

THE WORLD COMES HERE

TMS 2019

148th Annual Meeting & Exhibition

March 10–14, 2019

**HENRY B. GONZÁLEZ CONVENTION CENTER
SAN ANTONIO, TEXAS, USA**

PRELIMINARY TECHNICAL PROGRAM

The content in this preliminary program was generated on December 4. However, changes are still being implemented for the technical program. Please refer to the online session sheets for the most up-to-date information.

www.tms.org/TMS2019

THE WORLD COMES HERE TMS 2019

148th Annual Meeting & Exhibition

March 10–14, 2019
San Antonio, Texas, USA
#TMSAnnualMeeting

**ACT NOW: REGISTER BY FEBRUARY 1
FOR THE BEST RATES!**

More than 3,500 presentations are planned for TMS2019, but the conference is so much more than technical talks. Join us at TMS2019 for:



ALL-CONFERENCE PLENARY: THE NEXT MATERIALS FRONTIER FOR FLIGHT

Hear from **Luana Iorio**,
General Manager, Engineering
Material Systems, GE Aviation;
then browse a display
of related GE additive technologies.

KEYNOTE SESSIONS ADDRESS HOT-TOPIC ISSUES

- **Materials and Manufacturing Innovation Keynote Session** focuses on Autonomous Materials Research.
- **Additive Manufacturing Keynote Session** ties together the seven additive manufacturing-related symposia planned at TMS2019.
- **Light Metals Keynote Sessions** discuss timely topics in the aluminum and magnesium industries.

For the best rates on meeting attendance, **register by February 1** and **book housing by February 25** at:

www.tms.org/TMS2019



Symposium and Session	Day	Time	Room	Page
10th International Symposium on High Temperature Metallurgical Processing				
Simulation of High Temperature Processes	MON AM	9:00 AM	208	23
Energy Efficient Clean Metallurgical Technologies	MON PM	2:30 PM	208	47
Poster Session	MON EVE	5:30 PM	Hall 3	216
Fundamentals of Metallurgical Processes	TUES AM	8:30 AM	208	71
High Temperature Processing	TUES PM	2:00 PM	208	99
Extraction and Recovery of Metals	WED AM	8:30 AM	208	125
Ironmaking and Steelmaking	WED PM	2:00 PM	208	151
Preparation of Alloys and Materials I	THU AM	8:30 AM	208	176
Treatment and Recycling of Wastes	THU AM	8:30 AM	209	177
Preparation of Alloys and Materials II	THU PM	2:00 PM	208	198
Utilization of Complex Ores	THU PM	2:00 PM	209	198
2019 Energy Technologies and Carbon Dioxide Management Symposium				
Energy and Material Production	MON AM	8:00 AM	007D	23
Process and Waste Gas Operations	MON PM	2:30 PM	007D	48
Nanomaterials and Catalysts	TUES AM	8:30 AM	007D	71
Poster Session	TUES EVE	5:30 PM	Hall 3	229
2019 EPD Distinguished Lecture				
Distinguished Lecture	MON AM	8:00 AM	213B	24
2019 International Metallurgical Processes Workshop for Young Scholars (IMPROWYS 2019)				
Electrometallurgy	MON AM	9:00 PM	213B	24
Metal Refining	MON PM	2:30 PM	213B	48
Poster Session	MON EVE	5:30 PM	Hall 3	217
Solidification Processing	TUES AM	8:30 AM	213B	72
Powder Metallurgy and Additive Manufacturing	TUES PM	2:00 PM	213B	99
Physical and Mechanical Metallurgy	WED AM	8:30 AM	213B	125
Early Career Professional Forum	WED PM	2:00 PM	213B	151
2019 Light Metal Keynote				
Aluminum Industry: Vision for the Next Decade	MON AM	8:00 AM	004	24
2019 Symposium on Functional Nanomaterials: Synthesis, Integration, and Application of Emerging Nanomaterials				
Nanomaterials for Energy and Environmental Applications	MON AM	8:00 AM	213A	24
Atomic Layer Deposition for Functional Nanomaterials	MON PM	2:30 PM	213A	48

PROGRAM AT-A-GLANCE

Symposium and Session	Day	Time	Room	Page
Two-dimensional Nanomaterials I	TUE AM	8:30 AM	213A	72
Two-dimensional Nanomaterials II	TUE PM	2:00 PM	213A	100
Poster Session	TUE EVE	5:30 PM	Hall 3	230
Functional Thin Film Materials	WED AM	8:30 AM	213A	126
Additive Manufacturing and General Nanomaterials	WED PM	2:00 PM	213A	152
5th Symposium on Advanced Materials for Energy Conversion and Storage				
Materials Design for Sustainability and Energy Harvesting	MON AM	8:00 AM	225A	25
Energy Conversion with Emphasis on SOFCs I	MON PM	2:30 PM	225A	49
Energy Storage with Emphasis on Batteries I	MON PM	2:30 PM	223	49
Functional Materials Including High-temperature Ceramics and Alloys	TUE AM	8:30 AM	225A	73
Energy Storage with Emphasis on Batteries II	TUE PM	2:00 PM	225A	100
Poster Session	TUE EVE	5:30 PM	Hall 3	230
Energy Conversion with Emphasis on SOFCs II	WED AM	8:30 AM	225A	126
Energy Storage with Emphasis on Batteries III	WED PM	2:00 PM	225A	152
Energy Conversion with Emphasis on SOFCs III	THU AM	8:30 AM	225A	177
Energy Storage with Emphasis on Batteries IV	THU PM	2:00 PM	225A	199
Energy Storage with Emphasis on Batteries V	THU PM	2:00 PM	213B	199
Additive Manufacturing and Welding: Physical and Mechanical Metallurgy of Rapidly Solidified Metals				
Computational Tools for Additive Manufacturing	MON AM	8:00 AM	221A	25
Poster Session	MON EVE	5:30 PM	Hall 3	217
In Situ Process Monitoring	TUES AM	8:30 AM	221A	73
Process, Structure, and Properties I	TUES PM	2:00 PM	221A	101
Process, Structure, and Properties II	WED AM	8:30 AM	221A	127
Defects and Residual Stresses	WED PM	2:00 PM	221A	153
Properties	THU AM	8:30 AM	221A	177
In Situ Synchrotron Measurements	THU PM	2:00 PM	221A	200
Novel Materials and Applications	THU PM	2:00 PM	217C	200
Additive Manufacturing for Energy Applications				
Nuclear Components and Instrumentation	MON AM	8:00 AM	223	26
Student Poster Session	MON EVE	5:30 PM	Hall 3	218
Microstructure and Characterization	TUE AM	8:30 AM	223	74
Design, Process Optimization and Qualification	TUE PM	2:00 PM	223	101

Symposium and Session	Day	Time	Room	Page
Process Development and Modeling	WED AM	8:30 AM	223	127
Additive Manufacturing Joint Keynote Session				
Additive Manufacturing Joint Keynote Session	MON PM	2:30 PM	Lila Cockrell Theater	49
Additive Manufacturing of Metals: Applications of Solidification Fundamentals				
Poster Session	MON EVE	5:30 PM	Hall 3	218
Microstructure Evolution	WED AM	8:30 AM	224	128
Multi-scale Modeling	WED PM	2:00 PM	224	153
Process-microstructure Relationships I	THU AM	8:30 AM	224	178
Process-microstructure Relationships II	THU PM	2:00 PM	224	201
Process Modeling	THU PM	2:00 PM	216A	201
Additive Manufacturing of Metals: Fatigue and Fracture III				
Poster Session	MON EVE	5:30 PM	Hall 3	218
Session I	TUE AM	8:30 AM	221B	74
Session II	TUE PM	2:00 PM	221B	102
Session III	WED AM	8:30 AM	221B	128
Session IV	WED PM	2:00 PM	221B	154
Session V	THU AM	8:30 AM	221B	178
Session VI	THU PM	2:00 PM	221B	202
Additive Manufacturing of Metals: Microstructural Evolution and Phase Transformations				
High Temperature Materials	MON AM	8:00 AM	221C	26
Poster Session	MON EVE	5:30 PM	Hall 3	219
Ni-based Systems I	TUE AM	8:30 AM	221C	75
Ni-based Systems II	TUE PM	2:00 PM	221C	102
Fe-based Systems	WED AM	8:30 AM	221C	129
Al- and Cu-based Systems	WED PM	2:00 PM	221C	154
Ti-based Systems	THU AM	8:30 AM	221C	179
Additive Manufacturing: Materials Design and Alloy Development				
Fundamentals in Alloy Design for AM I	MON AM	8:00 AM	221D	27
Poster Session	MON EVE	5:30 PM	Hall 3	219
Fundamentals in Alloy Design for AM II	TUE PM	2:00 PM	221D	103
Functional Materials for AM	WED AM	8:30 AM	221D	129
Structural Alloy Design for AM I	WED PM	2:00 PM	221D	155

PROGRAM AT-A-GLANCE

Symposium and Session	Day	Time	Room	Page
Structural Alloy Design for AM II	THU AM	8:30 AM	221D	179
Structural Alloy Design for AM III	THU PM	2:00 PM	221D	202
Additive Manufacturing: Solid State Processing of Metals and Ceramics				
Bonding with Kinetic Energy	MON AM	8:00 AM	221B	27
Extrusion, Powder Lithography, Direct Write	WED PM	2:00 PM	223	155
Binder Jetting I	THU AM	8:30 AM	223	180
Binder Jetting II	THU PM	2:00 PM	223	203
Advanced Characterization Techniques for Quantifying and Modeling Deformation				
Session I	MON AM	8:00 AM	302A	27
Session II	MON PM	2:30 PM	302A	50
Session III	TUE AM	8:30 AM	302A	75
Session IV	TUE PM	2:00 PM	302A	103
Poster Session	TUE EVE	5:30 PM	Hall 3	231
Session V	WED AM	8:30 AM	302A	130
Session VI	WED PM	2:00 PM	302A	155
Session VII	THU AM	8:30 AM	302A	180
Advanced High-Strength Steels III				
Microstructure, Processing, and Properties Advanced High-Strength Steels I	TUE AM	8:30 AM	205	76
Microstructure, Processing, and Properties Advanced High-Strength Steels II	TUE PM	2:00 PM	205	104
Poster Session	TUE EVE	5:30 PM	Hall 3	231
Microstructure, Processing, and Properties Advanced High-Strength Steels III	WED AM	8:30 AM	205	130
High-Performance Steels I	WED PM	2:00 PM	205	156
High-Performance Steels II	THU AM	8:30 AM	205	181
Mechanical Properties of Advanced High-Strength and Microalloyed Steels	THU PM	2:00 PM	205	203
Advanced Magnetic Materials for Energy and Power Conversion Applications				
Development in Rare Earth Permanent Magnets	MON AM	8:00 AM	225B	28
Alloy Development and Application of Magneto-thermal Materials	MON PM	2:30 PM	225B	50
Application of Advanced Soft Magnetic Materials in Power Electronics and Motors	TUE AM	8:30 AM	225B	76
Additive Manufacturing and Advanced Processing of Magnetic Materials	TUE PM	2:00 PM	225B	104
Poster Session	TUE EVE	5:30 PM	Hall 3	232

Symposium and Session	Day	Time	Room	Page
FEMS-TMS Joint Session on Critical Materials in Magnet Supply Chains	WED AM	8:30 AM	225B	131
Development and Application of Soft Magnetic Materials for Transformers and Inductors	WED PM	2:00 PM	225B	156
Development in Rare Earth Free Permanent Magnets	THU AM	8:30 AM	225B	181
Development and Application of Soft Magnetic Materials for Electric Machines	THU PM	2:00 PM	225B	204
Advanced Microelectronic Packaging, Emerging Interconnection Technology, and Pb-free Solder				
Quality and Reliability of Advanced Microelectronic Packaging	MON AM	8:00 AM	216A	28
Solder Joint Intermetallics	MON PM	2:30 PM	216A	51
Pb-free Solder Alloys I	TUE AM	8:30 AM	216A	77
3D Microelectronic Packaging and Emerging Interconnects I	TUE PM	2:00 PM	216A	105
Poster Session	TUE EVE	5:30 PM	Hall 3	232
Advanced Microelectronic Packaging Materials	WED AM	8:30 AM	216A	131
3D Microelectronic Packaging and Emerging Interconnects II	WED PM	2:00 PM	216A	157
Pb-free Solder Alloys II	THU AM	8:30 AM	216A	182
Advanced Real Time Imaging				
Iron and Steelmaking I	MON AM	8:00 AM	302B	29
Energy, Fuels, and Environment	MON PM	2:30 PM	302B	51
Thermodynamic and Mechanical Properties	TUE AM	8:30 AM	302B	77
Iron and Steelmaking II	TUE PM	2:00 PM	302B	105
Poster Session	TUE PM	5:30 PM	Hall 3	232
Additive Manufacturing and Biomaterials	WED AM	8:30 AM	302B	131
Iron and Steelmaking III	WED PM	2:00 PM	302B	157
Phase Transformation I	THU AM	8:30 AM	302B	182
Phase Transformation II	THU PM	2:00 PM	302B	204
Advances in Computational Methods for Damage Mechanics and Failure Phenomena				
Poster Session	TUE EVE	5:30 PM	Hall 3	233
Computational Modeling of Failure: Novel Methods	WED AM	8:30 AM	303C	132
Crystal Plasticity Methods I	WED PM	2:00 PM	303C	158
Atomistic and Coarse-grained Methods	THU AM	8:30 AM	301C	183
Non-local Methods: Peridynamics and Phase-field	THU AM	8:30 AM	303C	183
Crystal Plasticity Methods II	THU PM	2:00 PM	303C	204

PROGRAM AT-A-GLANCE

Symposium and Session	Day	Time	Room	Page
Advances in Surface Engineering				
Session I	MON AM	8:00 AM	210A	29
Session II	MON PM	2:30 PM	210A	52
Poster Session	MON EVE	5:30 PM	Hall 3	220
Session III	TUE AM	8:30 AM	210A	78
Session IV	TUE PM	2:00 PM	210A	106
Algorithm Development in Materials Science and Engineering				
Electronic, Atomistic, and Machine Learning Algorithms for Study and Design of Materials	MON AM	8:00 AM	304A	30
Atomistic, Mesoscale, and Machine Learning Algorithms for Study and Design of Materials	MON PM	2:30 PM	304A	52
Computational, Experimental, and Machine Learning Algorithms in Study and Design of Materials I	TUE AM	8:30 AM	304A	78
Computational, Experimental, and Machine Learning Algorithms in Study and Design of Materials II	TUE PM	2:00 PM	304A	106
Poster Session	TUE EVE	5:30 PM	Hall 3	233
Atomistic and MesoScale Algorithms in Study and Design of Materials	WED AM	8:30 AM	304A	132
Applications of Algorithms for Study and Design of Materials	WED PM	2:00 PM	304A	158
Alloys and Compounds for Thermoelectric and Solar Cell Applications VII				
Session I	MON AM	8:00 AM	216B	30
Session II	MON PM	2:30 PM	216B	53
Session III	TUE AM	8:30 AM	216B	79
Session IV	TUE PM	2:00 PM	216B	107
Student Poster Session	TUE EVE	5:30 PM	Hall 3	233
Session V	WED AM	8:30 AM	216B	133
Session VI	WED PM	2:00 PM	216B	158
Alumina & Bauxite				
Poster Session	MON EVE	5:30 PM	Hall 3	220
Bayer Process and Non-conventional Processing	WED AM	8:30 AM	006A	133
Bauxite Residue: Management and Valorization	WED PM	2:00 PM	006A	159
Aluminum Alloys, Processing and Characterization				
Aluminum Alloy Development	MON PM	2:30 PM	007A	53
Poster Session I - Development of Aluminum Alloy Processing	MON EVE	5:30 PM	Hall 3	220
Poster Session II - Characterizations of Aluminum Alloys	MON EVE	5:30 PM	Hall 3	221

Symposium and Session	Day	Time	Room	Page
Microstructures and Mechanical Properties of Aluminum Alloys	TUE AM	8:30 AM	007A	79
Behavior of Casting Alloys	TUE PM	2:00 PM	007A	107
Simulations and Studies of Processing	WED AM	8:30 AM	007A	133
Characterizations and Applications of Aluminum Alloys	WED PM	2:00 PM	007A	159
Casting and Solidification	THU AM	8:30 AM	007A	184
Aluminum Reduction Technology				
Cell Technology Development and Modeling	MON PM	2:30 PM	004	54
Cell Design and Modelling	TUE AM	8:30 AM	004	80
Poster Session	MON EVE	5:30 PM	Hall 3	221
Joint Session Alumina Feeding and Alumina Scale Formation	TUE PM	2:00 PM	004	108
Joint Session with Electrode Technology	WED AM	8:30 AM	004	134
Fundamentals in Cell Behavior, Inert Anodes and other Research	WED PM	2:00 PM	004	160
Environmental Issues including PFC Emissions	THU AM	8:30 AM	004	184
Cell Operations, Control and Improvements	THU PM	2:00 PM	004	205
Atom Probe Tomography for Advanced Characterization of Metals, Minerals and Materials II				
General Methods and Development	MON AM	8:00 AM	303A	31
Semiconductors and Light-weight Alloys	MON PM	2:30 PM	303A	54
Steels and Ni Alloys	TUE AM	8:30 AM	303A	80
High-entropy Alloys and Nuclear Materials	TUE PM	2:00 PM	303A	108
Bio-nano Interfaces and Engineering Applications				
Bio-Nano Interfaces I	MON AM	8:00 AM	217C	31
Bio-Nano Interfaces II	MON PM	2:30 PM	217C	55
Poster Session	TUE EVE	5:30 PM	Hall 3	222
Bio-Nano Interfaces III	TUE AM	8:30 AM	217C	81
Bio-Nano Interfaces IV	WED AM	8:30 AM	217C	134
Bio-Nano Interfaces V	WED PM	2:00 PM	217C	160
Bio-Nano Interfaces VI	THU AM	8:30 AM	217C	184
Biological Materials Science				
Biological and Natural Materials I	MON AM	8:00 AM	217A	31
Biological and Natural Materials II	MON PM	2:30 PM	217A	55
Poster Session	MON EVE	5:30 PM	Hall 3	222
Biomimetic and Bioinspired Materials	TUE AM	8:30 AM	217A	81

PROGRAM AT-A-GLANCE

Symposium and Session	Day	Time	Room	Page
Bioenabled Materials and Systems	TUE PM	2:00 PM	217A	109
Biomaterials (Implants and Devices)	WED PM	2:00 PM	007D	160
Biorelated Applications	THU AM	8:30 AM	007D	185
Bulk Metallic Glasses XVI				
Alloy Development and Application	TUE AM	8:30 AM	206B	81
Structures and Mechanical Properties	TUE PM	2:00 PM	206B	109
Poster Session	TUE EVE	5:30 PM	Hall 3	233
Synthesis and Mechanical Properties	WED AM	8:30 AM	206B	135
Structures and Modeling I	WED PM	2:00 PM	206B	161
Thermal and Other Properties	THU AM	8:30 AM	206B	185
Structures and Characterization	THU PM	2:00 PM	207A	205
Structures and Modeling II	THU PM	2:00 PM	206B	206
Cast Shop Technology				
EHS and Cast House Operation	MON PM	2:30 PM	007B	55
Casting and Cast House Products	TUE AM	8:30 AM	007B	82
Melt Treatment	WED PM	2:00 PM	007B	161
Continuous Casting	THU AM	8:30 AM	007B	186
Cast Shop Technology: Energy Joint Session				
Cast Shop Technology: Energy Joint Session	WED AM	8:30 AM	007B	135
Ceramic Materials for Nuclear Energy Research and Applications				
Thermodynamics and Structural Properties	MON AM	8:00 AM	214A	32
Fabrication and Characterization	MON PM	2:30 PM	214A	56
Poster Session	MON PM	5:30 AM	Hall 3	222
Environmental Degradation	TUE AM	8:30 AM	214A	82
Irradiation Effect	TUE PM	2:00 PM	214B	110
In Reactor Fuel Behavior	WED PM	2:00 PM	214B	162
Thermophysical Properties and Irradiation	THU PM	2:00 PM	214B	206
Characterization of Materials through High Resolution Imaging				
Poster Session	TUE EVE	5:30 PM	Hall 3	234
Imaging I	WED AM	8:30 AM	303A	135
Imaging II	WED PM	2:00 PM	303A	162
Modeling and Computation for High Resolution Imaging	THU AM	8:30 AM	303A	186
Imaging III	THUPM	2:00 PM	303A	206

Symposium and Session	Day	Time	Room	Page
Characterization of Minerals, Metals, and Materials				
Characterization Method Development I	MON AM	8:00 AM	212B	32
Nanostructure and Characterization of Materials	MON AM	8:00 AM	006A	33
Characterization Method Development II	MON PM	2:30 PM	212B	56
Construction Materials	MON PM	2:30 PM	006A	57
Metallurgical Process	TUE AM	8:30 AM	212B	83
Process and Characteristics of Advanced Ceramics and Glasses I	TUE PM	2:00 PM	212B	110
Poster Session	TUE EVE	5:30 PM	Hall 3	234
Process and Characteristics of Advanced Ceramics and Glasses II	WED AM	8:30 AM	212B	136
Non-ferrous Metals and Processes	WED PM	2:00 PM	212B	163
Polymer and Composite Materials	WED PM	2:00 PM	212A	163
Analysis of Surfaces and Interfaces	THU AM	8:30 AM	212A	186
Ferrous Materials and Processes	THU AM	8:30 AM	212B	187
Characterization and Synthetic Process of Materials	THU PM	2:00 PM	212B	207
Mineral Processing and Extraction	THU PM	2:00 PM	213A	207
Coatings and Surface Engineering for Environmental Protection				
Corrosion Mechanisms & Performance Evaluations I	MON AM	8:00 AM	224	33
Corrosion Mechanism and Performance Evaluation II	MON PM	2:30 PM	224	57
Poster Session	MON EVE	5:30 PM	Hall 3	223
Coatings for Corrosion Protection I	TUE AM	8:30 AM	224	83
Coatings for Corrosion Protection II	TUE PM	2:00 PM	224	111
Computational Approaches for Big Data, Artificial Intelligence and Uncertainty Quantification in Computational Materials Science				
AI-based Investigation of Material Properties I	TUE AM	8:30 AM	305	84
AI-based Investigation of Material Properties II	TUE PM	2:00 PM	305	111
Poster Session	TUE EVE	5:30 PM	Hall 3	237
Big Data	WED AM	8:30 AM	305	136
AI Applied to General Materials Science	WED PM	2:00 PM	305	164
Uncertainty Quantification and AI-model Development in Atomistic Simulations	THU AM	8:30 AM	305	187
Uncertainty Quantification for Micro- and Macro-scale Modeling	THU PM	2:00 PM	305	208
Computational Materials Discovery and Design				
Applications to Surfaces, Interfaces, and 2D Materials	MON AM	8:00 AM	304C	34

PROGRAM AT-A-GLANCE

Symposium and Session	Day	Time	Room	Page
Applications for Defect and the Bulk I	MON PM	2:30 PM	304C	58
Applications for Defect and the Bulk II	TUE AM	8:30 AM	304C	85
Computational Methods for Materials Discovery and Design I	TUE PM	2:00 PM	304C	111
Poster Session	TUE EVE	5:30 PM	Hall 3	237
Computational Methods for Materials Discovery and Design II	WED AM	8:30 AM	304C	137
Computational Methods for Materials Discovery and Design III	WED PM	2:00 PM	304C	164
Computational Thermodynamics and Kinetics				
Computational Discovery	MON AM	8:00 AM	225C	34
Novel Approaches	MON PM	2:30 PM	225C	58
Kinetics	TUE AM	8:30 AM	225C	85
Phase Transformations	TUE PM	2:00 PM	225C	112
Poster Session	TUE EVE	5:30 PM	Hall 3	237
Phase Prediction and Stability	WED AM	8:30 AM	225C	137
Microstructural Evolution I	WED PM	2:00 PM	225C	165
Microstructural Evolution II	THU AM	8:30 AM	225C	188
Nuclear Materials and Radiation Effects	THU AM	8:30 AM	301A	188
Mechanics	THU PM	2:00 PM	225C	208
Deformation and Damage Behavior in High Temperature Alloys				
High Entropy Alloys and Strength Models	MON AM	8:00 AM	301C	35
Refractories, Intermetallics, and Mesoscopic Modeling	MON PM	2:30 PM	301C	59
Poster Session	MON EVE	5:30 PM	Hall 3	223
Superalloys: Alloy Development and Fatigue	TUE AM	8:30 AM	301C	86
Superalloys: Creep	TUE PM	2:00 PM	301C	112
Superalloys: Microstructural Evolution and Advanced Characterization	WED AM	8:30 AM	301C	138
Superalloys: Processing and Environmental-Assisted Mechanisms	WED PM	2:00 PM	301C	165
Diversity in STEM and Best Practices to Improve it				
Best Practices and Lessons Learned	MON AM	8:20 AM	301B	35
Being Out in STEM	MON PM	2:30 PM	301B	59
Effective Business Improvement Methodologies for the Minerals, Metals, and Materials Industries				
Effective Business Improvement Methodologies for the Minerals, Metals, and Materials Industries	WED PM	2:00 PM	303B	166

Symposium and Session	Day	Time	Room	Page
Electrode Technology for Aluminum Production				
Electrodes - Raw Materials and Paste Plant	MON PM	2:30 PM	006D	59
Poster Session	MON EVE	5:30 PM	Hall 3	223
Electrodes - Baking	TUE AM	8:30 AM	006D	86
Cathodes and Electrode Technology	TUE PM	2:00 PM	006D	113
Environmentally Assisted Cracking: Theory and Practice				
Hydrogen Embrittlement I	TUE AM	8:30 AM	214C	87
Stress Corrosion Cracking I	TUE PM	2:00 PM	214C	113
Hydrogen Embrittlement II	WED AM	8:30 AM	214C	138
Environmentally Assisted Embrittlement and Failure	WED PM	2:00 PM	214C	166
Environmentally Assisted Cracking in Aluminum Alloys	THU AM	8:30 AM	214C	188
Stress Corrosion Cracking II	THU PM	2:00 PM	214C	209
Fatigue in Materials: Multi-scale and Multi-environment Characterizations and Computational Modeling				
Poster Session	MON EVE	5:30 PM	Hall 3	223
Relationships Among Processing, Microstructure, and Fatigue Properties	TUE AM	8:30 AM	301B	87
Data-driven Investigations of Fatigue	TUE PM	2:00 PM	301B	113
Fatigue Characterization Using Advanced Experimental Methods in 2D and 3D	WED AM	8:30 AM	301B	139
Load and Environment Interaction Effects on the Mechanical Response during Fatigue	WED PM	2:00 PM	301B	166
Multi-scale and Multi-physics Models in Fatigue to Better Predict Behavior and Lifetime	THU AM	8:30 AM	301B	189
Crack Initiation and Propagation during Fatigue	THU PM	2:00 PM	301B	209
Fracture Processes of Thin Films and Nanomaterials				
Poster Session	TUE EVE	5:30 PM	Hall 3	237
Fracture of Functional and Structural Materials	WED AM	8:30 AM	217B	139
Thin Film and Interface Fracture	WED PM	2:00 PM	217B	167
Local Fracture Processes: Insights from Experiments and Modeling	THU AM	8:30 AM	217B	189
Size Effects on Fracture Processes in Monolithic and Multilayer Materials	THU PM	2:00 PM	217B	210
Freeze Lining: Myth and Reality				
Freeze Lining I	MON AM	8:00 AM	211	35
Freeze Lining II	MON PM	2:30 PM	211	60

PROGRAM AT-A-GLANCE

Symposium and Session	Day	Time	Room	Page
Friction Stir Welding and Processing X				
Poster Session	MON EVE	5:30 PM	Hall 3	224
Dissimilar Materials	WED AM	8:30 AM	210B	140
Hign Melting Temperature Materials	WED AM	8:30 AM	210A	140
Lightweight Materials	WED PM	2:00 PM	210A	167
Simulation	WED PM	2:00 PM	210B	167
Contols and Inspection	THU AM	8:30 AM	210B	190
Derivative Technologies	THU AM	8:30 AM	210A	190
Friction Stir Processing	THU PM	2:00 PM	210B	210
Friction Stir Spot Welding	THU PM	2:00 PM	210A	211
Gamma (FCC)/Gamma-Prime (L12) Co-Based Superalloys III				
Mechanical Behavior	MON AM	8:00 AM	206A	36
Environmental Resistance and Processing	MON PM	2:30 PM	206A	60
Alloy Development & Microstructural Evolution	TUE AM	8:30 AM	206A	88
Poster Session	TUE EVE	5:30 PM	Hall 3	238
General Poster Session				
General Poster Session	MON EVE	5:30 PM	Hall 3	224
Green Materials Engineering: An EPD Symposium in Honor of Sergio Monteiro				
Sustainable Ceramics	MON AM	8:00 AM	008A	36
Natural Fiber Composites	MON PM	2:30 PM	008A	61
Nano and Micro Green Composites	TUE AM	8:30 AM	008A	88
Properties and Characterization of Green Materials	TUE PM	2:00 PM	008A	114
Poster Session	TUE EVE	5:30 PM	Hall 3	238
Biomass in Armor Composites	WED AM	8:30 AM	008A	141
Heterogeneous and Gradient Materials (HGM III): Tailoring Mechanical Incompatibility for Superior Properties				
Heterostructured Materials I: Strength and Ductility	MON AM	8:00 AM	209	37
Heterostructured Materials II: Processing and Properties	MON PM	2:30 PM	209	61
Poster Session	MON EVE	5:30 PM	Hall 3	225
Gradient Materials I: Mechanical Properties	TUE AM	8:30 AM	209	89
Gradient Materials II: Property and Processing	TUE PM	2:00 PM	209	114
Structural Design, Processing and Properties	WED AM	8:30 AM	209	141
Deformation, Fracture and Fatigue	WED PM	2:00 PM	209	168

Symposium and Session	Day	Time	Room	Page
High-Entropy Alloys VII				
Alloy Design and Thermal Properties	MON AM	8:00 AM	207B	37
Alloy Development and Applications I	MON AM	8:00 AM	206B	38
Structures and Modeling I	MON AM	8:00 AM	207A	38
Structures and Characterization	MON PM	2:30 PM	207B	62
Structures and Mechanical Properties I	MON PM	2:30 PM	206B	62
Structures and Modeling II	MON PM	2:30 PM	207A	63
Structures and Mechanical Properties II	TUE AM	8:30 AM	207B	89
Alloy Development and Applications II	TUE PM	2:00 PM	207B	115
Poster Session	TUE EVE	5:30 PM	Hall 3	239
Thermal and Other Properties I	WED AM	8:30 AM	207B	142
Structures and Mechanical Properties III	WED PM	2:00 PM	207A	168
Thermal and Other Properties II	WED PM	2:00 PM	207B	169
Alloy Development and Applications III	THU AM	8:30 AM	207B	191
Mechanical and Other Properties I	THU AM	8:30 AM	207A	191
Structures and Mechanical Properties IV	THU AM	8:30 AM	008B	192
Synthesis and Mechanical Properties	THU PM	2:00 PM	207B	211
Thermal and Other Properties III	THU PM	2:00 PM	008B	212
Hume-Rothery Symposium – Bulk and Interfacial Thermodynamics of Complex Materials: Insights Derived from Integrating Modeling and Experiment				
Interfacial Thermodynamics and Kinetics I	MON AM	8:00 AM	304B	39
Interfacial Thermodynamics and Kinetics II	MON PM	2:30 PM	304B	63
Materials Design and Discovery I	TUE AM	8:30 AM	304B	90
Materials Design and Discovery II	TUE PM	2:00 PM	304B	115
CALPHAD and Ab-initio Studies of Phase Equilibria	WED AM	8:30 AM	304B	142
Fundamental Thermodynamics and Kinetics of Alloys	WED PM	2:00 PM	304B	169
ICME Case Studies and Validation: Extreme Environments				
Session I	TUE AM	8:30 AM	207A	90
Session II	TUE PM	2:00 PM	207A	116
Session II	WED AM	8:30 AM	207A	142
ICME Education in Materials Science and Mechanical Engineering				
ICME Education in Materials Science and Mechanical Engineering	THU AM	8:30 AM	304A	192

PROGRAM AT-A-GLANCE

Symposium and Session	Day	Time	Room	Page
Interfaces in Structural Materials: An MPMD Symposium in Honor of Stephen M. Foiles				
Interatomic Potentials and Methods: A Joint Session with Computational Materials Discovery and Design	MON AM	8:00 AM	302C	39
Structure -property Linkages	MON PM	2:30 PM	302C	63
Microstructural Evolution I	TUE AM	8:30 AM	302C	90
Microstructural Evolution II	TUE PM	2:00 PM	302C	116
Mechanical Behavior I: A Joint Session with Mechanical Behavior Related to Interfacial Physics III	WED AM	8:30 AM	302C	143
Mechanical Behavior II: A Joint Session with Mechanical Behavior Related to Interfacial Physics III	WED PM	2:00 PM	302C	170
Interface-defect Interactions I	THU AM	8:30 AM	302C	193
Interface-defect Interactions II	THU PM	2:00 PM	302C	212
Irradiation Effects on Phase Transformations in Nuclear Reactor Materials				
Pure and Binary Alloys	MON AM	8:00 AM	214B	40
Fe and FeCr Based Alloys	MON PM	2:30 PM	214B	64
Poster Session	MON EVE	5:30 PM	Hall 3	226
Nanoprecipitates and Nanoclusters	TUE AM	8:30 AM	214B	91
Ceramics and Fuels	WED AM	8:30 AM	214B	143
Multicomponent Alloys and Advanced Characterization Techniques	THU AM	8:30 AM	214B	193
Magnesium Technology 2019				
Keynote Session	MON AM	8:00 AM	005	40
Alloy Design and Casting	MON PM	2:30 PM	005	64
Poster Session	MON EVE	5:30 AM	Hall 3	226
Thermomechanical Processing	TUE AM	8:30 AM	005	91
Corrosion and Surface Protection	WED AM	8:30 AM	005	144
Fundamentals, Mechanical Behavior, Twinning, Plasticity, Texture and Fatigue I	WED PM	2:00 PM	005	170
Fundamentals, Mechanical Behavior, Twinning, Plasticity, Texture and Fatigue II	THU AM	8:30 AM	005	194
Materials and Manufacturing Innovation Keynote: Autonomous Materials Research				
Autonomous Materials Research	TUE AM	8:30 AM	221D	92
Materials for Molten Salt Energy Systems				
Corrosion and Compatibility I	MON AM	8:00 AM	008B	40
Corrosion and Compatibility II	MON PM	2:30 PM	008B	65
Advanced Materials for Molten Salt Systems	TUE AM	8:30 AM	008B	92

Symposium and Session	Day	Time	Room	Page
Thermodynamics and Electrochemistry	TUE PM	2:00 PM	008B	116
Materials Processing Fundamentals				
Modeling of Minerals and Metals Processing	MON AM	9:00 AM	212A	41
Steel - Microstructure and Properties	MON PM	2:30 PM	212A	65
Poster Session	MON EVE	5:30 PM	Hall 3	227
Alloys Processing and Properties Modeling	TUE AM	8:30 AM	212A	92
Multiphysics - Process and Properties Modeling	TUE PM	2:00 PM	212A	117
Extractive Process and Thermodynamic Modeling	WED AM	8:30 AM	212A	144
Mechanical Behavior of Nuclear Reactor Components				
Processing Effects	MON AM	8:00 AM	215	41
Microstructure Effects I	MON PM	2:30 PM	215	66
Poster Session	MON EVE	5:30 PM	Hall 3	228
Defect Evolution I	TUE AM	8:30 AM	215	93
Early Career	TUE PM	2:00 PM	215	117
Creep, Fatigue, and Fracture	WED AM	8:30 AM	215	145
Microstructure Effects II	WED PM	2:00 PM	215	171
Defect Evolution II	THU AM	8:30 AM	215	194
Small Scale Testing	THU PM	2:00 PM	215	213
Mechanical Behavior Related to Interface Physics III				
Grain Boundaries I	MON AM	8:00 AM	303C	42
Grain Boundaries II	MON PM	2:30 PM	303C	66
Nanocrystalline Materials I	TUE AM	8:30 AM	303C	93
Nanocrystalline Materials II	TUE PM	2:00 PM	303C	118
Poster Session	TUE EVE	5:30 PM	Hall 3	240
Nanocomposites I	THU AM	8:30 AM	304B	195
Nanocomposites II	THU PM	2:00 PM	304B	213
Micro- and Nanomechanical Testing in Harsh Environments				
High Temperature Micromechanics I	MON AM	8:00 AM	217B	42
High Temperature and Cryogenic Micromechanics	MON PM	2:30 PM	217B	67
Advances in Micromechanical Testing Techniques	TUE AM	8:30 AM	217B	94
Micromechanical Testing under Extreme Conditions	TUE PM	2:00 PM	217B	118
Poster Session	TUE EVE	5:30 PM	Hall 3	241

PROGRAM AT-A-GLANCE

Symposium and Session	Day	Time	Room	Page
Modeling and Simulation of Composite Materials				
Session I	MON AM	8:00 AM	303B	43
Session II	TUE AM	8:30 AM	303B	94
Session III	TUE PM	2:00 PM	303B	119
Poster Session	TUE EVE	5:30 PM	Hall 3	241
Session IV	WED AM	8:30 AM	303B	145
Nanoarchitected and Morphology-controlled Nanoporous Materials				
NP Materials-mechanical Behavior I	TUE PM	2:00 PM	214A	119
Poster Session	TUE EVE	5:30 PM	Hall 3	241
Structure Properties-radiation	WED AM	8:30 AM	214A	146
Metamaterials-MOFs-nano Architected	WED PM	2:00 PM	214A	171
Synthesis	THU AM	8:30 AM	214A	195
NP Materials-structure Properties-mechanical Behavior II	THU PM	2:00 PM	214A	214
Phase Stability, Phase Transformations, and Reactive Phase Formation in Electronic Materials XVIII				
Advanced Electronic Interconnection	MON AM	8:00 AM	217D	43
Phase Formation of Electronic Materials	MON PM	2:30 PM	217D	67
Interfacial Reaction of Electronic Materials	TUE AM	8:30 AM	217D	95
Phase Stability of Energy Materials	TUE PM	2:00 PM	217D	120
Phase Transformations and Microstructural Evolution				
Phase Transformations in Non-ferrous Alloys I	MON AM	8:00 AM	225D	44
Phase Transformations in Ferrous Alloys	MON PM	2:30 PM	225D	68
Phase Transformations in Steels and Non-ferrous Alloys	TUE AM	8:30 AM	225D	95
Modelling and Simulation of Phase Transformations in Alloys	TUE PM	2:00 PM	225D	120
Poster Session	TUE EVE	5:30 PM	Hall 3	241
Phase Transformation in Non-ferrous Alloys II	WED AM	8:30 AM	225D	146
Phase Transformation in Non-ferrous Alloys III	WED PM	2:00 PM	225D	171
Phase Transformation in Non-ferrous Alloys IV	THU AM	8:30 AM	225D	196
Phase Transformation in Non-ferrous Alloys V	THU PM	2:00 PM	225D	214
Powder Processing of Bulk Nanostructured Materials				
Densification Methods	TUE AM	8:30 AM	211	96
Nanostructured Metals	TUE PM	2:00 PM	211	121
Poster Session	TUE EVE	5:30 PM	Hall 3	242

Symposium and Session	Day	Time	Room	Page
Powder Synthesis	WED AM	8:30 AM	211	147
Nanocomposites	WED PM	2:00 PM	211	172
Structural Evolution and Thermal Stability	THU AM	8:30 AM	211	196
Rare Metal Extraction & Processing				
Rare Metals I	MON AM	8:00 AM	210B	44
Rare Metals II	MON PM	2:30 PM	210B	68
Poster Session	MON EVE	5:30 PM	Hall 3	228
Rare Metals III	TUE AM	8:30 AM	210B	96
Rare Metals IV	TUE PM	2:00 PM	210B	121
Recent Advances in Functional Materials and 2D/3D Processing for Sensors and Electronic Applications				
2D/3D Printed Electronics Advances	WED AM	8:30 AM	217D	147
Printed Electronics I: Functional Materials and Devices	WED PM	2:00 PM	217D	172
Printed Electronics II: Functional Materials and Devices	THU AM	8:30 AM	217D	197
Printed Electronics III: Functional Materials and Devices	THU PM	2:00 PM	217D	215
Recent Developments in Biological, Structural and Functional Thin Films & Coatings				
Biomedical and Polymeric Applications	WED AM	8:30 AM	217A	148
Functional Films and Coatings I	WED PM	2:00 PM	217A	173
Functional Films and Coatings II	THU AM	8:30 AM	217A	197
Functional Films and Coatings III	THU PM	2:00 PM	217A	215
Refractory Metals 2019				
(I) Mo and Nb; (II) Co-Re, Cr, and Nb-Si	MON AM	8:00 AM	205	45
(III) Welding and W Alloys; (IV) W, Re and Ru	MON PM	2:30 PM	205	68
REWAS 2019: Cast Shop Recycling Technologies				
Cast Shop and Recycling	TUES PM	2:00 PM	007B	122
REWAS 2019: Disruptive Material Manufacturing - Scaling and Systems Challenges				
Disruptive Material Manufacturing - Scaling and Systems Challenges	MON AM	8:00 AM	007C	45
REWAS 2019: Education and Workforce Development				
Education and Workforce Development	WED AM	8:30 AM	007D	148
REWAS 2019: Rethinking Production				
Poster Session	TUE EVE	5:30 PM	Hall 3	243
Rethinking Production	WED AM	8:30 AM	007C	148

PROGRAM AT-A-GLANCE

Symposium and Session	Day	Time	Room	Page
REWAS 2019: Secondary and Byproduct Sources of Materials, Minerals, and Metals				
Secondary and Byproduct Beneficial Use	MON PM	2:30 PM	007C	69
Plenary Session	TUE AM	8:30 AM	007C	97
Electronics and Battery Recycling	TUE PM	2:00 PM	007C	122
Poster Session	TUE EVE	5:30 PM	Hall 3	243
Circularity and Materials Availability	WED PM	2:00 PM	007C	173
Scandium Extraction and Use in Aluminum Alloys				
Scandium Markets and Extraction	WED AM	8:30 AM	006D	149
Aluminium Scandium Alloys	WED PM	2:00 PM	006D	174
Science Policy within the Materials Research Community				
Science Policy for Materials Research	WED AM	9:00 AM	008B	149
Getting Involved in Science Policy	WED PM	2:00 PM	008B	174
228Shape Casting: 7th International Symposium Celebrating Prof. John Campbell's 80th Birthday97				
Entrainment and Bifilms	MON AM	8:00 AM	006B	46
Casting Defects and their Characterization	MON PM	2:30 PM	006B	69
Poster Session	MON EVE	5:30 PM	Hall 3	228
Process Innovation and Modelling	TUE AM	8:30 AM	006B	97
Properties of Castings	TUE PM	2:00 PM	006B	123
Solar Cell Silicon				
Poster Session	TUE EVE	5:30 PM	Hall 3	243
Properties, Impurities, and Refining	WED PM	2:00 PM	008A	174
Slag, Recycling, and Photovoltaics	THU AM	8:30 AM	008A	197
Solidification Processing of Light Metals and Alloys: An MPMD Symposium in Honor of David StJohn				
Grain Refinement	MON AM	8:00 AM	006C	46
In-situ Observation and Simulation of Grain Formation	MON PM	2:30 PM	006C	70
Poster Session	MON EVE	5:30 PM	Hall 3	229
Shape Casting and Defects	TUE AM	8:30 AM	006C	97
External Fields and the Columnar to Equiaxed Transition	TUE PM	2:00 PM	006C	123
Magnesium Alloys	WED AM	8:30 AM	006C	149
Titanium Alloys and Research Partnerships	WED PM	2:00 PM	006C	175
Thermo-mechanical Response of Materials Investigated through Novel in-situ Experiments and Modeling				
Session I	MON AM	8:00 AM	301A	47

Symposium and Session	Day	Time	Room	Page
Session II	MON PM	2:30 PM	301A	70
Session III	TUE AM	8:30 AM	301A	98
Session IV	TUE PM	2:00 PM	301A	124
Session V	WED AM	8:30 AM	301A	150
Session VI	WED PM	2:00 PM	301A	175
TMS-DGM Symposium on Lightweight Metals: A Joint US-European Symposium on Challenges in Light Weighting the Transportation Industry				
Poster Session	MON EVE	5:30 PM	Hall 3	229
Aluminum	TUE AM	8:30 AM	006A	98
Magnesium	TUE PM	2:00 PM	006A	124
TMS 2019 Annual Meeting & Exhibition				
Plenary Session	MON PM	12:00 PM	Lila Cockrell Theater	71
Ultrasonic Processing of Liquid and Solidifying Alloys				
Fundamental Studies of Ultrasonic Processing	WED AM	8:30 AM	006B	150
Mechanisms and Applications of Ultrasonic Processing	WED PM	2:00 PM	006B	176



THE WORLD COMES HERE
TMS 2019
148th Annual Meeting & Exhibition

**PRELIMINARY
TECHNICAL
PROGRAM**

10th International Symposium on High Temperature Metallurgical Processing — Simulation of High Temperature Processes

Sponsored by: TMS: Pyrometallurgy Committee

Program Organizers: Tao Jiang, Central South University; Jiann-Yang Hwang, Michigan Technological Univ; Dean Gregurek, RHI Magnesita; Zhiwei Peng, Central South University; Jerome Downey, Montana Technological University; Baojun Zhao, University of Queensland; Onuralp Yucel, Istanbul Technical University; Ender Keskinilic, Atılım University; Rafael Padilla, Univ of Concepcion; Elsa Olivetti, Massachusetts Institute of Tech; Camille Fleuriaux, Gopher Resource

Monday AM
March 11, 2019

Room: 208
Location: Henry B. Gonzalez
Convention Center

Session Chairs: Dean Gregurek, RHI AG Technology Center
Leoben; Rafael Padilla, Univ of Concepcion

9:00 AM Introductory Comments

9:05 AM

A Mathematical Model for Carbon Loss of Blast Furnace Based on Traditional Engineering Method: *Shun Yao*¹; Shengli Wu¹; Bo Song¹; Mingyin Kou¹; Heng Zhou¹; ¹University of Science and Technology Beijing

9:25 AM

Study on Alkali Circulation Process and its Influence on Coke Ratio in Blast Furnace: *Haokun Li*¹; Yijie Wang¹; Kexin Jiao¹; Jianliang Zhang¹; Rong Zhu¹; Hanjie Guo¹; ¹University of Science and Technology Beijing

9:45 AM Break

10:05 AM

The Pyrolysis of Methane and Carbon-steam Reaction in Copper Fire Refining: *Paul Mather*¹; Matthew Krane¹; ¹Purdue University

10:25 AM

Fuzzy Grey Relational Analysis for Electromagnetic Parameters of Induction Heating Process: *Pei Fu*¹; Ping Zhou¹; Tian Yang Zhao¹; Chenn Zhou²; Zhuo Chen¹; ¹Central South University; ²Purdue University Calumet

10:45 AM

Investigating the Combustion System in a Top Submerged Lance Furnace: *Avinash Kandalam*¹; Daniele Obiso¹; Jörg Kleeberg¹; Michael Stelter¹; Markus Reuter¹; ¹TU Bergakademie Freiberg

11:05 AM

Submerged Gas Injection Physical and CFD Modelling and Visualisation: *Kenneth Kaiser*¹; Mostafa Smadzadeh²; Leili Tafaghodi²; ¹Air Liquide Inc; ²University of British Columbia

11:25 AM

Modelling of Motion and Heat Transfer of Blast Furnace Dust Particle during Flash Reduction Process at High Temperature: *Jin Xu*¹; *Nan Wang*¹; Min Chen¹; ¹Northeastern Univ

11:45 AM

Numerical Simulation of Inclusion Removal in a Novel Tundish with Swirl Flow: *Jianchuan Yan*¹; Tao Li¹; Jun Liu¹; ¹ChongQing University

12:05 PM

Numerical Simulation on the Optimization of Tundish Inner Structure: *Yong Zhong*¹; Mingmei Zhu¹; Bing Huang¹; ¹Chong Qing University

12:25 PM Concluding Comments

2019 Energy Technologies and Carbon Dioxide Management Symposium — Energy and Material Production

Sponsored by: TMS: Energy Committee

Program Organizers: Tao Wang, Nucor Castrip Arkansas; Xiaobo Chen, RMIT; Donna Guillen, Idaho National Laboratory; Lei Zhang, University of Alaska Fairbanks; Ziqi Sun, Queensland University of Technology; Cong Wang, Northeastern University; Nawshad Haque, Csiro; John Howarter, Purdue University; Neale Neelameggham, IND LLC

Monday AM
March 11, 2019

Room: 007D
Location: Henry B. Gonzalez
Convention Center

Session Chair: To Be Announced

8:00 AM

Effect of Dust in Flue Gas on Heat Transfer Efficiency: *Jiapeng Liang*¹; Haibin Zuo¹; Jingsong Wang¹; Yingli Liu¹; Wanlong Zhang¹; Shenhui Liu¹; ¹University of Science and Technology Beijing

8:20 AM

Analysis on Energy Efficiency and Optimization of Hismelt Process: *Chaozhen Cao*¹; Yujie Meng¹; Fangxing Yan¹; Dianwei Zhang²; Xin Li¹; Fuming Zhang¹; ¹Beijing Shougang International Engineering Technology Co., Ltd.; ²Shougang Research Institute of Technology

8:40 AM

Construction on Energy Flow Network of Modern Blast Furnace Ironmaking: *Fuming Zhang*¹; ¹Shougang Group

9:00 AM

Feasibility of a District Heating System using Waste Heat from Alcoa Fjardaal: *Leo Haraldsson*¹; Maria Gudjonsdottir¹; Gestur Valgardsson²; Gudrun Saevarsdottir¹; ¹Reykjavik University; ²EFLA Consulting Engineers

9:20 AM Break

9:40 AM

Phase Equilibria and Thermodynamics in the FeSO₄-CaSO₄ System: *Fiseha Tesfaye*¹; In-Ho Jung²; Mykola Moroz¹; Daniel Lindberg³; Leena Hupa¹; ¹Åbo Akademi University; ²Seoul National University; ³Aalto University

10:00 AM

Research and Application On Waste Heat Recycling and Preheating Technology of Ironmaking Hot Blast Stove In China: *Xin Li*¹; Fuming Zhang²; Guangyu Yin¹; Chaozhen Cao¹; ¹Beijing Shougang International Engineering Technology Co.,Ltd.; ²Shougang Group

10:20 AM

Influence of Proportion of Pellet on Burden Distribution: *Jiansheng Chen*¹; Haibin Zuo¹; jingsong Wang¹; Qingguo Xue¹; Jiapeng Liang¹; ¹University of Science and Technology Beijing

2019 EPD Distinguished Lecture — Distinguished Lecture

Sponsored by: TMS Extraction and Processing Division
Program Organizer: Cynthia Belt, Metals Energy Management LLC

Monday AM
March 11, 2019

Room: 213B
Location: Henry B. Gonzalez
Convention Center

Session Chair: To Be Announced

8:00 AM Introductory Comments

8:05 AM

The Importance of Transient Phenomena in Metallurgical Processes: *Sridhar Seetharaman*¹; ¹Colorado School of Mines

8:45 AM Question and Answer Period

8:55 AM Break

2019 International Metallurgical Processes Workshop for Young Scholars (IMPROWYS 2019) — Electrometallurgy

Sponsored by: TMS Extraction and Processing Division
Program Organizers: Cong Wang, Northeastern University; Amy Clarke, Colorado School of Mines; Kinnor Chattopadhyay, University of Toronto; Bryan Webler, Carnegie Mellon University

Monday AM
March 11, 2019

Room: 213B
Location: Henry B. Gonzalez
Convention Center

Funding support provided by: Korean Institute of Metals and Materials

Session Chair: Cong Wang, Northeastern University

9:00 AM Introductory Comments

9:10 AM Invited

Theoretical and Experimental Probing of the Molten State: *Antoine Allanore*¹; ¹MIT - DMSE

9:40 AM Break

10:00 AM Invited

The Utility of Liquid Metals in Electrometallurgical Processing of Used Nuclear Fuels for Recycling: *Hojong Kim*¹; ¹Pennsylvania State Univ

10:30 AM Invited

Dissolution Behavior of Solid SiO₂ in CaCl₂-based Molten Salts: *Xiao Yang*¹; *Kouji Yasuda*²; *Toshiyuki Nohira*²; *Fumitaka Tsukihashi*¹; ¹The University of Tokyo; ²Kyoto University

2019 Light Metals Keynote Session — Aluminum Industry: Vision for the Next Decade

Sponsored by: TMS Light Metals Division, TMS: Aluminum Committee
Program Organizer: Olivier Martin, Rio Tinto

Monday AM
March 11, 2019

Room: 004
Location: Henry B. Gonzalez
Convention Center

Session Chair: Olivier Martin, Rio Tinto

8:00 AM Introductory Comments

8:05 AM Keynote

The Aluminium Story: *Ron Knapp*¹; *Chris Bayliss*¹; ¹International Aluminium Institute

8:35 AM Keynote

China Aluminium Industry Picture: *Mo Xinda*¹; ¹China Nonferrous Metals Industry Association

9:05 AM Keynote

Products of the Future - Solutions for Shaping a Sustainable World: *Todd Summe*¹; ¹Novelis Inc.

9:35 AM Break

9:55 AM Keynote

Smelter of the Future: *Hans Erik Vatne*¹; ¹Norsk Hydro ASA

10:25 AM Keynote

The Aluminium Industry Revolution at the Door Step: *Vincent Christ*¹; ¹Elysis

10:55 AM Panel Discussion

2019 Symposium on Functional Nanomaterials: Synthesis, Integration, and Application of Emerging Nanomaterials — Nanomaterials for Energy and Environmental Applications

Sponsored by: TMS: Nanomaterials Committee
Program Organizers: Chang-Yong Nam, Brookhaven National Laboratory; Jiyoung Chang, University of Utah; Pei Dong, George Mason University; Yong Lin Kong, University of Utah; Shengfeng Yang, Indiana Univ. Purdue Univ. Indianapolis; SungWoo Nam, University of Illinois

Monday AM
March 11, 2019

Room: 213A
Location: Henry B. Gonzalez
Convention Center

Session Chairs: Chang-Yong Nam, Brookhaven National Laboratory; Jung-Kun Lee, University of Pittsburgh; Pei Dong, George Mason University

8:00 AM Invited

Study for Stable and Flexible Perovskite Solar Cells: *Jung-Kun Lee*¹; ¹University of Pittsburgh

8:30 AM Invited

Direct Characterization of Molecular Ordering in Organic Semiconductors: How the Nanoscale Structure Defines Electronic and Photovoltaic Properties: *Gabriel Calderon*¹; *Jared Johnson*¹; *Menglin Zhu*¹; *Jimwoo Hwang*¹; ¹Ohio State University

9:00 AM

A Flexible Solar Cell/supercapacitor Integrated Energy Device: *Pei Dong*¹; *Jun Lou*²; ¹George Mason University; ²Rice University

9:20 AM

A New Class of Integrated Chalcogenide Nanocrystals and Thin Films for Solar Cell Applications: *Soubantika Palchoudhury*¹; Abdollah Arabshahi¹; Uday Gharge¹; Arnel Boutchuen¹; Yasmin Foster¹; Dell Zimmerman¹; Hamad Alresheedi¹; ¹University of Tennessee Chattanooga

9:40 AM Break

9:50 AM Invited

Cobalt Oxide Electrocatalysts Doped with Various Transition Metals for Enhanced Oxygen Evolution Reaction: Changsoo Lee¹; Chanwon Jung¹; Pyuck-Pa Choi¹; *Hyuck Mo Lee*¹; ¹KAIST

10:20 AM Invited

Novel Synthesis Routes of Silicon/Carbon Nanocomposites for Lithium-Ion Batteries with High Energy Density and Long Cycle Life: *Min Kyu Song*¹; ¹Washington State University

10:50 AM

Synthesis of Hybrid Nanocomposites of Nanostructured Co₃O₄ Interfaced with Reduced/nitrogen-doped Graphene Oxides for Selective Enhancements in Electrochemical and/or Supercapacitive Properties: *Erick Ribeiro*¹; Sheng Hu¹; Dibyendu Mukherjee¹; Bamin Khomami¹; ¹Univ of Tennessee Knoxville

11:10 AM

Gold Flower-like Structures: Excellent Candidates as Sensors: *Karine Mouglin*¹; Delphine Faye²; Vincent Vignal³; Arnaud Buch⁴; ¹Institut De Science Des Matériaux De Mulhouse; ²CNES; ³ICB; ⁴CentraleSupélec

11:30 AM

Core/shell Nanoparticles via Inert Gas Condensation: Jeffrey Shield¹; *Zahra Ahmadi*¹; ¹Univ of Nebraska

5th Symposium on Advanced Materials for Energy Conversion and Storage — Materials Design for Sustainability and Energy Harvesting

Sponsored by: TMS: High Temperature Alloys Committee

Program Organizers: Amit Pandey, LG Fuel Cell Systems; Partha Mukherjee, Purdue University; Surojit Gupta, University of North Dakota; Kyle Brinkman, Clemson Univ; Jung Pyung Choi, Pacific Northwest National Laboratory; Soumendra Basu, Boston University; Paul Ohodnicki, National Energy Technology Laboratory

Monday AM
March 11, 2019

Room: 225A
Location: Henry B. Gonzalez
Convention Center

Session Chair: Surojit Gupta, University of North Dakota

8:00 AM Invited

Materials Design for Energy and Sustainability: *Lan Li*¹; ¹Boise State University

8:25 AM

The Improvement in Conversion Efficiency of Phthalocyanine-based Organic Photovoltaics: *Miroslav Popovic*¹; Stevan Davidovich¹; Barney Simic-Glavaski¹; ¹Univ of California Berkeley

8:45 AM

Design of Novel Polymer Matrix Composites: *Surojit Gupta*¹; Maharshi Dey¹; Sabah Javaid¹; Kathryn Hall¹; ¹University of North Dakota

9:05 AM

Comparison of Solar Selective Absorbance Properties of TiN, TiN_xO_y and TiO₂ Thin Films: Hanan Abd El-Fattah¹; *Iman El Mahallawi*²; Mostafa Shazly³; Waleed Khalifa¹; ¹Faculty of Engineering Cairo University; ²Cairo University/ Adjunct The British University in Egypt; ³The British University in Egypt

9:25 AM

Carrier Separation in High-efficient Kesterite Thin-film Solar Cells Probed by Optical and Scanning Probe Investigation: *Juran Kim*¹; William Jo¹; Kee-Jeong Yang²; Dae-Hwan Kim²; Jin-Kyu Kang²; ¹Ewha Womans University; ²Daegu Gyeongbuk Institute of Science & Technology (DGIST)

9:45 AM Break

10:05 AM

An Ab Initio Study of the Electronic and Atomic Structure at the PCBM/CH₃NH₃PbI₃ Interface in Perovskite Solar Cells: *Rabi Khanal*¹; Nicholas Ayers²; Soumik Banerjee³; Samrat Choudhury²; ¹University of Idaho; ²Univ of Idaho; ³Washington State University

10:25 AM

Electrochemically Driven Phase Transition: Observations and Mechanisms: *Xiao-Dong Zhou*¹; Emir Dogdibegovic²; Yudong Wang¹; ¹University of Louisiana at Lafayette; ²LBL

10:45 AM

Highly Efficient Chalcogenide Solar Cells on Flexible Polymers: Nanoscale Imaging of Optoelectronic Properties: *Juran Kim*¹; *William Jo*¹; Jihye Gwak²; Jae Ho Yun²; ¹Ewha Womans University; ²Korean Institute of Energy Research (KIER)

Additive Manufacturing and Welding: Physical and Mechanical Metallurgy of Rapidly Solidified Metals — Computational Tools for Additive Manufacturing

Sponsored by: TMS: Additive Manufacturing Committee

Program Organizers: Allison Beese, Pennsylvania State University; Eric Lass, National Institute of Standards and Technology; David Bourell, University of Texas; John Carpenter, Los Alamos National Laboratory; Kester Clarke, Colorado School of Mines; Daniel Coughlin, Los Alamos National Laboratory; Christian Leinenbach, Empa, Swiss Federal Laboratories for Materials Science and Technology; Behrang Poorganji, GE Additive; Judy Schneider, University of Alabama At Huntsville; Lee Semiatin, US Air Force Research Laboratory; Mark Stoudt, National Institute of Standards and Technology; Chantal Sudbrack, QuesTek Innovations LLC

Monday AM
March 11, 2019

Room: 221A
Location: Henry B. Gonzalez
Convention Center

Session Chairs: Eric Lass, National Institute of Standards and Technology; Christian Leinenbach, Empa, Swiss Federal Laboratories for Materials Science and Technology

8:00 AM Invited

Considerations in the Penetration of Additive-produced Materials into Mainstream Production of Commercial, Industrial, and Defense Products – Metallurgy, Capability, and Overcoming Adversity: *Eric Ott*¹; Amber Andreaeo¹; David Abbott¹; Behrang Poorganji¹; ¹GE Additive

8:30 AM Invited

Application of ICME Tools and Methods to Additive Manufacturing Process Development and Component Qualification: *David Furrer*¹; Rebecca Runkle¹; Sergei Burlatsky²; ¹Pratt & Whitney; ²United Technologies Research Center

9:00 AM

Development of a Computational Model of Metal Additive Manufacturing: *Vu Nguyen*¹; Anthony Murphy¹; Gary Delaney¹; Peter Cook¹; Sharen Cummins¹; Paul Cleary¹; Patrick O'Toole¹; Dayalan Gunasegaram¹; Matthew Sinnott¹; ¹CSIRO

9:20 AM

Computational Modeling for Additive Manufacturing of Engine Components: *Terryl Wallace*¹; Christopher Lang¹; Kevin Wheeler²; Joshua Fody¹; ¹Nasa Langley Research Center; ²NASA Ames Research Center

9:40 AM Break

10:00 AM Invited

Modeling Process–structure–process Relationships in Additively Manufactured Alloys with Machine Learning and Materials Informatics: *Branden Kappes*¹; Senthamaruvi Moorthy¹; Henry Geerlings²; Nathan Johnson¹; Thomas Gallmeyer¹; Behnam Amin-Ahmadi¹; Rui Liu³; Xiaoli Zhang¹; Bryce Meredig⁴; Aaron Stebner¹; ¹Colorado School of Mines; ²CoorsTek; ³Carnegie Mellon University; ⁴Citrine Informatics

10:30 AM

Development of a Microstructural-based Computational Model for Predicting the Mechanical Properties of Metals Manufactured by Additive Manufacturing: *Mohsen Taheri Andani*¹; Mohammad Reza Karamooz-Ravari²; Mohamad Ghodrati³; Reza Mirzaeifar³; Jun Ni¹; ¹Univ of Michigan; ²Graduate University of Advanced Technology; ³Virginia Tech

10:50 AM

Geometry and Size Effect in Metal Additive Manufacturing and Relevant Processing Parameters Optimization: *Jinquan Cheng*¹; ¹Composite Solutions and Digital Manuf

Additive Manufacturing for Energy Applications — Nuclear Components and Instrumentation

Sponsored by: TMS: Nuclear Materials Committee
Program Organizers: Isabella Van Rooyen, Idaho National Laboratory; Subhashish Meher, Idaho National Laboratory; Indrajit Charit, University of Idaho; Somayeh Pasebani, Oregon State University; Chad Duty, University of Tennessee

Monday AM Room: 223
March 11, 2019 Location: Henry B. Gonzalez
Convention Center

Session Chair: Isabella van Rooyen, Idaho National Laboratory

8:00 AM Invited

Westinghouse Advanced Manufacturing Development: *Clinton Armstrong*¹; ¹Westinghouse Electric Company

8:30 AM

A New 3D Manufacturing Technique for Composite Materials: *Kun Mo*¹; Sumit Bhattacharya¹; Yinbin Miao¹; Ruqing Xu²; Abdellatif Yacout¹; ¹Argonne National Laboratory; ²Argonne National Laboratory

8:50 AM

Additive Manufacturing of Steels for Advanced Reactor Concepts: *Niyanth Sridharan*¹; Thersa Mary Green²; Frank Chen¹; Kevin Field¹; ¹Oak Ridge National Laboratory; ²University of Wisconsin Madison

9:10 AM

Additive Manufacturing of Advanced Fuel Components for Commercial Reactors: *David Huegel*¹; Paula Freyer¹; Bill Cleary¹; Craig Amick¹; Zeses Karoutas¹; Clinton Armstrong¹; Peng Xu¹; ¹Westinghouse Electric Company

9:30 AM Break

9:50 AM Invited

Additive Manufacturing of Instrumentation for Measuring Field Properties in Extreme Environments: *David Estrada*¹; ¹Boise State University

10:20 AM

Additive Manufacturing for In-pile Instrumentation in Nuclear Test Reactors: *Michael McMurtrey*¹; Troy Unruh¹; Harish Subbaraman²; Eric Jankowski²; Lan Li²; David Estrada²; ¹Idaho National Laboratory; ²Boise State University

10:40 AM

Embedded Fiber Optic Sensors for In-core and In-pile Applications Enabled by Ultrasonic Additive Manufacturing: *Christian Petrie*¹; Niyanth Sridharan¹; Adam Hehr²; Mark Norfolk²; John Sheridan³; Sudarsanam Babu⁴; ¹Oak Ridge National Laboratory; ²Fabrisonic LLC; ³Sheridan Solutions LLC; ⁴University of Tennessee

11:00 AM

Environmental Cracking Resistant Stainless Steel by Laser Powder Bed Fusion: *Xiaoyuan Lou*¹; ¹Auburn University

Additive Manufacturing of Metals: Microstructural Evolution and Phase Transformations — High Temperature Materials

Sponsored by: TMS: Phase Transformations Committee, TMS: Additive Manufacturing Committee, TMS: High Temperature Alloys Committee

Program Organizers: Bij-Na Kim, LPW Technology / Lancaster University; Eric Lass, National Institute of Standards and Technology; Mohsen Asle Zaeem, Colorado School of Mines; Sudarsanam Babu, The University of Tennessee, Knoxville; Ryan Dehoff, Oak Ridge National Laboratory; Gerhard Fuchs, University of Florida; Chantal Sudbrack, QuesTek Innovations LLC

Monday AM Room: 221C
March 11, 2019 Location: Henry B. Gonzalez
Convention Center

Session Chairs: Mohsen Zaeem, Colorado School of Mines; Katerina Christofidou, University of Cambridge

8:00 AM Introductory Comments

8:05 AM Invited

Advanced Alloy Design Tailored to Accommodate Additive Manufacturing Rapid Solidification: *Emma White*¹; Timothy Prost¹; Ralph Napolitano¹; Iver Anderson¹; ¹Iowa State University/Ames Laboratory

8:35 AM

An Integrated Computational Materials Engineering (ICME) Framework for AM718Plus Post Processes: *Qiaofu Zhang*¹; Jiadong Gong¹; Greg Olson¹; ¹QuesTek Innovations LLC

8:55 AM

Microstructural Optimization and Mechanical Property Response of DMLM Rene 65: *Andrew Wessman*¹; Laura Dial²; Timothy Hanlon²; ¹GE Additive; ²GE Global Research

9:15 AM

Microstructural Evolution of Additively Manufactured Co-base Layer on Austenitic Stainless Steel: *Jinsung Jang*¹; Min Ha Shin¹; Chang Hee Han¹; Do-Hyang Kim²; Junhyun Kwon¹; ¹Korea Atomic Energy Research Institute; ²Yonsei University

9:35 AM Break

9:55 AM Invited

Microstructure Evolution During Additive Manufacturing of Niobium Silicide-Based Alloys: *Hongbiao Dong*¹; ¹University Of Leicester

10:25 AM

Modeling Residual Stress and Phase Evolution as a Function of Additive Manufacturing Process Parameters: Cornelia Altenbuchner¹; *Richard Otis*¹; Andrew Shapiro¹; ¹Jet Propulsion Laboratory

10:45 AM

In Situ Microstructure Evolution Characterization of Additive Manufactured U6Nb Under Load: *Eloisa Zepeda-Alarcon*¹; Amanda Wu²; Bjorn Clausen¹; Donald Brown¹; ¹Los Alamos National Laboratory; ²Lawrence Livermore National Laboratory

11:05 AM

In Situ and Time-resolved Diffraction Studies to Reveal Microstructural Transformations and Changes upon Heat Treatment: *Klaus-Dieter Liss*¹; ¹Guangdong Technion - Israel Institute of Technology (GTIIT)

Additive Manufacturing: Materials Design and Alloy Development — Fundamentals in Alloy Design for AM I

Sponsored by: TMS: Additive Manufacturing Committee, TMS: Integrated Computational Materials Engineering Committee
Program Organizers: Behrang Poorganji, GE Additive; James Saal; Hunter Martin, HRL Labs; Orlando Rios, Oak Ridge National Laboratory

Monday AM
March 11, 2019
Room: 221D
Location: Henry B. Gonzalez Convention Center

Session Chair: Behrang Poorganji, GE Additive

8:00 AM **Introductory Comments Alloy Design for AM-** Behrang Poorganji, GE Additive

8:05 AM **Invited**

Genomic Materials Design: Alloys for Additive Manufacturing: *Greg Olson*¹; ¹Northwestern University & QuesTek Innovations LLC

8:35 AM

Development of Alloys for Additive Manufacturing using the Materials by Design® Methodology: *Martin Walbrühl*¹; Ida Berglund²; Greta Lindwall³; ¹QuesTek Europe AB; ²QuesTek Innovations LLC; ³KTH Royal Institute of Technology

8:55 AM

Application of CALPHAD Modeling Tools to the Exploration of Alternative Titanium Alloys for Additive Manufacturing: *Ryan Jennings*¹; Ben Brown¹; Benjamin Sikora¹; ¹Kansas City National Security Campus

9:15 AM

Development of a Thermodynamics-informed Materials Design Simulator: *Aurelien Perron*¹; Patrice Turchi¹; Vincenzo Lordi¹; Joseph McKeown¹; Manyalibo Matthews¹; ¹Lawrence Livermore National Laboratory

9:35 AM **Break**

9:55 AM

Integrated Computational Framework for Prediction of Solidification Reactions and Topologically Closed Packed Phases for New Alloy Design in Additive Manufacturing: *Amrita Mishra*; Gautam Priyadarshan¹; Yizhou Lu¹; ¹University of Mississippi

10:15 AM **Invited**

3D Insights on Additive Melt Pools: Implications for Alloy Design: Andrew Polonsky¹; McLean Echlin¹; N. Raghavan²; Ryan Dehoff²; Michael Kirka²; *Tresa Pollock*¹; ¹University of California, Santa Barbara; ²Oak Ridge National Laboratory

10:45 AM

Challenges and Underlying Mechanisms in Processing of Aluminum Alloys via Direct Metal Laser Melting (DMLM): *Vipul Gupta*¹; Laura Dial¹; P.R. Subramanian¹; Eric Ott²; ¹GE Global Research; ²GE Additive

11:05 AM

Aluminum-cerium-based Alloy Development for Laser Powder Bed Fusion: *Hunter Henderson*¹; Zachary Sims²; Michael Thompson²; Michael Kesler¹; Alex Plotkowski¹; Peeyush Nandwana¹; Frederick List¹; Scott McCall³; Tian Li³; David Weiss⁴; Ryan Ott⁵; Fanqiang Meng⁵; Ryan Dehoff¹; Orlando Rios¹; ¹Oak Ridge National Laboratory; ²University of Tennessee; ³Lawrence Livermore National Laboratory; ⁴Eck Industries, Inc.; ⁵Ames Laboratory

11:25 AM

Development of High Strength Al-Mg Alloy for Additive Technologies with Reduced Scandium Content: Viktor Mann¹; Alexander Krokhin¹; Dmitriy Ryabov¹; Sergey Polyakov²; Roman Vakhromov²; *Daria Daubarayte*²; Vladimir Korolev²; ¹RUSAL Global Management B.V.; ²Light Materials and Technologies Institute

Additive Manufacturing: Solid State Processing of Metals and Ceramics — Bonding with Kinetic Energy

Sponsored by: TMS: Powder Materials Committee, TMS: Additive Manufacturing Committee
Program Organizers: James Paramore, US Army Research Laboratory; Amy Elliott, Oak Ridge National Laboratory; Matthew Dunstan, US Army Research Lab; Markus Chmielus, University of Pittsburgh; Nihan Tuncer, Desktop Metal

Monday AM
March 11, 2019
Room: 221B
Location: Henry B. Gonzalez Convention Center

Session Chair: Nihan Tuncer, Desktop Metal

8:00 AM **Invited**

Impact-induced Solid State Bond at Micron Scale: Toward Additive Manufacturing via Kinetic Energy: *Mostafa Hassani-Gangaraj*¹; David Veyssset¹; Keith Nelson¹; Christopher Schuh¹; ¹Massachusetts Institute of Technology

8:40 AM

Bonding Features and Microstructural Evolution in Cold Sprayed Metallic Coatings and Bulks: A New Materials Perspective: *Yu Zou*¹; ¹University of Toronto

9:00 AM

Ultrasonic Additive Manufacturing of Nanocrystalline Materials: *Austin Ward*¹; Zachary Cordero¹; ¹Rice University

9:20 AM

Net-shape Ambient Temperature Metal Additive Manufacturing using Acoustic Energy and Multi-Material Printing Prospects: *Anagh Deshpande*¹; Keng Hsu¹; ¹University of Louisville

9:40 AM

Development of a Low Earth Orbit Metal 3D Printing Capability with 30kHz Ultrasonic Additive Manufacturing (UAM): *Adam Hehr*¹; Mark Norfolk¹; Justin Wenning¹; Tracie Prater²; ¹Fabrisonic LLC; ²NASA Marshall Space Flight Center

Advanced Characterization Techniques for Quantifying and Modeling Deformation — Session I

Sponsored by: 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; C. Tasan, Massachusetts Institute of Technology; M Arul Kumar, Los Alamos National Laboratory

Monday AM
March 11, 2019
Room: 302A
Location: Henry B. Gonzalez Convention Center

Session Chairs: Josh Kacher, Georgia Institute of Technology; Thomas Britton, Imperial College London

8:00 AM **Invited**

A Refined Template Matching Approach to Index Electron Backscatter Diffraction Patterns: Alex Foden¹; David Collins²; Angus Wilkinson³; *Thomas Britton*¹; ¹Imperial College London; ²University of Birmingham; ³University of Oxford

8:30 AM

Coherent Diffraction Imaging of Strain at the Nanoscale: *Ross Harder*¹; Mathew Cherukara¹; Andrew Ulvestad¹; ¹Argonne National Laboratory

8:50 AM

3D Characterization of Shock-induced Damage in Wrought Ta: *Paul Rottmann*¹; Andrew Polonsky¹; Marie-Agathe Charpagne¹; George Gray²; Tresa Pollock¹; ¹Materials Department, UCSB; ²Dynamic Materials Properties, Testing, and Modeling, LANL

9:10 AM

In-situ Measurement of Slip System Softening Resulting from Planar Slip in an Aluminum-Lithium Alloy: *Wesley Tayon*¹; Kelly Nygren²; Roy Crooks³; Darren Pagan²; ¹NASA Langley Research Center; ²Cornell High Energy Synchrotron Source; ³Black Laboratories, L.L.C.

9:30 AM Break

9:50 AM Invited

Understanding Fatigue-induced Dislocation Processes at Grain and Twin Boundaries: *Josh Kacher*¹; Yung Suk Jeremy Yoo¹; Pragna Bhaskar¹; ¹Georgia Institute of Technology

10:20 AM

Deformation and Degradation of Superelastic NiTi under Multiaxial Cyclic Loadings: *Wei Neng Hsu*¹; Efthymios Polatidis¹; Miroslav Smid¹; Ivo Kubena²; Steven Van Petegem¹; Helena Van Swyghoven¹; ¹Paul Scherrer Institute; ²Institute of Physics of Materials ASCR

10:40 AM

Plastic Deformation of InSb Micro-pillars: A Comparative Study Between Spatially Resolved Laue and Monochromatic X-ray Micro-diffraction Maps: *Tarik Sadat*¹; Mariana Verezhak²; Pierre Godard¹; Pierre-Olivier Renault¹; Steven Van Petegem²; Vincent Jacques³; Ana Diaz¹; Daniel Grolimund²; *Ludovic Thilly*¹; ¹University of Poitiers; ²Paul Scherrer Institute; ³LPS-Orsay

11:00 AM

Texture Evolution of Warm Rolled Uranium Plate and Its Effects on Formability: *Ryan Mier*¹; Cody Miller¹; Daniel Coughlin¹; Rodney Mccabe¹; ¹Los Alamos National Laboratory

11:20 AM

In Situ EBSD Characterization of Lattice Rotation during Tensile Testing of Ti-6Al-4V: A Tool for the Analysis of Deformation Processes and Strain Partitioning: *Samuel Hemery*¹; Patrick Villechaise²; ¹Prime Institute - ENSMA; ²Institute Prime - ENSMA

Advanced Magnetic Materials for Energy and Power Conversion Applications — Development in Rare Earth Permanent Magnets

Sponsored by: Federation of European Materials Societies (FEMS), TMS Functional Materials Division, TMS: Magnetic Materials Committee

Program Organizers: Frank Johnson, Niron Magnetics, Inc.; Paul Ohodnicki, National Energy Technology Laboratory; Alex Leary, Nasa Grc; Orlando Rios, Oak Ridge National Laboratory; Alessandra Hool, ESM Foundation

Monday AM
March 11, 2019

Room: 225B
Location: Henry B. Gonzalez
Convention Center

Session Chair: Scott McCall, Lawrence Livermore National Laboratory

8:00 AM Invited

Prospect of Sm(Fe,Co)₁₂-based Permanent Magnets: *Kazuhiro Hono*¹; ¹National Institute for Materials Science

8:30 AM Invited

Recent Progress in RFe₁₂-type Compounds for Permanent Magnet Applications: *Daniel Salazar*¹; ¹BCMaterials

9:00 AM

Nanocrystalline Multifunctional Pr-Co Compounds: *Wassim Bouzidi*¹; Thomas Bartoli¹; Alain Michalowicz¹; Jacques Moscovici¹; Najeh Mliki¹; *Lotfi Bessais*¹; ¹Cnrs

9:20 AM

Effect of Magnetic Field Processing on CeCo-x Bulk Cast Magnets: *Michael Kesler*¹; Andriy Palasyuk²; Orlando Rios¹; Ryan Ott²; Ikenna Nlebedim²; Michael McGuire¹; ¹Oak Ridge National Laboratory; ²Ames Laboratory

9:40 AM Break

10:00 AM Invited

Development of Hard Magnetic Properties in Pr-Co-B Alloys: *Cajetan Ikenna Nlebedim*¹; Matthew Kramer¹; Michael McGuire²; Mariappan Paranthaman²; ¹Ames Laboratory; ²Oak Ridge National Laboratory

10:30 AM

Strategies to Improve Mechanical Strength of REPMs: *Baozhi Cui*¹; Jun Cui¹; ¹Ames Laboratory DOE

10:50 AM

New Rare Earths Reduced High Performance Magnets: *Andriy Palasyuk*¹; Tej Lamichhane²; Olena Palasyuk¹; Michael Onyszczak²; Sergey Bud'ko²; Paul Canfield²; ¹Ames Laboratory; ²Iowa State University

11:10 AM

Site Specific Magnetic Anisotropy in Rare Earth and Transition Metal Based Permanent Magnetic Materials: *Durga Paudyal*¹; Renu Choudhary¹; ¹Ames Laboratory

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

Sponsored by: TMS: Electronic Packaging and Interconnection Materials Committee

Program Organizers: Kazuhiro Nogita, University of Queensland; Tae-Kyu Lee, Portland State University; Yan Li, Intel Corporation; Christopher Gourlay, Imperial College London; Zhi-Quan Liu, Chinese Academy of Sciences; Rahul Panat, Carnegie Mellon University; Albert T. Wu, National Central University; Andre Delhaise, University of Toronto; Mohd Arif Salleh, Universiti Malaysia Perlis

Monday AM
March 11, 2019

Room: 216A
Location: Henry B. Gonzalez
Convention Center

Session Chairs: Tae-Kyu Lee, Portland State University; Fu Guo, Beijing university of technology

8:00 AM Introductory Comments

8:05 AM

Effect of Thermomigration-electromigration Coupling on Mass Transport in Cu Thin Films: *Nalla Somaiah*¹; *Abhik Choudhury*¹; *Praveen Kumar*¹; ¹Indian Institute of Science

8:25 AM

Electromigration and Thermally-induced Damage in Single and Bicrystal Sn Solder Joints Analyzed by Electron Backscatter Diffraction and X-ray Tomography: *Marion Branch Kelly*¹; *Nikhilesh Chawla*¹; ¹Arizona State University

8:45 AM

Effect of Reflow Profile on Microstructure and Mechanical Properties of Low Melting Alloy (SAC/SnBi): *Mohammed Genanu*¹; *Faramarz Hadian*¹; *Octavie Lenignon Kouame*¹; *Michael Meilunas*¹; *Jim Wilcox*¹; *Eric Cotts*¹; ¹Binghamton University

9:05 AM

Understanding Driving Forces and Mechanisms of Tin Whisker Formation Using Multi-physics Simulations in a Crystal Plasticity Framework: *Aritra Chakraborty*¹; *Pratheek Shanthraj*²; *Philip Eisenlohr*¹; ¹Michigan State University; ²The University of Manchester

9:25 AM Break

9:45 AM

Mechanical Reliability of Photovoltaic Cells under Cyclic Thermal Loading: Dipali Sonawane¹; Praveen Kumar¹; ¹Indian Institute of Science

10:05 AM

Mechanism of Electromigration Failure in Micro Solder Joint: Hossein Madanipour¹; Choong-un Kim¹; Yiram Kim¹; ¹University of Texas Arlington

10:25 AM

Effect of Strengthening Mechanism, Ageing and Shear Rate on Peak Force and Absorbed Energy of Tin-based Solder Balls Reflowed to a Copper Substrate: Keith Sweatman¹; Wayne Ng¹; Tetsuya Akaiwa¹; Pavithiran Narayanan¹; Tetsuro Nishimura¹; Takatoshi Nishimura¹; ¹Nihon Superior Co Ltd

10:45 AM

Microelasticity Modeling of Defects and Their Role in the Performance of Tin Solder Interconnects: Zachary Morgan¹; Yongmei Jin¹; Vahid Attari²; Raymundo Arroyave²; ¹Michigan Technological University; ²Texas A&M University

11:05 AM

Compression and Tension Stress Effect on Wafer Level Chip Scale Package Thermal Cycling Performance: Tae-Kyu Lee¹; Andy Hsiao¹; Mohamed Sheikh¹; ¹Portland State University

Advanced Real Time Imaging — Iron and Steelmaking I

Sponsored by: TMS: Alloy Phases Committee

Program Organizers: Jinichiro Nakano, US DOE - National Energy Tech Lab; P.Chris Pistorius, Carnegie Mellon University; Candan Tamerler, University of Kansas; Hideyuki Yasuda, Kyoto University; Zuotai Zhang, Southern University Of Science And Techn; Neslihan Dogan, McMaster University; Wanlin Wang, Central South University; Noritaka Saito, Kyushu University; Yongsug Chung, Korea Polytechnic University; Bryan Webler, Carnegie Mellon University

Monday AM
March 11, 2019

Room: 302B
Location: Henry B. Gonzalez
Convention Center

Session Chair: Jinichiro Nakano, United States Department of Energy National Energy Technology Laboratory

8:00 AM Keynote

Application of Confocal Scanning Laser Microscope at ArcelorMittal Global R&D: Hongbin Yin¹; ¹ArcelorMittal Global R&D

8:30 AM Invited

Visualization for Molten Slag Clogging Behavior during Softening and Melting of Slag Particles Packed Bed with Micro CT Observation: Ko-ichiro Ohno¹; Takayuki Maeda¹; Kazuya Kunitomo¹; ¹Kyushu University

9:00 AM

Wettability of Graphite-CaO·2Al₂O₃ Composites against Molten CaO-SiO₂-Al₂O₃-MgO Sags: Ziyao Zhang¹; Noritaka Saito¹; Kunihiko Nakashima¹; ¹Kyushu University

9:20 AM

A Novel Method of Surface Tension Test for Melt Slags Based on Hot Thermocouple Technique: Zhe Wang¹; Guanghua Wen¹; Ping Tang¹; Zibing Hou¹; ¹Chongqing University

9:40 AM Break

10:00 AM Invited

In Situ Observation on the Interactions of Non-metallic Inclusions on the Surface of Liquid Steel: Youngjo Kang¹; Piotr Scheller²; Kazuki Morita³; Sichen Du⁴; ¹Dong-A University; ²1) University of Science and Technology Beijing, China, 2) TU Bergakademie Freiberg, Germany.; ³The University of Tokyo; ⁴Royal Institute of Technology

10:30 AM

Apparent Size of Liquid Inclusions at the Steel-gas Interface: Mauro Ferreira¹; P.Chris Pistorius¹; ¹Carnegie Mellon University

10:50 AM

The Effect of Viscosity of Liquid Slags on Wetting and Spreading Kinetics in Contact with MgO-C Refractory: Yongsug Chung¹; Jong Oh Jo²; ¹Korea Polytechnic University; ²Hyundai Steel Company

Advances in Surface Engineering — Session I

Sponsored by: TMS: Surface Engineering Committee

Program Organizers: Rajeev Gupta, The University of Akron; Sandip Harimkar, Oklahoma State University; Arif Mubarak, PPG Industries; Deepak Kumar, Baker Hughes, A Ge Company; Tushar Borkar, Cleveland State University; Dong Lin, Kansas State University

Monday AM

March 11, 2019

Room: 210A

Location: Henry B. Gonzalez
Convention Center

Session Chairs: Kumar Sundaram, Novelis Corporation; Rajeev Gupta, The University of Akron; Sedigheh Rashidi, The University of Akron

8:00 AM Invited

The Roles of Al and Sn Alloying on Corrosion of Antimicrobial Cu-Al-Sn Alloys: Mike Hutchison¹; Carol Glover¹; John Scully¹; ¹University of Virginia

8:20 AM

Interaction between Additive Manufacturing Defects and Two Corrosive Environments: Holly Martin¹; Brett Conner¹; ¹Youngstown State University

8:40 AM Invited

Graphene Coating: A Novel Nano Approach for Remarkable Corrosion Resistance: Raman Singh¹; ¹Monash Univeristy

9:00 AM

Corrosion Study of Boron Nitride Nanosheets Deposited on Copper Metal by Electrophoretic Deposition: Mohsin Ali Raza¹; Amer Nadeem¹; Muhammad Tasaduq Ilyas¹; ¹University of Punjab Lahore

9:20 AM Break

9:40 AM

Influence of Heat Treatment on the Corrosion Resistance of AZ31B Cold Sprayed by AA7075: Sugrib Shaha¹; Yuna Xue¹; Xin Pang¹; Hamid Jahed¹; ¹University of Waterloo

10:00 AM

Pulse Galvanostatic Electrodeposition of Ag-Cu Thin Film Coating with Advanced Mechanical and Corrosion Properties: Nandita Kayal¹; Sambadan Jena¹; Sourav Das¹; Arijit Mitra¹; Siddhartha Das¹; Karabi Das¹; ¹Indian Institute of Technology Kharagpur

10:20 AM

Study on the Microstructure and Thermal Corrosion Behavior of Nanostructured GH864 Superalloy: Wenbin Ma¹; ¹Beihang University

10:40 AM

Laser Shock Processing of Ceramic Materials: Bai Cui¹; Fei Wang¹; Xueliang Yan¹; Chenfei Zhang¹; Leimin Deng¹; Yongfeng Lu¹; Michael Nastasi¹; ¹University of Nebraska, Lincoln

11:00 AM

Effect of Powder Composition, Laser Power and Load Variation on the Wear Depth and Wear Volume of Hybrid Titanium Alloy MMCs: Franklin Ochonogor¹; Esther Akinlabi¹; Kasongo Nyembwe¹; ¹University of Johannesburg

Algorithm Development in Materials Science and Engineering — Electronic, Atomistic, and Machine Learning Algorithms for Study and Design of Materials

Sponsored by: TMS: Computational Materials Science and Engineering Committee, TMS: Phase Transformations Committee, TMS: Integrated Computational Materials Engineering Committee
Program Organizers: Mohsen Asle Zaeem, Colorado School of Mines; Garritt Tucker, Colorado School of Mines; Prasanna Balachandran, University of Virginia; Douglas Spearot, University of Florida; Charudatta Phatak, Argonne National Laboratory; Srinivasan Srivilliputhur, University of North Texas

Monday AM
March 11, 2019
Room: 304A
Location: Henry B. Gonzalez
Convention Center

Session Chair: Mohsen Asle Zaeem, Colorado School of Mines

8:00 AM Introductory Comments

8:10 AM Invited

GPU-Enabled Algorithms for Ground-State and Excited-State Density Functional Tight Binding Simulations: *Bryan Wong*¹; M. Belen Oviedo¹; Sarah Allec¹; ¹University of California, Riverside

8:40 AM Invited

A Variational Principle for Mass Transport Calculations: *Dallas Trinkle*¹; ¹University of Illinois, Champaign

9:10 AM

Algorithms and Metrics for Characterization of Arbitrary Atomic Structures: Dustin Doty¹; *Brandon Snow*¹; Oliver Johnson¹; ¹Brigham Young University

9:30 AM Break

10:00 AM Invited

Applications of machine learning to potential development for molecular dynamics of Ti: *Christopher Barrett*¹; Doyl Dickel¹; ¹Mississippi State University

10:30 AM

A Multiscale Computational Framework for 2D Titanium Carbides (Tin+1Cn) MXenes: *Ning Zhang*¹; Yu Hong¹; Mohsen Asle Zaeem¹; ¹Colorado School of Mines

10:50 AM

Development, Testing, and Application of Physically-informed Artificial Neural Network Potentials for Silicon and Germanium Systems: *James Hickman*¹; Ganga Purja Pun²; Francesca Tavazza¹; Yuri Mishin²; ¹National Institute of Standards and Technology; ²George Mason University

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

Sponsored by: TMS: Alloy Phases Committee
Program Organizers: Sinn-wen Chen, National Tsing Hua University; Franck Gascoin, Ensicaen University of Caen; Soon-Jik Hong, Kongju National Univ; Philippe Jund, Montpellier University; Lan Li, Boise State University; Takao Mori, Nims; Hsin-Jay Wu, National Sun Yat-sen University; Tiejun Zhu, Zhejiang University

Monday AM
March 11, 2019
Room: 216B
Location: Henry B. Gonzalez
Convention Center

Session Chairs: Sinn-wen Chen, National Tsing Hua University; Takao Mori, National Institute for Materials Science

8:00 AM Introductory Comments

8:05 AM Invited

Fabrication and Properties Evaluation of Thermoelectric Thin Films: *Takao Mori*¹; ¹NIMS

8:25 AM Invited

Advanced Materials for Efficient High Temperature Thermoelectric Power Generation: *Jean-Pierre Fleurial*¹; Sabah Bux¹; ¹Jet Propulsion Laboratory

8:45 AM Invited

Boosting the Thermoelectric Performance to New Borders: Thin Film Heusler Systems: *Ernst Bauer*¹; Bernhard Hinterleitner¹; Christoph Eisenmenger¹; Michael Stöger-Pollach¹; Naoyuki Kawamoto²; Yohei Kakefuda²; Takao Mori²; Yongpeng Shi³; Sami Ullah³; Qing Xie³; Xing-Qiu Chen³; ¹Vienna University of Technology; ²NIMS Tsukuba; ³Shenyang National Laboratory for Materials Science, Shenyang

9:05 AM

Progress towards the Development of High Temperature Advanced Thermoelectric Devices: Performance, Long Term Stability and Degradation Mechanisms: *Billy Li*¹; Samad Firdosy¹; Jong-Ah Paik¹; Ike Chi¹; Fivos Drymiotis¹; Michell Aranda¹; Obed Villalpando¹; Kevin Smith¹; George Nakatsukasa¹; Thierry Caillat¹; Vilupanur Ravi¹; Jean-Pierre Fleurial¹; ¹Jet Propulsion Laboratory

9:25 AM Invited

Customizing Ternary Co-Ge-Te Skutterudites to Boost Thermoelectric Performance: *Li-Chyong Chen*¹; Kuei-Hsien Chen²; Deniz Wong²; ¹National Taiwan University; ²Academia Sinica

9:45 AM Break

10:05 AM Invited

Properties and Applications of 2D semiconductors: *Kyeongjae Cho*¹; ¹University of Texas, Dallas

10:25 AM Invited

Effective Approaches for Dramatically Enhancing the Thermoelectric Properties of Various Oxide Ceramics Through Engineering the Grain Boundaries: *Xueyan Song*¹; Liang Liang¹; Cesar-Octavio Romo-De-La-Cruz¹; Sergio Paredes Navia¹; Cullen Boyle¹; Bryan Jackson¹; Alec Hinerman¹; Jacky Prucz¹; Yun Chen¹; ¹West Virginia University

10:45 AM

A Thermodynamic Study of the of the Yb₁₄MnSb₁₁/Al₂O₃ Interface at High Temperatures: *Jorge Paz Soldan Palma*¹; Yi Wang¹; Xiaoyu Chong¹; Fivos Drymiotis²; Ravi Vilapanur²; Obed Vilalpando²; Kurt Star²; Jean-Pierre Fleurial²; Zi-Kui Liu¹; ¹Pennsylvania State University; ²Jet Propulsion Laboratory

Atom Probe Tomography for Advanced Characterization of Metals, Minerals and Materials II — General Methods and Development

Sponsored by: TMS Structural Materials 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; David Seidman, Northwestern University; Keith Knippling, Naval Research Laboratory; Gregory Thompson, Univ of Alabama; Simon Ringer, Univ of Sydney; Arun Devaraj, Pacific Northwest National Laboratory; Gang Sha, Nanjing University of Science and Technology

Monday AM
March 11, 2019
Room: 303A
Location: Henry B. Gonzalez Convention Center

Session Chairs: David Seidman, Northwestern University; Haiming Wen, Missouri University of Science & Technology

8:00 AM Introductory Comments

8:05 AM Invited

The Error Budget in Atom Probe Tomography: *Thomas Kelly*¹; ¹Cameca Instruments, Inc.

8:40 AM Invited

Selected Topics in Atom Probe Tomography: Yield and Reconstruction: *David Larson*¹; Brian Geiser¹; Ty Prosa¹; ¹Cameca

9:15 AM

Development and application of an integrated framework of hierarchical density-based cluster analysis for challenging atom probe tomography datasets: *Iman Ghamarian*¹; Emmanuelle Marquis¹; ¹University of Michigan

9:35 AM Break

9:55 AM Invited

Improving atom probe with field ion microscopy: *Leigh Stephenson*¹; Shyam Katnagallu¹; Isabelle Mouton¹; Christoph Freysoldt¹; Dierk Raabe¹; Baptiste Gault¹; ¹Max Planck Institut für Eisenforschung

10:30 AM

In situ field evaporation of Atom Probe Tomography specimens followed in Transmission Electron Microscopy: *Williams Lefebvre*¹; Antoine Normand¹; Celia Castro¹; François Vurpillot¹; ¹Normandie Univ, UNIROUEN, INSA Rouen, CNRS, Groupe de Physique des Matériaux, F-

10:50 AM Invited

Data Science for Atom Probe Tomography: *Krishna Rajan*¹; ¹University at Buffalo- State University of New York

Bio-Nano Interfaces and Engineering Applications — Bio-Nano Interfaces I

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

Monday AM
March 11, 2019
Room: 217C
Location: Henry B. Gonzalez Convention Center

Session Chairs: Candan Tamerler, University of Kansas; Po-Yu Chen, National Tsing Hua University

8:00 AM Keynote

Atomically Precise Manufacturing: *David Forrest*¹; ¹US Department of Energy

8:40 AM

Polarized Raman spectroscopy of self-assembled peptides for characterization of molecular conformations: *Nao Koishihara*¹; Takuma Narimatsu¹; Peiyong Li¹; Chen Chen¹; Yuhei Hayamizu¹; ¹Tokyo Institute of Technology

9:00 AM Keynote

Creating Functional Bionanomaterials By Influencing Biotic-Abiotic Interactions: Joseph Slocik¹; Zhifeng Kuang¹; Kristi Singh¹; Patrick Dennis¹; *Rajesh Naik*¹; ¹Air Force Research Laboratory

9:40 AM Break

10:00 AM Keynote

A Decade of Research on Manufacturing at the Nano-bio Interface: *Mohan Edirisinghe*¹; ¹University College London

10:40 AM

Unveiling the Ultrastructural and Mechanistic Aspects of Zebrafish Fin Regeneration by the PeakForce Quantitative Nanomechanical Mapping Technique: *Yang-Rong Shih*¹; Yung-Jen Chuang¹; Po-Yu Chen¹; ¹National Tsing Hua Univ

11:00 AM Invited

Controlling the Ionic Environment of Extracellular Fluid: *Marco Rolandi*¹; ¹University of California, Santa Cruz

Biological Materials Science — Biological and Natural Materials I

Sponsored by: TMS Functional Materials Division, TMS Structural Materials Division, TMS: Biomaterials Committee
Program Organizers: Rajendra Kasinath, DePuy Synthes (Johnson and Johnson); Steven Naleway, University of Utah; Vinoy Thomas, University of Alabama at Birmingham; Jing Du, Penn State University

Monday AM
March 11, 2019
Room: 217A
Location: Henry B. Gonzalez Convention Center

Session Chairs: Rajendra Kasinath, DePuy Synthes, Johnson and Johnson; Steven Naleway, University of Utah

8:00 AM Introductory Comments

8:05 AM Keynote

Fracture, Disease and Therapies in Human Bone: *Robert Ritchie*¹; ¹Univ of California

8:45 AM

Computational Model of Bone lamella: *Mohammad Maghsoudi-Ganjeh*¹; Liqiang Lin¹; Xiaodu Wang¹; Xiaowei Zeng¹; ¹University of Texas at San Antonio

9:05 AM

Biological Tissue Stiffness Control by 2-Propanol and Moisture due to Collagen Fibril Intermolecular Spacing Changes: *Richard Haverkamp*¹; ¹Massey University

9:25 AM

3D Contact and Strain in Alveolar Bone Under Tooth/Implant Loading: *Yuxiao Zhou*¹; Chujie Gong¹; Mehran Hossaini-Zadeh²; Jing Du¹; ¹Pennsylvania State Univ; ²Temple University

9:45 AM Break

10:05 AM Invited

Shear-punch Testing of Human Cranial Bone and Surrogate Materials: *Andrew Brown*¹; C. Allan Gunnarsson¹; Karin Rafiels¹; Stephen Alexander²; Thomas Plaisted¹; Tuset Weerasooriya¹; ¹U.S. Army Research Laboratory; ²SURVICE Engineering

10:35 AM

Study on the Toughening Mechanisms of Collagenous Materials by using Real-time X-ray Characterization and imaging: *Wen Yang*¹; Haocheng Quan¹; Eric Schaible²; Robert Ritchie³; Marc Meyers¹; ¹Univ of California San Diego; ²Lawrence Berkeley National Laboratory; ³University of California, Berkeley

10:55 AM

Analysis of bone microdamage with Twinned Orthogonal Adjustable Tomograph towards fatigue fracture prevention: *Gerardo Presbitero*¹; Michal Vopálenký¹; Ivana Kumpová¹; ¹Institute of Theoretical and Applied Mechanics, Centre of Excellence Tele

11:15 AM Invited

Bird Feathers and Bones: Ultralight Natural Materials: *Marc Meyers*¹; Eduard Arzt²; Pablo Zavattieri³; Horacio Espinosa⁴; ¹University of California, San Diego; ²INM - Leibniz Institute for New Materials; ³Purdue University; ⁴Northwestern University

Ceramic Materials for Nuclear Energy Research and Applications — Thermodynamics and Structural Properties

Sponsored by: TMS: Nuclear Materials Committee

Program Organizers: Yongfeng Zhang, Idaho National Laboratory; Xian-ming (David) Bai, Virginia polytechnic Institute and State University; David Andersson, Los Alamos National Laboratory; Thierry Wiss, European Commission- JRC -Institute of Transuranium Elements

Monday AM

March 11, 2019

Room: 214A

Location: Henry B. Gonzalez Convention Center

Session Chairs: David Andersson, Los Alamos National Laboratory; Haixuan Xu, University of Tennessee

8:00 AM Invited

Atomic structure of overstoichiometric uranium oxide: insights from molecular dynamics simulations with a many body variable charge model: *Jean-paul Crocombette*¹; Aurélien Soulié²; ¹CEA Saclay DEN-SRMP; ²CEA Saclay DEN-SRMP

8:30 AM

Mechanisms for diffusion of uranium interstitials in UO₂: *David Andersson*¹; Xiang-Yang Liu¹; Topher Matthews¹; ¹Los Alamos National Laboratory

8:50 AM

Characterization of defects structures in fast-reactor MOX fuels: *Riley Parrish*¹; Assel Aitkaliyeva¹; ¹University of Florida

Structural features in mixed uranium oxides with fluorite-related structures: *Gianguido Baldinozzi*¹; ¹Laboratoire SPMS CNRS Centralesupelec and CEA DEN DMN SRMA

9:40 AM Break

10:00 AM Invited

Crystallographic and electronic structure in Ln-U-O compounds: *Haixuan Xu*¹; Luis Casillas-Trujillo¹; Gianguido Baldinozzi²; Kurt Sickafus¹; ¹Univ of Tennessee; ²Centre National de la Recherche Scientifique

10:30 AM

Uranium Silicide-Based Nuclear Fuel Phase Relations and Computed In-Reactor Thermochemical Behavior: *Theodore Besmann*¹; Tashiema Wilson¹; Denise Lopes¹; Emily Moore¹; Vancho Kocovski¹; Joshua White²; Jacob McMurray³; Dongwon Shin³; Antoine Claisse⁴; Peng Xu⁴; ¹University Of South Carolina; ²Los Alamos National Laboratory; ³Oak Ridge National Laboratory; ⁴Westinghouse Company, LLC

10:50 AM

Effects of different cation doping on the physical properties of Gd₂Zr₂O₇ pyrochlores: *Fengai Zhao*¹; Xianming Bai¹; Haiyan Xiao²; Xiaotao Zu²; ¹Virginia Polytechnic Institute and State University; ²University of Electronic Science and Technology of China

11:10 AM

An Engineering Representation of the Thermal Conductivity of a UO₂ and BeO Composite Nuclear Fuel: *Ryan Brito*¹; Sean McDeavitt¹; ¹Texas A&M University Department of Nuclear Engineering

Characterization of Minerals, Metals, and Materials — Characterization Method Development I

Sponsored by: 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; Yunus Kalay, Middle East Technical University; John Carpenter, Los Alamos National Laboratory; Jiann-Yang Hwang, Michigan Technological Univ; Sergio Monteiro, Military Institute of Engineering; Chenguang Bai, Chongqing Univ; Juan Escobedo-Diaz, University of New South Wales; Pasquale Russo Spena, Free University of Bozen-Bolzano; Ramasis Goswami, Naval Research Laboratory

Monday AM

March 11, 2019

Room: 212B

Location: Henry B. Gonzalez Convention Center

Session Chair: Jian Li, CanmetMATERIALS

8:00 AM Introductory Comments

8:05 AM Invited

Development of stereological transfer functions for grain and particle size characterization: *Eric Payton*¹; Austin Gerlt²; Amanda Criner¹; ¹Air Force Research Laboratory; ²UES, Inc

8:25 AM Invited

Commentary - Are There Still Places for Gallium FIB: *Jian Li*¹; ¹Canmetmaterials

8:45 AM

Nanoscale Electronic Structure Characterization in CIGS with Electron Energy-Loss Spectroscopy: *Julia Deitz*¹; ¹The Ohio State University

9:05 AM

Towards the Materials Oscilloscope: In-situ and time-resolved diffraction from metals related to thermo mechanical processes: *Klaus-Dieter Liss*¹; ¹Guangdong Technion - Israel Institute of Technology (GTIIT)

9:25 AM Invited

Development of Road Surface Scanning System Using Multiple Sensing Techniques: *Jeongguk Kim*¹; ¹Korea Railroad Research Institute

9:45 AM Break

10:00 AM

Crystallizing Spherical Electron Backscatter Diffraction - Indexing and Cross Correlation: Ralf Hielscher¹; Felix Bartel¹; Alex Foden²; *Thomas Britton*²; ¹TU Chemnitz; ²Imperial College London

10:20 AM

Viscosity Measurements of Ionic Liquid Lubricants for Space Applications: *Sayavur Bakhtiyarov*¹; ¹New Mexico Inst of Mining & Tech

10:40 AM

Convolutional neural networks for accelerated crystallographic orientation mapping: *Yu-Feng Shen*¹; Reeru Pokharel¹; Turab Lookman¹; Anil Kumar¹; Thomas Nizolek¹; ¹Los Alamos National Laboratory

11:00 AM

Structure of nano-crystalline thin layers by glancing incidence X-ray diffraction: *Gianguido Baldinozzi¹; Vassilis Pontikis²; David Simeone¹; ¹Laboratoire SPMS CNRS Centralesupelec and CEA DEN DMN SRMA; ²CEA DRF Iramis*

Characterization of Minerals, Metals, and Materials — Nanostructure and Characterization of Materials

Sponsored by: 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; Yunus Kalay, Middle East Technical University; John Carpenter, Los Alamos National Laboratory; Jiann-Yang Hwang, Michigan Technological Univ; Sergio Monteiro, Military Institute of Engineering; Chenguang Bai, Chongqing Univ; Juan Escobedo-Diaz, University of New South Wales; Pasquale Russo Spena, Free University of Bozen-Bolzano; Ramasis Goswami, Naval Research Laboratory

Monday AM
March 11, 2019

Room: 006A
Location: Henry B. Gonzalez
Convention Center

Session Chairs: Juan Pablo Escobedo-Diaz, University of New South Wales; Eric Herbert, Michigan Technological University

8:00 AM Introductory Comments

8:05 AM

Thermal Conductivity Measurements of Materials from Insulating Polymer to Highly Conductive Graphite Film: *Heng Wang¹; Akhan Tleoubaev¹; Justin Wynn¹; Silviu Apostolescu¹; Daniele Paganelli¹; Louis Waguespack¹; Piero Scotto¹; ¹TA Instruments*

8:25 AM

The Microstructure of Ag-TiO₂ Thin Film Prepared by Sol-Gel Method: *Dewi Suriyani Che Halin¹; Mohd. Mustafa Al Bakri Abdullah¹; Mohd. Arif Anuar Mohd. Salleh¹; Kamrosni Abdul Razak¹; Mey Ling Beh¹; ¹Universiti Malaysia Perlis (UniMAP)*

8:45 AM

Synthesis and Development of Sm Microalloyed Zr-Cu-Al Based Metallic Glasses and Their Nanocomposites: *Fatih Sikan¹; Huseyin Basri Cerci²; Yunus Eren Kalay¹; *Ilkay Kalay²; ¹Middle East Technical University; ²Cankaya University**

9:05 AM

Experimental study on pelletizing of fine grinding hematite ore powder: *Tian Yunqing¹; qing gele¹; ¹Research Institute of Technology, Shougang Group Corporation*

9:25 AM

A Comparison between ZnO Hexagonal Micro/Nano Prisms Deposited on Aluminum and Glass Substrates: *Shadia Ikhmayies¹; ¹Al Isra University*

9:45 AM Break

10:00 AM

Characterization of nanocrystalline electrodeposited Fe-C coatings: *Jacob Nielsen¹; Per Møller¹; Karen Pantleon¹; ¹The Technical University of Denmark*

10:20 AM

Microwave-assisted one-step synthesis of FeCo/graphene nanocomposite for microwave absorption: *Jianhui Peng¹; Zhiwei Peng¹; Liancheng Wang¹; Leixia Zheng¹; Zhongping Zhu¹; Guanghui Li¹; Tao Jiang¹; ¹Central South Univ*

10:40 AM

Dynamic normal grain growth (DNGG) in an interstitial-free steel: *Ryann Rupp¹; Eric Taleff²; ¹Idhao National Laboratory; ²Univ of Texas At Austin*

11:00 AM

Synthesis of nickel/sepiolite nano composite: Novel catalytic and antibacterial nano materials: *Huanguang Wang¹; Bowen Li¹; ¹Michigan Tech University*

Coatings and Surface Engineering for Environmental Protection — Corrosion Mechanisms & Performance Evaluations I

Sponsored by: TMS Surface Engineering Committee
Program Organizers: Arif Mubarak, PPG Industries; Rajeev Gupta, The University of Akron; Raul Rebak, GE Global Research; Michael Mayo, PPG Industries; Brian Okerberg, PPG Industries

Monday AM
March 11, 2019

Room: 224
Location: Henry B. Gonzalez
Convention Center

Session Chairs: Raul Rebak, GE Global Research; Arif Mubarak, PPG Industries

8:00 AM Invited

Coating Performance and Atmospheric Corrosion Measurements: *Brandi Clark¹; Fritz Friedersdorf¹; Jacob Wright¹; Liam Agnew¹; ¹Luna Innovations, Inc*

8:40 AM

A one-dimensional time-dependent model for oxide film growth: *Adib Samin¹; Christopher Taylor²; ¹Los Alamos National Laboratory; ²The Ohio State University*

9:00 AM

Corrosion study of Cu-Ag alloy in the presence of benzotriazole inhibitor: *Hooman Rahmani¹; Efstathios Meletis¹; ¹Department of Materials Science and Engineering, University of Texas at Arlington*

9:20 AM

Electrochemical Mechanism and Preparation of Cr-low Carbon Steel Composite in a NaCl-KCl-NaF-Cr₂O₃ Molten Salt: *Shixian Zhang¹; Yungang Li¹; Kai Hu²; Xiaoping Zhao³; ¹North China University of Science and Technology; ²Chongqing University; ³Hebei College of Industry and Technology*

9:40 AM Break

10:00 AM

Influence of Surface States of Steels on Inhibition Performance of an Imidazoline-based Inhibitor in CO₂ Environments: *Huanhuan Zhang¹; Xiaolu Pang¹; Huisheng Yang¹; Yanjing Su¹; Kewei Gao¹; ¹University of Science and Technology Beijing*

10:20 AM

Influence of aluminum concentration in zinc bath on galvanizing behavior of a dual phase high strength steel: *Kefan Chen¹; Bin Li¹; Imran Aslam²; ¹University of Nevada, Reno; ²Mississippi State University*

10:40 AM Invited

Diamond-like Carbon Coating for Drill Collars – Test Experiences: *Nausha Asrar¹; Jeffrey Ham¹; ¹Schlumberger*

Computational Materials Discovery and Design — Applications to Surfaces, Interfaces, and 2D Materials

Sponsored by: TMS: Computational Materials Science and Engineering Committee

Program Organizers: Oliver Johnson, Brigham Young University; Arunima Singh, Arizona State University; Jake Bair, Pacific Northwest National Lab; Christopher Weinberger, Colorado State University; Timofey Frolov, Lawrence Livermore National Laboratory; Ning Zhang, Colorado School of Mines; Fadi Abdeljawad, Clemson University; Richard Hennig, Univ of Florida; Mikhail Mendelev, Ames Laboratory; Avinash Dongare, University of Connecticut

Monday AM
March 11, 2019

Room: 304C
Location: Henry B. Gonzalez
Convention Center

Session Chair: To Be Announced

8:00 AM Invited

Designer 2D Metals and Weyl Semimetals: *Prineha Narang*¹; ¹Harvard University

8:30 AM Invited

Exploration of interfacial transitions by correlating atomic scale microscopy with atomistic simulations: *Christian Liebscher*¹; Nicolas Peter¹; Thorsten Meiners¹; Gerhard Dehm¹; ¹Max-Planck-Institut

9:00 AM

A screening of Pt alloys with p-block elements and the DFT study of alloying effect for oxygen reduction reaction: Jung Woo Choi¹; Soonho Kwon¹; *Hyuck Mo Lee*¹; ¹KAIST

9:20 AM

Superior Structural, Elastic and Electronic Properties of 2D Titanium Nitride MXenes Over Carbide MXenes: A Comprehensive First Principles Study: *Ning Zhang*¹; Yu Hong¹; Mohsen Asle Zaeem¹; ¹Colorado School of Mines

9:40 AM Break

10:00 AM

Computational Discovery and Design of 2D Transition Metal Dichalcogenide Heterostructures: *Lan Li*¹; ¹Boise State University

10:20 AM

Goniopolarity of Thermal Transport Behavior in Layered 2D Materials: *Yaxian Wang*¹; Joshua Goldberger¹; Joseph Heremans¹; Maxx Arguilla¹; Wolfgang Windl¹; Bin He¹; ¹Ohio State Univ

10:40 AM

Computational Design of Non-Precious Transition Metal/Nitrogen Doped Carbon as Effective Fuel Cell Electrocatalysts: *Guofeng Wang*¹; Kexi Liu¹; Boyang Li¹; ¹Univ of Pittsburgh

11:00 AM

Enhancement of chemical stability of phosphorene and heterostructures on its basis: results of ab-initio modelling: Andrey Kistanov¹; *Elena Korznikova*²; ¹Nanyang Technological University; ²IMSP RAS

Computational Thermodynamics and Kinetics — Computational Discovery

Sponsored by: TMS: Computational Materials Science and Engineering Committee

Program Organizers: Fadi Abdeljawad, Clemson University; Hesam Askari, University of Rochester; Emine Gulsoy, Northwestern Univ; Joel Berry, University of Pennsylvania ; Damien Tourret, IMDEA Materials; Mohsen Asle Zaeem, Colorado School of Mines; James Morris, Oak Ridge National Laboratory

Monday AM
March 11, 2019

Room: 225C
Location: Henry B. Gonzalez
Convention Center

Session Chair: To Be Announced

8:00 AM Invited

Computational Discovery of Novel Structural and Functional Heusler Compounds: *Christopher Wolverton*¹; ¹Northwestern Univ

8:30 AM

A Review on the Thermodynamic Stability of perovskite cathode materials in presence of atmosphere impurities for Application in Solid Oxide Fuel Cells: Shadi Darvish¹; *Yu Zhong*¹; ¹Worcester Polytechnic Institute

8:50 AM

Thermodynamic Design of Dual Phase Steels Within an Information-Fusion Framework: *Richard Couperthwaite*¹; Raymundo Arroyave¹; Ibrahim Karaman¹; Ankit Srivastava¹; Douglas Allaire¹; ¹Texas A&M University

9:10 AM Invited

Discovery and Design of Novel Materials for Energy Applications: *Kristin Persson*¹; ¹Univ of California Berkeley

9:40 AM Break

10:00 AM Invited

Thermodynamic and kinetic descriptions of multicomponent crystals: *Anton Van Der Ven*¹; John Thomas¹; Brian Puchala¹; Anirudh Natarajan¹; ¹Univ of California

10:30 AM

Design and Discovery of Ceramic Matrix Composites By Assessment of Inverse Phase Stability and Microstructural Evolution: *Elias Munoz*¹; Vahid Attari¹; Thien Duong¹; Raymundo Arroyave¹; ¹Texas A&M University

10:50 AM

First-Principle Studies of Charged Point Defects in Two-Dimensional Semiconductors: *Biswas Rijal*¹; Christoph Freysoldt²; Enrique Batista³; Ping Yang³; Richard Hennig¹; ¹University Of Florida; ²Max Planck Institute for Iron Research; ³Los Alamos National Laboratory

11:10 AM Invited

Phase Equilibria and Kinetics of Sodium Superionic Conductors: *Shyue Ping Ong*¹; ¹University Of California, San Diego

Deformation and Damage Behavior of High Temperature Alloys — High Entropy Alloys and Strength Models

Sponsored by: TMS Structural Materials Division, TMS: High Temperature Alloys Committee

Program Organizers: Michael Titus, Purdue University; Qiang Feng, University of Science and Technology Beijing; Akane Suzuki, GE Global Research; Jonathan Cormier, ENSMA - Institut Pprime - UPR CNRS 3346; Sammy Tin, Illinois Institute of Technology; Martin Detroids, National Energy Technology Laboratory

Monday AM
March 11, 2019

Room: 301C
Location: Henry B. Gonzalez
Convention Center

Session Chairs: Michael Titus, Purdue University; Martin Detroids, National Energy Technology Laboratory

8:00 AM Invited

Single-crystal Mechanical Behavior of High- and Medium-entropy Alloys: Florian Fox¹; Pascal Thome¹; J. Pfetzing-Micklich¹; A. Kostka¹; Gunther Egger¹; Easo George²; ¹Ruhr University Bochum; ²Oak Ridge National Laboratory; University of Tennessee

8:30 AM Invited

Refractory high entropy alloys as potential candidates for high temperature applications beyond Ni based superalloys and conventional refractory alloys: Oleg Senkov¹; Daniel Miracle¹; Todd Butler¹; Kevin Chaput¹; Raj Banerjee²; ¹Air Force Research Laboratory; ²University of North Texas

9:00 AM

Design, mechanical performance and deformation characteristics of a new γ' strengthened Ni-based superalloy with high-entropy matrix: Martin Detroids¹; Paul Jablonski¹; Stoichko Antonov²; Sammy Tin³; Jeffrey Hawk¹; ¹National Energy Technology Laboratory; ²University of Science and Technology Beijing; ³Illinois Institute of Technology

9:20 AM

Predictive modeling of temperature-dependent hardness: Hongyeun Kim¹; Laszlo Kecskes²; Zi-Kui Liu¹; ¹Penn State Univ; ²Hopkins Extreme Materials Institute

9:40 AM Break

10:00 AM Invited

Solution Strengthening in FCC Random Alloys: Varvenne Celine¹; Guillaume Bracq²; Mathilde Laurent-Brocq²; William Curtin³; ¹Cnrs Aix-Marseille Univ; ²UPECE - CNRS; ³EPFL

10:30 AM Invited

Large Scale Atomistic Simulations of The Interaction of Glide Screw Dislocations with Twin Boundaries in FCC Bipillars: Satish Rao¹; Edwin Antillon¹; Brahim Akdim¹; Triplicane Parthasarathy¹; Christopher Woodward²; ¹Ues Inc; ²Air Force Research Laboratory

11:00 AM

Intrinsic nano diffusion-couples for studying high-temperature diffusion in compositionally-complex superalloys: Erdmann Spiecker¹; Yolita Eggeler²; ¹Univ of Erlangen-Nürnberg; ²Univ of Erlangen-Nürnberg

11:20 AM

Origin of the Significant Impact of Ta on the Creep Resistance of FeCrNi Alloys: Xavier Sauvage¹; Damien Magné¹; Mathieu Couvrat²; ¹CNRS - GPM - University Rouen Normandy; ²Manoir Industries

Diversity in STEM and Best Practices to Improve it — Best Practices and Lessons Learned

Sponsored by:

Program Organizers: Megan Cordill, Erich Schmid Institute; Matthew Korey, Purdue University; Jessica Krogstad, University of Illinois at Urbana-Champaign; Panthea Sepehrband, Santa Clara Univ

Monday AM
March 11, 2019

Room: 301B
Location: Henry B. Gonzalez
Convention Center

Session Chairs: Megan Cordill, Erich Schmid Institute; Jessica Krogstad, Univ of Illinois Urbana-Champaign

8:20 AM Introductory Comments

8:30 AM Invited

An Approach to Promote Equality and Diversity in a University Materials Department: Peter Nellist¹; ¹University of Oxford

9:00 AM Invited

Diversity in STEM : Retention, Graduation and Beyond: Andrea Hodge¹; ¹University of Southern California

9:30 AM Break

10:00 AM

Best Practices for Promoting Diversity in STEM through Outreach: Kaitlin Tyler¹; Nicole Johnson-Glauch¹; Leon Dean¹; Jessica Krogstad²; ¹Univ of Illinois Urbana-Champaign; ²Univ of Illinois Urbana-Champaign

10:30 AM Invited

Half a Century of Diversifying TMS: Carolyn Hansson¹; ¹Univ of Waterloo

11:00 AM Invited

Navigate an Exciting STEM Career Journey through Diversity: Isabella Van Rooyen¹; ¹Idaho National Laboratory

Freeze Linings: Myth and Reality — Freeze Lining I

Sponsored by: TMS: Pyrometallurgy Committee

Program Organizers: Juergen Schmidl, RHI Magnesita; Dean Gregurek, RHI Magnesita; Gerardo Alvear, Glencore Technology; Peter Hayes, Univ of Queensland; Mark Kennedy, Proval Partners SA; Maurits Van Camp, Umicore; Camilo Perez, RHI US Ltd; Stefan Luidold, University Of Leoben

Monday AM
March 11, 2019

Room: 211
Location: Henry B. Gonzalez
Convention Center

Session Chair: Juergen Schmidl, RHI Magnesita

8:00 AM Introductory Comments

8:05 AM

Basic Knowledge on Refractory Freeze Linings for Reviewing Post Mortem Studies Results: Juergen Schmidl¹; Dean Gregurek¹; Alfred Spanring¹; ¹RHI Magnesita

8:25 AM

Chemical interactions between slag and refractory or freeze-lining: Ata Fallah Mehrjardi¹; Sina Mostaghel¹; Gerardo Alvear Flores¹; ¹Aurubis

8:45 AM

Influence of CaO/SiO₂/Al₂O₃ Ratio on the Melting Behaviour of SynCon Slags: Dominik Hofer¹; Stefan Luidold¹; Tobias Beckmann²; Frank Schulenburg³; ¹Montanuniversitaet Leoben; ²H.C. Starck Smelting GmbH & Co. KG; ³H.C. Starck GmbH

9:05 AM

Influence of tap hole cooler design on matte-cooler heat transfer coefficient and freeze lining thickness: Anton Ishmurzin¹; Oliver Kuhnke¹; Daniel Kreuzer¹; ¹RHI Magnesita

9:25 AM

Evolution of freeze linings in multi-step processes: *Tijl Crivits*¹; Ling Zhang²; Liugang Chen²; Annelies Malfliet²; ¹Umicore; ²KU Leuven

9:45 AM

Freeze Lining Refractories in Non-ferrous TSL Smelting Systems: *Stanko Nikolic*¹; Ben Hogg¹; Paul Voigt¹; ¹Glencore Technology

Gamma (FCC)/Gamma-Prime (L12) Co-Based Superalloys III — Mechanical Behavior

Sponsored by: TMS: High Temperature Alloys Committee, TMS: Integrated Computational Materials Engineering Committee
Program Organizers: Michael Titus, Purdue University; David Dye, Imperial College; Eric Lass, National Institute of Standards and Technology; Katelun Wertz, Air Force Research Laboratory; Christopher Zenk, Ohio State University

Monday AM
March 11, 2019

Room: 206A
Location: Henry B. Gonzalez
Convention Center

Session Chairs: Eric Lass, National Institute of Standards and Technology; Christopher Zenk, The Ohio State University

8:00 AM Invited

Balancing the Property Suite in Co-base Superalloys: Sean Murray¹; Brent Goodlet¹; Colin Stewart¹; Carlos Levi¹; *Tresa Pollock*¹; ¹University of California Santa Barbara

8:30 AM

Structural evolution of a single crystal Co-Base superalloy during creep at 1000°C/137 MPa: *Stoichko Antonov*¹; Song Lu¹; Longfei Li¹; Qiang Feng¹; ¹University of Science and Technology Beijing

8:50 AM

Creep deformation mechanisms and compositional changes in SX Co-base superalloys studied by means of EM and APT: *Malte Lenz*¹; Yolita Eggeler¹; Julian Müller¹; Dorota Kubacka¹; Surendrar Makineni²; Christopher Zenk³; Nicklas Volz¹; Steffen Neumeier¹; Peter Felfer¹; Philip Wollgramm⁴; Gunther Eggeler⁴; Mathias Göken¹; Baptiste Gault²; Dierk Raabe²; Erdmann Specker¹; ¹Univ Erlangen Nuernberg; ²MPIE Düsseldorf; ³Ohio State University; ⁴Ruhr-Universität Bochum

9:10 AM

Effect of Tertiary Gamma Prime on the Creep Performance of a Developmental Co:Ni-Base Superalloy: *Ioannis Bantounas*¹; Vassili Vorontsov¹; Mark Hardy²; David Dye¹; ¹Imperial College London; ²Rolls-Royce Plc

9:30 AM Break

9:40 AM Invited

Wrought Co-base superalloys – Mechanical properties and deformation mechanisms: *Steffen Neumeier*¹; Mathias Göken¹; ¹Univ of Erlangen Nuernberg

10:10 AM Invited

Solute segregation effects at planar defects during Creep of CoNi-based superalloys: *Surendra Kumar Makineni*¹; Malte Lenz²; Steffen Neumeier²; Erdmann Specker²; Dierk Raabe¹; Baptiste Gault¹; ¹Max-Planck-Institut für Eisenforschung GmbH; ²Friedrich-Alexander-Universität Erlangen-Nürnberg

10:40 AM

Crystal plasticity finite element approach to modeling the creep behavior in Cobalt-based superalloys: *Shahriyar Keshavarz*¹; Andrew Reid²; Eric Lass²; Carelyn Campbell²; ¹NIST(Theiss Research); ²NIST

11:00 AM

Low Cycle Fatigue of Single Crystal γ -strengthened Co-based Superalloys at 750 °C in Air: *Sean Murray*¹; Jean-Charles Stinville¹; Robert Rhein¹; Patrick Callahan¹; *Tresa Pollock*¹; ¹University of California, Santa Barbara

11:20 AM

The hunt for B and C in grain boundaries and their role in crack tip embrittlement: *Lucy Reynolds*¹; David Dye¹; Paraskevas Kontis²; Baptiste Gault²; Ioannis Bantounas¹; Mark Hardy³; ¹Imperial College; ²Max-Planck-Institut für Eisenforschung GmbH; ³Rolls-Royce plc

Green Materials Engineering: An EPD Symposium in Honor of Sergio Monteiro — Sustainable Ceramics

Sponsored by: TMS: Materials Characterization Committee
Program Organizers: Shadia Ikhmayies, Al Isra University; Jian Li, Canmetmaterials; Carlos Mauricio Vieira, State University of the North Fluminense; Fabio Braga, Military Institute of Engineering

Monday AM
March 11, 2019

Room: 008A
Location: Henry B. Gonzalez
Convention Center

Session Chairs: Felipe Lopes, UENF; Jheison Lopes, Instituto Militar de Engenharia

8:00 AM Introductory Comments

8:05 AM Keynote

Recycling of Blast Furnace Sludge into Clay Ceramic: *Carlos Fontes Vieira*¹; Lucas Amaral¹; Sergio Neves Monteiro¹; ¹State University Of The North Fluminense

8:45 AM

Study of Incorporation of Fuel and Fluxing Wastes in Red Ceramics: Gabriela Barreto¹; Michelle Babisk¹; Geovana Delaqua¹; Monica Gadioli¹; *Carlos Mauricio Vieira*¹; ¹Universidade Estadual do Norte Fluminense Darcy Ribeiro

9:05 AM

Technical Feasibility of Catalyst Waste as Raw Material for Ceramic Industry: *Lucas Amaral*¹; Geovana Carla Delaqua¹; Gabriela Teixeira¹; Ulisses Prado²; Sérgio Neves³; Carlos Mauricio Vieira¹; ¹State University of Northern Rio de Janeiro; ²LINNING - Representation, Consulting and Projects; ³Military Engineering Institute

9:25 AM Break

9:35 AM

Incorporation of Dry Biomass of *Salvinia Auriculata* AUBL from Phytoremediation Process for Traditional Ceramics Production: *Geovana Carla Delaqua*¹; Lucas Amaral¹; Carlos Mauricio Vieira¹; Sérgio Neves²; ¹Universidade Estadual do Norte Fluminense Darcy Ribeiro; ²Military Engineering Institute

9:55 AM

Evaluation of the mechanical, thermal and swelling behavior of hydrogels containing clay Laponite RD: *Vinicius Dos Santos*¹; Angelica Zafalon¹; Luiz Komatsu¹; Vijaya Rangari¹; Ademar Lugão¹; Duclerc Parra¹; ¹Nuclear and Energy Research Inst

10:15 AM

Mechanical and Thermal properties of Clay filled recycled low-density polyethylene: *Gerald Onyedika*¹; Genevive Onuegbu¹; Martin Ogwuegbu¹; ¹Federal Univ of Technology

10:35 AM

Physical and mechanical properties of artificial stone produced with granit waste and vegetable polyurethane: Maria Luiza Gomes¹; Larissa Sobrinho¹; *Elaine Carvalho*¹; Rubén Sanchéz Rodríguez¹; Carlos Mauricio Vieira¹; Sérgio Neves Monteiro²; ¹Universidade Estadual do Norte Fluminense Darcy Ribeiro; ²IME-Military Engineering Institute

Heterogeneous and Gradient Materials (HGM III): Tailoring Mechanical Incompatibility for Superior Properties — Heterostructured Materials I: Strength and Ductility

Program Organizers: Yuntian Zhu, North Carolina State University; Kei Ameyama, Ritsumeikan University; Irene Beyerlein, University of California, Santa Barbara; Yves Brechet, Grenoble-INP; Huajian Gao, Brown Univ; Hyoung Seop Kim, Pohang University of Science and Technology; Ke Lu, Institute of Metal Research; Xiaolei Wu, Chinese Academy of Sciences

Monday AM
March 11, 2019

Room: 209
Location: Henry B. Gonzalez
Convention Center

Session Chairs: Yuntian Zhu, NC State University; Xiaoxu Huang, Chongqing University; Kei Ameyama, Ritsumeikan University; Xiaolei Wu, Chinese Academy of Sciences

8:00 AM Introductory Comments

8:10 AM Invited

Strength and ductility improvements of an Mg alloy with heterogeneous layered structures: Xuan Luo¹; Tianlin¹; Guilin Wu¹; Niels Hansen²; *Xiaoxu Huang*¹; ¹Chongqing University; ²Technical University of Denmark

8:35 AM

Synergistic strengthening and work hardening: principles toward superior mechanical properties of heterostructured materials: *Yuntian Zhu*¹; Xiaolei Wu²; ¹North Carolina State Univ; ²Institute of Mechanics, Chinese Academy of Sciences

8:55 AM Invited

A contrast study on the mechanical behavior and the underlying deformation mechanisms of homogeneous and harmonic β -Ti alloys under simple shear loading conditions: *Guy Dirras*¹; Frédéric Momprou²; David Tingaud¹; Cecile Marcelot²; Azziz Hocini¹; Kei Ameyama³; ¹UniversityParis 13; ²CEMES, CNRS; ³Ritsumeikan University

9:20 AM

Dynamically reinforced heterogeneous grain structure prolongs ductility in a medium-entropy alloy with gigapascal yield strength: *Xiaolei Wu*¹; En Ma²; ¹Institute of Mechanics; ²Johns Hopkins University

9:40 AM Break

10:00 AM Invited

Mechanics of heterogeneous microstructures in 3D-printed stainless steel: *Ting Zhu*¹; ¹Georgia Institute Of Technology

10:25 AM

Unique Mechanical Properties of Harmonic Structure Designed Materials: *Kei Ameyama*¹; ¹Ritsumeikan University

10:45 AM

Improving the Ductility of Nanostructured Metals by Heterogeneous Lamella Structures: *Guilin Wu*¹; Ling Zhang¹; Tianlin Huang¹; Xiaoxu Huang¹; ¹Chongqing University

11:05 AM Invited

Interface Affected Zone for Optimal Strength and Ductility in Heterogeneous Laminate: *Chongxiang Huang*¹; Yanfei Wang¹; Xiaolong Ma²; Yin Sheng³; Heinz Werner Hoepfel⁴; Mathias Goeken⁴; Xiaolei Wu⁵; Huajian Gao³; Yuntian Zhu²; ¹Sichuan University; ²North Carolina State University; ³Brown University; ⁴Friedrich-Alexander University of Erlangen-Nürnberg; ⁵Chinese Academy of Sciences

High Entropy Alloys VII — Alloy Design and Thermal Properties

Sponsored by: TMS: Alloy Phases Committee

Program Organizers: Xie Xie, FCA US LLC; Peter Liaw, University of Tennessee; Michael Gao, National Energy Technology Laboratory; E-Wen Huang, National Chiao Tung University; Gongyao Wang, Alcoa Technical Center; Srivatsan Tirumalai, The University of Akron

Monday AM
March 11, 2019

Room: 207B
Location: Henry B. Gonzalez
Convention Center

Session Chairs: Chuang Dong, Dalian University of Technology; Eun Park, Seoul National University

8:00 AM Invited

Combinatorial Exploration of High Entropy Alloys: *Sebastian Kube*¹; David Uhl²; Amit Datye¹; Apurva Mehta³; Jan Schroers¹; ¹Yale University; ²Southern Connecticut State University; ³SLAC National Accelerator Laboratory

8:20 AM Invited

Non-equiatom refractory high-entropy alloys lead to enhanced high-temperature properties: *Shaolou Wei*¹; Cem Tasan¹; ¹Massachusetts Institute of Technology

8:40 AM Invited

CALPHAD Screening and Mechanical Behavior in the AlTiZrNbMo Alloy System: *Benjamin MacDonald*¹; Zhiqiang Fu¹; Fengwei Guo²; Yongwang Kang²; Xiaochang Xie²; Yizhang Zhou¹; Enrique Lavernia¹; ¹University of California Irvine; ²AECC Beijing Institute of Aeronautical Materials

9:00 AM

Effect of Stacking Fault Energy on Formability of Cr-Mn-Fe-Co-Ni Alloys: *JeongWon Yeh*¹; Kook Noh Yoon¹; Hyun Seok Oh¹; Sang Jun Kim¹; Eun Soo Park¹; ¹Seoul National University

9:20 AM Invited

Phase Separation and Segregation in Mechanically Alloyed and Long-Term Annealed Refractory High Entropy Alloys: *Joshua Smeltzer*¹; B. Chad Hornbuckle²; Anit Giri²; Christopher Marvel¹; Kristopher Darling²; Jeffrey Rickman¹; Helen Chan¹; Martin Harner¹; ¹Lehigh University; ²U.S. Army Research Laboratory

9:40 AM Break

10:00 AM Invited

Effects of Al content on air-oxidation behavior of NiFeCoCrAlx high-entropy superalloys: *Fu Pen Cheng*¹; Wu Kai¹; Feng Chih Chien¹; Chain Tsuan Liu²; Ji-Jung Kai³; ¹Institute of Materials Engineering, National Taiwan Ocean University, Keelung, Taiwan; ²Department of Mechanical Engineering, The Hong Kong Polytechnic University, Hong Kong; ³Department of Mechanical and Biomedical Engineering, The City University of Hong Kong

10:20 AM

Structure and mechanical property of nanostructured Ta-Nb-V-W-Ti high entropy alloys prepared by powder metallurgy: *Da Hye Song*¹; Jin Soo Park¹; Sang Jun Kim²; Eun Soo Park²; Jin Kyu Lee¹; ¹Kongju National Univ; ²Seoul National University

10:40 AM

Exploration of phase structure evolution induced by alloying elements in Ti-Al(-Nb) alloys via a chemical-short-range-order cluster model: *Beibei Jiang*¹; Qing Wang¹; Chuang Dong¹; Peter K. Liaw²; ¹Dalian University of Technology; ²The University of Tennessee

11:00 AM

High Entropy Transition Metal Carbides: Tyler Harrington¹; Joshua Gild¹; Pranab Sarker²; Cormac Toher²; Olivia Dippo¹; Eduardo Marin¹; Lucas Borowski¹; Christina Rost³; Jian Luo¹; Stefano Curtarolo²; Donald Brenner²; Kenneth Vecchio¹; ¹University of California San Diego; ²Duke University; ³University of Virginia; ⁴North Carolina State University

High Entropy Alloys VII — Alloy Development and Applications I

Sponsored by: TMS: Alloy Phases Committee

Program Organizers: Xie Xie, FCA US LLC; Peter Liaw, University of Tennessee; Michael Gao, National Energy Technology Laboratory; E-Wen Huang, National Chiao Tung University; Gongyao Wang, Alcoa Technical Center; Srivatsan Tirumalai, The University of Akron

Monday AM
March 11, 2019

Room: 206B
Location: Henry B. Gonzalez
Convention Center

Session Chairs: Peter Liaw, The University of Tennessee; Michael Gao, National Energy Technology Lab

8:00 AM **Keynote**

Fifteen Years of High Entropy Alloys – How Are We Doing?: Daniel Miracle¹; ¹Air Force Research Laboratory

8:30 AM **Invited**

High-entropy functional materials: Current status and outlook: Michael Gao¹; Daniel Miracle²; David Maurice¹; Xuehui Yan³; Yong Zhang³; Jeffrey Hawk¹; ¹National Energy Technology Lab; ²AF Research Laboratory; ³University of Science and Technology Beijing

8:50 AM **Invited**

High entropy alloy foam: open a new era of thermal protection utilizing metals: Kook Noh Yoon¹; Khurram Yaqoob²; Je In Lee¹; Jinyeon Kim¹; Su Hyeon Kim³; DongEung Kim⁴; Eun Soo Park¹; ¹Seoul National Univ; ²National University of Sciences and Technology; ³Korea Institute of Materials Science; ⁴Korea Institute of Industrial Technology

9:10 AM **Invited**

Variable chemical order opens a new “high entropy” playground: Evan Ma¹; ¹Johns Hopkins Univ

9:30 AM **Break**

9:50 AM **Invited**

Refractory complex concentrated alloys for high temperature applications: challenges and opportunities: Oleg Senkov¹; Daniel Miracle¹; Jean-Philippe Couzine²; Stephane Gorsse³; Raj Banerjee⁴; ¹Air Force Research Laboratory; ²Université Paris Est, ICMPE (UMR 7182) CNRS-UPEC; ³CNRS, Université Bordeaux, ICMCB, UPR 9048; ⁴University of North Texas

10:10 AM **Invited**

Predictive multiphase evolution in Al-containing high-entropy alloys: Louis Santodonato¹; Peter Liaw²; Raymond Unocic³; Hongbin Bei³; James Morris³; ¹Advanced Research Systems, Inc.; ²The University of Tennessee; ³Oak Ridge National Laboratory

10:30 AM **Invited**

Effects of Electronic Energy Deposition in Concentrated Solid Solution Alloys: William Weber¹; Eva Zarkadoula²; Aleksí Leino²; Ritesh Sachan²; Yanwen Zhang²; ¹Univ of Tennessee; ²Oak Ridge National Laboratory

10:50 AM **Invited**

Nanograin Formation in High-entropy Alloys by Severe Plastic Deformation: Koichi Tsuchiya¹; Jian Qiang¹; Haoyan Diao²; Peter Liaw²; ¹NIMS; ²University of Tennessee

11:10 AM **Invited**

Observation of Hexagonal Dendrite Formation in CoCrCuMnTi HEAs: Nicholas Derimow¹; Reza Abbaschian¹; ¹Univ of California Riverside

High Entropy Alloys VII — Structures and Modeling I

Sponsored by: TMS: Alloy Phases Committee

Program Organizers: Xie Xie, FCA US LLC; Peter Liaw, University of Tennessee; Michael Gao, National Energy Technology Laboratory; E-Wen Huang, National Chiao Tung University; Gongyao Wang, Alcoa Technical Center; Srivatsan Tirumalai, The University of Akron

Monday AM
March 11, 2019

Room: 207A
Location: Henry B. Gonzalez
Convention Center

Session Chairs: James Morris, Oak Ridge National Lab; Michael Widom, Carnegie Mellon University

8:00 AM **Invited**

Information theoretical approaches to entropy: Michael Widom¹; ¹Carnegie Mellon Univ

8:20 AM **Invited**

Dislocation flow and the nature of obstacles in equiatomic alloys: James Morris¹; Yuri Osetsky¹; George Pharr²; ¹Oak Ridge National Lab; ²Texas A&M

8:40 AM **Invited**

Tailoring local chemical order for tunable stacking fault energies in CrCoNi medium-entropy alloys: Jun Ding¹; Qin Yu¹; Mark Asta¹; Robert Ritchie¹; ¹Lawrence Berkeley National Lab

9:00 AM **Invited**

Finite Temperature Elastic Properties of CoCrFeNi from First Principles: Yifeng Wu¹; Douglas Irving¹; ¹North Carolina State University

9:20 AM **Invited**

How High are the Entropies of High Entropy Alloys?: Kaituo Huo¹; Qikai Li¹; Mo Li²; ¹University of Science and Technology Beijing; ²Georgia Institute of Technology; University of Science and Technology Beijing,

9:40 AM **Break**

10:00 AM **Invited**

Lattice Strain in a High Entropy Alloy from Model Interatomic Potentials: Diana Farkas¹; Alfredo Caro²; ¹Virginia Tech; ²George Washington University

10:20 AM **Invited**

First-principles Study of the phase stability in the equiatomic CrMnFeCoNi alloy: Chin-Lung Kuo¹; Kang-Tien Hsieh¹; ¹National Taiwan University

10:40 AM

Phase stability and chemical short-range order in W-Ta-Cr-V-Ti high-entropy alloys and their derivatives from first-principles modelling based on cluster-expansion method: Damian Sobieraj¹; Jan S. Wrobel¹; K.J. Kurzydowski¹; Duc Nguyen-Manh²; ¹Warsaw University of Technology; ²United Kingdom Atomic Energy Authority

11:00 AM **Invited**

Core structure of $\frac{1}{2}\langle 111 \rangle$ screw dislocation in ternary BCC high entropy alloys: First-principles calculations: Brahim Akdim¹; Satish Rao¹; Christopher Woodward²; Edwin Antillon¹; Triplicane Parthasarathy¹; ¹UES Inc; ²AFRL

Hume-Rothery Symposium – Bulk and Interfacial Thermodynamics of Complex Materials: Insights Derived from Integrating Modeling and Experiment — Interfacial Thermodynamics and Kinetics I

Sponsored by: TMS: Alloy Phases Committee

Program Organizers: Raymundo Arroyave, Texas A&M University; Michael Gao, National Energy Technology Laboratory; Jeffrey Hoyt, McMaster Univ; Saryu Fensin, Los Alamos National Laboratory

Monday AM
March 11, 2019

Room: 304B
Location: Henry B. Gonzalez
Convention Center

Session Chairs: Raymundo Arroyave, Texas A&M University; Yang Yang, East China Normal University

8:00 AM Introductory Comments

8:05 AM Keynote

William Hume-Rothery Award Recipient: Order within Disordered Materials – Insights into the Nature and Impact of Short-Range Order in Concentrated Solid Solutions: *Mark Asta*¹; ¹University of California, Berkeley; Lawrence Berkeley National Laboratory

8:40 AM Invited

Predicting the interfacial reactions between electrodes and solid-state electrolytes or coatings: *Gerbrand Ceder*¹; ¹Univ of California Berkeley

9:10 AM Invited

Modeling Transitions at Interfaces: *Timofey Frolov*¹; ¹Lawrence Livermore National Laboratory

9:40 AM Break

10:00 AM Invited

Interface and defect free energies from atomistic simulations

: *Rodrigo Freitas*¹; ¹Stanford University

10:30 AM Invited

Ramifications of Interfacial Compositional Phase Transformations: *Stephen Foiles*¹; ¹Sandia National Laboratories

11:00 AM Invited

Asymmetric line segregation at faceted Si grain boundaries: *Christian Liebscher*¹; *Andreas Stoffers*¹; *Masud Alam*¹; *Liverios Lymperakis*¹; *Oana Cojocaru-Mirédin*²; *Baptiste Gault*¹; *Jörg Neugebauer*¹; *Gerhard Dehm*¹; *Christina Scheu*¹; *Dierk Raabe*¹; ¹Max-Planck-Institut für Eisenforschung GmbH; ²RWTH Aachen University

11:30 AM Invited

Energetics of non-stoichiometric stacking faults in Fe-Nb alloys: An ab initio study: *Ali Zendegani*¹; *Fritz Körmann*¹; *Joerg Neugebauer*¹; *Tilmann Hickel*¹; ¹Mpi Fur Eisenforschung

Interfaces in Structural Materials: An MPMD Symposium in Honor of Stephen M. Foiles — Interatomic Potentials and Methods: A Joint Session with Computational Materials Discovery and Design

Sponsored by: The Minerals, Metals and Materials Society, TMS: Computational Materials Science and Engineering Committee

Program Organizers: Fadi Abdeljawad, Clemson University; Eric Homer, Brigham Young University; Elizabeth Holm, Carnegie Mellon University; Mark Asta, Univ of California Berkeley

Monday AM
March 11, 2019

Room: 302C
Location: Henry B. Gonzalez
Convention Center

Session Chair: To Be Announced

8:00 AM Invited

Insights into Anharmonicity of Solids Using Moments: *Murray Daw*¹; ¹Clemson Univ

8:30 AM

Advances in Atomistic Methods for Material Design: *Difan Zhang*¹; *Susan Sinnott*¹; ¹Penn State University

8:50 AM

Materials Dynamics Descriptors Determined by Data: *Sven Rudin*¹; ¹Lanl

9:10 AM Invited

Development of interatomic potentials using physically-informed artificial neural networks: *Ganga P. Purja Pun*¹; *James Hickman*²; *Rohit Batra*³; *Rampi Ramprasad*⁴; *Yuri Mishin*¹; ¹George Mason University; ²National Institute of Standards and Technology; ³University of Connecticut; ⁴Georgia Institute of Technology

9:40 AM Break

10:00 AM Invited

Beyond the Embedded Atom Method Era – the Future for Interatomic Potentials: *William Curtin*¹; *R. Kobayashi*²; *Daniele Giofre*³; *Till Junge*³; *Michele Ceriotti*³; ¹Epl Sti Igm Lamm; ²Nagoya Tech; ³EPFL

10:30 AM Invited

Rational Design of Classical Interatomic Potentials: *Eugene Ragasa*¹; *R. Seaton Ullberg*¹; *Richard Hennig*¹; *Christopher O'Brien*²; *Stephen Foiles*²; *Simon Phillpot*¹; ¹University Of Florida; ²Sandia National Laboratories

11:00 AM Invited

Quantum mechanics based bond-order potentials and fundamental understanding of dislocation mediated plasticity in refractory bcc metals: *Vaclav Vitek*¹; *Yi-Shen Lin*¹; ¹Univ of Pennsylvania

Irradiation Effects on Phase Transformations in Nuclear Reactor Materials — Pure and Binary Alloys

Sponsored by: TMS: Phase Transformations Committee
Program Organizers: Janelle Wharry, Purdue University; Kester Clarke, Colorado School of Mines; Julie Tucker, Oregon State University; Par Olsson, KTH Royal Institute of Technology; Dhriti Bhattacharyya, ANSTO; Mohsen Asle Zaeem, Colorado School of Mines; Arun Devaraj, Pacific Northwest National Laboratory

Monday AM
March 11, 2019
Room: 214B
Location: Henry B. Gonzalez Convention Center

Session Chairs: Michael Short, Massachusetts Institute of Technology; Arun Devaraj, Pacific Northwest National Laboratory

8:00 AM Invited

Measuring Radiation Damage using Stored Energy and Magnetism for Reactor Dose Measurement and Non-Proliferation: Rachel Connick¹; Charles Hirst¹; Penghui Cao¹; Kangpyo Sol¹; Sara Ferry¹; R. Scott Kemp¹; Michael Short¹; ¹Massachusetts Institute of Technology

8:30 AM

Phase field modeling of irradiation-induced compositional patterning in immiscible binary alloy systems: *Qun Li*¹; Pascal Bellon¹; Robert Averback¹; ¹University of Illinois Urbana Champaign

8:50 AM

Atomistic Modeling of Solute Redistribution in Radiation-Resistant Solid Solutions: *Craig Daniels*¹; Pascal Bellon¹; Robert Averback¹; ¹University of Illinois

9:10 AM

Anomalous segregation induced by void-solute interactions under neutron irradiation: First-principles modeling and experimental validation in W(Re,Os,Ta): *Duc Nguyen-Manh*¹; Jan Wrobel²; Michael Klimenkov³; Sergei Dudarev¹; ¹United Kingdom Atomic Energy Authority; ²Warsaw University of Technology; ³Karlsruhe Institute of Technology

9:30 AM Break

9:50 AM Invited

Irradiation induced composition patterns and segregation to free surfaces in miscible binary solid solutions: *Anter El-Azab*¹; Santosh Dubey²; ¹Purdue Univ; ²University of Petroleum and Energy Studies

10:20 AM

Binary Collision Approximation modeling of irradiation damage: Iradina, an alternative to SRIM: *Jean-paul Crocombette*¹; ¹CEA Saclay DEN-SRMP

10:40 AM

Irradiation Induced Phase Transformation in Nanocrystalline Au: *James Nathaniel*¹; Pranav Suri¹; Jon Baldwin²; Yongqiang Wang²; Khalid Hattar³; Nan Li²; Mitra Taheri³; ¹Drexel Univ; ²Los Alamos National Laboratory; ³Sandia National Laboratory

11:00 AM

Quantification of 1D vs 3D Defect Migration Behavior in Ion Irradiated Dilute Copper Base Binary Alloys: *Ling Wang*¹; Arunodaya Bhattacharya²; Chad Parish²; Spencer Kropf²; David Martin¹; Brian Wirth¹; Steven Zinkle¹; ¹University Of Tennessee; ²Oak Ridge National Laboratory

Magnesium Technology 2019 — Keynote Session

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

Program Organizers: Vineet Joshi, Pacific Northwest National Laboratory; Brian Jordon, University of Alabama; Dmytro Orlov, Lund University; Neale Neelamegham, IND LLC

Monday AM
March 11, 2019
Room: 005
Location: Henry B. Gonzalez Convention Center

Session Chairs: Vineet Joshi, Pacific Northwest National Laboratory; J. Jordon, University of Alabama

8:00 AM Introductory Comments

8:10 AM Keynote

Magnesium Alloy Sheet for Transportation Applications: *Christopher Romanowski*¹; ¹Danieli FATA Hunter

8:55 AM Keynote

Magnesium for Automotive Lightweighting: Status and Challenges: *Sarah Kleinbaum*¹; ¹US Department of Energy

9:40 AM Break

10:00 AM Keynote

Magnesium Process and Alloy Development for Applications in the Automotive Industry: *David Klaumuenzer*¹; ¹Volkswagen AG

10:45 AM Keynote

Thermally Activated Slip in Rare Earth Containing Mg-Mn-Ce Alloy, ME10, Compared with Traditional Mg-Al-Zn Alloy, AZ31: *Sean Agnew*¹; Vikaas Bajikar¹; Jishnu Bhattacharyya¹; Nathan Peterson¹; ¹Univ of Virginia

Materials for Molten Salt Energy Systems — Corrosion and Compatibility I

Sponsored by: TMS: Corrosion and Environmental Effects Committee, TMS: Nuclear Materials Committee

Program Organizers: Stephen Raiman, Oak Ridge National Laboratory; Jinsuo Zhang, Virginia Polytechnic Institute and State University; Kumar Sridharan, Univ of Wisconsin-Madison; Judith Vidal, National Renewable Energy Laboratory; Michael Short, MIT

Monday AM
March 11, 2019
Room: 008B
Location: Henry B. Gonzalez Convention Center

Session Chair: Kumar Sridharan, University of Wisconsin

8:00 AM Introductory Comments

8:05 AM

Changing a Community's Perception on the Viability of Chloride Salts as Heat Transfer Fluids for Concentrating Solar Power: *Levi Irwin*¹; ¹Mantech International

8:35 AM

Effect of Ni on the corrosion behavior of Haynes 230 Alloy in MgCl₂-KCl salt: *Yuxiang Peng*¹; Ramana Reddy¹; ¹Univ of Alabama

8:55 AM

In situ proton irradiation slows corrosion in molten FLiNaK+Eu salt: *Weiyue Zhou*¹; Michael Short¹; ¹Massachusetts Institute of Technology

9:15 AM

Understanding Degradation of Structural Alloys in Molten Chloride Salts: *Stephen Raiman*¹; Jake McMurray¹; Richard Mayes¹; Matt Kurley¹; Jisue Moon¹; Claudia Rawn¹; ¹Oak Ridge National Laboratory

9:35 AM Break

9:55 AM

Corrosion of High Entropy Alloy CrFeMnNi in Molten FLiBe Salt: *Mohamed ElBakhshwan*¹; William Doniger¹; Cody Falconer¹; Michael Moorehead¹; Calvin Parkin¹; Kumar Sridharan¹; Adrien Couet¹; ¹University of Wisconsin Madison

10:15 AM

Carbon-metal interactions in molten FLiNaK: *Kevin Chan*¹; Preet Singh¹; ¹Georgia Institute of Technology

10:35 AM

Corrosion of Hastelloy-N in Molten FLiNaK Salt at 700°C: *Cody Falconer*¹; William Doniger¹; Raluca Scarlat²; Kumar Sridharan²; Adrien Couet²; ¹Dept. of Materials Science & Engineering, University of Wisconsin - Madison; ²Dept. of Engineering Physics, University of Wisconsin - Madison

Materials Processing Fundamentals — Modeling of Minerals and Metals Processing

Sponsored by: TMS: Process Technology and Modeling Committee
Program Organizers: Guillaume Lambotte, Boston Metal; Jonghyun Lee, Iowa State University; Antoine Allanore, MIT - DMSE; Samuel Wagstaff, Novelis

Monday AM
March 11, 2019

Room: 212A
Location: Henry B. Gonzalez
Convention Center

Session Chairs: Guillaume Lambotte, Boston Metal; Sam Wagstaff, Novelis

9:00 AM Introductory Comments

9:05 AM

A suite of modelling tools for rotary kiln processing operations: *Mark Schwarz*¹; Peter Witt¹; Matthew Sinnott²; Paul Cleary²; Simon Trang¹; Julian Johnson¹; ¹CSIRO Mineral Resources; ²CSIRO Data61

9:25 AM

Dynamic Current and Power Distributions in a Submerged Arc Furnace: *Yonatan Afework Tesfahunegn*¹; Thordur Magnusson²; Merete Tangstad³; Gudrun Saevarsdottir¹; ¹Reykjavik Univ; ²United Silicon; ³NTNU

9:45 AM Break

10:05 AM

CFD modeling of the combustion and heat transfer in the top submerged lance smelter: *Daniele Obiso*¹; Sebastian Kriebitzsch¹; Michael Stelter²; Markus Reuter³; ¹CIC Virtuhcon, TU Bergakademie Freiberg; ²TU Bergakademie Freiberg; ³HZDR, Freiberg

10:25 AM

Modeling of Steel-Slag-Air Three Phase Flow in Continuous Casting Strand: Xubin Zhang¹; Wei Chen¹; *Lifeng Zhang*¹; Piotr Scheller¹; ¹Univ of Science & Technology Beijing

10:45 AM

Research on the distribution of non-metallic inclusions under electromagnetic fields in continuous casting process: *Engang Wang*¹; Zhongxin Zhai¹; ¹Northeastern Univ

11:05 AM

Dynamic Modeling of Unsteady Bulging in Continuous Casting of Steel: *Zhelin Chen*¹; Hamed Olia²; Brian Thomas²; Joseph Bentsman³; Bryan Petrus⁴; Madeline Rembold⁴; ¹Univ of Illinois Urbana-Champaign; ²Colorado School of Mine; ³Univ of Illinois Urbana-Champaign; ⁴Nucor Steel Decatur

11:25 AM

Modeling on the two-phase flow in a slab continuous casting strand using Euler-Euler approach: *Haichen Zhou*¹; Lifeng Zhang¹; ¹Univ of Science & Technology Beijing

11:45 AM

Flow control in the model of a continuous caster by using Contactless Inductive Flow Tomography: *Ivan Glavinic*¹; Shereen Abouelazayem²; Matthias Ratajczak¹; Dennis Schurmann¹; Sven Eckert¹; Frank Stefani¹; Jaroslav Hlava²; Thomas Wondrak¹; ¹Helmholtz Zentrum Dresden Rossendorf; ²Technical University of Liberec

12:05 PM

Optimization of the Flow Behavior of Molten Steel in Ultra High-Speed Billet Continuous Casting Mold: *Pei Xu*¹; Dengfu Chen¹; Shixin Wu¹; Hengsong Yu¹; Mujun Long¹; Sheng Yu¹; Huamei Duan¹; ¹Chongqing Univ

Mechanical Behavior of Nuclear Reactor Components — Processing Effects

Sponsored by: TMS: Nuclear Materials Committee
Program Organizers: Clarissa Yablinsky, Los Alamos National Laboratory; Assel Aitkaliyeva, University of Florida; Khalid Hattar, Sandia National Laboratories; Janelle Wharry, Purdue University; Laurent Capolungo, Los Alamos National Laboratory; Eda Aydogan, Los Alamos National Laboratory

Monday AM
March 11, 2019

Room: 215
Location: Henry B. Gonzalez
Convention Center

Session Chairs: Assel Aitkaliyeva, University of Florida; Anne Campbell, Oak Ridge National Laboratory

8:00 AM Invited

Thermomechanical Processing to Improve the Fracture Toughness of HT-9 Steels for High-Dose Applications: *Thak Sang Byun*¹; Timothy Lach¹; Jung Pyung Choi¹; Stuart Maloy²; ¹Pacific Northwest National Lab; ²Los Alamos National Laboratory

8:30 AM

A Study on Tensile Behaviour and Microstructural Characteristics of Zircaloy-4 Processed through Swaging: *Gaurav Singh*¹; *Srinivasa Rakesh*¹; Abhishek Tiwari¹; R. Jayaganthan¹; KI Narayanan²; Chander Arora²; Dinesh Srivastava²; ¹IIT Madras; ²Nuclear Fuel Complex, Hyderabad

8:50 AM

Austenitic oxide dispersion strengthened (ODS) steels: Insights into their microstructure and mechanical behavior: *Ankur Chauhan*¹; Tim Gräning¹; Dimitri Litvinov¹; Michael Rieth¹; Anton Möslang¹; Jarir Aktaa¹; ¹Karlsruhe Institute of Technology (KIT)

9:10 AM

Development and Testing of Advanced Alloys for Very High Temperature and Dose Applications: *Osman Anderoglu*¹; Madhavan Radhakrishnan¹; Zhexion Zhang¹; Md. Mehadi Hassan¹; Eda Aydogan²; Connor Rietema³; Daniel Savage⁴; Justin Cheng⁵; Marko Knezevic⁴; Amy Clarke³; Kester Clarke³; Nathan Mara²; Yongqiang Wang²; Stuart Maloy²; ¹University of New Mexico; ²Los Alamos National Laboratory; ³Colorado School of Mines; ⁴University of New Hampshire; ⁵University of Minnesota

9:30 AM Break

9:50 AM Invited

Mechanical and Advanced Microstructural Analysis of Laser Beam Weldments Performed on Neutron-Irradiated 304 Austenitic Stainless Steel: *Jonathan Tatman*¹; Maxim Gussev²; Paula Freyer³; Frank Garner⁴; ¹Electric Power Research Inst (EPRI); ²Oak Ridge National Laboratory; ³Westinghouse Electric Company; ⁴Texas A&M University

10:20 AM

Thermal Shock and in-situ Radial Strain Measurements: *Delia Perez-Nunez*¹; Sean McDeavitt¹; Luis Ortega¹; ¹Texas A&M University

10:40 AM

Mechanical and microstructural characterization of three HT-9 heats (ORNL, LANL and EBR II) after side-by-side neutron irradiation at LWR and fast reactor relevant temperatures: *Ramprasad Prabhakaran*¹; Mychailo Toloczko¹; Dan Edwards¹; Kumar Sridharan²; ¹Pacific Northwest National Laboratory; ²University of Wisconsin

Mechanical Behavior Related to Interface Physics III — Grain Boundaries I

Sponsored by: TMS Materials Processing and Manufacturing Division, TMS: Nanomechanical Materials Behavior Committee
Program Organizers: Jason Trelewicz, Stony Brook University; Nathan Mara, University of Minnesota; Erica Lilleodden, Helmholtz-Zentrum Geesthacht; Siddhartha Pathak, University of Nevada, Reno; Jordan Weaver, National Institute of Standards and Technology; Marc Legros, CEMES-CNRS

Monday AM
March 11, 2019

Room: 303C
Location: Henry B. Gonzalez
Convention Center

Session Chair: To Be Announced

8:00 AM

Effects of Elastic and Plastic Anisotropy on Grain Boundary Mediated Plasticity: A Phase Field Study: *Jakub Mikula*¹; Siu Sin Quek¹; Shailendra P.Joshi²; Tong Earn Tay³; Rajeev Ahluwalia¹; ¹A*Star; ²University of Houston; ³National University of Singapore

8:20 AM

Investigation of Deformation Mechanisms in Columnar Aluminum
: *Marissa Linne*¹; Ajey Venkataraman²; Michael Sangid²; Samantha Daly³; ¹Univ of Michigan; ²Purdue University; ³University of California, Santa Barbara

8:40 AM Invited

Interface Defects Generated by Mechanical Loading Cause Early Fatigue Failure of Thin Cu Films: *Cynthia Volkert*¹; ¹University of Göttingen

9:10 AM Invited

A framework for grain boundary mode selection via compatible shear transformations: Ian Chesser¹; Brandon Runnels²; *Elizabeth Holm*¹; ¹Carnegie Mellon Univ; ²University of Colorado Colorado Springs

9:40 AM Break

10:00 AM

Mechanical behavior and strengthening mechanisms of nanotwinned Al alloys: *Xinghang Zhang*¹; Sichuang Xue¹; Qiang Li¹; Yifan Zhang¹; Jian Wang¹; ¹Purdue University

10:20 AM Invited

Defect analysis and evolution during in situ TEM nanomechanical testing using scanning nanobeam diffraction imaging: *Andrew Minor*¹; ¹University of California-Berkeley

10:50 AM

Strength statistics of single crystals and metallic glasses under small stressed volumes: *Yanfei Gao*¹; ¹University of Tennessee

11:10 AM

The effect of grain boundary character distribution on the mechanical properties at different strain rates of a 316L stainless steel: *Shuang Xia*¹; Qin Bai¹; Zhou Zhen¹; ¹Shanghai University

11:30 AM Invited

Conservative motion of sources of grain boundary dislocations: an effective mechanism for shear-coupled grain boundary migration.: *Anna Serra*¹; Pablo Garcia-Müller²; ¹Universitat Politècnica de Catalunya; ²CIEMAT

Micro- and Nanomechanical Testing in Harsh Environments — High Temperature Micromechanics I

Sponsored by: TMS Materials Processing and Manufacturing Division, TMS: Nanomechanical Materials Behavior Committee
Program Organizers: Verena Maier-Kiener, Montanuniversität Leoben; Sandra Korte-Kerzel, RWTH Aachen; Peter Hosemann, Univ of California; Afroz Barnoush, Ntnu; Jeffrey Wheeler, ETH Zurich; Dhriti Bhattacharyya, Australian Nuclear Science and Technology Organization

Monday AM
March 11, 2019

Room: 217B
Location: Henry B. Gonzalez
Convention Center

Session Chairs: Verena Maier-Kiener, Montanuniversität Leoben; Jon Molina-Aldaregu, Imdea Materials Institute

8:00 AM Invited

High-throughput investigation of strength and creep in Mg alloys through micromechanical testing: *Jon Molina-Aldaregu*¹; ¹Imdea Materials Institute

8:25 AM

Elevated temperature nanomechanical characterization of Mg-nanocomposites: *Meysam Haghshenas*¹; Devendra Verma²; Manoj Gupta³; ¹University of North Dakota; ²Nanoscience Instruments; ³National University of Singapore

8:45 AM

Understanding bcc Mg under extreme conditions of pressure, temperature and high strain rates: *Manish Jain*¹; Marko Knezevic²; Nenad Velisavljevic³; Nathan Mara⁴; Irene Beyerlein⁵; Johann Michler⁶; Siddhartha Pathak¹; ¹University Of Nevada Reno; ²University of New Hampshire; ³Los Alamos National Laboratory; ⁴University of Minnesota, Minneapolis; ⁵University of California, Santa Barbara; ⁶EMPA Thun

9:05 AM

A versatile shear-based method to study mechanical properties of metals at small scales: *Gan Feng*¹; Dinakar Sagapuram¹; ¹Texas A&M University

9:25 AM Break

9:45 AM Invited

Temperature and Strain-rate Dependence of the Mechanical Behavior of Freestanding Gold Thin Films: *Benoit Merle*¹; ¹University Erlangen-Nürnberg (FAU)

10:10 AM

Effect of varying interfaces on strain rate sensitivity of nanostructured metals – a case study on nickel: *Oliver Renk*¹; Verena Maier-Kiener²; Daniel Kiener²; Reinhard Pippan¹; ¹Erich Schmid Institute; ²Departement Physical Metallurgy and Materials Testing, Montanuniversität Leoben

10:30 AM

Creep behavior of thermally stable nanocrystalline NiW alloy using high temperature nanoindentation.: *Prince Singh*¹; Zhiyuan Liang²; George Pharr²; Maarten de Boer¹; ¹Carnegie Mellon University; ²Texas A & M University

10:50 AM

Comparison of soft Al-Zn-Mg-Cu and hard W-Re alloys: A High-Temperature Nanoindentation study: *Johann Kappacher*¹; Alexander Leitner²; Helmut Clemens¹; Verena Maier-Kiener¹; ¹Department Physical Metallurgy and Materials Testing; ²Erich Schmid Institute for Materials Science

11:10 AM

Real-time Deformation in Cold Sprayed Aluminum Alloy at Elevated Temperatures by In-situ Nanoindentation: *Pranjal Nautiyal*¹; Cheng Zhang¹; Victor Champagne²; Benjamin Boesl¹; Arvind Agarwal¹; ¹Florida International Univ; ²U.S. Army Research Laboratory

Modeling and Simulation of Composite Materials — Session I

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

Program Organizers: Rakesh Behera, New York University; Dinesh Pinisetty, CSU Maritime Academy; Dung Luong, Nyu

Monday AM
March 11, 2019

Room: 303B
Location: Henry B. Gonzalez
Convention Center

Session Chairs: Pratik Dholabhai, Rochester Institute of Technology; Pavana Prabhakar, University Of Wisconsin-Madison; Rakesh Behera, New York University

8:00 AM Introductory Comments

8:20 AM Invited

Multi-scale Analysis for predicting high-temperature oxidation in Carbon/Carbon ceramic composites: *Pavana Prabhakar*¹; Vinay Damodaran¹; ¹University of Wisconsin-Madison

8:40 AM

Surface Stress Driven Bending of Nanoscale Composite Plates: *R M Raghavendra*¹; Namrata Pachauri¹; Anandh Subramaniam¹; ¹Indian Institute of Technology Kanpur

9:00 AM

Application of UMAT in Abaqus on Short Fiber Composite Mechanics: *Yinglong Chen*¹; ¹The Dow Chemical Company

9:20 AM Break

10:00 AM

A Generalized Nature-Inspired Optimization Method: Additively Manufactured Materials with Superior Mechanical Performance: Mohamad Ghodrati¹; *Pinar Acar*¹; Reza Mirzaeifar¹; ¹Virginia Tech University

10:20 AM Invited

Atomic-scale Structure and Stability of Dopant-defect Complexes at Misfit Dislocations in Complex Oxide Heterostructures: *Pratik Dholabhai*¹; ¹Rochester Institute of Technology

10:40 AM

A simplified composite material model to evaluate strip twist/warpage mechanism and major factors in the Flip-chip packaging reflow process: Ching-Yu Lee¹; *You-Fu Wu*¹; Amir Reza Ansari Dezfoli¹; Wen-Dung Hsu¹; Tai-Sheng Wang²; Yi-Dao Wang²; Guan-Han Lin²; Peng-Yuan Cheng²; ¹Department of Materials Science and Engineering, National Cheng Kung University, Tainan, Taiwan; ²Advanced Semiconductor Engineering Group, Kaohsiung, Taiwan

11:00 AM

Bending Properties of Bio-inspired Nanocomposites: *Raghuram Santhapuram*¹; Scott Muller¹; Arun Nair¹; ¹Univ of Arkansas

Phase Stability, Phase Transformations, and Reactive Phase Formation in Electronic Materials XVIII — Advanced Electronic Interconnection

Sponsored by: TMS: Alloy Phases Committee

Program Organizers: Hiroshi Nishikawa, Osaka University; Shih-Kang Lin, National Cheng Kung University; Chaohong Wang, National Chung Cheng University; Chih-Ming Chen, National Chung Hsing Univ; Dajian Li, Karlsruhe Institute of Technology; Song-Mao Liang, Clausthal University Of Technology; Ming-Tzer Lin, National Chung Hsing University; Zhi-Quan Liu, Institute of Metal Research, Chinese Academy of Sciences; Jaeho Lee, Hongik University; Yee-wen Yen, National Taiwan Univ of Science & Tech; Yuan Yuan, Chongqing University; Yu Zhong, Worcester Polytechnic Institute

Monday AM
March 11, 2019

Room: 217D
Location: Henry B. Gonzalez
Convention Center

Session Chairs: Chin-Ming Chen, National Chung Hsing University; Shin-kang Lin, National Cheng Kung University

8:00 AM Invited

Phase determination of low-melting In-Bi alloys on Cu substrates: *Albert T. Wu*¹; Chang-Meng Wang²; ¹National Central Univ; ²SHENMAO Technology Inc.

8:20 AM

Effect of Ga-based liquid metal alloy interconnects for stretchable electronics on the durability of device contacts: *Asher Leff*¹; Nathan Lazarus¹; Iain Kierzewski¹; ¹U.S. Army Research Laboratory

8:40 AM

Development of Sn-Bi-In-Ga quaternary low-temperature solder: Chih-han Yang¹; Shiqi Zhou²; Hiroshi Nishikawa²; *Shih-Kang Lin*¹; ¹National Cheng Kung University; ²Osaka University

9:00 AM

Interfacial reactions in the Ga-doped Sn-0.7Cu/Cu couples and isothermal sections of the Sn-Cu-Ga ternary system: *Chih-Han Yang*¹; Yu-chen Liu¹; Yi-kai Kuo¹; Shih-kang Lin¹; ¹National Cheng-Kung University

9:20 AM Break

9:40 AM Invited

Reactive Dissolution of Metallic Nanoparticles during Reflow and Its Effects on Microstructure and Properties of Lead Free Solder Joints: *A.S.Md Abdul Haseeb*¹; ¹Univ of Malaya

10:00 AM

Improvement in thermomechanical reliability of low cost Sn-based BGA interconnects by Cr addition: *Jung-Hwan Bang*¹; Dong-Yurl Yu¹; Yong-Ho Ko¹; Hiroshi Nishikawa²; Chang-Woo Lee¹; ¹Korea Institute of Industrial Technology; ²Oaska University

10:20 AM

Reflowing Time Effect on Interfacial reactions and mechanical properties between Sn-9wt%Zn, Sn-3.0wt%Ag-0.5wt%Cu alloy solder and Ag substrate: *Chia-Yu Liu*¹; Yu-Chun Li¹; Chih-Ming Chen²; Ya-Jing Lee¹; Jia-Ying Dai¹; Yee-Wen Yen¹; ¹National Taiwan University of Science and Technology; ²National Chung Hsing University

10:40 AM

Formation and growth of intermetallic compound layer at Sn-Ag-Cu-Ni solder/Cu interface using laser process: *Hiroshi Nishikawa*¹; Ryo Matsunobu¹; ¹Osaka University

11:00 AM

Exploring effective charge in electromigration effect using machine learning: *Yu-chen Liu*¹; Shih-kang Lin¹; Dane Morgan²; ¹National Cheng Kung University; ²University of Wisconsin-Madison

11:20 AM

Low-Temperature Bonding Using Silver Nanoparticles Paste for Electronics Packaging: *Yu-Chi Fang*¹; Fan-Yi Ouyang¹; ¹National Tsing Hua University

Phase Transformations and Microstructural Evolution — Phase Transformation in Non-ferrous Alloys I

Sponsored by: TMS: Phase Transformations Committee

Program Organizers: Sophie Primig, Univ of New South Wales; Deep Choudhuri, University of North Texas; Klaus-Dieter Liss, Guangdong Technion – Israel Institute of Technology; Megumi Kawasaki, Oregon State University; Matthew Steiner, University of Cincinnati; Yufeng Zheng, Ohio State University; Ashley Paz y Puente, University of Cincinnati; Juan Escobedo-Diaz, University of New South Wales; Dhriti Bhattacharyya, ANSTO; Rajarshi Banerjee, University of North Texas

Monday AM
March 11, 2019

Room: 225D
Location: Henry B. Gonzalez
Convention Center

Session Chair: To Be Announced

8:00 AM

Shuffle Dominant Phase Transformation in Metastable Beta Titanium Alloys: *Yufeng Zheng*¹; Rajarshi Banerjee²; Dipankar Banerjee³; Hamish Fraser¹; ¹The Ohio State University; ²University of North Texas; ³Indian Institute of Science

8:20 AM

Segregation and Phase Transformations along Superlattice Stacking Faults in Ni-based Superalloys and its Effect on Creep Strength: *Tim Smith*¹; Bryan Esser²; Brian Good¹; Catherine Rae³; David McComb²; Michael Mills²; ¹Glenn Research Center; ²Ohio State University; ³University of Cambridge

8:40 AM

Mechanical Response, Phase Transformation and Texture Evolution of Titanium Aluminide Processed by High-Pressure Torsion: *Megumi Kawasaki*¹; Jae-Kyung Han¹; Xi Li²; Rian Dippenaar²; Klaus-Dieter Liss³; ¹Oregon State University; ²University of Wollongong; ³Guangdong Technion - Israel Institute of Technology

9:00 AM

Compositional influence on microtube formation in Ni-based wires via the Kirkendall effect: *Haozhi Zhang*¹; Ashley Paz Y Puente¹; ¹University of Cincinnati

9:20 AM

Heat treatment strategies to improve the quasi static and dynamic performance of alpha+ beta titanium alloys: *Alireza Fadavi Boostani*¹; Shiraz Mujahid²; Andrew L. Oppedal¹; Cory Krivanec²; Wilburn R Whittington²; Paul G Allison³; Jishnu J. Bhattacharyya⁴; Sean Agnew⁴; Haitham El Kadiri²; ¹Center for Advanced Vehicular Systems; ²Mississippi State University; ³The University of Alabama; ⁴University of Virginia

9:40 AM Break

10:00 AM

Microstructural evolution of alpha phase in high strength Ti-5Fe-5Zr alloy: *Tomoyuki Homma*¹; ¹Nagaoka University Of Technology

10:20 AM

Determination of the five parameter grain boundary character distribution of nanocrystalline alpha-zirconium thin films using transmission electron microscopy: *Iman Ghamarian*¹; Peyman Samimi²; Gregory Rohrer³; Peter Collins⁴; ¹University of Michigan; ²Texas A&M University; ³Carnegie Mellon University; ⁴Iowa State University

10:40 AM

Aging behavior of Alloy 625 Plus: *Li-Jen Yu*¹; Iman Ghamarian¹; Grace Burke²; Emmanuelle Marquis¹; ¹University of Michigan; ²University of Manchester

11:00 AM

Design of Heusler-strengthened NiTi-based Shape Memory Alloys: *Chuan Liu*¹; Gregory Olson¹; ¹Northwestern University

Rare Metal Extraction & Processing — Rare Metals I

Sponsored by: TMS: Hydrometallurgy and Electrometallurgy Committee

Program Organizers: Gisele Azimi, University of Toronto; Hojong Kim, Pennsylvania State University; Shafiq Alam, Univ of Saskatchewan; Takanari Ouchi, The University of Tokyo; Neale Neelameggham, IND LLC; You Qiang, Univ Of Idaho; Alafara Baba, University of Ilorin

Monday AM
March 11, 2019

Room: 210B
Location: Henry B. Gonzalez
Convention Center

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

8:00 AM

Cesium Extraction from the Taron Deposit in Argentina: New Developments: *David Dreisinger*¹; ¹University of BC

8:35 AM

Feasibility of Copper recovery from Spent Deposited Sludge of Transformer Oil (DSTO) for Industrial applications: *Alafara Baba*¹; Joshua Ayodele¹; Oloduowo Ameen¹; Abdulrasaq Jimoh¹; Folahan Adekola¹; Abdul Alabi¹; Marili Zubair¹; Kuranga Ayinla¹; Abdullah Ibrahim¹; Mustapha Raji¹; Daud Olaoluwa¹; Aishat Abdulkareem¹; Fausat Olasinde²; ¹University of Ilorin; ²Chemistry Advance Research Centre, Sheda Science & Tech. Complex, FCT, Abuja

9:00 AM

Leaching and recovery of an oxide gold concentrate using ammoniacal thiosulfate solutions: *Zhonglin Dong*¹; Tao Jiang¹; Bin Xu¹; Yongbin Yang¹; Qian Li¹; ¹Central South University

9:25 AM Break

9:45 AM

A multi-step process for the cleaner utilization of vanadium-bearing converter slag: *Junyi Xiang*¹; Guishang Pei¹; Qingyun Huang²; Wei Lv¹; Mingrui Yang¹; Kai Hu¹; Xuwei Lv¹; ¹Chongqing Univ; ²Chongqing University of Science and Technology

10:10 AM

Efficient extraction of V(V) in aqueous solution by microemulsion system: *Yun Guo*¹; Danqing Li¹; Bing Xie¹; Hong-Yi Li¹; ¹Chongqing University

10:35 AM

A novel approach for pre-concentrating vanadium from stone coal: *Daya Wang*¹; Baijun Yan¹; ¹University of Science and Technology Beijing

11:00 AM

Study on the roasting mechanism of vanadium-chromium slag with sodium hydroxide: *Minmin Lin*¹; Chengjie Wang¹; Bing Xie¹; Hong-Yi Li¹; ¹Chongqing University

Refractory Metals 2019 — (I) Mo and Nb; (II) Co-Re, Cr, and Nb-Si

Sponsored by: TMS: Refractory Metals Committee

Program Organizers: Eric Taleff, University of Texas at Austin; Martin Heilmair, KIT Karlsruhe; Kevin Jaansalu, Royal Military College of Canada

Monday AM
March 11, 2019

Room: 205
Location: Henry B. Gonzalez
Convention Center

Session Chairs: Eric Taleff, University of Texas at Austin; Martin Heilmair, KIT Karlsruhe

8:00 AM

Correlating the chemistry of grain boundaries in molybdenum with their deformation behaviour using atom probe tomography and micromechanical testing: *Severin Jakob*¹; Anna Ebner¹; Alexander Leitner²; Alexander Lorich³; Michael Eidenberger-Schober³; Wolfram Knabl³; Helmut Clemens¹; Verena Maier-Kiener¹; ¹Montanuniversität Leoben, Department Physical Metallurgy and Materials Testing; ²Montanuniversität Leoben, Department Materials Physics; ³Plansee SE

8:20 AM

Creep substructure, texture evolution, and dynamic abnormal grain growth in a Mo rod material: *Philip Noell*¹; Eric Taleff²; ¹Sandia National Labs; ²The University of Texas at Austin

8:40 AM

Damage initiation due to efficient generation, stabilization and transport of vacancies in body-centred-cubic niobium containing oxygen impurities: *Qing-Jie Li*¹; Howard Sheng²; Ju Li³; Evan Ma¹; ¹Johns Hopkins Univ; ²George Mason University; ³Massachusetts Institute of Technology

9:00 AM

Hot Isostatic Pressing of Niobium-Based Refractory Alloys: *Calvin Mikler*¹; Brian Welk¹; Gopal Viswanathan¹; Benjamin Georgin¹; Zachary Kloenne¹; Kevin Chaput²; John Foltz³; Hamish Fraser¹; ¹The Ohio State University; ²Air Force Research Laboratory; ³ATI Specialty Alloys and Components

9:20 AM

Elevated-temperature tensile behavior of niobium: *Emily Brady*¹; Eric Taleff¹; ¹Univ of Texas Austin

9:40 AM Break

9:50 AM

The Influence of C/Ta Ratio on Nanosized TaC Precipitates and Co Matrix in High-Temperature Co-Re Based Alloys Studied by Neutrons and X-rays: *Ralph Gilles*¹; Lukas Karge¹; Debashis Mukherji²; Pavel Strunz³; Premek Beran³; Michael Hofmann¹; Andreas Stark⁴; Joachim Roesler²; ¹TU Muenchen; ²TU Braunschweig; ³Nuclear physics institute of the CAS; ⁴Helmholtz Zentrum Geesthacht

10:10 AM

Microstructure evolution in Ni-containing Co-Re-Cr alloys and effects on alloy properties: *Katharina Esleben*¹; Bronislava Gorr¹; Hans-Jürgen Christ¹; Debashis Mukherji²; Joachim Rösler²; ¹Universität Siegen; ²TU Braunschweig

10:30 AM

Microstructure and oxidation behavior of Heat-Treatable Cr-based Alloys: *Mathias Galetz*¹; Anke Ulrich¹; Petra Pfitzenmeier¹; Uwe Glatzel¹; ¹DECHEMA Forschungsinstitut

10:50 AM

Mechanically Activated Combustion Synthesis of Niobium Silicide Based Composites: *Reina Trevino*¹; Edgar Maguregui¹; Evgeny Shafirovich¹; ¹University of Texas at El Paso

11:10 AM

Influence of composition of Nb-Si based alloy substrates on the microstructure and oxidation performance of their Si-Al-Y diffusive coatings prepared by pack cementation technique: *Guo Xiping*¹; Luo Yucheng¹; Yao Chengzhi¹; Qiao Yanqiang¹; ¹Northwestern Polytechnical Univ

REWAS 2019: Disruptive Material Manufacturing - Scaling and Systems Challenges — Disruptive Material Manufacturing - Scaling and Systems Challenges

Sponsored by: TMS Extraction and Processing Division, TMS Light Metals Division, TMS: Recycling and Environmental Technologies Committee

Program Organizers: Kaka Ma, Colorado State University; Iver Anderson, Iowa State University / Ames Laboratory; Sneha Prabha Narra, Worcester Polytechnic Institute; Fiseha Tesfaye, Abo Akademi University; Elsa Olivetti, Massachusetts Institute of Tech; Gabrielle Gaustad, Rit

Monday AM
March 11, 2019

Room: 007C
Location: Henry B. Gonzalez
Convention Center

Session Chair: To Be Announced

8:00 AM Introductory Comments

8:05 AM Invited

Metal Additive Manufacturing and Sustainable Materials Development: A Case Study in the Application of Alternative Feedstock Materials: Parnian Kiani¹; Katherine Terrassa¹; Blake Fullenwider²; Kaka Ma²; *Julie Schoenung*¹; ¹University of California, Irvine; ²Colorado State University

8:30 AM Invited

From Waste Steel to Weapons: Agile Production Enabled by Additive Manufacturing: Jianyu Liang¹; *Richard Sisson*¹; Diran Apelian¹; ¹Worcester Polytechnic Institute

8:55 AM

From Recycled Machining Waste to Useful Powders for Metal Additive Manufacturing: *Kaka Ma*¹; ¹Colorado State University

9:15 AM

Use of Non-spherical Hydride-DeHydride (HDH) Powders in Powder Bed Fusion Additive Manufacturing: Ziheng Wu¹; Rahi Patel¹; Joe Capone²; Muktesh Paliwal²; Jack Beuth¹; Anthony Rollett¹; *Sneha Prabha Narra*³; ¹Carnegie Mellon University; ²Ametek Specialty Metal Products; ³Worcester Polytechnic Institute

9:35 AM Break

9:55 AM

Recycling in Supply Chains for Tomorrow's Low-carbon Industries: *Adam Powell*¹; ¹WPI

10:15 AM

The Role of Manufacturing Variability on Environmental Impact: Alexander van Grootel¹; Jiyoung Chang¹; *Elsa Olivetti*¹; ¹Massachusetts Institute of Technology

10:35 AM

Manufacturing Materials Optimization Research at The REMADE Institute: Pradeep Rohatgi¹; *Alan Luo*²; Magdi Azer³; ¹University of Wisconsin-Milwaukee; ²The Ohio State University; ³University of Illinois Urbana-Champaign

10:55 AM

Sustainable Nitrogen-based Fertilizer Production from Sun, Air, and Water: *Stephan Petersen*¹; Dorottya Guban²; Martin Roeb²; Josua Vieten²; Hanna Krüger²; Klaus Hack¹; Tatjana Jantzen¹; Martin Habermehl¹; Markus Hufschmidt³; ¹GTT-Technologies; ²German Aerospace Center (DLR); ³aixprocess

Shape Casting: 7th International Symposium Celebrating Prof. John Campbell's 80th Birthday — Entrainment and Bifilms

Program Organizers: Murat Tiryakioglu, University of North Florida; William Griffiths, University of Birmingham; Mark Jolly, Cranfield University

Monday AM
March 11, 2019

Room: 006B
Location: Henry B. Gonzalez
Convention Center

Session Chair: Murat Tiryakioglu, University of North Florida

8:00 AM Introductory Comments

8:10 AM Keynote

Update on Bifilms - The Fundamental Defect in Metals: *John Campbell*¹;
¹University of Birmingham, UK.

8:40 AM

Entrainment Defects in Cast Iron: *Zakareya Nashwan*¹; William Griffiths¹;
¹School of Metallurgy and Materials, University of Birmingham

9:05 AM

Measurement of Air Entrainment During Pouring of an Aluminum Alloy:
*Lucas Archer*¹; Francisco Guerra¹; *Christoph Beckermann*¹; ¹Univ of Iowa

9:30 AM

Connecting Oxide Bifilms' Properties from Atomistic Simulations with Virtual Casting of Aluminum: *Jialin Liu*¹; Qigui Wang²; Yue Qi¹; ¹Michigan State University; ²General Motors Corporation

9:50 AM Break

10:10 AM

Numerical Process Modelling and Simulation of Campbell Running Systems designs: Chengcheng Lyu¹; Michail Papanikolaou¹; *Mark Jolly*¹;
¹Cranfield University

10:30 AM

Synchrotron X-ray real-time studies of the nucleation and growth of intermetallic phases in solidification: *Jiawei Mi*¹; ¹School Of Engineering University of Hull

10:50 AM

Determination of liquid metal quality and bifilms with deep etching method: *Furkan Tezer*¹; Özen Gürsoy¹; Mert Zoraga¹; Eray Erzi¹; Derya Dispinar¹; ¹Istanbul University

11:10 AM

Effect of Fe-Rich Intermetallics on Tensile Behavior of Al-Cu 206 Cast Alloys at Solid and Near-Solid States in Al-Cu 206 cast alloy: *Kun Liu*¹; X. Cao²; A. Bolouri³; X. G. Chen¹; ¹University Of Quebec At Chicoutimi; ²Aerospace Manufacturing Technology Center, National Research Council Canada; ³University of the West of England

Solidification Processing of Light Metals and Alloys: An MPMD Symposium in Honor of David StJohn — Grain Refinement

Sponsored by: TMS: Solidification Committee

Program Organizers: Mark Easton, RMIT University; Ma Qian, RMIT University (Royal Melbourne Institute of Technology); John Grandfield, Grandfield Technology Pty Ltd; Norbert Hort, Helmholtz-Zentrum Geesthacht; Mark Jolly, Cranfield University

Monday AM
March 11, 2019

Room: 006C
Location: Henry B. Gonzalez
Convention Center

Session Chairs: Mark Easton, RMIT University; Peter Schumacher, University of Leoben

8:00 AM Introductory Comments

8:10 AM Keynote

Heterogeneous Nucleation Sequence at the Interface of TiB₂ to Form Al:
*Jiehua Li*¹; *Peter Schumacher*¹; ¹Montanuniversität Leoben

8:30 AM Keynote

Recent Advances in Understanding Early Stages of Solidification:
*Zhongyun Fan*¹; ¹Brunel Univ

8:50 AM Invited

Grain Refinement of Aluminum: A Review and Unsolved Mysteries:
*Geoffrey Sigworth*¹; ¹GKS Engineering Services

9:10 AM Invited

Revealing the Heterogeneous Nucleation and Growth Behaviour of Grains in Inoculated Aluminium Alloys during Solidification: *Yijiang Xu*¹; Ragnvald Mathiesen²; Daniele Casari²; *Yanjun Li*¹; ¹Department of Materials Science and Engineering, Norwegian University of Science and Technology; ²Department of Physics, Norwegian University of Science and Technology

9:30 AM Break

9:50 AM Invited

Heterogeneous Nucleation in Peritectic Systems: *John Perepezko*¹; Rohit Trivedi²; ¹Univ of Wisconsin; ²Iowa State University

10:10 AM Keynote

Thermodynamics of carbon and carbides for grain refinement of Mg-alloys: *Rainer Schmid-Fetzer*¹; ¹Clausthal Univ of Technology

10:30 AM Invited

Crystallography of phase transformations in solids and its applications:
*Ming-Xing Zhang*¹; ¹Univ of Queensland

10:50 AM Invited

A Brief History of Grain Refinement: *Mark Easton*¹; Ma Qian¹; Michael Bermingham²; Peng Cao³; ¹RMIT University; ²University of Queensland; ³University of Auckland

Thermo-mechanical Response of Materials Investigated through Novel in-situ Experiments and Modeling — Session I

Sponsored by: TMS Functional Materials Division, TMS Structural Materials Division, TMS: Advanced Characterization, Testing, and Simulation Committee, TMS: Thin Films and Interfaces Committee
Program Organizers: Saurabh Puri, Microstructure Engineering; Robert Wheeler, Microtesting Solutions LLC; Dongchan Jang, Kaist; Amit Pandey, LG Fuel Cell Systems; Josh Kacher, Georgia Institute of Technology; Dhriti Bhattacharyya, Australian Nuclear Science and Technology Organization

Monday AM
March 11, 2019

Room: 301A
Location: Henry B. Gonzalez
Convention Center

Session Chairs: Saurabh Puri, Microstructure Engineering; Amit Pandey, LG Fuel Cell Systems

8:00 AM Introductory Comments

8:10 AM Keynote

Evolving Methods in the Measurement of Micromechanical Properties of Materials: *Robert Wheeler*¹; Amit Pandey²; Amit Shyam³; Thomas Stoughton⁴; Michael Uchic⁵; Paul Shade⁶; Lisa Rueschhoff⁷; Matthew Dickerson⁸; Mark Flores⁹; Nathaniel Sesar⁵; Torin Quick⁵; Andrew Sharits⁵; ¹MicroTesting Solutions LLC; ²LG Fuel Cell Systems; ³Oak Ridge National Laboratory; ⁴General Motors Research and Development Center; ⁵Air Force Research Laboratory

8:50 AM Invited

In-situ Instrumentation and Microfabrication for Mechanical Testing of Thin Films at Elevated Temperatures: *Gi-Dong Sim*¹; Joost Vlassak²; ¹KAIST; ²Harvard University

9:20 AM

A Novel MEMS Stage for in-situ Thermomechanical Testing of Materials under Bending: *Mohamed Elhebeary*¹; Taher Saif²; ¹Univ of Illinois Urbana Champaign; ²Univ of Illinois Urbana Champaign

9:40 AM Break

10:00 AM Invited

An overview of the research on TiAl alloys: from fundamental to applications: *Seong-Woong Kim*¹; Seung-Hwa Ryu²; Jae Keun Hong¹; Seung Eon Kim¹; ¹Korea Institute Of Materials Science; ²Korea Advanced Institute of Science and Technology

10:30 AM

Mechanical behavior of nanocrystalline NiTi films with highly controlled microstructures – ex-situ and in-situ TEM experiments: *Paul Rasmussen*¹; Rohit Sarkar¹; Jagannathan Rajagopalan¹; ¹Arizona State University

10:50 AM

Mechanical properties evaluation of irradiated duplex stainless steel by nano indentation and in-situ nano pillar compression test: *Hyeonsu Do*¹; Hyunmyung Kim¹; Changheui Jang¹; Dongchan Jang¹; ¹KAIST

11:10 AM

Deformation-Induced Martensitic Transformation in 304 Stainless Steel using In-situ TEM characterization: Effect of Ion Irradiation: *Djamel Kaoumi*¹; Francois-Ligori Paul²; ¹North Carolina State University; ²Phelma

10th International Symposium on High Temperature Metallurgical Processing — Energy Efficient Clean Metallurgical Technologies

Sponsored by: TMS: Pyrometallurgy Committee
Program Organizers: Tao Jiang, Central South University; Jiann-Yang Hwang, Michigan Technological Univ; Dean Gregurek, RHI Magnesita; Zhiwei Peng, Central South University; Jerome Downey, Montana Technological University; Baojun Zhao, University of Queensland; Onuralp Yucel, Istanbul Technical University; Ender Keskinilic, Atilim University; Rafael Padilla, Univ of Concepcion; Elsa Olivetti, Massachusetts Institute of Tech; Camille Fleuriaux, Gopher Resource

Monday PM
March 11, 2019

Room: 208
Location: Henry B. Gonzalez
Convention Center

Session Chairs: Shijie Wang, Rio Tinto Kennecott Utah Copper Corp; Yuanbo Zhang, Central South University

2:30 PM Introductory Comments

2:35 PM

Waste Toner Powder, a Potential Resource for Iron and Steelmaking Technologies: *James Dankwah*¹; Yvonne Owusu-Ansah¹; ¹University of Mines and Technology

2:55 PM

Preparation of High-carbon Metallic Briquette for Coke Saving in Blast Furnace: *Huiqing Tang*¹; Shihong Liu¹; ¹University of Science&Technology Beijing

3:15 PM

Study on the Migration of Alkali Metals in the Synthesis Process of Vanadium–nitrogen Alloy: *Demian Liu*¹; Jiang Diao¹; Guang Wang¹; Bing Xie¹; ¹Chongqing University

3:35 PM Break

3:55 PM

Study of Siderite Fluidization Magnetization Roasting-magnetic Separation: *Zhao Qiang*¹; Xue Jilai¹; ¹University of Science and Technology Beijing

4:15 PM

Strengthening Sodium Stannate Preparation from Cassiterite Concentrates and Na₂CO₃ Roasted in a Weak Reductive Atmosphere: *Yuanbo Zhang*¹; Benlai Han¹; Zijian Su¹; Bingbing Liu¹; Manman Lu¹; ¹Central South Univ

4:35 PM

Emission Profile of PM₁₀ and PM_{2.5} in Iron Ore Sintering Process and Control Technology Control Technology: *Zhiyun Ji*¹; Xiaohui Fan¹; Min Gan¹; Xuling Chen¹; Wei Lv¹; Guojing Wang¹; Tao Jiang¹; ¹Central South Univ

4:55 PM

The Influence Mechanism of Nb on Hot Charging Crack in X60 Pipeline Steel: *Ping Shen*¹; Yanxin Wu¹; Juan Cheng¹; Qiankun Yang¹; Dong Zhang¹; Yang Wang¹; Jianxun Fu¹; ¹Shanghai University

5:15 PM

Viscosity Properties of Mold Flux under Low Frequency Electromagnetic Field: *Wei Qian*¹; Yu Wang¹; Lu-ming Zhao¹; ¹Chong Qing University

5:35 PM Concluding Comments

2019 Energy Technologies and Carbon Dioxide Management Symposium — Process and Waste Gas Operations

Sponsored by: TMS: Energy Committee

Program Organizers: Tao Wang, Nucor Castrip Arkansas; Xiaobo Chen, RMIT; Donna Guillen, Idaho National Laboratory; Lei Zhang, University of Alaska Fairbanks; Ziqi Sun, Queensland University of Technology; Cong Wang, Northeastern University; Nawshad Haque, CSIRO; John Howarter, Purdue University; Neale Neelameggham, IND LLC

Monday PM
March 11, 2019

Room: 007D
Location: Henry B. Gonzalez Convention Center

Session Chair: John Howarter, Purdue University

2:30 PM

CO₂ Utilization in the Refining Process of FeCr and FeMn: *Haijuan Wang*¹; Xuan Wei¹; Cheng Li¹; ¹University of Science and Technology Beijing

2:50 PM

Flare Gas Reduction by Connecting the Flash Gas Compressors as Series: *Farhad Fazlollahi*¹; ¹Purdue University/WorleyParsons Company

3:10 PM

High-temperature Online Reforming of Converter Gas with Coke Oven Gas: *Binglang Ren*¹; Lin Lin¹; Jingsong Wang¹; ¹University of Science and Technology Beijing

3:30 PM

Simultaneous CO₂ Sequestration of Korean Municipal Solid Waste Incineration Bottom Ash and Encapsulation of Heavy Metals by Accelerated Carbonation: *Thriveni Thenepalli*¹; Ramakrishna Chilakala¹; Ahn Ji Whan²; ¹Hanil Cement Co Ltd; ²Korea Institute Of Geoscience And Miner

3:50 PM

Promoting Behaviors of Alkali Carbonates during CO₂ Capture of Lithium Orthosilicate: *Qian Xu*¹; ¹Shanghai University

2019 International Metallurgical Processes Workshop for Young Scholars (IMPROWYS 2019) — Metal Refining

Sponsored by: TMS Extraction and Processing Division

Program Organizers: Cong Wang, Northeastern University; Amy Clarke, Colorado School of Mines; Kinnor Chattopadhyay, University of Toronto; Bryan Webler, Carnegie Mellon University

Monday PM
March 11, 2019

Room: 213B
Location: Henry B. Gonzalez Convention Center

Funding support provided by: Korean Institute of Metals and Materials

Session Chairs: Kinnor Chattopadhyay, University of Toronto; M Akbar Rhamdhani, Swinburne University of Technology

2:30 PM Invited

Machine Learning Approaches to Describe and Classify Non-metallic Inclusions in Steel: Mohammad Abdulsalam¹; *Bryan Webler*¹; ¹Carnegie Mellon University

3:00 PM Invited

The Effects of FeO and Sulphur Concentration on the Spontaneous Emulsification of a Free Steel Droplet Suspended in Slag: Stephen Spooner¹; J. M. Warnett¹; M. A. Williams¹; Sridhar Seetharaman²; Z. Li¹; ¹University of Warwick; ²Colorado School of Mines

3:30 PM Invited

Microstructural Observation of Oxidised End-of-life Rare Earth Magnet: Muhamad Firdaus¹; *M Akbar Rhamdhani*¹; Kathie McGregor²; Mark Pownceby²; John Rankin¹; ¹Swinburne University of Technology; ²CSIRO

4:00 PM Break

4:20 PM Invited

Effect of Surface Active Elements on the Interaction between Refractory and Steel: Limei Cheng¹; *Lifeng Zhang*¹; Ying Ren¹; Wen Yang¹; ¹Univ of Science & Technology Beijing

4:50 PM Invited

Integration of Biomass Gasification in a Mixing Agent of CO₂ and H₂O and Waste Heat from Hot Slags: *Yongqi Sun*¹; ¹The University of Queensland

5:10 PM

Reaction Behavior of Al-killed Medium-manganese Steel with MgO Refractory: *Zhiyin Deng*¹; Lingzhong Kong¹; Liu Cheng¹; Miaoyong Zhu¹; ¹Northeastern University

5:30 PM

Effects of a Top-down Flow on Gas-solid Fluidization State in a Bubble Fluidized Bed: *Xu Han*¹; Liangying Wen¹; Shengyun Shi¹; Jiao Cao¹; Wenhuan Jiang¹; Meihuan Liu¹; Feng Lu¹; Jian Xu¹; Shengfu Zhang¹; ¹Chongqing University

2019 Symposium on Functional Nanomaterials: Synthesis, Integration, and Application of Emerging Nanomaterials — Atomic Layer Deposition for Functional Nanomaterials

Sponsored by: TMS: Nanomaterials Committee

Program Organizers: Chang-Yong Nam, Brookhaven National Laboratory; Jiyoung Chang, University of Utah; Pei Dong, George Mason University; Yong Lin Kong, University of Utah; Shengfeng Yang, Indiana Univ. Purdue Univ. Indianapolis; SungWoo Nam, University of Illinois

Monday PM
March 11, 2019

Room: 213A
Location: Henry B. Gonzalez Convention Center

Session Chairs: Jin-Seong Park, Hanyang University; Jeffrey Elam, Argonne National Laboratory

2:30 PM Invited

Sequential Infiltration Synthesis for Functional Nanomaterials: *Jeffrey Elam*¹; ¹Argonne National Laboratory

3:00 PM Invited

Atomic Layer Deposition (ALD) on Cellulosic Products for New Functional Materials: *Mark Losego*¹; ¹Georgia Tech

3:30 PM

Improving Stability and Performance of Photoelectrochemical Water Splitting on Solution-processed Organic Semiconductor Thin Films by Ultrathin Metal Oxide Passivation via Atomic Layer Deposition: *Chang-Yong Nam*¹; ¹Brookhaven National Laboratory

3:50 PM Break

4:10 PM Invited

Ultra-thin Films Deposited by Atomic Layer Deposition (ALD) for Organic – Inorganic Perovskite Solar Cells and Photoelectrochemical Cells: *Hyunjung Shin*¹; ¹Sungkyunkwan University

4:40 PM Invited

Recent Progress on Metal Oxide Semiconductor Thin Film Transistor Applications via Atomic Layer Deposition Method: *Jin-Seong Park*¹; ¹Hanyang University

5:10 PM

Ambipolar Behavior Owing to ALD In-situ DEZ Treatment on In_{0.53}Ga_{0.47}As MOSFETs Devices: *Heber Hernandez Arriaga*¹; Jiyoung Kim¹; ¹The University of Texas at Dallas

5:30 PM

Realization of Spatially Addressable Library using Raman as Combinatorial Approach on Atomic Layer Deposition: *Harrison Kim*¹; Si Joon Kim¹; Jaebeom Lee¹; Antonio Lucero¹; Jiyoung Kim¹; ¹Univ of Texas Dallas

5:50 PM

Investigation of Hollow Cathode Plasma Enhanced Atomic Layer Deposition of Silicon Nitride (Si₃N₄) Thin Films: *Su Min Hwang*¹; Antonio Lucero¹; Harrison Kim¹; Aswin Kondusamy¹; Si Joon Kim¹; Jiyoung Kim¹; ¹The University of Texas At Dallas

5th Symposium on Advanced Materials for Energy Conversion and Storage — Energy Conversion with Emphasis on SOFCs I

Sponsored by: TMS: High Temperature Alloys Committee
Program Organizers: Amit Pandey, LG Fuel Cell Systems; Partha Mukherjee, Purdue University; Surojit Gupta, University of North Dakota; Kyle Brinkman, Clemson Univ; Jung Pyung Choi, Pacific Northwest National Laboratory; Soumendra Basu, Boston University; Paul Ohodnicki, National Energy Technology Laboratory

Monday PM
March 11, 2019

Room: 225A
Location: Henry B. Gonzalez
Convention Center

Session Chairs: Amit Pandey, LGFCS; Soumendra Basu, Boston University

2:30 PM Invited

Electrophoretically Deposited Copper Manganese Spinel Coatings for Prevention of Chromium Poisoning in Solid Oxide Fuel Cells: *Zhihao Sun*¹; Ruofan Wang¹; Uday Pal¹; Srikanth Gopalan¹; *Soumendra Basu*¹; ¹Boston Univ

2:55 PM

Observations on Accelerated Oxidation of a Ferritic Stainless Steel under Dual Atmosphere Exposure Conditions: *Michael Reiser*¹; Ashish Aphale¹; Prabhakar Singh¹; ¹University of Connecticut

3:15 PM

High-temperature Oxidation Behavior of Additive Manufactured Inconel 625: *Sedigheh Rashidi*¹; Amit Pandey²; Rajeev Gupta¹; ¹University of Akron; ²LG Fuel Cell Systems

3:35 PM

Cathode Poisoning and Mitigation in the Presence of Combined Cr and S Contaminants in SOFC: *Junsung Hong*¹; Su Jeong Heo¹; Ashish N. Aphale¹; Boxun Hu¹; Prabhakar Singh¹; ¹University of Connecticut

3:55 PM Break

4:15 PM

Coatings for Metallic Components of Solid Oxide Fuel Cell Systems: *Manoj Mahapatra*¹; Mark King¹; ¹University of Alabama at Birmingham

4:35 PM Invited

Self-cleaning Cathodes for Endurance to Chromium Poisoning: *Michelle Sugimoto*¹; Zhikuan Zhu¹; *Uday Pal*¹; Soumendra Basu¹; Srikanth Gopalan¹; ¹Boston Univ

5th Symposium on Advanced Materials for Energy Conversion and Storage — Energy Storage with Emphasis on Batteries I

Sponsored by: TMS: High Temperature Alloys Committee
Program Organizers: Amit Pandey, LG Fuel Cell Systems; Partha Mukherjee, Purdue University; Surojit Gupta, University of North Dakota; Kyle Brinkman, Clemson Univ; Jung Pyung Choi, Pacific Northwest National Laboratory; Soumendra Basu, Boston University; Paul Ohodnicki, National Energy Technology Laboratory

Monday PM
March 11, 2019

Room: 223
Location: Henry B. Gonzalez
Convention Center

Session Chairs: Partha P. Mukherjee, Purdue University; Leela M. R. Arava, Wayne State University

2:30 PM Keynote

Battery Performance and Safety Aspects of Imposed Thermal Gradients: *Rachel Carter*¹; Connor Fear²; Aashutosh Mistry²; Partha Mukherjee²; *Corey Love*¹; ¹U.S. Naval Research Laboratory; ²Purdue University

3:00 PM

First Principles Calculations of Oxygen Diffusion in LSGM: *Abhinav Jain*¹; Dallas Trinkle¹; Ran Gao²; Lane Martin²; ¹Univ of Illinois Urbana Champaign; ²University of California Berkeley

3:20 PM

Hollow Sn Microspheres for Lithium-ion Battery: *Fuqian Yang*¹; ¹Univ of Kentucky

3:40 PM Break

4:00 PM Keynote

Critical Size Scale and Effects of Transport Gradients on Plating in Li-ion Batteries: *Craig Arnold*¹; ¹Princeton University

4:30 PM Invited

Toward New Electrode Materials for Energy Storage Devices: Synthesis via Chemical Pre-intercalation Approach: *Ekaterina Pomerantseva*¹; ¹Drexel University

4:55 PM

Mechanical Properties of Lithium Metal at the Macro- and Micro-scale: *Cole Fincher*¹; Daniela Ojeda²; Matt Pharr¹; ¹Texas A&M University; ²University of Central Florida

5:15 PM

Bi₂Mn₄O₁₀/C-N Nanocomposite as a New Sodium-Ion Battery Anode Material: *Jing Zhan*¹; *Yiyu Long*¹; ¹Central South Univ

Additive Manufacturing Joint Keynote Session — Additive Manufacturing Joint Keynote Session

Sponsored by: TMS: Additive Manufacturing Committee
Program Organizer: Ryan Dehoff, Oak Ridge National Laboratory

Monday PM
March 11, 2019

Room: Lila Cockrell Theater
Location: Henry B. Gonzalez
Convention Center

Session Chair: To Be Announced

2:30 PM Introductory Comments

2:35 PM Keynote

Solidification of Superalloys: From Single Crystals to Additive Manufacturing: *Andrew Polonsky*¹; *Tresa Pollock*¹; ¹University of California Santa Barbara

3:05 PM Keynote

Optimizing the Performance of Additively Manufactured Ti Alloy Components: Brian Welk¹; Samuel Kuhr¹; *Hamish Fraser*¹; ¹The Ohio State University

3:35 PM Keynote

Printable Alloys by Design: *Gregory Olson*¹; ¹Northwestern University & QuesTek Innovations LLC

4:05 PM Break**4:25 PM Keynote**

Opportunities in Machine Learning for Additive Manufacturing: *Elizabeth Holm*¹; ¹Carnegie Mellon University

4:55 PM Keynote

Solidification and Solid-state Transformations during Metal Additive Manufacturing under Thermo-mechanical-chemical Transients: *Sudarsanam Babu*¹; ¹The University of Tennessee, Knoxville

Advanced Characterization Techniques for Quantifying and Modeling Deformation — Session II

Sponsored by: 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; C. Tasan, Massachusetts Institute of Technology; M Arul Kumar, Los Alamos National Laboratory

Monday PM
March 11, 2019

Room: 302A
Location: Henry B. Gonzalez
Convention Center

Session Chairs: Wolfgang Pantleon, Technical University of Denmark; Reza Alizadeh

2:30 PM Invited

Slip Transfer at Grain Boundaries in Pure Al: *R. Alizadeh*¹; T. Bieler²; J. Molina-Aldareguia¹; Javier LLorca³; ¹IMDEA Materials Institute; ²IMDEA Materials Institute & Michigan State University; ³Polytechnic University of Madrid & IMDEA Materials Institute

3:00 PM

Understanding Deformation Near Nanoscratches using HR-EBSD Measurements and CP-FEA Simulations: *Anna Kareer*¹; Edmund Tarleton¹; Sarah Hainsworth²; Angus Wilkinson¹; ¹University Of Oxford; ²Aston University

3:20 PM

Accelerated Dictionary Based EBSD Indexing: *William Lenthe*¹; Saransh Singh¹; Marc De Graef¹; ¹Carnegie Mellon University

3:40 PM

A Multi-scale Characterization of Strain Localization in Ni-based Superalloys – combined HEDM and Dark Field X-ray Microscopy: *Sven Gustafson*¹; Wolfgang Ludwig²; Paul Shade³; Diwakar Naragani¹; Darren Pagan⁴; Carsten Detlefs²; Michael Sangid¹; ¹Purdue University; ²European Synchrotron Radiation Facility; ³Air Force Research Laboratory; ⁴Cornell High Energy Synchrotron Source

4:00 PM Break**4:20 PM**

Quantifying Grain Size and Shape in Anisometric Structures by the Orientation Correlation Function: *Wolfgang Pantleon*¹; ¹Technical University of Denmark

4:40 PM

Robust Methodology for Combining High-energy X-ray Diffraction and 3D Electron Microscopy Methods to Elucidate Evolving Plastic Response of Polycrystalline Alloys: *Kelly Nygren*¹; McLean Echlin²; Andrew Polonsky²; Joseph Wendorf²; Jean-Charles Stinville²; Patrick Callahan²; Tresa Pollock²; Eric Miller³; Matthew Miller⁴; ¹Cornell High Energy Synchrotron Source; ²University of California Santa Barbara; ³Tufts University; ⁴Cornell University

5:00 PM

Elucidating the Role of Localized Deformation on Hydrogen Environment-assisted Cracking Susceptibility in a Precipitation-Hardened Ni-base Superalloy: *Zachary Harris*¹; James Burns¹; ¹University of Virginia

5:20 PM

Characterization of Intragranular Deformation and Damage: *Veronica Livescu*¹; Cheng Liu¹; Bineh Ndefru¹; Ramon Martinez¹; Curt Bronkhorst¹; George Gray III¹; ¹Los Alamos National Laboratory

5:40 PM

Customized Polarized Optical Microscope for Determining C-axis Orientation of Alpha-titanium: *Ke-Wei Jin*¹; William Lenthe¹; Marc De Graef¹; ¹Carnegie Mellon University

Advanced Magnetic Materials for Energy and Power Conversion Applications — Alloy Development and Application of Magneto-thermal Materials

Sponsored by: Federation of European Materials Societies (FEMS), TMS Functional Materials Division, TMS: Magnetic Materials Committee

Program Organizers: Frank Johnson, Niron Magnetics, Inc.; Paul Ohodnicki, National Energy Technology Laboratory; Alex Leary, Nasa Grc; Orlando Rios, Oak Ridge National Laboratory; Alessandra Hool, ESM Foundation

Monday PM
March 11, 2019

Room: 225B
Location: Henry B. Gonzalez
Convention Center

Session Chair: Ryan Ott, Ames Laboratory

2:30 PM Invited

A New Quantitative Criterion to Determine the Order of Phase Transitions: Application to Different Materials: *Victorino Franco*¹; Jia Yan Law¹; Alejandro Conde¹; ¹Universidad De Sevilla

3:00 PM Invited

Advantages and Disadvantages of Additive Manufacturing of Magnetocaloric Materials and Magnetic Shape Memory Alloys: *Markus Chmielus*¹; ¹University of Pittsburgh

3:30 PM Invited

Magnetic Cooling and Energy Harvesting Materials and Systems: *Raju Ramanujan*¹; ¹Nanyang Technological University

4:00 PM Break**4:20 PM Invited**

Materials for Efficient Energy Conversion: *Ekkes Brueck*¹; ¹Delft University of Technology

4:50 PM

Optimization of Magnetocaloric Properties of Ball-Milled LaFe13-xSix(H,C)y: *Lotfi Bessais*¹; Valerie Paul-Boncour¹; ¹Cnrs

5:10 PM

The Effect of Additional Elements on the High-temperature Magnetocaloric Property of MnFe-based Alloys: *A-Young Lee*¹; Song-Yi Kim¹; Young-Do Kim²; Min-Ha Lee¹; ¹Korea Institute of Industrial Technology; ²Hanyang University

5:30 PM

Magnetocaloric Properties in Additive Manufactured Ni-Mn-Ga-Cu: *Erica Stevens*¹; Katerina Kimes¹; Daniel Salazar²; Rafael Rodriguez¹; Aaron Acierno¹; Patricia Lazpita²; Volodymyr Chernenko²; Markus Chmielus¹; ¹University of Pittsburgh; ²Basque Center for Materials, Applications, and Nanostructures

5:50 PM

Crystal Structure, Magnetization and Elastic Moduli of the Tb_{0.2}Dy_{0.8}Co₂ Compound: Dan Huang¹; Jianrong Gao¹; Jiaqiang Yan²; David Mandrus³; Veerle Keppens³; ¹Northeastern University, China; ²Oak Ridge National Laboratory; ³University of Tennessee at Knoxville

Advanced Microelectronic Packaging, Emerging Interconnection Technology, and Pb-free Solder — Solder Joint Intermetallics

Sponsored by: TMS: Electronic Packaging and Interconnection Materials Committee

Program Organizers: Kazuhiro Nogita, University of Queensland; Tae-Kyu Lee, Portland State University; Yan Li, Intel Corporation; Christopher Gourlay, Imperial College London; Zhi-Quan Liu, Chinese Academy of Sciences; Rahul Panat, Carnegie Mellon University; Albert T. Wu, National Central University; Andre Delhaise, University of Toronto; Mohd Arif Salleh, Universiti Malaysia Perlis

Monday PM
March 11, 2019

Room: 216A
Location: Henry B. Gonzalez
Convention Center

Session Chairs: Kazuhiro Nogita, The University of Queensland; Sergey Belyakov, Imperial College London

2:30 PM Invited

Nucleation and Cyclic Twinning of Tin Droplets on Single Crystal Intermetallic Compounds: *Christopher Gourlay*¹; Zhaolong Ma¹; Jingwei Xian¹; Sergey Belyakov¹; ¹Imperial College London

3:00 PM

Effects of CuZnAl Memory Particles on the Microstructures and Property of Cu/Sn/Cu Solder Joints: *Liang Zhang*¹; ¹Jiangsu Normal University

3:20 PM

Orientation Relationships Between Cu₆Sn₅ and Ni₃Sn₄ in Electronic Solder Joints: *Yuchen Hsu*¹; Jingwei Xian²; Christopher Gourlay²; ¹Toshiba Corporation Manufacturing Engineering Center; ²Imperial College London

3:40 PM

Phase Transformation Induced Cracking in Solder Joints Containing Cu₆Sn₅: *Flora Somidin*¹; Hiroshi Maeno²; Quy Tran Xuan³; Stuart McDonald¹; Mohd Arif Anuar Mohd Salleh⁴; Xiaozhou Ye¹; Syo Matsumura²; Kazuhiro Nogita¹; ¹Nihon Superior Centre for the Manufacture of Electronic Materials (NS CMEM), School of Mechanical and Mining Engineering, The University of Queensland; ²The Ultramicroscopy Research Center, Kyushu University, Fukuoka; ³Department of Applied Quantum Physics and Nuclear Engineering, Kyushu University; ⁴Centre of Excellence Geopolymer and Green Technology, School of Materials Engineering, Universiti Malaysia Perlis (UniMAP)

4:00 PM Break

4:20 PM Invited

The Evolution of IMCs in Sn-based Solder Joints with Au/Ni/Cu Pads under Current Stressing: *Fu Guo*¹; Yu Tian¹; Limin Ma¹; Yishu Wang¹; ¹Beijing University of Technology

4:50 PM

Mechanical Assessment of Hexagonal-Cu₆Sn₅ Intermetallics and Multilayered Structures in Cu/Sn Joints Using Micro-Compression: *Jui-Yang Wu*¹; C. Robert Kao¹; ¹National Taiwan University

5:10 PM

Interfacial Reaction between Copper-tin Couple under High Pressure Environment: *Kuo-Shuo Huang*¹; Albert T. Wu¹; ¹National Central University

5:30 PM

Twinning and Refinement of Cu₆Sn₅ in Ni-containing Solders: *Jingwei Xian*¹; M.A.A. Mohd Salleh²; Sergey Belyakov¹; Te-Cheng Su¹; Guang Zeng¹; Kazuhiro Nogita³; Hideyuki Yasuda⁴; Christopher Gourlay¹; ¹Imperial College London; ²Universiti Malaysia Perlis (UniMAP); ³The University of Queensland; ⁴Kyoto University

Advanced Real Time Imaging — Energy, Fuels, and Environment

Sponsored by: TMS: Alloy Phases Committee

Program Organizers: Jinichiro Nakano, US DOE - National Energy Tech Lab; P.Chris Pistorius, Carnegie Mellon University; Candan Tamerler, University of Kansas; Hideyuki Yasuda, Kyoto University; Zuotai Zhang, Southern University Of Science And Techn; Neslihan Dogan, McMaster University; Wanlin Wang, Central South University; Noritaka Saito, Kyushu University; Yongsug Chung, Korea Polytechnic University; Bryan Webler, Carnegie Mellon University

Monday PM
March 11, 2019

Room: 302B
Location: Henry B. Gonzalez
Convention Center

Session Chair: Zuotai Zhang, Southern University of Science and Technology

2:30 PM Invited

Rapid Radiation Damage Characterization with In Situ Dual Heterodyne Transient Grating Spectroscopy: Cody Dennett¹; Sara Ferry¹; Kangpyo So¹; Khalid Hattar²; Daniel Buller²; Kuba Anglin¹; *Michael Short*¹; ¹Massachusetts Institute of Technology; ²Sandia National Laboratory

3:00 PM Invited

In Situ Transmission Electron Microscopy Characterization of Irradiation Damage in Novel Nuclear Materials: *Osman El-Atwani*¹; Stuart Maloy¹; ¹Los Alamos National Laboratory

3:30 PM

In Situ Structural Variations of Individual Particles of an Al₂O₃-Supported Cu/Fe Spinel Oxygen Carrier during High-Temperature Oxidation and Reduction: *W. H. Harrison Nealley*¹; Anna Nakano²; Jinichiro Nakano²; James Bennett³; ¹National Energy Technology Laboratory/ORISE; ²National Energy Technology Laboratory/AECOM; ³National Energy Technology Laboratory

3:50 PM

Synthesis of Ordered Mesoporous Nano Materials from Coal Fly Ash: A Novel CO₂-assistant Precipitation Technology: *Feng Yan*¹; Jianguo Jiang¹; Zuotai Zhang²; ¹Tsinghua University; ²Southern University of Science and Technology

4:10 PM Break

4:30 PM Invited

In-operando Non-invasive Optical Visualization of Battery Reactions and Processes: *Nian Liu*¹; Yutong Wu¹; Peng Chen¹; ¹Georgia Institute of Technology

4:50 PM Invited

In Situ Interface Observation of Solution Growth of 4H-SiC at the Initial Growth Stage from Different Solvents: *Takeshi Yoshikawa*¹; Yao Yuchuan²; Takumi Horike²; Sakiko Kawanishi³; ¹The University Of Tokyo; ²The University of Tokyo; ³Tohoku University

5:10 PM

Advanced In Situ Electron Microscopy Characterization of Hydrogen and Helium Evolution in Materials: *Caitlin Taylor*¹; Joshua Sugar¹; David Robinson¹; Samuel Briggs¹; Warren York¹; Brittany Muntifer¹; Noelle Catarineu¹; Khalid Hattar¹; ¹Sandia National Laboratories

Advances in Surface Engineering — Session II

Sponsored by: TMS: Surface Engineering Committee

Program Organizers: Rajeev Gupta, The University of Akron; Sandip Harimkar, Oklahoma State University; Arif Mubarak, PPG Industries; Deepak Kumar, Baker Hughes, A Ge Company; Tushar Borkar, Cleveland State University; Dong Lin, Kansas State University

Monday PM

March 11, 2019

Room: 210A

Location: Henry B. Gonzalez
Convention Center

Session Chairs: Arif Mubarak, PPG Industries; Deepak Kumar, Baker Hughes, a GE Company

2:30 PM Invited

Structurally Integrated, Damage Tolerant Coatings: *Sanjay Sampath*¹; Gregory Smith¹; ¹Stony Brook University

2:50 PM Invited

Influence of Stacking Fault Energy (SFE) and Post Heat Treatment on the Microstructure and Mechanical Properties of Cold Sprayed Aluminium Bronze Coatings: *Sundararajan G.*¹; Naveen Chavan²; Prita Pant³; Sudharshan Phani Pardhasaradhi²; ¹Indian Institute of Technology Madras; ²Intl Advanced Resch Ctr for Powder Metallurgy and New Materials; ³Indian Institute of Technology Bombay

3:10 PM

Computer Vision and Feature Selection Approach to Analyzing Rough Surfaces for Fatigue Crack Initiation: *Christopher Kantzos*¹; Anthony (Tony) Rollett¹; ¹Carnegie Mellon University

3:30 PM

Application of Shot Peening on $\alpha+\beta$ and β Titanium Alloys to Form Nanocrystalline Layers: *David Brice*¹; David Bahr¹; Kevin Trumble¹; ¹Purdue University

3:50 PM

Microstructural Simulation of Thermal Spray Coatings: Comparison with 3D Characterization: *Theron Rodgers*¹; Aaron Olson¹; Warren Davis¹; Andrew Vackel¹; Andrew Chuang²; Reeju Pokhare³; Don Brown³; Bjorn Clausen³; Timothy Ickes³; Nathan Moore¹; ¹Sandia National Laboratories; ²Argonne National Laboratory; ³Los Alamos National Laboratory

4:10 PM Break

4:30 PM

Surface Characterization of the As-built Ti-6Al-4V Parts Produced using Electron Built Melting Technology (EBM): *Leila Ladani*¹; Md, Jamal Mian¹; ¹University of Texas at Arlington

4:50 PM

Nitrided Layers Investigated at the Atomic Scale by Atom Probe Tomography: *Frederic Danoix*¹; Raphaële Danoix¹; Andrius Martinavicius¹; Peter Jessner¹; Mohamed Gouné²; ¹Cnrs - Universite De Normandie Rouen; ²CNRS ICMCB

5:10 PM

Understanding the Effects of Lubricants/Coatings on Friction and Wear during Reciprocatory Sliding Motion at High Contact Pressures: *Dewika Mishra*¹; Farjana Sonia¹; Dinesh Srivastava²; G. Ganesh²; Utpal Singha²; Amartya Mukhopadhyay¹; ¹Indian Institute of Technology, Bombay; ²Nuclear Fuel Complex, Department of Atomic Energy

5:30 PM

Microstructure and Mechanical Properties of Directed Vapor Deposited Mg-Mn Alloy Coatings: *Rakesh Kamath*¹; Yuan Li¹; Youxiong Ye¹; Derek Hass²; Hahn Choo¹; ¹University of Tennessee, Knoxville; ²Directed Vapor Technologies International

Algorithm Development in Materials Science and Engineering — Atomistic, Mesoscale, and Machine Learning Algorithms for Study and Design of Materials

Sponsored by: TMS: Computational Materials Science and Engineering Committee, TMS: Phase Transformations Committee, TMS: Integrated Computational Materials Engineering Committee
Program Organizers: Mohsen Asle Zaeem, Colorado School of Mines; Garritt Tucker, Colorado School of Mines; Prasanna Balachandran, University of Virginia; Douglas Spearot, University of Florida; Charudatta Phatak, Argonne National Laboratory; Srinivasan Srivilliputhur, University of North Texas

Monday PM

March 11, 2019

Room: 304A

Location: Henry B. Gonzalez
Convention Center

Session Chairs: Srinivasan Srivilliputhur, University of North Texas; Srikanth Patala, North Carolina State University

2:30 PM Invited

Hybrid Atomistic-Continuum and Mesoscale-Continuum Approaches to Model the Microstructural Evolution during Laser Processing of Metallic Materials: Sergey Galitskiy¹; Dmitry Ivanov²; *Avinash Dongare*¹; ¹University of Connecticut; ²University of Kassel

3:00 PM

A Diffusive Molecular Dynamics Method for the Simulation of Long-Term Mass Transport in Nanomaterials: *Xingsheng Sun*¹; Pilar Ariza²; Michael Ortiz³; Kevin Wang¹; ¹Virginia Polytechnic Institute and State University; ²Universidad de Sevilla; ³California Institute of Technology

3:20 PM

Accelerated Quantum Molecular Dynamics for Chemical Reactions: *Enrique Martinez Saez*¹; Christian Negre¹; Romain Perriot¹; Marc Cawkwell¹; Danny Perez¹; Arthur Voter¹; Anders Niklasson¹; ¹Los Alamos National Laboratory

3:40 PM

Scale-bridging From the Atoms Up; Employing Machine Learning to Improve the Accuracy and Scalability of Molecular Dynamics: *Mitchell Wood*¹; Mary Alice Cusentino¹; Aidan Thompson¹; ¹Sandia National Laboratories

4:00 PM Break

4:30 PM

Designing High-strength Carbon-nanotube Polymer Composites Using Reinforcement Learning Algorithms Integrated with Molecular Dynamics Simulations: *Aowabin Rahman*¹; Matthew Radue²; Gregory Odegard²; Michael Czabaj¹; Ashley Spear¹; ¹University of Utah; ²Michigan Technological University

4:50 PM

Extended Common Neighbor Analysis to Characterize the Nucleation and Growth Mechanism of Deformation Twins in Polycrystalline HCP Microstructures: *Garvit Agarwal*¹; Avinash Dongare¹; ¹University of Connecticut

5:10 PM

Virtual Diffraction Analysis of Microstructural Features in Discrete Dislocation Dynamics Simulations: *Darshan Banney*¹; Laurent Capolungo²; Douglas Spearot¹; ¹University of Florida; ²Los Alamos National Laboratory

5:30 PM

A Line-free Method of Monopoles for 3D Dislocation Dynamics: *Arnold Deffo*¹; ¹California Institute of Technology

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

Sponsored by: TMS: Alloy Phases Committee

Program Organizers: Sinn-wen Chen, National Tsing Hua University; Franck Gascoin, Ensicaen University of Caen; Soon-Jik Hong, Kongju National Univ; Philippe Jund, Montpellier University; Lan Li, Boise State University; Takao Mori, Nims; Hsin-Jay Wu, National Sun Yat-sen University; Tiejun Zhu, Zhejiang University

Monday PM
March 11, 2019

Room: 216B
Location: Henry B. Gonzalez
Convention Center

Session Chairs: Tiejun Zhu, Zhejiang University; Philippe Jund, Université de Montpellier

2:30 PM Invited

Realizing High Thermoelectric Performance in Cubic GeTe via Sb-Doping: A First-Principles Study: Benjamin Chang¹; Mei-Yin Chou¹; ¹Academia Sinica

2:50 PM Invited

Influence of Defects on the Thermoelectric Properties of Materials: An Ab Initio Study: Alexandre Berche¹; Philippe Jund¹; ¹Montpellier University

3:10 PM Invited

Entropy Engineering in Multi-principal-element Alloyed SnTe: Jian He¹; Lipeng Hu²; ¹Clemson University; ²Shenzhen University

3:30 PM Invited

Electronic and Phononic Engineering for High Thermoelectric Performance: David Singh¹; ¹University of Missouri

3:50 PM Invited

Doping Effects on the Electronic Structures and Transport Properties of GeS-Type IV-VI Crystals: Yue Chen¹; ¹The University Of Hong Kong

4:10 PM Break

4:30 PM Invited

New n-type half-Heusler Thermoelectric Materials: Chenguang Fu¹; Yintu Liu²; Federico Serrano-Sánchez²; Xinbing Zhao²; Tiejun Zhu²; Claudia Felser¹; ¹Max Planck Institute for Chemical Physics of Solids; ²Zhejiang University

4:50 PM Invited

DFT Approach Toward Predicting TE Properties and Understanding their Relationships with the Charge Density Distribution: Pascal Boulet¹; Pingping Jiang¹; Hailong Yang¹; Marie-Christine Record¹; ¹Aix-Marseille University

5:10 PM Invited

Silicides Thermoelectric Modules: Performances and Challenges: Mahdi Mejri¹; Benoit Malard²; Yohann Thimont¹; Krunoslav Romanjek³; Claude Estournes⁴; ¹CIRIMAT/UT3-Paul Sabatier; ²CIRIMAT/ENSIACET; ³CEA-LITEN; ⁴CNRS/CIRIMAT

5:30 PM

The Scattering of Phonons by Edge Dislocations: Yandong Sun¹; Yanguang Zhou²; Jian Han¹; Ming Hu³; Ben Xu¹; ¹Laboratory of Advanced Materials, School of Materials Science and Engineering, Tsinghua University; ²University of California, Los Angeles; ³University of South Carolina

Aluminum Alloys, Processing and Characterization — Aluminum Alloy Development

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

Program Organizer: Hiromi Nagaumi, Soochow University

Monday PM
March 11, 2019

Room: 007A
Location: Henry B. Gonzalez
Convention Center

Session Chair: Dmitry Sediako, University of British Columbia - Okanagan

2:30 PM Introductory Comments

2:35 PM Invited

Clustering behavior of Al-Mg-Si alloys with Ag and Cu addition during natural and artificial aging: Zhihong Jia¹; Yaoyao Weng¹; ¹Chongqing Univ

3:05 PM

Influence of amine additives on the electrodeposition of aluminum from AlCl₃-Dimethyl sulfone electrolytes: Salah Salman¹; Sangjae Kim²; Kensuke Kuroda²; Masazumi Okido²; ¹Al-Azhar University; ²Nagoya University

3:30 PM

Determination of the Intermetallic α -Phase Crystal Structure in Aluminum Alloys Solidified at Rapid Cooling Rates: Joseph Jankowski¹; Michael Kaufman¹; Amy Clarke¹; Krish Krishnamurthy²; Paul Wilson³; ¹Colorado School Of Mines; ²Honeywell; ³Boeing

3:55 PM

Comparison of the Effects of B₄C and SiC Reinforcement in Al-Si Matrix Alloys Produced via PM Method: Yavuz Kaplan¹; Engin Tan¹; Hakan Ada²; Sinan Aksöz¹; ¹Pamukkale University; ²Kastamonu University

4:20 PM Break

4:35 PM

The Effects Manganese (Mn) Addition and Laser Parameters on the Microstructure and Surface Properties of Laser Deposited Aluminum Based Coatings: Olawale Fatoba¹; Stephen Akinlabi¹; Esther Akinlabi¹; ¹University of Johannesburg

5:00 PM

Effect of solute content and state of clustering on strain hardening and strain rate sensitivity of Al-Mg-Si-Cu alloys: Michael Langille¹; Bradley Diak²; Frederic De Geuser¹; Gilles Guiglionda³; Sami Meddeb⁴; Huan Zhao⁴; Baptiste Gault⁴; Dierk Raabe⁴; Alexis Deschamps¹; ¹Genoble Institute of Technology; ²Queen's University; ³Constellium CTEC; ⁴MPIE, Dusseldorf

5:25 PM

Production of the AA2196-TiB₂ MMCs via PM Technology: Engin Tan¹; Yavuz Kaplan¹; Hakan Ada²; Sinan Aksöz¹; ¹Pamukkale University; ²Kastamonu University

5:50 PM

Retrosession-reaging behavior in aluminum AA6013-T6 sheet: Katherine Rader¹; Jon Carter²; Louis Hector²; Eric Taleff¹; ¹Univ of Texas Austin; ²General Motors

Aluminum Reduction Technology — Cell Technology Development and Modeling

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

Program Organizer: Marc Dupuis, GeniSim Inc

Monday PM
March 11, 2019

Room: 004
Location: Henry B. Gonzalez
Convention Center

Session Chair: Steeve Renaudier, Rio Tinto

2:30 PM Introductory Comments

2:35 PM

How to limit the heat loss of anode stubs and cathode collector bars in order to reduce cell energy consumption.: *Marc Dupuis*¹; ¹GeniSim Inc

3:00 PM

Transformation of a potline from conventional to a full flexible production unit: Roman Düssel¹; *Albert Mulder*¹; Louis Bugnion²; ¹TRIMET Aluminium SE; ²KAN-NAK SA

3:25 PM

Modernisation of Sumitomo S170 cells at Boyne Smelters Limited: *Chris Corby*¹; Hao Zhang²; Madeleine Lewis¹; James Roberts¹; ¹Boyne Smelters; ²Pacific Aluminium

3:50 PM

Environmental Aspects of UC RUSAL's Aluminum Smelters Sustainable Development: *Viktor Buzunov*¹; Viktor Mann²; Vitaliy Pingin¹; Aleksey Zherdev³; Vyacheslav Grigoriev⁴; ¹RUSAL ETC; ²UC RUSAL; ³Rusal Etc; ⁴RUSAL SibVAMI

4:15 PM Break

4:30 PM

Copper insert collector bar for energy reduction in 360 kA smelter: *Amit Jha*¹; Amit Gupta¹; Vinay Tiwari²; Shashidhar Ghatnatti²; Kamal Pandey²; S.K. Anand²; ¹Aditya Birla Science and Technology Company Pvt Ltd; ²Hindalco Industries Ltd, Mahan Aluminium

4:55 PM

New Resource-Saving Technologies of the Application of Circular Un-Shaped Lining Materials in Cathodes of Cells: *Aleksandr Proshkin*¹; Vitaliy Pingin¹; Victor Mann¹; Yuri Shtefanyuk¹; Anton Orlov¹; ¹RUSAL

5:20 PM

Amperage Increase from 195kA to 240kA through Pot Upgrading: *Liu Ming*¹; Yang Xiaodong¹; Liu Yafeng¹; Lu Yanfeng¹; ¹SAMI

5:45 PM Concluding Comments

Atom Probe Tomography for Advanced Characterization of Metals, Minerals and Materials II — Semiconductors and Light-weight Alloys

Sponsored by: TMS Structural Materials 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; David Seidman, Northwestern University; Keith Knipling, Naval Research Laboratory; Gregory Thompson, Univ of Alabama; Simon Ringer, Univ of Sydney; Arun Devaraj, Pacific Northwest National Laboratory; Gang Sha, Nanjing University of Science and Technology

Monday PM
March 11, 2019

Room: 303A
Location: Henry B. Gonzalez
Convention Center

Session Chairs: Gang Sha, Nanjing University of Science and Technology; Keith Knipling, Naval Research Laboratory

2:30 PM Invited

The role of atom probe tomography in revealing the semiconductor physics of nitride alloys, heterostructures and devices.: *James Speck*¹; ¹Materials Department

3:05 PM

Atomic-scale chemical analysis of grain boundaries and surfaces of Nb₃Sn coatings on Nb for superconducting radiofrequency cavity applications using atom probe tomography and high-resolution scanning transmission electron microscopy.: *Jaeyel Lee*¹; Sam Posen²; Kai He¹; Zungang Mao¹; Zu Hawn Sung²; Yulia Trenikhina²; Sung-II Baik¹; David Seidman¹; ¹Northwestern University; ²Fermi National Accelerator Laboratory

3:25 PM Invited

Characterization of a Si FinFET Structure and Dopants Distributions by Atom Probe Tomography: *Rong Hu*¹; Jing Xue¹; Xingping Wu¹; Yanbo Zhang²; Huilong Zhu²; Gang Sha¹; ¹Nanjing University of Science and Technology; ²Institute of Microelectronics of Chinese Academy of Sciences

4:00 PM Break

4:20 PM Invited

Mechanisms of beta-to-omega and omega-assisted alpha phase formation in near beta-titanium alloys: *Tong Li*¹; Damon Kent²; Gang Sha³; Anna Ceguerra⁴; Matthew Dargusch⁵; Julie Cairney⁴; ¹Ruhr-Universität Bochum; ²University of the Sunshine Coast; ³Nanjing University of Science and Technology; ⁴University of Sydney; ⁵The University of Queensland

4:55 PM

Processing-microstructure-property relationships of Fe and Al modified Ti-Cr alloys: *Joann Ballor*¹; Vahid Khademi¹; Harish Chakravarty¹; Masahiko Ikeda²; Jane Howe³; Takeshi Sunaoshi³; Arun Devaraj⁴; Carl Boehlert¹; ¹Michigan State University; ²Kansai University; ³Hitachi; ⁴Pacific Northwest National Laboratory

5:15 PM

Chemistry stoichiometry of titanium carbide crystals grown in different metal melts during combustion synthesis revealed by atom probe tomography: *Shenbao Jin*¹; Haokai Su¹; Gang Sha¹; ¹Nanjing Univ of Science and Tech

5:35 PM

Dynamic Precipitation of a 7075 Al Alloy under High-Pressure Torsion Processing: Y Zhang¹; S Jin¹; X Liao²; M Murashkin³; R Valiev³; *Gang Sha*¹; ¹Nanjing University Of Science And Techno; ²The University of Sydney; ³Ufa State Aviation Technical University

Bio-Nano Interfaces and Engineering Applications — Bio-Nano Interfaces II

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

Monday PM
March 11, 2019
Room: 217C
Location: Henry B. Gonzalez
Convention Center

Session Chair: Hendrik Heinz, University of Colorado

2:30 PM Keynote

The Impact of Structural Factors and Solvent Effects on Macromolecular Self-Assembly at Interfaces: *Jim Deyoreo*¹; ¹Pacific Northwest National Laboratory; University of Washington

3:10 PM

Peptide Adsorption on Hydroxyapatite Surfaces and Implications on Shape and Mineralization: Impact of Sequence and Electrolyte pH: *Juan Liu*¹; Samuel Hoff¹; Sarah VanOosten²; Chandrani Pramanik¹; Tariq Jamil¹; Kyle Boone²; Candan Tamerler²; Hendrik Heinz¹; ¹University of Colorado Boulder; ²The University of Kansas

3:30 PM Keynote

Molecular Biomimetics: Engineered-Peptide Guided Technology and Medicine: *Mehmet Sarikaya*¹; ¹University of Washington

4:10 PM Break

4:30 PM Keynote

Association mechanisms and structural properties of silica-peptide composites: Towards Functional Bio-silica composites: *Anna Sola-Rabada*¹; Daniel Oliver¹; Monika Michaelis²; Hendrik Heinz²; Victor Volkov¹; *Carole Perry*¹; ¹Nottingham Trent University; ²Nottingham Trent University/University of Bremen; ³University of Colorado Boulder

5:10 PM Invited

Bioelectronics interface by self-assembled peptides on two-dimensional materials: *Yuhei Hayamizu*¹; ¹Tokyo Institute of Technology

Biological Materials Science — Biological and Natural Materials II

Sponsored by: TMS Functional Materials Division, TMS Structural Materials Division, TMS: Biomaterials Committee
Program Organizers: Rajendra Kasinath, DePuy Synthes (Johnson and Johnson); Steven Naleway, University of Utah; Vinoy Thomas, University of Alabama at Birmingham; Jing Du, Penn State University

Monday PM
March 11, 2019
Room: 217A
Location: Henry B. Gonzalez
Convention Center

Session Chairs: Jing Du, Penn State University; Vinoy Thomas, University of Alabama

2:30 PM Invited

Contributions of Intermolecular Bonding to the Strain Rate Response of Fish Scales: Sean Ghods¹; Emily Weller¹; Sarah Waddell¹; Hanyan Jiang²; E. Alex Ossa³; *Dwayne Arola*¹; ¹University of Washington; ²Southeast University; ³Universidad EAFIT

3:00 PM

A structural characterization of the mechanical properties of porcine skin: *Andrei Pissarenko*¹; Wen Yang¹; Haocheng Quan¹; Katherine Brown²; Alun Williams³; William Proud²; Marc Meyers¹; ¹Univ of California San Diego; ²Imperial College London; ³University of Cambridge

3:20 PM

Cuticle of the Armadillidium Vulgare: Microstructure and Mechanical Behavior: Nana Yamagata¹; Arthur Beausoleil¹; Kate Ericksen¹; Mitchell Nakaki¹; Junlan Wang¹; *Dwayne Arola*¹; ¹Univ of Washington

3:40 PM

On the three-dimensional structure and mechanical behavior of the highly porous structure of sea urchin spines: *Ling Li*¹; Ting Yang¹; Ziling Wu¹; Yunhui Zhu¹; ¹Virginia Polytechnic Institute

4:00 PM

Further insights on the damage tolerance of the crossed-lamellar structure of mollusk shells: *Zhifei Deng*¹; Ling Li¹; ¹Virginia Tech, Department of Mechanical Engineering

4:20 PM Break

4:40 PM Invited

Effect of orientation on water-repellant legs of water-walking insects: Georgia Hurchalla¹; *Jaroslav Drellich*¹; ¹Michigan Technological Univ

5:10 PM

Revealing the self-sharpening mechanisms of Sea Urchin Teeth: In situ testing and modeling: *David Restrepo*¹; Matthew Daly²; Alireza Zaheri³; Horacio Espinosa³; ¹The University of Texas at San Antonio; ²University of Illinois at Chicago; ³Northwestern University

5:30 PM

Shear mechanics of the Boxfish hexagonal scutes: Maryam Hosseini¹; Sean Garner²; Steven Naleway³; Joanna McKittrick²; *Pablo Zavattieri*¹; ¹Purdue University; ²University of California San Diego; ³University of Utah

5:50 PM

The fracture toughness of Arapaima giga scales: *Haocheng Quan*¹; Wen Yang¹; Sheng Yin²; Robert Ritchie²; Marc Meyers¹; ¹Univ of California San Diego; ²UC Berkeley

Cast Shop Technology — EHS and Cast House Operation

Sponsored by: TMS Light Metals Division, TMS: Aluminum Committee
Program Organizer: Pierre-Yves Menet, Constellium Technology Center

Monday PM
March 11, 2019
Room: 007B
Location: Henry B. Gonzalez
Convention Center

Session Chair: Arild Hakonsen, Hycast

2:30 PM Introductory Comments

2:35 PM

No personnel in hazard zones: *Arild Hakonsen*¹; ¹Hycast As

3:00 PM

The Industrial Application of Molten Metal Analysis (LIBS): Caitlin Detwiler¹; James Herbert¹; *Jorge Fernandez*¹; Joseph Craparo²; Robert DeSaro²; ¹Altek Llc; ²Energy Research Company (ERCo)

3:25 PM

Sheet Ingot Casting Improvements at TRIMET Essen: *Nicholas Towsey*¹; Andreas Luetzerath¹; Georg Scheele¹; Elmar Schoell¹; ¹TRIMET Aluminium AG

3:50 PM Break

4:05 PM

Automated billet surface inspection: *Jean-Pierre Gagne*¹; Rémi St-Pierre¹; Pascal Coté¹; Francis Caron²; ¹Stas Inc.; ²ALCOA

4:30 PM

Optical emission spectrometry (OES) data-driven inspection of inclusions in wrought aluminium alloys: *Varuzan Kevorkijan*¹; Tomaž Šustar²; Irena Lesjak¹; Marko Degiampietro¹; Janez Langus²; ¹Impol R in R d.o.o.; ²C3M

4:55 PM

Hydrogen Measurements Comparison in EN-AW 5083 Alloy: *Luisa Marzoli*¹; Federica Pascucci²; Giuseppe Esposito¹; Silvia Koch¹; Giulio Timelli²; Marcel Rosefort¹; ¹Trimet Aluminium SE; ²DTG Università di Padova

5:20 PM

Refurbishment of a Rail-guided Casting Pit: A Case Study with Sierra Aluminium: Jean Francois Desmeules¹; *Shaun Hamer*²; Shayne Seever³; ¹Dynamic Concept; ²AluMore; ³Sierra Aluminum

Ceramic Materials for Nuclear Energy Research and Applications — Fabrication and Characterization

Sponsored by: TMS: Nuclear Materials Committee

Program Organizers: Yongfeng Zhang, Idaho National Laboratory; Xian-ming (David) Bai, Virginia polytechnic Institute and State University; David Andersson, Los Alamos National Laboratory; Thierry Wiss, European Commission- JRC -Institute of Transuranium Elements

Monday PM

March 11, 2019

Room: 214A

Location: Henry B. Gonzalez Convention Center

Session Chairs: Lingfeng He, Idaho National Laboratory; Michael Tonks, University of Florida

2:30 PM Invited

Mechanistic Mesoscale Simulation of UO₂ Sintering: Ian Greenquist¹; *Michael Tonks*²; Yongfeng Zhang³; ¹Pennsylvania State University; ²University of Florida; ³Idaho National Laboratory

3:00 PM

Role of grain orientation and grain boundary inclination during sintering of UO₂: A phase-field study: *Sudipta Biswas*¹; Daniel Schwen¹; Vikas Tomar²; ¹Idaho National Laboratory; ²Purdue University

3:20 PM

Assessment of UO₂ based composites fabricated via SPS: *Erofilii Kardoulaki*¹; Ursula Carvajal Nunez¹; Andy Nelson¹; Darrin Byler¹; Bowen Gong²; Tiankai Yao²; Jie Lian²; Ken McClellan¹; ¹Los Alamos National Lab; ²Rensselaer Polytechnic Institute

3:40 PM Invited

Mesoscale Modeling of Grain Growth in Ceramics: *Karim Ahmed*¹; ¹Texas A&M University

4:10 PM Break

4:30 PM

Microstructural characterization of transmutation nitride fuels for fast reactors: *Lingfeng He*¹; Jason Harp¹; ¹Idaho National Laboratory

4:50 PM Invited

The role of dopant charge state on defect chemistry and grain growth of doped UO₂: *Michael Cooper*¹; Chris Stanek¹; David Andersson¹; ¹Los Alamos National Laboratory

5:20 PM

Characterization of Intragranular Creep Deformation in Uranium Dioxide: A Multicrystal Approach: *Benjamin Shaffer*¹; Pedro Peralta¹; ¹Arizona State Univ

Characterization of Minerals, Metals, and Materials — Characterization Method Development II

Sponsored by: 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; Yunus Kalay, Middle East Technical University; John Carpenter, Los Alamos National Laboratory; Jiann-Yang Hwang, Michigan Technological Univ; Sergio Monteiro, Military Institute of Engineering; Chenguang Bai, Chongqing Univ; Juan Escobedo-Diaz, University of New South Wales; Pasquale Russo Spena, Free University of Bozen-Bolzano; Ramasis Goswami, Naval Research Laboratory

Monday PM

March 11, 2019

Room: 212B

Location: Henry B. Gonzalez Convention Center

Session Chairs: Rajiv Soman, EAG Laboratories; Bowen Li, Michigan Technological University

2:30 PM Introductory Comments

2:35 PM Invited

Correlating Structure, Processing, and Properties of Disordered Materials for Electronic and Photovoltaic Applications: Gabriel Calderon¹; Jared Johnson¹; Menglin Zhu¹; Mehrdad Abbasi¹; Michelle Paquette²; Paul Rulis²; Nathan Oyler²; Ridwan Sakidja³; *Jinwoo Hwang*¹; ¹Ohio State University; ²University of Missouri - Kansas City; ³Missouri State University

2:55 PM Invited

Total scattering and Reverse Monte Carlo for the analysis of local effects in alloys: *Lewis Owen*¹; Helen Playford²; Matthew Tucker³; Howard Stone¹; ¹Univ of Cambridge; ²ISIS Neutron and Muon Source; ³Oak Ridge National Laboratory

3:15 PM

An Application of Computer Vision for Exploring Processing-Structure-Property Relationships in a Scalable Materials Database Framework: *Andrew Kitahara*¹; Elizabeth Holm¹; ¹Carnegie Mellon University

3:35 PM

New HEDM developments and applications to in-situ annealing measurements: *He Liu*¹; Robert Suter¹; Yufeng Shen¹; ¹Carnegie Mellon University

3:55 PM

Structural characterization of four Chinese coals by X-ray diffraction, Fourier-transform infrared spectroscopy and X-ray photoelectron spectroscopy: *Shuxing Qiu*¹; Shengfu Zhang¹; Xiaohu Zhou¹; Rongjin Zhu¹; Guibao Qiu¹; Yue Wu¹; Guangsheng Suo¹; ¹Chongqing University

4:15 PM Break

4:30 PM Invited

Mapping Grain Morphology and Orientation by Laboratory Diffraction Contrast Tomography: *Nicolas Guenin*¹; Florian Bachmann¹; Hrishikesh Bale²; Jun Sun¹; William Harris²; Steve Kelly²; Christian Holzner¹; Erik Lauridsen¹; ¹Xnovo Technology Aps; ²Carl Zeiss Microscopy

4:50 PM Invited

In-situ characterization at high temperature of VDM alloy 780 Premium to determine solvus temperatures and phase transformations by neutron diffraction and small-angle neutron scattering: *Cecilia Solis*¹; Johannes Munke¹; Michael Hofmann¹; Sebastian Mühlbauer¹; Martin Bergner²; Bodo Gehrman³; Joachim Rösler²; Gilles¹; ¹Heinz Maier-Leibnitz Zentrum (MLZ) TU München; ²Institut für Werkstoffe, Technische Universität Braunschweig; ³VDM Metals International GmbH

5:10 PM Invited

Computational Database to facilitate discovery of 3D and 2D materials with technological applications: *Kamal Choudhary*¹; Francesca Tavazza¹; ¹University of Maryland (NIST)

5:30 PM

Molecular dynamic simulations study of the interaction mechanisms of humic acid with Zn²⁺: *Shengpeng Su*¹; Yanfang Huang¹; Guihong Han¹; Zibiao Guo¹; Fengning Liu¹; ¹Zhengzhou University

Characterization of Minerals, Metals, and Materials — Construction Materials

Sponsored by: 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; Yunus Kalay, Middle East Technical University; John Carpenter, Los Alamos National Laboratory; Jiann-Yang Hwang, Michigan Technological Univ; Sergio Monteiro, Military Institute of Engineering; Chenguang Bai, Chongqing Univ; Juan Escobedo-Diaz, University of New South Wales; Pasquale Russo Spina, Free University of Bozen-Bolzano; Ramasis Goswami, Naval Research Laboratory

Monday PM
March 11, 2019

Room: 006A
Location: Henry B. Gonzalez
Convention Center

Session Chair: Jeongguk Kim, Korea Railroad Research Institute

2:30 PM Introductory Comments

2:35 PM

Biochemical characterization of Chrysophyllum albidum for elucidating its anticorrosion behaviour on reinforcing-steel in 3.5% NaCl-immersed concrete: *Joshua Okeniyi*¹; Esther Akinlabi²; Elizabeth Okeniyi¹; Stephen Akinlabi²; Olugbenga Omotosho¹; ¹Covenant University, Ota, Nigeria; ²University of Johannesburg

2:55 PM

Bentonite modified used as raw material to ceramic filter manufacturing: *Christiano Gianesi Bastos Andrade*¹; Samuel Marcio Toffoli¹; Francisco Rolando Valenzuela-Diaz¹; ¹Escola Politecnica da Universidade de Sao Paulo

3:15 PM

Microstructure characterization of Portland cement-based pastes exposed to an organic acid solution: *Rancés Castillo Lara*¹; ¹Universidade Estadual do Norte Fluminense Darcy Ribeiro

3:35 PM Break

3:50 PM

Use of municipal solid waste incinerator (MSWI) fly ash in alkali-activated slag cement: *Huang Kang*¹; Fan Xiaohui¹; Gan Min¹; Ji Zhiyun¹; ¹Central South University

4:10 PM

Charpy impact tests analysis on polymer composites, epox reinforced with (Palf) fibers: *Maycon Gomes*¹; Sergio Monteiro²; Carlos Vieira³; Livia Nunes¹; ¹Instituto Federal Fluminense; ²Instituto Militar de Engenharia; ³UENF

4:30 PM

Reliability increasing of an estimation of rocks strength by non-destructive methods of acoustic testing due to additional informative parameters: *Aleksandr Voznesenski*¹; Maksim Krasilov¹; Yaroslav Kutkin¹; ¹The National University of Science and Technology MISiS

4:50 PM

Characterization of Water/Ethanol/Bentonite Dispersions: Margarita Bobadilla¹; Thamyres Carvalho¹; Antonio Munhoz Junior²; Maria das Graças Silva-Valenzuela²; *Francisco Valenzuela*¹; ¹Escola Politecnica Da U De Sao Paulo; ²Universidade Presbiteriana Mackenzie

Coatings and Surface Engineering for Environmental Protection — Corrosion Mechanism and Performance Evaluation II

Sponsored by: TMS Surface Engineering Committee
Program Organizers: Arif Mubarak, PPG Industries; Rajeev Gupta, The University of Akron; Raul Rebak, GE Global Research; Michael Mayo, PPG Industries; Brian Okerberg, PPG Industries

Monday PM
March 11, 2019

Room: 224
Location: Henry B. Gonzalez
Convention Center

Session Chairs: Michael Mayo, PPG Industries; Rajeev Gupta, The University of Akron

2:30 PM Invited

New accelerated corrosion test methods for atmospheric corrosion on aluminum aircraft: *Ekaterina Badaeva*¹; Nels Olson¹; James Kirchner¹; Maribel Locsin¹; Kyle Clayton¹; Jill Seebergh¹; ¹Boeing Company

3:10 PM

Investigating the Electrical Restance (ER) Technique for in-situ Structural Alloy Corrosion Monitoring within Supercritical CO₂ Power Cycles: *Matthew Walker*¹; ¹Sandia National Laboratories

3:30 PM

Seawater Corrosion Results for 11 Alloys Tested at the TAMUG Boat Basin Site: *Richard Griffin*¹

3:50 PM

Inhibition Effect of Essential Oil Extracts on the Corrosion Inhibition of Mild Steel in Chloride-sulphate Media: *Roland Loto*¹; Richard Leramo; Babatunde Oyeade¹; ¹Covenant University

4:10 PM Break

4:30 PM

Characterizing high-temperature asphaltene fouling and corrosion of ferrous alloys: *Pralav Shetty*¹; Velu Subramani²; Paul Braun¹; Jessica Krogstad¹; ¹University of Illinois at Urbana-Champaign; ²BP Products North America Inc.

4:50 PM

Corrosion Test Methods for New Materials and Mixed Material Assemblies: Brian Okerberg¹; *Laurent Deronne*¹; ¹PPG Industries

5:10 PM

Effect of Aluminizing on cyclic oxidation behavior of 304H stainless steel at 650oC in dry/wet air: *Fu Pen Cheng*¹; Wu Kai²; Ji-Jung Kai³; ¹National Taiwan Ocean Univ; ²Institute of Materials Engineering, National Taiwan Ocean University, Keelung, Taiwan; ³Chair Professor of Nuclear Engineering, Department of Mechanical and Biomedical Engineering, The City University of Hong Kong, Kowloon, Hong Kong

5:30 PM

Investigation of self-healing properties of Cerium-based conversion coatings on Mg alloys: Brent Williams¹; Lamia Nahar¹; Diana Galeano-Osorio²; *Carlos Castano Londono*¹; ¹Virginia Commonwealth University; ²Universidad Nacional Abierta y a Distancia

Computational Materials Discovery and Design — Applications for Defects and the Bulk I

Sponsored by: TMS: Computational Materials Science and Engineering Committee

Program Organizers: Oliver Johnson, Brigham Young University; Arunima Singh, Arizona State University; Jake Bair, Pacific Northwest National Lab; Christopher Weinberger, Colorado State University; Timofey Frolov, Lawrence Livermore National Laboratory; Ning Zhang, Colorado School of Mines; Fadi Abdeljawad, Clemson University; Richard Hennig, Univ of Florida; Mikhail Mendelev, Ames Laboratory; Avinash Dongare, University of Connecticut

Monday PM
March 11, 2019

Room: 304C
Location: Henry B. Gonzalez
Convention Center

Session Chair: To Be Announced

2:30 PM Invited

Modeling microstructural evolution under applied magnetic fields: Heather Murdoch¹; Philip Goins¹; Efrain Hernandez¹; ¹Us Army Research Laboratory

2:50 PM

Phase-field modeling of stacked dislocation pile-ups in face-centered cubic metals: Shuozhi Xu¹; Abigail Hunter²; Irene Beyerlein¹; ¹University Of California, Santa Barbara; ²Los Alamos National Laboratory

3:10 PM

Elastic properties of bulk and low-dimensional materials using DFT with van der Waals functional: Kamal Choudhary¹; Gowoon Cheon²; Evan Reed²; Francesca Tavazza¹; ¹National Institute of Standard and Technology; ²Stanford University

3:30 PM

correlate the local structural characteristics with the activation energy of CuZr metallic glasses by using activation-relaxation technique and machine learning methods: Liang Tian¹; Lin Li¹; ¹University of Alabama

3:50 PM Break

4:10 PM

Learning to Twin: A Novel Application of Machine Learning to the Prediction of Twinning in Materials: William Schill¹; Dingyi Sun²; ¹California Institute of Technology; ²Brown University

4:30 PM

Simulations and Experiments of Template-directed Eutectic Solidification to Design Self-Organizing Optical Metamaterials: Erik Hanson¹; Ashish Kulkarni²; Julia Kohanek²; Paul Braun²; Katsuyo Thornton¹; ¹Univ of Michigan; ²University of Illinois

4:50 PM

The effects of β -stabilizers on ω -phase formation and elastic properties in titanium alloys: Riyadh Salloom¹; Srinivasan Srivilliputhur¹; ¹Univ Of North Texas

5:10 PM

Tuning martensitic behavior using free energy landscape engineering: Saaketh Desai¹; Sam Reeve¹; Karthik Vishnu¹; Alejandro Strachan¹; ¹Purdue University

Computational Thermodynamics and Kinetics — Novel Approaches

Sponsored by: TMS: Computational Materials Science and Engineering Committee

Program Organizers: Fadi Abdeljawad, Clemson University; Hesam Askari, University of Rochester; Emine Gulsoy, Northwestern Univ; Joel Berry, University of Pennsylvania; Damien Turret, IMDEA Materials; Mohsen Asle Zaeem, Colorado School of Mines; James Morris, Oak Ridge National Laboratory

Monday PM
March 11, 2019

Room: 225C
Location: Henry B. Gonzalez
Convention Center

Session Chair: To Be Announced

2:30 PM Invited

Introducing a Novel Concept of High Entropy Ceramic (HEC) by Using Computational Thermodynamics: Yu Zhong¹; Hooman Sabarou¹; Xiaotian Yan¹; Mei Yang¹; Richard Sisson¹; ¹Worcester Polytechnic Inst

3:00 PM

Adiabatic Electron-Phonon Interactions in Vanadium and FeTi: Fred Yang¹; Olle Hellman¹; Jorge Muñoz²; Brent Fultz¹; ¹California Institute of Technology; ²The University of Texas at El Paso

3:20 PM

Computational and Experimental Studies of Anharmonic Phonons in Cuprite: Claire Saunders¹; Dennis Kim²; Olle Hellman¹; Hillary Smith¹; Doug Abernathy³; Brent Fultz¹; ¹California Institute of Technology; ²University of California, Los Angeles; ³Oak Ridge National Laboratory

3:40 PM

Universal correlation between d-band bimodality and solute-defect interactions in bcc refractory metals: Yong-Jie Hu¹; Ge Zhao²; Chaoming Yang¹; Xiaofeng Qian³; Liang Qi¹; ¹University of Michigan; ²The Pennsylvania State University; ³Texas A&M University

4:00 PM

Kinetic Monte Carlo Simulations of Structural Evolution of Additively Manufactured Materials: Xiaowang Zhou¹; Nancy Yang¹; Joshua Keng Yee¹; Jose Juan Chavez¹; ¹Sandia National Laboratories

4:20 PM Break

4:40 PM Invited

Thermotransport and Thermodynamics in Ternary Liquid Alloys: Graeme Murch¹; Irina Belova¹; Tanvir Ahmed¹; Zi-Kui Liu¹; William Yi Wang¹; Andreas Meyer¹; ¹Univ of Newcastle

5:10 PM

DFT study of C diffusion in WC/W interfaces observed in WC/Co tools after Ti-alloy machining: Emil Edin¹; Andreas Blomqvist²; Rajeev Ahuja¹; ¹Uppsala University; ²Sandvik AB

5:30 PM

Atomic-Level Insight into Oxygen Adsorption on (hkl) Platinum Surfaces and Implications for the Reactivity in the Oxygen Reduction Reaction: Shiyi Wang¹; Enbo Zhu²; Yu Huang²; Hendrik Heinz³; ¹Department of Biological and Chemical Engineering, University of Colorado Boulder; ²University of California, Los Angeles; ³University of Colorado Boulder

5:50 PM

Interplay between magnetism and defects properties in bcc Fe-Mn alloys: from first principles to finite temperatures: Anton Schneider¹; Chu-Chun Fu¹; Frederic Soisson¹; Cyrille Barreateau²; ¹Service de Recherches de Métallurgie Physique, CEA, Paris-Saclay University, France; ²Service de Physique de l'Etat Condensé, CEA-CNRS, Université Paris-Saclay

Deformation and Damage Behavior of High Temperature Alloys — Refractories, Intermetallics, and Mesoscopic Modeling

Sponsored by: TMS Structural Materials Division, TMS: High Temperature Alloys Committee

Program Organizers: Michael Titus, Purdue University; Qiang Feng, University of Science and Technology Beijing; Akane Suzuki, GE Global Research; Jonathan Cormier, ENSMA - Institut Pprime - UPR CNRS 3346; Sammy Tin, Illinois Institute of Technology; Martin Detours, National Energy Technology Laboratory

Monday PM
March 11, 2019

Room: 301C
Location: Henry B. Gonzalez
Convention Center

Session Chairs: Akane Suzuki, GE Global Research; Jonathan Cormier, Institut P' - Departement de Physique et Mecanique des Materiaux

2:30 PM Invited

Creep behavior of intermetallic Mo-Silicide alloys: *Martin Heilmaier*¹; Alexander Kauffmann¹; Camelia Gombola¹; Susanne Obert¹; ¹KIT Karlsruhe

3:00 PM Invited

Recent progresses on lightweight high temperature TiAl intermetallic alloys and related processing: *Junpin Lin*¹; Yongfeng Liang¹; Laiqi Zhang¹; Jianping He¹; ¹Univ of Science and Technology Beijing

3:30 PM

Sliding Wear of Nanocrystalline Nb-Ag at Elevated Temperatures: Evolution of Subsurface Microstructure and Its Correlation with Wear Performance: *Ren Fuzeng*¹; Kangjie Chu¹; ¹Southern University of Science and Technology

3:50 PM

High temperature Creep of Alloy 709: Effect of Aging: *Martin Taylor*¹; Nicholas Shaber¹; Jose Ramirez²; Anumat Sittiho¹; *Indrajit Charit*¹; Gabriel Potirniche¹; Robert Stephens¹; Michael Glazoff²; ¹Univ of Idaho; ²Idaho National Laboratory

4:10 PM Break

4:30 PM

Models of Long-Term Creep Behavior of High Performance Structural Alloys: *Changning Niu*¹; Abhinav Saboo¹; Qiaofu Zhang¹; Jiadong Gong¹; Jifeng Zhao¹; David Dunand²; Gregory Olson¹; ¹QuesTek Innovations LLC; ²Northwestern University

4:50 PM

Benchmarking multi-scale models with microtensile experiments and 3D microstructural characterization of René 88DT: *David Eastman*¹; Paul Shade²; Michael Uchic²; George Weber¹; Akbar Bagri¹; Somnath Ghosh¹; Will Lenthe³; Tresa Pollock³; Kevin Hemker¹; ¹Johns Hopkins University; ²Air Force Research Lab; ³University of California, Santa Barbara

5:10 PM

Effect of Local Texture on Heterogeneous Plastic Strain Fields during High-Temperature Creep in Ni-based superalloys using Crystal Plasticity Finite Element Simulations: *Jean-Briac le Graverend*¹; ¹Texas A&M University

5:30 PM

Deformation behavior and constitutive models for high temperature isothermal compression of a newly type of Ni3Al-based superalloy: *Jiangwei Zhong*¹; Qingyan Xu¹; ¹Tsinghua University

Diversity in STEM and Best Practices to Improve it — Being Out in STEM

Sponsored by:

Program Organizers: Megan Cordill, Erich Schmid Institute; Matthew Korey, Purdue University; Jessica Krogstad, University of Illinois at Urbana-Champaign; Panthea Sepehrband, Santa Clara Univ

Monday PM
March 11, 2019

Room: 301B
Location: Henry B. Gonzalez
Convention Center

Session Chairs: Megan Cordill, Erich Schmid Institute; Matthew Korey, Purdue University

2:30 PM

The Minority Leaders Research Collaboration Program at the Air Force Research Laboratory Materials and Manufacturing Directorate: Overview, Experiences, and Lessons Learned: *Asheley Blackford*¹; Eric Payton¹; ¹Air Force Research Laboratory

3:00 PM Invited

TMS Summits on Diversity: What Have We Learned and Where Do We Go From Here?: *Jonathan Madison*¹; Jennifer Andrew²; Megan Brewster³; Amy Clarke⁴; Kristen Constant⁵; Oscar Dubon⁶; Emily Kinser⁷; Matthew Korey⁸; Natalie Larson⁹; Xavier Ochoa¹⁰; Michael Rawlings¹¹; Rosa Maria Rojas¹²; ¹Sandia National Laboratories; ²University of Florida; ³Launch Forth; ⁴Colorado School of Mines; ⁵Iowa State University; ⁶University of California, Berkeley; ⁷3M; ⁸Purdue University; ⁹University of California, Santa Barbara; ¹⁰McEwen Mining; ¹¹AAAS Fellow, NSF; ¹²University of Arizona

3:30 PM Invited

The Complexities of Being LGBTQ+ In the Workplace: *Roberta Beal*¹; ¹Los Alamos National Laboratory

4:00 PM Break

4:30 PM Invited

T Time: How to Welcome and Support People of All Genders: *K. Cunningham*¹; ¹ATI Specialty Alloys & Components

5:00 PM Invited

Coming Out in STEM: *Thomas Reeve*¹; ¹Purdue University

Electrode Technology for Aluminum Production — Electrodes - Raw Materials and Paste Plant

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

Program Organizer: Lorentz Petter Lossius, Hydro Aluminium AS

Monday PM
March 11, 2019

Room: 006D
Location: Henry B. Gonzalez
Convention Center

Session Chairs: Stefan Vucic, Maschinenfabrik Gustav Eirich GmbH & Co; William Bishop, Oxbow Calciners; Ronald Logan, Sunstone Development

2:30 PM Introductory Comments

2:35 PM

Anode Manufacturing: Changing the Fineness of Calcined Petroleum Coke with Ball Race Mills: *Jens-Peter Thiel*¹; *Jan Paepcke*¹; Arne Hilck¹; ¹Claudius Peters Projects GmbH

3:00 PM

How to appreciate the coal tar pitch impregnation on coke material?: *Salima Belbachir*¹; Christophe Bouché¹; Fabien Gaudière¹; Pierre-Louis Perrin¹; Quentin Bernabé²; Laurent Vonna²; Roger Gadiou²; Fabienne Virieux¹; ¹Fives Solios; ²Université de Haute Alsace

3:25 PM

A study of elastic and crack resistance properties of the anode carbon material: *Dag Herman Andersen*¹; Martin Walderhaug¹; Fabian Dedecker²; Sacha Emam²; ¹Hydro Aluminium; ²Itasca Consultants SAS

3:50 PM

Challenges and Opportunities of Vacuum Compaction: Lessons Learnt from Retrofitting EGA-JA Paste Plant to Vacuum Compaction: *Bienvenu Ndjom*¹; Muhammad Shafiq Malik¹; Ahmed Al Marzouqi¹; Tapan Kumar Sahu¹; Saleh Ahmed Rabba¹; Najeeba Al Jabri¹; ¹Emirates Global Aluminium

4:15 PM Break

4:30 PM

Carbon Block Tracking Package based on Vision Technology: *Pierre Mahieu*¹; Xavier Genin¹; Christophe Bouché¹; David Brismalein²; Hervé Pedroli²; Fabienne Virieux¹; ¹Fives Solios; ²Rio Tinto

4:55 PM

Physical and Chemical Characterization of Bio-pitch as a Potential Binder for Anode: *Ying Lu*¹; Roozbeh Mollaabbasi¹; Donald Picard¹; Donald Ziegler²; Houshang Alamdari¹; ¹Université Laval; ²Alcoa Corporation

5:20 PM

Anode Quality Monitoring Using Advanced Data Analytics: Vincent Bonnavard¹; Bilal Azennoud¹; *Amline Bernard*²; Hervé Pedroli²; ¹Probayes; ²Rio Tinto

5:45 PM

Reactivity of Coke in Relation to Sulfur Level and Microstructure: *Görl Jahrsengene*¹; Stein Rørvik²; Arne Petter Ratvik²; Lorentz Petter Lossius³; Richard Haverkamp⁴; Ann Mari Svensson¹; ¹NTNU - Department of Material Science and Engineering; ²SINTEF Industry; ³Hydro Aluminium AS, Primary Metal, Technology; ⁴Massey University - School of Engineering and Advanced Technology

Freeze Linings: Myth and Reality — Freeze Lining II

Sponsored by: TMS: Pyrometallurgy Committee

Program Organizers: Juergen Schmidl, RHI Magnesita; Dean Gregurek, RHI Magnesita; Gerardo Alvear, Glencore Technology; Peter Hayes, Univ of Queensland; Mark Kennedy, Proval Partners SA; Maurits Van Camp, Umicore; Camilo Perez, RHI US Ltd; Stefan Luidold, University Of Leoben

Monday PM

March 11, 2019

Room: 211

Location: Henry B. Gonzalez
Convention Center

Session Chair: Dean Gregurek, RHI Magnesita

2:30 PM

Practical Knowledge on Refractory Freeze Linings Collected from Post Mortem Studies: *Dean Gregurek*¹; Jürgen Schmidl¹; Alfred Spanring¹; ¹RHI Magnesita

2:50 PM

Use of Finite Element Analysis or Computation Fluid Dynamics for Estimation of Freeze Lining: *Allan MacRae*¹; ¹MacRae Technologies, Inc.

3:10 PM

High Temperature Corrosion of Magnesia based Refractory by Ferronickel Slags: *Christoph Sagadin*¹; Stefan Luidold¹; Christoph Wagner²; Christoph Pichler²; Alfred Spanring²; ¹Montanuniversitaet Cdl-Tm; ²RHI Magnesita

3:30 PM

Freeze-lining Formation in Submerged Arc Furnaces Producing Ferrochre Alloy in South Africa: *Joalet Steenkamp*¹; Quinn Reynolds¹; Markus Erwee¹; Stefan Swanepoel¹; ¹MINTEK

3:50 PM

Designing Furnace Lining/Cooling Systems to Operate with a Competent Freeze Lining: *Hugo Joubert*¹; Isobel McDougall¹; ¹Tenova Pyromet

Gamma (FCC)/Gamma-Prime (L12) Co-Based Superalloys III — Environmental Resistance and Processing

Sponsored by: TMS: High Temperature Alloys Committee, TMS: Integrated Computational Materials Engineering Committee
Program Organizers: Michael Titus, Purdue University; David Dye, Imperial College; Eric Lass, National Institute of Standards and Technology; Katelun Wertz, Air Force Research Laboratory; Christopher Zenk, Ohio State University

Monday PM

March 11, 2019

Room: 206A

Location: Henry B. Gonzalez
Convention Center

Session Chairs: Michael Titus, Purdue University; Katelun Wertz, Air Force Research Laboratory

2:30 PM Invited

Elucidating the effects of Cr on the microstructure, oxidation resistance and mechanical properties of cobalt-based superalloys: *Ding-Wen Chung*¹; Jacques Perrin Toinin¹; Daniel Ng¹; Eric Lass²; David Seidman¹; David Dunand¹; ¹Northwestern University; ²National Institute of Standards and Technology

3:00 PM Invited

An ICME-base investigation of the homogenization of a novel VIM/VAR Co-Ni superalloy: *Stephane Forsik*¹; Alberto Polar Rosas¹; Ning Zhou¹; Gian Colombo¹; Tao Wang¹; Richard Smith¹; Akash Patel¹; Samuel Kernion¹; Mario Epler¹; ¹Carpenter Technology Corporation

3:30 PM

Exploration of Thermo-Mechanical Processing Parameters for a Polycrystalline '947-'947' Cobalt-base Alloy: *Katelun Wertz*¹; Donald Weaver¹; Eric Payton¹; S. Lee Semiatin¹; Michael Mills²; Stephen Niezgodz²; ¹Air Force Research Lab; ²The Ohio State University

3:50 PM

Thermo-mechanical processing behavior of $\gamma - \gamma'$ strengthened cobalt-based superalloys: *Nithin Baler*¹; Prafull Pandey²; Chattopadhyay kamanio²; Phanikumar Gandham¹; ¹Metallurgical and Materials Engineering Department, IIT Madras, Chennai, India; ²Department of Materials Engineering, IISc Bangalore, India.

4:10 PM Break

4:30 PM Invited

High-temperature oxidation of γ/γ' -strengthened Co-base superalloys: Advanced techniques for the study of scale formation and growth mechanism: *Sannakaisa Virtanen*¹; Martin Weiser¹; ¹Univ of Erlangen

5:00 PM

The formation of protective alumina on γ' -strengthened Co-Ni-Al-Mo-Ta alloys during exposure at elevated temperatures: *Saurabh Das*¹; Mahander Singh¹; Om Gosain¹; Kamanio Chattopadhyay¹; ¹Indian Institute of Science

5:20 PM

Effect of Pre-deformation on the Aging Response of Co/Ni-base Superalloys: *Christopher Zenk*¹; Connor Slone¹; Katelun Wertz²; Michael Mills¹; ¹The Ohio State University; ²Air Force Research Laboratory

5:40 PM

Thermophysical and mechanical properties of multi-nary single crystalline Co-base superalloys: *Nicklas Volz*¹; Steffen Neumeier¹; Mathias Göken¹; ¹Lehrstuhl für Allgemeine Werkstoffeigenschaften

Green Materials Engineering: An EPD Symposium in Honor of Sergio Monteiro — Natural Fiber Composites

Sponsored by: TMS: Materials Characterization Committee

Program Organizers: Shadia Ikhmayies, Al Isra University; Jian Li, Canmetmaterials; Carlos Mauricio Vieira, State University of the North Fluminense; Fabio Braga, Military Institute of Engineering

Monday PM
March 11, 2019

Room: 008A
Location: Henry B. Gonzalez
Convention Center

Session Chairs: Lucio Nascimento, Instituto Militar de Engenharia; Fabio Garcia, Military Institute of Engineering

2:30 PM Introductory Comments

2:35 PM Keynote

Natural Fibers Reinforced Polymer Composites Applied in Ballistic Multilayered Armor for Personal Protection - An Overview: *Sergio Monteiro*¹; Jaroslaw Drelich²; ¹Military Institute of Engineering, IME;; ²Michigan Technological University

3:15 PM

Structure-property relation of epoxy resin with fique fibers: dynamic behavior using Split-Hopkinson pressure bar and Charpy tests: *Julian Rúa*¹; Sergio Neves Monteiro²; Henry Colorado¹; ¹Universidad De Antioquia; ²Military Institute of Engineering, IME

3:35 PM

Comparison of the Impact Properties of Composites Reinforced by Natural Fibers: *Felipe Perisse Duarte Lopes*¹; Carlos Fontes Vieira¹; ¹UENF

3:55 PM Break

4:05 PM

Impact Energy Evaluation of Natural Castor Oil Polyurethane Matrix Composites Reinforced with Jute Fabric: José Machado¹; Juliana Carvalho¹; Anna Neves¹; Felipe Lopes¹; Sérgio Monteiro¹; *Carlos Vieira*¹; ¹State University of Northern of Rio de Janeiro, UENF

4:25 PM

Comparison of mechanical performance of polyester and epoxy matrix composites reinforced with natural fabric from fique: *Michelle Oliveira*¹; Artur Camposo¹; Fábio Garcia¹; Luana Demosthenes¹; Larissa Nunes¹; Fábio Braga¹; Fernanda Luz¹; Sergio Monteiro¹; ¹Military Institute of Engineering

4:45 PM

Evaluation of the Projectile's Loss of Energy in Polyester Composite Reinforced with Figue Fabric: Artur Camposo Pereira¹; Sergio Monteiro²; Michelle Oliveira²; *Fabio da Costa Garcia Filho*²; Foluke Salgado de Assis²; ¹Uenf Rio De Janeiro; ²Military Institute of Engineering

Heterogeneous and Gradient Materials (HGM III): Tailoring Mechanical Incompatibility for Superior Properties — Heterostructured Materials II: Processing and Properties

Program Organizers: Yuntian Zhu, North Carolina State University; Kei Ameyama, Ritsumeikan University; Irene Beyerlein, University of California, Santa Barbara; Yves Brechet, Grenoble-INP; Huajian Gao, Brown Univ; Hyoung Seop Kim, Pohang University of Science and Technology; Ke Lu, Institute of Metal Research; Xiaolei Wu, Chinese Academy of Sciences

Monday PM
March 11, 2019

Room: 209
Location: Henry B. Gonzalez
Convention Center

Session Chairs: Elias Aifantis, Aristotle University of Thessaloniki;; Hyoung Seop Kim, Pohang University of Science and Technology; Nobuhiro Tsuji, Kyoto University; Jason Trelewicz, Stony Brook University

2:30 PM Invited

Superior Mechanical Properties in Alloys Having Heterogeneous Microstructures: *Nobuhiro Tsuji*¹; ¹Kyoto Univ

2:55 PM

How to play with grain size and texture to tune mechanical properties of architected materials: the case of Cu-Nb (nano)composite wires: *Ludovic Thilly*¹; Pierre-Olivier Renault¹; Florence Lecouturier²; ¹University Of Poitiers; ²LNCMI

3:15 PM

Deformation Instability in the layered steel sheet: *Hyoung Seop Kim*¹; Jung Gi Kim¹; Hak Hyeon Lee¹; Sunghak Lee¹; ¹Postech

3:35 PM

Architected steel sheets through localized laser processing: *Pierre Lapouge*¹; Justin Dirrenberger¹; Matthieu Schneider¹; ¹IPIMM, Arts et Métiers-ParisTech/CNAM/CNRS UMR 8006

3:55 PM Break

4:15 PM

Gradient and Fractional/Fractal Models for Heterogeneous Plastic Flow at Micro/Nano Scales: *Elias Aifantis*¹; ¹Aristotle University of Thessaloniki

4:35 PM

Structural, Phase and Geometrical Heterogeneity in Metallic Materials Processed by Severe Plastic Deformation: *Alexander Zhilyaev*¹; Jose Maria Cabrera²; Terence Langdon³; ¹Laboratory for Mechanics of Gradient Nanomaterials, Nosov Magnitogorsk State Technical University; ²Departamento de Ciencia de los Materiales e Ingeniería Metalúrgica, EEBE – Universitat Politècnica de Catalunya; ³Materials Research Group, Department of Mechanical Engineering, University of Southampton.

4:55 PM

Interface Mediated Mechanistic Transitions in Crystalline-Amorphous Nanolaminates: *Jason Trelewicz*¹; ¹Stony Brook University

5:15 PM Invited

Plastic flow and fracture in harmonic-structured materials: *Dmytro Orlov*¹; ¹Lund University

High Entropy Alloys VII — Structures and Characterization

Sponsored by: TMS: Alloy Phases Committee

Program Organizers: Xie Xie, FCA US LLC; Peter Liaw, University of Tennessee; Michael Gao, National Energy Technology Laboratory; E-Wen Huang, National Chiao Tung University; Gongyao Wang, Alcoa Technical Center; Srivatsan Tirumalai, The University of Akron

Monday PM
March 11, 2019

Room: 207B
Location: Henry B. Gonzalez
Convention Center

Session Chairs: Michael Bakas, U.S. Army Research Office; Mitra Taheri, Drexel University

2:30 PM Invited

Precipitation and Strengthening in AlCoCrFeNi High Entropy Alloys as Studied by Atom Probe Tomography: *Keith Knippling*¹; Richard Michi²; Peter Liaw³; ¹Naval Research Laboratory; ²Northwestern University; ³The University of Tennessee, Knoxville

2:50 PM Invited

Microstructural Engineering in Refractory High Entropy Alloys: *Vishal Soni*¹; Bharat Gwalani¹; Talukder Alam¹; Oleg Senkov²; Daniel Miracle³; Rajarshi Banerjee¹; ¹Univ of North Texas; ²UES Inc; ³Air Force Research Laboratory

3:10 PM Invited

Measurement of lattice distortion in high entropy alloys: *Yi-Chia Chou*¹; Yi Chou¹; Chanho Lee²; Shih-Jie Lin³; Peter Liaw²; ¹National Chiao Tung University; ²University of Tennessee; ³National Tsing Hua University & Department of Orthopaedic Surgery, Chang Gung Memorial Hospital, Chiayi

3:30 PM Invited

Surface Tension and Viscosity of FeCoCrNiTa and Al_{0.1}CoCrFeNi measured by the Oscillating Drop Method in an Electromagnetic Processing Device Under Reduced Gravity: Markus Mohr¹; *Rainer Wunderlich*¹; Peter Liaw²; Livio Battezzati³; Hans-Jörg Fecht¹; ¹Ulm University; ²The University of Tennessee; ³Università di Torino

3:50 PM Invited

Screening Ultra-high Temperature Refractory High Entropy Alloys: *William Yi Wang*¹; Haoxuan Wang¹; Deye Lin²; Jun Wang¹; Shun-Li Shang³; Jiang-Wei Wang⁴; Chengxiang Zou¹; Bin Tang¹; Hongchao Kou¹; Haifeng Song²; Chuang Dong³; Xidong Hui⁶; Zhenhai Xia¹; Yiguang Wang¹; Peter Liaw⁷; Jinshan Li¹; Zi-Kui Liu³; ¹Northwestern Polytechnical Univ; ²Institute of Applied Physics and Computational Mathematics, Beijing; ³Pennsylvania State University; ⁴Zhejiang University; ⁵Dalian University of Technology; ⁶University of Science and Technology Beijing; ⁷University of Tennessee, Knoxville

4:10 PM Break

4:30 PM Invited

Quantitative analysis of local lattice distortion in refractory high-entropy alloys: *Yang Tong*¹; Shijun Zhao¹; Hongbin Bei¹; Takeshi Egami¹; Yanwen Zhang¹; Fuxiang Zhang¹; ¹Oak Ridge National Laboratory

4:50 PM Invited

Microstructure and property characterization of high entropy alloy using advanced transmission electron microscopy techniques: *Mengkun Tian*¹; Chan Ho Lee²; Peter Liaw²; Joshua Kacher¹; ¹Georgia Institute of Technology; ²University of Tennessee, Knoxville

5:10 PM

Direct Observation on the Influence of Secondary Phases on the Oxidation Resistance of AlxCoCrFeNi High Entropy Alloys Using an in-situ TEM Approach: *Elaf Anber*¹; Andrew Lang¹; Wayne Harlow¹; Dan Scotto D'Antuono¹; Haoyan Diao²; Peter Liaw²; Mitra Taheri¹; ¹Drexel university; ²University of Tennessee

5:30 PM

Correlative analysis of nano-scale phase separation and magnetic microstructure evolution in a novel BCC HEA using atom probe tomography and electron holography: *Pradeep Konda Gokuldoss*¹; ¹Indian Institute of Technology Madras

High Entropy Alloys VII — Structures and Mechanical Properties I

Sponsored by: TMS: Alloy Phases Committee

Program Organizers: Xie Xie, FCA US LLC; Peter Liaw, University of Tennessee; Michael Gao, National Energy Technology Laboratory; E-Wen Huang, National Chiao Tung University; Gongyao Wang, Alcoa Technical Center; Srivatsan Tirumalai, The University of Akron

Monday PM
March 11, 2019

Room: 206B
Location: Henry B. Gonzalez
Convention Center

Session Chairs: Yanfei Gao, University of Tennessee, Knoxville; C. CEM Tasan, Massachusetts Institute of Technology

2:30 PM Invited

High or Medium Entropy alloys: Bridging the Compositional Complexity and Mechanical/physical properties: *Yanfei Gao*¹; Hongbin Bei¹; ¹University Of Tennessee

2:50 PM Invited

Mechanically- or thermally-induced forward / reverse transformations in a metastable dual-phase high-entropy alloy: *C. Tasan*¹; Shaolou Wei¹; ¹Massachusetts Institute of Technology

3:10 PM Invited

BCC-FCC interfacial effects on plasticity and strengthening mechanisms in high entropy alloys: *Jeff DeHosson*¹; ¹Univ of Groningen

3:30 PM Invited

Microstructural Analysis of High Entropy Alloys in Extreme Environments: *Mitra Taheri*¹; ¹Drexel Univ

3:50 PM

Atom clusters enhance strength and ductility in high-entropy alloys: *Dengke Chen*¹; Qian Yu²; Ting Zhu¹; ¹Georgia Institute of Technology; ²Zhejiang University

4:10 PM Break

4:30 PM Invited

A heterostructured single-phase high-entropy alloy with an outstanding combination of strength and ductility: *Zhiqiang Fu*¹; Benjamin MacDonald¹; Zhiming Li²; Zhenfei Jiang³; Weiping Chen³; Yizhang Zhou¹; Enrique Lavernia¹; ¹University of California Irvine; ²Max-Planck-Institut für Eisenforschung; ³South China University of Technology

4:50 PM Invited

Possibility of Microstructure Control by Thermo-mechanically Controlled Processes in High Entropy Alloys: *Nobuhiro Tsuji*¹; Nokeun Park²; Tilak Bhattacharjee³; Shuhei Yoshida¹; Rajeshwar Eleti¹; Yu Bai¹; Shu Kurokawa¹; Pinaki Bhattacharjee⁴; ¹Kyoto Univ; ²Yeungnam University; ³ESISM, Kyoto University; ⁴Indian Institute of Technology Hyderabad

5:10 PM

Microstructures and Properties of As-Cast Al₂CrFeMnV, Al₂CrFeTiV, and Al₂CrMnTiV High Entropy Alloys: *Richard Michi*¹; Keith Knippling²; ¹Northwestern University; ²Naval Research Laboratory

5:30 PM Invited

Understanding Short-range Ordering in High-entropy Alloys: *Wei Chen*¹; George Kim¹; Chanho Lee²; Peter Liaw²; ¹Illinois Institute of Technology; ²University of Tennessee

High Entropy Alloys VII — Structures and Modeling II

Sponsored by: TMS: Alloy Phases Committee

Program Organizers: Xie Xie, FCA US LLC; Peter Liaw, University of Tennessee; Michael Gao, National Energy Technology Laboratory; E-Wen Huang, National Chiao Tung University; Gongyao Wang, Alcoa Technical Center; Srivatsan Tirumalai, The University of Akron

Monday PM
March 11, 2019

Room: 207A
Location: Henry B. Gonzalez
Convention Center

Session Chairs: Oleg Senkov, UES, Inc; Katharine Flores, Washington University

2:30 PM Invited

Identification of single phase, multi-principal element alloys using first-principles calculations and high-throughput experiments: Mu Li¹; Rohan Mishra¹; Katharine Flores¹; ¹Washington Univ

2:50 PM Invited

Simulations and modelling of the core structure and mobility of a/2[111] dislocations in ternary multicomponent alloys, TiZrNb, TiZr0.5Nb1.5 and TiZr1.5Nb0.5: Satish Rao¹; Brahim Akdim¹; Edwin Antillon¹; Christopher Woodward²; Oleg Senkov¹; ¹Ues Inc; ²Air Force Research Laboratory

3:10 PM

The role of short-range order on the dislocation behavior in BCC and FCC multicomponent solid solution alloys using Atomistic Simulations: Edwin Antillon¹; Satish Rao¹; Christopher Woodward²; brahim akdim¹; Triplicane Parthasarathy¹; ¹Ues Inc; ²AFRL

3:30 PM

Band Structure Theory of the BCC to HCP Burgers Distortion: Bojun Feng¹; Michael Widom¹; ¹Carnegie Mellon University

3:50 PM

An efficient computational method for calculating properties of face-centered cubic high entropy alloys: Alexandra Scheer¹; Joshua Strother¹; Chelsey Hargather¹; ¹New Mexico Institute of Mining and Tech

4:10 PM Break

4:30 PM Invited

Atomistic simulations of the viscoelastic response of model, defect-free, equiatomic solid solutions: Tung Yan Liu¹; Michael Demkowicz¹; ¹Texas A&M University

4:50 PM

Deformation behavior and constitutive law of CoCrFeMnNi alloy and its variants: Julia Olszewska¹; Julien Favre¹; Anna Fraczekiewicz¹; Jean-Denis Mithieux²; ¹Mines Saint-Etienne; ²APERAM

5:10 PM Invited

Impact of chemical fluctuations and interstitial alloying on the stacking fault energy of high entropy alloys from first principles: Yuji Ikeda¹; Fritz Körmann¹; Jörg Neugebauer¹; ¹Max-Planck-Institut für Eisenforschung GmbH

5:30 PM

Computational and machine learning approach to determine mechanical properties of high entropy alloys based on Ni-Mo-W-Re and Mo-Ta-Nb-W-Ti: Amrita Mishra¹; Yizhou Lu¹; Gautam Priyadarshan¹; ¹University of Mississippi

Hume-Rothery Symposium – Bulk and Interfacial Thermodynamics of Complex Materials: Insights Derived from Integrating Modeling and Experiment — Interfacial Thermodynamics and Kinetics II

Sponsored by: TMS: Alloy Phases Committee

Program Organizers: Raymundo Arroyave, Texas A&M University; Michael Gao, National Energy Technology Laboratory; Jeffrey Hoyt, McMaster Univ; Saryu Fensin, Los Alamos National Laboratory

Monday PM
March 11, 2019

Room: 304B
Location: Henry B. Gonzalez
Convention Center

Session Chairs: Timofey Frolov, Lawrence Livermore National Laboratory; Rodrigo Freitas, Stanford University

2:30 PM Invited

Rational design of surfaces and nanoparticles using cluster expansions: Tim Mueller¹; ¹Johns Hopkins University

3:00 PM Invited

Structure and dynamics of chemically heterogeneous metal-metal solid-liquid interfaces: Yang Yang¹; Mark Asta²; Brian Laird³; ¹East China Normal University; ²University of California - Berkeley; ³Univ of Kansas

3:30 PM Invited

Using Phase Field Simulations to Determine Grain Boundary Properties: Jin Zhang¹; Yubin Zhang¹; Henning Poulsen¹; Peter Voorhees²; ¹Danish Technical University; ²Northwestern Univ

4:00 PM Break

4:20 PM Invited

Kinetic Coefficients for Dipolar Molecular Crystal Growth from the Melt: Yang Yang¹; Xianqi Xu¹; Jeff Hoyt²; Brian Laird³; Mark Asta⁴; ¹East China Normal University; ²McMaster University; ³University of Kansas; ⁴UC Berkeley

4:50 PM Invited

Effect of Point Defects on Nucleation and Solid-Liquid Interface Migration: Huajing Song¹; Yang Sun¹; Feng Zhang¹; Mikhail Mendeleev¹; Cai-Zhuang Wang¹; Kai-Ming Ho¹; ¹Ames Lab

5:20 PM Invited

Dendrite Orientation Transition Controlled by Liquid Composition: Lei Wang¹; Jeff Hoyt²; Nan Wang³; Nikolas Provatas⁴; Chadwick Sinclair¹; ¹The University of British Columbia; ²McMaster University; ³Northwestern Polytechnical University; ⁴McGill University

Interfaces in Structural Materials: An MPMD Symposium in Honor of Stephen M. Foiles — Structure-property Linkages

Sponsored by: The Minerals, Metals and Materials Society, TMS:

Computational Materials Science and Engineering Committee

Program Organizers: Fadi Abdeljawad, Clemson University; Eric Homer, Brigham Young University; Elizabeth Holm, Carnegie Mellon University; Mark Asta, Univ of California Berkeley

Monday PM
March 11, 2019

Room: 302C
Location: Henry B. Gonzalez
Convention Center

Session Chair: To Be Announced

2:30 PM Invited

From Computing Grain Boundary “Phase” Diagrams to Understanding Grain Boundary Embrittlement: Chongze Hu¹; Jian Luo¹; ¹Univ of California San Diego

3:00 PM

A non-parametric approach to reconstruct grain boundary energy from triple junction geometries: *Yu-Feng Shen*¹; Xiaoting Zhong¹; He Liu¹; Robert Suter¹; Gregory Rohrer¹; ¹Carnegie Mellon University

3:20 PM

Formation reactions of intermetallic compound layers in pure Fe / molten Zn diffusion couple held at 450\176C: *Kwangsik Han*¹; Inho Lee¹; Ikuro Ohnuma²; Yasuyuki Hayakawa³; Ryosuke Kainuma¹; ¹Tohoku University/ Dept. Mater. Sci.; ²National Institute for Materials Science (NIMS); ³JFE steel Co.

3:40 PM

Shear Induced Motion of Twin Boundaries in Mg via Disconnection Terrace Nucleation, Growth and Coalescence: *Douglas Spearot*¹; Laurent Capolungo²; Carlos Tome²; ¹University of Florida; ²Los Alamos National Laboratory

4:00 PM Break

4:20 PM Invited

Grain boundary phases in bcc metals: *Timofey Frolov*¹; Qiang Zhu²; Wahyu Setyawan³; Tomas Oppelstrup¹; Richard Kurtz³; Jaime Marian⁴; Artem Oganov⁵; Rudd Rudd¹; ¹Lawrence Livermore National Laboratory; ²UNLV; ³PNL; ⁴UCLA; ⁵Stony Brook University

4:50 PM

A New Approach for Interfacial Classification: Structural Descriptors of Atomistic Grain Boundaries: *Jacob Tavenner*¹; Garritt Tucker¹; Edward Kober²; ¹Colorado School Of Mines; ²Los Alamos National Laboratory

5:10 PM

Connecting atomic and crystallographic structure-property relationships of grain boundaries: Jonathan Priedeman¹; Conrad Rosenbrock¹; Oliver Johnson¹; *Eric Homer*¹; ¹Brigham Young University

5:30 PM

Characterization of interfaces of platinum nanoparticles in gamma alumina using transmission electron microscopy and density functional theory: *Arielle Clouser*¹; Kofi Oware Sarfo¹; Al Rise¹; Colin Ophus²; Raquel Giulian³; Linye Árnadóttir¹; Melissa Santala¹; ¹Oregon State University; ²National Center Electron Microscopy; ³Universidade Federal do Rio Grande do Sul

Irradiation Effects on Phase Transformations in Nuclear Reactor Materials — Fe and FeCr Based Alloys

Sponsored by: TMS: Phase Transformations Committee
Program Organizers: Janelle Wharry, Purdue University; Kester Clarke, Colorado School of Mines; Julie Tucker, Oregon State University; Par Olsson, KTH Royal Institute of Technology; Dhriti Bhattacharyya, ANSTO; Mohsen Asle Zaeem, Colorado School of Mines; Arun Devaraj, Pacific Northwest National Laboratory

Monday PM
March 11, 2019

Room: 214B
Location: Henry B. Gonzalez
Convention Center

Session Chairs: Julie Tucker, Oregon State University; Pär Olsson, KTH Royal Institute of Technology

2:30 PM Invited

Influence of irradiation conditions on precipitation behavior in Fe-Cr and Ni alloys: Elaina Reese¹; Li-Jen Yu¹; Nathan Almirall²; Khalid Hattar³; Takuya Yamamoto²; G. Robert Odette²; M. Grace Burke⁴; *Emmanuelle Marquis*¹; ¹University of Michigan; ²University of California, Santa Barbara; ³Sandia National Laboratory; ⁴University of Manchester

2:55 PM

Ion irradiation induced alpha prime precipitate formation in high purity Fe-Cr alloys: *Yajie Zhao*¹; Arunodaya Bhattacharya²; Steven Zinkle¹; ¹the University of Tennessee; ²Oak Ridge National Laboratory

3:15 PM

Heterogeneous damage structures in neutron, proton and ion irradiated FeCr alloys: *Jack Haley*¹; Steve Roberts¹; Sergio Lozano-Perez¹; G. Odette²; ¹University of Oxford; ²University of California Santa-Barbara

3:35 PM

Atomic scale modeling of the effect of forced atomic reactions on the thermodynamic and kinetic properties of Fe-based alloys under irradiation: *Liangzhao Huang*¹; Luca Messina²; Thomas Schuler¹; Maylise Nastar¹; ¹DEN-Service de Recherches de Métallurgie Physique, CEA, Université Paris-Saclay; ²KTH Royal Institute of Technology, Nuclear Engineering

3:55 PM Break

4:15 PM Invited

Kinetics of point defects under irradiation: from atomic to cluster scales: *Thomas Schuler*¹; Luca Messina²; Maylise Nastar¹; Pascal Bellon³; Dallas Trinkle³; Robert Averback³; ¹CEA/SRMP; ²KTH; ³University of Illinois at Urbana-Champaign

4:40 PM

Parametric study of swelling behavior with cluster dynamics of 15Cr / 15Ni austenitics stainless steels: *Adrien Vaugoude*¹; Thomas Jourdan²; M-H Mathon³; Dominique Thiaudiere⁴; Alexandre Legris⁵; Yann De Carlan¹; ¹DEN-Service de Recherches Métallurgiques Appliquées (SRMA), CEA; ²DEN-Service de Recherches de Métallurgie Physique (SRMP), CEA, Université Paris-Saclay; ³DRF – Laboratoire Léon Brillouin, CEA-CNRS, Université Paris-Saclay; ⁴Synchrotron SOLEIL - DiffAbs; ⁵Unité Matériaux et Transformations – UMR8207 (UMET), Centre National de la Recherche Scientifique – Université Lille 1

5:00 PM

Modeling temperature shift for solute clustering in T91 when using variable dose rate irradiations: *Matthew Swenson*¹; Saheed Adisa¹; ¹University of Idaho

5:20 PM

Modeling irradiation induced phase transformations in the FeCrAl system: *Par Olsson*¹; Ebrahim Mansouri¹; Christophe Domain²; Luca Messina¹; Nicolas Castin³; ¹KTH Royal Institute of Technology; ²EDF R&D; ³SCK-CEN

5:40 PM

Microstructure evolution in irradiation-tolerant ultrafine-grained steels: *Haiming Wen*¹; Andrew Hoffman¹; Jiaqi Duan¹; ¹Missouri University of Science and Technology

Magnesium Technology 2019 — Alloy Design and Casting

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

Program Organizers: Vineet Joshi, Pacific Northwest National Laboratory; Brian Jordon, University of Alabama; Dmytro Orlov, Lund University; Neale Neelamegham, IND LLC

Monday PM
March 11, 2019

Room: 005
Location: Henry B. Gonzalez
Convention Center

Session Chairs: Mark Easton, RMIT University; Wilhelmus Sillekens, European Space Agency

2:30 PM

Bimodal casting process of Eco-Mg series alloys by vertical high-speed press machine: *Fabrizio D'Errico*¹; ¹Politecnico Di Milano Politecnico Di Milano

2:50 PM

Investigation of the evolution of the microstructure in the directionally solidified long-period-stacking-ordered (LPSO) magnesium alloy as a function of the temperature: Daria Drozdenko¹; *Kristian Mathis*²; Stefanus Harjo³; Wu Gong⁴; Kazuya Aizawa³; Michiaki Yamasaki¹; ¹Kumamoto University; ²Nuclear Physics Institute of the CAS; ³Japan Atomic Energy Agency; ⁴Kyoto University

3:10 PM

Tem Studies of In Situ Formation of MgO and Al₄C₃ During Thixomolding of AZ91 Magnesium Alloy Conducted at CO₂: *Lukasz Rogal*¹; Lidia Litynska-Dobrzynska¹; Boguslaw Baran¹; ¹Institute Of Metallurgy And Materials Sc

3:30 PM

FFF of Mg-alloys for Biomedical Applications: Martin Wolff¹; Torben Mesterknecht¹; Andre Bals¹; Thomas Ebel¹; *Regine Willumeit Romer*¹; ¹Helmholtz-Zentrum Geesthacht

3:50 PM

Effects of Gd/Y ratio on the microstructures and mechanical properties of cast Mg-Gd-Y-Zr alloys: *Jingli Li*¹; Di Wu¹; Rongshi Chen¹; ¹Institute of Metal Research, Chinese Academy of Sciences

4:10 PM Break

4:30 PM Poster Pitch Session

Materials for Molten Salt Energy Systems — Corrosion and Compatibility II

Sponsored by: TMS: Corrosion and Environmental Effects Committee, TMS: Nuclear Materials Committee

Program Organizers: Stephen Raiman, Oak Ridge National Laboratory; Jinsuo Zhang, Virginia Polytechnic Institute and State University; Kumar Sridharan, Univ of Wisconsin-Madison; Judith Vidal, National Renewable Energy Laboratory; Michael Short, MIT

Monday PM
March 11, 2019

Room: 008B
Location: Henry B. Gonzalez
Convention Center

Session Chair: Stephen Raiman, Oak Ridge National Laboratory

2:30 PM Introductory Comments

2:35 PM

Molten Salt Thermochemistry Applied to Corrosion in Molten Salts: *Raluca Scarlat*¹; ¹UW Madison Engineering Physics

3:05 PM

Holistic Understanding of Graphite Behavior in MSR Environments: *Anne Campbell*¹; Timothy Burchell¹; Cristian Contescu¹; Nidia Gallego¹; James Keiser¹; Stephen Raiman¹; A. Lou Qualls¹; ¹Oak Ridge National Laboratory

3:25 PM

Fluorination of nuclear graphite IG-110 in molten 2LiF-BeF₂ (FLiBe) salt at 700 °C: *Huali Wu*¹; Francesco Carotti¹; Raluca Scarlat¹; ¹University of Wisconsin-Madison

3:45 PM

Kinetic and mechanistic corrosion studies of γ/γ' strengthened Co-based superalloys in KCl-NaCl molten salt mixture for advance power plant and thermal storage applications: *Mahander Singh*¹; Bikramjit Basu¹; Kamania Chattopadhyay¹; ¹Indian Institute of Science, Bangalore

4:05 PM Break

4:25 PM

Compatibility Of New And Commercial Alloys With Molten Salts: *James Keiser*¹; ¹Oak Ridge National Laboratory

4:45 PM

Compatibility of Ni-Cr Alloys in Static and Flowing Commercial Molten Chloride Salt: *Bruce Pint*¹; Stephen Raiman¹; ¹Oak Ridge National Laboratory

5:05 PM

Understanding the Behavior of Metallic Materials in Molten Salts: *Dev Chidambaram*¹; ¹University of Nevada, Reno

Materials Processing Fundamentals — Steel - Microstructure and Properties

Sponsored by: TMS: Process Technology and Modeling Committee
Program Organizers: Guillaume Lambotte, Boston Metal; Jonghyun Lee, Iowa State University; Antoine Allanore, MIT - DMSE; Samuel Wagstaff, Novelis

Monday PM
March 11, 2019

Room: 212A
Location: Henry B. Gonzalez
Convention Center

Session Chairs: Antoine Allanore, MIT; Guillaume Lambotte, Boston Metal

2:30 PM Introductory Comments

2:35 PM

A New Alloy System Having Autogenous Grain Pinning at High Temperature: *Tihe Zhou*¹; Hatem Zurob²; Ronald O'Malley³; ¹Stelco Inc; ²McMaster University; ³Missouri University of Science & Technology

2:55 PM

Understanding the first formation stages of nano-metallic oxide particles in ODS steels: *Martin Owusu-Mensah*¹; Aurélie Gentils¹; Stéphanie Jublot-Leclerc¹; Vladimir Borodin²; Joel Ribis³; ¹CSNSM, Univ Paris-Sud, CNRS/IN2P3, Université Paris-Saclay; ²NRC Kurchatov Institute and NRNU MEPhI; ³DEN, SRMA, CEA, Université Paris-Saclay, Gif sur Yvette

3:15 PM

Effect of casting temperature on the surface finish of grey iron castings: *Izudin Dugic*¹; ¹University Sweden

3:35 PM

Carbide precipitation of TBM cutter ring steel during tempering: *Shaoying Li*¹; Hanjie Guo¹; Xiao Shi¹; Mingtao Mao¹; ¹University of Science and Technology Beijing

3:55 PM

Analysis of Large Inclusions in Crankshaft Steel by Ingot Casting: *Qinghai Zhou*¹; Jiongming Zhang¹; Yanbin Yin¹; ¹University of Science and Technology Beijing

4:15 PM Break

4:35 PM

Study on hot deformation behavior and processing map of a Cu-bearing 2205 duplex stainless steel: *Tong Xi*¹; Chunguang Yang¹; Ke Yang¹; ¹Institute of Metal Research, Chinese Academy of Sciences

4:55 PM

Research on the L2 control model technology of double cold reduction during continuous annealing process: Wei Guo¹; *Hui Wang*¹; yanglong Li¹; Jie Wen¹; Meng Yu¹; Fengqin Wang¹; ¹Shougang Research Institute of Technology

5:15 PM

Research on Level 2 Rolling Model of Tin Plate Double Cold Reduction Process: *Hui Wang*¹; Wei Guo¹; Yanglong Li¹; Fei Chen¹; Jie Wen¹; Meng Yu¹; Qin Wang¹; ¹Shougang Research Institute of Technology

Mechanical Behavior of Nuclear Reactor Components — Microstructure Effects I

Sponsored by: TMS: Nuclear Materials Committee

Program Organizers: Clarissa Yablinsky, Los Alamos National Laboratory; Assel Aitkaliyeva, University of Florida; Khalid Hattar, Sandia National Laboratories; Janelle Wharry, Purdue University; Laurent Capolungo, Los Alamos National Laboratory; Eda Aydogan, Los Alamos National Laboratory

Monday PM
March 11, 2019

Room: 215
Location: Henry B. Gonzalez
Convention Center

Session Chairs: Ramprashad Prabakaran, Pacific Northwest National Laboratory; Cody Miller, Los Alamos National Laboratory

2:30 PM Invited

Dose-dependent ductile to brittle transition temperature in ferritic polycrystalline aggregates: a 3D dislocation dynamics analysis: *Christian Robertson*¹; Yang Li¹; ¹CEA Université Paris-Saclay

3:00 PM

Investigating the Effects of Wear in Reactor Environments using Ion Irradiation: *Gene Lucadamo*¹; William Howland¹; Paolo Zafred¹; Justin Cook¹; Ram Bajaj¹; Richard Smith¹; ¹Naval Nuclear Laboratory

3:20 PM

Mechanical Properties and Microstructural Evaluation of a Pilgered Thin-walled OFRAC Tube for Fast Reactor Applications: *Caleb Massey*¹; David Hoelzer²; Philip Edmondson²; Maxim Gussev²; Anoop Kini³; Baptiste Gault³; Kurt Terrani²; Steven Zinkle¹; ¹University Of Tennessee Knoxville; ²Oak Ridge National Laboratory; ³Max-Planck-Institut für Eisenforschung GmbH

3:40 PM

Mechanical Properties Retention of Accident Tolerant Fuel Cladding FeCrAl Alloys Following a Quenching Treatment: *Raul Rebak*¹; Vipul Gupta¹; ¹GE Global Research

4:00 PM Break

4:20 PM Invited

Mechanical and Thermal Behavior of Graphite in Nuclear Reactor Applications: *Anne Campbell*¹; Timothy Burchell¹; Yutai Katoh¹; Josina Geringer¹; ¹Oak Ridge National Laboratory

4:50 PM

Procedures for the Interpolation of Orientation Distributions from Coarse Grid Experimental Measurements to Fine Grid Finite Element Meshes: *Timothy Barrett*¹; Adnan Egthesad¹; Rodney McCabe²; Sven Vogel²; Marko Knezevic¹; ¹University of New Hampshire; ²Los Alamos National Lab

5:10 PM

The Study of Mechanical Behaviour of Materials for the Nuclear Reactor Components in SUSEN Hot Cells: *Mariia Zimina*¹; Petr Švrucal¹; Pavel Zháhal¹; Ondrej Libera¹; Stefan Zaunschirm²; Ondrej Srba¹; ¹Research Center Rež, LTd.; ²University of Applied Sciences Upper Austria

Mechanical Behavior Related to Interface Physics III — Grain Boundaries II

Sponsored by: TMS Materials Processing and Manufacturing

Division, TMS: Nanomechanical Materials Behavior Committee
Program Organizers: Jason Trelewicz, Stony Brook University; Nathan Mara, University of Minnesota; Erica Lilleodden, Helmholtz-Zentrum Geesthacht; Siddhartha Pathak, University of Nevada, Reno; Jordan Weaver, National Institute of Standards and Technology; Marc Legros, CEMES-CNRS

Monday PM
March 11, 2019

Room: 303C
Location: Henry B. Gonzalez
Convention Center

Session Chair: To Be Announced

2:30 PM

Understanding mechanical failure of metal/ceramic interfaces: Xiaoman Zhang¹; Yang Mu¹; Mohammad Dodaran¹; Shuai Shao¹; *Wen Meng*¹; Collin Wick²; Ramu Ramachandran²; ¹Louisiana State University; ²Louisiana Tech University

2:50 PM Invited

Understanding local deformation processes in Al 6061 using a multiscale electron microscopy approach: *Josh Kacher*¹; Yung Suk Jeremy Yoo¹; ¹Georgia Tech

3:20 PM

Sulfur Induced Embrittlement in Nickel: A Molecular Dynamics Approach: *Doruk Aksoy*¹; Rémi Dingreville²; Douglas E. Spearot¹; ¹University of Florida; ²Sandia National Laboratories

3:40 PM

Examining atomistic simulations of grain boundary – dislocation interactions in FCC Nickel: Devin Adams¹; *Eric Homer*¹; David Fullwood¹; Robert Wagoner²; ¹Brigham Young University; ²Ohio State University

4:00 PM Break

4:20 PM

Systematic Adjustment of Nanotwin Density in Thin Ag Films: *Shefford Baker*¹; Nathaniel Rogers¹; Kenneth Shaughnessy¹; ¹Cornell University

4:40 PM Invited

Shear-coupled grain boundary migration: heterogeneous disconnection nucleation: *Nicolas Combe*¹; Frederic Momprou²; Marc Legros²; ¹CEMES-CNRS / University of Toulouse; ²CEMES-CNRS

5:10 PM

Strength and Deformation of Au@Ag and Au@Cu Core-Shell Nanocubes: *Mehrdad Kiani*¹; Yifan Wang¹; Wei Cai¹; Wendy Gu¹; ¹Stanford University

5:30 PM Invited

{10-12} twinning mechanism, twin-slip and twin-twin interaction in hexagonal close-packed magnesium: *Bin Li*¹; Peng Chen¹; ¹University of Nevada, Reno

Micro- and Nanomechanical Testing in Harsh Environments — High Temperature and Cryogenic Micromechanics

Sponsored by: TMS Materials Processing and Manufacturing Division, TMS: Nanomechanical Materials Behavior Committee
Program Organizers: Verena Maier-Kiener, Montanuniversität Leoben; Sandra Korte-Kerzel, RWTH Aachen; Peter Hosemann, Univ of California; Afrooz Barnoush, Ntnu; Jeffrey Wheeler, ETH Zurich; Dhriti Bhattacharyya, Australian Nuclear Science and Technology Organization

Monday PM
March 11, 2019

Room: 217B
Location: Henry B. Gonzalez
Convention Center

Session Chairs: Sandra Korte-Kerzel, RWTH Aachen; Jeff Wheeler, ETH Zurich

2:30 PM Invited

Deformation in the Intermetallic Mg₂Ca Laves Phase from Room- to High-Temperature: *James Gibson*¹; *Christoffer Zehnder*¹; *Hanno Rempel*¹; *Dennis Gerber*¹; *Stefanie Sandlöbes*¹; *Sandra Korte-Kerzel*¹; ¹RWTH Aachen

2:55 PM

High Temperature Nanomechanical Characterization of Transition Metal Carbides: *Ming Chen*¹; *Davide Sangiovanni*²; *Giacomo Po*³; *Suneel Kodambaka*³; *Jeffrey Wheeler*¹; ¹Eth Zurich; ²Linköping University; ³University of California Los Angeles

3:15 PM

Elevated temperature nano- and micro-impact of hard PVD coatings: *Ben Beake*¹; *Luis Isern*²; *Jose Endrino*²; ¹Micro Materials Ltd; ²Cranfield University

3:35 PM

High temperature responses of bulk metallic glasses in nanoindentation: *Lisa Kraemer*¹; *Verena Maier-Kiener*²; *Yannick Champion*³; *Reinhard Pippan*¹; ¹Erich Schmid Institute (Oeaw); ²Montanuniversität Leoben; ³CNRS, SIMaP Grenoble

3:55 PM

Material optimisation for small scale bending creep by additive manufacturing of cantilevers: *Syed Jalali*¹; *Faizan Hizazi*¹; *Jyotirmaya Kar*¹; *Praveen Kumar*¹; *Vikram Jayaram*¹; ¹Indian Institute of Science

4:15 PM Break

4:35 PM Invited

Nanomechanical characterization in cryogenic environments: *Seok-Woo Lee*¹; ¹University of Connecticut

5:00 PM

Ultrahigh Elastically Compressible Superconductor, CaKFe₄As₄: *Gyuho Song*¹; *Vladislav Borisov*²; *William Meier*³; *Keith Dusoe*¹; *John Sypek*¹; *Roser Valenti*²; *Paul Canfield*³; *Seok-Woo Lee*¹; ¹University of Connecticut; ²Goethe University; ³Iowa State University

5:20 PM

Microindentation on monocrystalline materials at low temperatures: *Shunbo Wang*¹; ¹Jilin University

5:40 PM Invited

Thermally activated fracture behavior at the micron scale: *Johannes Ast*¹; *Szilvia Kalácska*¹; *Jakob Schwiedrzik*¹; *Johann Michler*¹; *Xavier Maeder*¹; ¹Empa Matls Science & Technology

Phase Stability, Phase Transformations, and Reactive Phase Formation in Electronic Materials XVIII — Phase Formation of Electronic Materials

Sponsored by: TMS: Alloy Phases Committee
Program Organizers: Hiroshi Nishikawa, Osaka University; Shih-Kang Lin, National Cheng Kung University; Chaohong Wang, National Chung Cheng University; Chih-Ming Chen, National Chung Hsing Univ; Dajian Li, Karlsruhe Institute of Technology; Song-Mao Liang, Clausthal University Of Technology; Ming-Tzer Lin, National Chung Hsing University; Zhi-Quan Liu, Institute of Metal Research, Chinese Academy of Sciences; Jaeho Lee, Hongik University; Yee-wen Yen, National Taiwan Univ of Science & Tech; Yuan Yuan, Chongqing University; Yu Zhong, Worcester Polytechnic Institute

Monday PM
March 11, 2019

Room: 217D
Location: Henry B. Gonzalez
Convention Center

Session Chairs: Song-Mao Liang, Clausthal University of Technology; Yuan Yuan, Chongqing University

2:30 PM Invited

Study of metastable phase formation for sputtered thin films: *Keke Chang*¹; ¹NIMTE, Chinese Academy of Sciences

2:50 PM

A Study of Nickel Metallization on Polyimide films of Different Structures by All-Wet Process: *Tzu-Jung Liu*¹; *Chih-Ming Chen*¹; *Ching-Hsuan Lin*¹; *Pei-Yu Wu*¹; ¹National Chung Hsing University

3:10 PM

The Effects of Electrochemical Parameters on the Physical Properties of Ni-Alloy Electroplating for the High Wear Resistant Materials: *Yong-Su Lee*¹; *Hong-Wook Chun*¹; *Jaeho Lee*¹; ¹Hongik Univ

3:30 PM

Effect of bilayers arrangement on self-propagating reactions and mechanical properties of thermite reactive nanolaminate films: *Petra Hanusova*¹; *Jon-Paul Maria*¹; ¹The Pennsylvania State University

3:50 PM Break

4:10 PM Invited

The design of magnesium-rare earth alloys based on thermodynamic calculations: *Qun Luo*¹; *Qian Li*¹; ¹Shanghai University

4:30 PM

Microstructure Evolution and Physics Properties of Low Silver Copper Alloy Wires during In-situ Composite Preparation: *Yuanwang Zhang*¹; *Shusen Wang*¹; *Dawei Yao*¹; ¹Shanghai Electric Cable Research Institute

4:50 PM

Growth of Nb₃Sn and Cu₃Al intermetallic Phases by Reactive Diffusion Process: *Choong-un Kim*¹; *Geng Ni*²; ¹Univ of Texas Arlington; ²Univ of Texas Arlington

5:10 PM

Silanization engineering for silicon metallization: *Ping-Heng Wu*¹; *Yu-Zhong Lai*¹; *Chih-Ming Chen*¹; ¹National Chung Hsing University

Phase Transformations and Microstructural Evolution — Phase Transformations in Ferrous Alloys

Sponsored by: TMS: Phase Transformations Committee

Program Organizers: Sophie Primig, Univ of New South Wales; Deep Choudhuri, University of North Texas; Klaus-Dieter Liss, Guangdong Technion – Israel Institute of Technology; Megumi Kawasaki, Oregon State University; Matthew Steiner, University of Cincinnati; Yufeng Zheng, Ohio State University; Ashley Paz y Puente, University of Cincinnati; Juan Escobedo-Diaz, University of New South Wales; Dhriti Bhattacharyya, ANSTO; Rajarshi Banerjee, University of North Texas

Monday PM
March 11, 2019

Room: 225D
Location: Henry B. Gonzalez
Convention Center

Session Chair: To Be Announced

2:30 PM

Phase Transformations in LDX2404® Duplex Stainless Steel Subjected to Shock Loading: Raymond Miller¹; Zakaria Quadir²; Ali Ameri¹; Con Logos³; Paul Hazell¹; Juan Escobedo-Diaz¹; ¹University of New South Wales; ²Curtin University; ³Outokumpu

2:50 PM

Effect of cooling parameters in long steel components during quenching: Andrea Mireles-Ramos¹; Francisco Garcia-Pastor¹; Francisco Acosta-González¹; Eddy Alfaro-López²; ¹CINVESTAV; ²Rassini Suspensiones S.A. de C.V.

3:10 PM

In-situ characterization of microstructure evolution during the partitioning step of TRIP-assisted bainitic ferrite (TBF) steel: influence of microalloying addition: Zélie Tournoud¹; Patricia Donnadieu¹; Gilles Renou¹; Didier Huin²; Alexis Deschamps¹; ¹Genoble Institute of Technology; ²ArcelorMittal Maizieres Research

3:30 PM

Advanced thermo-mechanical processing as tool to engineer hierarchical microstructures in modern HSLA steels: Carina Ledermueller¹; Sophie Primig¹; ¹UNSW Sydney

3:50 PM

Co-dependent pathways of thermal aging degradation of cast austenitic stainless steels characterized by atom probe tomography, electron microscopy, and mechanical testing: Timothy Lach¹; Arun Devaraj¹; David Collins¹; Emily Barkley¹; Thak Sang Byun¹; ¹Pacific Northwest National Laboratory

4:10 PM Break

4:30 PM

In-situ high energy X-ray diffraction investigation of the bainitic transformation in steels: Sen Lin¹; Peter Hedström¹; ¹KTH Royal Institute of Technology

4:50 PM

Effect of Silicon Content on the Dilatometric Behavior of a Medium-Carbon Steel: Alexis Gallegos-Pérez¹; Octavio Vázquez-Gómez¹; José López-Soria¹; Héctor Vergara-Hernández¹; Edgar López-Martínez²; ¹Tecnológico Nacional de México / I.T. Morelia; ²Universidad del Istmo

5:10 PM

How austenitic TRIP steels accommodate strain under multiaxial loading: the effect of stacking fault energy and deformation state: Efthymios Polatidis¹; Miroslav Smid¹; Wei-Neng Hsu²; Tobias Panzner¹; Helena Van Swygenhoven²; ¹Paul Scherrer Institute; ²Paul Scherrer Institute/École polytechnique fédérale de Lausanne

5:30 PM

Transformation-resistant plasticity versus transformation-induced plasticity in a cost-effective lightweight dual-phase steel: Jae Bok Seol¹; Seon Hyeong Na¹; Hyoung Seok Park²; ¹Postech; ²Hyundai MOBIS

Rare Metal Extraction & Processing — Rare Metals II

Sponsored by: TMS: Hydrometallurgy and Electrometallurgy Committee

Program Organizers: Gisele Azimi, University of Toronto; Hojong Kim, Pennsylvania State University; Shafiq Alam, Univ of Saskatchewan; Takanari Ouchi, The University of Tokyo; Neale Neelameggham, IND LLC; You Qiang, Univ Of Idaho; Alafara Baba, University of Ilorin

Monday PM
March 11, 2019

Room: 210B
Location: Henry B. Gonzalez
Convention Center

Session Chairs: Hojong Kim, The Pennsylvania State University; Shafiq Alam, University of Saskatchewan

2:30 PM

Supercritical Fluid Extraction for Urban Mining of Rare Earth Elements: Jiakai Zhang¹; John Anawati¹; Yuxiang Yao¹; Gisele Azimi¹; ¹University of Toronto

3:05 PM Keynote

Extraction of rare metals from NiMH batteries: Kivanc Korkmaz¹; Åke Rasmuson¹; Kerstin Forsberg¹; ¹KTH Royal Institute of Technology

3:30 PM

Selective precipitation of Th and rare-earth elements from HCl leach liquor: Haydar Günes¹; Hüseyin Eren Obuz¹; Murat Alkan¹; ¹Dokuz Eylül University

3:55 PM Break

4:15 PM

Recovery of Scandium by Leaching Process from Brazilian Red Mud: Amilton Botelho Junior¹; Raquel Costa¹; Denise Espinosa¹; Jorge Tenório¹; ¹Univ of Sao Paulo

4:40 PM

Improvement of The Pregnant Solution Arranging Method to Recover the Rare Earth Elements: Tatyana Surkova¹; Bagdaulet Kenzhaliyev¹; Ainur Berkinbayeva¹; Dinara Yessimova¹; ¹JSC "Institute of Metallurgy and Ore Beneficiation

5:05 PM

Process Optimization of Reducing Ilmenite Using Carbon: Shiju Zhang¹; Liu Songli²; ¹Panzhuhua University; ²Yangtze Normal University

Refractory Metals 2019 — (III) Welding and W Alloys; (IV) W, Re and Ru

Sponsored by: TMS: Refractory Metals Committee

Program Organizers: Eric Taleff, University of Texas at Austin; Martin Heilmair, KIT Karlsruhe; Kevin Jaansalu, Royal Military College of Canada

Monday PM
March 11, 2019

Room: 205
Location: Henry B. Gonzalez
Convention Center

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

2:30 PM

Resistance Upset Welding of Refractory Metals: Todd Leonhardt¹; Ying Ko¹; Jerry Gould²; Nick Lance¹; ¹Rhenium Alloys Inc; ²EWI

2:50 PM

Nanostructured two-phase tungsten alloys for high temperature applications: *Alexander Knowles*¹; ¹University of Birmingham

3:10 PM

Severe Plastic Deformation of Single Crystal Tungsten: *David Foley*¹; Brady Butler²; Zachary Levin³; Robert Barber¹; Shri Singh⁴; Karl Hartwig¹; ¹Shear Form Inc; ²US Army Research Laboratory; ³Texas A&M University; ⁴US Army Research Development and Engineering Center

3:30 PM

Effect of Mo, mechanical alloying and sintering on microstructure and mechanical properties of heavy tungsten ODS alloys: *Chun-Liang Chen*¹; Sutrisna Sutrisna¹; ¹Dong-Hwa Univ

3:50 PM

Analyses of intrinsic ductility of W-Ta and W-Re alloys based on ab initio calculations: *Chaoming Yang*¹; Liang Qi¹; ¹University of Michigan

4:10 PM Break

4:30 PM

Microstructural changes and related surface damage of tungsten rhenium alloys caused by electron beam loading: *Maximilian Siller*¹; Alexander Leitner¹; Jürgen Schatte²; Helmut Clemens¹; Wolfram Knabl²; Verena Maier-Kiener¹; ¹Montanuniversität Leoben; ²Plansee SE

4:50 PM

Fabrication of Ruthenium-Tungsten Alloy Wires by the Alloy-Micro-Pulling-Down Method: *Rikito Murakami*¹; Kei Kamada¹; Yasuhiro Shoji¹; Yuui Yokota¹; Shunsuke Kurosawa¹; Yuji Ohashi¹; Akihiro Yamaji¹; Masao Yoshino¹; Akira Yoshikawa¹; ¹Tohoku University

5:10 PM

Plastic deformation behavior of HCP Rhenium: Slip and Twinning: *M Arul Kumar*¹; Anil Kumar¹; Josh Kacher²; Rodney McCabe¹; Irene Beyerlein³; ¹Los Alamos National Laboratory; ²Georgia Institute of Technology; ³University of California Santa Barbara

5:30 PM

Strength and Ductility of Powder Consolidated Ultrafine-Grain Tantalum: *Zachary Levin*¹; Xiaoxi Wang²; Murat Kaynak³; Ibrahim Karaman³; Karl Hartwig³; ¹Air Force Research Lab; ²Xuzhou University of Technology; ³Texas A&M University

REWAS 2019: Secondary and Byproduct Sources of Materials, Minerals, and Metals — Secondary and Byproduct Beneficial Use

Sponsored by: TMS Extraction and Processing Division, TMS Light Metals Division, TMS: Recycling and Environmental Technologies Committee

Program Organizers: Gabrielle Gaustad, Rit; Camille Fleuriault, Gopher Resource; Neale Neelameggham, IND LLC; Elsa Olivetti, Massachusetts Institute of Tech

Monday PM
March 11, 2019

Room: 007C
Location: Henry B. Gonzalez
Convention Center

Session Chair: To Be Announced

2:30 PM **Introductory Comments**

2:35 PM **Invited**

Introducing the Extraordinary Leuven Cement: Raw Materials, Process, Performance and First Real-life Applications: *Yiannis Pontikes*¹; ¹KU Leuven

3:00 PM **Invited**

Ferro-alloy Production from Spent Petroleum Catalysts by Smelting Reduction and Selective Oxidation Processes: *Jong-Jin Pak*¹; Do-Hyeong Kim¹; Min-Kyu Paek²; Yong-Dae Kim³; ¹Hanyang University; ²Aalto University; ³Golden River Co.

3:25 PM

Reactivity of Crystalline Slags in Alkaline Solution: *Brian Traynor*¹; Hugo Uvegi¹; Piyush Chaunsali²; Elsa Olivetti¹; ¹MIT; ²IIT Madras

3:45 PM

Extraction of Zinc, Silver and Indium via Vaporization from Jarosite Residue: *Stefan Steinlechner*¹; Jürgen Antrekowitsch¹; ¹Montanuniversität Leoben

4:05 PM **Break**

4:25 PM

Efficient Utilization of Zinc-, Lead- and Copper Containing By-products: *Juergen Antrekowitsch*¹; ¹Univ of Leoben

4:45 PM

Production of High Purity Mo and Fe-Mo Alloys from Recycled Mo Oxide and Mill Scale through Hydrogen Reduction: *Min-Kyu Paek*¹; Do-Hyeong Kim²; Daniel Lindberg¹; Jong-Jin Pak²; ¹Aalto University; ²Hanyang University

5:05 PM

Alkali Elution of Various Mineralogical Phases in Steelmaking Slag: *Zuoqiao Zhu*¹; Xu Gao²; Shigeru Ueda³; Shin-ya Kitamura³; ¹Tohoku University; ²Institute of Multidisciplinary Research for Advanced Materials, Tohoku University, Japan; ³Institute of Multidisciplinary Research for Advanced Materials, Tohoku University, Japan

5:25 PM

Feasibility Assessment for Recycling Copper Slag as Ferrous By-products in FINEX®, an Alternative Ironmaking Process: *Moo Eob Choi*¹; Taehyeok Kim¹; ¹POSCO

5:45 PM

Development of Electromagnetic Interference Materials from Metallurgical Wastes: *Yong Fan*¹; ¹TU Freiberg

Shape Casting: 7th International Symposium Celebrating Prof. John Campbell's 80th Birthday — Casting Defects and their Characterization

Program Organizers: Murat Tiryakioglu, University of North Florida; William Griffiths, University of Birmingham; Mark Jolly, Cranfield University

Monday PM
March 11, 2019

Room: 006B
Location: Henry B. Gonzalez
Convention Center

Session Chair: Xinjin Cao, National Research Council Canada

2:30 PM

Determining casting defects in thixomolding Mg casting part by computed tomography: *Jiehua Li*¹; Bernd Oberdorfer²; *Peter Schumacher*¹; ¹Montanuniversität Leoben; ²Austrian Foundry Research Institute

2:55 PM

The Effect of the Addition of Transition Metals on Double Oxide Film Defects in an Al-Si-Mg Alloy: *William Griffiths*¹; Adrian Caden¹; ¹Univ of Birmingham

3:20 PM

On estimating largest defects in castings: *Murat Tiryakioglu*¹; Irisi Nini¹; ¹Univ of North Florida

3:40 PM

Ti grain refinement myth and cleanliness of A356 melt: *Özen Gürsoy*¹; Eray Erzi¹; Derya Dispinar¹; ¹Istanbul University

4:00 PM Break

4:20 PM

On the effects of defects and imperfections on tensile toughness of a secondary aluminium alloy: *Jakob Olofsson*¹; Anton Bjurenstedt²; Salem Seifeddine¹; ¹Jonkoping University School Of Engineering; ²Swerea SWECAST

4:40 PM

The Myth of Hydrogen Pores in Aluminum Castings: *Murat Tiryakioglu*¹; ¹Univ of North Florida

5:00 PM

Casting defect analysis on fracture surface of 356 aluminium alloy: *Özen Gürsoy*¹; Eray Erzi¹; Derya Dispinar¹; ¹Istanbul University

5:20 PM

Investigation of Casting Quality Change of A356 by Duration in Liquid State: *Mikdat Gurtaran*¹; Muhammet Uludag¹; Derya Dispinar²; ¹Bursa Technical University; ²Istanbul University

5:40 PM

Characterization of the Effect of Sr and Ti on Liquid Quality in Al8Si3Cu: *Muhammet Uludag*¹; Derya Dispinar²; Murat Tiryakioglu³; ¹Bursa Technical University; ²Istanbul University; ³University of North Florida

Solidification Processing of Light Metals and Alloys: An MPMD Symposium in Honor of David StJohn — In-situ Observation and Simulation of Grain Formation

Sponsored by: TMS: Solidification Committee

Program Organizers: Mark Easton, RMIT University; Ma Qian, RMIT University (Royal Melbourne Institute of Technology); John Grandfield, Grandfield Technology Pty Ltd; Norbert Hort, Helmholtz-Zentrum Geesthacht; Mark Jolly, Cranfield University

Monday PM
March 11, 2019

Room: 006C
Location: Henry B. Gonzalez
Convention Center

Session Chairs: Zhongyun Fan, Brunel University; Mark Jolly, Cranfield University

2:30 PM Keynote

4D synchrotron Imaging Insights into Grain Formation: *Peter Lee*¹; Biao Cai²; Mohammad Azeem¹; Enyu Guo³; David St John⁴; ¹University College London; ²University of Birmingham; ³Dalian University of Technology; ⁴University of Queensland

2:50 PM Keynote

X-Ray Synchrotron Radiography Investigations of Primary and Secondary Phase Nucleation in Aluminium Alloys: Enzo Liotti¹; Andrew Lui¹; *Patrick Grant*¹; ¹University of Oxford

3:10 PM Invited

δ - γ transformation during / after δ dendritic solidification in Fe-C-Mn-Si alloys: time-resolved 2D / 3D imaging: *Hideyuki Yasuda*¹; Takahiro Hashimoto¹; Naoki Sei¹; Kohei Morishita¹; Masato Yoshiya²; ¹Kyoto University; ²Osaka University

3:30 PM

Four-phase eutectic topology in solidification rosettes: Djar Oquab¹; Claudie Josse²; Arnaud Proietti²; Alessandro Pugliara¹; *Jacques Lacaze*³; ¹CIRIMAT; ²UMS Castaing; ³CNRS

3:50 PM

In-Situ Observation of Hyperbranched Dendrites in Aluminum Alloys: *Tiberiu Stan*¹; Yue Sun¹; Kate Elder¹; Xianghui Xiao²; Peter Voorhees³; ¹Northwestern University; ²Argonne National Laboratory

4:10 PM Break

4:20 PM

In-situ observation of nanoparticle-enabled diffusion control by high-speed synchrotron X-ray imaging: Joseph Volpe¹; *Qilin Guo*¹; Cang Zhao²; Lianghua Xiong¹; Tao Sun²; Lianyi Chen¹; ¹Missouri University Of Science & Tech; ²Argonne National Laboratory

4:40 PM Invited

Numerical modeling of heterogeneous nucleation behavior of equiaxed grains during directional solidification: *Lang Yuan*¹; David StJohn²; Arvind Prasad²; Peter Lee³; ¹University of South Carolina; ²The University of Queensland; ³University College London

5:00 PM Invited

Phase-field studies of the interplay between nucleation and growth in light metal alloys: *Janin Eiken*¹; ¹Access E.V.

5:20 PM

Understanding Compositional Effects of Dendritic Solidification via Directional Solidification and Cellular Automaton Simulation: *Colin Ridgeway*¹; Cheng Gu¹; Alan Luo¹; ¹Ohio State Univ

5:40 PM

Heterogeneities in Homogeneous Nucleation during Solidification of Pure Metals by Atomistic Simulations: *Mohsen Asle Zaeem*¹; Avik Mahata²; Michael Baskes³; ¹Colorado School of Mines; ²Missouri University of Science and Technology; ³University of California, San Diego

Thermo-mechanical Response of Materials Investigated through Novel in-situ Experiments and Modeling — Session II

Sponsored by: TMS Functional Materials Division, TMS Structural Materials Division, TMS: Advanced Characterization, Testing, and Simulation Committee, TMS: Thin Films and Interfaces Committee
Program Organizers: Saurabh Puri, Microstructure Engineering; Robert Wheeler, Microtesting Solutions LLC; Dongchan Jang, Kaist; Amit Pandey, LG Fuel Cell Systems; Josh Kacher, Georgia Institute of Technology; Dhriti Bhattacharyya, Australian Nuclear Science and Technology Organization

Monday PM
March 11, 2019

Room: 301A
Location: Henry B. Gonzalez
Convention Center

Session Chairs: Robert Wheeler, Microtesting Solutions LLC; Somuri Prasad, Sandia National Laboratories

2:30 PM Keynote

Direct Visualization of Kirkendall Voids at Cu-Au Interfaces from In-situ TEM Heating Studies: *Somuri Prasad*¹; Paul Kotula¹; Fadi Abdeljawad¹; ¹Sandia National Laboratories

3:10 PM

Dislocation pile-ups at β 1 precipitate interfaces in Mg-rare earth (RE) alloys: *Zihua Huang*¹; Amit Misra¹; John Allison¹; Chaoming Yang¹; Liang Qi¹; ¹University of Michigan

3:30 PM

Imaging Short Range Order in Ti-6Al with TEM/STEM Techniques: *Ruopeng Zhang*¹; Colin Ophus²; Thomas Pekin¹; Burak Ozdol²; Max Poschmann¹; Yu Deng³; Shradha Vachhani⁴; Mark Asta¹; Daryl Chrzan¹; Andrew Minor¹; ¹UC Berkeley; ²Lawrence Berkeley National Laboratory; ³Nanjing University; ⁴Bruker Nano Surfaces

3:50 PM

Nanoscale Plastic Wear of Olivine Investigated by In Situ TEM: *Eric Hintsala*¹; Sanjit Bhowmick¹; Douglas Stauffer¹; S. A. Syed Asif¹; ¹Bruker Nano Surfaces

4:10 PM Break

4:30 PM Keynote

A multi-scale in situ approach to understanding the collective deformation of ferroelastic polycrystalline ceramics: Charles Smith¹; Jessica Krogstad²; ¹Univ of Illinois Urbana-Champaign; ²Univ of Illinois Urbana-Champaign

5:10 PM

Deformation mechanism maps for submicron aluminum at elevated temperatures: Degang Xie¹; Rongrong Zhang¹; Zhiwei Shan¹; ¹Xian Jiaotong Univ

5:30 PM

Operando STEM guide catalyst regeneration method development: Kinga Unocic¹; Jae-Soon Choi¹; Theodore Krause¹; Jeffrey Miller¹; Franklin Tao¹; Susan Habas¹; ¹Oak Ridge National Laboratory

TMS 2019 Annual Meeting & Exhibition — Plenary Session

Monday PM
March 11, 2019

Room: Lila Cockrell Theater
Location: Henry B. Gonzalez
Convention Center

12:00 PM Introductory Comments

12:05 PM Plenary

The Next Materials Frontier for Flight: Luana Iorio¹; ¹GE Aviation

12:45 PM Concluding Comments

10th International Symposium on High Temperature Metallurgical Processing — Fundamentals of Metallurgical Processes

Sponsored by: TMS: Pyrometallurgy Committee

Program Organizers: Tao Jiang, Central South University; Jiann-Yang Hwang, Michigan Technological Univ; Dean Gregurek, RHI Magnesita; Zhiwei Peng, Central South University; Jerome Downey, Montana Technological University; Baojun Zhao, University of Queensland; Onuralp Yucel, Istanbul Technical University; Ender Keskinilic, Atilim University; Rafael Padilla, Univ of Concepcion; Elsa Olivetti, Massachusetts Institute of Tech; Camille Fleurialt, Gopher Resource

Tuesday AM
March 12, 2019

Room: 208
Location: Henry B. Gonzalez
Convention Center

Session Chairs: Jesse White, Elkem Carbon AS; Guanghui Li, Central South University

8:30 AM Introductory Comments

8:35 AM

Analysis of Reaction Mechanism on Poly-vinyl Chloride (PVC) Pyrolysis in the Presence of Nickel (II and III) Oxides: Lan Hong¹; Wendi Zhang¹; Taillin Li¹; ¹Soochow Univ

8:55 AM

The Effects of Grain Size of Magnesium Powders on the Metallothermic Production of Advanced Ceramics: Murat Alkan¹; Haydar Günes¹; Hüseyin Eren Obuz¹; ¹DEU

9:15 AM

Effects of Cr₂O₃, FeO and CaO/SiO₂ Ratio on the Apparent Viscosity of CaO-SiO₂-MgO-MnO-FeO-Cr₂O₃ Slags: Bing Huang¹; Mingmei Zhu¹; Yong Zhong; ¹Chong Qing University

9:35 AM

Thermodynamic Analysis of Carbothermic Reduction of Electric Arc Furnace Dust: Qing Ye¹; Zhiwei Peng¹; Lei Ye¹; Liancheng Wang¹; Robin Augustine²; Joonho Lee³; Yong Liu⁴; Mudan Liu⁴; Mingjun Rao¹; Gunaghui Li¹; Tao Jiang¹; ¹Central South Univ; ²Uppsala University; ³Korea University; ⁴Guangdong Provincial Key Laboratory of Development and Comprehensive Utilization of Mineral Resources

9:55 AM

Influence of Cr₂O₃ Content on Slag Viscosity under Different Situations: Yanling Zhang¹; ¹University of Science & Technology Beijing

10:15 AM Break

10:35 AM

Influence of Mold Slags with Different Reactivities on the Erosion Rate of ZrO₂-C Bearing Submergence Entry Nozzle: Xuesi Wang¹; Qian Wang¹; Changping Zeng¹; Huazhi Yuan¹; ¹Chongqing University

10:55 AM

A new method for determining high-temperature wettability of bonding phase: Yijia Dong¹; Li Guanghui¹; Chen Liu¹; Qiang Zhong¹; Hu Sun¹; Jun Luo¹; Tao Jiang¹; ¹Central South Univ

11:15 AM

Thermodynamic Modelling of Solidification and Viscosity studies of Titania Slag: Saida Shaik¹; Tarun Kundu¹; ¹IIT Kharagpur

11:35 AM Concluding Comments

2019 Energy Technologies and Carbon Dioxide Management Symposium — Nanomaterials and Catalysts

Sponsored by: TMS: Energy Committee

Program Organizers: Tao Wang, Nucor Castrip Arkansas; Xiaobo Chen, RMIT; Donna Guillen, Idaho National Laboratory; Lei Zhang, University of Alaska Fairbanks; Ziqi Sun, Queensland University of Technology; Cong Wang, Northeastern University; Nawshad Haque, CSIRO; John Howarter, Purdue University; Neale Neelameggham, IND LLC

Tuesday AM
March 12, 2019

Room: 007D
Location: Henry B. Gonzalez
Convention Center

Session Chair: To Be Announced

8:30 AM

Metal Oxides Nanostructures for Energy Applications: Ziqi Sun¹; ¹Queensland Univ of Tech

8:50 AM

Effect of Biomaterial (Citrullus Lanatus Peels) Nanolubricant on the Thermal Performance and Energy Consumption of R600a in Refrigeration System: Oluseyi Ajayi¹; ¹Covenant University, Ota, Nigeria

9:10 AM

Two-dimensional Materials and their Hybrids in Energy Applications: Ting Liao¹; Ziqi Sun¹; ¹Queensland Univ of Tech

9:30 AM

Calcium-looping Lime Production: An Energy-efficient and Cost-effective Approach for Decarbonisation of the Steelmaking Industry: Sicong Tian¹; ¹Macquarie University

9:50 AM Break

10:10 AM

Performance and Energy Consumption Analyses of R290/bio-based Nanolubricant as a Replacement for R22 Refrigerant in Air-conditioning System: Oluseyi Ajayi¹; ¹Covenant University, Ota, Nigeria

10:30 AM

Characterizations of Manganese-based Desulfurated Sorbents for Flue Gas Desulfurization: *Yanni Xuan*¹; Qingbo Yu¹; Kun Wang¹; Wenjun Duan¹; ¹Northeastern University

10:50 AM

The Manganese-based Zr and Cr Polymeric Pillared Interlayered Montmorillonite for the Low-temperature Selective Catalytic Reduction of NO_x by NH₃ in Metallurgical Sintering Flue Gas: *Zhicheng Han*¹; Qingbo Yu¹; Kaijie Liu¹; Huaqing Xie¹; Qin Qin¹; ¹Northeastern University

2019 International Metallurgical Processes Workshop for Young Scholars (IMPROWYS 2019) — Solidification Processing

Sponsored by: TMS Extraction and Processing Division
Program Organizers: Cong Wang, Northeastern University; Amy Clarke, Colorado School of Mines; Kinnor Chattopadhyay, University of Toronto; Bryan Webler, Carnegie Mellon University

Tuesday AM
March 12, 2019

Room: 213B
Location: Henry B. Gonzalez
Convention Center

Funding support provided by: Korean Institute of Metals and Materials

Session Chairs: Bryan Webler, Carnegie Mellon University; Caizhi Zhou, Missouri University of Science and Technology

8:30 AM Invited

Containerless Materials Processing: *Jonghyun Lee*¹; ¹Iowa State University

9:00 AM Invited

Effect of Al Addition to Si-Cr Based Solvent for Solution Growth of Single Crystalline SiC: *Sakiko Kawanishi*¹; Hironori Daikoku²; Takeshi Yoshikawa²; ¹Tohoku University; ²The University of Tokyo

9:30 AM Invited

Thermophysical Properties and Atomic Structure of Metastable Liquid Ti-Ni Alloys: Haipeng Wang¹; *P. Zou*¹; B. Wei¹; ¹Northwestern Polytechnical University

10:00 AM Break

10:20 AM Invited

Prediction of Porosity Formation during Directional Solidification of Nickel-based Superalloys: *Junsheng Wang*¹; Keli Liu¹; ¹Beijing Institute of Technology

10:50 AM

A New Efficient Quantitative Multi-component Phase Field – Lattice Boltzmann Model for Simulating Ti6Al4V Solidified Dendrite under Forced Flow: *Weizhao Sun*¹; Yu Xie²; Rui Yan¹; Hongbiao Dong³; Tao Jing¹; ¹Key Laboratory for Advanced Materials Processing Technology, Ministry of Education, School of Materials Science and Engineering, Tsinghua University; ²State Key Laboratory of Development and Application Technology of Automotive Steel, Baoshan Iron & Steel Co., Ltd.; ³Department of Engineering, University of Leicester

11:10 AM

Recalcescence and Segregation Phenomena during Equiaxed Dendritic Solidification of Fe-C Alloy: *Weiling Wang*¹; Shiwei Yin¹; Sen Luo¹; Miaoyong Zhu¹; ¹Northeastern Univ

11:30 AM

Special Metallurgical Characteristics of Al-Mg-Si Alloy Based on Sub-rapid Solidification Process: *Zetian Liu*¹; Cheng Wang¹; Huiyuan Wang¹; ¹Jilin University

11:50 AM

Nucleation of Heteroepitaxial Recrystallization in Polycrystalline Superalloys: *Brady Dowdell*¹; Victoria Miller¹; ¹North Carolina State University

2019 Symposium on Functional Nanomaterials: Synthesis, Integration, and Application of Emerging Nanomaterials — Two-dimensional Nanomaterials I

Sponsored by: TMS: Nanomaterials Committee

Program Organizers: Chang-Yong Nam, Brookhaven National Laboratory; Jiyoung Chang, University of Utah; Pei Dong, George Mason University; Yong Lin Kong, University of Utah; Shengfeng Yang, Indiana Univ. Purdue Univ. Indianapolis; SungWoo Nam, University of Illinois

Tuesday AM
March 12, 2019

Room: 213A
Location: Henry B. Gonzalez
Convention Center

Session Chairs: SungWoo Nam, University of Illinois at Urbana-Champaign; Jie Yao, University of California, Berkeley

8:30 AM Invited

Solution Based Preparation of van der Waals Materials and their Heterostructures: *Jie Yao*¹; ¹University of California Berkeley

9:00 AM

High-throughput Optical Thickness and Size Characterization of 2D Materials: William Dickinson¹; *Hannes Schniepp*¹; ¹The College of William & Mary

9:20 AM

The Effect of Processing Conditions on the Growth of Transition Metal Dichalcogenides by Molecular Beam Epitaxy: *Peter Litwin*¹; Stephen McDonnell¹; ¹Univ of Virginia

9:40 AM

High Anisotropy in Tubular Layered KP15: *Danmin Liu*¹; Nan Tian¹; Yanhan Yang¹; Yongzhe Zhang¹; ¹Beijing Univ Of Tech

10:00 AM Break

10:20 AM Invited

Centimeter Scale Growth and Integration of 2D TMDs: Vertically-controlled 2D Layer Orientation and 2D/2D Hetero-stacking on Arbitrary Substrates: *Yeonwoong Jung*¹; ¹University of Central Florida

10:50 AM Invited

Phase Engineering in a Novel Puckered Pentagonal 2D PdSe₂ for High Performance Single Material Electronic Devices: *Kai Xiao*¹; Akinola Oyedele¹; Shize Yang¹; Chenze Liu¹; Liangbo Liang¹; Alexander Puzetzkyl¹; Bobby Sumpter¹; Gerd Duscher¹; Christopher Rouleau¹; David Geohagan¹; ¹Oak Ridge National Laboratory

11:20 AM

Experimental Motivation for the High Monolayer Selectivity of Covalent-bond Exfoliation of 2D Transition Metal Dichalcogenides: *Clarissa Towle*¹; Hannah Gramling¹; Mary Scott¹; Joel Ager²; ¹University of California, Berkeley; ²Lawrence Berkeley National Laboratory

11:40 AM

Theory of Thin Film Mediated Exfoliation of van der Waals Bonded Layered Materials: *Haoye Sun*¹; Eric Sirott¹; James Mastandrea¹; Hannah Gramling¹; Yuzhi Zhou²; Hayden Taylor¹; Joel Ager¹; Daryl Chrzan¹; ¹UC Berkeley; ²Laboratory of Computational Physics

5th Symposium on Advanced Materials for Energy Conversion and Storage — Functional Materials Including High-temperature Ceramics and Alloys

Sponsored by: TMS: High Temperature Alloys Committee
Program Organizers: Amit Pandey, LG Fuel Cell Systems; Partha Mukherjee, Purdue University; Surojit Gupta, University of North Dakota; Kyle Brinkman, Clemson Univ; Jung Pyung Choi, Pacific Northwest National Laboratory; Soumendra Basu, Boston University; Paul Ohodnicki, National Energy Technology Laboratory

Tuesday AM
March 12, 2019
Room: 225A
Location: Henry B. Gonzalez
Convention Center

Session Chairs: Jung Pyung Choi, Pacific Northwest National Laboratory; Paul Ohodnicki, NETL

8:30 AM Keynote

Oxide-based Thermoelectric Generators enabled by Additive and Layered Manufacturing: *Sanjay Sampath*¹; Hwasoo Lee¹; ¹Stony Brook University

9:00 AM Invited

Functional Sensor Material and Device Development for Energy-related Sensing Applications: *Paul Ohodnicki*¹; ¹National Energy Technology Lab

9:25 AM Invited

Cold Spray Additive Manufacturing of Thermoelectric Generators: *Alexander Baker*¹; Richard Thuss²; Elissaios Stavrou¹; Joe Zaug¹; Scott McCall¹; Harry Radousky¹; ¹Lawrence Livermore National Laboratory; ²TTEC Thermoelectric Technologies

9:50 AM

Ceramic Encapsulated Metallic (CEM) High Temperature Phase Change Material for Energy Storage: *Brian Jolly*¹; Jake McMurray¹; Austin Schumacher¹; Stephen Raiman¹; Edgar Lara-Curzio¹; Chad Parish¹; ¹Oak Ridge National Laboratory

10:10 AM Break

10:30 AM

Wide Voltage Symmetric Supercapacitor based on High-performance Carbon Clothes Resulting in Enhanced Energy Densities: *Kwadwo Owusu*¹; ¹Wuhan University of Technology

10:50 AM

DOC Stabilized PVAc / MWCNTs Composites for Higher Thermoelectric Performance: Hussein Badr¹; Shadi Foad Saber¹; Mahmoud Sorour¹; *Iman El Mahallawi*²; Fawzi Elrefaie¹; ¹Cairo University; ²Cairo University/British University in Egypt

11:10 AM

Printable and Flexible Heterogeneous Nanostructures for Wearable Thermoelectrics: Zimeng Zhang¹; *Shiren Wang*¹; ¹Texas A&M University

11:30 AM

Sustainable Hydrogen Generation Enabled through Hydrolysis of Hierarchical Nanoporous Aluminum in Neutral Water: *Eric Detsi*¹; John Corsi¹; Jintao Fu¹; Zeyu Wang¹; ¹Univ of Pennsylvania

Additive Manufacturing and Welding: Physical and Mechanical Metallurgy of Rapidly Solidified Metals — In Situ Process Monitoring

Sponsored by: TMS: Additive Manufacturing Committee
Program Organizers: Allison Beese, Pennsylvania State University; Eric Lass, National Institute of Standards and Technology; David Bourell, University of Texas; John Carpenter, Los Alamos National Laboratory; Kester Clarke, Colorado School of Mines; Daniel Coughlin, Los Alamos National Laboratory; Christian Leinenbach, Empa, Swiss Federal Laboratories for Materials Science and Technology; Behrang Poorganji, GE Additive; Judy Schneider, University of Alabama At Huntsville; Lee Semiatin, US Air Force Research Laboratory; Mark Stoudt, National Institute of Standards and Technology; Chantal Sudbrack, QuesTek Innovations LLC

Tuesday AM
March 12, 2019
Room: 221A
Location: Henry B. Gonzalez
Convention Center

Session Chair: Kester Clarke, Colorado School of Mines

8:30 AM Invited

In-situ Monitoring of Directed Energy Deposition and Its Impact on the Development of In-process Control: *Jian Cao*¹; ¹Northwestern University

9:00 AM

Differentiating Defect Types in LENS Metal AM via In Situ Pyrometer Process Monitoring: *Tom Stockman*¹; Judith Schneider²; Cameron Knapp¹; Caleb Horan¹; John Carpenter¹; Kevin Henderson¹; Brian Patterson¹; ¹Los Alamos National Laboratory; ²University of Alabama in Huntsville

9:20 AM

Process Analysis of Powder Bed AM Using Two Color Pyrometer Data: *John Mitchell*¹; Thomas Ivanoff²; Daryl Dagle¹; Bradley Jared¹; Jon Madison¹; Laura Swiler¹; David Saiz¹; Josh Koepke¹; ¹Sandia National Laboratories

9:40 AM

In-situ Pyrometer Analysis of Powder Bed Printed Inconel 718 of Various Thicknesses: *Lev Chechik*¹; Iain Todd¹; ¹University of Sheffield

10:00 AM Break

10:20 AM

In-situ Melt Pool Monitoring Methodologies for the Laser Powder Bed Fusion Process: *Jack Beuth*¹; Brian Fisher¹; Luke Scime¹; ¹Carnegie Mellon Univ

10:40 AM

Quantifying Particle-melt Interactions via In-situ high Speed Imaging in Laser Engineered Net Shaping (LENS): *James Haley*¹; Parnian Kiani¹; Sen Jiang¹; Baolong Zheng¹; Julie Schoenung¹; Enrique Lavernia¹; ¹University of California Irvine

11:00 AM

Defect Detection in Metal Additive Manufacturing through Application of In-situ Diagnostics: Bradley Jared¹; *Jonathan Madison*¹; Laura Swiler¹; Thomas Ivanoff²; Burke Kernen¹; Jay Carroll¹; Todd Huber¹; Manyalibo Matthews²; Forien Jean-Baptiste²; Chris Spadaccini²; Gabe Guss²; Philip Depond²; John Carpenter³; Tom Stockman³; Elena Garlea⁴; Phong Du⁵; Ben Brown⁵; ¹Sandia National Laboratories; ²Lawrence Livermore National Laboratory; ³Los Alamos National Laboratory; ⁴Y-12 National Security Complex; ⁵Kansas City National Security Campus

11:20 AM

High-resolution Powder Bed Scanner for In-line Defect Characterization: *Tan-Phuc Le*¹; Matteo Seita¹; ¹Nanyang Technological University Singapore

11:40 AM

In-situ Monitoring System for Electron Beam Freeform Fabrication Based on Visual Detection and Backscattered Electron Imaging: *Shuhe Chang*¹; ¹Tsinghua University

Additive Manufacturing for Energy Applications — Microstructure and Characterization

Sponsored by: TMS: Nuclear Materials Committee
Program Organizers: Isabella Van Rooyen, Idaho National Laboratory; Subhashish Meher, Idaho National Laboratory; Indrajit Charit, University of Idaho; Somayeh Pasebani, Oregon State University; Chad Duty, University of Tennessee

Tuesday AM
March 12, 2019
Room: 223
Location: Henry B. Gonzalez Convention Center

Session Chairs: Subhashish Meher, Idaho National Laboratory; Chad Duty, University of Tennessee

8:30 AM Invited

Alloy 800/800H by Laser Powder Bed Fusion: Xiaoyuan Lou¹; Raul Rebak²; ¹Auburn University; ²GE Global Research

9:00 AM Invited

High Temperature Behavior of Additively Manufactured Inconel 625 Linked to Microstructure through In Situ Neutron Diffraction Experiments: Allison Beese¹; Zhuqing Wang²; Alexandru Stoica³; Dong Ma³; ¹Pennsylvania State University; ²Kennametal; ³Oak Ridge National Laboratory

9:30 AM

Effect of High Initial Dislocation Density Microstructure on the Strain Hardening and Anisotropy of Additively Manufactured 316L Stainless Steel: Jishnu Bhattacharyya¹; Fulin Wang¹; Md Shamsujjoha¹; James Fitzgerald¹; Sean Agnew¹; ¹University of Virginia

9:50 AM

Relations between Microstructure and Oxidation Resistance of an Additively Manufactured Nickel-based Superalloy: Zhenyu Liu¹; Satia Soltanattar¹; Brian Gleeson¹; Guofeng Wang¹; ¹Univ of Pittsburgh

10:10 AM Break

10:30 AM Invited

In-situ Characterization of Solidification: Insights for Understanding Additive Manufacturing: Amy Clarke¹; Joseph McKeown²; John Roehling²; Damien Tournet³; Seth Imhoff⁴; John Gibbs⁴; Paul Gibbs⁴; Kamel Fezzaa⁵; Tao Sun⁵; Michelle Espy⁴; James Hunter⁴; Alain Karma⁶; ¹Colorado School of Mines; ²Lawrence Livermore National Laboratory; ³IMDEA Materials; ⁴Los Alamos National Laboratory; ⁵Argonne National Laboratory; ⁶Northeastern University

11:00 AM

In-situ Dual Beam Kr Irradiation and He Implantation in Additive Manufactured 316L SS: Jing Hu¹; Shilei Li²; Weiying Chen¹; Pete Baldo¹; Mark Kirk¹; Meimei Li¹; ¹Argonne National Laboratory; ²University of Science and Technology Beijing

11:20 AM

Influence of Fine Solidification Microstructure on the Radiation Response of 316 Stainless Steels Produced by Laser Powder Bed Fusion and Directed Energy Deposition: Gabriel Meric de Bellefon¹; Kaila Bertsch¹; Dan Thoma¹; ¹University Of Wisconsin Madison

11:40 AM

Microstructural Characterization of a Stainless Steel Component Manufactured via Additive Manufacturing: Emmanuel Perez¹; Jhonathan Rosales-Franco¹; Isabella Van Rooyen¹; George Griffith¹; John Ralls²; Daniel Hebert²; ¹Idaho National Laboratory; ²Newport News Shipbuilding, A Division of Huntington Ingalls Industries

Additive Manufacturing of Metals: Fatigue and Fracture III — Session I

Sponsored by: TMS: Additive Manufacturing Committee
Program Organizers: Nikolas Hrabe, NIST-Boulder; Steve Daniewicz, University of Alabama; John Lewandowski, Case Western Reserve Univ; Nima Shamsaei, Auburn University; Mohsen Seifi, ASTM International/Case Western Reserve University

Tuesday AM
March 12, 2019
Room: 221B
Location: Henry B. Gonzalez Convention Center

Session Chair: Nima Shamsaei, Auburn University

8:30 AM Invited

A Summary of NASA's Efforts for the Development of Additive Manufacturing Metallic Materials: Richard Russell¹; Eric Burke¹; Robert Carter¹; Edward Glaesgen¹; Bryan Mcenerney²; Karen Taminger¹; Douglas Wells¹; ¹NASA; ²Jet Propulsion Laboratory

9:00 AM

Tensile, Creep and LCF Behavior of SLM Fabricated Inconel 718 in As-fabricated and HIPed Conditions: Sasidharan Periane¹; Arnaud Duchosal¹; Sébastien Vaudreuil²; Hicham Chibane³; Jonathan Cormier⁴; Rene Leroy¹; ¹Gabriel Lamé Laboratory, Université de Tours; ²Euro-Mediterranean University; ³INSA, Strasbourg; ⁴Institut P - Département de Physique et Mécanique des Matériaux UPR CNRS 3346 ISAE-ENSMA

9:20 AM

Effect of Internal Hydrogen on the Mechanical Behavior of Additively Manufactured Stainless Steels: Thale Smith¹; Joshua Sugar¹; Christine Smudde²; Dorian Balch¹; Chris San Marchi¹; ¹Sandia National Laboratories; ²University of California, Davis

9:40 AM

Evolution of Defect Characteristics During In Situ Tensile Loading of a Laser Powder Bed Fusion Processed 316L Stainless Steel Alloy: A Synchrotron X-ray Tomography Study: Hahn Choo¹; Kin-Ling Sham¹; Xianghui Xiao²; Derek Morin³; Elena Garlea³; ¹University of Tennessee; ²Argonne National Laboratory; ³Y-12 National Security Complex

10:00 AM Break

10:20 AM Invited

Fatigue Assessment of Additively Materials by Means of the Local Strain Energy: Filippo Berto¹; ¹Norwegian University of Science and Technology

10:50 AM

A Microstructural Investigation on the Crack Initiation Behavior of an Additively Manufactured Austenitic Stainless Steel: Jonathan Pegues¹; Michael Roach²; Nima Shamsaei¹; ¹Auburn University; ²University of Mississippi Medical Center

11:10 AM

Multiaxial Fatigue Analysis of Additively Manufactured 17-4 PH Stainless Steel Notched Specimens: Filippo Berto¹; Ali Fatemi²; Nima Shamsaei³; Seyed Mohammad Javad Razavi¹; ¹Norwegian University of Science and Technology; ²University of Memphis; ³Auburn University

11:30 AM

About a Digital Twin for the Fatigue Approach of Additively Manufactured Components: Rainer Wagoner¹; Matilde Scurria²; Benjamin Möller¹; Tobias Melz¹; ¹Fraunhofer Institute for Structural Durability and System Reliability LBF; ²Technische University Darmstadt

Additive Manufacturing of Metals: Microstructural Evolution and Phase Transformations — Ni-based Systems I

Sponsored by: TMS: Phase Transformations Committee, TMS: Additive Manufacturing Committee, TMS: High Temperature Alloys Committee

Program Organizers: Bij-Na Kim, LPW Technology / Lancaster University; Eric Lass, National Institute of Standards and Technology; Mohsen Asle Zaeem, Colorado School of Mines; Sudarsanam Babu, The University of Tennessee, Knoxville; Ryan Dehoff, Oak Ridge National Laboratory; Gerhard Fuchs, University of Florida; Chantal Sudbrack, QuesTek Innovations LLC

Tuesday AM
March 12, 2019

Room: 221C
Location: Henry B. Gonzalez
Convention Center

Session Chairs: Eric Lass, NIST; Emma White, Iowa State University / Ames Laboratory

8:30 AM Invited

GE Additive – Exploring the Processing-microstructure Connection for Nickel-based Materials: *Deborah Whitis*¹; Theodore Anderson¹; Andrew Wessman¹; Laura Dial¹; ¹General Electric Company

9:00 AM

Microstructural Evolution in Nickel Alloy 718 Produced by Laser-powder Bed Fusion Additive Manufacturing: *Hyeyun Song*¹; Alber Sadek¹; Paul Boulware¹; Heimdall Mendoza¹; Rodrigo Enriquez¹; ¹EWI

9:20 AM

The Role of Homogenization in the Post-processing of Inconel 718 Made by Casting and Additive Manufacturing: Yunhao Zhao¹; Jian Liu¹; Albert To¹; *Wei Xiong*¹; ¹University of Pittsburgh

9:40 AM

Microstructural Stability of Haynes 282 Fabricated by Electron Beam and Selective Laser Melting: *Sebastien Dryepondt*¹; Mike Kirka¹; Kinga Unocic¹; ¹Oak Ridge National Laboratory

10:00 AM Break

10:20 AM Invited

Prismatic Geometries to Components: Challenges in Maintaining Properties and Microstructure in High Gamma Prime Ni-base Superalloys Fabricated by AM: *Michael Kirka*¹; Sebastien Dryepondt¹; Yousub Lee¹; Peeyush Nandwana¹; Andres Marques Rossey¹; Charles Hawkins¹; Charles Joslin¹; Obed Acevedo¹; ¹Oak Ridge National Laboratory

10:50 AM

Investigation of Post-processing Heat Treatment on the Mechanical and Microstructural Properties of Nickel-Based Superalloy Inconel 718 Manufactured by Laser Powder-Bed Fusion: *Thomas Gallmeyer*¹; Aaron Stebner¹; Behnam Aminahmadi¹; ¹Colorado School of Mines

11:10 AM

Quantification of Local and Global Residual Stresses in Additively Manufactured Inconel Alloys using Electron Microscopy Techniques: *Kathryn Small*¹; Zach Clayburn²; David Fullwood²; Mitra Taheri¹; ¹Drexel University; ²Brigham Young University

11:30 AM

Effect on Microstructure and Tensile Properties of LPBF IN718 Annealed at 1160 °C": *David Newell*¹; David O'Hara²; Greg Cobb²; Ben Doane²; ¹Air Force Institute of Technology (AFIT)/ENY; ²Air Force Institute of Technology/ENY

11:50 AM

The Microtexture and Tensile Properties of Continuous-wave and Quasi-continuous-wave Laser Powder Deposited Inconel 718: *Zhaoyang Liu*¹; Qiang Zhu¹; Lijun Song²; ¹Southern University of Science and Technology; ²Hunan University

Advanced Characterization Techniques for Quantifying and Modeling Deformation — Session III

Sponsored by: 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; C. Tasan, Massachusetts Institute of Technology; M Arul Kumar, Los Alamos National Laboratory

Tuesday AM
March 12, 2019

Room: 302A
Location: Henry B. Gonzalez
Convention Center

Session Chairs: Christoph Kirchlechner, Max-Planck-Institut; Daniel Caillard, Centre Natl De La Research Science

8:30 AM Invited

Kinetics of Dislocations, Solid Solution Hardening and Dynamic Strain Ageing in Fe and Fe Alloys: *Daniel Caillard*¹; ¹Centre Natl De La Research Science

9:00 AM

In situ Characterization of Dislocation Motion during Hydrogen Diffusion in Steels: *Jinwoo Kim*¹; Haoxue Yan¹; Cemal Cem Tasan¹; ¹Massachusetts Institute of Technology

9:20 AM

Understanding the Alpha-omega Phase Transformation in Titanium and Zirconium using Spherical Nanoindentation and EBSD: *Cayla Harvey*¹; Jordan Weaver²; Ben Morrow³; M. Arul Kumar³; Irene Beyerlein⁴; Siddhartha Pathak⁵; ¹University of Nevada, Reno; ²National Institute of Standards and Technology; ³Los Alamos National Laboratory; ⁴University of California, Santa Barbara; ⁵University of Nevada, Reno

9:40 AM

Dislocation-type Evolution in Quasi-statically Compressed Polycrystalline Metals: *Chaoyi Zhu*¹; Tyler Harrington¹; Olivia Dippo¹; George Gray III²; Kenneth Vecchio¹; ¹University of California San Diego; ²Los Alamos National Laboratory

10:00 AM Break

10:20 AM Invited

Dislocation Slip Transmission through a Coherent $\Sigma 3\{111\}$ Copper Twin Boundary: Strain Rate Sensitivity, Activation Volume and Strength Distribution Function: Nataliya Malyar¹; Blazej Grabowski¹; Gerhard Dehm¹; *Christoph Kirchlechner*¹; ¹Max-Planck-Institut

10:50 AM

Characterization of Dislocation Evolution using Electron Channeling Contrast Imaging and its Effect on Superconducting Properties of Nb: *Mingmin Wang*¹; Shreyas Balachandran²; Santosh Chetri²; Anatolii Polyanski²; Peter Lee²; Chris Compton³; Thomas Bieler¹; ¹Michigan State University; ²National High Magnetic Field Laboratory; ³Facility for Rare Isotope Beams

11:10 AM

In Situ Analysis of Dislocation/Grain Boundary Interactions in Mg Alloys: *Mohsen Taheri Andani*¹; John Allison¹; Amit Misra¹; ¹University of Michigan

11:30 AM

In Situ EBSD Study on the Influence of Constituent Particles on Dislocation Accumulation during Deformation of AA6451: *Yung Suk Jeremy Yoo*¹; Sazol Das²; Richard Hamerton²; Josh Kacher¹; ¹Georgia Institute of Technology; ²Novelis Inc.

11:50 AM

Nanoindentation for Identification of Phase Change in Nano-precipitates: Rebecca Wang¹; *Jaclyn Cann*²; Cem Tasan²; ¹University of Oxford; ²Massachusetts Institute of Technology; ³Massachusetts Institute of Technology

Advanced High-Strength Steels III — Microstructure, Processing, and Properties

Advanced High-Strength Steels I

Sponsored by: TMS: Steels Committee

Program Organizers: Amy Clarke, Colorado School of Mines; MingXin Huang, University of Hong Kong; C. Tasan, Massachusetts Institute of Technology; Kester Clarke, Colorado School of Mines; Ana Luiza Araujo, Colorado School of Mines

Tuesday AM
March 12, 2019

Room: 205
Location: Henry B. Gonzalez
Convention Center

Session Chair: To Be Announced

8:30 AM

Are Deformation Twins Important for Twinning-Induced Plasticity Steels?: *MingXin Huang*¹; ¹University of Hong Kong

8:50 AM

Orientation-dependent Deformation Mechanisms and Twin Boundary-associated Strengthening in Fe-Mn-C TWIP Steel Micro-Pillar: *Won Seok Choi*¹; Stefanie Sandlöbes²; Nataliya Malyar³; Christoph Kirchlechner³; Sandra Korte-Kerzel²; Gerhard Dehm³; Bruno De Cooman⁴; Dierk Raabe²; ¹Korea Advanced Institute of Science and Technology; ²RWTH Aachen University; ³Max-Planck-Institut für Eisenforschung GmbH; ⁴NLMK

9:10 AM

Effects of Strain Rates on the Mechanical Properties and Microstructure in Precipitation Hardening TWIPING Induced Plasticity (TWIP) Steel: *Zhenli Mi*¹; Yonggang Yang¹; Zhen Wang¹; Dayuan Zhou¹; Huijian Li¹; ¹University of Science and Technology Beijing

9:30 AM

Kinetics of Deformation Processes in High-alloy Cast TRIP/TWIP Steels Determined by Acoustic Emission and Scanning Electron Microscopy: *Anja Weidner*¹; Robert Lehnert¹; Mikhail Linderov²; Alexei Vinogradov³; Horst Biermann¹; ¹TU Bergakademie Freiberg; ²Togliatti State University; ³Norwegian University of Science and Technology

9:50 AM Break

10:10 AM

Phase Transformation and Deformation Behavior in a TRIP Sheet Steel under Annealing and Tension by Real-time In Situ Neutron Diffraction: *Dunji Yu*¹; Yan Chen¹; Lu Huang²; *Ke An*¹; ¹Oak Ridge National Laboratory; ²United States Steel Corporation

10:30 AM

An In Situ Neutron Diffraction Study of Stress Partitioning and Dislocation Strengthening Behavior in TRIP-assisted Bainitic Steels: *Shihui He*¹; Mingxin Huang¹; Kangying Zhu¹; ¹The University of Hong Kong

10:50 AM

Tensile Deformation Behavior of 1 GPa-grade TRIP-aided Multi-microstructure Steels Studied by In Situ Neutron Diffraction: *Noriyuki Tsuchida*¹; Takaaki Tanaka²; Yuki Toji²; ¹University of Hyogo; ²JFE steel

11:10 AM

Dual Effects of Retained Austenite for Third Generation Advanced High Strength Steels: *Xuejun Jin*¹; Lianbo Luo¹; Wei Li¹; Yu Gong¹; Qi Lu²; Jeff Wang²; Charles Mathew Enloe³; Jason Coryell³; ¹Shanghai Jiao Tong University; ²China Science Lab of Global Research and Development, General Motors; ³Body and Closure Materials Engineering of Global Product Integrity, General Motors

11:30 AM

Deformation Behaviors in Multi-phase Steel Composed of Ferrite, Martensite and Retained Austenite: *Avala Lavakumar*¹; Myeong-heom Park²; Nobuhiro Tsuji¹; ¹Department of Materials Science and Engineering, Kyoto University; ²Elements Strategy Initiative for Structural Materials (ESISM), Kyoto University

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

Sponsored by: Federation of European Materials Societies (FEMS), TMS Functional Materials Division, TMS: Magnetic Materials Committee

Program Organizers: Frank Johnson, Niron Magnetics, Inc.; Paul Ohodnicki, National Energy Technology Laboratory; Alex Leary, Nasa Grc; Orlando Rios, Oak Ridge National Laboratory; Alessandra Hool, ESM Foundation

Tuesday AM
March 12, 2019

Room: 225B
Location: Henry B. Gonzalez
Convention Center

Session Chair: Paul Ohodnicki, National Energy Technology Laboratory

8:30 AM Invited

High Power-density Rotational Machine Design with Metal Amorphous Nanocomposite (MANC) Soft Magnetic Material (SMM)s and for Rare Earth Free Permanent Magnets: *Satoru Simizu*¹; Paul Ohodnicki²; Michael McHenry¹; ¹Carnegie Mellon University; ²National Energy Technology Laboratory

9:00 AM Invited

Nanocrystalline Materials for High Frequency Applications: Optimization of Inductors: *Christian Polak*¹; ¹Vacuumschmelze GmbH & Co. Kg

9:30 AM

A Hybrid Multi-pole Fe78Si13B9+FeSi3 Soft Magnetic Core for Application in the Stators of Low-power PMBLDC Motors: *Przemyslaw Zackiewicz*¹; Roman Kolano¹; Aleksandra Kolano-Burian¹; Marek Hreczka¹; ¹Institute of Non-Ferrous Metals

9:50 AM

Tunable Transformer Leakage Inductance Using Strain Annealed Metal Amorphous Nanocomposite Cores: *Richard Beddingfield*¹; Paul Ohodnicki²; Kevin Byerly³; Subhashish Bhattacharya⁴; ¹North Carolina State University/NETL; ²National Energy Technology Laboratory; ³AECOM, Contractor to the DOE / National Energy Technology Laboratory; ⁴North Carolina State University

10:10 AM Break

10:30 AM Invited

Commercial-scale Strain Annealing Efforts for Amorphous and Nanocrystalline Ribbon: *Eric Theisen*¹; ¹Metglas Inc

11:00 AM

Nanocomposite and Ferrite / Nanocomposite Hybrid Transformer Designs to Enable Medium Frequency Solid State Transformers and Grid-Tied Converters: *Paul Ohodnicki*¹; Kevin Byerly¹; Richard Beddingfield¹; Alex Leary²; Michael McHenry³; Ritwik Chattopadhyay⁴; Subhashish Bhattacharya⁴; Mark Juds⁵; ¹National Energy Technology Laboratory; ²NASA Glenn Research Center; ³Carnegie Mellon University; ⁴North Carolina State University; ⁵Eaton Corporation

11:20 AM

Permeability Engineering of Metal Amorphous Nanocomposite (MANC) Cores Through Strain Anneal Manufacturing: *Kevin Byerly*¹; Paul Ohodnicki¹; Seung-Ryul Moon¹; Alex Leary²; Vladimir Keylin²; Michael McHenry³; Satoru Simizu³; Byron Beddingfield⁴; Subhashish Bhattacharya⁴; ¹NETL - DOE; ²NASA GRC; ³CMU; ⁴NCSU

11:40 AM Invited

Tailoring of Magnetic Softness and Domain Wall Dynamics of Fe-rich Microwires by Stress Annealing: *Arcady Zhukov*¹; Paula Corte-Leon¹; Mihail Ipatov¹; Lorena Gonzalez-Legarreta¹; Juan Blanco¹; Valentina Zhukova¹; ¹Dept Phys Mater, Uni Basque Country

Advanced Microelectronic Packaging, Emerging Interconnection Technology, and Pb-free Solder — Pb-free Solder Alloys I

Sponsored by: TMS: Electronic Packaging and Interconnection Materials Committee

Program Organizers: Kazuhiro Nogita, University of Queensland; Tae-Kyu Lee, Portland State University; Yan Li, Intel Corporation; Christopher Gourlay, Imperial College London; Zhi-Quan Liu, Chinese Academy of Sciences; Rahul Panat, Carnegie Mellon University; Albert T. Wu, National Central University; Andre Delhaise, University of Toronto; Mohd Arif Salleh, Universiti Malaysia Perlis

Tuesday AM
March 12, 2019

Room: 216A
Location: Henry B. Gonzalez
Convention Center

Session Chairs: Mohd Mohd Arif Salleh, Universiti Malaysia Perlis;
Christopher Gourlay, Imperial College London

8:30 AM Invited

Role of Bi, Sb and In in Microstructure Formation and Properties of Sn-Cu-Ni and Sn-Ag-Cu BGA Solder Joints: *Sergey Belyakov*¹; Tetsuro Nishimura²; Keith Sweatman²; Tetsuya Akaiwa²; Christopher Gourlay¹; ¹Imperial College London; ²Nihon Superior Co., Ltd.

9:00 AM

Effect of Ag on Mechanical Properties of Sn-Ag-Cu Micro-BGA Joints: *Hao Chen*¹; Tzu-Ting Chou¹; Collin Fleshman¹; Rui-Wen Song¹; Jenq-Gong Duh¹; ¹National Tsing Hua University

9:20 AM

Influence of Low Ga and P Additions on the Microstructure and Mechanical Properties of Sn-0.7Cu: *Sufian Nazri*¹; M. A. A. Mohd Salleh¹; H. Yasuda²; K. Nogita³; ¹Universiti Malaysia Perlis (UniMAP); ²Kyoto University; ³University of Queensland (UQ)

9:40 AM

Effect of Sn Nanoparticles on SAC Solder Paste Preparation and IMC Growth on Cu Substrate: *Evan Wernicki*¹; Zhiyong Gu¹; ¹University of Massachusetts Lowell

10:00 AM Break

10:20 AM

Study of the Solid-state Diffusion of Bi in Sn – The Effects of Temperature, High Diffusivity Pathways, and Bi Concentration: *Andre Delhaise*¹; Zhangqi Chen²; Doug Perovic³; ¹Univ of Toronto; ²Ohio State University; ³University of Toronto

10:40 AM

The Variation of Grain Structure and the Enhancement of Shear Strength in SAC305-0.1Ni/Cu and SAC1205-0.1Ni/Cu Solder Joint Before and After Aging: *Collin Fleshman*¹; Jenq-Gong Duh¹; ¹National Tsing Hua University

11:00 AM

Impression Creep of Sn-0.7Cu, Sn-3.8Ag, and Sn-3.8Ag-0.7Cu Lead-Free Solders: *Seyed Alireza Torbati Sarraf*¹; Reza Mahmudi²; Abdol Reza Germayeh³; ¹University of Southern California; ²University of Tehran; ³Islamic Azad University

11:20 AM

Effects of Sb Additions on the Mechanical Behavior of SAC-Bi Solder Alloys: *Mehran Maalekian*¹; Mert Çelikin²; ¹Aim Metals & Alloys; ²University College Dublin

Advanced Real Time Imaging — Thermodynamic and Mechanical Properties

Sponsored by: TMS: Alloy Phases Committee

Program Organizers: Jinichiro Nakano, US DOE - National Energy Tech Lab; P.Chris Pistorius, Carnegie Mellon University; Candan Tamerler, University of Kansas; Hideyuki Yasuda, Kyoto University; Zuotai Zhang, Southern University Of Science And Techn; Neslihan Dogan, McMaster University; Wanlin Wang, Central South University; Noritaka Saito, Kyushu University; Yongsug Chung, Korea Polytechnic University; Bryan Webler, Carnegie Mellon University

Tuesday AM
March 12, 2019

Room: 302B
Location: Henry B. Gonzalez
Convention Center

Session Chair: Wanlin Wang, Central South University

8:30 AM Invited

Surface Tension of High Temperature Liquids Evaluation with Thermal Imaging Furnace: Andrew Caldwell¹; Mindy Wu¹; *Antoine Allanore*¹; ¹Massachusetts Institute of Technology

9:00 AM Invited

Real-time Deformation Mechanisms of Advanced Nanocomposites by High-Resolution In-situ Testing: *Arvind Agarwal*¹; Pranjali Nautiyal¹; ¹Florida International University

9:30 AM

Characterization of Localized Plastic Deformation Behaviors Associated with Dynamic Strain Aging In pipeline Steels using Digital Image Correlation: *Taylor Jacobs*¹; David Matlock²; Kip Findley²; ¹Los Alamos National Laboratory; ²Colorado School of Mines

9:50 AM

New Laue Micro-diffraction Setup for Real Time in-situ Microstructural Characterization of Materials under External Stress: *Dmitry Popov*¹; Stas Sinogeikin²; Changyong Park¹; Eric Rod¹; Jesse Smith¹; Rich Ferry¹; Curtis Kenney-Benson¹; Nenad Velisavljevic³; Guoyin Shen¹; ¹HPCAT; ²DAC Tools LLC; ³Los Alamos National Laboratory

10:10 AM Break

10:30 AM

Young Leaders International Scholar – JIM: An Approach for Solubility Measurement of SiC in Molten Silicon and Its Alloy by Real-time Interference Observation: *Sakiko Kawanishi*¹; Takeshi Yoshikawa²; Didier Chaussende³; Hiroyuki Shibata¹; ¹Tohoku University; ²The University of Tokyo; ³SIMaP

11:00 AM

In Situ Confocal Microscopy of P91 Steel under Short-term Creep in a High-temperature CO2 Environment: *Kyle Rozman*¹; Harrison Nealley¹; Jinichiro Nakano¹; Omer Dogan¹; Jeffrey Hawk¹; ¹National Energy Technology Laboratory

Advances in Surface Engineering — Session III

Sponsored by: TMS: Surface Engineering Committee

Program Organizers: Rajeev Gupta, The University of Akron; Sandip Harimkar, Oklahoma State University; Arif Mubarak, PPG Industries; Deepak Kumar, Baker Hughes, A Ge Company; Tushar Borkar, Cleveland State University; Dong Lin, Kansas State University

Tuesday AM
March 12, 2019

Room: 210A
Location: Henry B. Gonzalez
Convention Center

Session Chairs: Tushar Borkar, Cleveland State University; Dong Lin, Kansas State University

8:30 AM

Effect of Zr Content on Structure Property Relations of Ni-Zr Alloy Thin Films Processed by dc Magnetron Co-sputtering: *Bibhu Sahu*¹; Rahul Mitra¹; ¹Indian Institute of Technology, Kharagpur

8:50 AM

Effects of Process Parameters on the Zirconia Coating Prepared by Sol-gel and Electrodeposition Process
: *Jian Dong*¹; Yanhui Sun¹; Bingsheng Dou¹; Feiyu He¹; Hongtao Huang²; Jianping Zhen²; ¹University of Science and Technology Beijing; ²China Institute of Atomic Energy

9:10 AM

Laser Surface Alloying of Copper using HPDL: *Justyna Domagala-Dubiel*¹; Zbigniew Rdzawski¹; Wojciech Gluchowski¹; Damian Janicki²; Mirosława Pawlyta²; Katarzyna Bilewska¹; ¹Institute of Non-Ferrous Metals; ²Silesian University of Technology

9:30 AM

Optimization of Slurry Aluminized 31V Alloy Coatings: *Beth Armstrong*¹; Sebastien Dryepont¹; ¹Oak Ridge National Laboratory

9:50 AM

The Study of Slurry Erosion Wear Behavior of Coal Bottom Ash Slurry Handling Pipeline: *Satish More*¹; Sudeep Ingole²; Dhananjay Bhatt¹; Jyoti Menghani¹; ¹S V National Institute of Technology; ²Always Avant

10:10 AM Break

10:30 AM

Wear Characterization of Cemented Carbide Multipoint Cutting Tool Machining AISI 4140 at High Cutting Speed: Criteria for Materials Selection: *Federico Gobber*¹; Elisa Fracchia¹; *Mario Rosso*¹; ¹Politecnico Di Torino

10:50 AM

Pulsed Potentiostatic Deposition of Cu-Zn Alloy Coatings from Novel Glycerol-NaOH Based Electrolyte for Wear Resistance and Anti-corrosive Properties: *Sourav Das*¹; Sambedan Jena¹; Swastika Banthia¹; Arijit Mitra¹; Siddhartha Das¹; Karabi Das¹; ¹Indian Institute of Technology, Kharagpur

11:10 AM

Study of the Effects of Bi-Nano Additives on the Mechanical Properties of Aisi 5130 Mild Steel during Machining: *Adeniran Afolalu*¹; ¹Covenant University

Algorithm Development in Materials Science and Engineering — Computational, Experimental, and Machine Learning Algorithms in Study and Design of Materials I

Sponsored by: TMS: Computational Materials Science and Engineering Committee, TMS: Phase Transformations Committee, TMS: Integrated Computational Materials Engineering Committee
Program Organizers: Mohsen Asle Zaeem, Colorado School of Mines; Garritt Tucker, Colorado School of Mines; Prasanna Balachandran, University of Virginia; Douglas Spearot, University of Florida; Charudatta Phatak, Argonne National Laboratory; Srinivasan Srivilliputhur, University of North Texas

Tuesday AM
March 12, 2019

Room: 304A
Location: Henry B. Gonzalez
Convention Center

Session Chairs: Garritt Tucker, Colorado School of Mines; Charudatta Phatak, Argonne National Laboratory

8:30 AM Invited

Gluing Together Multiscale Computational and Experimental Information Sources with Machine Learning: *Maxwell Hutchinson*¹; ¹Citrine Informatics

9:00 AM Invited

Data-driven Framework for Statistical Quantification of the Material Internal Structure: *Apaar Shankar*¹; *Surya Kalidindi*¹; ¹Georgia Institute of Technology

9:30 AM

Machine Learning of Phase-field Simulated Domain Structures of Ferroelectrics: *Samrat Choudhury*¹; Isaac Curtis¹; Vishnu Boddeti²; ¹University of Idaho; ²Michigan State University

9:50 AM

Formulation and Calculation of Rotationally Invariant Spatial Correlations for Microstructure Datasets: *Yuksel Yabansu*¹; Ahmet Cecen¹; Surya Kalidindi¹; ¹Georgia Institute of Technology

10:10 AM Break

10:30 AM Invited

Electron Microscopy Image Simulations for Phase Field and Discrete Dislocation Dynamics Defect Models: *Marc De Graef*¹; ¹Carnegie Mellon University

11:00 AM

A Generalized Statistical Microstructure Generation Framework: *Ahmet Cecen*¹; Surya Kalidindi²; ¹ExxonMobil Chemicals Company; ²Georgia Institute of Technology

11:20 AM

Accurate Reconstruction of Large EBSD Datasets by Multi-modal Data Approach and an Evolutionary Algorithm: *Marie-Agathe Charpagne*¹; Florian Strub²; Tresa Pollock¹; ¹University of California Santa Barbara; ²Université de Lille, CNRS, Centrale Lille, Inria

11:40 AM

3D Microstructure Reconstruction Using Markov Random Fields: Validation of Microstructural Features: *Iman Javaheri*¹; Siddhartha Srivastava¹; Veera Sundararaghavan¹; ¹University of Michigan

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

Sponsored by: TMS: Alloy Phases Committee

Program Organizers: Sinn-wen Chen, National Tsing Hua University; Franck Gascoin, Ensicaen University of Caen; Soon-Jik Hong, Kongju National Univ; Philippe Jund, Montpellier University; Lan Li, Boise State University; Takao Mori, Nims; Hsin-Jay Wu, National Sun Yat-sen University; Tiejun Zhu, Zhejiang University

Tuesday AM
March 12, 2019

Room: 216B
Location: Henry B. Gonzalez
Convention Center

Session Chairs: Hsin-jay Wu, National Sun Yat-Sen University;
Albert T. Wu, National Central University

8:30 AM Invited

Development of Electroless Cobalt Diffusion Barrier for Medium-temperature Thermoelectric Module: *Albert T. Wu*¹; Hsien-Chien Hsieh¹; Chun-Hsien Wang¹; ¹National Central University

8:50 AM Invited

The Role of Structure and Bonding on the Thermal Properties of Materials: *George Nolas*¹; ¹University of South Florida

9:10 AM Invited

Structure and Bonding in Phosphide Clathrate Thermoelectrics: *Kirill Kovnir*¹; ¹Iowa State University

9:30 AM

Interfacial Stability of Co-P Diffusion Barrier for Bi₂Te₃ Thermoelectric Module: *Chun Hsien Wang*¹; Hsien Chien Hsieh¹; Albert T. Wu¹; ¹National Central University

9:50 AM

Interfacial Reactions in Sn/Ag₂Se Couples: *Anbalagan Ramakrishnan*¹; Zi-yang Huang¹; Sinn-wen Chen¹; ¹Department of Chemical Engineering, National Tsing Hua University

10:10 AM Break

10:30 AM Invited

Unexpected Liquation Phenomena at Joints: *Sinn-wen Chen*¹; ¹Department of Chemical Engineering, National Tsing Hua University

10:50 AM Invited

Alloying Effect and Defect Control for Boosting the Thermoelectric Performance of Mg-based Compounds: *Weishu Liu*¹; ¹Southern University of Science and Technology

11:10 AM

Phase Diagrams of Thermoelectric Pb-Se-Sn-Te Quaternary System: *Tse-yang Huang*¹; Sinn-wen Chen¹; ¹Department of Chemical Engineering, National Tsing Hua University

Aluminum Alloys, Processing and Characterization — Microstructures and Mechanical Properties of Aluminum Alloys

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

Program Organizer: Hiromi Nagaumi, Soochow University

Tuesday AM
March 12, 2019

Room: 007A
Location: Henry B. Gonzalez
Convention Center

Session Chair: William Golumbfskie, ¹Naval Surface Warfare Center

8:30 AM Introductory Comments

8:35 AM

Advanced characterization of the cyclic deformation and damage behavior in Al-Si-Mg cast alloys using hysteresis analysis and alternating current potential drop method: *Jochen Tenkamp*¹; Kevin Bleicher¹; Sven Klute¹; Karin Chrzan¹; Alexander Koch¹; Frank Walther¹; ¹TU Dortmund University, Department of Materials Test Engineering (WPT)

9:00 AM

3-D microstructural distribution and mechanical analysis of HPDC hypereutectic Al-Si alloys via X-ray tomography: *Jun Wang*¹; Shoumei Xiong¹; ¹Tsinghua University

9:25 AM

Conditions for retrogression forming aluminum AA7075-T6 sheet: *Katherine Rader*¹; Matthew Schick¹; Jon Carter²; Louis Hector²; Eric Taleff¹; ¹Univ of Texas Austin; ²General Motors

9:50 AM

Influence of silicon phase particles on the thermal conductivity of Al-Si alloys: *Wenping Weng*¹; Hiromi Nagaumi¹; Xiaodong Shen¹; Weizhong Fan¹; Xiaocun Chen¹; Xiaonan Wang¹; ¹Soochow University

10:15 AM Break

10:30 AM

Influence of microstructure development on mechanical properties of AlSi7MgCu alloy: *Zdenka Zovko Brodarac*¹; Davor Stanic²; Letian Li³; ¹University of Zagreb Faculty of Metallurgy; ²CIMOS-P.P.C. Buzet/Croatia Polytechnic Pula - College of Applied Sciences; ³FEI Netherlands

10:55 AM

Fabrication and Characterization of Open Cell Aluminum Foams by Polymer Replication Method: *Ceren Yagsi*¹; Ozgul Keles²; ¹Presenter; ²Istanbul Technical University

11:20 AM

The Rolling Behavior of AA5083 Aluminium Alloy: *Satyabrata Das*¹; Shiwani Meena²; Saevesh Swamy²; ¹Advanced Matls & Processes Rsch Inst(CSIR); ²IIT, Kanpur

Aluminum Reduction Technology — Cell Design and Modelling

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

Program Organizer: Marc Dupuis, GeniSim Inc

Tuesday AM
March 12, 2019

Room: 004
Location: Henry B. Gonzalez
Convention Center

Session Chair: Kristian Etienne Einarsrud, Norwegian University of Science and Technology (NTNU)

8:30 AM Introductory Comments

8:35 AM

A Transient Model of the Anodic Current Distribution in an Aluminum Electrolysis Cell: *Sébastien Guérard*¹; Patrice Côté¹; ¹Rio Tinto

9:00 AM

A numerical study of gas production and bubble dynamics in a Hall-Héroult reduction cell: *Alessandro Cubeddu*¹; Varchavsi Nandana¹; Hendrik Gesell¹; Roman Gutt¹; Roman Düssel²; Uwe Janoske¹; ¹Bergische Universität Wuppertal; ²TRIMET Aluminium SE

9:25 AM

Thermoelectrical Design of Startup Fuses for Aluminum Reduction Cells: *Andre Felipe Schneider*¹; Donald Ziegler²; Timothée Turcotte¹; Daniel Richard¹; Pascal Lavoie¹; Ryan Soncini²; Jayson Tessier³; ¹Hatch; ²Alcoa Technical Center; ³Alcoa

9:50 AM

Modelling Study of Exhaust Rate Impact on Heat Loss from Aluminium Reduction Cells: *Alexander Arkhipov*¹; Ievgen Necheporenko¹; Alexander Mukhanov¹; Nadia Ahli¹; Khawla Aimarzoqi¹; ¹Emirates Global Aluminium

10:15 AM Break

10:30 AM

Finite Element Analysis of a Cylindrical Cathode Collector Bars Design: *Olivier Lacroix*¹; Richard Beeler²; Hicham Chaouki¹; Louis Gosselin¹; Mario Fafard¹; ¹Université Laval; ²Alcoa Technical Center

10:55 AM

CFD Modeling of Alumina Diffusion and Distribution in Aluminum Smelting Cells: *Xiaozhen Liu*¹; Youjian Yang¹; Zhaowen Wang¹; Wenju Tao¹; Tuofu Li¹; Zhibin Zhao²; ¹Northeastern University; ²Shenyang Aluminum & Magnesium Engineering and Research Institute Co. Ltd.

11:20 AM

Study on Side Ledge Behavior under Current Fluctuations Based on Coupled Thermo-Electric Model: *Hongliang Zhang*¹; *Qiyu Wang*¹; Jie Li¹; Hui Guo¹; Jingkun Wang¹; Tianshuang Li¹; ¹Central South University

11:45 AM Concluding Comments

Atom Probe Tomography for Advanced Characterization of Metals, Minerals and Materials II — Steels and Ni Alloys

Sponsored by: TMS Structural Materials 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; David Seidman, Northwestern University; Keith Knipling, Naval Research Laboratory; Gregory Thompson, Univ of Alabama; Simon Ringer, Univ of Sydney; Arun Devaraj, Pacific Northwest National Laboratory; Gang Sha, Nanjing University of Science and Technology

Tuesday AM
March 12, 2019

Room: 303A
Location: Henry B. Gonzalez
Convention Center

Session Chairs: Gregory Thompson, University of Alabama; Keith Knipling, Naval Research Laboratory

8:30 AM Invited

Application of atom probe tomography to fundamental issues of steel materials: *Jun Takahashi*¹; Kazuto Kawakami²; Yukiko Kobayashi¹; Kyohei Ishikawa¹; Masaaki Fujioka¹; Naoyoshi Kubota²; ¹Nippon Steel & Sumitomo Metal Corporation; ²Nippon Steel & Sumikin Technology Corporation

9:05 AM

Atom probe analysis of carbon and nitrogen redistribution during heating of soft martensitic stainless steel: *Frederic Danoix*¹; Frank Niessen²; Matteo Villa²; Daniel Apel³; John Hald²; Marcel Somers²; ¹Cnrs - Université De Normandie Rouen; ²Technical University of Denmark (DTU); ³Helmholtz-Zentrum für Materialien und Energie (HZB)

9:25 AM

Atom probe characterization of Nb-rich nano-scale precipitates in a high strength low alloy steel: *Kelvin Xie*¹; Andrew Breen²; Julie Cairney³; Simon Ringer³; ¹Texas A&M University; ²Max-Planck-Institut für Eisenforschung; ³University of Sydney

9:45 AM

Distribution of alloying elements in weathering steels induced by oxide layer formation: *Yidong Zhang*¹; ShenBao Jin¹; Xiaohong Guo²; Gang Sha¹; ¹Nanjing University Science and Technology; ²Angang Steel Company Limited

10:05 AM Break

10:25 AM

Atom probe investigation of gamma alpha transformation interfaces in a model Fe-Mn-C alloy: *Olha Nakonechna*¹; Mohamed Gouné²; Helena Zapolsky¹; Didier Huin³; Frederic Danoix⁴; ¹UNIROUEN; ²CNRS ICMCB; ³ArcelorMittal; ⁴Cnrs - Université De Normandie Rouen

10:45 AM Invited

Atom probe tomography study of trace element behavior and secondary phase formation at grain boundaries of high refractory content Ni-based superalloys: *Stoichko Antonov*¹; Wei Chen²; Dieter Isheim³; David Seidman⁴; Qiang Feng¹; Eugene Sun⁵; Sammy Tin²; ¹University of Science and Technology Beijing; ²Illinois Institute of Technology; ³Northwestern University; ⁴Northwestern University; ⁵Rolls-Royce Corporation

11:20 AM

Characterization of Ni₂Cr ordered precipitates in Ni-Cr alloys: *Iman Ghamarian*¹; Li_Jen Yu¹; Fei Teng²; Julie Tucker²; Gracie Burke³; Emmanuelle Marquis¹; ¹University of Michigan; ²Oregon State University; ³University of Manchester

11:40 AM

Thermal Evolution of Sputtered Nanostructured Mo-Au: *Joel Bahena*¹; J. Sebasian Riano¹; Mohammed Chelli²; Torben Boll²; Andrea Hodge¹; ¹University of Southern California; ²Karlsruhe Institute of Technology

Bio-Nano Interfaces and Engineering Applications — Bio-Nano Interfaces III

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

Tuesday AM
March 12, 2019

Room: 217C
Location: Henry B. Gonzalez
Convention Center

Session Chairs: Candan Tamerler, University of Kansas; Hannes Schneipp, College of William and Mary

8:30 AM

Self-Assembling Peptides: Guiding Functional Precision at the Hybrid Interfaces: *Candan Tamerler*¹; ¹University of Kansas

9:00 AM

A portable device for point-of-need production of compartmentalised micro/nanofibres for in situ drug delivery: *CJ Luo*¹; ¹University College London

9:20 AM Invited

A biologically inspired attachable, self-standing nanofibrous membrane for versatile use in oil-water separation or antifouling: *Seimei Shiratori*¹; ¹Keio University

9:50 AM

Predictive modeling of bionanomaterials from picometers to micrometers: *Hendrik Heinz*¹; ¹University of Colorado Boulder

10:20 AM Break

10:40 AM Invited

Optimum geometries in biological and bio-inspired sutured interfaces: *Idris Malik*¹; *Mohammad Mirkhalaf*¹; *Francois Barthelat*¹; ¹McGill University

11:10 AM

Long Range Hierarchical Assembly of Pt Nanocubes – Insights from Measurements and Molecular Simulations of Nanoparticle Docking: *Shiyi Wang*¹; *Enbo Zhu*²; *Xucheng Yan*²; *Masoud Sobani*³; *Chen Wang*²; *Yuan Liu*²; *Xiangfeng Duan*²; *Hendrik Heinz*¹; *Yu Huang*²; ¹University of Colorado Boulder; ²University of California, Los Angeles; ³University of Akron

11:30 AM Invited

Spider Silk — A Hierarchical High-Performance Material Based on Self-Assembly Starting at the Molecular Level: *Qijue Wang*¹; *Hannes Schneipp*¹; ¹The College of William & Mary

Biological Materials Science — Biomimetic and Bioinspired Materials

Sponsored by: TMS Functional Materials Division, TMS Structural Materials Division, TMS: Biomaterials Committee
Program Organizers: Rajendra Kasinath, DePuy Synthes (Johnson and Johnson); Steven Naleway, University of Utah; Vinoy Thomas, University of Alabama at Birmingham; Jing Du, Penn State University

Tuesday AM
March 12, 2019

Room: 217A
Location: Henry B. Gonzalez
Convention Center

Session Chairs: Rajendra Kasinath, DePuy Synthes, Johnson and Johnson; Steven Naleway, University of Utah

8:30 AM Invited

Segmentation and architecture in natural materials: discrete element models for bioinspiration: *Francois Barthelat*¹; ¹McGill University

9:00 AM

Bioinspired Composites with Self-Stiffness Adaptation: *Santiago Orrego*¹; *Urszula Krekora*¹; *Eugene Kang*¹; *Sung Kang*¹; ¹Johns Hopkins University

9:20 AM

Bioinspired Phase Transforming Architected Materials with Snap-through Instabilities: *Yunlan Zhang*¹; *Kristiaan Hector*¹; *Mirian Velay*¹; *David Restrepo*¹; *Nilesh Mankame*²; *Pablo Zavattieri*¹; ¹Purdue University; ²General Motors Research and Development

9:40 AM

Bioinspired segmented armor: discrete element models, 3D printing and mechanical tests: *Ali Shafei*¹; *J. William Pro*¹; *Francois Barthelat*²; ¹McGill University; ²McGill University

10:00 AM

Bioinspired Shark Teeth Serrated Edges for Penetration and Shearing: *John Wood*¹; *M. Murphy*²; *H. Rhee*²; *A. McIntosh*¹; *M. Horstemeyer*²; *R. Prabhu*²; ¹Mississippi State Univ; ²Center for Advanced Vehicular Systems

10:20 AM Break

10:40 AM Invited

Underwater Adhesion of Aquatic Animals: Hierarchical Structures, Attachment Mechanisms and Bio-inspirations: *Po-Yu Chen*¹; *Yung-Chieh Chuang*¹; *Guan-Lin Liu*¹; *Haw-Kai Chang*¹; *Cheng-Che Tung*¹; *Yang-Rong Shih*¹; ¹National Tsing Hua Univ

11:10 AM

Bioinspired Microarchitected Materials by 3D Nanoparticle Printing: *M. Sadeq Saleh*¹; *Chunshan Hu*²; *Rahul Panat*¹; ¹Carnegie Mellon University; ²Washington State University

11:30 AM Invited

Bioinspired, graphene/metal composites with exceptionally high strength and toughness: *Yunya Zhang*¹; *Xiaodong Li*¹; ¹University of Virginia

11:50 AM

Bio-inspired Design of Soft-Hard Integrated Materials: *Baoxing Xu*¹; ¹University of Virginia

Bulk Metallic Glasses XVI — Alloy Development and Application

Sponsored by:
Program Organizers: Xie Xie, FCA US LLC; Peter Liaw, University of Tennessee; Yanfei Gao, University of Tennessee; Hahn Choo, University of Tennessee; Yunfeng Shi, Rensselaer Polytechnic Institute; Gongyao Wang, Alcoa; Robert Maass, University of Illinois at Urbana-Champaign; Muhammad Rafique, RMIT University

Tuesday AM
March 12, 2019

Room: 206B
Location: Henry B. Gonzalez
Convention Center

Session Chairs: Peter Liaw, The University of Tennessee; William Johnson, California Institute of Technology

8:30 AM Keynote

Configurational Thermodynamics of Metallic Glasses: Can a glass melt?: *William Johnson*¹; *Jong Na*²; ¹California Institute of Technology; ²Glassmetal Technologies Inc.

9:00 AM Keynote

Determining Metastable Phases in Metallic Alloys via Ultrafast Calorimetry: *Jörg Löffler*¹; ¹ETH Zurich

9:30 AM Invited

Origin of Embrittlement of Metallic Glasses: *Marios Demetriou*¹; *William Johnson*¹; ¹Glassmetal Technology

9:50 AM Invited

3D Printing of Bulk Metallic Glasses: Is it a Rebirth or the End of BMG Research?: *Douglas Hofmann*¹; *Punnathat Bordeenithikasem*¹; *Scott Roberts*¹; *Andre Pate*¹; ¹NASA JPL/Caltech

10:10 AM Break**10:30 AM Invited**

Metallic-Glass: A Beneficial Coating for Enhancing Electrospun Polyacrylonitrile Membrane for Oil/Water Separation: Shewaye Temesgen Kassa¹; Chien-Chieh Hu¹; Jem-Kun Chen¹; *Jinn Chu*¹; ¹National Taiwan Univ of Science and Technology

10:50 AM Invited

Cold Spray Deposition of an Iron-based Bulk Metallic Glass: Constance Ziemian¹; *Wendelin Wright*¹; David Cipoletti²; ¹Bucknell University; ²Bucknell University; Hydro Flask

11:10 AM Invited

Utilization of high entropy alloy characteristics in glass-forming alloys: Jinyeon Kim¹; Hyun Seok Oh¹; Jinwoo Kim¹; Chae Woo Ryu¹; Geun Woo Lee²; Hye Jung Chang³; *Eun Soo Park*¹; ¹Seoul National Univ; ²Korea Research Institute of Standards and Science; ³Korea Institute of Science and Technology

11:30 AM Invited

Bulk metallic glass inserts for spacecraft applications: *Punnathat Bordeenithikasem*¹; Robert Dillon¹; Douglas Hofmann¹; ¹NASA JPL/Caltech

11:50 AM Invited

Tailoring phase selection and microstructure through controlled synthesis of Al-Sm metallic glasses: *Fanqiang Meng*¹; Yang Sun¹; Feng Zhang¹; Matthew Kramer¹; Ryan Ott¹; ¹Ames Laboratory

Cast Shop Technology — Casting and Cast House Products

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

Program Organizer: Pierre-Yves Menet, Constellium Technology Center

Tuesday AM
March 12, 2019

Room: 007B
Location: Henry B. Gonzalez
Convention Center

Session Chair: Samuel Wagstaff, Novelis

8:30 AM Introductory Comments**8:35 AM**

Macrosegregation Modelling of large Sheet Ingots including Grain Motion, Solidification Shrinkage and Mushy Zone Deformation: *Dag Mortensen*¹; Øyvind Jensen¹; Gerd-Ulrich Gruen²; Andreas Buchholz²; ¹Institute For Energy Technology; ²Hydro Aluminium

9:00 AM

Effect of reversing rotational magnetic field on grain size refinement: *Akihiro Minagawa*¹; Koichi Takahashi¹; Shin-ichi Shimasaki²; ¹UACJ Corporation; ²Kagawa College

9:25 AM

A Reduction in Hot Cracking via Microstructural Modification in DC Cast Billets: *Kathleen Bennett*¹; Elli Tindall¹; Sam Wagstaff¹; Kenzo Takahashi²; ¹Novelis Inc; ²Z-Mag

9:50 AM

Analysis Of The Interplay Between Thermo-Solutal Convection And Equiaxed Grain Motion In Relation To Macrosegregation Formation In AA5182 Sheet Ingots: *Akash Pakanati*¹; Knut Omdal Tveito²; Mohammed M'Hamdi³; Hervé Combeau⁴; Miha Založnik⁴; ¹Norwegian University of Science & Technology; ²Hydro Research and Development Center; ³SINTEF Materials and Chemistry; ⁴Institut Jean Lamour

10:15 AM Break**10:30 AM**

Grain Refinement of Commercial EC Grade 1370 Aluminum Alloy for Electrical Applications: *Massoud Hassanabadi*¹; Shahid Akhtar²; Lars Arnberg¹; Ragnhild E. Aune¹; ¹Norwegian University of Science and Technology (NTNU); ²Hydro Aluminium, Karmøy Primary Production, Håvik

10:55 AM

Effects of CO2 cover gas and yttrium additions on the oxidation of AlMg alloys: *Nicholas Smith*¹; Wissam Saidi²; Brian Gleeson²; Anne Kvithyld³; Gabriella Tranell¹; ¹Norwegian Univ of Science and Tech; ²University of Pittsburgh; ³SINTEF

11:20 AM

Behaviour of Aluminium Carbide in Al-melts during Re-melting: *Mertol Gökelma*¹; Trygve Storm Aarnæs¹; Jürgen Maier²; Bernd Friedrich²; Gabriella Tranell¹; ¹Norwegian University of Science and Technology; ²RWTH Aachen University

11:45 AM

Study of controllable inclusion addition methods in Al melt: *Jiawei Yang*¹; Sarina Bao²; Shahid Akhtar³; Yanjun Li¹; ¹Norwegian University of Science and Technology; ²SINTEF industri; ³Norsk Hydro

Ceramic Materials for Nuclear Energy Research and Applications — Environmental Degradation

Sponsored by: TMS: Nuclear Materials Committee

Program Organizers: Yongfeng Zhang, Idaho National Laboratory; Xian-ming (David) Bai, Virginia polytechnic Institute and State University; David Andersson, Los Alamos National Laboratory ; Thierry Wiss, European Commission- JRC -Institute of Transuranium Elements

Tuesday AM
March 12, 2019

Room: 214A
Location: Henry B. Gonzalez
Convention Center

Session Chairs: Xianming Bai, Virginia Tech; Izabela A. Szlufarska, University of Wisconsin

8:30 AM Invited

Computational studies of environmental degradation of silicon carbide: *Izabela Szlufarska*¹; Jianqi Xi¹; Cheng Liu¹; Dane Morgan¹; ¹University of Wisconsin

9:00 AM

Characterization of the Hydrothermal Corrosion Behavior of SiC With and Without Corrosion Mitigation Coatings: *Peter Doyle*¹; Kurt Terrani²; Yutai Katoh²; Stephen Raiman²; Steven Zinkle¹; ¹Univ of Tennessee Knoxville; ²Oak Ridge National Laboratory

9:20 AM

High Density Uranium Silicide Fuels – Fabrication and Oxidation Resistance: Bowen Gong¹; Tiankai Yao¹; Lu Cai²; Edward Lahoda²; Frank Boylan²; Peng Xu²; Jason Harp³; *Jie Lian*¹; ¹Rensselaer Polytechnic Institute; ²Westinghouse Electric Company LLC; ³Idaho National Laboratory

9:40 AM

Microstructural effects on the high-temperature oxidation resistance of magnetron sputtered Cr-Al-Si-N coatings on zirconium substrates: *Han Zhu*¹; Yue Dong¹; Fangfang Ge¹; Feng Huang¹; Jun Yi²; ¹Ningbo Institute of Industrial Technology; ²Shanghai University

10:00 AM Break**10:20 AM Invited**

Nanostructured Ferritic Alloy-Silicon Carbide Composites for Nuclear Applications (invited): *Kathy Lu*¹; Kaustubh Bawane¹; Kaijie Ning¹; ¹Virginia Tech

10:50 AM

Water Corrosion Resistance of Modified U3Si2: Lu Cai¹; Ed Lahoda¹; Frank Boylan¹; Peng Xu¹; Andrew Atwood¹; Robert Oelrich¹; Jie Lian²; ¹Westinghouse Electric Company; ²Rensselaer Polytechnic Institute

11:10 AM

Characterization of U-Si Accident-Tolerant Fuels Using Neutron Imaging and Diffraction: Sven Vogel¹; Tashiema L. Wilson²; Adrian S. Losko¹; Joshua T. White¹; Kenneth J. McClellan¹; ¹Los Alamos National Laboratory; ²University of South Carolina

Characterization of Minerals, Metals, and Materials — Metallurgical Process

Sponsored by: 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; Yunus Kalay, Middle East Technical University; John Carpenter, Los Alamos National Laboratory; Jiann-Yang Hwang, Michigan Technological Univ; Sergio Monteiro, Military Institute of Engineering; Chenguang Bai, Chongqing Univ; Juan Escobedo-Diaz, University of New South Wales; Pasquale Russo Spina, Free University of Bozen-Bolzano; Ramasis Goswami, Naval Research Laboratory

Tuesday AM
 March 12, 2019

Room: 212B
 Location: Henry B. Gonzalez
 Convention Center

Session Chair: Y. Eren Kalay, Middle East Technical University

8:30 AM Introductory Comments**8:35 AM**

Effect of Firing Temperature on Iron Ore Pellet Reduction Swelling with Different Silica Content: Gele Qing¹; Qing Tian¹; Xin Li¹; Li Ma¹; Wang Liu¹; ¹Shougang Group

8:55 AM

Effect of Metallic Iron Sinter Feed on Sinter Mineralogy and Quality: Mingming Zhang¹; Marcelo Andrade¹; ¹ArcelorMittal Global R&D

9:15 AM

Effect of microstructure on resistance to buildups formation of carbon sleeves in continuous annealing furnace for silicon steel production: He Mingsheng¹; Wangzhi Zhou¹; Xuecheng Gong²; Jing Zhang²; Jian Xu²; ¹R&D Center of Wuhan Iron & Steel Co., Ltd; ²Silicon Steel Division of Wuhan Iron & Steel Co., Ltd.

9:35 AM

Influence of Cr2O3 and Basicity on Viscosity of Ti-bearing Blast Furnace Slag: Guibao Qiu¹; Jian Wang¹; Shiyuan Liu¹; Qingjuan Li¹; ¹Chongqing University

9:55 AM

Raman Spectroscopy on KBF₄-KF-KCl Molten Salt System: Xianwei Hu¹; Bo Li¹; Jiangyu Yu¹; Zhongning Shi¹; Bingliang Gao¹; Zhaowen Wang¹; ¹Northeastern Univ

10:15 AM Break**10:30 AM**

Influence of Water Vapor on the Oxidation Behavior of a Hot Working Tool Steel for Applications in Roughing Mill Work Rolls: Kai Fota¹; Andreas Cestonaro²; Peter Heisterkamp²; Hartmut Jacke²; Frieder Spannagel²; Bronislava Gorr¹; Hans-Jürgen Christ¹; ¹Universität Siegen; ²Gontermann-Peipers GmbH

10:50 AM

Thermodynamic Characteristics of Ferronickel Slag Sintered in the Presence of Magnesia: Foquan Gu¹; Zhiwei Peng¹; Yuanbo Zhang¹; Huimin Tang¹; Lei Ye¹; Weiguang Tian²; Guoshen Liang²; Joonho Lee³; Mingjun Rao¹; Guanghui Li¹; Tao Jiang¹; ¹Central South Univ; ²Guangdong Guangqing Metal Technology Co. Ltd.; ³Korea University

11:10 AM

Characterization on the properties of calcium stannates synthesized under different atmospheres: Benlai Han¹; Zijian Su¹; Yuanbo Zhang¹; Bingbing Liu¹; Manman Lu¹; Tao Jiang¹; ¹Central South Univ

Coatings and Surface Engineering for Environmental Protection — Coatings for Corrosion Protection I

Sponsored by: TMS Surface Engineering Committee
Program Organizers: Arif Mubarak, PPG Industries; Rajeev Gupta, The University of Akron; Raul Rebak, GE Global Research; Michael Mayo, PPG Industries; Brian Okerberg, PPG Industries

Tuesday AM
 March 12, 2019

Room: 224
 Location: Henry B. Gonzalez
 Convention Center

Session Chairs: Brian Okerberg, PPG; Raul Rebak, GE Global Research

8:30 AM Invited

Improvement of the high temperature oxidation behavior of Ni-alloys by a combined Al- plus F-treatment: Alexander Donchev¹; Ali Solemani¹; Mathias Galetz¹; ¹DECHEMA-Forschungsinstitut

9:10 AM

Comparing the Corrosion Resistance Imparted by a Polyetherimide Coating on Magnesium and Steel: Holly Martin¹; ¹Youngstown State University

9:30 AM

Corrosion Phenomena in Powder-Processed Icosahedral-Phase-Strengthened Aluminum Alloys: Sarshad Rommel¹; Hannah Leonard¹; Thomas Watson²; Sonia Tulyani³; Mark Aindow¹; ¹University of Connecticut; ²Pratt & Whitney; ³UTC Aerospace Systems

9:50 AM

Corrosion Properties of Steel Sheet with Zinc-base Alloyed Coatings: Guangrui Jiang¹; Ting Shang¹; ¹Shougang

10:10 AM Break**10:30 AM**

Effect and role of alloyed Nb on the air oxidation behaviour of Ni-Cr-Fe alloys at 1000 °C: Yaxin Xu¹; Wenya Li¹; ¹Northwestern Polytechnical University

10:50 AM

Effect of nickel content on mechanical property and corrosion behaviour of nickel-aluminium bronze: Fenfen Yang¹; Tongmin Wang¹; Enyu Guo¹; Huijun Kang¹; Zongning Chen¹; ¹Dalian University of Technology

11:10 AM Invited

Protective Coating for Nuclear Fuel Claddings: Kiran Nimishakavi¹; Jeremy Bischoff¹; ¹Framatome Inc.

Computational Approaches for Big Data, Artificial Intelligence and Uncertainty Quantification in Computational Materials Science — AI-based Investigation of Material Properties I

Sponsored by: TMS: Computational Materials Science and Engineering Committee

Program Organizers: Liang Qi, University of Michigan; Francesca Tavazza, National Institute of Standards and Technology; Christopher Woodward, Air Force Research Laboratory; Adrian Sabau, Oak Ridge National Laboratory; Houlong Zhuang, Arizona State University; Sugata Chowdhury, National Institute of Standards and Technology

Tuesday AM
March 12, 2019

Room: 305
Location: Henry B. Gonzalez
Convention Center

Session Chair: To Be Announced

8:30 AM Invited

A Machine Learning Exploration of Grain Boundary Mobility Mechanisms: *Srikanth Patala*¹; ¹North Carolina State Univ

9:00 AM

Applying Machine Learning Techniques to Predict Precipitate Morphology for Alloy Design and Uncertainty Quantification: *Stephen DeWitt*¹; Brian Puchala¹; Katsuyo Thornton¹; John Allison¹; ¹University of Michigan

9:20 AM

Machine learning to predict continuous cooling phase transformations in steels: *Peter Hedström*¹; Moshior Rahaman²; Wangzhong Mu¹; Joakim Odqvist¹; ¹KTH Royal Institute of Technology; ²HiMat Engineering

9:40 AM Invited

Machine Learning for High-Temperature Alloy Design: High-Quality Data, Scientific Descriptors and Curve Fitting: *Dongwon Shin*¹; Bruce Pint¹; Govindarajan Muralidharan¹; Yukinori Yamamoto¹; Michael Brady¹; Jiheon Jun¹; Sangkeun Lee¹; J. Haynes¹; ¹Oak Ridge National Laboratory

10:10 AM Break

10:30 AM

Optimization of calibration methods for a reduced-order structure property linkage of polycrystalline materials: Aaron Tallman¹; *Krzysztof Stopka*¹; Laura Swiler²; Yan Wang¹; Surya Kalidindi¹; David McDowell¹; ¹Georgia Institute of Technology; ²Sandia National Laboratories

10:50 AM

Steel Inclusion Classification Using Computer Vision and Machine Learning: *Nan Gao*¹; Mohammad Abdulsalam¹; Bryan Weble¹; Elizabeth Holm¹; ¹Carnegie Mellon University, Materials Science and Engineering

11:10 AM

A Reification Approach to Modeling Material Response by Fitting Johnson Cook Parameters: *Jaylen James*¹; Austin Gerlt²; Manny Gonzales²; Eric Payton²; Reji John²; Ibrahim Karaman¹; Raymundo Arroyave¹; Douglas Allaire¹; ¹Texas A&M University; ²Air Force Research Lab

11:30 AM

Matbench: an automatic materials science machine learning tool for benchmarking and prediction: *Alexander Dunn*¹; Alireza Faghaninia²; Qi Wang²; Anubhav Jain²; ¹University of California, Berkeley; ²Lawrence Berkeley Laboratory

Computational Approaches for Big Data, Artificial Intelligence and Uncertainty Quantification in Computational Materials Science — AI-based investigation of material properties PART I

Sponsored by: TMS: Computational Materials Science and Engineering Committee

Program Organizers: Liang Qi, University of Michigan; Francesca Tavazza, National Institute of Standards and Technology; Christopher Woodward, Air Force Research Laboratory; Adrian Sabau, Oak Ridge National Laboratory; Houlong Zhuang, Arizona State University; Sugata Chowdhury, National Institute of Standards and Technology

Tuesday AM
March 12, 2019

Room: 305
Location: Henry B. Gonzalez
Convention Center

Session Chair: To Be Announced

8:30 AM Invited

A Machine Learning Exploration of Grain Boundary Mobility Mechanisms: *Srikanth Patala*¹; ¹North Carolina State Univ

9:00 AM

Applying Machine Learning Techniques to Predict Precipitate Morphology for Alloy Design and Uncertainty Quantification: *Stephen DeWitt*¹; Brian Puchala¹; Katsuyo Thornton¹; John Allison¹; ¹University of Michigan

9:20 AM

Machine learning to predict continuous cooling phase transformations in steels: *Peter Hedström*¹; Moshior Rahaman²; Wangzhong Mu¹; Joakim Odqvist¹; ¹KTH Royal Institute of Technology; ²HiMat Engineering

9:40 AM Invited

Machine Learning for High-Temperature Alloy Design: High-Quality Data, Scientific Descriptors and Curve Fitting: *Dongwon Shin*¹; Bruce Pint¹; Govindarajan Muralidharan¹; Yukinori Yamamoto¹; Michael Brady¹; Jiheon Jun¹; Sangkeun Lee¹; J. Haynes¹; ¹Oak Ridge National Laboratory

10:10 AM Break

10:30 AM

Optimization of calibration methods for a reduced-order structure property linkage of polycrystalline materials: Aaron Tallman¹; *Krzysztof Stopka*¹; Laura Swiler²; Yan Wang¹; Surya Kalidindi¹; David McDowell¹; ¹Georgia Institute of Technology; ²Sandia National Laboratories

10:50 AM

Steel Inclusion Classification Using Computer Vision and Machine Learning: *Nan Gao*¹; Mohammad Abdulsalam¹; Bryan Weble¹; Elizabeth Holm¹; ¹Carnegie Mellon University, Materials Science and Engineering

11:10 AM

A Reification Approach to Modeling Material Response by Fitting Johnson Cook Parameters: *Jaylen James*¹; Austin Gerlt²; Manny Gonzales²; Eric Payton²; Reji John²; Ibrahim Karaman¹; Raymundo Arroyave¹; Douglas Allaire¹; ¹Texas A&M University; ²Air Force Research Lab

11:30 AM

Matbench: an automatic materials science machine learning tool for benchmarking and prediction: *Alexander Dunn*¹; Alireza Faghaninia²; Qi Wang²; Anubhav Jain²; ¹University of California, Berkeley; ²Lawrence Berkeley Laboratory

Computational Materials Discovery and Design — Applications for Defects and the Bulk II

Sponsored by: TMS: Computational Materials Science and Engineering Committee

Program Organizers: Oliver Johnson, Brigham Young University; Arunima Singh, Arizona State University; Jake Bair, Pacific Northwest National Lab; Christopher Weinberger, Colorado State University; Timofey Frolov, Lawrence Livermore National Laboratory; Ning Zhang, Colorado School of Mines; Fadi Abdeljawad, Clemson University; Richard Hennig, Univ of Florida; Mikhail Mendeleev, Ames Laboratory; Avinash Dongare, University of Connecticut

Tuesday AM
March 12, 2019

Room: 304C
Location: Henry B. Gonzalez
Convention Center

Session Chair: To Be Announced

8:30 AM Invited

Machine Learning Guided Accelerated Search for New Materials with Experimental Data: *Prasanna Balachandran*¹; ¹University of Virginia

8:50 AM

Structure and Properties of High-Mobility MoTe_{2-x} Phases: *Arunima Singh*¹; Ryan Beams²; Irina Kalish³; Sergiy Krylyuk⁴; Albert Davydov³; ¹Arizona State University; ²Food and Drug Administration; ³National Institute of Standards and Technology; ⁴Theiss Research

9:10 AM

eXtremeMAT: Computational Materials Discovery for Existing and Advanced FE Power Cycles: *Jeffrey Hawk*¹; David Alman¹; ¹NETL, U.S. Department of Energy

9:30 AM

Machine-learning phase prediction of high-entropy alloys: *Wenjiang Huang*; Pedro Martin; Houlong Zhuang; ¹

9:50 AM Break

10:10 AM

Machine learned defect level prediction for lead-based hybrid perovskites: *Arun Kumar Mannodi Kanakkithodi*¹; Maria Chan¹; Michael Davis¹; ¹Argonne National Laboratory

10:30 AM

Prediction of the strength of FeNiCrCo high entropy alloy single crystals: *Mohammad Asadikiya*¹; Vadym Drozd²; Yu Zhong¹; ¹Worcester Polytechnic Institute; ²Florida International University

10:50 AM

Presence of Chern insulating and Weyl semimetallic phase in Bi₂MnSe₄/Bi₂Se₃ multilayer heterostructures: *Sugata Chowdhury*¹; Kevin Garrity¹; A¹; Curt Richter¹; Francesca Tavazza¹; ¹NIST

11:10 AM

Density Functional Theory Study on the Complexation of La (III) Ion with Hydroxyamide Ligands: *Anindita Pati*¹; Tarun Kundu¹; Snehanshu Pal²; ¹IIT Kharagpur; ²NIT Rourkela

Computational Thermodynamics and Kinetics — Kinetics

Sponsored by: TMS: Computational Materials Science and Engineering Committee

Program Organizers: Fadi Abdeljawad, Clemson University; Hesam Askari, University of Rochester; Emine Gulsoy, Northwestern Univ; Joel Berry, University of Pennsylvania; Damien Turrett, IMDEA Materials; Mohsen Asle Zaeem, Colorado School of Mines; James Morris, Oak Ridge National Laboratory

Tuesday AM
March 12, 2019

Room: 225C
Location: Henry B. Gonzalez
Convention Center

Session Chair: To Be Announced

8:30 AM Invited

Phase-field model of oxidation: Kinetics: *Kyoungdoc Kim*¹; Quentin Sherman¹; Larry Aagesen²; Peter W. Voorhees¹; ¹Northwestern University; ²Idaho National Laboratory

9:00 AM

Hydrogen diffusion in HCP iron: A first-principles study: *Satoshi Ikubo*¹; Kenji Hirata¹; Yui Kuroki¹; Shoya Kawano¹; Hiroshi Ohtani²; Motomichi Koyama³; Kaneaki Tsuzaki³; ¹Kyushu Institute Of Technology; ²Tohoku University; ³Kyushu University

9:20 AM

Simulated hydrogen diffusion in nickel grain boundaries: *David Page*¹; Eric Homer¹; Katie Varela¹; Oliver Johnson¹; David Fullwood¹; ¹Brigham Young University

9:40 AM

First-Principles Kinetic Monte Carlo Study of Temperature Effects on Pipe Diffusion in FCC Ni: *Luke Wirth*¹; Amir Farajian¹; Christopher Woodward²; ¹Wright State University; ²Air Force Research Laboratory

10:00 AM Break

10:20 AM Invited

Meso-Scale and Atomistic Modeling of Interface Evolution during Zirconium Alloy Corrosion: *Richard Smith*¹; Natalia Tymiak Carlson¹; Bruce Kammenzind¹; ¹Bettis Laboratory, NNL

10:50 AM

Phosphorus effect on vacancy-mediated diffusion and ordering kinetics in nickel alloys: *Jia-Hong Ke*¹; George A. Young²; Julie D. Tucker¹; ¹Oregon State University; ²Dominion Engineering, Inc.

11:10 AM

First-principles calculations of factors contributing to non-dilute impurity diffusion coefficients in metals: *Chelsey Hargather*¹; Harrison Lee¹; John O'Connell¹; ShunLi Shang¹; Zi-Kui Liu¹; ¹New Mexico Institute of Mining and Tech

11:30 AM

Oxygen Diffusion in Zirconia with Kinetic Monte Carlo: *Thomas Schablitzki*¹; Ying Chen²; Tetsuo Mohri¹; ¹Institute for Materials Research, Tohoku University; ²Graduate School of Engineering, Tohoku University

11:50 AM

Kinetics Calculation and Analysis of AlN Precipitation in ML40Cr Steel Austenite: *Ziyi Liu*¹; Yanping Bao¹; Min Wang¹; ¹University of Science and Technology Beijing

Deformation and Damage Behavior of High Temperature Alloys — Superalloys: Alloy Development and Fatigue

Sponsored by: TMS Structural Materials Division, TMS: High Temperature Alloys Committee

Program Organizers: Michael Titus, Purdue University; Qiang Feng, University of Science and Technology Beijing; Akane Suzuki, GE Global Research; Jonathan Cormier, ENSMA - Institut Pprime - UPR CNRS 3346; Sammy Tin, Illinois Institute of Technology; Martin Detours, National Energy Technology Laboratory

Tuesday AM
March 12, 2019

Room: 301C
Location: Henry B. Gonzalez
Convention Center

Session Chairs: Sammy Tin, Illinois Institute of Technology; Martin Detours, National Energy Technology Laboratory

8:30 AM Invited

Developing alloy compositions for future high temperature disk rotors:

Mark Hardy¹; Katerina Christofidou²; Christos Argyrakis¹; Suyang Yu³; Hang-yue Li³; Alison Wilson²; Catherine Rae²; Paul Bowen³; Howard Stone²; ¹Rolls-Royce Plc; ²University of Cambridge; ³University of Birmingham

9:00 AM

Effect of Grain Boundary Serration on Creep Enhancement in a Nickel Alloy Inconel 600: Yuanbo Tang¹; Angus Wilkinson¹; Roger Reed¹; ¹University of Oxford

9:20 AM

Stress Analysis and Structure Optimization of W-shaped Radiant Tube in Continuous Annealing Furnace: Yanglong Li¹; Shunming Liu²; Dawei Hou²; Wei Guo¹; Hui Wang¹; Meng Yu¹; ¹Shougang Research Institute of Technology; ²Shougang Jingtang United Iron & Steel Co., Ltd.

9:40 AM

On the Rapid Assessment of Mechanical Behaviour of a Prototype Nickel-Based Superalloy using Small-Scale Testing: Sabin Sulzer¹; Enrique Alabort¹; André Németh¹; Roger Reed¹; ¹Univ of Oxford

10:00 AM Break

10:20 AM Invited

A fatigue deformation map to quantify the degree of mesoscopic cube slip at elevated temperatures: Alberto Mello¹; Andrea Nicolas¹; Michael Sangid¹; ¹Purdue University

10:50 AM

Low Cycle Fatigue Performance of HAYNES 244 Alloy: Michael Fahrman¹; ¹Haynes International

11:10 AM

Fatigue and creep life sensitivity to processing defects of a third generation Ni-based single crystal superalloy: Luciana Maria Bortoluci Ormastroni¹; Lorena Mataveli Suave²; Jonathan Cormier¹; ¹Institut Pprime/ISAE-ENSMA; ²SAFRAN Tech

11:30 AM

Microstructure and mechanical behavior of MarM-509 fabricated by direct metal laser sintering: Nicholas Ferreri¹; Saeede Ghorbanpour¹; Jonathan Bicknell²; Marko Knezevic¹; ¹University of New Hampshire; ²Turbocam International

Electrode Technology for Aluminum Production — Electrodes - Baking

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

Program Organizer: Lorentz Petter Lossius, Hydro Aluminium AS

Tuesday AM
March 12, 2019

Room: 006D
Location: Henry B. Gonzalez
Convention Center

Session Chairs: Frank Hiltmann, COBEX GmbH; Jianhong Yang, Jiangsu University

8:30 AM Introductory Comments

8:35 AM

Development of a New Baking Furnace Design Concept without Headwall to Increase Anode Production Capacity: Arnaud Bourcier¹; Lise Lavigne¹; Yves Tremblay¹; Allan Graham²; Meaghan Noonan²; ¹Rio Tinto Aluminium; ²Pacific Aluminium

9:00 AM

Risk Assessment of Fire & explosion incident in Anode Baking Furnace and Operational Practices.: Suryakanta Nayak¹; Kalpataru Samal¹; Pulak Patra¹; ¹Hindalco Industries Ltd

9:25 AM

The Optimization of Soaking Time to Reduce Fuel Consumption while Keeping Good Baked Anode Quality: S.S. Sijabat¹; Ivan Ermisyam¹; Firman Ashad¹; Ivan Yudho¹; Daniel Hutahuruk¹; Ade Buandra¹; ¹Pt Indonesia Asahan Aluminium (Persero)

9:50 AM

Influence of Coke Calcining Level on Anode RD, Lc and Other Properties Using a Constant Baking Cycle: Christopher Kuhnt¹; Les Edwards²; Marvin Lubin²; Kevin Harp²; ¹Rutgers Germany GmbH; ²Rain Carbon Inc.

10:15 AM Break

10:30 AM

In situ measurements of pit gas composition in an anode baking furnace: Trond Brandvik¹; Thor Anders Aarhaug²; Heiko Gaertner²; Arne Petter Ratvik²; Tor Grande¹; ¹NTNU Norwegian University of Science and Technology; ²Sintef Industry

10:55 AM

Measurement of Anode Anisotropy by Micro X-ray Computed Tomography: Stein Rørvik¹; Lorentz Lossius²; Dag Herman Andersen²; ¹SINTEF Group; ²Hydro Aluminium

11:20 AM

Experimental Study on Preparation of Prebake Anodes with High Sulfur Petroleum Coke Desulfurized at High Temperatures: Shoulei Gao¹; ¹Sunstone Development

11:45 AM

Electrochemical behaviour of carbon anodes produced with different mixing temperatures and baking levels – a laboratory study: Camilla Sommerseth¹; Rebecca Thorne²; Wojciech Gebarowski³; Arne Ratvik¹; Stein Rørvik¹; Hogne Linga⁴; Lorentz Lossius⁴; Ann Svensson⁵; ¹Sintef; ²Norwegian Institute for Air Research; ³AGH University of Science and Technology; ⁴Hydro Aluminium AS; ⁵Norwegian University of Science and Technology

Environmentally Assisted Cracking: Theory and Practice — Hydrogen Embrittlement I

Program Organizers: Bai Cui, University of Nebraska Lincoln; Raul Rebak, GE Global Research; Srujan Rakkam, Def-Aero, Advanced Cooling Technologies Inc

Tuesday AM
March 12, 2019

Room: 214C
Location: Henry B. Gonzalez
Convention Center

Session Chairs: Ian Robertson, University of Wisconsin-Madison;
Petros Sofronis, University of Illinois at Urbana-Champaign

8:30 AM Introductory Comments

8:40 AM Invited

Hydrogen-induced intergranular failure in FCC equi-molar alloys explained: Kaila Bertsch¹; Kelly Nygren²; Shuai Wang³; Akihide Nagao⁴; Hongbin Bei⁵; *Ian Robertson*⁶; ¹Univ of Wisconsin Madison; ²Cornell University; ³Southern University of Science and Technology; ⁴JFE Steel; ⁵Oak Ridge National Laboratory; ⁶Univ of Wisconsin Madison

9:20 AM

Evolution of dislocation structure in the presence of hydrogen: *Shuai Wang*¹; Akihide Nagao²; Kaveh Edalati³; Zenji Horita³; Petros Sofronis⁴; Ian Robertson⁵; ¹Southern University of Science and Technology; ²JFE Steel Corporation; ³Kyushu University; ⁴University of Illinois at Urbana-Champaign; ⁵University of Wisconsin-Madison

9:40 AM

On the trail of the hydrogen embrittlement by novel critical experiments: *Afroz Barnoush*¹; ¹Norwegian University of Science and Technology

10:00 AM

Hydrogen Assisted Fracture in Austenitic Stainless Steel Welds: *Joseph Ronevich*¹; Chris San Marchi¹; Josh Sugar¹; Dorian Balch¹; ¹Sandia National Laboratories

10:20 AM Break

10:40 AM Invited

Mechanistic Model for Fatigue Crack Growth in the Presence of Hydrogen: Seyedehzahra Hosseini-rani¹; Mohsen Dadfarnia¹; Masanobu Kubota²; Akihide Nagao³; Brian Somerday⁴; *Petros Sofronis*¹; Robert Ritchie⁵; ¹Kyushu University; University of Illinois at Urbana-Champaign; ²Kyushu University; ³Kyushu University; JFE Steel Corporation; ⁴Kyushu University; Southwest Research Institute; ⁵Kyushu University; University of California, Berkeley

11:20 AM

A mechanistic modelling framework for hydrogen assisted cracking: *Emilio Martinez-Pañeda*¹; ¹University of Cambridge

11:40 AM

Influence of hardness and trapping characteristics on hydrogen Embrittlement (HE) susceptibility of materials based on a numerical-experimental approach: *Tuhin Das*¹; Priyadarshi Behera¹; Salim Brahimi²; Jun Song¹; Stephen Yue¹; ¹Department of Mining and Materials Engineering, McGill University; ²IBECA Technologies Corporation

Fatigue in Materials: Multi-scale and Multi-environment Characterizations and Computational Modeling — Relationships Among Processing, Microstructure, and Fatigue Properties

Sponsored by: TMS: Computational Materials Science and Engineering Committee, TMS: Integrated Computational Materials Engineering Committee

Program Organizers: Jean-Briac le Graverend, Texas A&M University; Ashley Spear, University of Utah; Antonios Kotsos, Drexel Univ; Garrett Pataky, Clemson University; Filippo Berto, Norwegian University of Science and Technology

Tuesday AM
March 12, 2019

Room: 301B
Location: Henry B. Gonzalez
Convention Center

Session Chair: Filippo Berto, Norwegian University of Science and Technology

8:30 AM

Fatigue and Fracture Behavior of Gamma Titanium Aluminide Ti-43.5Al-4Nb-1Mo-0.1B (TNM): *Hannah Sims*¹; Matthew Dahar²; Sesh Tamirisakandala²; John Lewandowski¹; ¹Case Western Reserve University; ²Arconic

8:50 AM

Influence of Crystal Elasticity on the Average Grain Stress/Strain Distributions and Consequences on Micro-Crack Initiation: *Maxime Sauzay*¹; Thomas Ghidossi²; Loïc Signor²; Patrick Villechaise²; ¹Cea Université Paris-Saclay; ²ISAE-ENSMA

9:10 AM

Microstructure and Local Fatigue Property Assessment near Linear Friction Welds: *Christopher Magazzeni*¹; Jicheng Gong¹; Angus Wilkinson¹; ¹University of Oxford

9:30 AM

On the evolution of crack-tip γ' precipitation at 750\176C in the new nickel-based superalloy AD730\8482: *Nicolas Mrozowski*¹; Guillaume Benoît²; Florence Hamon³; Jonathan Cormier²; Jean-Michel Franchet⁴; Anne-Laure Rouffie⁴; Gilbert Hénaff³; Patrick Villechaise³; ¹Safran TECH - Institut Pprime; ²ISAE ENSMA - Institut Pprime; ³CNRS - Institut Pprime; ⁴SAFRAN Tech

9:50 AM Break

10:10 AM

Effect of Local Texture on Heterogeneous Plastic Strain Fields during Low Cycle Fatigue in Ni-based superalloys using Crystal Plasticity Finite Element Simulations: *Jean-Briac le Graverend*¹; ¹Texas A&M University

10:30 AM

Various factors affecting fatigue behaviors of TWIP steels: *Hyokyung Sung*¹; Soojin Ahn¹; Kwanho Lee¹; Woojin An¹; Sangshik Kim¹; Jehyun Lee²; ¹Gyeongsang National Univ; ²Changwon National University

10:50 AM

Nickel-Titanium-Hafnium alloys designed for space-age bearings: *Sean Mills*¹; Behnam Amin-ahmadi¹; Christopher Dellacorte²; Ronald Noebe²; Aaron Stebner¹; ¹Colorado School of Mines; ²NASA GRC

11:10 AM

Role of Surface Roughness on Fatigue Crack Initiation on Surface: *Calvin Tszeng*¹; ¹Santa Clara University

Gamma (FCC)/Gamma-Prime (L12) Co-Based Superalloys III — Alloy Development & Microstructural Evolution

Sponsored by: TMS: High Temperature Alloys Committee, TMS: Integrated Computational Materials Engineering Committee
Program Organizers: Michael Titus, Purdue University; David Dye, Imperial College; Eric Lass, National Institute of Standards and Technology; Katelun Wertz, Air Force Research Laboratory; Christopher Zenk, Ohio State University

Tuesday AM
March 12, 2019

Room: 206A
Location: Henry B. Gonzalez
Convention Center

Session Chairs: David Dye, Imperial College London; Katelun Wertz, Air Force Research Laboratory

8:30 AM Invited

Microstructural and compositional design of multicomponent Co/Ni-based superalloys using high-throughput diffusion multiples: Wendao Li¹; Changdong Wei²; Longfei Li¹; Ji-Cheng Zhao²; *Qiang Feng*¹; ¹University of Science and Technology Beijing; ²The Ohio State University

9:00 AM Invited

Elemental partitioning and site-occupancy behavior of alloying elements in α/α' -strengthened Co-Ti based alloys: *Pyuck-Pa Choi*¹; Hyeji Im¹; Boryung Yoo¹; Surendra Makineni²; Baptiste Gault²; Dierk Raabe²; ¹Korea Advanced Institute of Science and Technology; ²Max-Planck-Institut fuer Eisenforschung

9:30 AM

Partitioning preferences of alloying elements and their effect on the stability of the $\gamma'/L1_2$ -phase in Co-base superalloys: Li Wang¹; Yuzhi Li²; Michael Oehring¹; Uwe Lorenz¹; *Florian Pyczak*¹; ¹Helmholtz-Zentrum Geesthacht; ²Northwestern Polytechnical University

9:50 AM

$\square+\square'$ microstructures in W-free Co-Ta-V- and Co-Nb-V-based systems: *Fernando Reyes Tirado*¹; David Dunand¹; ¹Northwestern University

10:10 AM Break

10:30 AM Invited

Development of Ni/Co based superalloys: CALPHAD and Materials databases: *Suzana Fries*¹; ¹Ruhr Univ Bochum

11:00 AM

Towards developing a new generation of Cobalt based superalloys: *Kamano Chattopadhyay*¹; Prafull Pandey¹; ¹Indian Institute Of Science

11:20 AM

The effect of long term exposure at elevated temperature on the stability of a novel Co-Ni based superalloy: *Ning Zhou*¹; Alberto Polar Rosas¹; Gian Colombo¹; Tao Wang¹; Stéphane Forsik¹; Samuel Kernion¹; Mario Epler¹; ¹Cartech

11:40 AM

A rapid and simplified approach to accurately measure single crystal elastic constants: *Brent Goodlet*¹; Ben Bales¹; Leah Mills¹; Marie-Agathe Charpagne¹; Sean Murray¹; Linda Petzold¹; Tresa Pollock¹; ¹Univ of California Santa Barbara

Green Materials Engineering: An EPD Symposium in Honor of Sergio Monteiro — Nano and Micro Green Composites

Sponsored by: TMS: Materials Characterization Committee
Program Organizers: Shadia Ikhmayies, Al Isra University; Jian Li, Canmetmaterials; Carlos Mauricio Vieira, State University of the North Fluminense; Fabio Braga, Military Institute of Engineering

Tuesday AM
March 12, 2019

Room: 008A
Location: Henry B. Gonzalez
Convention Center

Session Chairs: Esperidiana Moura, Nuclear & Energy Research Institute; Afonso Azevedo, Instituto Federal Fluminense

8:30 AM Introductory Comments

8:35 AM Keynote

Application of natural nanoparticle in polymeric blend of HMSPP/SEBS for biocide activity: Luiz Komatsu¹; Angelica Zafalon¹; Vinicius Santos¹; Nilton Lincopan²; *Vijaya Rangari*³; Duclerc Parra¹; ¹Nuclear and Energy Research Institute; ²Institute of Biomedical Sciences; ³Tuskegee University

9:15 AM

The potential of micro- and nano-sized fillers extracted from agroindustry residues as reinforcements of thermoplastic-based biocomposites - a review: *Esperidiana Moura*¹; ¹Nuclear & Energy Research Institute

9:35 AM

Thermal characterization of a nanobiocomposite for use in bone defects: *Teresa Castillo*¹; Leila Siqueira²; Ruben Jesus Sanchez Rodriguez¹; ¹Univ Estadual Do Norte Fluminense; ²Centro Universitário Fluminense, UNIFLU

9:55 AM Break

10:05 AM

3D Printing of Live Diatoms to Make Structures with Many Levels of Hierarchy: John Gardner¹; Ben Lazarus²; *Hannes Schniepp*²; ¹NASA Langley Research Center; ²The College of William & Mary

10:25 AM

Impact properties of composites reinforced by bamboo fibers with polyurethane and epoxy as matrix: Mariana Lopes¹; Juliana Carvalho¹; Felipe Lopes¹; Sérgio Monteiro¹; *Carlos Vieira*¹; ¹State University of Northern of Rio de Janeiro, UENF

10:45 AM

Thermal behavior of epoxy composites reinforced with fique fabric by DSC: *Michelle Oliveira*¹; Artur Camposo¹; Sergio Monteiro¹; Fabio Garcia¹; Luana Demosthenes¹; ¹Militar Institute of Engineering

11:05 AM

Chemical and Morphological Characterization of Guaruman Fiber: *Raphael Reis*¹; Larissa Nunes¹; Verônica Cândido²; Sergio Monteiro¹; ¹IME; ²Federal University of Pará – UFPA

Heterogeneous and Gradient Materials (HGM III): Tailoring Mechanical Incompatibility for Superior Properties — Gradient Materials I: Mechanical Properties

Program Organizers: Yuntian Zhu, North Carolina State University; Kei Ameyama, Ritsumeikan University; Irene Beyerlein, University of California, Santa Barbara; Yves Brechet, Grenoble-INP; Huajian Gao, Brown Univ; Hyoung Seop Kim, Pohang University of Science and Technology; Ke Lu, Institute of Metal Research; Xiaolei Wu, Chinese Academy of Sciences

Tuesday AM
March 12, 2019

Room: 209
Location: Henry B. Gonzalez
Convention Center

Session Chairs: Ke Lu, Chinese Academy of Sciences; David Field, Washington State University; Xinghang Zhang, Purdue University; Hatem Zurob, McMaster University

8:30 AM Invited

Strengthening and work hardening in gradient nanotwinned metals: *Lei Lu*¹; ¹Institute of Metal Research, CAS

8:55 AM

Mechanical behavior of structurally gradient nickel alloys: *Xinghang Zhang*¹; Jie Ding¹; Qiang Li¹; ¹Purdue University

9:15 AM Invited

The Design of High Strength, Ductility, and Impact Resistance of Compositionally and Microstructurally Graded Steel: *Bosco Yu*¹; Hamid Azizd¹; David Embury¹; Hatem Zurob¹; ¹McMaster University

9:40 AM

Enhanced fatigue strength and lifetime in an austenitic stainless steel with a gradient nanostructured surface layer: *Y.B. Lei*¹; *Z.B. Wang*¹; K. Lu¹; ¹Institute of Metal Research, CAS

10:00 AM Break

10:20 AM Invited

Microstructure and Mechanical Properties of Nano-Al and Mg Alloys and Composites with Heterogeneous and Gradient Structures: *Baolong Zheng*¹; Xin Wang¹; Yuntian Zhu²; Julie Schoenung¹; Enrique Lavernia¹; ¹University Of California, Irvine; ²North Carolina State University

10:45 AM

Gradient microstructure and mechanical properties of a TiAl alloy after high-temperature torsion: *Yongfeng Liang*¹; Jie Ding¹; Jianping He¹; Junpin Lin¹; ¹University of Science and Technology Beijing

11:05 AM

Effect of Gradient Microstructures on Strength and Ductility of TRC AZ31: *Maryam Jamalian*¹; *David Field*¹; ¹Washington State Univ

11:25 AM Invited

Gradient grained nickel with optimum gradient on mechanical properties: *Li Yi*¹; ¹Institute of Metal Research, CAS

11:50 AM

Mechanical Properties of Electrodeposited Ni-W Alloys having Amorphous and Nanocrystalline Dual Phase Structures: *Tohru Yamasaki*¹; Hiroki Adachi¹; ¹Univ of Hyogo

High Entropy Alloys VII — Structures and Mechanical Properties II

Sponsored by: TMS: Alloy Phases Committee

Program Organizers: Xie Xie, FCA US LLC; Peter Liaw, University of Tennessee; Michael Gao, National Energy Technology Laboratory; E-Wen Huang, National Chiao Tung University; Gongyao Wang, Alcoa Technical Center; Srivatsan Tirumalai, The University of Akron

Tuesday AM
March 12, 2019

Room: 207B
Location: Henry B. Gonzalez
Convention Center

Session Chairs: David Shifler, Office of Naval Research; Easo George, Oak Ridge National Laboratory

8:30 AM Keynote

Phase instability and mechanical properties of the CrMnFeCoNi high-entropy alloy: *F. Fox*¹; *Y. Kalchev*¹; *S. Berglund*¹; *A. Kostka*¹; *G. Laplanche*¹; *G. Eggeler*¹; *Easo George*²; ¹Ruhr University Bochum; ²Oak Ridge National Laboratory

9:00 AM Invited

Crystallographic slip in a high-entropy alloy: *Quentin Rizzardi*¹; *Gregory Sparks*¹; *Robert Maass*¹; ¹Univ of Illinois At Urbana-Champaign

9:20 AM Invited

Nanomechanical studies of high-entropy alloys: *Yu Zou*¹; ¹University of Toronto

9:40 AM

Microstructural Evolution and influence of grain size on the mechanical properties of AlCoCrFeNi single phase high entropy alloy: *Srinivas Dudala*¹; *Chenna Krishna S*²; *Rajesh Korla*¹; ¹Indian Institute of Technology, Hyderabad; ²Vikram Sarabhai Space Centre, Trivandrum

10:00 AM Invited

Balance of Strength-ductility in Ultrafine-grained (CoCrMnNi)₅₀Fe₅₀ Medium Entropy Alloy having Fully Recrystallized Microstructure: *Ibrahim Ondicho*¹; *Nokeun Park*¹; ¹Yeungnam University

10:20 AM Break

10:40 AM

Lattice Distortion and Its Effect on Mechanical Behavior in Single-Phase Nb-Ta-Ti-V-Zr Refractory High-entropy Alloy Systems: *Chanho Lee*¹; *Gian Song*²; *Wei Chen*³; *Michael Gao*⁴; *Yi Chou*²; *Yi-Chia Chou*²; *Jamieson Brecht*¹; *Hahn Choo*¹; *Peter Liaw*¹; ¹The University of Tennessee; ²Kongju National University; ³Illinois Institute of Technology; ⁴National Energy Technology Laboratory/AECOM; ⁵National Chiao Tung University

11:00 AM Invited

Microstructures and Mechanical Properties of V-doped Cantor Alloy Films: *Cheng Wang*¹; *Shuang Fang*¹; *Chun-Hway Hsueh*¹; ¹National Taiwan University

11:20 AM Invited

Recent progresses in the understanding of metastable high-entropy alloys: *Zhiming Li*¹; *Jing Su*¹; *Wenjun Lu*¹; *Hong Luo*¹; *Zhangwei Wang*¹; *Xiaoxiang Wu*¹; *Dierk Raabe*¹; ¹Max-Planck-Institut Fur Eisenforschung

11:40 AM

Advanced Manufacturing of High Entropy Alloys: *Andrew Kustas*¹; *Shaun Whetten*¹; *Dave Keicher*¹; *Jake Mahaffey*¹; *Andrew Vackel*¹; *Dinakar Sagapuram*²; *Joseph Michael*¹; *Michael Chandross*¹; *Ping Lu*¹; *Nicolas Argibay*¹; ¹Sandia National Laboratories; ²Texas A&M University

Hume-Rothery Symposium – Bulk and Interfacial Thermodynamics of Complex Materials: Insights Derived from Integrating Modeling and Experiment — Materials Design and Discovery I

Sponsored by: TMS: Alloy Phases Committee

Program Organizers: Raymundo Arroyave, Texas A&M University; Michael Gao, National Energy Technology Laboratory; Jeffrey Hoyt, McMaster Univ; Saryu Fensin, Los Alamos National Laboratory

Tuesday AM
March 12, 2019

Room: 304B
Location: Henry B. Gonzalez
Convention Center

Session Chairs: Jeffrey Hoyt, McMaster Univ; Saryu Fensin, Los Alamos National Laboratory

8:30 AM Invited

Beyond Cluster Expansion: New Approaches for Alloys: *Gus Hart*¹; ¹Brigham Young University

9:00 AM Invited

The Materials Project for Computational Materials Design: *Kristin Persson*¹; ¹Univ of California Berkeley

9:30 AM Invited

High entropy alloys from high throughput calculations: understanding material-specific variations from Hume-Rothery rules: *James Morris*¹; Louis Santodonato¹; M. Claudia Tropaevsky¹; Ray Unocic¹; Hongbin Bei¹; Peter Liaw²; ¹Oak Ridge National Lab; ²University of Tennessee

10:00 AM Break

10:20 AM Invited

The search for high entropy alloys: a high-throughput ab-initio approach: *Stefano Curtarolo*¹; Yoav Lederer²; Cormac Toher¹; Kenneth Vecchio¹; ¹Duke University; ²NRCN; ³UCSD

10:50 AM Invited

Inverse Band Structure Design via Materials Informatics: *Eric Isaacs*¹; *Christopher Wolverton*¹; ¹Northwestern Univ

11:20 AM Invited

Implementation of the ICME approach in a master course in materials science and simulations: *Suzana Fries*¹; ¹Ruhr Univ Bochum

ICME Case Studies and Validation: Extreme Environments — Session I

Sponsored by: TMS Materials Processing and Manufacturing Division, TMS Structural Materials Division, TMS: High Temperature Alloys Committee, TMS: Integrated Computational Materials Engineering Committee, TMS: Mechanical Behavior of Materials Committee

Program Organizers: James Saal; Mark Carroll, Federal-Mogul Powertrain; Xuan Liu, Pratt & Whitney; Dongwon Shin, Oak Ridge National Laboratory; Laurent Capolungo, Los Alamos National Laboratory

Tuesday AM
March 12, 2019

Room: 207A
Location: Henry B. Gonzalez
Convention Center

Session Chairs: James Saal; Xuan Liu, Pratt & Whitney

8:30 AM Invited

Case study in ICME guided materials development: *Jerry Gibbs*¹; ¹US Department Of Energy

9:10 AM Invited

An Integrated Approach to Assess the CMAS Performance of T/EBCs: *Carlos Levi*¹; David Poerschke²; Collin Holgate¹; William Summers¹; Wesley Jackson³; ¹Univ of California Santa Barbara; ²University of Minnesota; ³United Technologies Research Center

9:50 AM

Integrated numerical modeling of misoriented grains in directionally-solidified Ni-base superalloy castings and its application to turbine blades: *Huijuan Dai*¹; Durga Ananthanarayanan¹; Lang Yuan¹; Shenyang Huang¹; Jared Iverson¹; Patrick Willson¹; Mark Thompson¹; ¹GE Global Research

10:10 AM Break

10:30 AM Invited

ICME Approaches to Alloy Design for High-Temperature Corrosion Resistance: *Brian Gleeson*¹; ¹Univ of Pittsburgh

11:10 AM

Systematic analysis of the γ/γ' -micro- and nanostructure evolution with increasing temperature exploiting a new Rapid Thermal Annealing furnace approach: *Dorota Kubacka*¹; Yolita Eggeler¹; Erdmann Spiecker¹; ¹Institute of Micro- and Nanostructure Research

11:30 AM

In situ TEM heating experiments to assess chemical evolution at interfaces of γ' -strengthened superalloys at high temperatures: *Yolita Eggeler*¹; Erdmann Spiecker¹; ¹University Erlangen-Nuernberg

Interfaces in Structural Materials: An MPMD Symposium in Honor of Stephen M. Foiles — Microstructural Evolution I

Sponsored by: The Minerals, Metals and Materials Society, TMS: Computational Materials Science and Engineering Committee
Program Organizers: Fadi Abdeljawad, Clemson University; Eric Homer, Brigham Young University; Elizabeth Holm, Carnegie Mellon University; Mark Asta, Univ of California Berkeley

Tuesday AM
March 12, 2019

Room: 302C
Location: Henry B. Gonzalez
Convention Center

Session Chair: To Be Announced

8:30 AM Invited

Mobility of stacking-order domain boundaries in bilayer graphene: *David Olmsted*¹; Max Poschmann¹; Mark Asta¹; ¹University of California, Berkeley

9:00 AM

Stress Modulated Grain Boundary Mobility: *Derek Lontine*¹; *Oliver Johnson*²; ¹US Synthetic; ²Brigham Young University

9:20 AM

The Wide World of Grain Boundary Mode Selection: *Ian Chesser*¹; Brandon Runnels²; Elizabeth Holm¹; ¹Carnegie Mellon University; ²University of Colorado Colorado Springs

9:40 AM Invited

The How and Why of GB Dynamics: *David Srolovitz*¹; Jian Han²; ¹University of Hong Kong; University of Pennsylvania; ²University of Pennsylvania

10:10 AM Break

10:30 AM Invited

Variations of interfacial energy in the 5-space: a simple function for FCC metals: *Vasily Bulatov*¹; ¹Lawrence Livermore National Lab

11:00 AM

Twin boundary facets in three-dimensions: *Shujuan Wang*¹; Rodney McCabe¹; Laurent Capolungo¹; ¹Los Alamos National Lab

11:20 AM

The Role of the Interface Stiffness Tensor on Grain Boundary Dynamics: *Fadi Abdeljawad*¹; Stephen Foiles¹; Adam Hinkle¹; Alex Moore¹; Christopher Barr¹; Nathan Heckman¹; Khalid Hattar¹; Brad Boyce¹; ¹Sandia National Laboratories

11:40 AM Invited

Measurements of grain boundary energies and curvatures in polycrystalline materials and their influence on microstructural evolution: *Gregory Rohrer*¹; ¹Carnegie Mellon Univ

Irradiation Effects on Phase Transformations in Nuclear Reactor Materials — Nanoprecipitates and Nanoclusters

Sponsored by: TMS: Phase Transformations Committee

Program Organizers: Janelle Wharry, Purdue University; Kester Clarke, Colorado School of Mines; Julie Tucker, Oregon State University; Par Olsson, KTH Royal Institute of Technology; Dhriti Bhattacharyya, ANSTO; Mohsen Asle Zaeem, Colorado School of Mines; Arun Devaraj, Pacific Northwest National Laboratory

Tuesday AM
March 12, 2019

Room: 214B
Location: Henry B. Gonzalez
Convention Center

Session Chairs: Eda Aydogan, Los Alamos National Laboratory; Janelle Wharry, Purdue University

8:30 AM Invited

Evolution of stresses and strains in nuclear reactor components.: *Sergei Dudarev*¹; Daniel Mason¹; Edmund Tarleton²; Pui-Wai Ma¹; Andrea Sand³; ¹Ukaea; ²University of Oxford; ³University of Helsinki

9:00 AM

Irradiation Enhanced Precipitation Over a Wide Range RPV Steel Compositions: New Physically Based Embrittlement Chemistry Factors: *Nathan Almirall*¹; Peter Wells¹; Takuya Yamamoto¹; G. R. Odette¹; ¹University of California, Santa Barbara

9:20 AM

Density functional theory simulations of solutes in reactor pressure vessel steels: *Thomas Whiting*¹; Daniel King¹; Patrick Burr²; Mark Wenman¹; ¹Imperial College London; ²University of New South Wales

9:40 AM

Irradiation-induced precipitation in Ni-based superalloys: *Li-Jen Yu*¹; Grace Burke²; Emmanuelle Marquis¹; ¹University of Michigan; ²University of Manchester

10:00 AM Break

10:20 AM Invited

Neutron irradiation studies on 14YWT nanostructured ferritic alloys: *Eda Aydogan*¹; Jordan Weaver²; Ursula Carvajal-Nunez¹; Jonathan Gigax¹; Enrique Martinez Saez¹; David Krumwiede³; Peter Hosemann³; Tarik Saleh¹; Nathan Mara⁴; David Hoelzer⁵; Stuart Maloy¹; ¹Los Alamos National Laboratory; ²National Institute of Standards and Technology; ³University of California Berkeley; ⁴University of Minnesota; ⁵Oak Ridge National Laboratory

10:50 AM

Characterization of microstructural evolution of ODS alloys after thermal aging treatments and ion radiations: *Amal Issaoui*¹; Joel Ribis¹; Joel Malaplate¹; Alexandre Legris²; ¹CEA-Saclay -France; ²Université de Lille 1

11:00 AM

Ion irradiation induced segregation and precipitation in PH 13-8 Mo steel: *Ce Zheng*¹; Peter Hosemann²; Djamel Kaoumi¹; ¹North Carolina State University; ²University of California

11:30 AM

The investigation of phase stability of a nanoprecipitate steel following heavy ion irradiation: *Yao Li*¹; Tengfei Yang¹; Suihe Jiang²; Zhaoping Lu²; Steven Zinkle¹; ¹The University of Tennessee; ²University of Science and Technology Beijing

Magnesium Technology 2019 — Thermomechanical Processing

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

Program Organizers: Vineet Joshi, Pacific Northwest National Laboratory; Brian Jordon, University of Alabama; Dmytro Orlov, Lund University; Neale Neelameggham, IND LLC

Tuesday AM
March 12, 2019

Room: 005
Location: Henry B. Gonzalez
Convention Center

Session Chairs: Norbert Hort, Helmholtz-Zentrum Geesthacht; Regine Willumeit Romer, Helmholtz-Zentrum Geesthacht

8:30 AM Invited

Evolution of Heterogeneous Microstructure of Equal Channel Angular Pressed Magnesium: *Qizhen Li*¹; ¹Washington State University

9:00 AM Invited

Novel Magnesium Alloy Processing via Shear Assisted Processing and Extrusion (ShAPE): *Suveen Mathaudhu*¹; Nicole Overman²; Scott Whalen²; Matthew Olzsta²; David Catalini²; Karen Kruska²; Jens Darsell²; Vineet Joshi²; Xiujuan “Hellen” Jiang²; Arun Devaraj²; Glenn Grant²; Cynthia Powell²; ¹UC Riverside / Pacific Northwest National Laboratory; ²Pacific Northwest National Laboratory

9:30 AM

Effect of the extrusion temperature on microstructure, texture evolution and mechanical properties of extruded Mg-2.49Nd-1.82Gd-0.19Zn-0.4Zr alloy: *Lei Xiao*¹; Guangyu Yang¹; Shifeng Luo¹; Wanqi Jie¹; ¹Northwestern Polytechnical University

9:50 AM

Influence of thermomechanical treatment on tension-compression yield asymmetry of extruded Mg-Zn-Ca alloy: *Patrik Dobron*¹; Marius Hegedüs¹; Juraj Olejník¹; Daria Drozdenko¹; Klaudia Horváth¹; Jan Bohlen²; ¹Charles University; ²Helmholtz-Zentrum Geesthacht, MagIC

10:10 AM Break

10:30 AM

Homogeneous grain refinement and ductility enhancement in AZ31B magnesium alloy using friction stir processing: *Vivek Patel*¹; Wenya Li²; Quan Wen²; Yu Su²; Na Li²; ¹Northwestern Polytechnical University; ²Pandit Deendayal Petroleum University; ³Northwestern Polytechnical University

10:50 AM

Microstructure and texture evolution during hot compression of cast and extruded AZ80 magnesium alloy: *Pareesh Prakash*¹; Amir Hadadzadeh²; Sugrib Shaha¹; Mark Whitney¹; Mary Wells³; Hamid Jahed¹; Bruce Williams⁴; ¹Department of Mechanical and Mechatronics Engineering, University of Waterloo; ²Marine Additive Manufacturing Centre of Excellence (MAMCE), University of New Brunswick; ³College of Engineering and Physical Sciences, University of Guelph; ⁴CanmetMATERIALS, Natural Resources Canada

11:10 AM

Experimental Investigation of Friction Coefficient Of Magnesium Alloy Developed Through Friction Stir Processing With Pks Ash Powder Particles: *Romeo Fono-Tamo*¹; Jen Tien-Chien¹; ¹University of Johannesburg

11:30 AM

A review and case-study on mechanical properties and microstructure evolution in magnesium-steel friction stir welding: *Suryakanta Sahu*¹; Omkar Thorat²; Raju Prasad Mahto¹; Surjya Kanta Pal¹; Prakash Srirangam³; ¹Indian Institute of Technology Kharagpur; ²Babasaheb Ambedkar Technological University; ³University of Warwick

11:50 AM

Effects of Sn on Microstructures and Mechanical Properties of as-extruded Mg-6Al-1Ca-0.5Mn Magnesium Alloy: *Huajie Wu*¹; Ruizhi Wu¹; Daqing Fang²; Yuesheng Chai²; Chao Liang²; ¹Harbin Engineering University; ²Taiyuan University of Science and Technology

Materials and Manufacturing Innovation Keynote: Autonomous Materials Research — Autonomous Materials Research

Sponsored by: TMS: Materials Innovation Committee
Program Organizer: James Warren, NIST

Tuesday AM
March 12, 2019
Room: 221D
Location: Henry B. Gonzalez Convention Center

Session Chair: James Warren, NIST

8:30 AM Introductory Comments

8:35 AM Keynote

Data, Disorder and Materials: *Stefano Curtarolo*¹; ¹Duke University

9:15 AM Keynote

Autonomous Experimentation Applied to Carbon Nanotube Synthesis: *Benji Maruyama*¹; Pavel Nikolaev²; Daylond Hooper³; Fred Webber¹; Kevin Decker²; Jason Poleski⁴; Michael Krein⁴; Richard Barto⁴; Ahmad Islam²; Rahul Rao²; ¹Air Force Research Laboratory; ²UES Inc.; ³InfoScitex, Inc.; ⁴Lockheed Martin Corporation

9:55 AM Break

10:10 AM Keynote

SARA: Scientific Autonomous Reasoning Agent to Accelerate Materials Discovery: *Carla Gomes*¹; ¹Cornell University

10:50 AM Keynote

Towards Autonomous Materials Research Systems: *Jason Hattrick-Simpers*¹; ¹National Institute of Standards and Technology

11:30 AM Panel Discussion

Materials for Molten Salt Energy Systems — Advanced Materials for Molten Salt Systems

Sponsored by: TMS: Corrosion and Environmental Effects Committee, TMS: Nuclear Materials Committee
Program Organizers: Stephen Raiman, Oak Ridge National Laboratory; Jinsuo Zhang, Virginia Polytechnic Institute and State University; Kumar Sridharan, Univ of Wisconsin-Madison; Judith Vidal, National Renewable Energy Laboratory; Michael Short, MIT

Tuesday AM
March 12, 2019
Room: 008B
Location: Henry B. Gonzalez Convention Center

Session Chair: Michael Short, Massachusetts Institute of Technology

8:30 AM

Cladded components for molten salt reactors: chemical compatibility, mechanical effects, and the potential advantages of functionally graded properties and multi-material systems: *Mark Messner*¹; T.-L. Sham¹; George Young²; Zhili Feng³; ¹Argonne National Laboratory; ²Dominion Engineering; ³Oak Ridge National Laboratory

8:50 AM

Directed Energy Deposition Fabrication of Mo-coated 316 Stainless Steel Components for Molten Salt Applications: *Gabriel Meric de Bellefon*¹; Shiva Rudraraju¹; Dan Thoma¹; ¹University Of Wisconsin Madison

9:10 AM

High-Temperature, High-Efficiency Silicon Carbide TRIPLEX Receiver Tubes for Next Generation Molten Salt Concentrated Solar Power: *Matthew Walker*¹; John Malloy²; Herb Feinroth²; Ken Armijo¹; Cliff Ho¹; Amy Bohinsky¹; Julius Yellowhair¹; ¹Sandia National Laboratories; ²Ceramic Tubular Products LLC

9:30 AM

Preliminary Chemical Durability Testing of Molten Salt Waste Forms: *Richard Livingston*¹; Luis Ortega¹; Sean McDeavitt¹; ¹Texas A&M

Materials Processing Fundamentals — Alloys Processing and Properties Modeling

Sponsored by: TMS: Process Technology and Modeling Committee
Program Organizers: Guillaume Lambotte, Boston Metal; Jonghyun Lee, Iowa State University; Antoine Allanore, MIT - DMSE; Samuel Wagstaff, Novelis

Tuesday AM
March 12, 2019
Room: 212A
Location: Henry B. Gonzalez Convention Center

Session Chairs: Sam Wagstaff, Novelis; Song Cai, Fort Wayne Metals

8:30 AM Introductory Comments

8:35 AM

Influence of omega phase on super-elastic and fatigue properties of a Beta Ti Alloy: *Song Cai*¹; Jeremy Schaffer¹; ¹Fort Wayne Metals

8:55 AM

Numerical Modelling and Influence of Cu Addition on the Microstructure and Mechanical Properties of Additive Manufactured Ti-Cu-Al/Ti-6Al-4V Composite: *Olawale Fatoba*¹; *Esther Akinlabi*¹; Stephen Akinlabi¹; ¹University of Johannesburg

9:15 AM

Nonequilibrium Solidification of Zn-6wt.% Al Alloy: *Hongfa Hu*¹; ¹University Of Windsor

9:35 AM

Creating nano-precipitates and ultra-fine grains in Mg-9Al (wt.%) and Mg-6Al (wt.%) alloys during low-temperature equal channel angular extrusion (ECAE): *Suhas Eswarappa Prameela*¹; Vance Liu¹; Stephanie Hernandez¹; Matthew Fernandez¹; Laszlo Kecskes²; Tomoko Sano³; Timothy Weihs¹; ¹Johns Hopkins University; ²MatSys; ³ARL

9:55 AM

High Cycle Fatigue Behaviour of Ultrafine Grained 5052 Al Alloy Processed Through Cryo-forging: *Yogesh K K*¹; Amit Joshi²; Raviraj Verma³; A Raja³; R Jayaganthan⁴; ¹National Institute of Engineering; ²G. B. Pant Institute of Engineering & Technology; ³IIT Roorkee; ⁴IIT Madras

10:15 AM Break

10:35 AM

Mechanical Characteristics of Boron Nitride Nanotube and Magnesium Composites: *Mitchell Hopper*¹; ¹Florida International University

10:55 AM

Scalable Nanomanufacturing Approaches to Develop Advanced Metal Matrix Nanocomposites: *Pranjal Nautiyal*¹; Benjamin Boesl¹; Arvind Agarwal¹; ¹Florida International Univ

11:15 AM

Effect of heat treatment on microstructure of continuous unidirectional solidified Cu-Ni-Sn Alloy: *Jihui Luo*¹; Qin Li¹; Yanhui Chen¹; Shu Liu¹; Qiuyue Wen¹; Huimin Ding¹; ¹Yangtze Normal University

11:35 AM

Modelling the effects of friction on tool-chip interface temperature during orthogonal cutting of Al6061-T6 aluminium alloy: *Sunday Ojolo*¹; Sikiru Ismail¹; ¹Univ of Lagos

Mechanical Behavior of Nuclear Reactor Components — Defect Evolution I

Sponsored by: TMS: Nuclear Materials Committee
Program Organizers: Clarissa Yablinsky, Los Alamos National Laboratory; Assel Aitkaliyeva, University of Florida; Khalid Hattar, Sandia National Laboratories; Janelle Wharry, Purdue University; Laurent Capolungo, Los Alamos National Laboratory; Eda Aydogan, Los Alamos National Laboratory

Tuesday AM
March 12, 2019

Room: 215
Location: Henry B. Gonzalez
Convention Center

Session Chairs: Samuel Briggs, Oregon State University; Meimei Li, Argonne National Laboratory

8:30 AM Invited

Continuum theory of defects and microstructure evolution under irradiation: *Anter El-Azab*¹; ¹Purdue Univ

9:00 AM

Understanding Deformation and Failure Mechanisms in Steels using High-Energy Synchrotron X-rays: *Meimei Li*¹; Xuan Zhang¹; Chi Xu²; Fallon Laliberte³; Jonathan Almer¹; Jun-Sang Park¹; Peter Kenesei¹; Xianghui Xiao¹; ¹Argonne National Lab; ²University of Florida; ³Rensselaer Polytechnic Institute

9:20 AM

EBSD and High Resolution EBSD Analysis of Strain-Induced Phenomena in Irradiated Austenitic Steels: *Maxim Gussev*¹; Keith Leonard¹; ¹ORNL

9:40 AM

Irradiation resistance of mechanically processed Zr-Nb multilayers at very high doses: *Madhavan Radhakrishnan*¹; Daniel Savage²; Marko Knezevic²; Yongqiang Wang³; Nathan Mara⁴; Osman Anderoglu¹; ¹University of New Mexico; ²University of New Hampshire; ³Los Alamos National Laboratory; ⁴University of Minnesota

10:00 AM Break

10:20 AM Invited

Evolution of Hardening during Irradiation: Nanoindentation and Nanostructural Characterisation Approach: *M Grace Burke*¹; Alex Carruthers¹; ¹Univ of Manchester

10:50 AM

Multiscale modeling of dislocation/precipitate interactions under cyclic loading: *Shuozhi Xu*¹; Irene Beyerlein¹; ¹University of California, Santa Barbara

11:10 AM

Multiscale modeling of radiation-induced Cu precipitation hardening in Fe-0.1at.%Cu: *Xian-Ming Bai*¹; Yaxuan Zhang¹; ¹Virginia Tech

11:30 AM

On The Elementary Deformation Mechanisms Involved In The Singular Behavior Of 15Cr-15Ni Fuel Cladding Tubes At Moderate Temperatures: *Emilien Curtet*¹; Bouzid Kedjar²; Patrick Olier¹; Matthew Bono³; Elodie Rouesne¹; Frédéric Momprou⁴; Ludovic Thilly²; ¹DEN-Service de Recherches Métallurgiques Appliquées, CEA, Université Paris-Saclay; ²Institut Pprime, D1/Axe PDP; ³DEN-Service d'Etudes des Matériaux Irradiés, CEA, Université Paris-Saclay; ⁴CEMES-CNRS

Mechanical Behavior Related to Interface Physics III — Nanocrystalline Materials I

Sponsored by: TMS Materials Processing and Manufacturing Division, TMS: Nanomechanical Materials Behavior Committee
Program Organizers: Jason Trelewicz, Stony Brook University; Nathan Mara, University of Minnesota; Erica Lilleodden, Helmholtz-Zentrum Geesthacht; Siddhartha Pathak, University of Nevada, Reno; Jordan Weaver, National Institute of Standards and Technology; Marc Legros, CEMES-CNRS

Tuesday AM
March 12, 2019

Room: 303C
Location: Henry B. Gonzalez
Convention Center

Session Chair: To Be Announced

8:30 AM

In situ TEM nanofabrication and mechanical testing of metallic nanowires: *Jiangwei Wang*¹; ¹Zhejiang Univ

8:50 AM

Investigating the Effect of Severe Surface Plastic Deformation on Sensitization and the Miniature Tensile Behavior of AA5083: *Denise Yin*¹; Heather Murdoch¹; B. Hornbuckle¹; Joseph Labukas¹; ¹U.S. Army Research Laboratory

9:10 AM Invited

Grain-boundary based deformation mechanisms: an in-situ TEM perspective: *Frederic Momprou*; Marc Legros¹; Nicolas Combe¹; ¹CEMES-CNRS

9:40 AM

Deformation-induced precipitation in highly-immiscible alloys at low temperature: *Nirab Pant*¹; Nisha Verma¹; Robert Averbach¹; Yinon Ashkenazy²; Pascal Bellon¹; ¹Univ of Illinois At Urbana-Champaign; ²Hebrew University of Jerusalem

10:00 AM Break

10:20 AM Invited

Defining Hetero-epitaxial Relationships of Films on Substrates: *Dominique Chatain*¹; Paul Wynblatt²; Anthony Rollett²; Ulrich Dahmen³; ¹CNRS, Aix-Marseille University; ²Carnegie Mellon University; ³NCEM-Molecular Foundry-LNBL

10:50 AM

Ultrahigh-strength low carbon steel produced by severe plastic deformation of martensite: *Andrea Bachmaier*¹; Timo Müller¹; Marlene Kapp²; Peter Felfer³; Reinhard Pippan¹; ¹Erich Schmid Institute, Austrian Academy of Sciences; ²Erich Schmid Institute; ³Department of Material Science and Engineering, Institute I, Friedrich-Alexander Universität Erlangen-Nürnberg

11:10 AM

Thermal analysis of electrodeposited nano-grained Ni-Mo alloys: *Yinong Shi*¹; Jian Hu²; K. Lu¹; ¹Imr Cas; ²School of Materials Science and Engineering, East China JiaoTong University

11:30 AM Invited

Changing Mechanical Properties of Nanoporous Metals by Surface Modification and the Impact of Capillarity: *Jürgen Markmann*¹; Nadiia Mameka¹; ¹Helmholtz-Zentrum Geesthacht

Micro- and Nanomechanical Testing in Harsh Environments — Advances in Micromechanical Testing Techniques

Sponsored by: TMS Materials Processing and Manufacturing Division, TMS: Nanomechanical Materials Behavior Committee
Program Organizers: Verena Maier-Kiener, Montanuniversität Leoben; Sandra Korte-Kerzel, RWTH Aachen; Peter Hosemann, Univ of California; Afrooz Barnoush, Ntnu; Jeffrey Wheeler, ETH Zurich; Dhriti Bhattacharyya, Australian Nuclear Science and Technology Organization

Tuesday AM
March 12, 2019

Room: 217B
Location: Henry B. Gonzalez
Convention Center

Session Chairs: Peter Hosemann, UC Berkeley; James Gibson, RWTH Aachen

8:30 AM Invited

Elevated Temperature Nanomechanical Mapping and Approaches to High-Throughput Mechanical Testing of Fe-based Alloys: *Nathan Mara*¹; Douglas Stauffer²; Eric Hintsala²; Bartosz Nowakowski²; Youxing Chen¹; Jordan Weaver³; Siddhartha Pathak⁴; Ashley Reichardt⁵; Peter Hosemann²; ¹University of Minnesota; ²Bruker Nano Surfaces Division; ³National Institute of Standards and Technology; ⁴University of Nevada, Reno; ⁵University of California, Berkeley

8:55 AM

Mechanical high-temperature characteristics of FCC/BCC metal nanocomposites investigated by means of advanced nanoindentation techniques: *Alexander Leitner*¹; Verena Maier-Kiener¹; Daniel Kiener¹; ¹Montanuniversität Leoben

9:15 AM

Measuring stress-strain curves of metals by nanoindentation with a frustum: *Jennifer Hay*¹; ¹Nanomechanics

9:35 AM Invited

High speed nanomechanical property mapping and data deconvolution: *Sudharshan Phani Pardhasaradhi*¹; Vignesh B¹; Siva Kumar G¹; Warren Oliver²; ¹ARCI; ²Nanomechanics Inc

10:00 AM

In operando high speed nanoindentation mapping: *Eric Hintsala*¹; Douglas Stauffer¹; ¹Bruker Nano Surfaces

10:20 AM Break

10:40 AM Invited

Mapping strains at high temperature on micromechanical testpieces: *Thomas Edwards*¹; Fabio Di Gioacchino²; Robert Jones³; Gaurav Mohanty¹; Juri Wehrs¹; William Clegg²; Johann Michler¹; ¹EMPA; ²Univ of Cambridge; ³Rolls-Royce plc

11:05 AM

Exploring grain boundary-defect interactions in Pt and Pt-Au using in-situ TEM high cycle fatigue: *Christopher Barr*¹; Khalid Hattar¹; ¹Sandia National Laboratories

11:25 AM

Dislocation structure and GB movement in W at RT during grain boundary pop-in: *Karsten Durst*¹; Farhan Javaid¹; ¹Tu Darmstadt

11:45 AM

Investigation of the effects of thermal treatment and coldwork on grain boundary strength in Alloy 600 for stress corrosion cracking: *Hi Vo*¹; Evan Still¹; Rasheed Auguste¹; Joey Kabel¹; Daniel Schreiber²; Kiet Lam¹; Peter Chou³; Peter Hosemann¹; ¹Univ of California Berkeley; ²Pacific Northwest National Lab; ³EPRI

Modeling and Simulation of Composite Materials — Session II

Sponsored by: TMS Structural Materials Division, TMS: Composite Materials Committee
Program Organizers: Rakesh Behera, New York University; Dinesh Pinisetty, CSU Maritime Academy; Dung Luong, Nyu

Tuesday AM
March 12, 2019

Room: 303B
Location: Henry B. Gonzalez
Convention Center

Session Chairs: Donghwa Lee, Pohang Univ of Science & Tech; Vinamra Agrawal, Auburn University; Dinesh Pinisetty, CSU Maritime Academy

8:30 AM Invited

Microstructure design tool to optimize the thermal conductivity of composite structures: *Floyd Hilty*¹; *Michael Tonks*¹; ¹University of Florida

8:50 AM Invited

Interface control of material functionality: *Valentino Cooper*¹; ¹Oak Ridge National Laboratory

9:10 AM

Phase field damage modeling of mechanical degradation in polymer composites under hydro-thermomechanical loading conditions: *Vinamra Agrawal*¹; ¹Auburn University

9:30 AM Invited

Unraveling the mechanisms of nanostructural self-assembly in physical vapor-deposited immiscible alloy films
: *Rahul Raghavan*¹; *Kumar Ankit*¹; ¹Arizona State University

9:50 AM Break

10:30 AM Invited

Multiscale modeling of transition metal-chemically modified graphene based nanocomposites: *Krishna Muralidharan*¹; ¹University of Arizona

10:50 AM Invited

Unraveling the dynamic toughening mechanisms of bioinspired composites under extreme loading conditions: *Grace Gu*¹; ¹UC Berkeley

11:10 AM Invited

First-principles investigation on Mn segregation at ferrite-cementite interface: *Donghwa Lee*¹; Jae-Bok Seol¹; ¹Pohang Univ of Science & Tech

11:30 AM

Graph theoretic analyses of fiber-scale data to determine defect strength of transversely loaded fiber-reinforced composites.: *Siu Sin Quek*¹; Sridhar Narayanaswamy¹; Brian Cox²; ¹Inst of High Performance Computing; ²Arachne Consulting

Phase Stability, Phase Transformations, and Reactive Phase Formation in Electronic Materials XVIII — Interfacial Reaction of Electronic Materials

Sponsored by: TMS: Alloy Phases Committee

Program Organizers: Hiroshi Nishikawa, Osaka University; Shih-Kang Lin, National Cheng Kung University; Chaohong Wang, National Chung Cheng University; Chih-Ming Chen, National Chung Hsing Univ; Dajian Li, Karlsruhe Institute of Technology; Song-Mao Liang, Clausthal University Of Technology; Ming-Tzer Lin, National Chung Hsing University; Zhi-Quan Liu, Institute of Metal Research, Chinese Academy of Sciences; Jaeho Lee, Hongik University; Yee-wen Yen, National Taiwan Univ of Science & Tech; Yuan Yuan, Chongqing University; Yu Zhong, Worcester Polytechnic Institute

Tuesday AM
March 12, 2019

Room: 217D
Location: Henry B. Gonzalez
Convention Center

Session Chairs: Hiroshi Nishikawa, Osaka University; Zhi-Quan Liu, Institute of Metal Research, Chinese Academy of Sciences

8:30 AM Invited

Advanced Electroplating Technologies for 2.5D and 3D Chip Packaging Fabrication: *Wei-Ping Dow*¹; ¹National Chung Hsing University

8:50 AM

Abnormal Growth of Intermetallic Compounds in Sn/Cu Diffusion Pair: *Yram Kim*¹; Hossein Madanipour¹; Choong-un Kim¹; ¹University of Texas Arlington

9:10 AM

A model to describe kinetics of intermetallic compound with narrow homogeneity range: Cu-Sn system as an example: *Yuan Yuan*¹; Dajian Li²; Nele Moelans³; Fusheng Pan¹; ¹Chongqing University; ²Karlsruhe Institute of Technology; ³KU Leuven

9:30 AM

The Investigation of the Interaction Between Co, Cu and Sn_{3.5}Ag under Thermomigration: *Jou-Hsuan Li*¹; Fan-Yi Ouyang¹; Yuan-Ruei Hsu¹; ¹National Tsing Hua University

9:50 AM

Growth behavior of compounds during reactive diffusion between solid Co and liquid Sn-base solders: *Minho O*¹; Masanori Kajihara¹; ¹Tokyo Institute of Technology

10:10 AM Break

10:30 AM Invited

Interfacial microstructure variation of ENIG/SAC305 solder joint with Ni-P electroless plating bath: *Sehoon Yoo*¹; Wonil Seo¹; Sungwook Mhin¹; Young-Ho Kim²; ¹KITECH; ²Hanyang University

10:50 AM

Solder joint design elements: Impact of Ni in Cu-alloys on intermetallic compound formation and properties: *Christian Wieser*¹; Andreas Leineweber²; Werner Huegel¹; ¹Robert Bosch GmbH; ²TU Freiberg

11:10 AM

Interfacial Reactions between Lead-Free Solders and the Ni-xPd-yCo Alloys: *Kuo Jung Chen*¹; Mei-Ting Lai¹; Chih-Ming Chen²; Yu-Chun Li¹; Yee-Wen Yen¹; ¹Department of Materials Science and Engineering, National Taiwan University of Science and Technology; ²Department of Chemical Engineering, National Chung Hsing University

11:30 AM

The improvement of solderability for diamond/Al composite by electroless plating of Ni-P coating film: *Zhi-Quan Liu*¹; Qi-Yuan Shi¹; Hao Zhang²; ¹Institute of Metal Research, CAS; ²Institute of Scientific and Industrial Research, Osaka University

11:50 AM

The study on currents stress effects of electromigration on IMC formation: Ching Chun Chiu¹; Po-Hsun Wang¹; Wei-Jhen Chen¹; Ming-Tzer Lin¹; ¹National Chung Hsing Univ

Phase Transformations and Microstructural Evolution — Phase Transformations in Steels and Non-ferrous Alloys

Sponsored by: TMS: Phase Transformations Committee

Program Organizers: Sophie Primig, Univ of New South Wales; Deep Choudhuri, University of North Texas; Klaus-Dieter Liss, Guangdong Technion – Israel Institute of Technology; Megumi Kawasaki, Oregon State University; Matthew Steiner, University of Cincinnati; Yufeng Zheng, Ohio State University; Ashley Paz y Puente, University of Cincinnati; Juan Escobedo-Diaz, University of New South Wales; Dhriti Bhattacharyya, ANSTO; Rajarshi Banerjee, University of North Texas

Tuesday AM
March 12, 2019

Room: 225D
Location: Henry B. Gonzalez
Convention Center

Session Chair: To Be Announced

8:30 AM

Recrystallization of a niobium-stabilized austenitic stainless steel: *Nicolas Cliche*¹; Eric Georges²; Philippe Petit²; Jean-Loup Heuzé³; Anne-Françoise Gourgues-Lorenzon⁴; Jacques Bellus²; Sylvain Ringeval¹; ¹CEA; ²Aubert & Duval; ³DGA; ⁴MINES ParisTech, PSL Research University, Centre des Matériaux, UMR CNRS 7633

8:50 AM

Influence of strain rates on the stability of retained austenite under tension-compression loading in high carbon steel: *Amborish Banerjee*¹; B. Prusty¹; ¹UNSW

9:10 AM

Laves Phase Stability of Creep Resistant FeCrAl Alloys at Elevated Temperature: *Chih-Hsiang Kuo*¹; Benjamin Shassere²; Jonathan Poplawsky²; Yukinori Yamamoto²; Sudarsanam Babu¹; ¹Univ of Tennessee; ²Oak Ridge National Laboratory

9:30 AM

Anomalous X-ray diffraction from ω particles in a metastable β -Ti alloy: *Jana Šmilauerová*¹; Petr Harcuba¹; Václav Holý¹; ¹Charles University

9:50 AM

In-Situ Study of Transformation in NiTiNiOL using Neutron and High Energy Diffraction Experiment: *Jinesh Dahal*¹; Aaron Stebner¹; ¹Colorado School of Mines

10:10 AM Break

10:30 AM

Microstructural evolution and phase transformations in U-10Mo alloys with varying Zr content after heat treatments relevant to the monolithic fuel plate fabrication process: *Abhishek Mehta*¹; Nicholas Eriksson¹; Ryan Newell¹; Le Zhou¹; Esin Schulz¹; William Sprowes¹; Felipe Betancor¹; Youngjoo Park¹; Dennis Keiser, Jr.¹; Yongho Sohn¹; ¹Univ of Central Florida

10:50 AM

Negative and Positive Tailorable Thermal Expansion in Shape Memory Alloys: *Dominic Gehring*¹; Ibrahim Karaman¹; ¹Texas A&M University

11:10 AM

Oxygen Influence on Omega and Alpha Phase Transformations in Ti-Nb alloys: *Kathleen Chou*¹; Emmanuelle Marquis¹; ¹University of Michigan

11:30 AM

Phase Identification and Microstructural Evolution of Al6061 Powder Using In-Situ TEM: *Benjamin Bedard*¹; Sriram Vijayan¹; Mark Aindow¹; ¹University of Connecticut

Powder Processing of Bulk Nanostructured Materials — Densification Methods

Sponsored by: TMS: Powder Materials Committee
Program Organizers: Zachary Cordero, Rice University; Deliang Zhang, Shanghai Jiao Tong Univ; Brady Butler, US Army Research Laboratory; Ma Qian, RMIT University (Royal Melbourne Institute of Technology)

Tuesday AM
March 12, 2019

Room: 211
Location: Henry B. Gonzalez
Convention Center

Session Chair: Brady Butler, Army Research Laboratory

8:30 AM

Invited - Below 30 Nanometers: Unlocking the Potential of Very Small Grain Sizes in Dense Nanocrystalline Ceramics: *James Wollmershauser*¹; Boris Feigelson¹; Heonjune Ryou²; Eric Patterson¹; Edward Gorzkowski¹; ¹U.S. Naval Research Laboratory; ²American Society for Engineering Education Postdoctoral Research Fellow sited at U.S. Naval Research Laboratory

9:00 AM

Control of Electric Current Pathway in Field-Assisted Sintering: *Eugene Olevsky*¹; Geuntak Lee¹; Elisa Torresani¹; ¹San Diego State Univ

9:30 AM

Kinetics and Densification Behavior during Reaction Sintering of Bulk Titanium Boride (TiB) Nanoceramics by Electric Field Activated Sintering: *K. S. Ravi Chandran*¹; Jun Du¹; ¹Univ of Utah

9:50 AM

Combustion Synthesis of Silicon-based Nanostructured Materials: *Sergio Cordova*¹; Rodrigo Mesta¹; Evgeny Shafirovich¹; ¹The University of Texas At El Paso

10:10 AM Break

10:30 AM

Effect of milling on the Structural, magnetic and catalytic properties of zinc ferrite synthesized by microwave combustion method: *M Housam Issa*¹; ¹Guf University

10:50 AM

Laser-Assisted Cold Spray Deposition of Ferritic Oxide Dispersion Strengthened Alloys: *Dallin Barton*¹; William Story¹; B. Hornbuckle²; Kristopher Darling²; Luke Brewer¹; Gregory Thompson¹; ¹University of Alabama Tuscaloosa; ²United States Army Research Laboratory

11:10 AM

Synthesis of bulk nanocrystalline copper with ultrasonic powder compaction: *Christopher Hareland*¹; Austin Ward¹; Zachary Cordero¹; ¹Rice University

11:30 AM

Bulk Nanostructured Rods from Gas Atomized AL-12.4TM Power using Shear Assisted Processing and Extrusion (ShAPE): *Scott Whalen*¹; Nicole Overman¹; Jens Darsell¹; Md. Reza-E-Rabby¹; Wayne Daye²; Tom Pelletiers²; ¹Pacific Northwest National Laboratory; ²Kymera International - SCM Metals

Rare Metal Extraction & Processing — Rare Metals III

Sponsored by: TMS: Hydrometallurgy and Electrometallurgy Committee

Program Organizers: Gisele Azimi, University of Toronto; Hojong Kim, Pennsylvania State University; Shafiq Alam, Univ of Saskatchewan; Takanari Ouchi, The University of Tokyo; Neale Neelameggham, IND LLC; You Qiang, Univ Of Idaho; Alafara Baba, University of Ilorin

Tuesday AM
March 12, 2019

Room: 210B
Location: Henry B. Gonzalez
Convention Center

Session Chairs: Shafiq Alam, University of Saskatchewan; Gisele Azimi, University of Toronto

8:30 AM

Recovery of manganese by roasting-ammonia leaching from low-grade manganese carbonate ores: *Zhongbing Tu*¹; Xiaoping Liang¹; Xiangguan Yang¹; Shilei Ren¹; Chengbo Wu¹; Yu Wang¹; ¹Chongqing University

8:55 AM

General rules for deep purification of low-grade molybdenite concentrate: *Junjie Yu*¹; Hu Sun¹; Jun Luo¹; Li Guanghui¹; Tao Jiang¹; ¹Central South Univ

9:20 AM

Production of high-purity titanium dioxide from spent selective catalytic reduction (SCR) catalyst: Gyeonghye Moon¹; Jin-Hyung Kim¹; In-hyeok Choi¹; Hee-Nam Kang¹; Tae-Hyuk Lee¹; Jin-Young Lee¹; *Jungshin Kang*¹; ¹Korea Institute of Geoscience and Mineral Resources

9:45 AM

Reduction of TiCl₄ to TiH₂ with CaH₂ in presence of Ni Powder: Mohammad Rezaei Ardani¹; Aws Sadoon Mohammed Al Janabi¹; Sanjith Udayakumar¹; *Sheikh Rezan*¹; M.N. Ahmad Fauzi¹; Abdul Rahman Mohamed¹; H.L. Lee¹; Ismail Ibrahim¹; ¹Universiti Sains Malaysia

10:10 AM Break

10:30 AM

Nepheline Syenite —an alternative source for potassium and aluminium: Jayashree Samantray¹; Amit Anand²; Barsha Dash¹; *Malay Ghosh*¹; Ajay Behera³; ¹CSIR-Institute of Minerals and Materials Technology, Bhubaneswar; ²Indian Institute of Technology, Bhubaneswar; ³Sambalpur University, Sambalpur

10:55 AM

Novel Application of Microwave Pre-Treatment for the Valorization of Rare Earth Elements from Phosphogypsum: Adrian Lambert¹; John Anawati¹; Mugdha Walawalkar¹; Jason Tam¹; *Gisele Azimi*¹; ¹University of Toronto

11:20 AM

Experimental study on the treatment of zinc-containing rotary hearth furnace dust: *Shilei Ren*¹; Xiaoping Liang¹; Zhongbing Tu¹; Qian Tang¹; Xiangguan Yang¹; Yu Wang¹; ¹Chongqing University

11:45 AM

Synthesis of tungsten carbides by reducing and carbonizing WO₃ with CO: *Yijie Wu*¹; Jie Dang¹; Zepeng Lv¹; Run Zhang¹; ¹Chongqing University

REWAS 2019: Secondary and Byproduct Sources of Materials, Minerals, and Metals — Plenary Session

Sponsored by: TMS Extraction and Processing Division, TMS Light Metals Division, TMS: Recycling and Environmental Technologies Committee

Program Organizers: Gabrielle Gaustad, Rit; Camille Fleuriault, Gopher Resource; Neale Neelameggham, IND LLC; Elsa Olivetti, Massachusetts Institute of Tech

Tuesday AM
March 12, 2019

Room: 007C
Location: Henry B. Gonzalez
Convention Center

Session Chair: To Be Announced

8:30 AM Keynote

Recycling of Critical Metals: *Toru Okabe*¹; Takanari Ouchi¹; ¹Univ of Tokyo

9:00 AM Keynote

Supply Chains for Battery Materials: *Ben Jones*¹; ¹CRU

9:30 AM Keynote

Implications of an Evolving Electronic Waste Stream: *Callie Babbitt*¹; ¹Rochester Institute of Technology

10:00 AM Break

10:20 AM Keynote

Is Sustainability Less Than the Sum of its Parts?: *David Wagger*¹; ¹Institute of Scrap Recycling Industries, Inc.

10:50 AM Keynote

Mineral Exploration of the Urban Mine: Dynamics of Aluminum Stocks and Flows: *Chris Bayliss*¹; ¹International Aluminum Institute

11:20 AM Keynote

A New Thinking in Metals Recycling: *Ramana Reddy*¹; ¹The University of Alabama

11:50 AM Panel Discussion

Shape Casting: 7th International Symposium Celebrating Prof. John Campbell's 80th Birthday — Process Innovation and Modelling

Program Organizers: Murat Tiryakioglu, University of North Florida; William Griffiths, University of Birmingham; Mark Jolly, Cranfield University

Tuesday AM
March 12, 2019

Room: 006B
Location: Henry B. Gonzalez
Convention Center

Session Chair: William Griffiths, University of Birmingham

8:30 AM

The Nematik Cosworth Casting Process Latest Generation: *Glenn Byczynski*¹; Robert Mackay¹; ¹Nematik

8:55 AM

Campbellology for runner system design: *Fu-Yuan Hsu*¹; ¹National United University

9:20 AM

A Solidification Model with Application to AlSi-based Alloys: *Adrian Catalina*¹; Liping Xue¹; Charles Monroe²; ¹Flow Science, Inc.; ²The University of Alabama at Birmingham

9:40 AM

Physical modelling of transport phenomena in asymmetrical multi-strand tundish with retaining wall: *Wei Xiao*¹; Yanping Bao¹; ¹University of Science and Technology Beijing

10:00 AM Break

10:20 AM

The validation of Feeder modeling for Ductile Iron Castings: *Fu-Yuan Hsu*¹; Yu-Hung Chen¹; ¹National United University

10:40 AM

The contactless electromagnetic sonotrode: *Koulis Pericleous*¹; Valdis Bojarevics¹; Georgi Djambazov¹; Agnieszka Dybalska²; William Griffiths²; Catherine Tonry¹; ¹University Of Greenwich; ²University of Birmingham

11:00 AM

Simulation Analysis Techniques for Investment Casting Process of Ni-Base Superalloy Components: *Kosuke Fujiwara*¹; Hidetaka Oguma¹; Masaki Taneike¹; Ikuo Okada¹; Kyoko Kawagishi²; Tadaharu Yokokawa²; Hiroshi Harada²; ¹Mitsubishi Heavy Industries, LTD.; ²National Institute for Materials Science

11:20 AM

Improvement in Metallurgical Properties of Gravity Die Cast 2024-T6 Aluminum Alloy via Cryogenic Process: *Engin Tan*¹; Sinan Aksöz¹; Yavuz Kaplan¹; Hilal Can¹; Derya Dispinar²; ¹Pamukkale University; ²Istanbul University

11:40 AM

Melt cleaning efficiency of various fluxes for A356 alloy: *Caglar Yuksel*¹; Ugur Aybar²; Eray Erzi³; Derya Dispinar³; Mustafa Cigdem⁴; ¹Ataturk University; ²CMS; ³Istanbul University; ⁴Yildiz Technical University

Solidification Processing of Light Metals and Alloys: An MPMD Symposium in Honor of David StJohn — Shape Casting and Defects

Sponsored by: TMS: Solidification Committee

Program Organizers: Mark Easton, RMIT University; Ma Qian, RMIT University (Royal Melbourne Institute of Technology); John Grandfield, Grandfield Technology Pty Ltd; Norbert Hort, Helmholtz-Zentrum Geesthacht; Mark Jolly, Cranfield University

Tuesday AM
March 12, 2019

Room: 006C
Location: Henry B. Gonzalez
Convention Center

Session Chairs: Peter Lee, University College London; Diran Apelian, Worcester Polytechnic Institute

8:30 AM Keynote

Porosity in Castings: *Mark Jolly*¹; ¹Cranfield University

8:50 AM Keynote

Twin-roll Casting of Mg Alloys: *Nack Kim*¹; ¹Postech

9:10 AM Invited

Practical Experiences Using Knowledge to Solve Mysterious Problems: *Salvador Valtierra*¹; ¹Namak

9:30 AM Invited

Effects of Si Macrosegregation of the Constitutive Behaviour of A356: Hatef Khadivinassab¹; *Daan Maijer*¹; Steve Cockcroft¹; ¹Univ of British Columbia

9:50 AM Invited

Modelling of Shrinkage-induced Species Macrosegregation in A356 Aluminum Wheel Casting: Pan Fan¹; *Steve Cockcroft*¹; Daan Maijer¹; Lu Yao¹; Carl Reilly²; Andre Phillion³; ¹Univ of British Columbia; ²Cast Analytics Inc.; ³McMaster University

10:10 AM Break

10:30 AM Keynote

Prediction of hot tearing “down under” the root of dendrites during Direct Chill casting: Niloufar Khodaei¹; *Andre Phillion*¹; ¹McMaster University

10:50 AM Invited

Deformation and defect formation in partially solid alloys: *Christopher Gourlay*¹; Te-Cheng Su¹; Catherine O'Sullivan¹; Hideyuki Yasuda²; ¹Imperial College London; ²Kyoto University

11:10 AM

Study on the Hot Tearing Susceptibility of Mg-Gd Binary Magnesium Alloy: *Guangyu Yang*¹; Shifeng Luo¹; Zhen Zou¹; Wanqi Jie¹; ¹Northwestern Polytechnical University

11:30 AM

Compositional templating for heterogeneous nucleation of intermetallic compounds: *Zhongping Que*¹; Zhongyun Fan¹; Yun Wang¹; ¹Brunel Univ

Thermo-mechanical Response of Materials Investigated through Novel in-situ Experiments and Modeling — Session III

Sponsored by: TMS Functional Materials Division, TMS Structural Materials Division, TMS: Advanced Characterization, Testing, and Simulation Committee, TMS: Thin Films and Interfaces Committee
Program Organizers: Saurabh Puri, Microstructure Engineering; Robert Wheeler, Microtesting Solutions LLC; Dongchan Jang, Kaist; Amit Pandey, LG Fuel Cell Systems; Josh Kacher, Georgia Institute of Technology; Dhriti Bhattacharyya, Australian Nuclear Science and Technology Organization

Tuesday AM
March 12, 2019

Room: 301A
Location: Henry B. Gonzalez
Convention Center

Session Chairs: Saurabh Puri, Microstructure Engineering; Arunabha Roy, Univ of Michigan-Ann Arbor

8:30 AM Introductory Comments**8:35 AM Keynote**

Dislocation Dynamics Simulation for Predicting Precipitation Strengthening in Mg-Nd Alloys: *Arunabha Mohan Roy*¹; Chaoming Yang¹; Zhihua Huang¹; Amit Misra¹; John Allison¹; Liang Qi¹; ¹Univ of Michigan-Ann Arbor

9:15 AM

In situ Micro-mechanical Characterization and Multiscale Modeling of Thermo-mechanical Properties of Micro-architected Tungsten Coating: *Quan Jiao*¹; Jiahao Cheng¹; Gi-Dong Sim²; Jaafar El-Awady¹; ¹The Johns Hopkins University; ²KAIST

9:35 AM

Diffuse Interface Approach to Modeling Crystal Plasticity with Accommodation of Grain Boundary Sliding: *Tianle Cheng*¹; Youhai Wen²; Jeffrey Hawk²; ¹National Energy Technology Laboratory / AECOM; ²National Energy Technology Laboratory

9:55 AM

Nano-mechanics-based characterization of radiation-tolerance for reduced-activation ferritic/martensitic (RAFM) steel: *Ye-Eun Na*¹; Woojin Jeong²; Myung-Gyu Lee²; Dongchan Jang¹; ¹KAIST; ²Seoul National University

10:15 AM Break**10:35 AM**

Modeling the Contribution of Deformation Twinning to the Temperature and Rate Dependent Strength of Tantalum: *Anik Faisal*¹; Christopher Weinberger¹; ¹Colorado State University

10:55 AM

The connection between ideal strengths and deformation mechanisms in BCC Refractory Metals: *Chaoming Yang*¹; Liang Qi¹; ¹University of Michigan

11:15 AM

Mesoscale Simulation of Microstructure Dependent Fracture in Hydrided Zircaloy Structure: *Hao Wang*¹; Vikas Tomar¹; ¹Purdue University

11:35 AM

Modelling of grain boundary segregation and precipitation in multi-component Al alloys subjected to heat treatment: *Dongdong Zhao*¹; Sylvain Gouttebroze²; Jesper Friis²; Yanjun Li¹; ¹NTNU; ²SINTEF

TMS-DGM Symposium on Lightweight Metals: A Joint US-European Symposium on Challenges in Light Weighting the Transportation Industry — Aluminum

Sponsored by: DGM (Deutsche Gesellschaft für Materialkunde eV), TMS: Magnesium Committee, TMS: Aluminum Committee
Program Organizers: Eric Nyberg, Brunel University London; Wilhelmus Sillekens, European Space Agency; Juergen Hirsch, Hydro Aluminium Rolled Products GmbH; Norbert Hort, Helmholtz-Zentrum Geesthacht

Tuesday AM
March 12, 2019

Room: 006A
Location: Henry B. Gonzalez
Convention Center

Session Chairs: Wilhelmus Sillekens, European Space Agency; Juergen Hirsch, Hydro Aluminium Rolled Products

8:30 AM Introductory Comments**8:40 AM**

A Novel Flexible SSM and HPDC Equipment to Process Secondary Aluminum Alloys for Decarbonising Lightweight Parts in Automotive Sector: *Fabrizio D'Errico*¹; Guido Perricone²; Mattia Alemani²; ¹Politecnico Di Milano Politecnico Di Milano; ²Brembo Spa

9:00 AM

The effects of strontium addition on the microstructures and mechanical properties of Al-7Si alloy reinforced with in-situ Al₃Ti particulates: Siming Ma¹; Xiaoming Wang¹; ¹Purdue University

9:20 AM

Mechanical and microstructural characterization of ultrasonic metal welded large cross section aluminum wire/copper terminal joints: *Andreas Gester*¹; Guntram Wagner¹; Ingo Kesel²; Friedhelm Guenter²; ¹Technische Universität Chemnitz; ²Robert Bosch GmbH Renningen

9:40 AM

The dependence of local strain distribution on quench rate for Al-Mg-Si-Mn-Fe Alloys: Warren Poole¹; Mojtaba Mansouri¹; Nick Parson²; Mei Li³; ¹Univ of British Columbia; ²Rio Tinto Aluminium; ³Ford Motor Company

10:00 AM Break**10:20 AM**

The effect of through thickness texture variation on the anisotropic mechanical response of an extruded Al-Mn-Fe-Si alloy: Jingqi Chen¹; Nick Parson²; Warren Poole¹; ¹Univ of British Columbia; ²Rio Tinto Aluminium

10:40 AM

Increasing the strength and electrical conductivity of AA6101 aluminum by nanostructuring: Rilee Meagher¹; Mathew Hayne¹; Julie DuClos¹; Casey Davis¹; Terry Lowe¹; Tamás Ungár²; Babak Arfaei³; ¹Colorado School of Mines; ²Eötvös University; ³Ford Motor Company

11:00 AM

Assessing the impact of texture and its gradients on the forming limits of an AA6xxx sheet alloy: *Jishnu Bhattacharyya*¹; Nathan Peterson¹; Richard Burrows²; David Anderson²; Fatih Sen²; Vishwanath Hegadekatte²; Sean Agnew¹; ¹University of Virginia; ²Novelis Inc

10th International Symposium on High Temperature Metallurgical Processing — High Temperature Processing

Sponsored by: TMS: Pyrometallurgy Committee

Program Organizers: Tao Jiang, Central South University; Jiann-Yang Hwang, Michigan Technological Univ; Dean Gregurek, RHI Magnesita; Zhiwei Peng, Central South University; Jerome Downey, Montana Technological University; Baojun Zhao, University of Queensland; Onuralp Yucel, Istanbul Technical University; Ender Keskinilic, Atilim University; Rafael Padilla, Univ of Concepcion; Elsa Olivetti, Massachusetts Institute of Tech; Camille Fleurault, Gopher Resource

Tuesday PM
March 12, 2019

Room: 208
Location: Henry B. Gonzalez
Convention Center

Session Chairs: Zhiwei Peng, Central South University; Elsa Olivetti, Massachusetts Institute of Tech

2:00 PM Introductory Comments

2:05 PM

Research on Dezincification of Ironmaking and Steelmaking Ashes: *Yan Zhang*¹; Xiaojiang Wu¹; Meng Xu; Gele Qing¹; Haoyu Cai¹; Wenbin Huang¹; Yunqing Tian¹; Wenwang Liu¹; ¹Shougang Group

2:25 PM

The Reduction Performance of the Ca₂(Fe_{2-x}Al_x)O₅ Solid Solution: *Fei Liao*¹; Xing-Min Guo¹; ¹University of Science and Technology Beijing

2:45 PM

Determination of Minimum Practical Sintering Temperature of Potential HEA Alternative Binders for Cemented Carbides: *Jannette Chorney*¹; Jerome Downey¹; Grant Wallace¹; Marc D'Aberle¹; ¹Montana Tech

3:05 PM

Effects of Temperature and Alkali Carbonates on Graphitization and Metallurgical Properties of Coke: *Rongjin Zhu*¹; Shengfu Zhang; Guangsheng Suo¹; Yue Wu¹; Xiaohu Zhou¹; Shuxing Qiu¹; ¹Chongqing university

3:25 PM

Field-assisted Sintering of Nickel-based Superalloy Powder for High Temperature Hybrid Turbine Disk Applications: *Charis Lin*¹; Sebastian Niuman¹; Namiko Yamamoto¹; Anil Kulkarni¹; Jogender Singh¹; ¹Penn State University

3:45 PM Break

4:05 PM

Sintering Test Research of High Proportion Limonite: *Zhao Qiang*¹; ¹University of Science and Technology Beijing

4:25 PM

Stainless Steel Extrusions and Cold Draw Process to Achieve Properties for Elevated Temperature Applications: *Debajyoti Maitra*¹; *Cody Traylor*¹; Phani Gudipati¹; ¹Plymouth Tubing Company

4:45 PM

Study on the Three-dimensional Distribution of Sulfide in High Sulfide Steel: *Dong Zhang*¹; Ping Shen¹; Yang Wang¹; Qian-kun Yang¹; Juan Cheng¹; Jian-xun Fu¹; ¹Shanghai University

5:05 PM

A Machine Learning Method for State Identification of Superheat Degree with Flame Interference: *Shiwei Zhao*¹; Yongfang Xie¹; Weichao Yue¹; Xiaofang Chen¹; ¹Central South University

5:25 PM Concluding Comments

2019 International Metallurgical Processes Workshop for Young Scholars (IMPROWYS 2019) — Powder Metallurgy and Additive Manufacturing

Sponsored by: TMS Extraction and Processing Division

Program Organizers: Cong Wang, Northeastern University; Amy Clarke, Colorado School of Mines; Kinnor Chattopadhyay, University of Toronto; Bryan Weblar, Carnegie Mellon University

Tuesday PM
March 12, 2019

Room: 213B
Location: Henry B. Gonzalez
Convention Center

Funding support provided by: Korean Institute of Metals and Materials

Session Chairs: Gang Chen, University of Science and Technology Beijing; Hojong Kim, Pennsylvania State University

2:00 PM Invited

Product Driven Process Research for AM Powder Production: *Ali Asgarian*¹; Eric (Cheng Tse) Wu¹; *Kinnor Chattopadhyay*¹; ¹University of Toronto

2:30 PM Invited

Preparation and Formation Mechanism of Dispersed Er₂O₃ Doped Mo Super-fine Powders and Agglomerated La₂O₃ Doped Mo Powders: *Jinshu Wang*¹; ¹Beijing University of Technology

3:00 PM Invited

Sintering of Titanium Alloys from the Core-shell Structured Titanium@Metal Powders: *Yafeng Yang*¹; Shaofu Li¹; ¹Institute of Processing Engineering Chinese Academy of Science

3:30 PM Break

3:50 PM Invited

Ab Initio Molecular Dynamics Study on the Dissolution of Interfacial Iron Oxides in Hot Compressive Bonding Combined with Experiments: *Honglin Zhang*¹; *Mingyue Sun*¹; ¹Institute of Metal Research

4:20 PM Invited

Static Magnetic Field has Impact on Solidification Structure of Metallic Samples Fabricated via Additive Manufacturing: *Jiang Wang*¹; Zhongming REN¹; ¹Shanghai University

4:50 PM Invited

Cost-affordable Ti Powders for Additive Manufacturing Treated by Fluid-bed: *Gang Chen*¹; Wangwang Ding¹; Mingli Qin¹; Wei Cai²; Xuanhui Qu¹; ¹University of Science and Technology Beijing; ²Stanford University

5:20 PM

New Insights into Interfacial Reactions between CBN and Cu-Sn-Ti Active Filler Metals: *Yonggang Fan*¹; Cong Wang¹; ¹Northeastern Univ

2019 Symposium on Functional Nanomaterials: Synthesis, Integration, and Application of Emerging Nanomaterials — Two-dimensional Nanomaterials II

Sponsored by: TMS: Nanomaterials Committee

Program Organizers: Chang-Yong Nam, Brookhaven National Laboratory; Jiyoung Chang, University of Utah; Pei Dong, George Mason University; Yong Lin Kong, University of Utah; Shengfeng Yang, Indiana Univ. Purdue Univ. Indianapolis; SungWoo Nam, University of Illinois

Tuesday PM
March 12, 2019

Room: 213A
Location: Henry B. Gonzalez
Convention Center

Session Chairs: Stephen McDonnell, University of Virginia; Yeonwoong Jung, University of Central Florida

2:00 PM Invited

2D and Layered Metal Chalcogenide Semiconductors: Growth, Electronic Structure, Light-matter Interactions: *Peter Sutter*¹; ¹University of Nebraska-Lincoln

2:30 PM Invited

2D Flexible Electronics and Graphene Electronic Tattoo: *Deji Akinwande*¹; ¹University of Texas - Austin

3:00 PM

Distinctive Optoelectronic Signatures of Energy Transfer and Charge Transfer in Quantum-dot-sensitized Two-dimensional Semiconductors Probed by Scanning Photocurrent Microscopy: *Chang-Yong Nam*¹; ¹Brookhaven National Laboratory

3:20 PM

Stress Dependent Phase Transition in Monolayer MoTe₂: *Wei Gao*¹; ¹The University of Texas at San Antonio

3:40 PM Break

4:00 PM Invited

Wafer-scale Epitaxial Growth of Transition Metal Dichalcogenides by Gas Source CVD: *Joan Redwing*¹; Xiaotian Zhang¹; Tanushree Choudhury¹; Mikhail Chubarov¹; ¹Pennsylvania State Univ

4:30 PM Invited

The Emergence of Multifunctional Two-dimensional Materials: *Jun Lou*¹; ¹Rice Univ

5:00 PM

Mechanical Instability-driven Architecturing of Atomically-thin Materials: *SungWoo Nam*¹; ¹University of Illinois

5:20 PM

Thermal Stability of Metal/TMD Interfaces: Keren Freedy¹; *Stephen McDonnell*¹; ¹University of Virginia

5th Symposium on Advanced Materials for Energy Conversion and Storage — Energy Storage with Emphasis on Batteries II

Sponsored by: TMS: High Temperature Alloys Committee

Program Organizers: Amit Pandey, LG Fuel Cell Systems; Partha Mukherjee, Purdue University; Surojit Gupta, University of North Dakota; Kyle Brinkman, Clemson Univ; Jung Pyung Choi, Pacific Northwest National Laboratory; Soumendra Basu, Boston University; Paul Ohodnicki, National Energy Technology Laboratory

Tuesday PM
March 12, 2019

Room: 225A
Location: Henry B. Gonzalez
Convention Center

Session Chairs: Partha P. Mukherjee, Purdue University; George Nelson, University of Alabama, Huntsville

2:00 PM Keynote

Defining Conduction Pathways in Cathode Materials: Resolving Logjams through Atomistic Design and Mesoscale Structuring: *Sarbajit Banerjee*¹; ¹Texas A&M University

2:30 PM Invited

Multiscale Analysis of Lithium Ion Battery Materials Using X-ray Tomography: Thushanath Rajendra¹; Prehit Patel¹; *George Nelson*¹; ¹University of Alabama in Huntsville

2:55 PM

Novel Fabrication of Interconnected Hierarchical Porous Carbon Derived from Biowaste for High Performance Electrochemical Energy Storage Devices: *Li Li*¹; Shulan Wang¹; Yunqiang Zhang¹; Song Yang¹; ¹Northeastern University

3:15 PM Break

3:35 PM Keynote

Lithium Battery Characterization Using Neutron Imaging Techniques: *Hassina Bilheux*¹; Robert Schmidt¹; Jagjit Nanda¹; Nancy Dudney¹; Jean Bilheux¹; ¹Oak Ridge National Laboratory

4:05 PM

Exploiting Piezoelectrochemical Phenomena in Lithium-ion Batteries for Low Frequency Mechanical Energy Harvesting and Storage: Craig Arnold¹; *Juliane Preimesberger*¹; Seung-Yeon Kang¹; ¹Princeton University

4:25 PM

In Situ Electrochemical Dilatometry Study of Capacity Fading in Nanoporous Ge-based Na-ion Battery Anode during Sodiation-desodication Cycles: *Manni Li*¹; Eric Detsi¹; ¹University of Pennsylvania

4:45 PM

Mechanistic Understanding of Multi-modal Degradation in Li-ion Battery Electrodes: *Ankit Verma*¹; Partha Mukherjee¹; ¹Purdue University

5:05 PM Invited

Elucidating the Role of Mesoscale Morphology on Lithium-ion Battery Mechanical and Electrochemical Performance through Mesoscale Simulation: *Scott Roberts*¹; Dan Bolintineanu¹; Mark Ferraro¹; Jeremy Lechman¹; David Noble¹; Ishan Srivastava¹; Bradley Trebacki¹; ¹Sandia National Laboratories

Additive Manufacturing and Welding: Physical and Mechanical Metallurgy of Rapidly Solidified Metals — Process, Structure, and Properties I

Sponsored by: TMS: Additive Manufacturing Committee

Program Organizers: Allison Beese, Pennsylvania State University; Eric Lass, National Institute of Standards and Technology; David Bourell, University of Texas; John Carpenter, Los Alamos National Laboratory; Kester Clarke, Colorado School of Mines; Daniel Coughlin, Los Alamos National Laboratory; Christian Leinenbach, Empa, Swiss Federal Laboratories for Materials Science and Technology; Behrang Poorganji, GE Additive; Judy Schneider, University of Alabama at Huntsville; Lee Semiatin, US Air Force Research Laboratory; Mark Stoudt, National Institute of Standards and Technology; Chantal Sudbrack, QuesTek Innovations LLC

Tuesday PM
March 12, 2019

Room: 221A
Location: Henry B. Gonzalez
Convention Center

Session Chair: David Bourell, University of Texas

2:00 PM

3D Characterization of Solidification-induced Orientation Gradients in Additively Manufactured Stainless Steel: *Andrew Polonsky*¹; William Lenthe²; McLean Echlin¹; Veronica Livescu³; George Gray³; Tresa Pollock¹; ¹Univ of California, Santa Barbara; ²Carnegie Mellon University; ³Los Alamos National Laboratory

2:20 PM

Build Environment Pressure Effects on SLM Processing of 316L Stainless Steel: *Jonathan Gibbs*¹; Stuart Baker²; Ryan Penny³; Christoph Meier⁴; David Griggs⁵; A. John Hart³; ¹U.S. Naval Academy; ²AFRL - Wright-Patterson AFB; ³Massachusetts Institute of Technology; ⁴Technical University of Munich

2:40 PM

The Effect of Welding Process Parameters on Microstructure, Creep Strength and Fracture Toughness of 22V Submerged Arc Weldments: *Harrison Whitt*¹; Michael Kottman²; Ben Schaeffer²; Michael Mills¹; ¹Ohio State University; ²The Lincoln Electric Company

3:00 PM

Print Pattern Impact on the Material Properties of Metal Big Area Additively Manufactured Multi-layered Steel Interfaces: *Eric Tenuta*¹; Andrzej Nycz²; Mark Noakes²; Srdjan Simunovic³; Markus Piro¹; ¹University of Ontario Institute of Technology; ²Oak Ridge National Lab; ³Oak Ridge National Laboratory

3:20 PM

Thermal Modeling of Maragani Flow in the Melt pool for SS 17-4 PH Stainless Steel in Selective Laser Melting: *Yi Shu*¹; Daniel Galles²; Xiaohan Zhang¹; Wei Cai¹; Adrian Lew¹; ¹Stanford University; ²Oak Ridge Institute for Science and Education

3:40 PM Break

4:00 PM

Effect of Thermal Cycles on the Microstructure of 17-4 PH Stainless Steel Parts Prepared by Selective Laser Melting: *Yu Sun*¹; Mark Aindow¹; Rainer Hebert¹; ¹University of Connecticut

4:20 PM

Design and Study of Lattice Struts Made from Direct Metal Laser Sintering: *Hayley Zhang*¹; Ben Wang¹; ¹Georgia Institute of Technology

4:40 PM

Morphological Features of Melt Pool in Selective Laser Melting of Inconel 738LC Alloy: *Teresa Guraya*¹; Amir Safwan Anuar²; Sarat Singamneni²; Zhan Chen²; ¹University of the Basque Country; ²Auckland University of Technology

5:00 PM

Development of Tailor-made Properties via Additive Manufacturing of Functionally Graded Inconel 718: *V. A. Popovich*¹; E. V. Borisov²; V. Sh. Sufiarov²; A. A. Popovich²; ¹Delft University of Technology; ²Peter the Great Saint-Petersburg Polytechnic University

5:20 PM

Quantifying Microstructure Variability in Large-scale 3D Printed Metals Using Optical Microscopy: *Matteo Seita*¹; Ekta Jain¹; ¹Nanyang Technological University

Additive Manufacturing for Energy Applications — Design, Process Optimization and Qualification

Sponsored by: TMS: Nuclear Materials Committee

Program Organizers: Isabella Van Rooyen, Idaho National Laboratory; Subhashish Meher, Idaho National Laboratory; Indrajit Charit, University of Idaho; Somayeh Pasebani, Oregon State University; Chad Duty, University of Tennessee

Tuesday PM
March 12, 2019

Room: 223
Location: Henry B. Gonzalez
Convention Center

Session Chair: Somayeh Pasebani, Oregon State University

2:00 PM Invited

Impact of Powder Feedstock Compositions on the Additive Manufacturing of Corrosion Resistant Alloys for Energy Applications: *Todd Palmer*¹

2:30 PM

Experimental Design Approach to Optimize Selective Laser Melting of Pure Copper: *Leonidas Gargalis*¹; Cassidy Sibernagel¹; Richard Hague¹; Ian Ashcroft¹; Phill Dickens¹; ¹University of Nottingham, Center for Additive Manufacturing

2:50 PM

Powder Surface Characterization toward Powder Feedstock Screening for AM: *Timothy Probst*¹; Dapeng Jing²; Michael Kirka³; Emma White¹; Iver Anderson¹; ¹Ames Laboratory; ²Iowa State University; ³Oak Ridge National Lab

3:10 PM Invited

Binder Jetting Materials for Energy Applications: *Corson Cramer*¹; Parans Paranthaman¹; Hsin Wang¹; Kashif Nawaz¹; Amy Elliott¹; ¹Oak Ridge National Laboratory

3:40 PM Break

4:00 PM Invited

Recent Progress in Testing and Qualification of PM-HIP Alloys for Nuclear Applications: *Janelle Wharry*¹; Michael Pavel²; Zachary Kroll¹; Esteban Bautista³; Alexander Bullens¹; Donna Guillen⁴; Lucille Giannuzzi⁵; Elizabeth Getto⁶; Darren Pagan⁷; Paula Freyer⁸; David Gandy⁹; ¹Purdue University; ²University of Alabama; ³California State University - Northridge; ⁴Idaho National Laboratory; ⁵L.A. Giannuzzi & Associates; ⁶US Naval Academy; ⁷Cornell University; ⁸Westinghouse Electric Company, LLC; ⁹Electric Power Research Institute

4:30 PM

Design for Additive Manufacturing of a Novel Heat Exchanger: *Adrian Sabau*¹; Bart Murphy¹; Keith Carver¹; Frederick List¹; Yarom Polsky¹; ¹Oak Ridge National Laboratory

4:50 PM

Thermoelectric Higher Manganese Silicide: Synthesized, Sintered and Shaped Simultaneously by Selective Laser Sintering/melting Additive Manufacturing Technique: *Yohann Thimont*¹; Lionel Presmanes¹; Vincent Baylac¹; Philippe Tailhades¹; David Berthebaud²; Franck Gascoin²; ¹CIRIMAT; ²Laboratoire CRISMAT UMR 6508 CNRS ENSICAEN

5:10 PM

Laser Additive Manufacturing of Thermoelectric Materials: Haidong Zhang¹; Panagiotis Rammos¹; *Saniya LeBlanc*¹; ¹George Washington University

Additive Manufacturing of Metals: Fatigue and Fracture III — Session II

Sponsored by: TMS: Additive Manufacturing Committee
Program Organizers: Nikolas Hrabe, NIST-Boulder; Steve Daniewicz, University of Alabama; John Lewandowski, Case Western Reserve Univ; Nima Shamsaei, Auburn University; Mohsen Seifi, ASTM International/Case Western Reserve University

Tuesday PM
March 12, 2019

Room: 221B
Location: Henry B. Gonzalez
Convention Center

Session Chair: Mohsen Seifi, ASTM International

2:00 PM Invited

Criticality of Porosity Defects on the Fatigue Life of Wire + Arc Additive Manufactured Titanium Alloy: *Xiang Zhang*¹; ¹Coventry University

2:30 PM

Effect of the Surface Finish on the Cyclic Behavior of Additively Manufactured AlSi10Mg: *Matilde Scurria*¹; Benjamin Möller²; Rainer Wagener²; Tobias Melz²; ¹Tu Darmstadt; ²Fraunhofer Institute for Structural Durability and System Reliability LBF

2:50 PM

The Relationship of Processing Parameters to Surface Roughness and Fatigue Life in Additive Manufacturing: *Joy Gockel*¹; Luke Sheridan¹; Bo Whip¹; Eric Tatman¹; Brittanie Koerper¹; ¹Wright State University

3:10 PM

Effect of Heat Treatments on Fatigue Properties of Ti-6Al-4V and 316L Produced by Laser Powder Bed Fusion in as Built Surface Condition: *Antonio Cutolo*¹; Chola Elangeswaran¹; Charlotte de Formanoir¹; Gokula Muralidharan²; Brecht Van Hooreweder¹; ¹KU Leuven; ²3D Systems

3:30 PM Break

3:50 PM Invited

Fatigue Crack Growth Properties of Selective Laser Melting Produced Alloy 718 at Ambient and Elevated Temperatures: *Jamie Krusic*¹; Halsey Ostergaard¹; ¹UNSW Sydney

4:20 PM

Development of Parameters and Comparison of Mechanical and Microstructural Properties of Tungsten Nickel Iron (W-Ni-Fe) with Parts Fabricated from Laser Powder Bed Fusion (PBF): *Michael Brand*¹; Colt Montgomery¹; Chris Farnin¹; Cody Miller¹; John Carpenter¹; ¹Los Alamos National Laboratory

4:40 PM

Dynamic Loading and Failure of Ti-6Al-4V AM Octet and Gyroid Unit Cells: *Christopher Meredith*¹; Saadi Habib²; Eric Faierson³; ¹U.S. Army Research Laboratory; ²University of Maryland Baltimore County; ³Quad Cities Manufacturing Laboratory--Western Illinois University

5:00 PM

The Effects of Microstructure and Material Length Scales on the Fatigue Crack Growth Rates for Thin Wall Additive Manufactured Components: *Richard Russell*¹; Jacob Hochhalter²; David Dawicke³; Edward Glaessgen¹; Douglas Wells¹; ¹NASA; ²University of Utah; ³Analytical Services and Materials, Inc.

Additive Manufacturing of Metals: Microstructural Evolution and Phase Transformations — Ni-based Systems II

Sponsored by: TMS: Phase Transformations Committee, TMS: Additive Manufacturing Committee, TMS: High Temperature Alloys Committee

Program Organizers: Bij-Na Kim, LPW Technology / Lancaster University; Eric Lass, National Institute of Standards and Technology; Mohsen Asle Zaeem, Colorado School of Mines; Sudarsanam Babu, The University of Tennessee, Knoxville; Ryan Dehoff, Oak Ridge National Laboratory; Gerhard Fuchs, University of Florida; Chantal Sudbrack, QuesTek Innovations LLC

Tuesday PM
March 12, 2019

Room: 221C
Location: Henry B. Gonzalez
Convention Center

Session Chairs: Chantal Sudbrack, QuesTek Innovations, LLC; Gerhard Fuchs, University of Florida

2:00 PM Invited

The Microstructural Evolution of CM247LC Manufactured through Selective Laser Melting: *Katerina Christofidou*¹; Nick Jones¹; Ed Pickering²; Yogiraj Pardhi³; Neil Jones³; Howard Stone¹; ¹University of Cambridge; ²University of Manchester; ³Rolls-Royce plc

2:30 PM

Influence of Different Heat Treatments on the Microstructure and Mechanical Properties of Additively Manufactured IN718: *Benedikt Diebold*¹; Martin Pröbstle¹; Steffen Neumeier¹; Mathias Göken¹; ¹Friedrich-Alexander University Erlangen-Nürnberg

2:50 PM

Integrated Computational Modeling of Selective Laser Melting of Inconel 718: *Kubra Karayagiz*¹; Luke Johnson¹; Mohamad Mahmoudi¹; Hannah Boon¹; Alaa Elwany¹; Ji Ma¹; Ibrahim Karaman¹; Raymundo Arroyave¹; ¹Texas A&M University

3:10 PM

Microstructural Response to Heat Treatment of Blown Powder Inconel 625: *Myles Fullen*¹; Judy Schneider¹; Paul Gradl²; ¹University of Alabama At Huntsville; ²NASA Marshall Space Flight Center

3:30 PM Break

3:50 PM

Microstructural Evolution of Ni-based Superalloys Produced by Selective Laser Melting: *Mark Jepson*¹; Will Philpott²; Hakan Brodin³; Geoff Marchant²; Rachel Thomson²; ¹Loughborough University; ²Loughborough University; ³Siemens Industrial Turbomachinery

4:10 PM

How Dependent are the Microstructure Evolutions of AM Alloys on the Local Geometry and Thermal Conditions of the Build?: *Fan Zhang*¹; Lyle Levine¹; Mark Stoudt¹; Carelyn Campbell¹; Andrew Allen¹; ¹National Institute of Standards and Technology

4:30 PM

Microstructure and Mechanical Response of SLM IN718 Printed under Ar, N₂, He Gases: *Glenn Bean*¹; David Witkin¹; Tait McLouth¹; Dhruv Patel¹; Rafael Zaldivar¹; ¹The Aerospace Corporation

4:50 PM

Quantifying Bimetallic Joints Formed Using Directed Energy Deposition Processes: *Jordan Terrell*¹; Judy Schneider¹; Paul Gradl²; ¹University of Alabama At Huntsville; ²NASA Marshall Space Flight Center

Additive Manufacturing: Materials Design and Alloy Development — Fundamentals in Alloy Design for AM II

Sponsored by: TMS: Additive Manufacturing Committee, TMS: Integrated Computational Materials Engineering Committee
Program Organizers: Behrang Poorganji, GE Additive; James Saal; Hunter Martin, HRL Labs; Orlando Rios, Oak Ridge National Laboratory

Tuesday PM
March 12, 2019

Room: 221D
Location: Henry B. Gonzalez
Convention Center

Session Chair: To Be Announced

2:00 PM Invited

Nanostructured Metal Parts through Green Body 3D Printing and Sintering: *Christopher Schuh*¹; ¹Massachusetts Institute of Technology

2:30 PM

Coupling the Calculation of Phase Diagrams and Machine Learning to Search for Printable Alloys: *Minh-Son Pham*¹; ¹Imperial College London

2:50 PM

Data-Driven Approach for the Development of a Steel Alloy for Powder Bed Additive Manufacturing: *Mahdi Jamshidinia*¹; Behrang Poorganji¹; ¹GE Additive

3:10 PM

Additive Manufacturing of Aluminum Alloys from Multiple Series Via Nanofunctionalization: *Julie Miller*¹; Brennan Yahata¹; Randall Schubert¹; John Martin¹; Jacob Hundley¹; ¹Hrl Laboratories, Llc

3:30 PM Break

3:50 PM Invited

Data-driven Design of Alloys for Additive Manufacturing: *Bryce Meredig*¹; ¹Citrine Informatics

4:20 PM

Progress of Developing Addalloy™, High-performance Aluminum Alloys for Additive Manufacturing: *Joe Croteau*¹; Seth Griffiths²; Christian Leinenbach²; David Seidman³; David Dunand³; Nhon Vo¹; ¹NanoAl LLC; ²Empa; ³Northwestern University

4:40 PM

3D Printed Ultrastrong and Ultratough Metallic Architectures: *Wen Chen*¹; Cheng Zhu²; Thomas Voisin²; Scott McCall²; Andrew Pascall²; Joshua Kuntz²; Eric Duoss²; Christopher Spadaccini²; ¹University of Massachusetts, Amherst; ²Lawrence Livermore National Laboratory

5:00 PM

Additive Manufacturing of 304 Stainless Steel Oxide Dispersion Alloy via Selective Laser Melting: *Milad Ghayoor*¹; Kijoon Lee¹; Yujuan He²; Chih-hung Chang²; Brian K. Paul¹; Somayeh Pasebani¹; ¹School of Mechanical, Industrial and Manufacturing Engineering, Oregon State University; ²School of Chemical, Biological, and Environmental Engineering, Oregon State University

Advanced Characterization Techniques for Quantifying and Modeling Deformation — Session IV

Sponsored by: 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; C. Tasan, Massachusetts Institute of Technology; M Arul Kumar, Los Alamos National Laboratory

Tuesday PM
March 12, 2019

Room: 302A
Location: Henry B. Gonzalez
Convention Center

Session Chairs: Daniel Coughlin, Los Alamos National Laboratory; Daniel Savage, University of New Hampshire

2:00 PM

3D Observation of Plastic Slip Localization in a Ti-7Al Alloy using X-ray Topotomography: *Patrick Callahan*¹; Jean Stinville¹; Aude Mulard²; Wolfgang Ludwig³; Henry Proudhon⁴; Tresa Pollock¹; ¹University of California Santa Barbara; ²Safran; ³MATEIS, INSA Lyon; ⁴MINES ParisTech

2:20 PM

The Shear Response of Beryllium as a Function of Temperature and Strain Rate: *Carl Cady*¹; Cheng¹; Carl Trujillo¹; George Gray¹; ¹Los Alamos National Laboratory

2:40 PM

Discerning Multiaxial Stress Gradients using High Energy X-rays and Finite Elements: *Christopher Budrow*¹; Matt Miller¹; Paul Dawson¹; ¹Cornell University

3:00 PM

Micro-cantilever Tests of Asymmetry in Tensile and Compressive Slip Properties in Alpha Titanium: *Jicheng Gong*¹; Angus Wilkinson¹; ¹University of Oxford

3:20 PM

Cold Creep of Ti Alloys: In Situ Synchrotron Diffraction and Crystal Plasticity Finite Element Analysis: *Yi Xiong*¹; Phani Karamched¹; Chi-Toan Nguyen²; Christopher Magazzeni¹; David Collins³; Edmund Tarleton¹; Angus Wilkinson¹; ¹University of Oxford; ²University of Manchester; ³University of Birmingham

3:40 PM Break

4:00 PM

In Situ TEM Deformation of Metallic Films with Precisely Controlled Bimodal Microstructures: *Rohit Berlia*¹; Jagannathan Rajagopalan¹; ¹Arizona State University

4:20 PM

Effect of Microtextured Regions on the Early Plastic Deformation of Ti-6Al-4V: EVP-FFT Simulations of Realistic Polycrystals Reconstructed using 3D EBSD: *Samuel Hemery*¹; Azdine Nait-Ali¹; Mikael Gueguen²; McLean Echlin³; Jean-Charles Stinville³; Tresa Pollock³; Patrick Villechaise²; ¹Prime Institute - ENSMA; ²Prime Institute - CNRS; ³University of California, Santa Barbara

4:40 PM

A New Mechanism of Strain Transfer in Polycrystals: *Fabio Di Gioacchino*¹; Thomas Edwards²; Garth Wells³; William Clegg¹; ¹Department of Materials Science and Metallurgy, University of Cambridge; ²EMPA – Swiss Federal Laboratories for Materials Science and Technology; ³Department of Engineering, University of Cambridge

5:00 PM

In Situ X-ray Diffraction and High-resolution DIC of a High Work-hardening Ti-6Al-4V Prepared by Electron-beam Melting: *Karl Sofinowski*¹; Solange Vivès²; Charlotte De Formanoir²; Ivo Kubena³; Steven Van Petegem¹; Stéphane Godet²; Helena Van Swyghoven¹; ¹Paul Scherrer Institute; ²Université Libre de Bruxelles; ³Academy of Sciences of the Czech Republic

5:20 PM

Effect of Basal Precipitates on Non-basal Deformation Mechanisms: a Micro-compression Study of Single Crystal Mg-9Al (wt%) Pillars: *Xiaolong Ma*¹; Quan Jiao¹; Laszlo Kecskes¹; Jaafar El-Awady¹; Timothy Weihs¹; ¹Johns Hopkins University

5:40 PM

Microstructure and Deformation Behavior of CP Titanium with Different Oxygen Contents: *Joo-Hee Kang*¹; Jun-Yeol Chae²; Ji Hoon Kim²; Eun-Young Kim¹; Chan Hee Park¹; Chang-Seok Oh¹; ¹Korea Institute of Materials Science; ²Pusan National University

Advanced High-Strength Steels III — Microstructure, Processing, and Properties Advanced High-Strength Steels II

Sponsored by: TMS: Steels Committee

Program Organizers: Amy Clarke, Colorado School of Mines; MingXin Huang, University of Hong Kong; C. Tasan, Massachusetts Institute of Technology; Kester Clarke, Colorado School of Mines; Ana Luiza Araujo, Colorado School of Mines

Tuesday PM

March 12, 2019

Room: 205

Location: Henry B. Gonzalez
Convention Center

Session Chair: To Be Announced

2:00 PM

Effect of Electrode Degradation on Liquid Metal Embrittlement Cracking in Resistance Spot welding of Advanced High Strength Steels: *Kaisar Mahmud*¹; Siva Prasad Murugan¹; *Yeongdo Park*¹; ¹Dong-Eui University

2:20 PM

Microscale Observations of Liquid Metal Embrittlement in TRIP Steels: *Daniel Massie*¹; Mark Barkey¹; Benjamin Hilpert²; Holger Schubert²; Luke Brewer¹; ¹University of Alabama; ²TecFabrik Daimler AG

2:40 PM

Effect of Intercritical Annealing Parameters and Surface Active Element (Sn) Addition on the Mechanical Properties of a Medium Mn Third Generation Advanced High Strength Steel: *Kazi Mahmudul Haque Bhadhon*¹; Joseph McDermid¹; Frank Goodwin²; ¹McMaster University; ²International Zinc Association

3:00 PM

Atomistic and First Principles Simulation of Fe/Fe3Al8 System: *Kefan Chen*¹; Bin Li¹; ¹University of Nevada, Reno

3:20 PM Break

3:40 PM

Cyclic Austenite-to-Ferrite and Ferrite-to-Austenite Phase Transformations in Fe-C-Mn-Si Alloy: Phase-Field and Experimental Studies: *Rihito Ikuta*¹; Akinori Yamanaka¹; Takahiko Kohtake²; Masahito Segawa³; ¹Tokyo University of Agriculture and Technology; ²Nippon Steel & Sumitomo Metal Corporation; ³Itouchi Techno-Solutions Corporation

4:00 PM

Stabilizing Austenite via a Core-Shell Structure in the Medium Mn Steel: *Xinhao Wan*¹; Hao Chen¹; Zhigang Yang¹; Chi Zhang¹; ¹Tsinghua University

4:20 PM

The Influence of Multi-step Partitioning on the Microstructure and Mechanical Properties of High Strength-high Ductility Medium-manganese Steels: *Kun Li*¹; *Bing Yu*¹; S. Liu²; R.D.K. Misra¹; ¹UTEP; ²Shanghai Jiatong University

4:40 PM

Effect of CGL-compatible Heat Treatments on the Mechanical Properties of a Medium-Mn Third-generation Advanced High Strength Steel: *Daniella Pallisco*¹; Joseph McDermid¹; Frank Goodwin²; ¹McMaster University; ²International Zinc Association

5:00 PM

Synthesis and Characterization of Low Density Manganese Steel for Automotive Applications: *Sudipta Mohapatra*¹; Karabi Das¹; ¹Indian Institute of Technology Kharagpur

Advanced Magnetic Materials for Energy and Power Conversion Applications — Additive Manufacturing and Advanced Processing of Magnetic Materials

Sponsored by: Federation of European Materials Societies (FEMS), TMS Functional Materials Division, TMS: Magnetic Materials Committee

Program Organizers: Frank Johnson, Niron Magnetics, Inc.; Paul Ohodnicki, National Energy Technology Laboratory; Alex Leary, Nasa Grc; Orlando Rios, Oak Ridge National Laboratory; Alessandra Hool, ESM Foundation

Tuesday PM

March 12, 2019

Room: 225B

Location: Henry B. Gonzalez
Convention Center

Session Chair: Richard Beddingfield, North Carolina State University

2:00 PM Invited

3D Printing of Magnets using Fused Deposition Modeling and Selective Laser Melting: *Dieter Suess*¹; ¹University of Vienna

2:30 PM Invited

Additive Manufacturing of High Performance Anisotropic NdFeB Permanent Magnets: *Mariappan Paranthaman*¹; Kinjal Gandha²; Brian Sales¹; Vlastamil Kunc¹; Cajetan Nlebedim²; ¹Oak Ridge National Laboratory; ²Ames Laboratory

3:00 PM Invited

Additive Manufacturing of Soft Ferromagnetic Alloys: *Andrew Kustas*¹; Don Susan¹; Kyle Johnson¹; Shaun Whetten¹; Tomas Babuska²; Joseph Michael¹; Mark Rodriguez¹; Daryl Dagle¹; Chris Fancher³; Jeff Rodelas¹; Dave Keicher¹; John Curry¹; Brandon Krick²; Nicolas Argibay¹; ¹Sandia National Laboratories; ²Lehigh University; ³Oak Ridge National Laboratory

3:30 PM Break

3:50 PM

Additive Manufacturing of Soft Magnetic Supermalloys: *Srinivas Aditya Mantri*¹; Sriswaroop Dasari¹; Varun Chaudhary²; Raju Ramanujan²; Rajarshi Banerjee¹; ¹University of North Texas; ²Nanyang Technological University

4:10 PM Invited

Exploring Processing Parameters for Soft Magnetic Composites Fabricated by Additive Manufacturing: *Mitra Taheri*¹; ¹Drexel University

4:40 PM Invited

Laser Additive Manufacturing of Magnetic Materials (Invited): *Tushar Borkar*¹; Raj Banerjee²; Raju Ramanujan³; ¹Cleveland State University; ²University of North Texas; ³Nanyang Technological University

5:10 PM Invited

Production of Highly Coercive Net Shape Magnets with Additive Manufacturing: *Scott McCall*¹; Alexander Baker¹; Sarah Baker¹; Matthew Worthington¹; Joshua Kuntzq¹; Christine Orme¹; ¹Lawrence Livermore National Laboratories

Advanced Microelectronic Packaging, Emerging Interconnection Technology, and Pb-free Solder — 3D Microelectronic Packaging and Emerging Interconnects I

Sponsored by: TMS: Electronic Packaging and Interconnection Materials Committee

Program Organizers: Kazuhiro Nogita, University of Queensland; Tae-Kyu Lee, Portland State University; Yan Li, Intel Corporation; Christopher Gourlay, Imperial College London; Zhi-Quan Liu, Chinese Academy of Sciences; Rahul Panat, Carnegie Mellon University; Albert T. Wu, National Central University; Andre Delhaise, University of Toronto; Mohd Arif Salleh, Universiti Malaysia Perlis

Tuesday PM
March 12, 2019

Room: 216A
Location: Henry B. Gonzalez
Convention Center

Session Chairs: Albert Wu, National Central University; Won-Sik Hong, Korea Electronics Technology Institute (KETI)

2:00 PM Invited

A Novel Joining Process for the Die-attachment of Next-generation Power Devices: *Hao Zhang*¹; Seungjun Noh¹; Zhi-quan Liu²; Caifu Li¹; Norio Asatani¹; Yukiharu Kimoto¹; Aiji Suetake¹; Shijo Nagao¹; Tohru Sugahara¹; Katsuaki Suganuma¹; ¹The Institute of Scientific and Industrial Research, Osaka University; ²Institute of Metal Research, Chinese Academy of Sciences

2:30 PM

A Study on Electrical Conductivity of Micro Friction Stir Welded Dissimilar Sheets for Hybrid Electric Vehicles (HEVs): *Omkar Mypati*¹; Surjya Pal¹; Prakash Srirangam²; ¹IIT Kharagpur; ²Warwick Manufacturing Group

2:50 PM

Multi-phase-field Modeling for Next-generation Interconnect Devices Based on TSVs: *Vahid Attari*¹; Raymundo Arroyave¹; Zachary Morgan²; Yungmei Jin²; ¹Texas A&M University; ²Michigan Technological University

3:10 PM

Kinetic Monte Carlo Model for Improved Electroplating of TSVs in 3DIC: *Bharathi Srinivasan*¹; ¹Institute of High Performance Computing

3:30 PM Break

3:50 PM

Stress Measurement for Highly <111>-Oriented Nanotwinned Cu by Synchrotron X-ray: *Wang I-Ju*¹; Chih Chen¹; ¹National Chiao Tung University

4:10 PM

Low Resistance Cu-to-Cu Joints using Highly <111>-Oriented Nanotwinned Copper: *Kai Cheng Shie*¹; Jing-Ye Juang¹; Shih-Yang Chang¹; Chih Chen¹; ¹National Chiao Tung University

4:30 PM

Low Temperature Cu-to-Cu Direct Bonding with Thin Gold Capping on Highly <111>-Oriented Nanotwinned Cu Films: *Yu-Ting Wu*¹; Chih Chen¹; ¹National Chiao Tung University

4:50 PM

Electrodeposition of Large-scale Nanotwinned Copper Pillar within through Silicon via: *Zhi-Quan Liu*¹; Fu-Long Sun¹; ¹Institute of Metal Research, Cas

Advanced Real Time Imaging — Iron and Steelmaking II

Sponsored by: TMS: Alloy Phases Committee

Program Organizers: Jinichiro Nakano, US DOE - National Energy Tech Lab; P.Chris Pistorius, Carnegie Mellon University; Candan Tamerler, University of Kansas; Hideyuki Yasuda, Kyoto University; Zuotai Zhang, Southern University Of Science And Techn; Neslihan Dogan, McMaster University; Wanlin Wang, Central South University; Noritaka Saito, Kyushu University; Yongsug Chung, Korea Polytechnic University; Bryan Webler, Carnegie Mellon University

Tuesday PM
March 12, 2019

Room: 302B
Location: Henry B. Gonzalez
Convention Center

Session Chairs: Chris Pistorius, Carnegie Mellon University; Bryan Webler, Carnegie Mellon University

2:00 PM Invited

Observation of Crystallization Behavior for Silicate Supercooled Liquids on Metallic Substrates under Different Oxygen Partial Pressure: *Sohei Sukenaga*¹; Masanori Tashiro¹; Hiroyuki Shibata¹; ¹IMRAM, Tohoku University

2:30 PM Invited

Observation of the Reaction between Iron Ore and Metallurgical Fluxes for Improved Pre-reduction: *J Whiston*¹; Stephen Spooner¹; K Meijer²; Z. Li¹; ¹WMG, University of Warwick; ²Tata Steel Europe

3:00 PM

In Situ CLSM Study of Al₂O₃ Effect on Mineralogical Modification and Crystallization Kinetics of a High Basicity BOF Steel Slag: *Muxing Guo*

3:20 PM

In Situ Observation of Initial Stages of Oxide-scale Formation on Steel at 1150 \176C: *Ming Zhong*¹; Yining He¹; Elyce Milligan¹; Chris Pistorius¹; Bryan Webler¹; ¹Carnegie Mellon University

3:40 PM Break

4:00 PM Invited

In Situ Observation of Non-metallic Inclusions in the System Steel-slag-refractory: Set-up, Limitations and Results: *Susanne Michelic*¹; Uxia Dieguez Salgado¹; Christian Bernhard¹; ¹Montanuniversitaet Leoben

4:30 PM

In-situ Study on the Transformation Behavior of Ti-bearing Slags: *Yongqi Sun*¹; Zuotai Zhang²; ¹The University of Queensland; ²Southern University of Science and Technology

4:50 PM

Dissolution of Sapphire and Alumina-magnesia Particles in CaO-SiO₂-Al₂O₃ Liquid Slags: Hamed Abdeyazdan¹; *Neslihan Dogan*²; Raymond Longbottom¹; M Akbar Rhamdhani³; Michael Chapman⁴; Brian Monaghan¹; ¹University of Wollongong; ²McMaster University; ³Swinburne University of Technology; ⁴BlueScope Ltd.

Advances in Surface Engineering — Session IV

Sponsored by: TMS: Surface Engineering Committee

Program Organizers: Rajeev Gupta, The University of Akron; Sandip Harimkar, Oklahoma State University; Arif Mubarak, PPG Industries; Deepak Kumar, Baker Hughes, A Ge Company; Tushar Borkar, Cleveland State University; Dong Lin, Kansas State University

Tuesday PM
March 12, 2019

Room: 210A
Location: Henry B. Gonzalez
Convention Center

Session Chairs: Sandip Harimkar, Oklahoma State University; Dong Lin, Kansas State University

2:00 PM

Microstructural Analysis of Aluminum-Molybdenum Surface Composites by Friction Stir Processing: Mahesh P.¹; Amit Arora¹; ¹Indian Institute of Technology, Gandhinagar

2:20 PM

Surface Chemistry after Spot-by-spot Laser-interference Processing of AA 5128 Alloy: Adrian Sabau¹; Meyer Harry¹; Claus Daniel¹; ¹Oak Ridge National Laboratory

2:40 PM

Determining Conditions and Mechanisms for Barium Desorption from Scandate Cathode Surfaces: Mujan Seif¹; Thomas Balk¹; Matthew Beck¹; ¹University of Kentucky

3:00 PM

Dry Sheet Metal Forming Through Selective Oxidized Tool Surfaces: Bernd-Arno Behrens¹; Deniz Yilkinson¹; Simon Schöler¹; Sven Hübner¹; Kai Möhwalld¹; Fahrettin Özkaya¹; ¹Leibniz University Hannover

3:20 PM

Effect of Process Parameters on Surface Properties of Laser Hardened Cast Iron: Santosh Wagh¹; Sudeep Ingole²; Dhananjay Bhatt¹; Jyoti Menghani¹; M Rathod³; ¹S V National Institute of Technology; ²Always Avant; ³College of Engineering, Pune

3:40 PM Break

4:00 PM

Characterization of Deposits on Oil-refining Process Equipment: John Garcia¹; William McCaffrey¹; John Nychka¹; ¹University of Alberta

4:20 PM

Features of Surface Texture and Friction: Kumar Vemaganti¹; Jai Sekhar²; ¹University of Cincinnati; ²Institute of Thermodynamics, Texture and Design

4:40 PM

Heat Treatment of Gas Atomized Powders for Cold Spray Deposition: Luke Brewer¹; William Story¹; Tian Liu¹; ¹University of Alabama

5:00 PM

On Improvement in Surface Integrity of Ti-6Al-4V Alloy μ -EDMed by μ -ECM Process: Ramver Singh¹; Akshay Dvivedi¹; Pradeep Kumar¹; ¹Indian Institute of Technology, Roorkee

Algorithm Development in Materials Science and Engineering — Computational, Experimental, and Machine Learning Algorithms in Study and Design of Materials II

Sponsored by: TMS: Computational Materials Science and Engineering Committee, TMS: Phase Transformations Committee, TMS: Integrated Computational Materials Engineering Committee

Program Organizers: Mohsen Asle Zaeem, Colorado School of Mines; Garritt Tucker, Colorado School of Mines; Prasanna Balachandran, University of Virginia; Douglas Spearot, University of Florida; Charudatta Phatak, Argonne National Laboratory; Srinivasan Srivilliputhur, University of North Texas

Tuesday PM
March 12, 2019

Room: 304A
Location: Henry B. Gonzalez
Convention Center

Session Chair: Charudatta Phatak, Argonne National Laboratory

2:00 PM

Video Games & Crowd Sourcing: Algorithm Development for Materials Design: Christopher Adair¹; Alexandra Bradford¹; Michael McCullough¹; Jedediah Lion¹; Seth Holladay¹; Derek Hansen¹; Oliver Johnson¹; ¹Brigham Young University

2:20 PM

Validation of High-Resolution Calculations to Inform Continuum Model Development: Garry Maskaly¹; Donald Sandoval¹; Elias Clark¹; ¹Los Alamos National Laboratory

2:40 PM

Predictions of Field Fluctuations in Heterogeneous Materials: Miroslav Zecevic¹; Ricardo Lebensohn¹; ¹Los Alamos National Laboratory

3:00 PM

Spectral Homogenization Modeling of Heterogeneous Materials: Aitor Cruzado¹; Javier Segurado²; Amine Benzerga¹; ¹Texas A&M University; ²Technical University of Madrid

3:20 PM Break

3:50 PM

Identify Rare Atomic-Scale Events Using Machine Learning on Mesoscale Data: Philip Goins¹; Brian DeCost²; Efrain Hernandez-Rivera¹; ¹Army Research Laboratory; ²National Institute of Standards and Technology

4:10 PM

U-SLADS: Unsupervised Learning Approach For Dynamic Dendrite Sampling
: Nicola Ferrier¹; Yan Zhang¹; Xiang Huang¹; Emine Gulsoy²; Charudatta Phatak¹; ¹Argonne National Laboratory; ²Northwestern University

4:30 PM

Automated Algorithm for Quantifying Nanoscale Precipitates in Superalloy 718 using High-Resolution SEM Imaging: Nishan Senanayake¹; Timothy Smith²; Peter Bonacuse²; Richard Rogers²; Jennifer Carter¹; ¹Case Western Reserve University; ²NASA Glenn Research Center

4:50 PM

Quantitative Electron Diffraction Simulations of Quasicrystals: Comparison with Experiments and Approximant Phases: Saransh Singh¹; Marc De Graef¹; ¹Carnegie Mellon University

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

Sponsored by: TMS: Alloy Phases Committee

Program Organizers: Sinn-wen Chen, National Tsing Hua University; Franck Gascoin, Ensicaen University of Caen; Soon-Jik Hong, Kongju National Univ; Philippe Jund, Montpellier University; Lan Li, Boise State University; Takao Mori, Nims; Hsin-Jay Wu, National Sun Yat-sen University; Tiejun Zhu, Zhejiang University

Tuesday PM
March 12, 2019

Room: 216B
Location: Henry B. Gonzalez
Convention Center

Session Chairs: Hsin-jay Wu, National Sun Yat-Sen University; Franck Gascoin, Ensicaen University of Caen

2:00 PM Invited

Exploratory Research Project “Conpothe”: Achievements and Thoughts:

Franck Gascoin¹; Stefan Maier²; Robin Lefevre³; ¹Crismat Cnrs; ²Aachen university; ³Aarhus University

2:20 PM Invited

TiNiSn-based High-Entropy Thermoelectrics with High ZT~1.5: Peter Rogl¹; Matthias Guerth¹; Philipp Sauerschnig¹; Jan Vrestal²; Vitaliy Romaka³; Gerda Rogl⁴; Andriy Grytsiv⁴; Kunio Yubuta⁵; Ernst Bauer⁶; ¹Universitaet Wien; ²Masaryk University; ³Lviv Polytechnic National University; ⁴Christian Doppler Laboratory for Thermoelectricity Vienna; ⁵Tohoku University; ⁶TU-Wien

2:40 PM Invited

Superior Thermoelectric Performance of n-type Mg₃Sb₂-Mg₃Bi₂ Alloyed Materials for Low-mid Temperature: G. Jeffrey Snyder¹; Kazuki Imasato¹; ¹Northwestern University

3:00 PM

Thermal Superinsulating Materials with Integrated Thermoelectric Properties: Jérémy Guazzagaloppa¹; Cédric Huillet²; Fabrice Chopard²; Philippe Jund¹; ¹Montpellier University; ²Hutchinson

3:20 PM Invited

High Thermoelectric Figure-of-merit in In-doped β-Zn₄Sb₃: Hsin-Jay Wu¹; Hui-Yi Su¹; ¹National Sun Yat-sen University

3:40 PM Break

4:00 PM Invited

Prospective Cryogenic Temperature Thermoelectric Materials: BiSb Alloys: Joseph Poon¹; ¹University of Virginia

4:20 PM

HPT Processing, a New Way to Produce high ZT Skutterudites: Gerda Rogl¹; Andriy Grytsiv²; Michael Zehetbauer³; Ernst Bauer²; Peter Rogl¹; ¹CDL University Vienna Austria; ²CDL, TU Wien; ³Faculty of Physics, University Vienna

4:40 PM

Custom Pyrolytic Graphite-steel Thermocouple for High Temperature Measurements: Abdul-Sommed Hadi¹; Bryce Hill²; ¹Montana Technical University; ²Montana Technological University

5:00 PM

Thermal Stability of Doped CoSb₃ based Skutterudites: Pavel Broz¹; Frantisek Zelenka¹; Jan Vrestal¹; Jiri Bursik²; Gerda Rogl³; Peter Rogl³; ¹Masaryk University, CEITEC MU; ²Institute of Physics of Materials, Czech Academy of Sciences; ³Institute of Materials Chemistry, University of Vienna

Aluminum Alloys, Processing and Characterization — Behavior of Casting Alloys

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

Program Organizer: Hiromi Nagaumi, Soochow University

Tuesday PM
March 12, 2019

Room: 007A
Location: Henry B. Gonzalez
Convention Center

Session Chair: X. Grant Chen, Department of Applied Sciences
Université du Québec à Chicoutimi

2:00 PM Invited

Study on tensile behavior of high vacuum die-cast AlSiMgMn alloys:

Haidong Zhao¹; Fei Liu¹; Chen Hu¹; Runsheng Yang¹; Fengzhen Sun²; ¹South China University of Technology; ²Imperial College London

2:30 PM

Effect of manganese and strontium on iron intermetallics in recycled Al-7% Si alloy: James Mathew¹; Prakash Srirangam¹; ¹WMG

2:55 PM

Effect of Modified Strain Induced Melt Activation (M-SIMA) processing parameter on microstructure and mechanical properties of Al-7Si alloy: Chandan Choudhary¹; Durbadal Mandal¹; Kanai Lal Sahoo²; ¹NIT Durgapur; ²CSIR-NML, Jamshedpur

3:20 PM

Elevated-temperature low cycle fatigue behaviors of Al-Si 356 and 319 foundry alloys: S. Chen¹; Kun Liu¹; X. G. Chen¹; ¹University of Quebec at Chicoutimi

3:45 PM Break

4:00 PM

High conductivity AlSi7Mg (A356) alloys – market, production, optimization and development: Takeshi Saito¹; Petter Åsholt¹; Leonhard Heusler¹; Thomas Balkenhol¹; Kjetil Steen¹; ¹Hydro Aluminium

4:25 PM

Die-casting and Recyclability of LREE Aluminum-Cerium Alloys: Zachary Sims¹; Hunter Henderson²; David Weiss³; Michael Thompson²; Michael Kesler²; Ryan Ott⁴; Fanqiang Meng⁴; Eric Stromme⁵; Sam Kassoumeh⁶; James Evangelista⁶; Gerald Begley⁷; Orlando Rios²; Ananth Iyer⁸; Heejong Lim⁹; ¹Univ Of Tennessee; ²ORNL; ³Eck Industries; ⁴Ames National Laboratory; ⁵US Navy; ⁶Shiloh Industries; ⁷Tennessee Tooling and Engineering; ⁸Purdue University; ⁹University of Seoul

4:50 PM

Influence of die soldering on die erosion and soldering layer between Al melts and die in Al-Si-Fe alloys: Jong Min Kim¹; Jeong IL Youn¹; Young Jig Kim¹; ¹Sungkyunkwan University

Aluminum Reduction Technology — Joint Session Alumina Feeding and Alumina Scale Formation

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

Program Organizer: Marc Dupuis, GeniSim Inc

Tuesday PM
March 12, 2019

Room: 004
Location: Henry B. Gonzalez
Convention Center

Session Chair: Jayson Tessier, Alcoa

2:00 PM Introductory Comments

2:05 PM

Alumina feeding and raft formation: Raft collection and process parameters: Sindre Engzelius Gylver¹; Nina Helene Omdahl²; Ann Kristin Prytz³; Astrid Johanne Meyer³; Lorentz Petter Lossius³; *Kristian Etienne Einarsrud*¹; ¹NTNU; ²Alcoa Mosjøen; ³Hydro Aluminium

2:30 PM

Evolution of mechanical resistance of alumina raft exposed to the bath in Hall-Héroult cells: *Sandor Poncsak*¹; Lovatiana Rakotondramanana¹; Laszlo Kiss¹; Thomas Roger¹; Sebastien Guérard²; Jean François Bilodeau²; ¹University of Quebec at Chicoutimi; ²CRDA Rio Tinto Aluminium

2:55 PM

Dynamic modelling of alumina feeding in an aluminium electrolysis cell: *Valdis Bojarevics*¹; ¹University of Greenwich

3:20 PM

Development of a mathematical model to follow alumina injection: *Thomas Roger*¹; Laszlo Kiss¹; Sandor Poncsak¹; Kirk Fraser²; Sébastien Guérard³; Jean-François Bilodeau³; ¹Université du Québec à Chicoutimi; ²CNRC; ³CRDA Rio Tinto Aluminium

3:45 PM Break

4:00 PM

The micro- and macrostructure of alumina rafts: Sindre Engzelius Gylver¹; Nina Helene Omdahl²; Stein Rørvik³; Ingrid Hansen¹; Andrea Nautnes¹; Sofie Nilsen Neverdal¹; *Kristian Etienne Einarsrud*¹; ¹NTNU; ²Alcoa Mosjøen; ³SINTEF Industry

4:25 PM

Alumina scale composition and growth rate in distribution pipes: *Ingrid Haugland*¹; Ole Kjos¹; Arne Røyset²; Per Erik Vullum²; Thor Aarhaug¹; Maths Halstensen³; ¹Sintef; ²SINTEF AS; ³University of South-Eastern Norway

4:50 PM

Investigation on scale formation in aluminium industry by means of a fouling probe: *Daniel Clos*¹; Petter Nekså²; Sverre Johnsen³; Ragnhid Aune¹; ¹NTNU; ²SINTEF Energy; ³SINTEF Materials and Chemistry

5:15 PM Concluding Comments

Atom Probe Tomography for Advanced Characterization of Metals, Minerals and Materials II — High-entropy Alloys and Nuclear Materials

Sponsored by: TMS Structural Materials 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; David Seidman, Northwestern University; Keith Knipling, Naval Research Laboratory; Gregory Thompson, Univ of Alabama; Simon Ringer, Univ of Sydney; Arun Devaraj, Pacific Northwest National Laboratory; Gang Sha, Nanjing University of Science and Technology

Tuesday PM
March 12, 2019

Room: 303A
Location: Henry B. Gonzalez
Convention Center

Session Chairs: Arun Devaraj, Pacific Northwest National Laboratory; Haiming Wen, Missouri University of Science & Technology

2:00 PM Invited

Coupled Atom Probe Tomography – Transmission Electron Microscopy Investigation of Microstructural Inversion in a Refractory High Entropy Alloy (Invited): Vishal Soni¹; Talukder Alam¹; Bharat Gwalani¹; Oleg Senkov²; Daniel Miracle³; *Rajarshi Banerjee*¹; ¹University of North Texas; ²UES Inc; ³Air Force Research Laboratory

2:35 PM

APT characterization of irradiation-induced segregation and precipitation in Al_xCoCrFeNi high entropy alloys: *Tengfei Yang*¹; Wei Guo²; Jonathan Poplawsky²; Rong Hu³; Gang Sha³; Dongyue Li⁴; Songqin Xia⁴; Yong Zhang⁴; Yugang Wang⁵; Steven Zinkle¹; ¹Department of Nuclear Engineering, University of Tennessee; ²Center for Nanophase Materials Sciences, Oak Ridge National Laboratory; ³Herbert Gleiter Institute of Nanoscience, Nanjing University of Science and Technology; ⁴State Key Laboratory for Advanced Metals and Materials, University of Science and Technology Beijing; ⁵State Key Laboratory of Nuclear Physics and Technology, Center for Applied Physics and Technology, Peking University

2:55 PM

Effects of severe plastic deformation and irradiation on segregation and precipitation in ultrafine-grained steels studied using atom-probe tomography: *Andrew Hoffman*¹; Haiming Wen¹; ¹Missouri University of Science & Technology

3:15 PM

Analysis of Hydrogen Isotopes in Zircalloy-4 using Atom Probe Tomography: *Arun Devaraj*¹; Elizabeth Kautz¹; Daniel Perea¹; Bruce Arey¹; John Hardy¹; Bradley Johnson¹; David Senor¹; ¹Pacific Northwest National Lab

3:35 PM Break

3:55 PM Invited

Atomic scale analysis of grain boundary deuteride growth front in Zircaloy-4: A.J. Breen¹; I. Mouton¹; W. Lu¹; Siyang Wang²; A. Szczeplaniak¹; P. Kontis¹; L.T. Stephenson¹; A.K. da Silva¹; C. Liebscher¹; D Raabe¹; Thomas Britton²; M. Herbig¹; *Baptiste Gault*¹; ¹Max-Planck-Institut für Eisenforschung; ²Imperial College London

4:30 PM

APT and STEM analysis of a metallic nuclear fuel to reveal the influence of thermomechanical processing on their microstructural evolution: *Arun Devaraj*¹; Elizabeth Kautz¹; Libor Kovarik¹; Saumyadeep Jana¹; Curt Lavender¹; Vineet Joshi¹; ¹Pacific Northwest National Lab

4:50 PM Invited

Using atom probe tomography to understand neutron irradiated effects in high temperature superconductors for nuclear fusion applications: *Philip Edmondson*¹; ¹Oak Ridge National Laboratory

Biological Materials Science — Bioenabled Materials and Systems

Sponsored by: TMS Functional Materials Division, TMS Structural Materials Division, TMS: Biomaterials Committee
Program Organizers: Rajendra Kasinath, DePuy Synthes (Johnson and Johnson); Steven Naleway, University of Utah; Vinoy Thomas, University of Alabama at Birmingham; Jing Du, Penn State University

Tuesday PM
March 12, 2019

Room: 217A
Location: Henry B. Gonzalez
Convention Center

Session Chairs: David Restrepo, University of Texas San Antonio; Jing Du, Penn State University

2:00 PM Keynote

Functional Hybrid Material Systems Designed by Guided Biofabrication: *Candan Tamerler*¹; ¹University of Kansas

2:40 PM

A nacre-like glass that surpasses the impact resistance of tempered glass: *Zhen Yin*¹; Florent Hannard¹; Francois Barthelat²; ¹McGill University; ²McGill University

3:00 PM

Nanoscale toughening mechanisms in the cell walls of wood: *Mona Maass*¹; Holger Miltz¹; *Cynthia Volkert*¹; ¹Univ of Goettingen

3:20 PM

Discrete element models of crack propagation and toughness in idealized, enamel-inspired composites: *John Pro*¹; Francois Barthelat¹; ¹McGill University

3:40 PM Break

4:00 PM Invited

Using biomineralization routes to build cancer testbeds: *Kalpana Katti*¹; MD Shahjahan Molla¹; Sumanta Kar¹; Dinesh Katti¹; ¹North Dakota State Univ

4:30 PM

In vivo evaluation of electrochemically deposited collagen biomaterial for soft tissue healing: *Xingguo Cheng*¹; ¹Southwest Research Institute

4:50 PM

Processing of a formable bioactive glass composite for bone tissue scaffolding: *Caitlin Guzzo*¹; John Nychka¹; ¹Univ of Alberta

5:10 PM

3D printed nanocomposite for interstitial hyperthermia of cancer cells: *Kwabena Kan-Dapaah*¹; John Obayemi²; Ali Salifu²; Nima Rahbar²; Wole Soboyejo²; ¹University of Ghana; ²Worcester Polytechnic Institute

5:30 PM

Dispersion of Nanosized Ceria Compounds using Biocompatible Hydrophilic Coating in Biological Fluid and Effect of Coating on Radical Scavenging Characteristics: *Nandani Rai*¹; Raagdeep Raj¹; Devivasha Bordoloi¹; Aparna Zagabathuni¹; Ajaikumar Kunnumakkara; Ajaikumar Kunnumakkara¹; Subramani Kanagaraj¹; ¹Indian Institute of Technology Guwahati

Bulk Metallic Glasses XVI — Structures and Mechanical Properties

Sponsored by: TMS: Mechanical Behavior of Materials Committee
Program Organizers: Xie Xie, FCA US LLC; Peter Liaw, University of Tennessee; Yanfei Gao, University of Tennessee; Hahn Choo, University of Tennessee; Yunfeng Shi, Rensselaer Polytechnic Institute; Gongyao Wang, Alcoa; Robert Maass, University of Illinois at Urbana-Champaign; Muhammad Rafique, RMIT University

Tuesday PM
March 12, 2019

Room: 206B
Location: Henry B. Gonzalez
Convention Center

Session Chairs: Takeshi Egami, The University of Tennessee, Knoxville; Xie Xie, FCA US LLC

2:00 PM Keynote

Why Liquid Becomes Glass?: *Takeshi Egami*¹; ¹Univ of Tennessee

2:30 PM Invited

Two-way tuning of structural order in metallic glasses: *Qiaoshi Zeng*¹; ¹Hpstar

2:50 PM Invited

High Pressure Quenched Metallic Glasses: *Wojciech Dmowski*¹; Stanislaw Gierlotka²; Yoshihiko Yokoyama³; Takeshi Egami¹; ¹Univ Of Tennessee; ²Institute of High Pressure Physics; ³Tohoku University

3:10 PM Invited

The high-iron content Fe-based amorphous alloys with good soft magnetic property: *Ke-Fu Yao*¹; Ji-Li Jia¹; Ling-xiang Shi¹; Jin-Feng Li¹; ¹Tsinghua Univ

3:30 PM Break

3:50 PM Keynote

On the Fracture Toughness of Bulk-Metallic Glasses: *Robert Ritchie*¹; Jun Ding²; Mark Asta¹; Bernd Gludovatz³; Thomas Pekin¹; Andrew Minor¹; ¹Univ of California; ²Lawrence Berkeley National Laboratory; ³University of New South Wales

4:20 PM Invited

On the Fracture Toughness and Fatigue Strength of Ni-based glasses: *Bernd Gludovatz*¹; Edwin Chang²; Mingxi Zheng²; Sara Messina²; Jong Na³; Maximilien Launey³; Marios Demetriou³; William Johnson⁴; ¹UNSW Sydney; ²University of California, Berkeley; ³Glassmetal; ⁴Caltech

4:40 PM Invited

In-situ Deformation Behavior of Bulk Metallic Glass Composites at Small Length-scales: Saideep Muskeri¹; Vahid Hasannaemi¹; *Sundeep Mukherjee*¹; ¹Univ of North Texas

5:00 PM Invited

Guiding and Deflecting Cracks in Bulk Metallic Glasses to Increase Damage Tolerance: *Jun Yi*¹; Wei Hua Wang²; John Lewandowski³; ¹Laboratory for Microstructures, Institute of Materials, Shanghai University; ²Institute of Physics, Chinese Academy of Sciences; ³Department of Materials Science and Engineering, Case Western Reserve University

5:20 PM Invited

Microstructure and Fracture Toughness Evolution a Zr-based Bulk Metallic Glass after Thermomechanical Processing: *Jamie Krucic*¹; Bosong Li¹; Bernd Gludovatz¹; Anna Ceguerra²; Keita Nomoto¹; Simon Ringer²; Shenghui Xie³; ¹UNSW Sydney; ²University of Sydney; ³Shenzhen University

Ceramic Materials for Nuclear Energy Research and Applications — Irradiation Effect

Sponsored by: TMS: Nuclear Materials Committee

Program Organizers: Yongfeng Zhang, Idaho National Laboratory; Xian-ming (David) Bai, Virginia polytechnic Institute and State University; David Andersson, Los Alamos National Laboratory; Thierry Wiss, European Commission- JRC -Institute of Transuranium Elements

Tuesday PM
March 12, 2019

Room: 214B
Location: Henry B. Gonzalez
Convention Center

Session Chairs: Thierry Wiss, European Commission; Jian Wang, University of Nebraska

2:00 PM Invited

Effects of Electronic Energy Loss on Irradiation Damage Production and Evolution in Ceramics: *William Weber*¹; Eva Zarkadoula²; Yanwen Zhang²;

¹Univ of Tennessee; ²Oak Ridge National Laboratory

2:30 PM

Strength-Ductility-Irradiation Tolerance of Nanostructured Fe – Amorphous ceramic SiOC Composites: *Jian Wang*¹; Qing Su¹; Kaisheng Ming¹; Chao Gu¹; Michael Nastasi¹; ¹University of Nebraska–Lincoln

2:50 PM Invited

Defects and microstructure evolution in oxides under irradiation: *Anter El-Azab*¹; Thomas Hochrainer²; ¹Purdue Univ; ²Technische Universität Graz

3:20 PM

SiC-SiC fiber composites for accident-tolerant fuel applications: micromechanical study of radiation and temperature effects: *Yevhen Yayachuk*¹; David Armstrong¹; Christian Deck²; Peter Hosemann³; ¹University of Oxford; ²General Atomics; ³University of California, Berkeley

3:40 PM Break

4:00 PM Invited

Dynamic structures resulting from ion radiation interactions with porous ceramics: Nathan Madden¹; Khalid Hattar²; *Jessica Krogstad*³; ¹Univ of Illinois Urbana-Champaign; ²Sandia National Laboratory; ³Univ of Illinois Urbana-Champaign

4:30 PM

Radiation damage studies in plutonium containing ceramics: *Thierry Wiss*¹; Oliver Dieste¹; Emanuele De Bona¹; Alessandro Benedetti¹; Ondrej Benes¹; Jean-Yves Colle¹; Dragos Staicu¹; Rudy Konings¹; Vincenzo Rondinella¹; ¹JRC Karlsruhe

4:50 PM

Visualizing Stress Distribution of Irradiated and Corroded SiC Using Nano-Mechanical Raman Spectroscopy: *Hao Wang*¹; Debapriya Mohanty¹; Vikas Tomar¹; ¹Purdue University

5:10 PM

Radiation effects on SiC/SiC composites for nuclear energy application: *Shradha Agarwal*¹; William Weber¹; ¹University of Tennessee and Oak Ridge National Laboratory

Characterization of Minerals, Metals, and Materials — Process and Characteristics of Advanced Ceramics and Glasses I

Sponsored by: 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; Yunus Kalay, Middle East Technical University; John Carpenter, Los Alamos National Laboratory; Jiann-Yang Hwang, Michigan Technological Univ; Sergio Monteiro, Military Institute of Engineering; Chenguang Bai, Chongqing Univ; Juan Escobedo-Diaz, University of New South Wales; Pasquale Russo Spena, Free University of Bozen-Bolzano; Ramasis Goswami, Naval Research Laboratory

Tuesday PM
March 12, 2019

Room: 212B
Location: Henry B. Gonzalez
Convention Center

Session Chairs: Huazhang Zhai, Beijing Institute of Technology; Bowen Li, Michigan Technological University

2:00 PM Introductory Comments

2:05 PM Invited

Microscale investigation of fracture strength in hot pressed silicon carbide: *Daniel Magagnosc*¹; Brian Schuster¹; ¹U.S. Army Research Laboratory

2:25 PM Invited

Preparation and Adsorption Properties of Ultrathin Boron Nitride Nanosheets: *Huazhang Zhai*¹; ¹Beijing Institute of Tech

2:45 PM

Structure, phase composition and properties of ceramics based on AlMgB14, obtained from various powders: *Ilia Zhukov*¹; Pavel Nikitin¹; Alexander Vorozhtsov¹; ¹Tomsk State University

3:05 PM

Valorization of waste glass in the production of traditional ceramics: *Stefan Csaki*¹; Jan Ondruska²; Igor Stubna²; Michal Knappek¹; Patrik Dobron¹; Frantisek Chmelik¹; ¹Charles University; ²Constantine the Philosopher University in Nitra

3:25 PM Break

3:40 PM

TEM observations of the effect of boron content on the amorphization of boron carbide: *Ankur Chauhan*¹; Mark Schaefer²; Sisi Xiang³; Kelvin Xie³; Vladislav Domnich²; Richard Haber²; Kevin Hemker¹; ¹Johns Hopkins University; ²Rutgers University; ³Texas A & M University

4:00 PM

Ultra-high strength above 10 GPa and short-range atomic order of amorphous boron: *Jessica Maita*¹; Gyuho Song¹; Mariel Colby¹; Seok-Woo Lee¹; ¹University of Connecticut

4:20 PM

Structural and electrical properties of vacuum annealed ruthenium thin films on 4H-SiC for extremely high temperature operating Schottky barrier diodes: *Kinnock Munthali*¹; ¹University of Namibia

4:40 PM

Micropillar Compression Study of Plastic Deformation in Silicate Glasses: *Shefford Baker*¹; Zachary Rouse¹; Sanjit Bhowmick²; Praveena Manimunda²; Nicole Wiles¹; S.A. Syed Asif²; Thomas Wyrobek²; ¹Cornell Univ; ²Bruker Nano Surfaces

5:00 PM

Macroporous ceramics derived from particle-stabilized emulsions: *Jinhong Li*¹; Zhiwei Yang¹; Xiang Wang¹; ¹China University of Geosciences

3:20 PM Break

3:40 PM

Materials discovery under electrochemical conditions: *Mira Todorova*¹; Sudarsan Surendralal¹; Joerg Neugebauer¹; ¹Mpi Fuer Eisenforschung

4:00 PM

A python-based toolkit for material design: *Shengyen Li*¹; Steven Mates¹; Mark Stoudt¹; Carelyn Campbell¹; ¹National Institute of Standards and Technology

4:20 PM

Optimizing elastic moduli of the silicate glasses through high-throughput atomistic modeling and machine learning techniques: *Yong-Jie Hu*¹; Ge Zhao²; Tyler Del Rose¹; Liang Qi¹; ¹University of Michigan; ²The Pennsylvania State University

4:40 PM

Towards an Autonomous Efficient Materials Discovery Framework: An Example of Optimal Experiment Design Under Model Uncertainty: *Anjana Talapatra*¹; Shahin Boluki¹; Xiaoning Qian¹; Raymundo Arroyave¹; Edward Dougherty¹; ¹Texas A & M Univ

Computational Thermodynamics and Kinetics — Phase Transformations

Sponsored by: TMS: Computational Materials Science and Engineering Committee

Program Organizers: Fadi Abdeljawad, Clemson University; Hesam Askari, University of Rochester; Emine Gulsoy, Northwestern Univ; Joel Berry, University of Pennsylvania ; Damien Tourret, IMDEA Materials; Mohsen Asle Zaeem, Colorado School of Mines; James Morris, Oak Ridge National Laboratory

Tuesday PM
March 12, 2019

Room: 225C
Location: Henry B. Gonzalez
Convention Center

Session Chair: To Be Announced

2:00 PM Invited

Soft Phonon Modes as a Predictor of Structural Grain Boundary Phase Transformations?: *Chad Sinclair*¹; Louis Hebrard¹; ¹University of British Columbia

2:30 PM

Developing accurate models of phase transformations from first-principles: *Anirudh Raju Natarajan*¹; Anton Van der Ven¹; ¹University of California, Santa Barbara

2:50 PM

Atomic-scale phase field investigation of ordering in Metamagnetic Shape Memory Alloys: *Yuhao Wang*¹; Vahid Attari¹; Thien Duong¹; Daniel Salas¹; Ibrahim Karaman¹; Raymundo Arróyave¹; ¹Texas A&M University

3:10 PM Invited

Chemically heterogeneous transition metal dichalcogenide monolayers under strain: bend, shuffle, and slip: *Mikko Haataja*¹; ¹Princeton Univ

3:40 PM Break

4:00 PM Invited

Modeling Mechanisms in Rapid Solidification Using Structural Phase Field Crystal Theories: *Nikolas Provatas*¹; ¹McGill Univ

4:30 PM

Study of Dendrite Growth under Forced Convection in Superalloy Solidification by Multiphase-field Coupled Lattice Boltzmann Method: *Cong Yang*¹; Qingyan Xu¹; Baicheng Liu¹; ¹Tsinghua University

4:50 PM

Phase Transformations in Al Alloys using Computational Thermodynamic and Kinetic Modeling: *Kyle Fitzpatrick-Schmidt*¹; Victor Champagne²; Danielle Cote¹; ¹Worcester Polytechnic Institute; ²US Army Research Laboratory

5:10 PM

Three-Dimensional Modeling of Bubble-Dendrite Interactions under Microgravity and Terrestrial Conditions: *Seyed Amin Nabavizadeh*¹; Mohsen Eshraghi²; Sergio Felicelli¹; ¹University of Akron; ²California State University

5:30 PM

Thermodynamics and Coarsening of Solid Sn in Pb-Sn Liquid Mixtures using Hybrid Molecular Dynamics and Monte Carlo Simulations: *Seyyed Alireza Etesami*¹; Mohamed Laradji¹; Ebrahim Asadi¹; ¹University of Memphis

Deformation and Damage Behavior of High Temperature Alloys — Superalloys: Creep

Sponsored by: TMS Structural Materials Division, TMS: High Temperature Alloys Committee

Program Organizers: Michael Titus, Purdue University; Qiang Feng, University of Science and Technology Beijing; Akane Suzuki, GE Global Research; Jonathan Cormier, ENSMA - Institut Pprime - UPR CNRS 3346; Sammy Tin, Illinois Institute of Technology; Martin Detroit, National Energy Technology Laboratory

Tuesday PM
March 12, 2019

Room: 301C
Location: Henry B. Gonzalez
Convention Center

Session Chairs: Qiang Feng, University of Science and Technology Beijing; Michael Titus, Purdue University

2:00 PM Invited

Deformation Processes in γ' and γ''/γ''' Strengthened Ni-Base Superalloys: *Michael Mills*¹; ¹Ohio State Univ

2:30 PM

Deformation mechanisms of σ' and σ'' precipitates in IN718 Ni-based superalloys: *Longsheng Feng*¹; Duchao Lv²; Donald McAllister¹; Michael Mills¹; Yunzhi Wang¹; ¹The Ohio State University; ²Computherm LLC

2:50 PM

Dislocation core behavior in Ni-based superalloys: *Anne Marie Tan*¹; Christopher Woodward²; Dallas Trinkle³; ¹University Of Florida; ²Air Force Research Laboratory; ³University of Illinois at Urbana-Champaign

3:10 PM

Effects of eta phase on the high temperature creep behavior of Nimonic 263: *Walter Milligan*¹; *Ninad Mohale*¹; Paul Sanders¹; Calvin White¹; John Shingledecker²; ¹Michigan Technological Univ; ²Electric Power Research Institute

3:30 PM Break

3:50 PM

3D modeling of microstructure evolution in Ni-based superalloys under creep loading: *Maeva Cottura*¹; Benoît Appolaire²; Alphonse Finel³; Yann Le Bouar³; ¹Institut Jean Lamour & LEM, Onera, CNRS; ²Institut Jean Lamour; ³LEM, Onera, CNRS

4:10 PM

Role of Lattice Misfit in the Stability of Ni-based Single Crystal Superalloys: A Phase Field Study: *Harikrishnan Rajendran*¹; Jean-Briac le Graverend¹; ¹Texas A&M University

4:30 PM

Probing Creep Deformation Using High Temperature Nanoindentation and Bulk Mechanical Testing: *Ashton Egan*¹; Jiashi Miao¹; Connor Slone¹; Maryam Ghazisaedi¹; Yunzhi Wang¹; Stephen Niezgoda¹; Michael Mills¹; ¹The Ohio State University

4:50 PM

Deformation Behavior of a Metal-weld Exposed to High-Temperature CO₂-rich Environment: *Sajedur Akanda*¹; Reyixiati Repukaiti¹; Kyle Rozman¹; Ömer Dogan¹; Jeffrey Hawk¹; ¹National Energy Technology Lab

Electrode Technology for Aluminum Production — Cathodes and Electrode Technology

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

Program Organizer: Lorentz Petter Lossius, Hydro Aluminium AS

Tuesday PM
March 12, 2019

Room: 006D
Location: Henry B. Gonzalez
Convention Center

Session Chairs: Eirik Hagen, Hydro Aluminium AS, Primary Metal, Technology; Ronald Logan, Sunstone Development

2:00 PM Introductory Comments

2:05 PM

Carbon Cathode Wear in Aluminium Electrolysis Cells: *Samuel Senanu*¹; Tor Grande¹; Arne Petter Ratvik²; Zhaohui Wang²; ¹NTNU Norwegian University of Science and Technology; ²SINTEF

2:30 PM

Observation on the creep and cracking of graphite cathode in laboratory aluminum electrolysis: Yunfei Lian¹; Jilai Xue¹; *Cheng Zhang*¹; Xuan Liu¹; Haipeng Li¹; ¹University of Science and Technology Beijing

2:55 PM

Electrolytic properties and element migration behavior of Fe-TiB₂ composite cathode: *Yudong Liang*¹; Lijun Wang¹; Dengpeng Chai¹; Shengzhong Bao¹; Tingting Niu¹; Junwei Wang¹; Ying Liu¹; ¹Zhengzhou Non-ferrous Metals Research Institute Co Ltd

3:20 PM

Chemical properties of chromium oxide in KF-NaF-AlF₃ based low temperature electrolyte melt: *Shengzhong Bao*¹; Yudong Liang¹; Dengpeng Chai¹; Zhirong Shi¹; Guanghui Hou¹; ¹Zhengzhou Non-ferrous Metals Research Institute Co Ltd

3:45 PM Concluding Comments

Environmentally Assisted Cracking: Theory and Practice — Stress Corrosion Cracking I

Program Organizers: Bai Cui, University of Nebraska Lincoln; Raul Rebak, GE Global Research; Srujan Rokkam, Def-Aero, Advanced Cooling Technologies Inc

Tuesday PM
March 12, 2019

Room: 214C
Location: Henry B. Gonzalez
Convention Center

Session Chairs: Gary Was, University of Michigan; Xiaoyuan Lou, Auburn University

2:00 PM Invited

Mechanisms behind Irradiation Assisted Stress Corrosion Cracking: *Gary Was*¹; ¹Univ of Michigan

2:40 PM

Crack Growth Rate and Fracture Toughness of Irradiated Austenitic Stainless Steel Weld: *Yiren Chen*¹; Chi Xu²; Yong Yang²; Wei-ying Chen¹; Bogdan Alexandreanu¹; Ken Natesan¹; Appajosula Rao³; ¹Argonne National Lab; ²University of Florida; ³US Nuclear Regulatory Commission

3:00 PM

Fracture Mechanics-based Study of Stress Corrosion Cracking of SS304 Dry Storage Canister for Spent Nuclear Fuel: *Leonardi Tjayadi*¹; Nilesh Kumar²; K.L. Murty¹; ¹North Carolina State University Raleigh; ²University of Alabama

3:20 PM

Mechanisms of Mitigating Chloride-Induced Stress Corrosion Cracking in Austenitic Steels by Laser Shock Peening: *Xueliang Yan*¹; Fei Wang¹; Leimin Deng¹; Chenfei Zhang¹; Yongfeng Lu¹; Michael Nastasi¹; Bai Cui¹; ¹University of Nebraska-Lincoln

3:40 PM Break

4:00 PM Invited

Environmental cracking of laser-fused alloys under non-irradiated and irradiated conditions: *Xiaoyuan Lou*¹; Mi Wang²; Miao Song²; Gary Was²; Rebek Raul³; ¹Auburn University; ²University of Michigan; ³GE Global Research

4:40 PM

Bulk nc-Materials with Tailored Density Enables Design of Retrievable Corrosion Sensors: *Ting Chen*¹; Anuvind Akula²; Ram Shenoy²; Saadedine Tebbal¹; Indranil Roy²; ¹WellDiver, SET Laboratories; ²WellDiver, UniPolar Technology

5:00 PM

Modelling the effect of iodine at stress corrosion crack tips in zirconium using hybrid quantum mechanics/molecular dynamics simulations: *Vlad Podgurschi*¹; ¹Imperial College London

Fatigue in Materials: Multi-scale and Multi-environment Characterizations and Computational Modeling — Data-driven Investigations of Fatigue

Sponsored by: TMS: Computational Materials Science and Engineering Committee, TMS: Integrated Computational Materials Engineering Committee

Program Organizers: Jean-Briac le Graverend, Texas A&M University; Ashley Spear, University of Utah; Antonios Kotsos, Drexel Univ; Garrett Pataky, Clemson University; Filippo Berto, Norwegian University of Science and Technology

Tuesday PM
March 12, 2019

Room: 301B
Location: Henry B. Gonzalez
Convention Center

Session Chair: Ashley Spear, University of Utah

2:00 PM Keynote

Materials-specific machine learning: fatigue modeling and beyond: *Bryce Meredig*¹; ¹Citrine Informatics

2:40 PM

A data-driven approach to describe fatigue damage evolution and crack initiation in a BCC steel microstructure: *Ali Riza Durmaz*¹; Thomas Straub¹; Christoph Eberl¹; ¹Fraunhofer IWM

3:00 PM Invited

Uncertainty, Probabilistic, and Statistical Modeling: *D. Gary Harlow*¹; ¹Lehigh University

3:20 PM Break

3:40 PM Invited

Surface roughness parameters as predictive damage indices for crack initiation and small crack propagation: Jalal Fathi Sola¹; Randall Kelton¹; Efstathios Meletis¹; *Haiying Huang*¹; ¹Univ of Texas Arlington

4:00 PM

Linking Fatigue Probability Distributions to Coupled Microstructure Attributes Surrounding Fatigue Hot-Spots: *Adrienne Muth*¹; Surya Kalidindi¹; Adam Pilchak²; Reji John²; David McDowell¹; ¹Georgia Institute of Technology; ²Air Force Research Laboratory

4:20 PM

Virtual Testing for Fiber Reinforced Composites Coupled with Multimodal NDE Monitoring: *Brian Wisner*¹; Mohammadreza Bahadori¹; Mira Shehu¹; Melvin Mathew¹; Harsh Baid²; Frank Abdi²; Antonios Kotsos¹; ¹Drexel Univ; ²AlphaSTAR Corporation

4:40 PM

Complex 3D Microstructure and Short Crack Growth Correlation by a Surrogate Model in Ti-6Al-4V: *Meysam Hassanipour*¹; Shinta Watanabe¹; Kyosuke Hirayama¹; Hiroyuki Toda¹; Han Li¹; Kentaro Uesugi¹; Akihisa Takeuchi¹; ¹Kyushu University

Green Materials Engineering: An EPD Symposium in Honor of Sergio Monteiro — Properties and Characterization of Green Materials

Sponsored by: TMS: Materials Characterization Committee

Program Organizers: Shadia Ikhmayies, Al Isra University; Jian Li, Canmetmaterials; Carlos Mauricio Vieira, State University of the North Fluminense; Fabio Braga, Military Institute of Engineering

Tuesday PM
March 12, 2019

Room: 008A
Location: Henry B. Gonzalez
Convention Center

Session Chairs: Sergio Monteiro, Military Institute of Engineering, IME; Luis Silva, IME

2:00 PM Introductory Comments

2:05 PM Keynote

Fish Skin: A Natural Inspiration for Novel Materials and Coatings: Adam Drelich¹; *Jaroslav Drelich*¹; ¹Michigan Technological Univ

2:45 PM

Mechanical and Morphological Properties of Eucalyptus Fibers: Juliana Soares de Faria¹; *Felipe Perisse Duarte Lopes*¹; Carlos Fontes Vieira¹; Sergio Neves Monteiro¹; ¹UENF

3:05 PM

Optimization of Torrefaction Parameters for *Tectona grandis* for High Energetic Yields: *Jamiu Odusote*¹; Adekunle Adeleke¹; Olumuyiwa Lasode¹; Madhurai Malathi²; Dayananad Paswan²; ¹University of Ilorin; ²CSIR-National Metallurgical Laboratory

3:25 PM Break

3:35 PM

Characterization of Arapaima fish scales and related reinforced epoxy matrix composites by XRD, EDS and SEM: *Wendell Bruno Almeida Bezerra*¹; Sergio Neves Monteiro¹; Michelle Souza Oliveira¹; Fábio Da Costa Garcia Filho¹; Luana Cristyne Da Cruz Demosthenes¹; Luís Carlos da Silva¹; ¹IME

3:55 PM

Piassava Fibers: Morphologic and Spectroscopic Aspects: *Fabio Garcia Filho*¹; Michelle Oliveira¹; Luana Demosthenes¹; Sergio Monteiro¹; Fernanda Luz¹; Artur Pereira¹; ¹Military Institute of Engineering

4:15 PM

Structural characterization by XRD and SEM of fique fabrics in epoxy composites: *Michelle Oliveira*¹; Artur Camposo¹; Fábio Garcia¹; Luana Demosthenes¹; Fábio Braga¹; Fernanda Luz¹; Sergio Monteiro¹; ¹Military Institute of Engineering

Heterogeneous and Gradient Materials (HGM III): Tailoring Mechanical Incompatibility for Superior Properties — Gradient Materials II: Property and Processing

Program Organizers: Yuntian Zhu, North Carolina State University; Kei Ameyama, Ritsumeikan University; Irene Beyerlein, University of California, Santa Barbara; Yves Brechet, Grenoble-INP; Huajian Gao, Brown Univ; Hyoung Seop Kim, Pohang University of Science and Technology; Ke Lu, Institute of Metal Research; Xiaolei Wu, Chinese Academy of Sciences

Tuesday PM
March 12, 2019

Room: 209
Location: Henry B. Gonzalez
Convention Center

Session Chairs: Suveen Mathaudhu, University of California, Riverside; Bin Yang, University of Science and Technology Beijing; Troy Topping, California State University, Sacramento; Somuri Prasad, Sandia National Laboratories

2:00 PM Invited

Mechanical Performance and Thermal Stability of Gradient-Structured Copper: Sina Shahrezaei¹; *Suveen Mathaudhu*²; ¹Univ of California Riverside; ²Univ of California Riverside

2:25 PM

Characterization and Analysis of Functionally Graded Metallic Plates for Use in Personal Ballistic Protection: *Troy Topping*¹; Samuel Garrison-Terry¹; Elizabeth Keys¹; ¹California State University, Sacramento

2:45 PM Invited

Enhanced stability of nano-grained metals below a critical size: *Xiuyan Li*¹; K. Lu¹; ¹Institute of Metal Research C.A.S.

3:10 PM

Radiation and Corrosion Resistances of 316LN Austenitic Stainless Steel by Rotationally Accelerated Shot Peening: *Bin Yang*¹; Xudong Chen¹; Yuntian Zhu²; Yusheng Li³; ¹Univ of Science and Technology Beijing; ²North Carolina State University; ³Nanjing University of Science and Technology

3:30 PM

Mechanical properties and failure mechanisms of gradient nanoporous materials: *Paulo Branicio*¹; ¹Usc

3:50 PM Break

4:10 PM Invited

Usual Gradients Leading to Unusual Benefits: Two Case Studies: *C. Tasan*¹; S.M.T. Mousavi¹; Zhiyuan Liang¹; Dingshun Yan²; Jian Lu³; Mingxin Huang⁴; ¹Massachusetts Institute of Technology; ²Chinese Academy of Sciences; ³City University of Hong Kong; ⁴The University of Hong Kong

4:35 PM

The Mechanical Properties Investigation of Gradient Materials Processed by Surface Mechanical Attrition Treatment (SMAT): *Xinkun Zhu*¹; ¹Kunming Univ of Science & Technology

4:55 PM Invited

Gradient Microstructures in Single Crystals Induced by Sliding Contact (Invited): *Somuri Prasad*¹; Joseph Michael¹; Corbett Battaile¹; Bhaskar Majumdar²; ¹Sandia National Laboratories; ²New Mexico Institute of Technology

5:20 PM

Plastic deformation behavior of laser-processed nanoscale Al-Al₂Cu eutectic alloy: *Shujuan Wang*¹; Guisen Liu²; Qing Su²; Dongyue Xie²; Gu Chao²; Jian Wang²; Amit Misra³; ¹Los Alamos National Lab; ²University of Nebraska-Lincoln; ³University of Michigan

High Entropy Alloys VII — Alloy Development and Applications II

Sponsored by: TMS: Alloy Phases Committee

Program Organizers: Xie Xie, FCA US LLC; Peter Liaw, University of Tennessee; Michael Gao, National Energy Technology Laboratory; E-Wen Huang, National Chiao Tung University; Gongyao Wang, Alcoa Technical Center; Srivatsan Tirumalai, The University of Akron

Tuesday PM
March 12, 2019

Room: 207B
Location: Henry B. Gonzalez
Convention Center

Session Chairs: Carl Koch, North Carolina State Univ; Robert Ritchie, Univ of California

2:00 PM Keynote

Low Density High Entropy Alloys: A Review: *Carl Koch*¹; ¹North Carolina State Univ

2:30 PM Keynote

Damage-Tolerance in CrCoNi-Based Medium/High-Entropy Alloys: *Robert Ritchie*¹; Jun Ding²; Mark Asta¹; Bernd Gludovatz³; Easo George⁴; Qian Yu⁵; ¹Univ of California; ²Lawrence Berkeley National Laboratory; ³University of New South Wales; ⁴Oak Ridge National Laboratory; ⁵Zhejiang University

3:00 PM Invited

Deformation of Single-phase Small-scale HEAs at Cryogenic Temperatures: *Julia Greer*¹; Adenike Giwa¹; Zachary Aitken²; Yong-Wei Zhang²; Peter Liaw²; ¹California Institute of Technology; ²Institute for High Performance Computing

3:20 PM Invited

High-throughput Materials Design Using CALPHAD-based Informatics Tools: *Chuan Zhang*¹; Fan Zhang¹; Rui Feng²; Michael Gao³; Peter Liaw²; ¹Computherm LLC; ²University of Tennessee; ³National Energy Technology Laboratory

3:40 PM Break

4:00 PM Invited

ICME Design of a corrosion resistant HEA for harsh environments: *Pin Lu*¹; James Saal¹; Greg Olson¹; Tianshu Li²; Orion Swanson²; Gerald Frankel²; Angela Gerard³; Kathleen Quiambao³; John Scully³; ¹QuesTek Innovations; ²The Ohio State University; ³University of Virginia

4:20 PM

Design of advanced light-weight high-entropy alloys for high-temperature and cost-effective applications: Rui Feng¹; Chuan Zhang²; Michael Gao³; Fan Zhang²; *Peter Liaw*¹; ¹Univ of Tennessee, Knoxville; ²CompuTherm LLC; ³National Energy Technology Laboratory

4:40 PM Invited

Designing of coherent microstructure with cuboidal B2 nanoprecipitation strengthening in BCC-based high-entropy superalloys: *Qing Wang*¹; Beibei Jiang¹; Xiaona Li¹; Chuang Dong¹; Peter K. Liaw²; ¹Dalian University of Technology; ²The University of Tennessee

5:00 PM Invited

Solidification Processing and Microstructural Development in High-Entropy Alloys: *Reza Abbaschian*¹; Nicholas Derimow¹; Abraham Munitz²; Louis Santodonato³; ¹Univ of California Riverside; ²Nuclear Research Center-Negev; ³Oak Ridge National Laboratory

5:20 PM Invited

A Novel Dual-phase Gradient Material of High-entropy Alloy Prepared by Spark Plasma Sintering: *Wei Zhang*¹; Mingyang Zhang¹; Fangzhou Liu¹; Yingbo Peng²; Yong Liu¹; ¹Central South University; ²Nanjing Agricultural University

Hume-Rothery Symposium – Bulk and Interfacial Thermodynamics of Complex Materials: Insights Derived from Integrating Modeling and Experiment — Materials Design and Discovery II

Sponsored by: TMS: Alloy Phases Committee

Program Organizers: Raymundo Arroyave, Texas A&M University; Michael Gao, National Energy Technology Laboratory; Jeffrey Hoyt, McMaster Univ; Saryu Fensin, Los Alamos National Laboratory

Tuesday PM
March 12, 2019

Room: 304B
Location: Henry B. Gonzalez
Convention Center

Session Chairs: Michael Gao, National Energy Technology Laboratory; Jeffrey Hoyt, McMaster University

2:00 PM Invited

Challenges in scale-bridging computational materials science: *Alain Karma*¹; ¹Northeastern University

2:30 PM Invited

Interfacing ab initio calculations, Calphad models, thermodynamic databases, web interfaces and visualization tools: *Axel Van De Walle*¹; Ruoshi Sun¹; Qijun Hong¹; Sara Kadkhodaei¹; Chiraag Nataraj¹; Helena Liu¹; Sayan Samanta¹; Siya Zhu¹; ¹Brown University

3:00 PM Invited

Uncertainty quantification for solute transport modeling: *Dallas Trinkle*¹; ¹University of Illinois Urbana Champaign

3:30 PM Break

3:50 PM Invited

Machine Learning Applications in Materials Modeling, Data and Imaging: *Dane Morgan*¹; ¹Univ of Wisconsin

4:20 PM Invited

Band Gap Formation in Classic Oxide Mott Insulators and the Surprising Use of Special Quasirandom Structure (SQS) Construct for Spin Alloys: *Alex Zunger*¹; ¹University of Colorado

4:50 PM

Rethinking Diffusivity of Ni50Al50 Melt under Extreme Conditions: An ab initio Molecular Dynamics Study: *William Yi Wang*¹; Jian Tang¹; Xiangyi Xue¹; Deye Lin²; Tanvir Ahmed³; Jun Wang¹; Bin Tang¹; Shun-Li Shang⁴; Xingyu Gao²; Irina Belova³; Haifeng Song²; Graeme Murch³; Jinshan Li¹; Zi-Kui Liu⁴; ¹Northwestern Polytechnical Univ; ²Institute of Applied Physics and Computational Mathematics, Beijing; ³University of Newcastle; ⁴Pennsylvania State University

ICME Case Studies and Validation: Extreme Environments — Session II

Sponsored by: TMS Materials Processing and Manufacturing Division, TMS Structural Materials Division, TMS: High Temperature Alloys Committee, TMS: Integrated Computational Materials Engineering Committee, TMS: Mechanical Behavior of Materials Committee

Program Organizers: James Saal; Mark Carroll, Federal-Mogul Powertrain; Xuan Liu, Pratt & Whitney; Dongwon Shin, Oak Ridge National Laboratory; Laurent Capolungo, Los Alamos National Laboratory

Tuesday PM
March 12, 2019

Room: 207A
Location: Henry B. Gonzalez
Convention Center

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

2:00 PM Invited

Resisting attack by hot CO₂; a comparison of Fe- and Ni-base alloys: *David Young*¹; Jianqiang Zhang¹; ¹Univ of New South Wales

2:40 PM Invited

Design and analysis of mesoscale reduced order models for predicting microstructure evolution in extreme environments: Aaron Kohnert¹; James Stewart²; Laurent Capolungo¹; *Remi Dingreville*²; ¹Los Alamos National Laboratory; ²Sandia National Laboratories

3:20 PM Break

3:40 PM Invited

Predicting behavior and designing alloys for extreme environments: *Bruce Pint*¹; ¹Oak Ridge National Laboratory

4:20 PM Invited

Design of creep-resistant, alumina-forming ferrous alloys with ICME approach: *Yukinori Yamamoto*¹; Michael Brady¹; Govindarajan Muralidharan¹; Bruce Pint¹; Dongwon Shin¹; Sangkeun Lee¹; Michael Santella²; Philip Maziasz²; ¹Oak Ridge National Lab; ²Oak Ridge National Lab (Retired)

5:00 PM

Materials for extreme environments: The role of data analytics: *Ram Devanathan*¹; Jovan Araiza¹; Jennifer Bauer²; Gary Black¹; Michael Gao²; Michael Glazoff³; Lianshan Lin⁴; Thomas Lograsso⁵; Turab Lookman⁶; Pratik Ray⁵; Vyacheslav Romanov²; Kelly Rose²; Arun Sathanur¹; Dongwon Shin⁴; Ashley Weber¹; Yukinori Yamamoto⁴; Jeffrey Hawk²; ¹Pacific Northwest National Laboratory; ²National Energy Technology Laboratory; ³Idaho National Laboratory; ⁴Oak Ridge National Laboratory; ⁵Ames Laboratory; ⁶Los Alamos National laboratory

Interfaces in Structural Materials: An MPM D Symposium in Honor of Stephen M. Foiles — Microstructural Evolution II

Sponsored by: The Minerals, Metals and Materials Society, TMS: Computational Materials Science and Engineering Committee

Program Organizers: Fadi Abdeljawad, Clemson University; Eric Homer, Brigham Young University; Elizabeth Holm, Carnegie Mellon University; Mark Asta, Univ of California Berkeley

Tuesday PM
March 12, 2019

Room: 302C
Location: Henry B. Gonzalez
Convention Center

Session Chair: To Be Announced

2:00 PM Invited

Phase transformation strengthening in high entropy alloys: *Maryam Ghazisaeidi*¹; Changning Niu¹; Carlyn LaRosa¹; Jiashi Miao¹; Michael Mills¹; ¹Ohio State Univ

2:30 PM

Coupling of the trajectory of grain boundaries with the diffusion-controlled growth dynamics of alloys: *Silvere Akamatsu*¹; Sabine Bottin-Rousseau²; Supriyo Ghosh³; Alain Karma⁴; Mathis Plapp¹; ¹CNRS; ²Sorbonne University; ³TAM University; ⁴NEU

2:50 PM

Atomic-level description of grain boundary structure and dynamics in Al-based alloy: *Marcela Trybula*¹; Pawel Zieba¹; ¹Institute Metallurgy and Materials Science PAS

3:10 PM Invited

Grain boundary diffusivity in nanocrystalline metals: stability and transport: *Jessica Krogstad*¹; ¹Univ of Illinois Urbana-Champaign

3:40 PM Break

4:00 PM

Solid-liquid interface migration in terbium: kinetics vs. thermodynamics: *Mikhail Mendeleev*¹; Feng Zhang¹; Huajing Song¹; Yang Sun¹; Cai-Zhuang Wang¹; Kai-Ming Ho¹; ¹Ames Lab

4:20 PM

Phase transformations in nanocrystalline Fe alloys: interface generation and thermal stability: *Dor Amram*¹; Christopher Schuh¹; ¹Massachusetts Institute of Technology

4:40 PM

Kinematic accessibility and thermodynamic stability of geometrically complex grain boundaries: *Logan Ware*¹; Daniel Suzuki¹; Zachary Cordero¹; ¹Rice University

5:00 PM

A three-dimensional study of the grain boundary networks in conventional and grain boundary engineered 316L stainless steels: *Qin Bai*¹; Shuang Xia¹; Tingguang Liu¹; ¹Shanghai University

5:20 PM

Phase competition during solidification of Terbium: *Huajing Song*¹; Mikhail Mendeleev¹; ¹Ames Laboratory US Department of Energy

Materials for Molten Salt Energy Systems — Thermodynamics and Electrochemistry

Sponsored by: TMS: Corrosion and Environmental Effects Committee, TMS: Nuclear Materials Committee

Program Organizers: Stephen Raiman, Oak Ridge National Laboratory; Jinsuo Zhang, Virginia Polytechnic Institute and State University; Kumar Sridharan, Univ of Wisconsin-Madison; Judith Vidal, National Renewable Energy Laboratory; Michael Short, MIT

Tuesday PM
March 12, 2019

Room: 008B
Location: Henry B. Gonzalez
Convention Center

Session Chair: Jinsuo Zhang, Virginia Polytechnic Institute and State University

2:00 PM Introductory Comments

2:05 PM

Modeling Molten Salt Chemical Behavior for Nuclear Reactor Applications: *Theodore Besmann*¹; Johnathan Ard¹; Jacob McMurray²; ¹University of South Carolina; ²Oak Ridge National Laboratory

2:35 PM

Electrochemistry to understand and control materials corrosion in molten Li₂BeF₄ (FLiBe) salt: *William Doniger*¹; Mohamed Elbakhshwan¹; Cody Falconer¹; Karl Britsch¹; Adrien Couet¹; Kumar Sridharan¹; ¹Univ of Wisconsin Madison

2:55 PM

Thermodynamics coupled molten salt reactor performance simulations: *Jacob McMurray*¹; Theodore Besmann²; Jonathan Ard²; Ben Collins¹; Ben Betzler¹; Bernie Fitzpatrick³; Markus Piro³; Stephen Raiman¹; Lou Qualls¹; ¹Oak Ridge National Laboratory; ²University of South Carolina; ³University of Ontario Institute of Technology

3:15 PM

Chromium corrosion properties in molten salt: fundamental data measurement and salt structure identification: *Jinsuo Zhang*¹; Yafei Wang¹; ¹Virginia Polytechnic Institute and State University

3:35 PM Break

3:55 PM

Use of Carbon Tetrachloride to Remove Trace Oxide and Lower Corrosivity of Molten Chloride Salts: *James Kurley*¹; Richard Mayes¹; Stephen Raiman¹; Phillip Halstenberg¹; Abbey McAlister¹; ¹Oak Ridge National Laboratory

4:15 PM

Electrochemical Properties of Tellurium in Molten Salts: Soluble-Insoluble Transition Behavior: *Hojong Kim*¹; Timothy Lichtenstein¹; ¹Pennsylvania State Univ

4:35 PM

Effect of Purification Procedures on Electrochemistry of Molten NaCl-KCl-MgCl₂: *Michael Simpson*¹; Nicole Orabona¹; ¹University of Utah

Materials Processing Fundamentals — Multiphysics - Process and Properties Modeling

Sponsored by: TMS: Process Technology and Modeling Committee
Program Organizers: Guillaume Lambotte, Boston Metal; Jonghyun Lee, Iowa State University; Antoine Allanore, MIT - DMSE; Samuel Wagstaff, Novelis

Tuesday PM
March 12, 2019

Room: 212A
Location: Henry B. Gonzalez
Convention Center

Session Chairs: Jonghyun Lee, Iowa State University; Antoine Allanore, MIT

2:00 PM Introductory Comments

2:05 PM Invited

The Materials Science Laboratory – Electromagnetic Levitator on the International Space Station: A case study with the alloy Ti-48Al-2Cr-2Nb: *Rainer Wunderlich*¹; M Mohr¹; U Hecht²; R Hyers³; D Matson⁴; G Lohöfer⁵; O Shuleshova⁶; H.-J. Fecht¹; ¹Ulm University; ²ACCESS e.V.; ³University of Massachusetts; ⁴Tufts University; ⁵Institut für Materialphysik im Weltraum; ⁶IFW Dresden

2:25 PM

Modeling of Fluid Flow Effects on Experiments using Electromagnetic Levitation in Reduced Gravity: *Gwendolyn Bracker*¹; Xiao Xiao²; Jonghyun Lee³; Dieter Herlach⁴; Markus Rettenmayr⁵; Marcus Reinartz⁵; Stefan Burggraf⁶; Douglas Matson⁷; Robert Hyers¹; ¹University of Massachusetts; ²Tufts University; ³Iowa State University; ⁴Institut für Experimentalphysik IV, Ruhr-Universität Bochum and Institut für Materialphysik im Weltraum, Deutsches Zentrum für Luft- und Raumfahrt; ⁵Otto-Schott-Institut für Materialforschung, Friedrich-Schiller-Universität; ⁶Institut für Materialphysik im Weltraum, Deutsches Zentrum für Luft- und Raumfahrt; ⁷Tufts University

2:45 PM

Investigation of non-linear effects in viscosity measurements by the oscillating drop method in an electromagnetic levitation device under reduced gravity conditions: *Rainer Wunderlich*¹; Markus Mohr¹; ¹Ulm University

3:05 PM

Short Range Order of Supersaturated Sodium Sulfate Solution: *Jonghyun Lee*¹; Yong Chan Jo²; Sai Katamreddy¹; Geun Woo Lee²; ¹Iowa State University; ²Korea Institute of Standards and Science

3:25 PM

The Role of Cavitation in Ultrasound Metrology: *Bitong Wang*¹; Andrew Caldwell²; Antoine Allanore²; Douglas Kelley¹; ¹University of Rochester; ²Massachusetts Institute of Technology

3:45 PM Break

4:05 PM

Optimal Stator Design For Oxide Films Shearing Found By Physical Modelling: *Agnieszka Dybalska*¹; Dmitry Eskin²; Jayesh Patel²; ¹Birmingham University; ²Brunel University

4:25 PM

Reassessment of the Numerical Modeling of Equiaxed Solidification: *John Coleman*¹; Matthew Krane¹; ¹Purdue Univ

4:45 PM

The Lattice Boltzmann Approach to Microstructural Convective Transport Simulations Using Parallel Cellular Automata: *Andrew Kao*¹; Matthew Alexandrakis¹; Ivars Krastins¹; Teddy Gan¹; Koulis Pericleous¹; ¹University of Greenwich

5:05 PM

An analysis of heat transfer in the planar flow casting process of noncrystalline metals: *Joseph Mattson*¹; ¹Cornell University

5:25 PM

Computation of Large Strains Associated with Plastic Instability of In-Plane Loaded Plates: *Ahmed Elkholy*¹; ¹Mechanical Engineering Department

Mechanical Behavior of Nuclear Reactor Components — Early Career

Sponsored by: TMS: Nuclear Materials Committee
Program Organizers: Clarissa Yablinsky, Los Alamos National Laboratory; Assel Aitkaliyeva, University of Florida; Khalid Hattar, Sandia National Laboratories; Janelle Wharry, Purdue University; Laurent Capolungo, Los Alamos National Laboratory; Eda Aydogan, Los Alamos National Laboratory

Tuesday PM
March 12, 2019

Room: 215
Location: Henry B. Gonzalez
Convention Center

Session Chairs: Clarissa Yablinsky, Los Alamos National Laboratory; Julie Tucker, Oregon State University

2:00 PM Invited

Deformation mechanisms in a candidate FeCrAl alloy and its weldment after neutron irradiation: *Dalong Zhang*¹; Maxim Gussev¹; Samuel Briggs²; Philip Edmondson¹; Yukinori Yamamoto¹; Kevin Field¹; ¹Oak Ridge National Laboratory; ²Oregon State University

2:20 PM Invited

Effect of Friction Stir Welding on Microstructure Evolution on in situ and ex situ Self-Ion Irradiated MA956: *Elizabeth Getto*¹; Nicholas Nathan¹; Samuel Briggs²; Khalid Hattar²; Brad Baker¹; ¹United States Naval Academy; ²Sandia National Laboratories

2:40 PM Invited

Additively manufactured grade 91 steel for reactor applications: *Benjamin Eftink*¹; Daniel Vega²; Yung Yoo¹; Matthew Janish¹; Eda Aydogan¹; Todd Steckley¹; Mark Ortega¹; Carl Cady¹; Thomas Lienert¹; Stuart Maloy¹; ¹Los Alamos National Laboratory; ²Department of Energy

3:00 PM Invited

Visco-Plastic Self Consistent (VPSC) Modeling of Deformation Processing of NFA-1 14YWT Thin-Walled Tubing: *Soupitak Pal*¹; Irene Beyerlein¹; Eshradul Alam¹; John Lewandowski²; Stuart Maloy³; Robert Odette¹; ¹University Of California Santa Barbara; ²Case Western Reserve University; ³Los Alamos National Lab

3:20 PM Break**3:40 PM Invited**

Correlation between the microstructure of precipitations and their mechanical contributions with and without radiation damage: *Tianyi Chen*¹; Lizhen Tan²; Ying Yang²; Rigen-Mo He³; Beata Tyburska-püschel¹; Kumar Sridharan³; ¹Oregon State University; ²Oak Ridge National Laboratory; ³University of Wisconsin-Madison

4:00 PM Invited

Quantitative In-situ TEM Nanomechanical Testing of Model and Nuclear Relevant Engineering Alloys: *Christopher Barr*¹; Khalid Hattar¹; ¹Sandia National Laboratories

4:20 PM Invited

Experimental and Modeling Study of Deformation Mechanisms in Irradiated ZIRLO: *Samuel Briggs*¹; Pierre-Alexandre Juan²; Brittany Muntiferer²; Hui Yang³; Marko Knezevic⁴; Remi Dingreville²; Jianmin Qu²; Khalid Hattar²; ¹Oregon State University; ²Sandia National Laboratories; ³Tufts University; ⁴University of New Hampshire

4:40 PM Invited

Mechanical Properties of Tungsten Irradiated with a Thermal Neutron Shield: *Lauren Garrison*¹; Yutai Katoh¹; Akira Hasegawa²; Takeshi Miyazawa²; ¹Oak Ridge National Laboratory; ²Tohoku University

5:00 PM Invited

Damage and fracture of nuclear materials under extreme conditions: from nuclear graphite to TRISO fuel particles: *Dong Liu*¹; Steven Knol²; Mark Davies³; Arjan Vreeling²; Saurabh Kabra⁴; Houzheng Wu⁵; Martin Kuball¹; Harold Barnard⁶; Robert Ritchie⁶; ¹University of Bristol; ²NRG; ³USNC; ⁴Rutherford Appleton Laboratory; ⁵Loughborough University; ⁶Lawrence Berkeley National Lab

Mechanical Behavior Related to Interface Physics III — Nanocrystalline Materials II

Sponsored by: TMS Materials Processing and Manufacturing Division, TMS: Nanomechanical Materials Behavior Committee
Program Organizers: Jason Trelewicz, Stony Brook University; Nathan Mara, University of Minnesota; Erica Lilleodden, Helmholtz-Zentrum Geesthacht; Siddhartha Pathak, University of Nevada, Reno; Jordan Weaver, National Institute of Standards and Technology; Marc Legros, CEMES-CNRS

Tuesday PM
March 12, 2019

Room: 303C
Location: Henry B. Gonzalez
Convention Center

Session Chair: To Be Announced

2:00 PM

Multifunctional properties of nanostructured Al stabilized by Ca grain boundary segregations and intermetallic particles: *Xavier Sauvage*¹; Fabien Cuvilly¹; Alan Russell²; Kaveh Edalati³; ¹CNRS - GPM - University Rouen Normandy; ²Department of Materials Science and Engineering, Iowa State University and Ames Laboratory of the US Department of Energy; ³International Institute for Carbon-Neutral Energy Research and Kyushu University

2:20 PM Invited

Influence of Ion Beam Assisted Deposition (IBAD) on Interface Stability in PVD Thin Films: Yuan Xiao¹; Ming Chen¹; Huan Ma²; Ralph Spolenak²; *Jeffrey Wheeler*¹; ¹Eth Zurich; ²EMPA

2:50 PM

An experimental and atomistic simulation study of strain rate deformation in amorphous Ni-Zr alloyed thin film: *Bibhu Sahu*¹; Amlan Dutta¹; Rahul Mitra¹; ¹Indian Institute of Technology, Kharagpur

3:10 PM

Rejuvenation of Nanocrystalline Metals: *Glenn Balbus*¹; McLean Echlin¹; Charlette Grigorian²; Christoph Gammmer³; Oliver Renk³; Verena Maier-Kiener⁴; Daniel Kiener⁴; Timothy Rupert²; Tresa Pollock¹; Daniel Gianola¹; ¹University of California, Santa Barbara; ²University of California, Irvine; ³Erich Schmid Institute for Materials Science, Austrian Academy of Sciences; ⁴Montanuniversität Leoben

3:30 PM Break**3:50 PM**

Atomistic Mechanisms on Interface- and Surface-Mediated Coble-Type Creep in Nanostructured Metals: *Scott Mao*¹; Li Zhong¹; Jiangwei Wang²; Yang He¹; ¹University of Pittsburgh; ²Zhejiang University

4:10 PM Invited

In situ micromechanical testing of Ni thin films for understanding the deformation behaviour at grain boundaries: *Dhriti Bhattacharyya*¹; Alan Xu¹; Michael Saleh¹; Lyndon Edwards¹; ¹Australian Nuclear Sci & Tech Organization

4:40 PM

Unexpected Behavior of Stiffness and Thermal Expansion in Nanoparticles: *Siu-Wai Chan*¹; ¹Columbia University

5:00 PM Invited

Role of Interfaces in Nanoscale Deformation Mechanisms of Shape Memory Ytria Stabilized Tetragonal Zirconia: *Mohsen Asle Zaeem*¹; Ning Zhang¹; ¹Colorado School of Mines

Micro- and Nanomechanical Testing in Harsh Environments — Micromechanical Testing under Extreme Conditions

Sponsored by: TMS Materials Processing and Manufacturing Division, TMS: Nanomechanical Materials Behavior Committee
Program Organizers: Verena Maier-Kiener, Montanuniversität Leoben; Sandra Korte-Kerzel, RWTH Aachen; Peter Hosemann, Univ of California; Afroz Barnoush, Ntnu; Jeffrey Wheeler, ETH Zurich; Dhriti Bhattacharyya, Australian Nuclear Science and Technology Organization

Tuesday PM
March 12, 2019

Room: 217B
Location: Henry B. Gonzalez
Convention Center

Session Chairs: Afroz Barnoush, NTNU; Samantha Lawrence, Los Alamos National Laboratory

2:00 PM Invited

Probing hydrogen-deformation interactions in additively manufactured stainless steel using synchrotron x-rays: *Samantha Lawrence*¹; Reemu Pokharel¹; Bjørn Clausen¹; Donald Brown¹; John Carpenter¹; Chris San Marchi²; ¹Los Alamos National Laboratory; ²Sandia National Laboratories

2:25 PM

Environmental TEM study of Hydrogen Effect on the Evolution of Irradiation-induced Dislocation Loops in a-Fe at Elevated Temperature: *Longchao Huang*¹; Zhangjie Wang²; Degang Xie²; Zhiwei Shan²; ¹Xi'an Jiaotong University; ²Xi'an Jiaotong University

2:45 PM

Evaluation of hydrogen embrittlement of technical relevant alloy systems by means of electrochemical nanoindentation: *Anna Ebner*¹; Patrick Lebernegg¹; Alexander Leitner²; Helmut Clemens¹; Reinhard Pippan²; Verena Maier-Kiener¹; ¹Department Physical Metallurgy and Material Testing; ²Erich Schmid Institute of Materials Science

3:05 PM

In situ scanning electron microscopy for microstructural and micro-mechanical characterization during hydrogen-charging: *Jinwoo Kim*¹; Cemal Cem Tasan¹; ¹Massachusetts Institute of Technology

3:25 PM Break**3:45 PM Invited**

Hydrogen-dislocation interaction in Al and Fe revisited by quantitative mechanical tests inside TEM: *Degang Xie*¹; Longchao Huang¹; Evan Ma²; Ju Li³; Zhiwei Shan¹; ¹Xian Jiaotong Univ; ²John Hopkins University; ³MIT

4:10 PM

Virtual Experiments: Discrete Dislocation Plasticity Simulations of Hydrogen in Microcantilevers: Haiyang Yu¹; Alan Cocks¹; *Edmund Tarleton*¹; ¹University of Oxford

4:30 PM

Multiscale 3D investigation of environmental barrier coatings and damage in angle-interlocked ceramic matrix composite under in-situ loading: *Hrishikesh Bale*¹; Aly Badran²; Robert Ritchie³; David Marshall²; ¹Carl Zeiss X-ray Microscopy; ²University of Colorado Boulder; ³University of California, Berkeley

4:50 PM

Mechanical behavior of flash-sintered yttria stabilized zirconia via in-situ microcompression tests at elevated temperatures: *Xinghang Zhang*¹; Jaehun Cho¹; Amiya Mukherjee¹; R. Garcia¹; Haiyan Wang¹; ¹Purdue University

5:10 PM Invited

Under Pressure: Deformation of Metallic Nanocrystals up to 20 GPa: *Wendy Gu*¹; Abhinav Parakh¹; ¹Stanford University

3:20 PM Break**4:00 PM Invited**

Multiscale Synergistic Damage Mechanics Methodology for Predicting Progressive Failure in Composite Structures: *Chandra Veer Singh*¹; ¹University of Toronto

4:20 PM Invited

Novel stress-assisted structural transformation in Mo/Cu and plasticity enhancement bicontinuous intertwined materials: Lijie He¹; *Niaz Abdolrahim*¹; ¹University of Rochester

4:40 PM

Hybrid Nanocomposite Bio-Inspired from Bone: *Mohammad Maghsoudi-Ganjeh*¹; Liqiang Lin¹; Xiaodu Wang¹; Xiaowei Zeng¹; ¹University of Texas at San Antonio

5:00 PM

Atomistic simulation studies of the sulphide minerals with the pentlandite structure.: *Mofuti Mehlape*¹; Phuti Ngoepe¹; ¹University of Limpopo

Nanoarchitected and Morphology-controlled Nanoporous Materials — NP Materials-mechanical Behavior I

Sponsored by: TMS Materials Processing and Manufacturing Division, TMS: Mechanical Behavior of Materials Committee
Program Organizers: Niaz Abdolrahim, University of Rochester; John Balk, Univ of Kentucky; Michael Demkowicz, Texas A&M Univ; Christoph Eberl, Fraunhofer IWM

Tuesday PM
March 12, 2019

Room: 214A
Location: Henry B. Gonzalez
Convention Center

Session Chair: To Be Announced

Modeling and Simulation of Composite Materials — Session III

Sponsored by: TMS Structural Materials Division, TMS: Composite Materials Committee
Program Organizers: Rakesh Behera, New York University; Dinesh Pinisetty, CSU Maritime Academy; Dung Luong, Nyu

Tuesday PM
March 12, 2019

Room: 303B
Location: Henry B. Gonzalez
Convention Center

Session Chairs: Chandra Veer Singh, University of Toronto; Brandon Runnels, Brandon Runnels University Of Colorado Colorado Springs; Dung Dinh Luong, New York University

2:00 PM Invited

Modeling composites and microstructure evolution with MOOSE/MARMOT in nuclear materials: *Daniel Schwen*¹; Sebastian Schunert¹; Larry Aagesen¹; Andrea Jokisaari¹; Yongfeng Zhang¹; ¹Idaho National Laboratory

2:20 PM Invited

Atomic Structure and Solute Segregation at Semi-coherent Metal/Oxide Interfaces: *Samrat Choudhury*¹; Blas Uberuaga²; ¹University of Idaho; ²Los Alamos National Laboratory

2:40 PM

Atomistic to continuum modeling of metalized polyvinylidene fluoride with aluminum nanoparticles: *Brandon Runnels*¹; ¹University of Colorado Colorado Springs

3:00 PM

Multiscale modeling of the elasto-plastic behavior of architected and nanostructured Cu-Nb composite wires and comparison with neutron diffraction experiments: *Tang Gu*¹; David McDowell¹; ¹Georgia tech

2:00 PM Invited

Mechanical Response of Au Nano-foams from Atomistic Simulations: *Diana Farkas*¹; ¹Virginia Tech

2:30 PM

A Modified scaling law for stiffness of nanoporous materials accounting for bending and stretching modes of nodes and ligaments: *Haomin Liu*¹; Niaz Abdolrahim¹; ¹University of Rochester

2:50 PM

Tensile Behavior of Stitched Log-pile Cellular Structures Fabricated via Direct Laser Writing: *Alina Garcia Taormina*¹; Andrea Hodge¹; ¹Univ of Southern California

3:10 PM Break**3:40 PM Invited**

Mechanical Properties of Metallic Nanocubes: Bimetallic Interfaces and Porosity: *Wendy Gu*¹; Mehrdad Kiani¹; Radhika Patil¹; ¹Stanford University

4:10 PM

Modified Gibson-Ashby model accounting for network coordination derived from stochastic modeling of the mechanical behavior of nanoporous materials: *Mujan Seif*¹; Thomas Balk¹; Matthew Beck¹; ¹University of Kentucky

4:30 PM

Controlling effect of ligaments and nodes morphology on the deformation behavior of nanoporous Cu with varying relative density: *Lijie He*; Muhammad Hadi¹; Haomin Liu¹; Niaz Abdolrahim¹; ¹University of Rochester

4:50 PM

Shear Band suppression in High-strength Cu/Mo Nanocomposites with Hierarchical Heterogeneous Structures: *Yuchi Cui*¹; Benjamin Derby¹; Amit Misra¹; ¹Department of Materials Science and Engineering, University of Michigan, Ann Arbor

5:10 PM

Solid-shell/Porous-core Amorphous Carbon Nanospheres: *Baoxing Xu*¹;

¹University of Virginia

Phase Stability, Phase Transformations, and Reactive Phase Formation in Electronic Materials XVIII — Phase Stability of Energy Materials

Sponsored by: TMS: Alloy Phases Committee

Program Organizers: Hiroshi Nishikawa, Osaka University; Shih-Kang Lin, National Cheng Kung University; Chaohong Wang, National Chung Cheng University; Chih-Ming Chen, National Chung Hsing Univ; Dajian Li, Karlsruhe Institute of Technology; Song-Mao Liang, Clausthal University Of Technology; Ming-Tzer Lin, National Chung Hsing University; Zhi-Quan Liu, Institute of Metal Research, Chinese Academy of Sciences; Jaeho Lee, Hongik University; Yee-wen Yen, National Taiwan Univ of Science & Tech; Yuan Yuan, Chongqing University; Yu Zhong, Worcester Polytechnic Institute

Tuesday PM
March 12, 2019

Room: 217D
Location: Henry B. Gonzalez
Convention Center

Session Chairs: Dajian Li, Karlsruhe Institute of Technology ; Yu Zhong, Worcester Polytechnic Institute

2:00 PM **Invited**

Study on the phase diagrams of Bi-Te binary and Bi-Te-RE (Yb, La, Ce, Nd, Sm, Tb, Er) ternary systems: *Ligang Zhang*¹; Mingyue Tan¹; Cun Mao¹; Libin Liu¹; ¹Central South University

2:10 PM

Phase diagrams of the Bi-In-Se-Te quaternary system: *Sinn-wen Chen*¹; Yi-cheng Lin²; ¹Department of Chemical Engineering, National Tsing Hua University; High Entropy Materials Center, National Tsing Hua University; ²Department of Chemical Engineering, National Tsing Hua University

2:40 PM

Solid-state interfacial reactions of Sn solder joints with Bi₂Te₃-based thermoelectric materials: *Chaohong Wang*¹; Mei-hau Li¹; ¹National Chung Cheng University

3:00 PM

Investigation into phase transformation of (La,Sr)_y(Cr_{1-x}Fe_x)O₃/YSZ for dual-phase oxygen transport membranes: *Hooman Sabarou*¹; Boxun Hu²; Prabhakar Singh²; Yu Zhong¹; ¹Worcester Polytechnic Inst; ²University of Connecticut

3:20 PM

Thermodynamic investigation into the chemical stability of LSCrF-ScSZ: *Hooman Sabarou*¹; Yu Zhong¹; ¹Worcester Polytechnic Institute

3:40 PM **Break**

4:00 PM

Thermodynamic Stability of LiMn_{2-x}MxO₄ Spinel with multivalent Transition-Metal-Substitutions: *Dajian Li*¹; Weibin Zhang¹; Keke Chang²; Hans Seifert¹; ¹Karlsruhe Institute Of Technology; ²Ningbo Institute of Materials Technology and Engineering, Chinese Academy of Sciences

4:20 PM

Understanding Cation Diffusion Pathways and Roadblocks in Polymorphs of V₂O₅: *Yuting Luo*¹; Sarbajit Banerjee¹; ¹Texas A&M University

4:40 PM

Effect of Tungsten Doping on the Structure and Electronic Properties of Gallium Oxide: *Vishal Zade*¹; Mallesh Bandi¹; Ramana Chintalapalle¹; ¹University Of Texas - El Paso

5:00 PM

Size Dependence of Nucleation Controlled Hysteresis in Free-Standing VO₂ Rods: *Heidi Clarke*¹; Bill Caraway¹; Diane Sellers¹; Erick Braham¹; Raymundo Arroyave¹; Sarbajit Banerjee¹; Patrick Shamberger¹; ¹Texas A&M University

5:20 PM

Effect of inorganic additives on sintered Cu conductive thick film: *Jyun*

*Yang Wang*¹; Cheng-Yi Liu¹; ¹National Central University

Phase Transformations and Microstructural Evolution — Modelling and Simulation of Phase Transformations in Alloys

Sponsored by: TMS: Phase Transformations Committee

Program Organizers: Sophie Primig, Univ of New South Wales; Deep Choudhuri, University of North Texas; Klaus-Dieter Liss, Guangdong Technion – Israel Institute of Technology; Megumi Kawasaki, Oregon State University; Matthew Steiner, University of Cincinnati; Yufeng Zheng, Ohio State University; Ashley Paz y Puente, University of Cincinnati; Juan Escobedo-Diaz, University of New South Wales; Dhriti Bhattacharyya, ANSTO; Rajarshi Banerjee, University of North Texas

Tuesday PM
March 12, 2019

Room: 225D
Location: Henry B. Gonzalez
Convention Center

Session Chair: To Be Announced

2:00 PM

Interfacial Energetics and Structure Analysis of the Ferrite-Cementite and Austenite-Cementite Microstructures of Steel Using Empirical Potentials: *Matthew Guziewski*¹; Shawn Coleman¹; Christopher Weinberger²; ¹Army Research Laboratory; ²Colorado State Univ

2:20 PM

Phase-Field Simulation of Intermetallic Phase Precipitation in a High-Al Alloyed Lightweight High-Strength Steel: *Carsten Drouven*¹; Wenwen Song¹; Wolfgang Bleck¹; ¹Steel Institute, RWTH Aachen University

2:40 PM

Dimensionality in coarsening at the critical composition: *W. Beck Andrews*¹; Peter Voorhees²; Katsuyo Thornton¹; ¹University of Michigan; ²Northwestern University

3:00 PM

Ostwald ripening of spheroidal particles in multicomponent alloys: *Kyoungdoc Kim*¹; Peter W. Voorhees¹; ¹Northwestern University

3:20 PM

Beyond Hillert, Mullins and Modified Mean Field: A Case for a Stochastic Grain Growth Model: *Alex Moser*¹; Chandra Pande¹; ¹U.S. Naval Research Laboratory

3:40 PM **Break**

4:00 PM

The Development of Continuum-Based Models of Interface Energetics in Steels as a Function of Temperature: *Christopher Weinberger*¹; Matthew Guziewski²; Shawn Coleman²; ¹Colorado State University; ²Army Research Laboratory

4:20 PM

Mesoscale modeling of grain boundary migration driven by crystallographically informed energy and mobility: *Brandon Runnels*¹; ¹University of Colorado Colorado Springs

4:40 PM

Nucleation kinetic path: an application of the thermodynamic extremum principle: *Manon Bonvaler*¹; Thomas Philippe²; John Ågren¹; ¹Department of Materials Science and Engineering - KTH Royal Institute of Technology - Stockholm - Sweden; ²Physique de la Matière Condensée - Ecole Polytechnique - CNRS - Palaiseau - France

5:00 PM

Phase transformation strengthening in metastable fcc materials: *Carlyn Larosa*¹; Changning Niu¹; Jiashi Miao¹; Michael Mills¹; Maryam Ghazisaeidi¹; ¹The Ohio State University

Powder Processing of Bulk Nanostructured Materials — Nanostructured Metals

Sponsored by: TMS: Powder Materials Committee

Program Organizers: Zachary Cordero, Rice University; Deliang Zhang, Shanghai Jiao Tong Univ; Brady Butler, US Army Research Laboratory; Ma Qian, RMIT University (Royal Melbourne Institute of Technology)

Tuesday PM
March 12, 2019

Room: 211
Location: Henry B. Gonzalez
Convention Center

Session Chair: Zachary Cordero, Rice University

2:00 PM

Phase transformations and phase separation in nanocrystalline Fe alloys: thermal stability and densification behavior: *Dor Amram*¹; Christopher Schuh¹; ¹Massachusetts Institute of Technology

2:30 PM

Effect of Boron on Processing and Consolidation of Tungsten Nanopowders: *Brady Butler*¹; Scott Middlemas²; Eric Klier¹; James Paramore¹; Daniel Casem¹; Kevin Hemker³; ¹US Army Research Laboratory; ²Idaho National Laboratory; ³Johns Hopkins University

2:50 PM

Fabrication of bulk nanostructured materials with high toughness through simple powder processing: *Olivia Donaldson*¹; Timothy Rupert¹; ¹University of California Irvine

3:10 PM

Mechanical Properties of Gas-Atomized and Hot-Extruded Aluminum Alloys: *Joe Croteau*¹; David Seidman²; David Dunand²; Nhon Vo¹; ¹NanoAl LLC; ²Northwestern University

3:30 PM

Effect of the milling and parameters of sintering of the Ti-15Mo powder on the microstructure and mechanical properties: *Anna Terynková*¹; Kristína Bartha¹; Jirí Kozlík¹; Tomáš Chráska²; Josef Stráský¹; ¹Charles University; ²Institute of plasma physics

3:50 PM Break

4:10 PM

Novel Pathways to Low Cost Titanium Manufacturing: from powder to part: *Stefan Gulizia*¹; Peter King¹; Saden Zahiri¹; Christian Doblin¹; Mark Styles¹; Andrew Urban¹; Alejandro Vargas Uscategui¹; Leon Prentice¹; ¹CSIRO Manufacturing

4:30 PM

Microstructure Evolution and Mechanical Properties of Medical Material Mg-3Zn Alloy Prepared by Semi-solid Powder Injection Moulding: *Xia Luo*¹; Chao Fang¹; Zhou Fan¹; Bensheng Huang¹; Jun Yang¹; ¹Southwest Petroleum University

Rare Metal Extraction & Processing — Rare Metals IV

Sponsored by: TMS: Hydrometallurgy and Electrometallurgy Committee

Program Organizers: Gisele Azimi, University of Toronto; Hojong Kim, Pennsylvania State University; Shafiq Alam, Univ of Saskatchewan; Takanari Ouchi, The University of Tokyo; Neale Neelameggham, IND LLC; You Qiang, Univ Of Idaho; Alafara Baba, University of Ilorin

Tuesday PM
March 12, 2019

Room: 210B
Location: Henry B. Gonzalez
Convention Center

Session Chair: Baba Alafara, University of Ilorin

2:00 PM

New dissolution process of iridium to hydrochloric acid: *Yuto Kobayashi*¹; Shota Yamada¹; Takashi Nagai¹; ¹Chiba institute of technology

2:25 PM

Leaching of tellurium and bismuth from the Dashiugou tellurium deposit in H₂SO₄ and FeCl₃ media: *Lixiong Shao*¹; Jiang Diao¹; Liang Liu¹; Bing Xie¹; ¹Chongqing University

2:50 PM

Development in Rare Earth Metal Reduction Technologies: A Review: *Fangyu Liu*¹; Matthew Earlam¹; Patrick Taylor¹; ¹Colorado School of Mines

3:15 PM

Study on thiosulfate leaching of gold by cycling barren solution: *Yongbin Yang*¹; Lai Meixiang¹; Qiang Zhong¹; Qian Li¹; Bin Xu¹; Tao Jiang¹; ¹Central South University

3:40 PM

Recovery of potash values from silicate rocks: *Nikhil Dhawan*¹; Himanshu Tanvar¹; ¹IIT-Roorkee

REWAS 2019: Cast Shop Recycling Technologies — Cast Shop and Recycling

Sponsored by: TMS Extraction and Processing Division, TMS Light Metals Division, TMS: Aluminum Committee, TMS: Recycling and Environmental Technologies Committee

Program Organizers: Mertol Göknelma, Norwegian University of Science and Technology; Elsa Olivetti, Massachusetts Institute of Tech; Gabrielle Gaustad, Rit

Tuesday PM
March 12, 2019

Room: 007B
Location: Henry B. Gonzalez
Convention Center

Session Chair: Elsa Olivetti, Massachusetts Institute of Technology

2:00 PM Introductory Comments

2:05 PM Invited

LIBS Based Sorting - A Solution for Automotive Scrap: *Georg Rombach*¹; ¹Hydro Aluminium Rolled Products GmbH

2:35 PM

An Assessment of Recyclability of Aluminum from Incinerated Household Waste: *Mertol Göknelma*¹; *Ingrid Meling*¹; *Ece Soylu*²; *Anne Kvithyld*³; *Gabriella Tranell*¹; ¹Norwegian University of Science and Technology; ²Istanbul Technical University; ³SINTEF Materials and Chemistry

3:00 PM

The Vertical Floatation Decoater for Efficient, High Metal Yield Decoating and Delacquering of Aluminum Scrap: *Robert De Saro*¹; *Sam Luke*²; ¹Energy Research Co; ²DG Marshall Associates, Inc.

3:25 PM

Positive Material Identification (PMI) Capabilities in the Metals Secondary Industry: An Analysis of XRF and LIBS Handheld Analyzers: *Leslie Brooks*¹; *Gabrielle Gaustad*¹; ¹Rochester Institute of Technology

3:50 PM Break

4:05 PM

Aluminum Alloys in Autobodies: Sources and Sinks: *Ayomipo Arowosola*¹; *Gabrielle Gaustad*¹; ¹Rochester Institute of Technology

4:30 PM

Manufacturing of Hydrogen on Demand Using Aluminum Can Scrap with Near Zero Waste: *Jed Checketts*¹; *Neale Neelameggham*²; ¹Natrium Hydroxide Corporation; ²IND LLC

4:55 PM

Isothermal Hot Pressing of Skimmed Aluminium Dross: Influence of the Main Processing Parameters on In-house Molten-metal Recovery: *Varuzan Kevorkijan*¹; ¹Impol R in R d.o.o.

REWAS 2019: Secondary and Byproduct Sources of Materials, Minerals, and Metals — Electronics and Battery Recycling

Sponsored by: TMS Extraction and Processing Division, TMS Light Metals Division, TMS: Recycling and Environmental Technologies Committee

Program Organizers: Gabrielle Gaustad, Rit; Camille Fleuriaux, Gopher Resource; Neale Neelameggham, IND LLC; Elsa Olivetti, Massachusetts Institute of Tech

Tuesday PM
March 12, 2019

Room: 007C
Location: Henry B. Gonzalez
Convention Center

Session Chair: To Be Announced

2:00 PM

Li-Cycle – A Case Study in Integrated Process Development: *Boyd Davis*¹; *Kevin Watson*¹; *Alain Roy*¹; *Ajay Kochhar*²; *Darcy Tait*²; ¹Kingston Process Metallurgy Inc; ²Li-Cycle Corp.

2:20 PM

Lithium Ion Batteries, How to Generate Value Out of End of Life Mobile Units: *Christer Forsgren*¹; ¹Stena Recycling International AB

2:40 PM

Advances in Lithium-ion Battery Electrolytes: Prospects and Challenges in Recycling: *Joseph Hamuyuni*¹; *Fiseha Tesfaye*²; ¹Aalto University; ²Åbo Akademi University

3:00 PM

An Overview of the Recycling Processes and Technologies for Spent Lithium-Ion Batteries: *Haruka Pinegar*¹; *York Smith*¹; ¹University of Utah

3:20 PM

Increasing Lead Battery Performance Efficiency: *Timothy Ellis*¹; *John Howes*²; ¹RSR Technologies, Inc.; ²Redland Energy Group

3:40 PM Break

4:00 PM Invited

Outotec Solutions for E-scrap Processing: *Stephen Hughes*¹; *Jan Stål*¹; *Mikael Jåfs*¹; *Hannu Johto*¹; *Janne Karonen*¹; ¹Outotec

4:25 PM

Printed Circuit Board Leach Residue as Reductant in Pyrometallurgical Operations: *Desmond Atah-Kyei*¹; *Güven Akdoğan*¹; *Christie Dorfling*¹; *Daniel Lindberg*²; *Markus Erwee*³; *Johan Zietsman*⁴; *Quinn Reynolds*³; ¹Stellenbosch University; ²Åbo Akademi University; ³Mintek; ⁴Ex Mente Pty (Ltd)

4:45 PM

Experimental Methods of Flowsheet Development for Hard Drive Recycling by Preferential Degradation and Physical Separation: *Brandon Ott*¹; ¹Colorado School of Mines

5:05 PM

Electrochemical Reduction and Separation of Europium from Waste Fluorescent Lamps: *Mark Strauss*¹; *Brajendra Mishra*¹; *Gerard Martins*²; ¹Worcester Polytechnic Institute; ²Colorado School of Mines

Shape Casting: 7th International Symposium Celebrating Prof. John Campbell's 80th Birthday — Properties of Castings

Program Organizers: Murat Tiryakioglu, University of North Florida;
William Griffiths, University of Birmingham; Mark Jolly, Cranfield
University

Tuesday PM
March 12, 2019

Room: 006B
Location: Henry B. Gonzalez
Convention Center

Session Chair: Mark Jolly, Cranfield University

2:00 PM

Characterization of lead sheet manufactured using traditional sand-casting technique: *Arun Prabhakar*¹; Konstantinos Salonitis¹; Mark Jolly¹; ¹Cranfield University

2:25 PM

On the Intrinsic and Extrinsic Microstructure-Property Effects in Cast Aluminum Alloys: *Murat Tiryakioglu*¹; ¹University of North Florida

2:50 PM

Measurement of Residual Strain in the Cylinder Bridge of High Pressure Die Cast A383 Engine Blocks Using Neutron Diffraction: *Tao Liu*¹; Chris Fancher²; Jeffrey Bunn²; Vishweshwar Arvikar³; Ilya Levin³; Laurentiu Nastac¹; Luke Brewer¹; ¹University of Alabama; ²Oak Ridge National Laboratory; ³Nemak Alabama

3:10 PM

Relation Between Microstructure and Tensile Properties of V and B added Al-7Si Alloy: *Ozkan Kesen*¹; Ahmet Filiz¹; Selim Temel¹; Özen Gürsoy¹; Eray Erzi¹; Derya Dispınar¹; ¹Istanbul University

3:30 PM Break

3:50 PM

The Effect of Friction Stir Processing on Bilfilms & Structural Quality in A356 Alloy Castings: *Murat Tiryakioglu*¹; Nelson Netto¹; Paul Eason¹; ¹Univ of North Florida

4:10 PM

Effect of Copper and Nickel Addition on Mechanical Properties of A356 Alloy and Assessment of Mechanism of Pore Formation: Kerim Yildirim¹; Johannes Brachmann¹; *Derya Dispınar*²; Andreas Buhrig-Polaczek¹; Uwe Vroomen¹; ¹RWTH; ²Istanbul University

4:30 PM

Aluminum Alloy with High Magnesium Content: Casting Studies for Microstructural Evolution, Phase Formation and ThermoPhysical Properties with Different Alloying Elements: *Armagan Gul*¹; Özen Gürsoy²; Özkan Kesen²; Eray Erzi²; Derya Dispınar²; Eyup Kayali³; ¹Renault; ²Istanbul University; ³Istanbul Technical University

4:50 PM

Correlation between melt quality and machinability of Al9Si3Cu HPDC alloy: *Halil Kalkan*¹; Özen Gürsoy²; Ömer Vardar²; Eray Erzi²; Derya Dispınar²; ¹Mercedes Benz; ²Istanbul University

5:10 PM

Change in Sr modification by duration and its effect on mechanical properties of A360 and A413 alloy: *Inal Duygun*¹; Özen Gürsoy¹; Eray Erzi¹; Derya Dispınar¹; ¹Istanbul University

Solidification Processing of Light Metals and Alloys: An MPMD Symposium in Honor of David StJohn — External Fields and the Columnar to Equiaxed Transition

Sponsored by: TMS: Solidification Committee

Program Organizers: Mark Easton, RMIT University; Ma Qian, RMIT University (Royal Melbourne Institute of Technology); John Grandfield, Grandfield Technology Pty Ltd; Norbert Hort, Helmholtz-Zentrum Geesthacht; Mark Jolly, Cranfield University

Tuesday PM
March 12, 2019

Room: 006C
Location: Henry B. Gonzalez
Convention Center

Session Chairs: Ma Qian, RMIT University; Gui Wang, University of Queensland

2:00 PM Keynote

Mechanisms of primary intermetallic refinement by ultrasonic processing: *Dmitry Eskin*¹; Feng Wang¹; Iakovos Tzanakis²; Jiawei Mi³; ¹Brunel Univ; ²Oxford Brookes University; ³University of Hull

2:20 PM

Influence of AlN nanoparticles on creep resistance of Elektron21 alloy prepared by intensive melt shearing: *Hong Yang*¹; Yuanding Huang¹; Karl Kainer¹; Norbert Hort¹; Hajo Dieringa¹; ¹Helmholtz-Zentrum Geesthacht

2:40 PM

Grain initiation behaviour and its effect on grain refinement: *Feng Gao*¹; Zhongyun Fan¹; ¹Brunel University

3:00 PM

Simulating the As-cast Microstructure of an Al-2Cu Alloy Formed under Ultrasonic Treatment: Gui Wang¹; Paul Croaker²; Matthew Dargusch¹; *Damian McGuckin*³; David StJohn¹; ¹University of Queensland; ²University of New South Wales; ³Pacific Engineering Systems International

3:20 PM Break

3:40 PM Invited

Promoting the Columnar-to-Equiaxed Transition and Grain Refinement of Ti alloys during Additive Manufacturing: *Michael Bermingham*¹; ¹The University of Queensland

4:00 PM Invited

Prediction of the Columnar to Equiaxed Transition in Bottom Cooled Aluminum Copper Cylinders: Thomas, J. Williams¹; *Christoph Beckermann*¹; ¹Univ of Iowa

4:20 PM

Directional solidification to form nanoscale eutectic microstructures in Al-Cu thin films: *Eli Sullivan*¹; John Tomko¹; Patrick Hopkins¹; Jerrold Floro¹; ¹University of Virginia

4:40 PM

Measurements of microstructure evolution and kinetics during laser-induced rapid solidification of Al-based alloys: *Joseph McKeown*¹; John Roehling¹; Seth Griffiths²; Kai Zweiecker²; Amy Clarke³; Christian Leinenbach²; Jörg Wiezorek⁴; Manyalibo Matthews¹; ¹Lawrence Livermore National Laboratory; ²Empa - Swiss Federal Laboratories for Materials Science and Technology; ³Colorado School of Mines; ⁴University of Pittsburgh

5:00 PM

Grain Refinement of Al-7Si through Addition of an Al-V-B Master Alloy: *Yunhu Zhang*¹; C.Y. Ye¹; Y.P. Shen¹; W. Chang¹; D.P. Wang¹; D StJohn²; G. Wang²; Q.J. Zhai¹; ¹Shanghai University; ²The University of Queensland

Thermo-mechanical Response of Materials Investigated through Novel In-situ Experiments and Modeling — Session IV

Sponsored by: TMS Functional Materials Division, TMS Structural Materials Division, TMS: Advanced Characterization, Testing, and Simulation Committee, TMS: Thin Films and Interfaces Committee
Program Organizers: Saurabh Puri, Microstructure Engineering; Robert Wheeler, Microtesting Solutions LLC; Dongchan Jang, Kaist; Amit Pandey, LG Fuel Cell Systems; Josh Kacher, Georgia Institute of Technology; Dhriti Bhattacharyya, Australian Nuclear Science and Technology Organization

Tuesday PM
March 12, 2019

Room: 301A
Location: Henry B. Gonzalez
Convention Center

Session Chairs: Saurabh Puri, Microstructure Engineering; Auger Thierry, CNRS/ENSAM/CNAM

2:00 PM Keynote

Elastic strains from Laue XRay microdiffraction on bi-crystal: Pouya Tajdary¹; Emeric Plancher¹; Auger Thierry¹; Véronique Favier¹; Olivier Castelnaud¹; Julien Stodolna²; Odile Robach³; Claire Maurice⁴; Vincent Michel¹; Jean-Baptiste Marijon¹; Johan Petit⁵; Dominique Loisnard²; Ngoc-Lam Phong¹; ¹CNRS/ENSAM/CNAM; ²EDF; ³CEA; ⁴EMSE; ⁵Université Paris 10

2:40 PM

Measurement of the Thermal Expansion of Ti-7Al Using High Energy X-Ray Diffraction Microscopy: Rachel Lim¹; Darren Pagan²; JY Peter Ko²; Anthony Rollett¹; ¹Carnegie Mellon University; ²Cornell High Energy Synchrotron Source

3:00 PM

Mechanical Behavior of Austenitic Alloy 709: Synchrotron X-Ray vs. Neutron Diffraction Characterization: Yuchen Zhao¹; Jun-Sang Park²; Jonathan Almer²; Djamel Kaoumi¹; ¹North Carolina State University; ²Department of Nuclear Engineering; ²Argonne National Laboratory

3:20 PM

Measuring elastic and plastic anisotropies of a metastable β -titanium alloy, Timetal 18, by in-situ high energy X-ray diffraction (HEXRD): Jishnu Bhattacharyya¹; Darren Pagan²; Sriramya Nair²; Ricardo Lebensohn³; Anthony Rollett⁴; Haitham El-Kadiri⁵; Sean Agnew¹; ¹Univ of Virginia; ²Cornell High Energy Synchrotron Source, Cornell University; ³Los Alamos National Laboratory; ⁴Carnegie Mellon University; ⁵Mississippi State University

3:40 PM Break

4:00 PM

Revealing the role of microstructure architecture on strength and ductility of Ni microwires by in-situ synchrotron X-Ray diffraction: Ravi Purushottam¹; Abhinav Arya²; Girish BOJJAWAR Bojjawar²; Steven Van Petegem³; Henry Proudhon⁴; Céline Gérard⁵; Loïc Signor⁶; Satyam Suwas²; Atul Chokshi²; Ludovic Thilly¹; ¹University of Poitiers; ²IISc-Bangalore; ³Paul Scherrer Institute; ⁴Mines Paris Tech; ⁵Institut Prisme CNRS-Université de Poitiers-ISAE ENSMA

4:20 PM

The compressive performances of aluminum foams prepared by different methods: Ningzhen Wang¹; Eric Maire²; Ying Cheng¹; Xiang Chen¹; Jérôme Adrien²; Yanxiang Li¹; Yasin Amani²; ¹Tsinghua Univ; ²Institut National des Sciences Appliquées de Lyon

4:40 PM

Four-Dimensional (4D) Characterization of Thermal Cycling Damage in Sintered Nano-Silver Solder by X-ray Microtomography: Irene Lujan Regalado¹; Tarun Amla¹; Jason Williams¹; Yanghe Liu²; Ercan M. Dede²; Shailesh Joshi²; Nikhilesh Chawla¹; ¹Center for 4D Materials Science- Arizona State University; ²Toyota Research Institute of North America

5:00 PM

In-situ Synchrotron X-Ray Microtomography of Stress Corrosion Cracking in 304 SS under humid air environment: Ryan Schoell¹; Peter Kenesei²; Jonathan Almer³; Djamel Kaoumi¹; ¹North Carolina State University; ²Argonne National Laboratory; ³Argonne National Laboratory

TMS-DGM Symposium on Lightweight Metals: A Joint US-European Symposium on Challenges in Light Weighting the Transportation Industry — Magnesium

Sponsored by: DGM (Deutsche Gesellschaft für Materialkunde eV), TMS: Magnesium Committee, TMS: Aluminum Committee
Program Organizers: Eric Nyberg, Brunel University London; Wilhelmus Sillekens, European Space Agency; Juergen Hirsch, Hydro Aluminium Rolled Products GmbH; Norbert Hort, Helmholtz-Zentrum Geesthacht

Tuesday PM
March 12, 2019

Room: 006A
Location: Henry B. Gonzalez
Convention Center

Session Chairs: Eric Nyberg, Brunel University London; Norbert Hort, Helmholtz-Zentrum Geesthacht

2:00 PM

Incorporating an ICME Approach into Die-Cast Magnesium Alloy Component Design: Jon Weiler¹; ¹Meridian Lightweight

2:20 PM

Influences of SiC particle additions on the grain refinement of Mg-Zn alloys: Yuanding Huang¹; Jian Gu¹; Sihang You¹; Karl Kainer¹; Norbert Hort¹; ¹Helmholtz-Zentrum Geesthacht

2:40 PM

Development, Characterization, Mechanical and Corrosion Behavior Investigation of Multi Direction Forged Mg-Zn Alloy: Gajanan Anne¹; ¹Associate Professor

3:00 PM

Electrochemical behaviour of ECAP processed AM series magnesium alloy: Gopi Rangaraju¹; Shivananda Hanumanthappa²; ¹Rajeev Institute of Technology; ²National Institute of Technology Karnataka

3:20 PM Break

3:40 PM

Effect of split sleeve cold expansion on the residual stress, texture and fatigue life of rolled AZ31B magnesium alloy: Sasan Faghhi¹; Sugrib Shaha¹; Seyed Behravesht¹; Hamid Jahed¹; ¹University of Waterloo

4:00 PM

A theory for designing ductile materials with anisotropy: Amine Benzerga¹; ¹Texas A & M University

4:20 PM Concluding Comments

10th International Symposium on High Temperature Metallurgical Processing — Extraction and Recovery of Metals

Sponsored by: TMS: Pyrometallurgy Committee

Program Organizers: Tao Jiang, Central South University; Jiann-Yang Hwang, Michigan Technological Univ; Dean Gregurek, RHI Magnesita; Zhiwei Peng, Central South University; Jerome Downey, Montana Technological University; Baojun Zhao, University of Queensland; Onuralp Yucel, Istanbul Technical University; Ender Keskinilic, Atilim University; Rafael Padilla, Univ of Concepcion; Elsa Olivetti, Massachusetts Institute of Tech; Camille Fleuriaux, Gopher Resource

Wednesday AM
March 13, 2019

Room: 208
Location: Henry B. Gonzalez
Convention Center

Session Chairs: Tao Jiang, Central South university; Onuralp Yucel, Istanbul Technical University

8:30 AM Introductory Comments

8:35 AM

Effect of Semiconductor Bornite on the Bioleaching of Chalcopyrite by Moderately Thermophiles: Kexin Chang¹; *Yansheng Zhang*¹; Libo Cao¹; Tengfei Li¹; ¹Central South University

8:55 AM

Study on Tin Volatilizing from Tin-bearing Middling by Carbothermic Reduction in Rotary Kiln: *Jianfa Jing*¹; Yufeng Guo¹; Feng Chen¹; Fuqiang Zheng¹; Lingzhi Yang¹; ¹Central South University

9:15 AM

A Novel 'Ladder-like' Tri-step Roasting Approach to High-efficiency Co-sulfation for Nonferrous Metals in Fe-Ni-Cu-Co Sulfides: Lizhen Wei¹; Caixiang Yu¹; *Guangshi Li*¹; Xiaolu Xiong¹; Hongwei Cheng¹; Qian Xu¹; Xionggang Lu¹; ¹Shanghai Univ

9:35 AM

Manganese Partition between Slag and Liquid Metal in LD Converter: *Abdelrhman Hassan*¹; ¹Tabbin Institute for Metallurgical Studies

9:55 AM Break

10:15 AM

Study on Preparation of Active Zinc Oxide From Zinc Ferrite by Calcified-roasting and Ammonia Complex Method: *Zejiang Xie*¹; Yufeng Guo¹; Tao Jiang¹; Feng Chen¹; Fuqiang Zheng¹; Lingzhi Yang¹; ¹Central South Univ

10:35 AM

Thermal Transformations of Main Components in Molybdenite Concentrates under SO₂-containing Atmosphere: *Hu Sun*¹; Li Guanghui¹; Junjie Yu¹; Jun Luo¹; Mingjun Rao¹; Tao Jiang¹; ¹Central South Univ

10:55 AM

Study on Phase Conversion from Zinc Ferrite to Zinc Oxide by Magnetic Roasting: *Chao Wang*¹; Yufeng Guo¹; Yujia Tan¹; Feng Chen¹; Zejiang Xie¹; Linlin Zhang¹; ¹Central South University

11:15 AM

A Novel Method of Recovering Rare Earths from Bayan Obo Rare-earth Concentrate under Super-gravity Field: *Xi Lan*¹; Jintao Gao¹; Zhancheng Guo¹; ¹University of Science and Technology Beijing

11:35 AM Concluding Comments

2019 International Metallurgical Processes Workshop for Young Scholars (IMPROWYS 2019) — Physical and Mechanical Metallurgy

Sponsored by: TMS Extraction and Processing Division

Program Organizers: Cong Wang, Northeastern University; Amy Clarke, Colorado School of Mines; Kinnor Chattopadhyay, University of Toronto; Bryan Weblar, Carnegie Mellon University

Wednesday AM
March 13, 2019

Room: 213B
Location: Henry B. Gonzalez
Convention Center

Funding support provided by: Korean Institute of Metals and Materials

Session Chairs: Amy Clarke, Colorado School of Mines; Haiwen Luo, University of Science & Technology Beijing

8:30 AM Invited

Effect of the Crystallographic Orientation on the Void Growth during Creep of Superalloys: *Caizhi Zhou*¹; Tianju Chen¹; Ridwan Sakidja²; Wai-Yim Ching³; ¹Missouri University of Science and Technology; ²Missouri State University; ³University of Missouri-Kansas City

8:50 AM Invited

Effects of Element Segregation/depletion and Precipitates on Grain Boundary Strength of Alloys: *Lingfeng He*¹; Mukesh Bachhav¹; Daniel Murray¹; Xiang Liu¹; Emmanuel Perez²; Wen Jiang¹; Cheng Sun¹; Sebastien Teyssyre¹; Xianming Bai²; ¹Idaho National Laboratory; ²Virginia Polytechnic Institute and State University

9:10 AM Invited

Precipitation Strengthened Al-Er-Sc-Zr-Si Alloys Modified with V, Nb, or Ta: *Dinc Erdeniz*¹; Anthony De Luca²; David Seidman²; David Dunand²; ¹Marquette Univ; ²Northwestern Univ

9:30 AM Invited

Resistance Spot Welding of Medium-Mn TRIP Steel with Excellent Mechanical Properties: *Haiwen Luo*¹; Shuoshuo Li¹; David Yang²; ¹University of Science and Technolgy Beijing; ²Shanghai Institute of Optics and Fine Mechanics, Chinese Academy of Sciences

9:50 AM Invited

Design of Stable Ultrafine-grained TWIP Steels with Superior Combination of Strength and Ductility: *Junheng Gao*¹; W. Mark Rainforth¹; ¹Univ of Sheffield

10:10 AM Break

10:30 AM Invited

Abnormal Mechanical Properties Development of 1.25 Cr-0.5Mo Steel after Simulated Postweld Heat Treatment: Yang Shen¹; *Cong Wang*¹; ¹Northeastern Univ

10:50 AM Invited

Microstructure Evolution of Ti Alloy Subjected to Asymmetric Cryorolling and Annealing: *Hailiang Yu*¹; Charlie Kong²; ¹Central South University; ²University of New South Wales

11:10 AM Invited

Strain Rate Effects on the Plasticity Mechanisms and Work Hardening of Metallic Micropillars: *Matthew Daly*¹; Zhaowen Lin¹; Horacio Espinosa¹; ¹Northwestern University

2019 Symposium on Functional Nanomaterials: Synthesis, Integration, and Application of Emerging Nanomaterials — Functional Thin Film Materials

Sponsored by: TMS: Nanomaterials Committee

Program Organizers: Chang-Yong Nam, Brookhaven National Laboratory; Jiyoung Chang, University of Utah; Pei Dong, George Mason University; Yong Lin Kong, University of Utah; Shengfeng Yang, Indiana Univ. Purdue Univ. Indianapolis; SungWoo Nam, University of Illinois

Wednesday AM
March 13, 2019

Room: 213A
Location: Henry B. Gonzalez
Convention Center

Session Chairs: Chang-Yong Nam, Brookhaven National Laboratory; Jang-Sik Lee, Pohang University of Science and Technology

8:30 AM Invited

Assessment of Thin Films and Nanomaterials Functionality Using Multimodal Approach: *Iliia Ivanov*¹; Eric Muckley¹; ¹ORNL

9:00 AM Invited

Emerging Memory Devices with Metal-halide Perovskite Materials: *Jang-Sik Lee*¹; ¹POSTECH

9:30 AM

Ferroelectricity in Hafnium Zirconate using Tungsten Capping Layer: *Jaidah Mohan*¹; Si Joon Kim¹; Jiyoung Kim¹; ¹University of Texas at Dallas

9:50 AM

Pinning of Structural Transition in VO₂ Thin Films: *Adele Moatti*¹; Ritesh Sachan¹; John Prater¹; Jagdish Narayan¹; ¹North Carolina State Univ

10:10 AM Break

10:30 AM Invited

Advances in MOCVD Production of Complex Materials from Single-source Precursors: Phase Pure Metal Phosphide Thin Films: *Kenton Whitmire*¹; Desmond Schipper¹; Andrew Leitner¹; ¹Rice University

11:00 AM

Influence of Layer Thickness on Microstructure and Optical Properties of AlN/SiO₂ and AlN/Ag Nanomultilayers: *Chelsea Applegat*¹; Andrea Hodge¹; ¹Univ of Southern California

11:20 AM

Emergence of High-temperature Superconductivity in B-doped Q-carbon: *Ritesh Sachan*¹; Anagh Bhaumik²; Siddharth Gupta²; Jagdish Narayan²; ¹Army Research Office; ²NCSU

11:40 AM

A Novel Synthesis Method for Independent Control of Grain Size, Dispersion and Phase Composition of Thin Films: *Paul Rasmussen*¹; Rohit Sarkar¹; Jagannathan Rajagopalan¹; ¹Arizona State University

5th Symposium on Advanced Materials for Energy Conversion and Storage — Energy Conversion with Emphasis on SOFCs II

Sponsored by: TMS: High Temperature Alloys Committee

Program Organizers: Amit Pandey, LG Fuel Cell Systems; Partha Mukherjee, Purdue University; Surojit Gupta, University of North Dakota; Kyle Brinkman, Clemson Univ; Jung Pyung Choi, Pacific Northwest National Laboratory; Soumendra Basu, Boston University; Paul Ohodnicki, National Energy Technology Laboratory

Wednesday AM
March 13, 2019

Room: 225A
Location: Henry B. Gonzalez
Convention Center

Session Chairs: Jung Pyung Choi, Pacific Northwest National Laboratory; Xingbo Liu, West Virginia University

8:30 AM Invited

Laser 3D Printing of SOFC: *Jian Liu*¹; Shaofei Cheng¹; Shuang Bai¹; ¹PolarOnyx Inc

8:55 AM

High Pressure Co-electrolysis of CO₂/H₂O in Tubular Solid Oxide Electrolysis Cells: *Muhammad Taqi Mehran*¹; Tak-Hyoung Lim²; ¹School of Chemical and Materials Engineering, National University of Sciences and Technology (NUST), Islamabad, Pakistan; ²Korea Institute of Energy Research (KIER)

9:15 AM Invited

Infiltration of Nickel Nanoparticles in Ni/YSZ Solid Oxide Fuel Cell Anodes for Improved Performance: *Yanchen Lu*¹; Paul Gasper¹; Boshan Mo¹; Uday Pal¹; Srikanth Gopalan¹; *Soumendra Basu*¹; ¹Boston Univ

9:40 AM

Phase Field Simulation of Ni Coarsening in SOFC Anodes in Dry and Humid Atmospheres: *Yinkai Lei*¹; Tian-Le Cheng¹; You-Hai Wen¹; ¹National Energy Technology Laboratory

10:00 AM Break

10:20 AM Invited

(M, Mn)3O₄ Spinel for Advanced Electrical Conductive layer for SOFC Stacks: *Jung Pyung Choi*¹; Jeffrey Stevenson¹; Jeff Bonnett¹; Nathan Canfield¹; Lorraine Seymour¹; Vivianaluxa Gervasio¹; ¹Pacific Northwest National Laboratory

10:45 AM

Nondestructive 3D Analysis of Solid Oxide Fuel Cells by Lab-based X-ray Nanotomography – Towards Computational Integrity: *Stephen Kelly*¹; Sandrine Ricote²; Alexis Dubois²; William Harris¹; John Berger²; Robert Kee²; ¹Carl Zeiss X-ray Microscopy; ²Colorado School of Mines

11:05 AM Invited

Impact of the Humidity on the Nanostructure Degradation of Ionic Conductor YSZ from Electrodes of SOFCs upon Electrochemical Operation: *Xueyan Song*¹; Yun Chen¹; Harry Abernathy²; Gregory Hackett²; Yueying Fan²; Shiwoo Lee²; Kirk Gerdes²; ¹West Virginia Univ; ²National Energy Technology Laboratory

11:30 AM

Density Functional Theory Modeling of the Cation Impurity Diffusivity and Solubility in La_{1-x}Sr_xMnO_{3+d} (LSM) for Solid Oxide Fuel Cells: *Yueh-Lin Lee*¹; Yuhua Duan¹; Dane Morgan²; Dan Sorescu¹; Harry Abernathy¹; Gregory Hackett¹; ¹NETL; ²University of Wisconsin-Madison

Additive Manufacturing and Welding: Physical and Mechanical Metallurgy of Rapidly Solidified Metals — Process, Structure, and Properties II

Sponsored by: TMS: Additive Manufacturing Committee

Program Organizers: Allison Beese, Pennsylvania State University; Eric Lass, National Institute of Standards and Technology; David Bourell, University of Texas; John Carpenter, Los Alamos National Laboratory; Kester Clarke, Colorado School of Mines; Daniel Coughlin, Los Alamos National Laboratory; Christian Leinenbach, Empa, Swiss Federal Laboratories for Materials Science and Technology; Behrang Poorganji, GE Additive; Judy Schneider, University of Alabama at Huntsville; Lee Semiatin, US Air Force Research Laboratory; Mark Stoudt, National Institute of Standards and Technology; Chantal Sudbrack, QuesTek Innovations LLC

Wednesday AM
March 13, 2019

Room: 221A
Location: Henry B. Gonzalez
Convention Center

Session Chair: Mark Stoudt, National Institute of Standards and Technology

8:30 AM

Parametric Optimization of Laser-based Powder Bed Fusion

for Gas Atomized Al-Zn-Mg-Sc-Zr Alloy: *Le Zhou*¹; Holden Hyer¹; Sharon Park¹; Thinh Huynh¹; Brandon McWilliams²; Kyu Cho²; Katherine Rice; Yimeng Chen³; Alexander Giddings³; Yongho Sohn¹; ¹Univ of Central Florida; ²US Army Research Laboratory; ³CAMECA Instruments Inc

8:50 AM

Multiscale Advanced Characterization of Microstructures Formed during the Additive Manufacturing of Aluminium-silicon Alloys: Microstructure-process Relationship and Aging Effect: *Williams Lefebvre*¹; Grégory Rose²; Fabien Cuvilly²; Eric Baustert³; ¹Normandie Univ., GPM, UNIROUEN, INSA Rouen, CNRS; ²Normandie Univ., GPM, UNIROUEN, INSA Rouen, CNRS; ³Volum-e/MMB

9:10 AM

Effects of Recycling Al10SiMg Alloy Powders in the Selective Laser Melting Process: *Sharon Park*¹; Holden Hyer¹; Le Zhou¹; Thinh Huynh¹; Edward Dein¹; Brandon McWilliams²; Kyu Cho²; Yongho Sohn¹; ¹Univ of Central Florida; ²US Army Research Laboratory

9:30 AM

Fast Calorimetry to Study Rapid Solidification of Alloys for AM Application: *Mathieu Brochu*¹; Pierre Hudon¹; Amy Nommests-Nomm¹; ¹McGill University

9:50 AM

Characterization of Rapidly Solidified Aluminum Alloy Microstructures: *Chloe Johnson*; John Roehling¹; Yaofeng Guo²; Francisco Coury²; Joe Jankowski²; Adam Stokes²; Michael Kaufman²; Joe McKeown¹; Amy Clarke²; ¹Lawrence Livermore National Laboratory; ²Colorado School of Mines

10:10 AM Break

10:30 AM

Plasticity and Damage Mechanisms in Ti-6Al-4V Printed with Selective Laser Melting: *Atieh Moridi*¹; Ali Gökhan Demir²; Barbara Previtali²; Bianca Colosimo²; John Hart¹; Cem Tasan¹; ¹Massachusetts Institute of Technology; ²Politecnico di Milano

10:50 AM

Exploring the Limits of Thin Section Builds in Laser Powder Bed Fusion Process: *Ziheng Wu*¹; Sneha Prabha Narra¹; Jack Beuth¹; Anthony Rollett¹; ¹Carnegie Mellon Univ

11:10 AM

Enhanced Ultrasonic Characterization of Metal Additively Manufactured Parts Using Hybrid Capabilities: *Luz Sotelo*¹; Michael Sealy¹; Joseph Turner¹; Cody Kanger¹; Haitham Hadidi¹; ¹University of Nebraska - Lincoln

11:30 AM

Mechanisms of Melt Pool Evolution under Constant Input Energy Density in Laser Powder Bed Fusion Additive Manufacturing Process: *Qilin Guo*¹; Cang Zhao²; Minglei Qu¹; Lianghua Xiong¹; Luis Escano¹; S. Mohammad Hojjatzadeh¹; Niranjan Parab²; Kamel Fezzaa²; Wes Everhart³; Tao Sun²; Lianyi Chen¹; ¹Missouri University of Science & Tech; ²Argonne National Laboratory; ³Honeywell FM&T

11:50 AM

Development of Process Parameters for a Low-cost Wire Arc Additive Manufacturing System: Miguel Navarro¹; Amer Matar¹; Vladimir Pena¹; *Mohsen Eshraghi*¹; ¹California State University, Los Angeles

Additive Manufacturing for Energy Applications — Process Development and Modeling

Sponsored by: TMS: Nuclear Materials Committee

Program Organizers: Isabella Van Rooyen, Idaho National Laboratory; Subhashish Meher, Idaho National Laboratory; Indrajit Charit, University of Idaho; Somayeh Pasebani, Oregon State University; Chad Duty, University of Tennessee

Wednesday AM
March 13, 2019

Room: 223
Location: Henry B. Gonzalez
Convention Center

Session Chairs: Indrajit Charit, University of Idaho; Chad Duty, University of Tennessee

8:30 AM Invited

Predictive Modeling of Process Parameter-microstructure-property Relationships of Additive Manufactured Parts: *Yung Shin*¹; Neil Bailey¹; Christopher Katinas¹; ¹Purdue Univ

9:00 AM

Phase-field Modeling of Dendritic Solidification for Additive Manufacturing Applications: *Larry Aagesen*¹; Stephanie Pitts¹; Richard Martineau¹; ¹Idaho National Laboratory

9:20 AM

Topology Optimization of Additively Manufactured Architected Materials and Components for Energy Systems: Reza Behrou¹; *James Guest*¹; ¹Johns Hopkins Univ

9:40 AM

Quantifying the Effect of Local Texture Optimization on Additive Manufactured Structural Components: *Andrea Rovinelli*¹; Mark Messner¹; T.-L. Sham¹; ¹Argonne National Laboratory

10:00 AM Break

10:20 AM Invited

Development and Optimization of Various Steels with ICME for Laser Powder Bed Fabrication Production: *Chantal Sudbrack*¹; Thomas Kozmel¹; Abhinav Saboo¹; Amit Behera¹; ¹QuesTek Innovations, LLC

10:50 AM

Evolution of the Grain Morphology due to Solidification during Additive Manufacturing: *Sudipta Biswas*¹; Daniel Schwen¹; Yongfeng Zhang¹; ¹Idaho National Laboratory

11:10 AM

Laser Powder-bed Fusion of Type 304 Stainless Steel: Ferrite-austenite Transformation: *Alicia Gauffin*¹; *P.Chris Pistorius*¹; ¹Carnegie Mellon Univ

11:30 AM

Site-specific Property Maps of Additively Manufactured SS316L Using a Mesoscale, Multi-physics Modeling Framework: *Nadia Kouraytem*¹; Carl Herriott¹; Xuxiao Li¹; Wenda Tan¹; Vahid Tari²; Ben Anglin²; Anthony Rollett²; Ashley Spear¹; ¹University of Utah; ²Carnegie Mellon University

Additive Manufacturing of Metals: Applications of Solidification Fundamentals — Microstructure Evolution

Sponsored by: TMS: Additive Manufacturing Committee
Program Organizers: Alex Plotkowski, Oak Ridge National Laboratory; Lang Yuan, University of South Carolina; Kevin Chaput, Air Force Research Laboratory; Mohsen Asle Zaeem, Colorado School of Mines; Sudarsanam Babu, The University of Tennessee, Knoxville; Wenda Tan, University of Utah

Wednesday AM
March 13, 2019

Room: 224
Location: Henry B. Gonzalez
Convention Center

Session Chairs: Lang Yuan, University of South Carolina; Wenda Tan, University of Utah

8:30 AM

Phase-field Modeling of Additive Manufacturing Cellular Solidification Microstructures: *Supriyo Ghosh*¹; Li Ma²; Nana Ofori-Opoku²; Mark Stoudt²; Lyle Levine²; Jonathan Guyer²; ¹Texas A&M University; ²NIST

8:50 AM

Phase-field Modeling of Microstructure Evolution of Binary and Multicomponent Alloys during Selective Laser Melting (SLM) Process: *Ali Ramazani*¹; Julia Kundin²; Christian Haase³; Ulrich Prah⁴; ¹Univ of Michigan; ²Ruhr-University Bochum; ³RWTH-Aachen University; ⁴University of Freiberg

9:10 AM

Experimental and Simulation Study of Solidification and Microstructural Evolution of Ti and Ni Based Alloys for Laser Based Additive Manufacturing: *Jonathan Raush*¹; Sanjeev Tulasigeri¹; Congyuan Zeng²; Shengmin Guo²; ¹Univ of Louisiana At Lafayette; ²Louisiana State University

9:30 AM

Phase Field Simulation of Microstructure Evolution in Direct Metal Laser Sintering of AlSi10Mg: *Hossein Azizi*¹; Nikolas Provatas²; Mohsen Mohammadi¹; ¹University of New Brunswick; ²McGill University

9:50 AM Break

10:10 AM

Simulation of Solidification Microstructures under AM Thermal Conditions - Investigation of Solute Trapping Models in Phase Field Simulations: *Bala Radhakrishnan*¹; Sarma Gorti¹; John Turner¹; ¹Oak Ridge National Lab

10:30 AM

Influence of Lattice Mismatch and Nucleation Anisotropy on Inoculating Efficiency at Various Cooling Rates: Insights into Grain Refinement of Additively Manufactured Metals: Zhuo Wang¹; Yaohong Xiao¹; Pengwei Liu¹; Yanzhou Ji²; Mark Horstemeyer¹; Yi Wang²; Haley Doude¹; *Lei Chen*¹; ¹Mississippi State Univ; ²The Pennsylvania State University

10:50 AM

Phase Field Modeling of Solidification during Additive Manufacturing: *Ramanarayan Hariharaputran*¹; ¹Institute of High Performance Computing

11:10 AM

Solidification Simulation of Metal Additive Manufacturing with Phase-field Modeling: *Jiwon Park*¹; Chang-Seok Oh¹; ¹Korea Institute of Materials Science

Additive Manufacturing of Metals: Fatigue and Fracture III — Session III

Sponsored by: TMS: Additive Manufacturing Committee
Program Organizers: Nikolas Hrabe, NIST-Boulder; Steve Daniewicz, University of Alabama; John Lewandowski, Case Western Reserve Univ; Nima Shamsaei, Auburn University; Mohsen Seifi, ASTM International/Case Western Reserve University

Wednesday AM
March 13, 2019

Room: 221B
Location: Henry B. Gonzalez
Convention Center

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

8:30 AM Invited

Mechanical Testing Results from MIDAS: Material Informed Digital Design Demonstration for Additive Structures: *William Musinski*¹; Michael Groeber¹; Paul Shade¹; Edwin Schwalbach¹; Sean Donegan¹; Daniel Sparkman¹; Michael Uchic¹; Jonathan Miller¹; ¹US Air Force Research Laboratory

9:00 AM

Effect of Microstructure and Defects on the Fatigue Performance of Additively Manufactured 2205 Duplex Stainless Steel: *Jayme Keist*¹; Andrew Iams¹; Griffin Jones¹; Todd Palmer¹; ¹Pennsylvania State University

9:20 AM

Predicting the Integrity of Additively Manufactured Nickel Alloys: *Jeffrey Rossin*¹; Michael Groeber²; Bill Musinski²; Jonathan Miller²; Samantha Daly¹; Tresa Pollock¹; ¹University of California Santa Barbara; ²US Air Force Research Laboratory

9:40 AM

Effect of Microstructure and Internal Defects on the Cyclic Deformation and Damage Behavior in Additively (SLM) Manufactured Al-Si Alloys: Shafaqat Siddique¹; Mustafa Awd¹; Felix Frömel¹; *Jochen Tenkamp*¹; Frank Walther¹; ¹TU Dortmund University, Department of Materials Test Engineering (WPT)

10:00 AM Break

10:20 AM Invited

A Data-driven Approach to Investigate the Influence of Process Parameters on Fatigue Life of Additively Manufactured Metals: *Ashley Spear*¹; Dillon Watring¹; Nadia Kouraytem¹; ¹University of Utah

10:50 AM

Investigating Local Microstructure Response During Crack Initiation and Propagation in DMLS IN718 Subjected to High Cycle Fatigue Loading: *Priya Ravi*¹; Diwakar Naragani¹; Michael Sangid¹; Jun-Sang Park²; Peter Kenesei²; ¹Purdue University; ²Argonne National Laboratory

11:10 AM

Fracture and Fatigue Properties of Titanium Alloy (Ti6Al4V) Parts Made Using Laser Powder Bed Fusion (LPBF) Additive Manufacturing Process: Scott Halliday¹; Prahalad Rao²; *Jeffrey Shield*³; Ashley Spear⁴; Branden Kappes⁵; Sandip Harimkar⁶; ¹Navajo Technical University; ²University of Nebraska; ³University of Nebraska-Lincoln; ⁴University of Utah; ⁵Colorado School of Mines; ⁶Oklahoma State University

11:30 AM

Fatigue Life Prediction of Additively Manufactured IN718 Using Crystal Plasticity Modeling with Experimental Validation: *Veerappan Prithivirajan*¹; Michael Sangid¹; ¹Purdue University

Additive Manufacturing of Metals: Microstructural Evolution and Phase Transformations — Fe-based Systems

Sponsored by: TMS: Phase Transformations Committee, TMS: Additive Manufacturing Committee, TMS: High Temperature Alloys Committee

Program Organizers: Bij-Na Kim, LPW Technology / Lancaster University; Eric Lass, National Institute of Standards and Technology; Mohsen Asle Zaeem, Colorado School of Mines; Sudarsanam Babu, The University of Tennessee, Knoxville; Ryan Dehoff, Oak Ridge National Laboratory; Gerhard Fuchs, University of Florida; Chantal Sudbrack, QuesTek Innovations LLC

Wednesday AM
March 13, 2019

Room: 221C
Location: Henry B. Gonzalez
Convention Center

Session Chairs: Suresh Babu, The University of Tennessee, Knoxville; Constaninos Goulas, Rotterdam Fieldlab Additive Manufacturing / TU Delft

8:30 AM Invited

Cryomilled 17-4 Stainless Steel Powder as Feedstock for Additive Manufacturing: *Franklyn Kellogg*¹; Andelle Kudzal²; Josh Taggart-Scarff¹; Ryan Rogers³; Brandon McWilliams²; ¹SURVICE Engineering; ²US Army Research Laboratory; ³Bowhead Support

9:00 AM

The Effects of Nitrogen on the Microstructure of Precipitation Hardenable Martensitic Stainless Steels for Additive Manufacturing: *Eric Lass*¹; ¹National Institute of Standards and Technology

9:20 AM

Microstructure Evolution in Direct Metal Laser Sintered Corrax Maraging Stainless Steel: *Amir Hadadzadeh*¹; Babak Shalchi Amirkhiz²; Jian Li²; Mohsen Mohammadi¹; ¹Marine Additive Manufacturing Centre of Excellence-University of New Brunswick; ²CanmetMATERIALS-Natural Resources Canada

9:40 AM

Synchrotron X-ray Imaging of 4140 Steel Laser Powder Bed Fusion: Andrew Bobel¹; Anil Sachdev¹; Tyson Brown¹; Whitney Poling¹; Robert Kubic¹; *Louis Hector*¹; Tao Sun²; Benjamin Gould²; Aaron Greco²; Isaac Chelladurai³; ¹General Motors Global R&D Center; ²Argonne National Laboratory; ³Brigham Young University

10:00 AM Break

10:20 AM

From Powder to Part: On the Microstructural and Phase Stability in Steel Builds: *Bij-Na Kim*¹; David San Martin²; Pedro EJ Rivera-Diazdel-Castillo³; ¹LPW Technology / Lancaster University; ²CENIM-CSIC; ³Lancaster University

10:40 AM

Tailoring Microstructure of Steel Alloys in Selective Laser Melting: *Mahdi Jamshidinia*¹; Behrang Poorganji¹; ¹GE Additive

11:00 AM

Controlling Defects and Microstructure Evolution in Single Tracks: *Saad Khairallah*¹; Rongpei Shi¹; Jianchao Ye¹; Alexander Rubenchik¹; Aiden Martin¹; Nicholas Calta¹; Tien Roehling¹; John Roehling¹; Josephn McKeown¹; Manyalibo Matthews¹; ¹Lawrence Livermore National Laboratory

11:20 AM

Inclusion Evolution in Additive Manufactured 316L Stainless Steel Using Laser Metal Deposition Process: Du-Rim Eo¹; *Jung-Wook Cho*¹; Sun-Hong Park²; ¹POSTECH; ²Research Institute of Industrial Science and Technology(RIST)

Additive Manufacturing: Materials Design and Alloy Development — Functional Materials for AM

Sponsored by: TMS: Additive Manufacturing Committee, TMS: Integrated Computational Materials Engineering Committee

Program Organizers: Behrang Poorganji, GE Additive; James Saal; Hunter Martin, HRL Labs; Orlando Rios, Oak Ridge National Laboratory

Wednesday AM
March 13, 2019

Room: 221D
Location: Henry B. Gonzalez
Convention Center

Session Chair: To Be Announced

8:30 AM Invited

Development and Synthesis of Functional Materials via Additive Manufacturing: *Ryan Ott*¹; Emrah Simsek¹; Fanqiang Meng¹; Ikenna Nlededim¹; Matthew Kramer¹; ¹Ames Laboratory

9:00 AM

Mitigating Melt Pool Balling Defects through Alloy Compositional Changes and Processing Changes: *Jack Beuth*¹; Zachary Francis¹; Debomita Basu¹; Nicholas Jones¹; Bryan Webler¹; ¹Carnegie Mellon Univ

9:20 AM

Composition Refinement for Functional Gradient Printing Methodology: *Olga Eliseeva*¹; Tanner Kirk¹; Raymundo Arroyave¹; Richard Malak¹; Alaa Elwany¹; Ibrahim Karaman¹; ¹Texas A&M University

9:40 AM

Laser Powder Bed Fusion of Fe-Si Soft-Magnetic Materials: *Alex Plotkowski*¹; Fred List¹; Jason Pries¹; Benjamin Stump¹; Ryan Dehoff¹; ¹Oak Ridge National Laboratory

10:00 AM

Alloy-design for Biomedical Applications in Additive Manufacturing: *Kay-Peter Hoyer*¹; Mirko Schaper¹; ¹Paderborn University, Chair of Material Science

10:20 AM Break

10:40 AM Invited

Alloy Design of Ti-based Metallic Glass for Additive Manufacturing and EIGA Processes: *Hwi-Jun Kim*¹; Sung-Uk Hong¹; Min-Ha Lee¹; Min-Cheol Kang¹; ¹KITECH

11:10 AM

Additive Manufacturing of Metal Trenching and Excavating Tools for Future NASA Landers: *Douglas Hofmann*¹; Punnathat Bordeenithikasem¹; Andre Pate¹; Samad Firdosy¹; Chris Yahnker¹; Cecily Sunday¹; Morgan Hendry¹; ¹NASA JPL/Caltech

11:40 AM

In Situ Alloying of High-entropy Alloy Compositions through Additive Manufacturing: *Michael Moorehead*¹; Kaila Bertsch¹; Dan Thoma¹; Calvin Parkin¹; Adrien Couet¹; Kumar Sridharan¹; ¹University of Wisconsin-Madison

12:00 PM

Characterization of Cu-Sn-Ti based Metal-Diamond Composites Fabricated by Selective Laser Melting: Xiaoshuang Li¹; Adriaan Spierings²; Konrad Wegener³; *Christian Leinenbach*¹; ¹Empa - Materials Science And Technology; ²Inspire AG; ³ETH Zurich

Advanced Characterization Techniques for Quantifying and Modeling Deformation — Session V

Sponsored by: 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; C. Tasan, Massachusetts Institute of Technology; M Arul Kumar, Los Alamos National Laboratory

Wednesday AM
March 13, 2019

Room: 302A
Location: Henry B. Gonzalez
Convention Center

Session Chairs: Robert Maass, University of Illinois at Urbana-Champaign; Peter Hedström, KTH Royal Institute of Technology

8:30 AM Invited

Characterization of Deformation Behaviour of Fe-Cr-Ni Alloys with Different Austenite Stabilities: *Peter Hedström*¹; Ye Tian¹; Benjamin Neding¹; ¹KTH Royal Institute of Technology

9:00 AM

Microstructural Evolution of Ti-7Al Under Cyclic Loading: *Rachel Lim*¹; Vahid Tari¹; Darren Pagan²; Yufeng Shen¹; Robert Suter¹; Anthony Rollett¹; ¹Carnegie Mellon University; ²Cornell High Energy Synchrotron Source

9:20 AM

A Temperature Sensitivity Study of Non-proportional Strain-paths using In Situ X-ray Diffraction: *David Collins*¹; Richard Todd²; Angus Wilkinson²; ¹University of Birmingham; ²University of Oxford

9:40 AM

Coupling Experiments and Simulation to Understand Local Deformation Mechanism in Ni Micro-wire: *Ravi Purushottam*¹; *Céline Gérard*²; Loïc Signor²; Abhinav Arya³; Girish Bojjawar³; Satyam Suwas³; Atul Chokshi³; Ludovic Thilly¹; ¹University of Poitiers; ²Institut Pprime CNRS-Université de Poitiers-ISAE ENSMA; ³IISc-Bangalore

10:00 AM Break

10:20 AM Invited

Non-trivial Scaling Exponents of Avalanches in Crystal Plasticity: *Robert Maass*¹; ¹University of Illinois At Urbana-Champaign

10:50 AM

Investigation of Improved Ductility in Mg-Ca Alloy through In Situ EBSD and 3DXRD Experiments: *Leyun Wang*¹; Gaoming Zhu¹; Zhouuo Tong¹; ¹Shanghai Jiao Tong University

11:10 AM

316L Stainless Steel Subjected to Shear: *Ramon Martinez*¹; Veronica Livescu¹; William Blumenthal¹; Clarissa Yablinsky¹; Christopher Baxter¹; Hashem Mourad¹; Curt Bronkhorst¹; ¹Los Alamos National Laboratory

11:30 AM

3D Characterization of Nano-scale Precipitates in Shape-memory Alloys: *Dexin Zhao*¹; Tejas Umale¹; Jobin Joy¹; Ibrahim Karaman¹; Lagoudas Dimitris¹; Kelvin Xie¹; ¹Texas A&M University

11:50 AM

Study of Heterogeneous Deformation and Estimation of Surface Dislocation Density in Hexagonal Titanium: *Harsha Phukan*¹; Thomas Bieler¹; Chen Zhang¹; Ruqing Xu²; Philip Eisenlohr¹; Martin Crimp¹; Carl Boehlert¹; ¹Michigan State University; ²Argonne National Laboratory

Advanced High-Strength Steels III — Microstructure, Processing, and Properties Advanced High-Strength Steels III

Sponsored by: TMS: Steels Committee
Program Organizers: Amy Clarke, Colorado School of Mines; MingXin Huang, University of Hong Kong; C. Tasan, Massachusetts Institute of Technology; Kester Clarke, Colorado School of Mines; Ana Luiza Araujo, Colorado School of Mines

Wednesday AM
March 13, 2019

Room: 205
Location: Henry B. Gonzalez
Convention Center

Session Chair: To Be Announced

8:30 AM

In Situ Investigation of the Iron Carbide Precipitation Process in a Fe-C-Mn-Si Q&P Steel: *Sebastien Allain*¹; Angéline Poulon-Quintin²; Samy Aoued²; Magali Bouzat³; Michel Soler³; Jean-Christophe Hell³; Frédéric Danoix⁴; Mohamed Goune²; Guillaume Geandier⁵; ¹Institut Jean Lamour / Mines Nancy; ²ICMCB; ³ArcelorMittal Maizières Research; ⁴GPM; ⁵Institut Jean Lamour

8:50 AM

Into the Quenching & Partitioning of a 0.2C Steel: an In Situ Synchrotron Study: *Pierre Huyghe*¹; Matteo Caruso²; Jean-Louis Collet²; Sylvain Dépinoy¹; *Stephane Godet*¹; ¹Universite Libre De Bruxelles; ²CRM Group

9:10 AM

Revealing the Effect of Fast-heating on the Microstructure and Mechanical Properties of Cold-rolled Q&P Steels: *Geng Liu*¹; Hao Chen¹; ¹Tsinghua University

9:30 AM

Effect of Strain Rate on the Austenite Mechanical Stability in QP980 Steel: *Ming Wang*¹; Binbin He¹; Mingxin Huang¹; ¹The University of Hong Kong

9:50 AM Break

10:10 AM

Micro-mechanics of Plasticity and Damage in 3rd Generation Advanced High Strength Steel: *Mei-Mei Wang*¹; *Jean-Christophe Hell*²; Cem Tasan³; ¹Max-Planck-Institut für Eisenforschung; ²Arcelormittal Global R&D; ³Massachusetts Institute of Technology

10:30 AM

The Influence of Transformation Induced Plasticity on Damage Development in QP1500: *Concetta Pelligra*¹; Javad Samei¹; David Wilkinson¹; ¹McMaster University

10:50 AM

Low Temperature Deformation and Fracture Behaviors of a 1400 MPa Quenching and Partitioning Steel: *Zhou Wang*¹; Mingxin Huang¹; ¹The University of Hong Kong

11:10 AM

Development of Advanced High Strength Steels for Automobile Applications: *Francys Barrado*¹; Tihe Zhou¹; David Overby¹; Peter Badgley¹; Christopher Martin-Root¹; Sarah Zhang¹; Richard Zhang¹; ¹Research Department, Stelco Inc.

11:30 AM

Tailoring the Strength and Ductility by Different Transformation Procedures in 0.47C- and 0.19C- TRIP Steels: *Yongfeng Shen*¹; ¹Northeastern University

Advanced Magnetic Materials for Energy and Power Conversion Applications — FEMS-TMS Joint Session on Critical Materials in Magnet Supply Chains

Sponsored by: Federation of European Materials Societies (FEMS), TMS Functional Materials Division, TMS: Magnetic Materials Committee

Program Organizers: Frank Johnson, Niron Magnetics, Inc.; Paul Ohodnicki, National Energy Technology Laboratory; Alex Leary, Nasa Grc; Orlando Rios, Oak Ridge National Laboratory; Alessandra Hool, ESM Foundation

Wednesday AM
March 13, 2019

Room: 225B
Location: Henry B. Gonzalez
Convention Center

Session Chair: Orlando Rios, Oak Ridge National Laboratory

8:30 AM

Critical Raw Materials: Current Challenges in Europe and Beyond: *Alessandra Hool*¹; ¹ESM Foundation

8:50 AM Invited

Availability of Raw Materials for Magnets: Short- and Long-Term Considerations: *Roderick Eggert*¹; ¹Colorado School of Mines

9:20 AM Invited

Canadian Rare Earth Elements R&D Program: *Janice Zinck*¹; Ian London²; ¹Natural Resources Canada, CanmetMINING; ²Canadian Rare Earth Elements Network (CREEN)

9:50 AM Break

10:10 AM Invited

Accelerated Development of Substitutes for Critical Materials in Clean Energy Technologies: *Thomas Lograsso*¹; ¹Ames Laboratory

10:40 AM Invited

A State of the Art Life Cycle Assessment of Rare Earth Elements: *Gwendolyn Bailey*¹; *Dieuwertje Schrijvers*²; *Rita Schulze*³; *Anne Marie Slyvestre*⁴; *James Joyce*⁵; *Benjamin Sprecher*³; *Ehsan Vahidi*⁶; *Wim Dewulf*¹; *Karel Van Acker*¹; ¹Ku Leuven; ²Université de Bordeaux; ³Leiden University; ⁴Lynas; ⁵KTH; ⁶Purdue University

Advanced Microelectronic Packaging, Emerging Interconnection Technology, and Pb-free Solder — Advanced Microelectronic Packaging Materials

Sponsored by: TMS: Electronic Packaging and Interconnection Materials Committee

Program Organizers: Kazuhiro Nogita, University of Queensland; Tae-Kyu Lee, Portland State University; Yan Li, Intel Corporation; Christopher Gourlay, Imperial College London; Zhi-Quan Liu, Chinese Academy of Sciences; Rahul Panat, Carnegie Mellon University; Albert T. Wu, National Central University; Andre Delhaise, University of Toronto; Mohd Arif Salleh, Universiti Malaysia Perlis

Wednesday AM
March 13, 2019

Room: 216A
Location: Henry B. Gonzalez
Convention Center

Session Chairs: Andre Delhaise, Celestica; Rahul Panat, Carnegie Mellon University

8:30 AM

High Thermally Conducting Polymer-based Films with Magnetic Field-assisted Aligned Hexagonal Boron Nitride for Flexible Electronic Encapsulation: *Jie Yuan*¹; Zhi-Quan Liu¹; ¹Institute of Metal Research, Chinese Academy of Sciences

8:50 AM

Soldering of Core-shell Multi-Segment Nanowires for Nanoscale Interconnection: *Edward Fratto*¹; *Jirui Wang*¹; *Hongwei Sun*¹; *Zhiyong Gu*¹; ¹University of Massachusetts Lowell

9:10 AM

Boron Nitride Nanotube-based Composites for Thermal Management: *Hannes Schniepp*¹; ¹The College of William & Mary

9:30 AM

Developing Seed Layer for Electroplating of Vertically Aligned Carbon Nano Tubes: *Leila Ladani*¹; *Garrison Frost*¹; ¹University of Texas at Arlington

9:50 AM Break

10:10 AM

Transient Response of Composite PCMs to Periodic Heat Pulses: *Michael Deckard*¹; *Alison Hoe*¹; *Jonathan Felts*¹; *Patrick Shamberger*¹; ¹Texas A&M University

10:30 AM

The Interaction of Ga-based Alloys and Cu Substrates at Low Temperatures: *Shiqian Liu*¹; *Stuart McDonald*¹; *Keith Sweatman*²; *Tetsuro Nishimura*²; *Kazuhiro Nogita*¹; ¹Nihon Superior Centre for the Manufacture of Electronic Materials (NS CMEM), School of Mechanical and Mining Engineering, The University of Queensland; ²Nihon Superior Co., Ltd.

10:50 AM

A Preliminary Study of Oxide Film Break-down during Ultrasonic Wire Bonding: *Calvin Tszeng*¹; *Panthea Sepehrband*¹; ¹Santa Clara University

11:10 AM

Study of Thiourea-sulfur Compound Co-deposited in Ni(P) and its Effect on Ni(P) Surface Corrosion: *Chen-Yu Wu*¹; *Cheng-Yi Liu*¹; *An-Lun Liu*²; *Min-lung Cheng*²; *Chih-yuan Hsiao*²; ¹National Central University; ²Taiwan Uyemura

Advanced Real Time Imaging — Additive Manufacturing and Biomaterials

Sponsored by: TMS: Alloy Phases Committee

Program Organizers: Jinichiro Nakano, US DOE - National Energy Tech Lab; P.Chris Pistorius, Carnegie Mellon University; Candan Tamerler, University of Kansas; Hideyuki Yasuda, Kyoto University; Zuotai Zhang, Southern University Of Science And Techn; Neslihan Dogan, McMaster University; Wanlin Wang, Central South University; Noritaka Saito, Kyushu University; Yongsug Chung, Korea Polytechnic University; Bryan Webler, Carnegie Mellon University

Wednesday AM
March 13, 2019

Room: 302B
Location: Henry B. Gonzalez
Convention Center

Session Chairs: Yongsug Chung, Korea Polytechnic University; Candan Tamerler, University of Kansas

8:30 AM

In Situ Characterization of Hot Cracking using Dynamic X-ray Radiography: *Po-Ju Chiang*¹; *Runbo Jiang*¹; *Ross Cunningham*¹; *Niranjana Parab*²; *Cang Zhao*²; *Kamel Fezzaa*²; *Tao Sun*²; *Anthony Rollett*¹; ¹Carnegie Mellon University; ²Argonne National Laboratory

8:50 AM

High Resolution 4D X-ray Tomography of Dendrite Growth in Aluminum Alloys: *Tiberiu Stan*¹; *Yue Sun*¹; *Kate Elder*¹; *Xianghui Xiao*²; *Peter Voorhees*¹; ¹Northwestern University; ²Argonne National Laboratory

9:10 AM

Determination of Temperature Distribution in and Around the Melt Pool during Laser Powder Bed Fusion by Hyperspectral Thermal Imaging: *Nicholas Calta*¹; *Gabe Guss*¹; *Dongxia Qu*¹; *Saad Khairallah*¹; *Manyalibo Matthews*¹; ¹Lawrence Livermore National Laboratory

9:30 AM

New Insights on Liquid Metal Breakup from High Speed Image Analysis during Close Coupled Gas Atomization: *Jordan Tiarks¹*; Trevor Riedemann¹; Emma White¹; Iver Anderson¹; ¹US DOE Ames Laboratory

9:50 AM Break

10:10 AM

Analysis of Chlorpropamide's Polymorphic Transformation using In Situ Mechanical Raman Spectroscopy during Tableting: *Vikas Kumar Reddy Yettella¹*; Heejun Park¹; Abhijeet Dhiman¹; Vikas Tomar¹; Qi Zhou¹; ¹Purdue University

10:30 AM

High-frequency Ultrasound Analysis in Both Experimental and Computation Level to Understand the Micro Structural Change in Soft Tissues: *Leila Ladani¹*; Koushik Paul¹; Jeremy Stromer²; ¹University of Texas at Arlington; ²University of Connecticut

Advances in Computational Methods for Damage Mechanics and Failure Phenomena — Computational Modeling of Failure: Novel Methods

Sponsored by: TMS: Computational Materials Science and Engineering Committee

Program Organizers: Srujan Rokkam, Def-Aero, Advanced Cooling Technologies Inc; Michael Tonks, University of Florida; Remi Dingreville, Sandia National Laboratories; Jaafar El-Awady, Johns Hopkins University

Wednesday AM

March 13, 2019

Room: 303C

Location: Henry B. Gonzalez Convention Center

Session Chairs: Amine Benzerga, Texas A&M University; Katsuyo Thornton, University of Michigan

8:30 AM Introductory Comments

8:35 AM Invited

A New Automated Computational Framework for Simulating the Failure Response of Materials with Complex Microstructures: *Soheil Soghrati¹*; Anand Nagaragan¹; Ming Yang¹; Bowen Liang¹; Hossein Ahmadian¹; Weijie Mai¹; ¹The Ohio State University

9:05 AM Invited

A Parameter-free Top-down Approach to Ductile Fracture Simulations: *Amine Benzerga¹*; ¹Texas A & M University

9:35 AM

A Nonlinear Dynamics Approach to Oxide Breakdown in the Stochastic Model of Zirconium Alloy Corrosion: *Richard Smith¹*; ¹Naval Nuclear Laboratory

9:55 AM Break

10:15 AM Invited

Computational Modeling of Fracture in Ceramic Nuclear Fuel: Comparison of Methods and Validation Needs: *Benjamin Spencer¹*; Wen Jaing¹; Hailong Chen¹; ¹Idaho National Laboratory

10:45 AM Invited

The Smoothed Boundary Method for Mechanics of Anisotropic Materials for Energy Storage: Alexander Chadwick¹; Doaa Taha¹; Erik Hanson¹; Hui-Chia Yu²; *Katsuyo Thornton¹*; ¹University of Michigan; ²Michigan State University

11:15 AM

Engineering Microcracked Ceramic Metamaterials: *Ryan Cooper¹*; ¹University of Connecticut

11:35 AM Invited

Design of Supercompressible Material by Artificial Intelligence and Additive Manufacturing: *Miguel Bessa¹*; ¹Delft University of Technology

Algorithm Development in Materials Science and Engineering — Atomistic and MesoScale Algorithms in Study and Design of Materials

Sponsored by: TMS: Computational Materials Science and Engineering Committee, TMS: Phase Transformations Committee, TMS: Integrated Computational Materials Engineering Committee
Program Organizers: Mohsen Asle Zaeem, Colorado School of Mines; Garritt Tucker, Colorado School of Mines; Prasanna Balachandran, University of Virginia; Douglas Spearot, University of Florida; Charudatta Phatak, Argonne National Laboratory; Srinivasan Srivilliputhur, University of North Texas

Wednesday AM

March 13, 2019

Room: 304A

Location: Henry B. Gonzalez Convention Center

Session Chairs: Mohsen Asle Zaeem, Colorado School of Mines; Vahid Tari, Eaton Corporate Research & Technology

8:30 AM Invited

Coupling CPFEM with Phase Field Modeling from Crack Propagation in Polycrystalline Materials: *Somnath Ghosh¹*; Jiahao Cheng¹; Ahmad Shahba¹; ¹Johns Hopkins University

9:00 AM

A phase field model for dislocation evolution in heterogeneous media: *Shuozhi Xu¹*; Abigail Hunter²; Irene Beyerlein¹; ¹University Of California, Santa Barbara; ²Los Alamos National Laboratory

9:40 AM

Algorithm to Include Inertia in FFT-based Micromechanical Modelling of Heterogeneous Materials: *Ricardo Lebensohn¹*; ¹Los Alamos National Laboratory

9:20 AM

Multi-Information Source Fusion and Optimization to Realize ICME: Application to Dual Phase Materials: Seyed Ghoreishi¹; Abhilash Molkeri¹; Raymundo Arroyave¹; Douglas Allaire¹; *Ankit Srivastava¹*; ¹Texas A&M University

10:00 AM Break

10:30 AM

Extension of SPPARKS' hybrid Potts-Phase Field Model to Include Anisotropic Grain Boundaries: *Efrain Hernandez-Rivera¹*; Philip Goins¹; Heather Murdoch¹; ¹US Army Research Laboratory

10:50 AM

A Crystal Plasticity Model for Dynamic Recrystallization in Ti-6Al-4V Alloy: *Arunabha Mohan Roy¹*; Riddhiman Bhattacharya¹; John Allison¹; Veera Sundararaghavan¹; ¹University of Michigan-Ann Arbor

11:10 AM

Numerical Simulation of Ti6-Al4-V Alloy Diffusion Bonding Process Based on Molecular Dynamics: *Xiaogang Liu¹*; Haiding Guo¹; Yongji Zuo¹; ¹College of Energy and Power Engineering, Nanjing University of Aero and Astro

11:30 AM

Modeling the Evolution of Microstructure of Metallic Powder Particles at the Mesoscales using Quasi-Coarse-Grained Dynamics Simulations: *Avinash Dongare¹*; ¹University of Connecticut

Alloys and Compounds for Thermoelectric and Solar Cell Applications VII — Session V

Sponsored by: TMS: Alloy Phases Committee

Program Organizers: Sinn-wen Chen, National Tsing Hua University; Franck Gascoin, Ensicaen University of Caen; Soon-Jik Hong, Kongju National Univ; Philippe Jund, Montpellier University; Lan Li, Boise State University; Takao Mori, Nims; Hsin-Jay Wu, National Sun Yat-sen University; Tiejun Zhu, Zhejiang University

Wednesday AM
March 13, 2019

Room: 216B
Location: Henry B. Gonzalez
Convention Center

Session Chairs: Yoshisato Kimura, Tokyo Institute of Technology; Lan Li, Boise State University

8:30 AM Invited

Tuning Transition Metal Dichalcogenide Heterostructure Transport Properties: *Lan Li*¹; ¹Boise State University

8:50 AM Invited

Strain Tuning of Thermoelectric Properties of 2D TMDCs: The Case of TiSe₂: Safoura Nayebsadeghi¹; Mona Zebarjadi¹; *Keivan Esfarjani*¹; ¹University of Virginia

9:10 AM Invited

Applications of Aberration-Corrected TEM on Thermoelectric Materials: *Binghui Ge*¹; Yumei Wang²; ¹Anhui University; ²Institute of Physics, CAS

9:30 AM

Intrinsic Phase Stability and Microstructural Evolution of Elastically Stressed Mg₂SixSn_{1-x} Thermoelectric System: *Vahid Attari*¹; Su-In Yi¹; Choongho Yu¹; Raymundo Arroyave¹; ¹Texas A&M University

9:50 AM

Phonon Spectroscopy in Inhomogenous Materials: *Raphael Hermann*¹; ¹Oak Ridge National Laboratory

10:10 AM Break

10:30 AM Invited

Effects of Vacancy-Site Occupancy on Thermoelectric and Mechanical Properties of Half-Heusler ZrNiSn and Zr(Ni,Co)Sn: *Yoshisato Kimura*¹; Yaw Wang Chai¹; ¹Tokyo Institute of Technology

10:50 AM Invited

Screening Promising Thermoelectric Materials in Binary Chalcogenides through High-Throughput Computations: *Yongsheng Zhang*¹; ¹Institute of Solid State Physics, Cas

11:10 AM Invited

Computational Screening of Tens of Thousands of Compounds as Potential Thermoelectrics and their Experimental Followup: *Anubhav Jain*¹; ¹Lawrence Berkeley National Laboratory

11:30 AM

Mechanical Characterization and Microstructural Evolution of Reactively-Brazed Half-Heusler/Incusil ABA/Copper Interfaces: *Sonika Gahlawat*¹; Kenneth White¹; ¹University of Houston

11:50 AM

In Situ TEM Study of Transition Metal Oxides based Hole-Selective Contacts Employed in Silicon Solar Cells: *Haider Ali*¹; Supriya Koul¹; Geoffrey Gregory¹; Akihiro Kushima¹; Kristopher Davis¹; ¹University of Central Florida

Alumina & Bauxite — Bayer Process and Non-conventional Processing

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

Program Organizer: Sebastien Fortin, Rio Tinto - Aluminium Technology Solutions - ARDC

Wednesday AM
March 13, 2019

Room: 006A
Location: Henry B. Gonzalez
Convention Center

Session Chairs: Roberto Seno, Companhia Brasileira de Alumínio (CBA); Lance Myers, Alcoa; James Vaughan, Univ of Queensland; Marie-Louise Bouchard, Rio Tinto

8:30 AM Introductory Comments

8:35 AM

Advances in Beneficiation of Low-grade Bauxite: *Lala Sukla*¹; Archana Pattanaik¹; Debabrata Pradhan¹; ¹Biofuels and Bioprocessing Research Center, Institute of Technical Education and

9:00 AM

Leaching Kinetics of Thermally-activated, High Silica Bauxite: *Hong Peng*¹; Steven Peters²; James Vaughan¹; ¹Univ of Queensland; ²University of Bath

9:25 AM

Rheological Improvements in Alumina Industry Clarification Circuits: *Lawrence Andermann*¹; Adrian Mullins Mullins²; Cameron Smyth²; Clive Roscoe¹; ¹Solenis; ²Rio Tinto Aluminum

9:50 AM

Improving the Reliability of Fluidized Bed Alumina Calciners by Suitable Refractory Lining Selection: *Mariana Braulio*¹; Jose Cunha²; Austin Maxwell²; Dean Whiteman²; Victor Pandolfelli³; ¹4cast Materials Consultancy; ²Alcoa; ³Federal University of São Carlos

10:15 AM Break

10:30 AM Keynote

Valorization of Bauxite Residue: A Challenge That Leads to a Mentality Shift and Eventually Innovation: *Yiannis Pontikes*¹; ¹KU Leuven

11:10 AM

Synchronous Desulfurization and Desilication of Low-quality Bauxite by a Flotation Process: Wencui Chai¹; *Guihong Han*¹; Yanfang Huang¹; Yijun Cao¹; Jiongtian Liu¹; ¹Zhengzhou University

11:35 AM

Preparing Alumina by Electrolytic Method from Sulfuric Acid Leachate of Coal Fly Ash: *Yuan Shi*¹; Kai-xi Jiang¹; Zhang Tingan¹; Guo-zhi Lyu¹; ¹Northeastern Univ

Aluminum Alloys, Processing and Characterization — Simulations and Studies of Processing

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

Program Organizer: Hiromi Nagaumi, Soochow University

Wednesday AM
March 13, 2019

Room: 007A
Location: Henry B. Gonzalez
Convention Center

Session Chair: Hiromi Nagaumi, Soochow University

8:30 AM Introductory Comments

8:35 AM

Coupled Fluid Flow and Heat Transfer Analysis of Ageing Heat Furnace: *Mircea Popa*¹; Ioan Sava¹; Marin Petre¹; Catalin Ducu²; Sorin Moga²; Alexandra Necola¹; Constantin-Nicuser Draghici¹; ¹ALRO; ²University of Pitesti

9:00 AM

The Influence of the Distance Between the Plate and the Top Nozzles During the Soft Quenching Process of the 6061 Aluminium Alloy Plates: Gheorghe Dobra¹; Ioan Sava¹; *Carmen Stanica*¹; Marin Petre¹; Catalin Ducu²; Sorin Moga²; Cristian Florescu¹; ¹ALRO; ²University of Pitesti

9:25 AM

Numerical Investigation on the Motion of Free-floating Crystals during DC Casting of Aluminum Alloys: *Qipeng Dong*¹; Hiromi Nagaumi¹; Haitao Zhang²; Tianpeng Qu¹; Jingkun Wang³; ¹Soochow University; ²Northeastern University; ³China Hongqiao Group Limited

9:50 AM

Numerical Modelling, Microstructural Evolution and Characterization of Laser Cladded Al-Si-Sn Coatings on Ti-6Al-4V Alloy: *Olavale Fatoba*¹; Esther Akinlabi¹; Stephen Akinlabi¹; Mutiu Erinosh¹; ¹University of Johannesburg

10:15 AM Break

10:30 AM

The influence of quenching and stretching process conditions of aluminium alloy plates on residual stresses: Gheorghe Dobra¹; Ioan Sava¹; *Cristian Stanescu*¹; Catalin Ducu²; Sorin Moga²; Decebal Dorin Balasoiu¹; Dan Ion Paun¹; ¹ALRO; ²University of Pitesti

10:55 AM

Characteristics of Surface Properties of Aluminum Flat Products Related with Different Annealing Temperature and Cleaning Properties: *Emel Çaliskan*¹; Kaan Ipek¹; Ahmet Seisoglu¹; Erdem Güler¹; Ali Ulus¹; ¹Teknik Alüminyum San. Tic. A.S.

11:20 AM

Comparative electrochemical and intergranular corrosion-resistance testing of wrought aluminium alloys: *Varuzan Kevorkijan*¹; Irena Lesjak¹; Marko Degiampietro¹; Lucija Skledar¹; Teja Krumpak¹; ¹Impol R in R d.o.o.

11:45 AM

Nature of Grain Boundary Precipitates and Stress Corrosion Behavior in Al 7075 and 7079 Alloys: *Ramasis Goswami*¹; ¹Naval Research Laboratory

Aluminum Reduction Technology — Joint Session with Electrode Technology

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

Program Organizer: Marc Dupuis, GeniSim Inc

Wednesday AM
March 13, 2019

Room: 004
Location: Henry B. Gonzalez
Convention Center

Session Chairs: Ali Jassim, EGA; Bjørn Petter Moxnes, Hydro Aluminium Sunndal Metal Plant

8:30 AM Introductory Comments

8:35 AM

Dry Barrier Powder Performance Update: *Richard Jeltsch*¹; ¹Jeltsch Consulting

9:00 AM

Investigation of Refractory Degradation in Hall-Héroult Cell: *Bhavya Narang*¹; Shanmukh Rajgire¹; Amit Gupta¹; Mahesh Sahoo²; J.P. Nayak²; ¹Aditya Birla Science and Technology Company Pvt. Ltd.; ²Hindalco Industries Ltd.

9:25 AM

Thermogravimetric analysis of thermal insulating materials exposed to sodium vapor: *Raymond Luneng*¹; Zhaohui Wang²; Arne Petter Ratvik²; Tor Grande¹; ¹Norwegian Univ of Science & Technology; ²SINTEF Industry

9:50 AM

Innovative Anode Coating Technology to Reduce Anode Carbon Consumption in Electrolysis Cells: *Ali Jassim*¹; Najeeba Al Jabri¹; Saleh Ahmed Rabbaa¹; Edouard Gerard Mofor¹; Jamil Jamal Wazir Eddin¹; ¹EGA

10:15 AM Break

10:30 AM

Theory and Practice of High Temperature Gas Baking Technology for Aluminium Electrolysis Cells: *Xudong Wang*¹; Yingwu Li¹; Chengbo Wu¹; Yinbo Zhang¹; ¹Zhengzhou Jingwei Technology Industry Co., Ltd

10:55 AM

Research and Application of Direct Welding Technology on Super Large Section Conductor: *Xudong Wang*¹; *Yingwu Li*¹; Qingguo Bai¹; Qianqian Wei¹; ¹Zhengzhou Jingwei Technology Industry Co., Ltd

11:20 AM Concluding Comments

Bio-Nano Interfaces and Engineering Applications — Bio-Nano Interfaces IV

Sponsored by: TMS Functional Materials Division, TMS Structural Materials Division, TMS: Biomaterials Committee

Program Organizers: Candan Tamerler, University of Kansas; Kalpana Katti, North Dakota State University; Po-Yu Chen, National Tsing Hua University; Hendrik Heinz, University of Colorado Boulder; Terry Lowe, Colorado School of Mines

Wednesday AM

March 13, 2019

Room: 217C

Location: Henry B. Gonzalez
Convention Center

Session Chairs: Hendrik Heinz, University of Colorado; Candan Tamerler, University of Kansas

8:30 AM Invited

Structure / property relationships in Biomaterials at the nanoscale: *Federico Rosei*¹; ¹INRS Centre for Energy, Matls & Telecommunications

9:00 AM

Nanoclusters with T1 MRI enhancement for imaging-guided drug delivery: *Yuping Bao*¹; ¹Univ of Alabama

9:20 AM Invited

Nanostructured Diamond for Medical Device Applications: *Roger Narayan*¹; ¹University of North Carolina

9:50 AM

Engineered Peptide Coupled Polymer Composites for Antimicrobial Adhesive-Dentin Interface: *Sheng-Xue Xin*¹; Kyle Boone¹; Leon Song¹; Sarah VanOosten¹; Paulette Spencer¹; Candan Tamerler¹; ¹University of Kansas

10:10 AM Break

10:30 AM Keynote

Phase-Change Materials for Controlled Release and Related Biomedical Applications: Da Huo¹; Jiajia Xue¹; Chunlei Zhu¹; *Yunan Xia*¹; ¹Georgia Institute of Technology and Emory University

11:10 AM

Adhesion of neuron-like cells on single-layer MoS₂ towards electrical detection of cell activity: *Kazuki Yatsu*¹; Tomoko Ohnishi¹; Takakazu Seki¹; Hironaga Noguchi¹; Sayaka Tezuka¹; Yuhei Hayamizu¹; ¹Tokyo Institute of Technology

11:30 AM Invited

Interdisciplinary Strategies for Engineering at Nanoscale: *Handan Acar*¹; ¹Stephenson School of Biomedical Engineering, University of Oklahoma

Bulk Metallic Glasses XVI — Synthesis and Mechanical Properties

Sponsored by: TMS: Mechanical Behavior of Materials Committee
Program Organizers: Xie Xie, FCA US LLC; Peter Liaw, University of Tennessee; Yanfei Gao, University of Tennessee; Hahn Choo, University of Tennessee; Yunfeng Shi, Rensselaer Polytechnic Institute; Gongyao Wang, Alcoa; Robert Maass, University of Illinois at Urbana-Champaign; Muhammad Rafique, RMIT University

Wednesday AM
March 13, 2019

Room: 206B
Location: Henry B. Gonzalez
Convention Center

Session Chairs: Frans Spaepen, Harvard School of Engrg & Appl Sciences; Juergen Eckert, Erich Schmid Inst of Materials Science

8:30 AM Keynote

Mechanical Measurements on Colloidal Crystals and Glasses: J. Terdik¹; David Weitz¹; *Frans Spaepen*¹; ¹Harvard Univ

9:00 AM Keynote

Improving the Tensile Ductility of Bulk Metallic Glasses by Controlling Heterogeneities: *Jurgen Eckert*¹; ¹Erich Schmid Inst of Materials Science

9:30 AM Invited

Fe-based Bulk Metallic Glasses: Properties and Phase Formation: *Mihai Stoica*¹; Jörg Löffler¹; ¹ETH Zurich

9:50 AM Invited

Synthesis and properties of BMG type nanoglasses by thin film deposition in comparison with HPT: *Hans Fecht*¹; ¹Ulm Univ

10:10 AM Break

10:30 AM Invited

Deformation of bulk metallic glasses: strain softening or hardening?: *Jie Pan*¹; Yi Li¹; ¹Institute of Metal Research, Cas

10:50 AM Invited

Super high dense Zr-based bulk metallic glass induced by high pressure treatment over T_g: *Rui Yamada*¹; Yuki Shibasaki²; Yasuto Abe¹; Wookha Ryu¹; Junji Saida¹; ¹Frontier Research Institute for Interdisciplinary Sciences, Tohoku University; ²National Institute for Materials Science

11:10 AM Invited

Small-scale plasticity of quasicrystals: similarity and difference from metallic glasses: *Yu Zou*¹; ¹University of Toronto

11:30 AM

Surface patterning by thermoplastic forming of Ni-free Ti-based bulk metallic glasses: *Mariana Calin*¹; Supriya Bera¹; Baran Sarac²; Juergen Eckert³; ¹IFW Dresden; ²Austrian Academy of Sciences; ³Austrian Academy of Sciences

11:50 AM Invited

Overcoming the ductility and strength trade-off via precise controlling of microstructure of Al-based glassy alloys: *Wan Kim*¹; Eun Soo Park¹; ¹Seoul National University

Cast Shop Technology: Energy Joint Session — Cast Shop Technology: Energy Joint Session

Sponsored by: TMS Light Metals Division, TMS: Aluminum Committee
Program Organizers: Pierre-Yves Menet, Constellium Technology Center; Mark Jolly, Cranfield University; Valmiro Sa Neto, Praxair Inc; Cynthia Belt, Metals Energy Management LLC

Wednesday AM
March 13, 2019

Room: 007B
Location: Henry B. Gonzalez
Convention Center

Session Chairs: Cynthia Belt, Metals Energy Management LLC; Mark Jolly, Cranfield University

8:30 AM Introductory Comments

8:35 AM

Aluminum Holding Furnace Optimal Design Using the CFD Method and Factorial Approach: *Mohamed Hassan*¹; Saeed Alshehhi¹; Cindy Belt²; ¹Khalifa University of Science and Tech; ²Metals Energy Management LLC

9:00 AM

Artificial intelligence to optimize melting processes: an approach combining data acquisition and modeling: *Amin Rostamian*¹; Stéphane Lesquereux²; Marc Bertherat³; Michel Rappaz⁴; ¹Novamet SàRL; ²GAP Engineering SA; ³Constellium; ⁴MRC-Consulting Michel Rappaz

9:25 AM

Oxy-fuel Technologies for Improved Efficiency in Aluminum Scrap Melting: *Xavier Paubel*¹; Stewart Jepson²; Frank Rheker¹; Sarah Juma¹; Dietmar Wieck¹; William Ollerton²; ¹AIR LIQUIDE; ²AIRGAS

9:50 AM Break

10:05 AM

Electromagnetic Transfer and Circulation (ETAC) of Molten Aluminium Metal and Its Alloys: *Robert Fritzsche*¹; Jim Grayson¹; ¹Pyrotek, EMP Technologies Limited

10:30 AM

Optimized electromagnetic stirring in aluminium melting and holding furnaces: *Joakim Andersson*¹; ¹ABB Ab

Characterization of Materials through High Resolution Imaging — Imaging I

Sponsored by: TMS: Advanced Characterization, Testing, and Simulation Committee

Program Organizers: Ross Harder, Argonne National Laboratory; Richard Sandberg, Los Alamos National Laboratory; Xianghui Xiao, Argonne National Laboratory; Brian Abbey, La Trobe University; Saryu Fensin, Los Alamos National Laboratory; Ana Diaz, Paul Scherrer Institut; Mathew Cherukara, Argonne National Laboratory

Wednesday AM

March 13, 2019

Room: 303A
Location: Henry B. Gonzalez
Convention Center

Session Chair: To Be Announced

8:30 AM Invited

Ultrahigh-speed x-ray imaging for studying materials structure dynamics: *Tao Sun*¹; Kamel Fezzaa¹; ¹Argonne National Laboratory

9:00 AM Invited

Advances in fatigue crack growth characterization via in situ phase contrast tomography imaging: *Michael Sangid*¹; Michael Waddell¹; Stephen Carter¹; Kevin Walker²; Xianghui Xiao³; ¹Purdue University; ²Defence Science and Technology Group; ³Argonne National Laboratory

9:20 AM

In situ loading of engineered materials during X-ray 3D tomographic imaging: *Brian Patterson*¹; Kevin Henderson¹; Nikolaus Cordes¹; Matthew Herman¹; Lindsey Kuettner¹; Trevor Shear¹; Cynthia Welch¹; Paul Welch¹; Axinte Ionita¹; Nikhilesh Chawla²; Jason Williams²; Kamel Fezzaa³; Tao Sun³; Xianghui Xiao³; ¹Los Alamos National Laboratory; ²Arizona State University; ³Argonne National Laboratory

9:40 AM Invited

Bridging nano- and micro-scales in electrochemical energy technologies with X-ray computed tomography: *Iryna Zenyuk*¹; ¹University of California Irvine

10:00 AM Break

10:20 AM Invited

Recent development of full-field X-ray microscope at NSLS-II --- a case of battery research: *Mingyuan Ge*¹; David Scott Coburn¹; Evgeny Nazaretski¹; Kazimierz J. Gofron¹; Huijuan Xu¹; Weihe Xu¹; Zhijian Yin¹; Wah-Keat Lee¹; ¹Brookhaven National Lab

10:40 AM Invited

Revealing the Growth Dynamics of Nature's Forbidden Crystals: Insung Han¹; Nancy Senabulya¹; Haiping Sun¹; Xianghui Xiao²; *Ashwin Shahani*¹; ¹University of Michigan; ²Argonne National Laboratory

11:00 AM Invited

X-ray Coherent Surface Scattering Imaging for Surface 3D Imaging and Material Characterization: *Miaoqi Chu*¹; Zhang Jiang¹; Tao Sun¹; Jin Wang¹; ¹Advance Photon Source

11:20 AM Invited

Identification and Visualization of Chemical Outliers through Scientific Data Mining in Nanoscale Spectro-Microscopic Study of NMC Electrode: *Enyuan Hu*¹; Yijin Liu²; Xiao-Qing Yang¹; ¹Chemistry Division, Brookhaven National Laboratory; ²Stanford Synchrotron Radiation Lightsource, SLAC National Accelerator Laboratory

Characterization of Minerals, Metals, and Materials — Process and Characteristics of Advanced Ceramics and Glasses II

Sponsored by: 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; Yunus Kalay, Middle East Technical University; John Carpenter, Los Alamos National Laboratory; Jiann-Yang Hwang, Michigan Technological Univ; Sergio Monteiro, Military Institute of Engineering; Chenguang Bai, Chongqing Univ; Juan Escobedo-Diaz, University of New South Wales; Pasquale Russo Spena, Free University of Bozen-Bolzano; Ramasis Goswami, Naval Research Laboratory

Wednesday AM
March 13, 2019

Room: 212B
Location: Henry B. Gonzalez
Convention Center

Session Chairs: Shadia Ikhmayies, Al Isra Univeristy; Tomoko Sano, Army Research Laboratory

8:30 AM Introductory Comments

8:35 AM

Estimating the Thermal Conductivity of Uranium and Uranium – Zirconium Alloys with High Porosity: *Luis Ortega*¹; Karyn Stern¹; Brandon Blamer²; Sean McDeavitt¹; ¹Texas A&M University; ²X Energy LLC

8:55 AM

Nanoindentation of Commercial PVD Hard Coatings at Elevated Temperatures and High Strain Rates: *Kurt Johanns*¹; Warren Oliver¹; ¹Nanomechanics Inc

9:15 AM

Measurement of hydrogen vapor pressure over two-phase zirconium/zirconium hydride material between 300°C and 450°C: *Kenneth Geelhood*¹; Walter Luscher¹; ¹Pacific Northwest National Laboratory

9:35 AM

Characterization of Modified Nickel Silicate Anode Material for Lithium Ion Batteries: *Yunyun Wei*¹; Guihong Han¹; Yanfang Huang¹; Duo Zhang¹; ¹Zhengzhou University

9:55 AM Break

10:10 AM

The influence of microstructure and emissivity of NiO doped Fe₃O₄ spinel structure on near and middle infrared radiation: Jian Zhang¹; *Hao Bai*¹; Xu Zhang¹; Huanmei Yuan¹; Zefei Zhang¹; Liyun Yang¹; ¹University of Science And Technology

10:30 AM

Preparation and Characterization of PBAT/PLA Biofoams Reinforced with Bio Calcium Carbonate: *Elizabeth Cardoso*¹; Sandra Scagliusi¹; Duclerc Parra¹; Ademar Lugão¹; ¹Ipen - Instituto De Pesquisas Energetica

10:50 AM

Incorporation of Silver Nanoparticles in Zinc Oxide Matrix In Polyester Thermoplastic Elastomer (TPE-E) Aiming Antibacterial Activity: Leonardo Marchini¹; *Dra. Duclerc Parra*¹; Dr. Vijaya Rangari²; ¹IPEN; ²Center for Advanced Materials Science and Engineering Tuskegee University

Computational Approaches for Big Data, Artificial Intelligence and Uncertainty Quantification in Computational Materials Science — Big Data

Sponsored by: TMS: Computational Materials Science and Engineering Committee

Program Organizers: Liang Qi, University of Michigan; Francesca Tavazza, National Institute of Standards and Technology; Christopher Woodward, Air Force Research Laboratory; Adrian Sabau, Oak Ridge National Laboratory; Houlong Zhuang, Arizona State University; Sugata Chowdhury, National Institute of Standards and Technology

Wednesday AM
March 13, 2019

Room: 305
Location: Henry B. Gonzalez
Convention Center

Session Chair: To Be Announced

8:30 AM Invited

Machine Learning of Materials Synthesis by Data Extraction from over 3 Million Research Papers: *Gerbrand Ceder*¹; ¹Univ of California Berkeley

9:00 AM

Application of Natural Language Processing to TMS Abstracts to Understand the Direction of Computational Materials Design: *Efrain Hernandez-Rivera*¹; Jason Hattrick-Simpers²; Brian DeCost²; Amy Trost³; Aaron Kusne²; ¹US ARL; ²NIST; ³University of Maryland

9:20 AM Invited

Materials Informatics and Big Data: Realization of 4th Paradigm of Science in Materials Science: *Ankit Agrawal*¹; Alok Choudhary¹; ¹Northwestern University

9:50 AM

Investigation of Deformation Twinning in Mg Alloy during In-situ Compression using Clustering and Computer Vision: *Zhe Chen*¹; Samantha Daly¹; ¹University of California, Santa Barbara

10:10 AM Break

10:30 AM Invited

Polymer Genome: An Informatics Platform for Rational Polymer Dielectrics Design and Beyond: *Rampi Ramprasad*¹; ¹Georgia Tech

11:00 AM

Materials science learning and discovery from large-scale text mining: *Leigh Weston*¹; Vahe Tshitoyan²; John Dagdelen¹; Kristin Persson¹; Gerbrand Ceder²; Anubhav Jain¹; ¹Energy Technologies Area, Lawrence Berkeley National Laboratory; ²Materials Science Division, Lawrence Berkeley National Laboratory

11:20 AM

Materials Platform for Data Science: from Big Data towards Materials Genome: *Evgeny Blokhin*¹; Pierre Villars²; ¹Tilde Materials Informatics; ²Material Phases Data System

11:40 AM

Cloud-Based Infrastructure for Big Data in the Materials Domain: *David Elbert*¹; Nick Carey¹; Tamas Budavari¹; Gerard Lemson¹; Alex Szalay¹; Tyrel McQueen¹; K.T. Ramesh¹; ¹Johns Hopkins Univ

Computational Materials Discovery and Design — Computational Methods for Materials Discovery and Design II

Sponsored by: TMS: Computational Materials Science and Engineering Committee

Program Organizers: Oliver Johnson, Brigham Young University; Arunima Singh, Arizona State University; Jake Bair, Pacific Northwest National Lab; Christopher Weinberger, Colorado State University; Timofey Frolov, Lawrence Livermore National Laboratory; Ning Zhang, Colorado School of Mines; Fadi Abdeljawad, Clemson University; Richard Hennig, Univ of Florida; Mikhail Mendelev, Ames Laboratory; Avinash Dongare, University of Connecticut

Wednesday AM
March 13, 2019

Room: 304C
Location: Henry B. Gonzalez
Convention Center

Session Chair: To Be Announced

8:30 AM Invited

Microstructure Stabilization and the Herring Condition: *Jeremy Mason*¹; Erdem Eren¹; ¹University of California, Davis

8:50 AM Invited

Interpretable machine learning for polycrystal plasticity micromechanics: Ankita Mangal¹; *Elizabeth Holm*¹; ¹Carnegie Mellon Univ

9:10 AM

Predicting small-scale plasticity in single crystal micropillars via machine learning: *Jamie Gravell*¹; Junho Cho¹; Seungjoon Lee²; Ill Ryu¹; ¹University of Texas at Dallas; ²John Hopkins University

9:30 AM

A statistical dislocation-mediated crystal plasticity model for predicting size effects on the yield strength of single and polycrystalline metals: *Yejun Gu*¹; David Eastman¹; Kevin Hemker¹; Jaafar El-Awady¹; ¹Johns Hopkins Univ

9:50 AM Break

10:10 AM

Intrinsic Ductility of Alloys from Nonlinear Elasticity Theory: *Ian Winter*¹; Daryl Chrzan¹; ¹University of California Berkeley

10:30 AM

The Representation of Five-Parameter Grain Boundary Functions Using Harmonics: *Srikanth Patala*¹; Jeremy Mason²; ¹North Carolina State Univ; ²University of California Davis

10:50 AM

New Spectral Graph Theoretic Metrics for Grain Boundary Network Design: *Christopher Adair*¹; Oliver Johnson¹; ¹Brigham Young University

11:10 AM

3D reconstruction of microstructure from surface images using graph theoretic approaches: *Siddhartha Srivastava*¹; Iman Javaheri¹; Veera Sundararaghavan¹; ¹University of Michigan

Computational Thermodynamics and Kinetics — Phase Prediction and Stability

Sponsored by: TMS: Computational Materials Science and Engineering Committee

Program Organizers: Fadi Abdeljawad, Clemson University; Hesam Askari, University of Rochester; Emine Gulsoy, Northwestern Univ; Joel Berry, University of Pennsylvania; Damien Tournet, IMDEA Materials; Mohsen Asle Zaeem, Colorado School of Mines; James Morris, Oak Ridge National Laboratory

Wednesday AM
March 13, 2019

Room: 225C
Location: Henry B. Gonzalez
Convention Center

Session Chair: To Be Announced

8:30 AM Invited

Multi-cell Monte Carlo (MC)² method for phase prediction in multicomponent alloys: *Maryam Ghazisaedi*¹; Changning Niu¹; ¹Ohio State Univ

9:00 AM

Investigation of Al-Co-Fe and Al-Cu-Fe phase diagrams over the whole composition range: *Lilong Zhu*¹; Sujeily Soto-Medina¹; Richard Hennig¹; Michele Manuel¹; ¹University of Florida

9:20 AM

Finding the Zeta Phase: *Christopher Weinberger*¹; Hang Yu²; Xiao-Xiang Yu³; Gregory Thompson³; ¹Colorado State University; ²Drexel University; ³University of Alabama

9:40 AM

Re-visit to Cu-Au first-principles thermodynamics: *Tetsuo Mohri*¹; ¹Tohoku University

10:00 AM

Reassessment of Zn-rich corner phase diagrams in the Zn-Fe-Al ternary system: *Inho Lee*¹; Kwangsik Han¹; Ikuo Ohnuma²; Ryosuke Kainuma¹; ¹Tohoku university; ²National Institute for Materials Science (NIMS)

10:20 AM Break

10:40 AM Invited

The formation and structure of Fe-Mn-Ni-Si solute clusters and G-phase precipitates in steels: *Daniel King*¹; Patrick Burr²; Simon Middleburgh³; Thomas Whiting¹; M. Burke⁴; Mark Wenman¹; ¹Imperial College London; ²University of New South Wales; ³Bangor University; ⁴Manchester University

11:10 AM

Theoretical calculation of thermodynamic properties of liquid transition-metal alloys with perturbation theory: *Shun Ueda*¹; Kazuki Morita¹; ¹Univ of Tokyo

11:30 AM

Thermodynamic Evaluation of the Fe-Ti-V-O System in Air: *Willem Dutoit Malan*¹; Johan Zietsman¹; Guven Akdogan²; Pekka Taskinen³; ¹University of Pretoria; ²Stellenbosch University; ³Aalto University

11:50 AM

Understanding of D₀₂₂ Ordering and Stability of Cu₃Al Phase in Cu-Al Binary Alloys: *Choong-un Kim*¹; Khaled Hirmas²; ¹Univ of Texas Arlington; ²Univ of Texas Arlington

Deformation and Damage Behavior of High Temperature Alloys — Superalloys: Microstructural Evolution and Advanced Characterization

Sponsored by: TMS Structural Materials Division, TMS: High Temperature Alloys Committee

Program Organizers: Michael Titus, Purdue University; Qiang Feng, University of Science and Technology Beijing; Akane Suzuki, GE Global Research; Jonathan Cormier, ENSMA - Institut Pprime - UPR CNRS 3346; Sammy Tin, Illinois Institute of Technology; Martin Detroits, National Energy Technology Laboratory

Wednesday AM
March 13, 2019

Room: 301C
Location: Henry B. Gonzalez
Convention Center

Session Chairs: Qiang Feng, University of Science and Technology Beijing; Jonathan Cormier, Institut P' - Departement de Physique et Mecanique des Materiaux

8:30 AM Invited

Role of micro-pores in single crystal nickel based superalloys: *Jian Zhang*¹; ¹Institute Of Metal Research

9:00 AM

Effects of Mo Additions on gamma-Ni/eta-Ni₃Ti Lattice Mismatch in Nickel-base Alloys: *Satoru Kobayashi*¹; ¹Tokyo Institute of Technology

9:20 AM

Overheating Effects on Microstructural Evolution and Non-isothermal Creep Behavior of a Directionally Solidified Superalloy: *Wenrui An*¹; Satoshi Utada²; Xiaotong Guo¹; Weiwei Zheng¹; Jonathan Cormier²; Qiang Feng¹; ¹University Science and Technology Beijing; ²ENSMA - Institut Pprime - UPR CNRS 3346

9:40 AM

Microstructure evolution and recrystallization during creep loading on pre-deformed Ni-based SX superalloy: *Satoshi Utada*¹; Jonathan Cormier²; Patrick Villechaise²; Florence Hamon²; Sarah Hamadi³; Joël Delautre³; ¹ISAE-ENSMA/Institut Pprime/SAFRAN Aircraft Engines; ²ISAE-ENSMA/Institut Pprime; ³SAFRAN Aircraft Engines

10:00 AM Break

10:20 AM Invited

Understanding deformation mechanisms in superalloys through atomic scale microanalysis: *Paraskevas Kontis*¹; Surendra Makineni¹; Xiaoxiang Wu¹; Jaber Mianroodi¹; Pratheek Shanthraj²; Jonathan Cormier³; Dierk Raabe¹; Baptiste Gault¹; ¹Max-Planck-Institut für Eisenforschung GmbH; ²School of Materials, The University of Manchester; ³Institut Pprime, Physics and Mechanics of Materials Department

10:50 AM

Residual Stress Relaxation in Ni-based Superalloys at High Temperature by Real-time Neutron diffraction: *Yan Chen*¹; Iuliana Cernatescu²; Robert Goetz²; Alexandru Stoica¹; Sheldon Semiatin³; Ke An¹; ¹Oak Ridge National Lab; ²Pratt & Whitney; ³Air Force Research Laboratory

11:10 AM

Quantifying stress relaxation of a single crystal nickel-base superalloy during casting relevant thermal cycles: *David Collins*¹; Neil D'Souza²; Ayan Bhowmik³; Chinnapat Panwisawas⁴; ¹University of Birmingham; ²Rolls-Royce plc; ³Rolls-Royce@NTU Corporate Lab, Nanyang Technological University; ⁴University of Oxford

11:30 AM

Tensile Properties and Fracture Behavior of ATI 718Plus Alloy at Room and Elevated Temperatures: *Micheal Kattoura*¹; Gopal Viswanathan²; Seetha Ramaiah Mannava¹; Dong Qian³; Vijay Vasudevan¹; ¹Univ of Cincinnati; ²The Ohio State University; ³University of Texas at Dallas

Environmentally Assisted Cracking: Theory and Practice — Hydrogen Embrittlement II

Program Organizers: Bai Cui, University of Nebraska Lincoln; Raul Rebak, GE Global Research; Srujan Rokkam, Def-Aero, Advanced Cooling Technologies Inc

Wednesday AM
March 13, 2019

Room: 214C
Location: Henry B. Gonzalez
Convention Center

Session Chairs: John Scully, University of Virginia; Brian Somerday, Southwest Research Institute

8:30 AM Invited

Insights Regarding Hydrogen Embrittlement Susceptibility and Mitigation in Structural Materials through Improved Understanding of Hydrogen-Metal Interactions: *John Scully*¹; ¹University of Virginia

9:10 AM

The relationship between overpotential and hydrogen content in pure Ni under electrochemical charging: *Lai Jiang*¹; Michael Demkowicz¹; ¹Department of Materials Science and Engineering, Texas A&M

9:30 AM

Hydrogen-enhanced fatigue crack growth in ferritic alloy revealed by in-situ hydrogen charging with in-situ cyclic loading inside an environmental scanning electron microscope: *Di Wan*¹; Afrooz Barnoush¹; ¹Norwegian University of Science and Technology

9:50 AM

Microstructural behaviour on the hydrogen-embrittlement resistance of offshore-platform ferritic steels using in-situ slow strain rate testing: *Namhyun Kang*¹; Cheolho Park¹; Hanji Park¹; Yang Do Kim¹; Myung Hyun Kim¹; Stephen Liu²; Dae-Geun Nam³; Kyung-Mox Cho¹; ¹Pusan National University; ²Colorado School of Mines; ³Korea Institute of Industrial Technology

10:10 AM Break

10:30 AM Invited

A Comprehensive View of Gaseous Hydrogen-Assisted Cracking: *Brian Somerday*¹; ¹Southwest Research Institute

11:10 AM

Effect of Stress State on Hydrogen Embrittlement in Alloy 718: *Fassett Hickey*¹; Brian Somerday¹; John Macha¹; ¹Southwest Research Institute

11:30 AM

The Effect of Hydrogen and Aging Condition on the Deformation and Fracture Behavior of a Precipitation-Hardened Ni-base Superalloy: *Zachary Harris*¹; Michael Ritzo¹; Sean Agnew¹; James Burns¹; ¹Univ of Virginia

Fatigue in Materials: Multi-scale and Multi-environment Characterizations and Computational Modeling — Fatigue Characterization Using Advanced Experimental Methods in 2D and 3D

Sponsored by: TMS: Computational Materials Science and Engineering Committee, TMS: Integrated Computational Materials Engineering Committee

Program Organizers: Jean-Briac le Graverend, Texas A&M University; Ashley Spear, University of Utah; Antonios Kotsos, Drexel Univ; Garrett Pataky, Clemson University; Filippo Berto, Norwegian University of Science and Technology

Wednesday AM
March 13, 2019

Room: 301B
Location: Henry B. Gonzalez
Convention Center

Session Chair: Antonios Kotsos, Drexel University

8:30 AM

3D Characterization of Microtexture in Ti64: *Joseph Wendorf*¹; Jean-Charles Stinville¹; Andrew Polonsky¹; McLean Echlin¹; Tresa Pollock²; ¹University of California Santa Barbara

8:50 AM

High cycle thermal fatigue of austenitic stainless steel investigated via hybrid multiview correlation: *Yanjun Wang*¹; François Hild²; Ludovic Vincent¹; ¹DEN-Service de Recherches Métallurgiques Appliquées, CEA, Université Paris-Saclay; ²LMT, ENS Paris-Saclay, CNRS, Université Paris-Saclay

9:10 AM

High cycle fatigue in microcompression of gamma-TiAl using digital image correlation strain mapping: *Thomas Edwards*¹; Fabio Di Gioacchino²; Amy Goodfellow²; William Clegg²; ¹Swiss Federal Laboratories for Materials Science and Technology (EMPA); ²University of Cambridge

9:30 AM

Nucleation of persistent slip bands and crack initiation in fatigue of FCC microcrystals: *Steven Lavenstein*¹; Jaafar El-Awady¹; ¹Johns Hopkins Univ

9:50 AM Break**10:10 AM**

Quantitative Measurements of Cyclic Slip Irreversibility in Nickel Base Superalloys: *Jean-Charles Stinville*¹; P. G. Callahan¹; M. P. Echlin¹; V. Valle²; T. M. Pollock¹; ¹UCSB; ²Institut P³ - UPR 3346, CNRS - Université de Poitiers - ENSMA

10:30 AM

Temperature and Microstructural Dependence of Dwell Fatigue in Near-Alpha Titanium Alloys: *Michelle Harr*¹; Samantha Daly²; Adam Pilchak³; ¹University of Michigan; ²University of California Santa Barbara; ³Air Force Research Lab

10:50 AM

Examining Sub-Grain-Level Plasticity and Fatigue Crack Growth using High Energy X-ray Diffraction Microscopy and Crystal Plasticity Finite Element Modeling: *William Musinski*¹; Paul Shade¹; Mark Obstalecki¹; Todd Turner¹; David Menasche²; Joel Bernier³; Sirina Safriet⁴; Darren Pagan⁵; Peter Kenesei⁶; Jun-Sang Park⁶; Jon Almer⁶; ¹US Air Force Research Lab; ²Hamiltonian Group; ³Lawrence Livermore National Laboratory; ⁴University of Dayton Research Institute; ⁵Cornell High Energy Synchrotron Source; ⁶Argonne National Laboratory

Fracture Processes of Thin Films and Nanomaterials — Fracture of Functional and Structural Materials

Sponsored by: TMS Materials Processing and Manufacturing Division, TMS: Nanomechanical Materials Behavior Committee
Program Organizers: Daniel Kiener, University of Leoben; Megan Cordill, Erich Schmid Institute; Johannes Ast, Empa, Swiss Federal Laboratories for Materials Science and Technology; Brad Boyce, Sandia National Labs

Wednesday AM
March 13, 2019

Room: 217B
Location: Henry B. Gonzalez
Convention Center

Session Chairs: Daniel Kiener, Montanuniversität Leoben; Benoit Merle, University Erlangen-Nürnberg

8:30 AM Invited

Understanding interface failure and fracture in Silicon carbide composites: *David Armstrong*¹; ¹University of Oxford

8:50 AM

Reliable lead-free solders for harsh environments: microstructure and fracture behaviour: *Chaowei Du*¹; Rafael Soler¹; Bernhard Voelker²; Kurt Matoy³; Johannes Zechner⁴; Gregor Langer³; Christoph Kirchlechner¹; Gerhard Dehm¹; ¹Max-Planck Institut für Eisenforschung; ²Institute of materials chemistry, RWTH-Aachen; ³Infineon Technologies Austria AG; ⁴Kompetenzzentrum Automobil- und Industrieelektronik GmbH

9:10 AM

Experimental Characterization of Commercial Thermal Barrier Coating Systems: *Jalil Alidoost*¹; Brian Hazel²; Elisa Zaleski²; Doug Konitzer³; Ming Fu⁴; Kevin Hemker¹; ¹Johns Hopkins University; ²Pratt & Whitney; ³General Electric; ⁴General Electric

9:30 AM

Multi-scale study of the deformation mechanisms of p-type half-Heusler Hf_{0.44}Zr_{0.44}Ti_{0.12}CoSb_{0.8}Sn_{0.2} nanostructured thermoelectric alloy: Matthieu Aumand¹; Ken White²; *Ludovic Thilly*¹; ¹University of Poitiers; ²University of Houston

9:50 AM Break**10:10 AM Invited**

Nanoindentation of Silicate Glasses at Loads Near the Cracking Threshold: *George Pharr*¹; Yvonne Dieudonne¹; Benjamin Hackett²; Brittnee Mound²; ¹Texas A&M University; ²University of Tennessee

10:30 AM

In Situ TEM Fracture Experiments at RT: *Inas Issa*¹; Daniel Kiener¹; ¹Department Materials Physics, Montanuniversität Leoben

10:50 AM

Interactions between surface topography, multilayers, nano-microstructure, friction and defects with respect to fracture behavior and safe design of diamond-like carbon thin films: *Anssi Laukkanen*¹; Tom Andersson¹; Matti Lindroos¹; Kenneth Holmberg¹; ¹VTT Technical Research Center of Finland

11:10 AM

Relationships between Deformation Fields and Fracture in Heterogeneous Network Thin Films: *Yoon Joo Na*¹; Christopher Muhlstein¹; ¹Georgia Institute of Technology

Friction Stir Welding and Processing X — Dissimilar Materials

Sponsored by: TMS: Shaping and Forming Committee
Program Organizers: Yuri Hovanski, Brigham Young University; Rajiv Mishra, University of North Texas; Yutaka Sato, Tohoku University; Piyush Upadhyay, Pacific Northwest National Laboratory; David Yan, San Jose State University

Wednesday AM
March 13, 2019

Room: 210B
Location: Henry B. Gonzalez
Convention Center

Session Chair: YURI Hovanski, Brigham Young University

8:30 AM

A Comparison of Dissimilar Aluminum Alloys Joined by Friction Stir Welding with Conventional and Bobbin Tools: *Paul Goetze*¹; Mateusz Kopyscianski²; Carter Hamilton¹; Stanislaw Dymek²; ¹Miami University; ²AGH University of Science and Technology

8:50 AM

Friction stir welding of aluminum to ECO AZ31 magnesium alloy with penetration of the tool into the bottom layer: Reza Beygi¹; Kiarash Torabi¹; Ghasem Eisaabadi B.¹; Majid Zarezadeh Mehrizi¹; *Shae Kwang Kim*²; ¹Arak University; ²Korea Institute of Industrial Technology

9:10 AM

Microstructural and mechanical properties of friction stir welding of dissimilar lap joint of metallurgically immiscible CuCrZr and SS 316L: *Pankaj Sahlot*¹; Saurabh Nene²; Michael Frank²; Rajiv Mishra²; Amit Arora³; ¹PDPU Gandhinagar and IIT Gandhinagar; ²University of North Texas; ³IIT Gandhinagar

9:30 AM Invited

Promising high speed welding techniques for joining polymers to metals and underlying joining mechanisms: *Fengchao Liu*¹; Pingsha Dong¹; ¹University of Michigan

9:50 AM Break

10:10 AM

Effect of tool eccentricity on dissimilar friction stir welding of 5052-6061 aluminum alloys: *Luqman Hakim Ahmad Shah*¹; Seyedhossein Sonbolestan¹; Scott Walbridge¹; Adrian Gerlich¹; ¹Univ of Waterloo

10:30 AM

Joining of Magnesium to Reinforced polymers using Friction Stir interlocking: *Piyush Upadhyay*¹; Md. Reza Rabby²; Scott Whalen²; ¹Pacific Northwest National Laboratory; ²Pacific Northwest National Laboratory

10:50 AM

Ultrasound Enhanced Friction Stir Welding (USE-FSW) of Hybrid Aluminum/Steel-Joints: *Marco Thomä*¹; Guntram Wagner¹; Benjamin Straß²; Bernd Wolter²; Sigrid Benfer³; Wolfram Fürbeth³; ¹Chemnitz University of Technology; ²Fraunhofer Institute for Nondestructive Testing IZFP Saarbrücken; ³DECHEMA Forschungsinstitut

11:10 AM

Effect of stress concentration on strength and fracture behavior of dissimilar material joints: *Tianhao Wang*¹; Rajiv Mishra¹; ¹University of North Texas

11:30 AM

Microstructure and mechanical properties of dissimilar Ti/Mg joint fabricated by friction stir welding: *Jeong-Won Choi*¹; Huihong Liu¹; Kohsaku Ushioda¹; Hidetoshi Fujii¹; ¹Osaka University

Friction Stir Welding and Processing X — High Melting Temperature Materials

Sponsored by: TMS: Shaping and Forming Committee
Program Organizers: Yuri Hovanski, Brigham Young University; Rajiv Mishra, University of North Texas; Yutaka Sato, Tohoku University; Piyush Upadhyay, Pacific Northwest National Laboratory; David Yan, San Jose State University

Wednesday AM
March 13, 2019

Room: 210A
Location: Henry B. Gonzalez
Convention Center

Session Chair: Tracy Nelson, Brigham Young University

8:30 AM Invited

Friction Stir Welding of Fibre Reinforced Titanium Composites for Aerospace Structures: *Jonathan Martin*¹; Craig Blacker²; Kathryn Beamish¹; Advenit Makaya³; ¹Twi Ltd; ²TISICs Ltd; ³European Space Agency

8:50 AM Invited

Microstructure and mechanical properties of the friction stir welded ultra-fine Grained CP Titanium: Jae-Deuk Kim¹; Chang Keun Chun²; Jaekeun Hong³; Yutaka Sato⁴; *Yeongdo Park*¹; ¹Dong-Eui University; ²Research Institute of Industrial Science & Technology; ³Korea Institute of Materials Science; ⁴Tohoku University

9:10 AM

Friction stir welding of medium Mn steel: *Seung-Joon Lee*¹; Yufeng Sun¹; Hidetoshi Fujii¹; Jeongho Han²; ¹Joining and Welding Research Institute (JWRI), Osaka University; ²Department of Materials Science and Engineering, Chungnam National University

9:30 AM Invited

Friction stir welding of steel with laser melting: *Yoshiaki Morisada*¹; Takuya Wada¹; Hidetoshi Fujii¹; ¹Joining and Welding Institute, Osaka University

9:50 AM Break

10:10 AM Invited

An Investigation into the Effects of Stir Zone Chemistry on Fracture Toughness in Friction Stir Welded Pipeline Grade Steel: *Michael Eff*¹; Jerry Gould¹; Jianqing Su¹; ¹EWI

10:30 AM Invited

Plastic flow behavior and mechanical properties in double-sided friction stir weld of advanced high strength steel sheets: *Muneo Matsushita*¹; Daiki Yamagishi¹; Hiroshi Matsuda¹; Yoshiaki Murakami¹; ¹JFE Steel Corporation

10:50 AM Invited

Effects of grain refinement on tensile properties for friction stir welds of CoCrFeMnNi high entropy alloys: *Sangwon Park*¹; Namhyun Kang¹; Youngsang Na²; Hyoungseop Kim³; ¹Pusan National University; ²Korea Institute of Materials Science; ³Pohang University of Science and Technology

11:10 AM

Wear mechanism for H13 steel tool during friction stir welding of CuCrZr alloy: *Pankaj Sahlot*¹; Rajiv Mishra²; Amit Arora³; ¹PDPU Gandhinagar and IIT Gandhinagar; ²University of North Texas; ³IIT Gandhinagar

11:30 AM

Low cost fabrication of Tungsten-Rhenium alloys for friction stir welding applications: *Jordan Terrell*¹; Judy Schneider¹; Todd Leonhardt²; Dennis Tucker³; ¹University of Alabama At Huntsville; ²Rhenium Alloys; ³NASA Marshall Space Flight Center

Green Materials Engineering: An EPD Symposium in Honor of Sergio Monteiro — Biomass in Armor Composites

Sponsored by: TMS: Materials Characterization Committee

Program Organizers: Shadia Ikhmayies, Al Isra University; Jian Li, Canmetmaterials; Carlos Mauricio Vieira, State University of the North Fluminense; Fabio Braga, Military Institute of Engineering

Wednesday AM
March 13, 2019

Room: 008A
Location: Henry B. Gonzalez
Convention Center

Session Chairs: Carlos Vieira, State University of The North Fluminense; Elaine Carvalho, State University of the Northern Rio de Janeiro

8:30 AM Introductory Comments

8:35 AM Keynote

Izod impact test on epoxy composites reinforced with mallow fibers: Lucio Cassiano Nascimento¹; Sérgio Monteiro¹; *Ulisses Costa*¹; Luana Demosthenes¹; ¹Instituto Militar de Engenharia

8:55 AM

Evaluation on the Design of Piassava Fiber Reinforcement Epoxy Matrix Composite for Ballistic Application: *Fabio Garcia Filho*¹; Sergio Monteiro¹; Michelle Oliveira¹; Luana Demosthenes¹; ¹Military Institute of Engineering

9:15 AM

Ballistic Test of Multilayered Armor with Intermediate Polyester Composite Reinforced with Figue Fabric: Artur Camposo Pereira¹; Foluque de Assis¹; Luana Cristyne da Cruz Demosthenes¹; Fabio da Costa Garcia Filho¹; *Sergio Neves Monteiro*¹; ¹Military Institute of Engineering

9:35 AM

Ballistic Tests of Epoxy Matrix Composites Reinforced with Arapaima Fish Scales: *Luis Carlos Silva*¹; Michelle Oliveira¹; Luana Demosthenes¹; Wendell Bezerra¹; Sergio Monteiro¹; ¹IME

9:55 AM Break

10:05 AM

Evaluation of buriti fabric as reinforcement of polymeric matrix composite for ballistic application as multilayered armor system: Luana Demosthenes¹; Sergio Monteiro¹; Lucio Nascimento¹; *Fabio Filho*¹; Michelle Oliveira¹; Leandro Demosthenes²; Artur Pereira¹; Fernanda Luz¹; Edio Lima JR¹; ¹Military Intitute Engineering; ²UFAM

10:25 AM

Evaluation of the Absorbed Energy and Velocity Limits of Reinforced Epoxy Composites with Mallow Natural Fibers Used in Ballistic Protection.: Lucio Nascimento¹; *Sérgio Monteiro*¹; Jheison dos Santos¹; Luana Demosthenes¹; Ulisses Oliveira¹; ¹Instituto Militar de Engenharia

10:45 AM

Fique fiber-reinforced epoxy composite for ballistic armor against 7,62 mm ammunition: *Michelle Oliveira*¹; Artur Camposo¹; Fernanda Luz¹; Fábio Braga¹; Lucio Nascimento¹; Édio Lima Jr.¹; Sergio Monteiro¹; Fabio Garcia¹; Luana Demosthenes¹; ¹Militar Institute of Engineering

Heterogeneous and Gradient Materials (HGM III): Tailoring Mechanical Incompatibility for Superior Properties — Structural Design, Processing and Properties

Program Organizers: Yuntian Zhu, North Carolina State University; Kei Ameyama, Ritsumeikan University; Irene Beyerlein, University of California, Santa Barbara; Yves Brechet, Grenoble-INP; Huajian Gao, Brown Univ; Hyoung Seop Kim, Pohang University of Science and Technology; Ke Lu, Institute of Metal Research; Xiaolei Wu, Chinese Academy of Sciences

Wednesday AM
March 13, 2019

Room: 209
Location: Henry B. Gonzalez
Convention Center

Session Chairs: Mingxin Huang, University of Hong Kong; Soo-Hyun Joo, Tohoku University; Gerhard Dehm, Max-Planck-Institute; Xiuyan Li, Institute Of Metal Research

8:30 AM Invited

Alloy design by dislocation engineering: *MingXin Huang*¹; ¹Univ of Hong Kong

8:55 AM

Deformation microstructure and mechanism of Ni during refined into extremely fine nano-grains: *Zhaoping Luo*¹; Xiaokai Guo¹; Xin Zhou¹; Jianxin Hou¹; Xiuyan Li¹; Ke Lu¹; ¹Institute of Metal Research, Chinese Academy of Sciences

9:15 AM

Formation of low angle boundary-dominated nanolaminated structures in pure Al: *Xiaochun Liu*¹; Wei Xu¹; Ke Lu¹; ¹Institute of Metal Research

9:35 AM Invited

Evolution of heterogeneous structure and phase transformation behavior during liquid metal dealloying.: *SooHyun Joo*¹; Hidemi Kato¹; Takeshi Wada¹; ¹Tohoku University

10:00 AM

The Effects of Microstructural Heterogeneity and Porosity Distribution on the Evolution of Plastic Anisotropy and Failure under Uniaxial Tension of Additively Manufactured AlSi10Mg Alloy by Selective Laser Melting: Waqas Muhammad¹; Abhijit Brahma¹; Raja Mishra²; *Kaan Inal*¹; ¹University of Waterloo; ²General Motors Research & Development Center

10:20 AM Break

10:40 AM Invited

Severe deformation of a lamellar microstructure: pearlitic steel as a case study: Steffen Brinckmann¹; *Gerhard Dehm*¹; ¹Max-Planck-Institute

11:05 AM

Small-Volume Aluminum Alloys with Native Oxide Shell Deliver Unprecedented Strength and Toughness: *Weizhong Han*¹; ¹Xi'an Jiaotong University

11:25 AM

Structural Design of Synthetic Honeycombs with the Introduction of Heterogeneously Distributed 5-7 Defects and Arrays: *Bosco Yu*¹; David Wilkinson¹; Hatem Zurob¹; ¹McMaster University

11:45 AM

Plastic flow and microstructural instabilities during high-pressure torsion of Cu/ZnO composites: *Yuanshen Qi*¹; Anna Kosinova¹; Askar Kilmametov²; Boris Straumal²; Eugen Rabkin¹; ¹Technion – Israel Institute of Technology; ²Karlsruhe Institute of Technology

High Entropy Alloys VII — Thermal and Other Properties I

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

Wednesday AM
March 13, 2019
Room: 207B
Location: Henry B. Gonzalez
Convention Center

Session Chairs: Veerle Keppens, University of Tennessee; Joseph Poon, University of Virginia

8:30 AM Invited

High-entropy oxides: a path to novel materials with enhanced functionality: *Veerle Keppens*¹; ¹Univ of Tennessee

8:50 AM Invited

Radiation Effects in Concentrated Solid Solution Alloys: *Yanwen Zhang*¹; Gihan Velisa¹; Shijun Zhao¹; Ke Jin¹; Ritesh Sachan¹; Yury Osetskii¹; Chenyang Lu²; Lumin Wang²; William Weber³; ¹Oak Ridge National Laboratory; ²University of Michigan; ³University of Tennessee

9:10 AM Invited

High Entropy Alloy Phases Mined From Phase Diagrams: *Joseph Poon*¹; Qi Jie¹; ¹University of Virginia

9:30 AM Invited

Study of Oxidation Mechanisms in Refractory MoW-TaTiZr HEA using Periodic DFT and Atomistic Thermodynamic Modelling: *Eric Osei-Agyemang*¹; Ganesh Balasubramanian¹; ¹Lehigh University

9:50 AM Invited

Self-diffusion in high-entropy alloys: *Gerhard Wilde*¹; ¹Uni Muenster

10:10 AM Break

10:30 AM Invited

Surface Degradation of High Entropy Alloys – Corrosion, Erosion, and Wear Behavior and Mechanisms: *Aditya Ayyagari*¹; Jibril Shittu¹; *Sundeep Mukherjee*¹; ¹Univ of North Texas

10:50 AM Invited

In situ ion irradiation on Al-Co-Cr-Fe-Ni high entropy alloys: *Jing Hu*¹; ¹Argonne National Laboratory

11:10 AM Invited

Correlating He Bubble Segregation in APT Data to Radiation Tolerance for Single-phase Concentrated Solid-solution Alloys (SP-CSAs): *Jonathan Poplawsky*¹; Xing Wang¹; Wei Guo²; Ke Jin³; Hongbin Bei³; Yongqiang Wang⁴; William Weber³; Yanwen Zhang³; Karren More¹; ¹Center for Nanophase Materials Sciences, Oak Ridge National Laboratory; ²Materials Science Research and Development, Timken World Headquarters; ³Materials Science and Technology Division, Oak Ridge National Laboratory; ⁴Materials Science and Technology Division, Los Alamos National Laboratory

11:30 AM Invited

Determination of transformation pathways in high entropy alloys with B2/bcc phase combinations: *Jake Jensen*¹; John Sosa²; Brian Welk³; Gopal Viswanathan³; Sam Kuhr³; Rongpei Shi⁴; Yunzhi Wang³; *Hamish Fraser*³; ¹Thermo Fisher Scientific Inc; ²MIPAR Software; ³Ohio State Univ; ⁴Lawrence Livermore National Laboratory

Hume-Rothery Symposium – Bulk and Interfacial Thermodynamics of Complex Materials: Insights Derived from Integrating Modeling and Experiment — CALPHAD and Ab-initio Studies of Phase equilibria

Sponsored by: TMS: Alloy Phases Committee
Program Organizers: Raymundo Arroyave, Texas A&M University; Michael Gao, National Energy Technology Laboratory; Jeffrey Hoyt, McMaster Univ; Saryu Fensin, Los Alamos National Laboratory

Wednesday AM
March 13, 2019
Room: 304B
Location: Henry B. Gonzalez
Convention Center

Session Chair: To Be Announced

8:30 AM Invited

CALPHAD modeling, moving forward: *Ursula Kattner*¹; ¹National Institute of Standards & Technology

9:00 AM Invited

OpenCalphad - Thermodynamics for Phase Diagrams and Simulations: *Bo Sundman*¹; Christophe Sigli²; Catalina Heresi³; ¹Instn; ²Constellium CRV; ³Ruhr University Bochum

9:30 AM Invited

Beyond modeling of phase-based properties: *Zi-Kui Liu*¹; ¹Pennsylvania State University

10:00 AM Break

10:20 AM Invited

Modelling structural materials in realistic environments by ab initio thermodynamics: *Joerg Neugebauer*¹; Mira Todorova¹; Blazej Grabowski¹; Tilmann Hickel¹; ¹MPI fuer Eisenforschung

10:50 AM Invited

Stability of Cu<SUB6>Sn<SUB5>, a first-principles study: *Gautam Ghosh*¹; ¹Northwestern Univ

11:20 AM

Phase stability and magnetic properties of Fe-Cr-Ni-Mn high entropy alloys from first-principles and Monte-Carlo simulations: *Mark Fedorov*¹; Jan S. Wrobel¹; Antonio Fernandez-Caballero²; K.J. Kurzydowski¹; *Duc Nguyen-Manh*³; ¹Warsaw University of Technology; ²University of Manchester; ³United Kingdom Atomic Energy Authority

ICME Case Studies and Validation: Extreme Environments — Session III

Sponsored by: TMS Materials Processing and Manufacturing Division, TMS Structural Materials Division, TMS: High Temperature Alloys Committee, TMS: Integrated Computational Materials Engineering Committee, TMS: Mechanical Behavior of Materials Committee
Program Organizers: James Saal; Mark Carroll, Federal-Mogul Powertrain; Xuan Liu, Pratt & Whitney; Dongwon Shin, Oak Ridge National Laboratory; Laurent Capolungo, Los Alamos National Laboratory

Wednesday AM
March 13, 2019
Room: 207A
Location: Henry B. Gonzalez
Convention Center

Session Chairs: Mark Carroll, Federal-Mogul Powertrain; Laurent Capolungo, Los Alamos National Laboratory

8:30 AM Invited

Thermodynamic properties in Ni based alloys using a first principles renormalized potential: *Ryoji Sahara*¹; Toshio Osada¹; Swastibrata Bhattacharyya¹; Kaoru Ohno¹; ¹National Institute For Materials Science

9:00 AM

An ICME Method for Predicting Phase Transformation and Microstructural Evolution in Advanced High Pressure Die Casting Magnesium Alloys: *Zhenjie Yao*¹; Tracy Berman¹; John Allison¹; ¹University of Michigan

9:20 AM

Bonding Mechanisms for Single Particle Impact during Cold Spray of Aluminum Powders: *Sumit Suresh*¹; Jie Chen¹; Seok-Woo Lee¹; Mark Aindow¹; Harold Brody¹; Victor Champagne²; Avinash Dongare¹; ¹University of Connecticut; ²U.S. Army Research Laboratory

9:40 AM

Data mining methods for characterization of creep of Ti-X alloys: A first-principles study: Jinshan Li¹; *Ying Zhang*¹; William Yi Wang¹; Chengxiong Zou¹; Bin Tang¹; Jun Wang¹; Hongchao Kou¹; ¹Northwestern Polytechnical University

10:00 AM Break

10:20 AM

Integrated Modelling of Microstructure Evolution for Yield Strength Prediction in Aluminum Alloys: *Qianying Shi*¹; Tracy Berman¹; Jacob Garves¹; Chal Park¹; John Allison¹; ¹University of Michigan

10:40 AM

Modeling of Sheet Metal Forming Based on Implicit Embedding of the Elasto-Plastic Self-Consistent Formulation in Finite Elements: Application to Cup Drawing of Al6022-T4: *Timothy Barrett*¹; Milovan Zecevic¹; Marko Knezevic¹; ¹University of New Hampshire

11:00 AM

Revealing the Solutes Effects and Strengthening Mechanisms of Ti-X alloys through high-throughput First-principles calculations: Jinshan Li¹; *Chengxiong Zou*¹; William Yi Wang¹; Ying Zhang¹; Bin Tang¹; Jun Wang¹; Hongchao Kou¹; ¹School of Materials Science and Engineering, Northwestern Polytechnical University

11:20 AM

Texture Evolution and Hardening Behavior During Thermomechanical Processing of an Al-Li Alloy: *Tracy Berman*¹; Arunabha Roy¹; Chal Park¹; Veera Sundararaghavan¹; John Allison¹; ¹University of Michigan

11:40 AM

Enhanced Hardening due to FCC-HCP transformation in medium-entropy CrCoNi alloy: *Supriyo Chakraborty*¹; Connor Slone¹; Jiashi Miao¹; Easo George²; Michael Mills¹; Stephen Niezgodka¹; ¹The Ohio state University; ²University of Tennessee

Interfaces in Structural Materials: An MPMD Symposium in Honor of Stephen M. Foiles — Mechanical Behavior I: A Joint Session with Mechanical Behavior Related to Interfacial Physics III

Sponsored by: The Minerals, Metals and Materials Society, TMS: Computational Materials Science and Engineering Committee
Program Organizers: Fadi Abdeljawad, Clemson University; Eric Homer, Brigham Young University; Elizabeth Holm, Carnegie Mellon University; Mark Asta, Univ of California Berkeley

Wednesday AM
March 13, 2019

Room: 302C
Location: Henry B. Gonzalez
Convention Center

Session Chair: To Be Announced

8:30 AM Invited

Atomic Level Investigation of the Structure and Mechanical Behavior of α/β Interfaces and Twin Boundaries in Titanium Alloys: *Michael Baskes*¹; Doyl Dickel¹; ¹Mississippi State University

9:00 AM

An Atomistic Study of the Deformation Behavior of Bulk Titanium Alloys: *Tonya Stone*¹; Parshu Bhusal¹; Doyl Dickel¹; Mark Horstemeyer¹; ¹Mississippi State University

9:20 AM

Grain Boundary Segregation Strengthening in Nanocrystalline Aluminum Alloys: Wenbo Wang¹; *Jason Trelewicz*¹; ¹Stony Brook University

9:40 AM

Mechanical Response of Nano Scale Bicontinuous Copper Molybdenum with Varying Feature Sizes: *Nathan Beets*¹; Yuchi Cui²; Diana Farkas¹; Amit Misra²; ¹Virginia Polytechnic Institute and State University; ²University of Michigan

10:00 AM

Understanding the Mechanical Behavior of Nanotwinned Ni-Mo-W Films for High Temperature MEMS Applications: *Gianna Valentino*¹; Pralav Shetty²; Jessica Krogstad²; Timothy Weihs¹; Kevin Hemker¹; ¹Johns Hopkins University; ²University of Illinois at Urbana-Champaign

10:20 AM Break

10:40 AM Invited

Role of Grain Boundaries in Polycrystal Plasticity: *Richard LeSar*¹; John Graham²; Laurent Capolungo²; ¹Iowa State University; ²Los Alamos National Laboratory

11:10 AM Invited

Unraveling the Mechanistic Origins of Deformation and Strain Accommodation in Nanocrystalline Materials: *Garritt Tucker*¹; Ankit Gupta¹; Satish Rajaram²; Gregory Thompson³; ¹Colorado School of Mines; ²Drexel University; ³University of Alabama

11:40 AM

Connecting grain boundary properties to the response of tantalum under shock compression and release: *Eric Hahn*¹; Saryu Fensin¹; Tim Germann¹; ¹Los Alamos National Laboratory

12:00 PM Invited

Void formation at boundaries under incipient spall conditions: *Anthony Rollett*¹; Evan Lieberman²; David Menasche³; Ricardo Lebensohn²; Robert Suter¹; ¹Carnegie Mellon Univ; ²Los Alamos National Laboratory; ³Hamiltonian Group

Irradiation Effects on Phase Transformations in Nuclear Reactor Materials — Ceramics and Fuels

Sponsored by: TMS: Phase Transformations Committee
Program Organizers: Janelle Wharry, Purdue University; Kester Clarke, Colorado School of Mines; Julie Tucker, Oregon State University; Par Olsson, KTH Royal Institute of Technology; Dhriti Bhattacharyya, ANSTO; Mohsen Asle Zaeem, Colorado School of Mines; Arun Devaraj, Pacific Northwest National Laboratory

Wednesday AM
March 13, 2019

Room: 214B
Location: Henry B. Gonzalez
Convention Center

Session Chairs: Mohsen Asle Zaeem, Colorado School of Mines; Hui Xiong, Boise State University

8:30 AM Invited

Ion Irradiation Effects on Structural and Electrochemical Charge Storage Properties of

Electroceramic Materials for Lithium-Ion Batteries: *Hui Xiong*¹; Kassiopieia Smith¹; Andreas Savva¹; Janelle Wharry²; Yongqiang Wang³; ¹Boise State Univ; ²Purdue University; ³Los Alamos National Lab

9:00 AM

Nanotube/nanowire as effective defect sinks in metals: atomistic simulations and in situ ion radiation transmission electron microscopy: *Kangpyo So*¹; Penghui Cao¹; Yang Yang¹; Jonggil Park²; Mingda Li¹; Long Yan²; Jing Hu³; Meimei Li³; Eduardo Bringa⁴; Young Hee Lee²; Michael Short¹; Ju Li¹; ¹Mit; ²Sungkyunkwan University; ³Argonne National Laboratory; ⁴Universidad Nacional de Cuyo

9:20 AM

A Novel Dual-Step Nucleation Pathway in Silicon Carbide under Neutron Irradiation: *Subhashish Meher*¹; Isabella van Rooyen¹; ¹Idaho National Laboratory

9:40 AM Invited

Phase Transformations in Neutron Irradiated Metallic Fuels: *Maria Okuniewski*¹; Jonova Thomas¹; Alejandro Figueroa¹; Gyuchul Park¹; Walter Williams¹; ¹Purdue University

10:10 AM Break

10:30 AM

Microstructural defects induced by phase transformations in uranium alloys: *Yipeng Gao*¹; ¹Idaho National Laboratory

10:50 AM

Effects of Neutron Irradiation on Phase Transformations in U-Mo Alloys: *Dennis Keiser*¹; Jan-Fong Jue¹; Jian Gan¹; Brandon Miller¹; Adam Robinson¹; ¹Idaho National Lab

11:10 AM

Theoretical predictions, atomistic simulations and experimental observations of void and gas bubble superlattice formation under irradiation: *Yongfeng Zhang*¹; Yipeng Gao¹; Cheng Sun¹; Daniel Schwen¹; Chao Jiang¹; Lingfeng He¹; Jian Gan¹; David Sprouster²; Lynne Ecker³; ¹Idaho National Laboratory; ²Brookhaven National Laboratory; ³Brookhaven National Laboratory

11:30 AM

Xe segregation at grain boundaries in U3Si2: *Benjamin Beeler*¹; David Andersson²; Michael Cooper²; Michael Baskes²; Yongfeng Zhang¹; ¹Idaho National Laboratory; ²Los Alamos National Laboratory

Magnesium Technology 2019 — Corrosion and Surface Protection

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

Program Organizers: Vineet Joshi, Pacific Northwest National Laboratory; Brian Jordon, University of Alabama; Dmytro Orlov, Lund University; Neale Neelameggham, IND LLC

Wednesday AM
March 13, 2019

Room: 005
Location: Henry B. Gonzalez
Convention Center

Session Chairs: J. Jordon, University of Alabama; Chaitanya Kale, Arizona State University

8:30 AM Invited

Effect of alloying with rare-earth metals on the degradation of magnesium alloys studied using a combination of isothermal calorimetry and pressure measurements: Lars Wadsö¹; Norbert Hort²; *Dmytro Orlov*¹; ¹Lund University; ²Helmholtz-Zentrum Geesthacht

8:50 AM

Effects of Li on Microstructures and Corrosion Behaviors of Mg-Li-Al Alloys: Yang Li¹; Tingchao Li¹; Qilong Wang¹; *Yun Zou*; ¹Zhengzhou University

9:10 AM

Galvanically Graded Interface: A Computational Model for Mitigating Galvanic Corrosion between Magnesium and Mild Steel: Kurt Spies¹; *Vineet Joshi*¹; Vilayanur Viswanathan¹; Ayoub Soulami¹; Yuri Hovanski¹; ¹Pacific Northwest National Laboratory

9:30 AM

Iron content in relationship with alloying elements and corrosion behaviour of magnesium alloys: *Ha Nguyen*¹; Jongil Kim²; Young Min Kim³; Bong Sun You³; ¹Korea University of Science and Technology; ²Chungnam National University; ³Korea Institute of Materials Science

9:50 AM

Microstructure, corrosion and mechanical properties of Mg-Si alloys as biodegradable implant material: *Weidan Wang*¹; Ke Yang²; Yuanding Huang¹; Norbert Hort¹; ¹Helmholtz-Zentrum Geesthacht; ²Institute of Metal Research

10:10 AM Break

10:30 AM

The Influence of Temperature and Medium on Corrosion Response of ZE41 and EZ33: *Marwa AbdelGawad*¹; Ali Chaudhry¹; Bilal Mansoor¹; ¹Texas A&M University at Qatar

10:50 AM

Alloy Design strategy of the native anti-corrosion Magnesium alloy: *Yuan Yuan*¹; Fusheng Pan¹; Bin Jiang¹; Jiajia Wu¹; Tao Chen¹; ¹Chongqing University

11:10 AM

Corrosion Bending Fatigue of RESOLY® and WE43 Magnesium Alloy Wires: *Petra Maier*¹; Adam Griebel²; Matthias Jahn¹; Maximilian Bechly¹; Roman Menze³; Jeremy Schaffer²; ¹Stralsund University of Applied Sciences; ²Fort Wayne Metals; ³MeKo Laserstrahl-Materialbearbeitungen e.K.

11:30 AM

Sacrificial Cathodic Protection of Mg Alloy AZ31B by an Mg-5Sn Surface Alloy: *Carol Glover*¹; Taylor Cain¹; John Scully¹; ¹University of Virginia

Materials Processing Fundamentals — Extractive Process and Thermodynamic Modeling

Sponsored by: TMS: Process Technology and Modeling Committee
Program Organizers: Guillaume Lamotte, Boston Metal; Jonghyun Lee, Iowa State University; Antoine Allanore, MIT - DMSE; Samuel Wagstaff, Novelis

Wednesday AM
March 13, 2019

Room: 212A
Location: Henry B. Gonzalez
Convention Center

Session Chairs: Fiseha Tesfaye, Abo Akademi University; Jake McMurray, Oak Ridge National Laboratory

8:30 AM Introductory Comments

8:35 AM

An investigation on electrodeposition of titanium in molten LiCl-KCl: Chenyao Li¹; *Jianxun Song*¹; Shaolong Li¹; Xuepeng Li¹; Yongchun Shu¹; Jilin He¹; ¹Zhengzhou University

8:55 AM

A scalable Gibbs minimization model for solvent extraction applied to rare earths separation: *Chukwunwike Iloeje*¹; Diane Graziano¹; Joe Cresko²; ¹Argonne National Lab; ²US Department of Energy

9:15 AM

Effect of ultrasound on the extraction of silicon and aluminum from metallurgical slag of laterite nickel ore: *Pengju Zhang*¹; Jilai Xue¹; Xuan Liu¹; Donggen Fang¹; ¹School of Metallurgical and Ecological Engineering

9:35 AM

Thermal Stability and Thermodynamics of the Ag₂ZnGeS₄ Compound: *Mykola Moroz*¹; Fiseha Tesfaye¹; Pavlo Demchenko²; Myroslava Prokhorenko³; Daniel Lindberg⁴; Oleksandr Reshetnyak²; Leena Hupa¹; ¹Abo Akademi University; ²Ivan Franko National University of Lviv; ³Lviv Polytechnic National University; ⁴Aalto University

9:55 AM

Thermochemical Data of Selected Phases in the FeOx-FeSO4-Fe2(SO4)3 System: *Fiseha Tesfaye*¹; In-Ho Jung²; Min-Kyu Paek³; Mykola Moroz²; Daniel Lindberg³; Leena Hupa¹; ¹Åbo Akademi University; ²Seoul National University; ³Aalto University

10:15 AM Break

10:35 AM

The Effect of Heat Treatment to FePt/Fe₂O₃ and FePt/Cu Magnetic Performance: *Naidu Seetala*¹; Deidre Henderson¹; Jumel Jno-Baptiste¹; Hao Wen²; Shengmin Guo²; ¹Grambling State Univ; ²Louisiana State University

Mechanical Behavior of Nuclear Reactor Components — Creep, Fatigue, and Fracture

Sponsored by: TMS: Nuclear Materials Committee
Program Organizers: Clarissa Yablinsky, Los Alamos National Laboratory; Assel Aitkaliyeva, University of Florida; Khalid Hattar, Sandia National Laboratories; Janelle Wharry, Purdue University; Laurent Capolungo, Los Alamos National Laboratory; Eda Aydogan, Los Alamos National Laboratory

Wednesday AM
March 13, 2019

Room: 215
Location: Henry B. Gonzalez
Convention Center

Session Chairs: Clarissa Yablinsky, Los Alamos National Laboratory; Janelle Wharry, Purdue University

8:30 AM Invited

Irradiation Induced Creep in FCC Alloys Measured using in situ TEM: *Shen Dillon*¹; Gowtham Jawahararam¹; Christopher Barr²; Khalid Hattar²; ¹University of Illinois; ²Sandia National Laboratories

9:00 AM

Analytical methodology to predict crack growth for irradiated stainless steel 304L under combined fatigue-creep loading: *Robert Fuller*¹; Jutima Simsiriwong²; Nima Shamsaei³; ¹Entergy Operations, Grand Gulf Nuclear Station; ²University of North Florida; ³Auburn University

9:20 AM

Characterization of creep-fatigue crack propagation in Alloy 709 at high temperatures using computational simulations and experimental testing: *Jose J. Ramirez*¹; Gabriel Potirniche¹; Robert Stephens¹; Indrajit Charit¹; Nicholas Shaber¹; Martin Taylor¹; ¹University of Idaho

9:40 AM

Compressive creep of porous γ -phase uranium metal: *Karyn Stern*¹; Luis Ortega¹; Sean McDeavitt¹; ¹Department of Nuclear Engineering, Texas A&M University

10:00 AM Break

10:20 AM

On the Remarkable Fracture Toughness of 90 to 97W-NiFe Alloys Revealing Powerful New Ductile Phase Toughening Mechanisms: *Md Ershadul Alam*¹; G R Odette¹; ¹University of California Santa Barbara

10:40 AM

Creep-Fatigue Interaction of Fe-25Ni-20Cr austenitic stainless steel (Alloy 709): *Abdullah Alomari*¹; Nilesh Kumar¹; Korukonda Murty¹; ¹North Carolina State University

11:00 AM

Experiments and Modeling of Mechanical Behaviour of Zircaloy-4 under Monotonic and Cyclic Loading for Research on Stress Corrosion Cracking: *Yuqing Ding*¹; Gregory Kasprick¹; Sterling St Lawrence¹; ¹Canadian Nuclear Laboratories

11:20 AM

In Situ TEM Clamped Beam Fracture of Irradiated Fe-9%Cr ODS: *Kayla Yano*¹; Janelle Wharry¹; ¹Purdue Univ

11:40 AM

Understand the Phase Transformation and Mechanical Behavior of Thermally Aged and Neutron Irradiated Duplex Stainless Steels Using High-Energy X-ray Beamline Experiments: *Yu Lu*¹; Shilei Li²; Yiren Chen³; Yong Yang¹; ¹Univ of Florida; ²University of Science and Technology Beijing; ³Argonne National Laboratory

Modeling and Simulation of Composite Materials — Session IV

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

Program Organizers: Rakesh Behera, New York University; Dinesh Pinisetty, CSU Maritime Academy; Dung Luong, Nyu

Wednesday AM
March 13, 2019

Room: 303B
Location: Henry B. Gonzalez
Convention Center

Session Chairs: Peng Zhao, Panzhihua University; Masanori Enoki, Tohoku University; Rakesh Behera, New York University

8:30 AM

Accounting for slip localization at the grain scale in polycrystal homogenization applied to FCC metals and alloys: *Maxime Sauzay*¹; Diogo Goncalves²; Bertrand Sicaud¹; Jérôme Hazan¹; ¹Cea Université Paris-Saclay; ²Cea Cadarache

8:50 AM

Monte Carlo simulation for clustering behavior between interstitial and substitutional elements in iron: *Masanori Enoki*¹; Hiroshi Ohtani¹; ¹Tohoku University

9:10 AM

Mesoscopic model of Free Surface in a Continuous Casting Mould: *Peng Zhao*¹; ¹Panzhihua university

9:30 AM

Dispersion Corrected Density Functional Theory Studies on PVDF/Hydrated Aluminium Nitrate Composite System: *Ranjini Sarkar*¹; Tarun Kundu¹; ¹Indian Institute of Technology Kharagpur

9:50 AM Break

10:30 AM

Heat Transfer in Lamellar Phase Change Material Composite Heatsinks: *Delia Perez-Nunez*¹; Patrick Shamberger¹; Alison Hoe¹; ¹Texas A&M University

10:50 AM

Molecular dynamics simulation of the structure and transport properties of xKF-yNaF-zAlF₃: Jie Li¹; Hui Guo¹; Hongliang Zhang¹; Rucai Li²; Qiyu Wang¹; Jingkun Wang¹; Tianshuang Li¹; ¹Central South University; ²Eastern Airlines Technic Co. Ltd. Wuhan Branch

11:10 AM

Transient Heat Transfer in Phase Change Material Composites: *Alison Hoe*¹; Michael Deckard¹; Achutha Tamraparni¹; Alaa Elwany¹; Jonathan Felts¹; Patrick Shamberger¹; ¹Texas A&M University

11:30 AM Concluding Comments

Nanoarchitected and Morphology-controlled Nanoporous Materials — Structure Properties-radiation

Sponsored by: TMS Materials Processing and Manufacturing Division, TMS: Mechanical Behavior of Materials Committee
Program Organizers: Niaz Abdolrahim, University of Rochester; John Balk, Univ of Kentucky; Michael Demkowicz, Texas A&M Univ; Christoph Eberl, Fraunhofer IWM

Wednesday AM
March 13, 2019

Room: 214A
Location: Henry B. Gonzalez
Convention Center

Session Chair: To Be Announced

8:30 AM Invited

Applications of nanoporous metals to semiconductor device interconnects: *Antonia Antoniou*¹; Vanessa Smet¹; ¹Georgia Institute of Technology

9:00 AM Invited

On the structure-activity correlation of catalytic nanoporous gold: *Yi Ding*¹; ¹Tianjin University of Technology

9:30 AM

Graphene-Carbon Nanotube Aerogel As ‘Organic’ Thermochemical Energy Harvesters: Synthesis, Structure and Properties: *Sanju Gupta*¹; R. Meek¹; ¹Western Kentucky Univ

9:50 AM Break

10:20 AM Invited

Microfabricated Nanoporous Gold Morphology Libraries for the Study of Structure-Property Relationships: *Erkin Seker*¹; ¹University of California, Davis

10:50 AM

Effect of process conditions on the hierarchical structure of UCT manganese oxide: *Bahareh Deljoo*¹; Tahereh Jafari¹; Ran Miao¹; Mu-Ping Nieh¹; Steven Suib¹; Mark Aindow¹; ¹University of Connecticut

11:10 AM

In situ TEM study on the radiation response of nanostructured Cu with nanovoids: *Cuncai Fan*¹; Jin Li¹; Youxing Chen²; Xinghang Zhang¹; ¹Purdue University; ²University of Minnesota

11:30 AM

Graphene-based ‘hybrid’ aerogels with carbon nanotubes: Mesoporous network functionality promoted defect density and electrochemical activity correlations: *Sanju Gupta*¹; ¹Western Kentucky Univ

Phase Transformations and Microstructural Evolution — Phase Transformation in Non-ferrous Alloys II

Sponsored by: TMS: Phase Transformations Committee
Program Organizers: Sophie Primig, Univ of New South Wales; Deep Choudhuri, University of North Texas; Klaus-Dieter Liss, Guangdong Technion – Israel Institute of Technology; Megumi Kawasaki, Oregon State University; Matthew Steiner, University of Cincinnati; Yufeng Zheng, Ohio State University; Ashley Paz y Puente, University of Cincinnati; Juan Escobedo-Diaz, University of New South Wales; Dhriti Bhattacharyya, ANSTO; Rajarshi Banerjee, University of North Texas

Wednesday AM
March 13, 2019

Room: 225D
Location: Henry B. Gonzalez
Convention Center

Session Chair: To Be Announced

8:30 AM

Experimental and Theoretical Examinations of Dynamic precipitation in a Mg-9Al (wt.%) alloy during low-temperature equal channel angular extrusion (ECAE): Xiaolong Ma¹; Suhas Eswarappa Prameela¹; Peng Yi¹; Matthew Fernandez¹; Nicholas Krywopusk¹; Laszlo Kecskes²; Tomoko Sano³; Michael Falk¹; *Timothy Weihs*¹; ¹Johns Hopkins University; ²MatSys; ³ARL

8:50 AM

Interplay of Stacking Faults and Clusters during Formation of Long Period Stacking Ordered Structures in Mg-TM-Y alloys: *Hiroshi Okuda*¹; Kohei Kintsu¹; Michiaki Yamasaki²; Yoshihito Kawamura³; ¹Kyoto Univ; ²Kumamoto Univ.

9:10 AM

Mechanisms of phase stabilization in AlCuMnZr (ACMZ) alloys: *Amit Shyam*¹; Dongwon Shin¹; Patrick Shower¹; Lawrence Allard¹; Jonathan Poplawsky¹; Yukinori Yamamoto¹; James Morris¹; James Haynes¹; ¹Oak Ridge National Laboratory

9:30 AM

Mechanistic insights on the enhanced environmental stability of sputtered deposited nanograined alloys: *Pralav Shetty*¹; Megan Emigh¹; Jessica Krogstad¹; ¹University of Illinois at Urbana-Champaign

9:50 AM

Transformation pathways and microstructural evolution in shock-loaded and reshocked Zr and Ti: *Benjamin Morrow*¹; David Jones¹; Cayla Harvey²; Ellen Cerreta¹; ¹Los Alamos National Laboratory; ²University of Nevada, Reno

10:10 AM Break

10:30 AM

Understanding the role of microstructure on high pressure phase transformation in zirconium: *M Arul Kumar*¹; N Hilairat²; Yanbin Wang³; Rodney McCabe¹; Irene Beyerlein⁴; Laurent Capolungo¹; Carlos Tome¹; ¹Los Alamos National Laboratory; ²CNRS-UMET, Université Lille ; ³Argonne National Laboratory; ⁴University of California Santa Barbara

10:50 AM

A unified theory for deformation-induced transformations (TRIP/TWIP) in titanium and ferrous alloys: *Madeleine Bignon*¹; Pedro Rivera-Diaz-Del-Castillo²; Emmanuel Bertrand¹; Franck Tancret¹; ¹Université de Nantes; ²University of Lancaster

11:10 AM

Atom probe Tomography and Scanning Transmission Electron Microscopy correlative characterization of in situ evolution of precipitation structure upon ageing in an Al-Zn-Mg-Cu alloy: *Williams Lefebvre*¹; ¹Normandie Univ, UNIROUEN, INSA Rouen, CNRS, Groupe de Physique des Matériaux, F-

11:30 AM

Discontinuous Precipitation in U10Mo alloy: Reaction Kinetics, Effect of Prior γ -UMo Microstructure, and the Effect of Ternary Alloying
Addition: *Saamyadeep Jana*¹; Arun Devaraj¹; Lucas Sweet¹; Curt Lavender¹; Vineet Joshi¹; ¹Pacific Northwest National Laboratory

Powder Processing of Bulk Nanostructured Materials — Powder Synthesis

Sponsored by: TMS: Powder Materials Committee

Program Organizers: Zachary Cordero, Rice University; Deliang Zhang, Shanghai Jiao Tong Univ; Brady Butler, US Army Research Laboratory; Ma Qian, RMIT University (Royal Melbourne Institute of Technology)

Wednesday AM
March 13, 2019

Room: 211
Location: Henry B. Gonzalez
Convention Center

Session Chair: Ma Qian, RMIT University

8:30 AM

The role of dehydrogenation in powder sintering involving TiH₂: *Gang Chen*¹; Peng Cao²; Klaus-Dieter Liss³; Graeme Auchterlonie⁴; Xuanhui Qu¹; ¹University of Science and Technology Beijing; ²The University of Auckland; ³Guangdong Technion – Israel Institute of Technology; ⁴The University of Queensland

9:00 AM

Inhomogeneous mechanical alloying during ball milling of Fe alloys: How grain boundary segregation prevails over extreme deformation: *Dor Amram*¹; Christopher Schuh¹; ¹Massachusetts Institute of Technology

9:20 AM

Inhomogeneity of Strain in Metal Particulates Produced by Modulation-assisted Machining: *Indrani Biswas*¹; James Mann²; Srinivasan Chandrasekar¹; Kevin Trumble¹; ¹Purdue Univ; ²University of West Florida

9:40 AM

As-Atomized Spherical GARS Powder for Direct Shape Forming of Fe-based ODS Alloys by Cold Spray Deposition: *Iver Anderson*¹; Emma White¹; Timothy Prost¹; Timothy Eden²; Todd Palmer³; ¹Iowa State Univ, Ames Laboratory; ²Applied Research Laboratory, Penn State Univ.; ³Materials Science and Engineering, Penn State Univ.

10:00 AM Break

10:20 AM

Numerical Simulation and Validation of Gas and Molten Metal Flows in Close-coupled Gas Atomization: *Franz Hernandez*¹; Bo Kong¹; Trevor Riedemann¹; Jordan Tiarks¹; Jonathan Regele²; Thomas Ward³; Iver Anderson¹; ¹Ames Laboratory of US DOE; ²Los Alamos National Laboratory; ³Iowa State University

10:40 AM

Requirements of NFPA 652 Standard on Combustible Dust: Are Your Powder Processes Compliant?: *Vahid Ebadat*

11:00 AM

Density Separation of Mixed Carbide Colloids via Standing Wave Physics: *Trenin Bayless*¹; Grant Wallace¹; Jerome Downey¹; ¹Montana Tech

11:20 AM

Fabrication, Characterization, and Optimization of Cold-crucible based Rapidly Solidified Ti Powders: *Sardar Farhat Abbas*¹; *Bin Lee*²; Sanghyun Lee²; Taek-Soo Kim²; ¹University of Science and Technology (UST); ²Korea Institute of Industrial Tech

11:40 AM

Synthesis of TiH_x Powders from Titanium Alloy Shavings by Thermohydrogen Processing: *Zhongqi Liu*¹; Junhao Li¹; Qinfeng Ruan¹; *Ruigang Wang*¹; ¹The University of Alabama

Recent Advances in Functional Materials and 2D/3D Processing for Sensors and Electronic Applications — 2D/3D Printed Electronics Advances

Sponsored by: TMS: Thin Films and Interfaces Committee

Program Organizers: Pooran Joshi, Oak Ridge National Laboratory; Ravindra Nuggeshalli, New Jersey Institute of Tech; Jud Ready, Georgia Institute of Technology; Anming Hu, Univ of Tennessee; Tolga Aytug, Oak Ridge National Laboratory; Konstantinos Sierros, West Virginia University; Wenchao Zhou, University of Arkansas

Wednesday AM
March 13, 2019

Room: 217D
Location: Henry B. Gonzalez
Convention Center

Session Chairs: Pooran Joshi, Oak Ridge National Laboratory; Nuggeshalli Ravindra, New Jersey Institute of Technology

8:30 AM Invited

Conformal and Embedded Electronics in 3D: *Mike Renn*¹; ¹Optomec

9:00 AM Invited

Additive Manufacturing of High Performance Rare Earth Permanent Magnets: Prospects and Challenges: *Mariappan Paranthaman*¹; ¹Oak Ridge National Laboratory

9:30 AM

Additive Manufacturing of Electronic and Magnetic Sensors: *Sameh Dardona*¹; ¹United Technologies Research Center

9:50 AM Invited

Additive manufacturing of functional electronics and ingestible biomedical devices: *Yong Lin Kong*¹; ¹University of Utah

10:20 AM Break

10:40 AM Invited

Adaptive 3D-Printed Liquid Metal Electronics: *Christopher Tabor*¹; ¹AFRL

11:10 AM

3D Printing of Polymer-based Gasochromic, Thermochromic and Piezochromic Sensors: *Patrick Dzisah*¹; Nuggeshalli Ravindra¹; ¹New Jersey Institute of Technology

11:30 AM Invited

3D Printed High Performance Sensors: *Rahul Panat*¹; Md Taibur Rahman¹; Matthew Schrandt²; Michael Renn²; M. Sadeq Saleh¹; Chih-Yang Cheng¹; Chintalapalle Ramana³; ¹Carnegie Mellon University; ²Optomec Inc; ³University of Texas at El Paso

12:00 PM

Electronic Tongue Sensing with a Six-sensor Array for Multi Flavors Detection: *Yongchao Yu*¹; Pooran Joshi²; Jayne Wu¹; Anming Hu¹; ¹University of Tennessee; ²Oak Ridge National Lab

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

Sponsored by: TMS: Thin Films and Interfaces Committee
Program Organizers: Adele Carrado, IPCMS - CNRS; Nancy Michael, Univ of Texas Arlington; Gerald Ferblantier, Icube Laboratory; Heinz Palkowski, Clausthal University of Technology; Ramana Chintalapalle, University of Texas at El Paso; Ravindra Nuggehalli, New Jersey Institute of Tech; Vikas Tomar, Purdue University

Wednesday AM
 March 13, 2019

Room: 217A
 Location: Henry B. Gonzalez
 Convention Center

Session Chairs: Adele Carrado, Strasbourg University; Nancy Michael, University of Texas Arlington

8:30 AM Keynote

Examining the Long-Term Adhesion Strength of Chitosan bonded to Titanium when Exposed to Heated Simulated Body Fluid: *Holly Martin*¹; Lauren DeBow¹; Patrick McWhorter¹; Snjezana Balaz¹; ¹Youngstown State University

9:10 AM Invited

Duplex Surface Treatments for Improving the Tribological Properties of Titanium Alloys: *Brandon Strahin*¹; Gary Doll¹; ¹Univ of Akron

9:35 AM

Fractured Oxide Films on Metals as Reservoir for Biological Agents to Create Antibacterial Surfaces: *Jesus Morales Espejo*¹; Susana Diaz A.¹; Lia Stanciu¹; David Bahr¹; ¹Purdue University

9:55 AM

Characterization and properties study of Cu and Ag inclusion in Zr-Ti matrix for biomedical application.: *Akib Jabed*¹; Ishraq Shabib¹; Waseem Haider¹; ¹Central Michigan University

10:15 AM Break

10:35 AM Invited

Structural, Magnetic, and Cytotoxicity Studies on CoFe₂O₄ Nanoparticles for Biomedical Applications: *Yesappa Kolekar*¹; Sumayya Ansari¹; Chintalapalle Ramana²; ¹Savitribai Phule Pune University, Pune; ²The University of Texas, El Paso

11:00 AM

Polymer Brushes: Routes toward biomedical implants: *Melania Reggente*¹; Sebastien Kriegel²; Patrick Masson²; Genevieve Pourroy²; Jacques Farber²; Heinz Palkowski³; *Adele Carrado*²; ¹EPFL SB ISIC LNB; ²IPCMS - CNRS; ³Institute of Metallurgy TU Clausthal

11:20 AM

Assembly of Glass Particles and Copolymer Latex on the Surface of Silicone Oil and Hallbrite Liquid: *Kinnari Shah*¹; Nuggehalli Ravindra²; ¹LaGuardia Community College -CUNY; ²New Jersey Institute of Technology

11:40 AM

Force Field for Molybdenum Disulfide and Molybdenum Diselenide to Compute Bulk and Interfacial Properties with Electrolytes and Biomacromolecules in High Accuracy: *Juan Liu*¹; Jin Zeng¹; Zewei Wang¹; Jiajun Chen²; Jim de Yoreo²; Yu Huang³; Hendrik Heinz¹; ¹University of Colorado Boulder; ²Pacific Northwest National Laboratory; ³University of California, Los Angeles

REWAS 2019: Education and Workforce Development — Education and Workforce Development

Sponsored by: TMS Extraction and Processing Division, TMS Light Metals Division, TMS: Recycling and Environmental Technologies Committee
Program Organizers: Adam Powell, Worcester Polytechnic Institute; Christina Meskers, Umicore; Elsa Olivetti, Massachusetts Institute of Tech; Gabrielle Gaustad, Rit

Wednesday AM
 March 13, 2019

Room: 007D
 Location: Henry B. Gonzalez
 Convention Center

Session Chair: To Be Announced

8:30 AM Introductory Comments

8:35 AM Invited

Sustainable Electronics: An Action-based Graduate Program: *Carol Handwerker*¹; ¹Purdue University

9:00 AM

The Contribution of Industry to STEM Education and Lifelong Learning: *Tom Hennebel*¹; Christina Meskers¹; Maurits Van Camp¹; ¹Umicore, Belgium

9:20 AM

Sustainability as a Lens for Traditional Material Science Curriculums: *Gabrielle Gaustad*¹; ¹Rochester Institute of Technology

9:40 AM Invited

Sustainability through Selection: *Uday Pal*¹; ¹Boston University

10:05 AM Break

10:25 AM Invited

How to Nurture Young Talents in the Materials Sector: *Gijs Du Laing*¹; ¹Ghent University

10:50 AM Invited

Corrosion Education for Materials Life Extension: Pathway to Improvement in Resource Productivity: *Brajendra Mishra*¹; ¹Worcester Polytechnic Institute

11:15 AM

Material Oriented Product Development by QFD4Mat Material Selection Strategy Approach: *Fabrizio D'Errico*¹; ¹Politecnico Di Milano Politecnico Di Milano

11:35 AM Invited

EIT RawMaterials Academy – Educating and Inspiring the Lifecycle of Innovators: *Wesley Crock*¹; Rima Dapous¹; ¹EIT RawMaterials GmbH

REWAS 2019: Rethinking Production — Rethinking Production

Sponsored by: TMS Extraction and Processing Division, TMS Light Metals Division, TMS: Recycling and Environmental Technologies Committee
Program Organizers: John Howarter, Purdue University; Mingming Zhang, ArcelorMittal Global R&D; Gabrielle Gaustad, Rit; Elsa Olivetti, Massachusetts Institute of Tech

Wednesday AM
 March 13, 2019

Room: 007C
 Location: Henry B. Gonzalez
 Convention Center

Session Chairs: John Howarter, Purdue University; Mingming Zhang, ArcelorMittal

8:30 AM Invited

Recycling Steel Manufacturing Wastewater Treatment Solid Wastes via In-process Separation with Dynamic Separators: *Naiyang Ma*¹; ¹ArcelorMittal

8:55 AM Invited

Metal-rich Byproduct Processing: Flexible Smelting for Responsible Recycling: *Joshua Montenegro*¹; ¹Conecuss LLC

9:20 AM

In Furnace Dross Pressing - IFDP: *David Roth*¹; Michael Rockstroh²; ¹GPS Global Solutions; ²RIA Cast House Engineering GMBH

9:45 AM

Tannic Acid – A Novel Intumescent Agent in Epoxy Systems: *Matthew Korey*¹; Alexander Johnson¹; William Webb¹; John Howarter¹; ¹Purdue University

10:05 AM Break

10:25 AM

Effect of CO Partial Pressure on Extraction of Alumina from Coal Fly Ash during Carbothermal Reduction Process: *Yang Xue*¹; Wenzhou Yu¹; Zhixiong You¹; Xuewei Lv¹; ¹Chongqing University

10:45 AM

Removal of Sulfur from Copper Smelting Slag by CO₂: *Yun Wang*¹; Rong Zhu¹; Shaoyan Hu¹; Hongyang Wang¹; Yaguang Guo²; ¹Univ of Science & Technology Beijing; ²China ENFI Engineering Co., Ltd.

11:05 AM

Sustainable Use of Precious and Rare Metals through Biotechnological Recycling: Norizo Saito¹; Toshiyuki Nomura¹; *Yasuhiro Konishi*¹; ¹Osaka Prefecture University

11:25 AM

Control of Leachate Contamination from Mine Wastes by Operating Practice: *Kenneth Sichone*¹; ¹UR-CST

Scandium Extraction and Use in Aluminum Alloys — Scandium Markets and Extraction

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

Program Organizers: Nigel Ricketts, Altrius Engineering Services; John Grandfield, Grandfield Technology Pty Ltd

Wednesday AM
March 13, 2019

Room: 006D
Location: Henry B. Gonzalez
Convention Center

Session Chair: To Be Announced

8:30 AM Introductory Comments

8:35 AM Panel Discussion Scandium supply, markets and applications

9:35 AM

Aluminium-Scandium Alloy Production via the Metalysis Process: *Ian Mellor*¹; Lyndsey Benson¹; Melchiorre Conti¹; Luke Benson Marshall¹; Stephen Repper¹; Nader Khan¹; ¹Metalysis Ltd

10:00 AM

Scandium Solvent Extraction: *Nigel Ricketts*¹; ¹Altrius Engineering Services

10:25 AM Break

10:40 AM

Improved Technology of Scandium Recovery from Solutions of Bauxite Residue Carbonation Leaching: *Andrey Panov*¹; Olga Petrakova¹; Aleksander Kozyrev¹; Aleksander Suss¹; Sergey Gorbachev¹; ¹Rusal

11:05 AM

Refining Technology of Scandium Concentrate Obtained from Bauxite Residue: *Andrey Panov*¹; Aleksander Suss¹; Aleksander Kozyrev¹; Sergey Gorbachev¹; Olga Petrakova¹; ¹Rusal

11:30 AM

Experimental Study of Pre-concentration from Silicate Containing Rare Earth Ore with Scandium by Magnetic Separation: Peng Yan¹; Guifang Zhang¹; Bo Li¹; Lei Gao¹; Zhe Shi²; Hua Wang¹; *Yindong Yang*²; ¹Kunming University of Science and Technology; ²University of Toronto

Science Policy within the Materials Research Community — Science Policy for Materials Research

Sponsored by: TMS: Education Committee

Program Organizers: Kathleen Chou, University of Michigan; Ashley Hilmas, University of Michigan; Peter Meisenheimer, University of Michigan; Max Powers, University of Michigan; Brian Tobelmann, University of Michigan

Wednesday AM
March 13, 2019

Room: 008B
Location: Henry B. Gonzalez
Convention Center

Session Chair: To Be Announced

9:00 AM Invited

The Interplay of Materials Research, Advocacy, and Policy Development: *Charles Ward*¹; ¹Air Force Research Laboratory

9:30 AM Invited

Opportunities and Trends in Materials Engineering Research Funding at the National Science Foundation: *Alexis Lewis*¹; ¹National Science Foundation

10:00 AM Break

10:20 AM Invited

Role of Public-Private Initiatives in Scientific Research: *Alan Taub*¹; ¹Univ of Michigan

10:50 AM Invited

The MGI and Materials Research Policy: *James Warren*¹; ¹NIST

11:20 AM Invited

Program Management in a Federal Agency: *John Vetrano*¹; ¹US Department of Energy

Solidification Processing of Light Metals and Alloys: An MPMD Symposium in Honor of David StJohn — Magnesium Alloys

Sponsored by: TMS: Solidification Committee

Program Organizers: Mark Easton, RMIT University; Ma Qian, RMIT University (Royal Melbourne Institute of Technology); John Grandfield, Grandfield Technology Pty Ltd; Norbert Hort, Helmholtz-Zentrum Geesthacht; Mark Jolly, Cranfield University

Wednesday AM
March 13, 2019

Room: 006C
Location: Henry B. Gonzalez
Convention Center

Session Chairs: Eric Nyberg, Brunel University; Norbert Hort, Helmholtz-Zentrum Geesthacht

8:30 AM Keynote

Influence of Microstructure Evolution during Twin-roll Casting on the Properties of Magnesium Sheets: *Karl Kainer*¹; Gerrit Kurz¹; Sven Pakulat¹; Dietmar Letzig¹; ¹Helmholtz Zentrum Geesthacht

8:50 AM Invited

Development of melt-conditioned twin-roll casting (MC-TRC) process for thin gauge Mg alloy strip production: *Chamini Mendis*¹; ¹Brunel University

9:10 AM Invited

Corrosion behavior of Mg, Al and Ti: *Guang-Ling Song*¹; ¹Xiamen University

9:30 AM Invited

Prospects for Magnesium as an Engineering Material: *Trevor Abbott*¹; ¹Magontec Ltd.

9:50 AM Invited

Predicting Microsegregation and Microstructural Evolution in Advanced High Pressure Die Cast Magnesium Alloys: Tracy Berman¹; Zhenjie Yao¹; Mei Li²; *John Allison*¹; ¹University of Michigan; ²Ford Motor Company

10:10 AM Break**10:20 AM Keynote**

Hot Tearing in Magnesium Alloys: *Norbert Hort*¹; Jiangfeng Song²; Mark Easton³; ¹Helmholtz-Zentrum Geesthacht; ²Chongqing University; ³RMIT University

10:40 AM Invited

Solidification of Aluminum and Magnesium Alloys: Modeling and Experiments: *Alan Luo*¹; ¹The Ohio State University

11:00 AM Invited

Deformation Behavior of Magnesium Single Crystals: *Kwang Seon Shin*¹; ¹Seoul National University

11:20 AM Invited

Controlling the eutectic microstructures of Mg based alloys for functional properties: *Kazuhiro Nogita*¹; Stuart McDonald¹; Manjin Kim¹; Xuan Tran²; Syo Matsumura²; ¹Univ of Queensland; ²Kyushu University

11:40 AM Invited

Advanced characterization of precipitates in light alloys: *Jian-Feng Nie*¹; ¹Monash Univ

Thermo-mechanical Response of Materials Investigated through Novel in-situ Experiments and Modeling — Session V

Sponsored by: TMS Functional Materials Division, TMS Structural Materials Division, TMS: Advanced Characterization, Testing, and Simulation Committee, TMS: Thin Films and Interfaces Committee
Program Organizers: Saurabh Puri, Microstructure Engineering; Robert Wheeler, Microtesting Solutions LLC; Dongchan Jang, Kaist; Amit Pandey, LG Fuel Cell Systems; Josh Kacher, Georgia Institute of Technology; Dhriti Bhattacharyya, Australian Nuclear Science and Technology Organization

Wednesday AM
March 13, 2019

Room: 301A
Location: Henry B. Gonzalez
Convention Center

Session Chairs: Josh Kacher, Georgia Tech; Yan Li, California State University, Long Beach

8:30 AM Keynote

Ex-situ and in-situ cyclic crack propagation in microscale tests on Pt-Ni-Al bond coats: Kaustubh Venkatraman¹; *Vikram Jayaram*¹; ¹Indian Institute of Science

9:10 AM

In-situ digital image correlation and acoustic emission monitoring of mechanically and thermally loaded ceramic materials: *Michal Knapek*¹; Jakub Kušník¹; Tomáš Hůlan²; František Chmelík¹; Patrik Dobron¹; Štefan Csáki¹; ¹Charles University; ²Constantine the Philosopher University in Nitra

9:30 AM

In Situ Digital Image Correlation and Infrared Thermal Measurements During Shear Deformation of Tantalum: *Thomas Nizolek*¹; James Valdez¹; Cheng Liu¹; Michael Torrez¹; George Gray¹; ¹Los Alamos National Laboratory

9:50 AM

Digital Volume Correlation for Volumetric Characterization of Material Changes: *Alexander Hall*¹; Jan Giesebrecht²; Kamel Madi²; ¹Thermo Fisher Scientific; ²3Dmagination

10:10 AM Break**10:30 AM Invited**

An In Situ Digital Image Correlation Framework to Understand the Competing Failure Mechanisms in Metal Matrix Composites: *Yan Li*¹; ¹Califronia State University, Long Beach

11:00 AM

Experimental and Numerical Analyses of the Uniaxial Shakedown Behavior of 316 Stainless Steel: *Ismail Cinoglu*¹; Ali Charbal¹; Natasha Vermaak¹; ¹Department of Mechanical Engineering and Mechanics, Lehigh University

11:20 AM

Creep-fracture in OFHC copper evaluated using in-situ HR-ESBSD: *Philip Noel*¹; Jay Carroll¹; Brad Boyce¹; ¹Sandia National Labs

Ultrasonic Processing of Liquid and Solidifying Alloys — Fundamental Studies of Ultrasonic Processing

Sponsored by: TMS Light Metals Division, TMS Materials Processing and Manufacturing Division, TMS: Process Technology and Modeling Committee

Program Organizers: Dmitry Eskin, Brunel University; Laurentiu Nastac, University of Alabama; Koulis Pericleous, University of Greenwich; Iakovos Tzanakis, Oxford Brookes University

Wednesday AM
March 13, 2019

Room: 006B
Location: Henry B. Gonzalez
Convention Center

Session Chairs: Dmitry Eskin, Brunel University London; Jiawei Mi, University of Hull

8:30 AM Introductory Comments**8:40 AM Invited**

Investigation on acoustic streaming during ultrasonic irradiation in aluminum melts: *Takuya Yamamoto*¹; Sergey Komarov¹; ¹Tohoku University

9:05 AM

Acoustic cavitation measurements and modeling in liquid aluminum: *Iakovos Tzanakis*¹; Gerard Lebon²; Tunky Subroto²; Dmitry Eskin²; Koulis Pericleous³; ¹Oxford Brookes University; ²Brunel University London; ³University of Greenwich

9:25 AM

Understanding the highly dynamic phenomena in ultrasonic melt processing by ultrafast synchrotron X-ray imaging: *Jiawei Mi*¹; Dmitry Eskin²; Thomas Connolley³; Kamel Fezzaa⁴; ¹School of Engineering University of Hull; ²Brunel University London; ³Diamond Light Source; ⁴Advanced Photon Source

9:45 AM

The Influence of Ultrasound on the Microstructure Formation during Solidification of A356 Ingots Processed via a 2-Zone Induction Melting Furnace: Yang Xuan¹; Aqi Dong¹; *Laurentiu Nastac*¹; ¹The University of Alabama

10:05 AM Break**10:30 AM**

Resonance from contactless ultrasound in alloy melts: Catherine Tony¹; Valdis Bojarevics¹; Agnieszka Dybalska²; Georgi Djambazov¹; William Griffiths²; *Koulis Pericleous*¹; ¹University Of Greenwich; ²University of Birmingham

10:50 AM

In situ tomographic observation of dendritic growth in Mg/Al matrix composites: *Enyu Guo*¹; Andre Phillion²; Zongning Chen¹; Huijun Kang¹; Tongmin Wang¹; Peter Lee³; ¹Dalian University of Technology; ²McMaster University; ³University College London

11:10 AM

Anomalous nucleation in undercooled melts processed by electromagnetic levitation: *Robert Hyers*¹; Jie Zhao¹; Gwendolyn Bracker¹; Rainer Wunderlich²; Hans Fecht²; ¹University of Massachusetts; ²Universität Ulm

11:30 AM

Modeling of the effect of ultrasonic frequency and amplitude on acoustic streaming: *Young Ki Lee*¹; Jeong IL Youn¹; Young Jig Kim¹; ¹Sungkyunkwan Univ

11:50 AM

Mechanisms of grain formation during ultrasonic solidification of commercial purity magnesium: *Nagasivamani Balasubramani*¹; Gui Wang¹; Matthew Dargusch¹; David St John¹; ¹The University of Queensland

10th International Symposium on High Temperature Metallurgical Processing — Ironmaking and Steelmaking

Sponsored by: TMS: Pyrometallurgy Committee

Program Organizers: Tao Jiang, Central South University; Jiann-Yang Hwang, Michigan Technological Univ; Dean Gregurek, RHI Magnesita; Zhiwei Peng, Central South University; Jerome Downey, Montana Technological University; Baojun Zhao, University of Queensland; Onuralp Yucel, Istanbul Technical University; Ender Keskinilic, Atilim University; Rafael Padilla, Univ of Concepcion; Elsa Olivetti, Massachusetts Institute of Tech; Camille Fleuriaux, Gopher Resource

Wednesday PM
March 13, 2019

Room: 208
Location: Henry B. Gonzalez
Convention Center

Session Chairs: Baojun Zhao, University of Queensland; Zhancheng Guo, University of Science and Technology Beijing

2:00 PM Introductory Comments

2:05 PM

Sintering Characteristic and Consolidation Behavior of Chromite Fines: Xiaohui Fan¹; *Guojing Wong*¹; Min Gan¹; Xuling Chen¹; Zhiyun Ji¹; Xunwei Zhou¹; Tao Jiang¹; ¹Central South University

2:25 PM

Construction and Practice on Energy Flow Network of New Generation Recyclable Iron and Steel Manufacturing Process: *Fuming Zhang*¹; ¹Shougang Group

2:45 PM

Dependency of Microstructure and Inclusions on the Different Growth Rate for Directionally Solidified Non-quenched and Tempered Steel: *Hui Liu*¹; Jianbo Xie¹; Honggang Zhong¹; Qijie Zhai¹; Jianxun Fu¹; ¹Shanghai University

3:05 PM

Development and Improvement of Submerged Lance Converting & Refining Furnace of Dongying Fangyuan's Two-step Process: *Zhi Wang*¹; Yongmao Zhou²; Qinneng Wang²; Wuzhao Du¹; Wenzhao Cui¹; ¹Dongying Fangyuan Nonferrous Metals Co Ltd; ²Central South University

3:25 PM Break

3:45 PM

Development of Offshore Steel for High Heat Input Welding: Xiaodong Ma¹; Peng Zhang²; Tingliang Dong²; Feng Wang²; *Baojun Zhao*¹; ¹The University of Queensland; ²Hebei Iron and Steel Group Co., Ltd.

4:05 PM

Slag Basicity: What Does it Mean?: *Geoffrey Brooks*¹; Mohammad Hasan¹; Akbar Rhamdhani¹; ¹Swinburne University of Technology

4:25 PM

Flow Field and Inclusion Removal in a Continuous Casting Tundish with Channel Type Induction Heating: *Haiyan Tang*¹; Jin Wen Liu¹; Jia quan Zhang¹; Hong Xiao²; Hai Ying Yao²; Shuo Zhang¹; Luzhao Guo¹; Guang Hui Wu¹; ¹University of Science & Technology Beijing; ²Electromagnetic Center, Hunan Zhongke Electric Co., Ltd

4:45 PM

Investigation on Clogging of Submerged Entry Nozzles for GCr15 Bearing Steels: Gong Cheng¹; *Lifeng Zhang*¹; Wenbo Wang¹; Qiangqiang Wang²; Piotr Roman Scheller¹; ¹Univ of Science & Technology Beijing; ²Chongqing University

5:05 PM Concluding Comments

2019 International Metallurgical Processes Workshop for Young Scholars (IMPROWYS 2019) — Early Career Professional Forum

Sponsored by: TMS Extraction and Processing Division

Program Organizers: Cong Wang, Northeastern University; Amy Clarke, Colorado School of Mines; Kinnor Chattopadhyay, University of Toronto; Bryan Webler, Carnegie Mellon University

Wednesday PM
March 13, 2019

Room: 213B
Location: Henry B. Gonzalez
Convention Center

Funding support provided by: Korean Institute of Metals and Materials

Session Chairs: Yongqi Sun, University of Queensland; Weiling Wang, Northeastern University

2:00 PM

Adsorption of CO and Cl₂ on the TiO₂(110) Surface: A Theoretical Investigation: *Shengyun Shi*¹; Liangying Wen¹; Xu Han¹; Wenhuan Jiang¹; Huamei Duan¹; Jian Xu¹; ¹Chongqing University

2:20 PM

Effect of MgO Content on the Properties of Magnesia Fluxed Pellets: Yuzhu Zhang¹; *Weixing Liu*¹; Aimin Yang¹; Jie Li¹; ¹North China University of Science and Technology

2:40 PM

Effect of Quenching Temperature on Mechanical Properties and Microstructure Of High Nitrogen Martensitic Stainless Steel: *Xin Cai*¹; Xiao Hu¹; Dian Li¹; ¹Institute of Metal Research, Chinese Academy of Sciences

3:00 PM

Heating Rate Effects on Austenitization from Ferrite-cementite Structure during Continuous Heating: *Geng Liu*¹; Hao Chen¹; ¹Tsinghua University

3:20 PM Break

3:40 PM

Modification of Inclusions in High Strength Low Alloyed Steels: *Keyan Miao*¹; Muhammad Nabeel¹; Neslihan Dogan¹; ¹McMaster University

4:00 PM

Numerical Simulation of Three-phase Flow of Gas-stirring Micro-phenomenon during Ladle Furnace Process: Libin Zhu¹; *Wei Liu*¹; Shfueng Yang¹; Jingshe Li¹; Feng Wang¹; Xueliang Zhang¹; ¹University of Science & Technology Beijing

4:20 PM

The Effect Of Ph and Temperature During Carbonation Process on Spent Die Cleaning Solution from Aluminium Extrusion Industry: *Ahmed Aadi*¹; ¹Aluminium Company of Egypt

4:40 PM

The Structure Evolution Mechanism of Electrodeposited Ni Films on Steel Substrate Depending on Current Density: *XiangTao Yu*¹; ¹University of Science and Technology Beijing

5:00 PM

Improvement of Center Segregation in Continuously Cast Blooms by Convex Roll Soft Reduction: *Liang Li*¹; *Xiao Zhao*¹; *Peng Lan*¹; *Zhanpeng Tie*¹; *Haiyan Tang*¹; *Jiaquan Zhang*¹; ¹University of Science and Technology Beijing

2019 Symposium on Functional Nanomaterials: Synthesis, Integration, and Application of Emerging Nanomaterials — Additive Manufacturing and General Nanomaterials

Sponsored by: TMS: Nanomaterials Committee

Program Organizers: Chang-Yong Nam, Brookhaven National Laboratory; Jiyoung Chang, University of Utah; Pei Dong, George Mason University; Yong Lin Kong, University of Utah; Shengfeng Yang, Indiana Univ. Purdue Univ. Indianapolis; SungWoo Nam, University of Illinois

Wednesday PM

March 13, 2019

Room: 213A

Location: Henry B. Gonzalez Convention Center

Session Chairs: Yong Lin Kong, University of Utah; Jiyoung Chang, University of Utah

2:00 PM

Additive Manufacturing of 2D/3D Biological Platform using Functional Nanofibers for Cell/tissue Engineering: *Jiyoung Chang*¹; ¹University of Utah

2:20 PM

Synthesis of Biochar and 3D Printing of Sustainable Biochar Recycled PET Composite: *Vijaya Rangari*¹; *Mohanad Idrees*¹; *Shaik Jeelani*¹; ¹Tuskegee University

2:40 PM

Multiscale Additive Manufacturing of Functional Devices: *Yong Lin Kong*¹; ¹University of Utah

3:00 PM

Nano-manufacturing of Highly-uniform 0D/1D/2D Metamaterials via Large-scale Self-assembly: *Michael Cai Wang*¹; *Matthew Gole*¹; *Juyoung Leem*¹; *Wayne Lin*¹; *Rachel Ziran Zhou*¹; *Catherine Murphy*¹; *SungWoo Nam*¹; ¹University of Illinois at Urbana-Champaign

3:20 PM Break

3:40 PM Invited

Low-cost Zeta Potentiometry using Solute Gradients: *Sangwoo Shin*¹; ¹University of Hawaii at Manoa

4:10 PM Invited

Energy Transport and Dissipation at the Nanoscale: *Woochul Lee*¹; ¹University of Hawaii at Manoa

4:40 PM Invited

Growth and Characterizations of Si and Ge Heterostructures in Multi-dimensional Architectures: *Jinkyoun Yoo*¹; ¹Los Alamos National Laboratory

5:10 PM

Hybrid Nanoscale Architectures: Plasmonic and Magnetic Induced Heating Applications: *Simona Hunyadi Murph*¹; ¹Savannah River National Laboratory and University of Georgia

5:30 PM

A Facile Synthesis of Monodisperse Magnetic Nanorods as an Effective Hyperthermia Agent: *Shan Zhao*¹; *Nanjing Hao*¹; *Jennifer Andrew*²; *Jack Hoopes*¹; *Zi Chen*¹; ¹Dartmouth College; ²University of Florida

5th Symposium on Advanced Materials for Energy Conversion and Storage — Energy Storage with Emphasis on Batteries III

Sponsored by: TMS: High Temperature Alloys Committee

Program Organizers: Amit Pandey, LG Fuel Cell Systems; Partha Mukherjee, Purdue University; Surojit Gupta, University of North Dakota; Kyle Brinkman, Clemson Univ; Jung Pyung Choi, Pacific Northwest National Laboratory; Soumendra Basu, Boston University; Paul Ohodnicki, National Energy Technology Laboratory

Wednesday PM

March 13, 2019

Room: 225A

Location: Henry B. Gonzalez Convention Center

Session Chairs: Leela M. R. Arava, Wayne State University; George Nelson, University of Alabama, Huntsville

2:00 PM Keynote

Future Battery System Modeling and Diagnostics for Automotive Application: *Yuichiro Tabuchi*¹; ¹Nissan Motor Co., Ltd

2:30 PM Invited

Biomass Carbon Enabled, High Performance Lithium-sulfur Batteries: *Xiaodong Li*¹; ¹Univ of Virginia

2:55 PM

3D Printed Hierarchically-porous Microlattice Electrode Materials for Exceptionally High Specific Capacity and Areal Capacity Lithium Ion Batteries: *M. Sadeq Saleh*¹; *Jie Li*²; *Jonghyun Park*²; *Rahul Panat*¹; ¹Carnegie Mellon University; ²Missouri University of Science and Technology

3:15 PM

In-situ Measurements of Stress Evolution in Composite Sulfur Cathodes: *Yuwei Zhang*¹; *Matt Pharr*¹; ¹Texas A&M university

3:35 PM Break

3:55 PM

Investigating the Performance of NMC-532 Cathode Materials Operating Different Voltages: *Dila Sivlin*¹; *Ozgul Keles*¹; *Billur Deniz Karahan*²; *Ali Abouimrane*³; ¹Istanbul Technical University; ²Istanbul Medipol University; ³Qatar Environment and Energy Research Institute

4:15 PM

Understanding Heterogeneous Electrocatalysis of Lithium Polysulfides: *Naresh Thangavel*¹; *Kiran Mahankali*¹; *Leela Arava*¹; ¹Wayne State University

4:35 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; *Katharine Page*²; *Beth Guiton*¹; ¹Univ of Kentucky; ²Oak Ridge National Laboratory

5:00 PM Invited

Reliability and Degradation Mechanism of Li-ion Batteries under Grid Services: *Daiwon Choi*¹; *Alasdair Crawford*¹; *Vilayanur Viswanathan*¹; *David Reed*¹; *Vincent Sprenkle*¹; ¹Pacific Northwest National Lab

Additive Manufacturing and Welding: Physical and Mechanical Metallurgy of Rapidly Solidified Metals — Defects and Residual Stresses

Sponsored by: TMS: Additive Manufacturing Committee

Program Organizers: Allison Beese, Pennsylvania State University; Eric Lass, National Institute of Standards and Technology; David Bourell, University of Texas; John Carpenter, Los Alamos National Laboratory; Kester Clarke, Colorado School of Mines; Daniel Coughlin, Los Alamos National Laboratory; Christian Leinenbach, Empa, Swiss Federal Laboratories for Materials Science and Technology; Behrang Poorganji, GE Additive; Judy Schneider, University of Alabama at Huntsville; Lee Semiatin, US Air Force Research Laboratory; Mark Stoudt, National Institute of Standards and Technology; Chantal Sudbrack, QuesTek Innovations LLC

Wednesday PM
March 13, 2019

Room: 221A
Location: Henry B. Gonzalez
Convention Center

Session Chair: Chantal Sudbrack, QuesTek Innovations LLC

2:00 PM Invited

Healing of Stripe Boundary Defects in Direct Metal Laser Melting of Ti-64: *Kevin Chaput*¹; Edwin Schwalbach¹; Sean Donegan¹; Michael Groeber¹; ¹Air Force Research Laboratory

2:30 PM

Knit Line Microstructural and Tensile Effects in Various Selective Laser Melting (SLM) Additive Manufactured (AM) Alloys: *Ryan Anderson*¹; Stephen Cooke¹; Joseph Sims¹; ¹ASRC Federal Astronautics

2:50 PM

Defect Signatures for Metal Laser Powder Bed Fusion: *Bradley Jared*¹; Jonathon Madison¹; Laura Swiler¹; David Saiz¹; Joshua Koepke¹; John Mitchell¹; Daryl Dagle¹; Thomas Ivanoff¹; ¹Sandia National Laboratories

3:10 PM

Effects of Volumetric Energy Density on Microstructure, Texture, and Defect Characteristics in a Laser Powder Bed Fusion Processing: *Hahn Choo*¹; Kin-Ling Sham¹; Michael Koehler¹; Xianghui Xiao²; Yang Ren²; Manyalibo Matthews³; Elena Garlea⁴; ¹University of Tennessee; ²Argonne National Laboratory; ³Lawrence Livermore National Laboratory; ⁴Y-12 National Security Complex

3:30 PM Break

3:50 PM

Defects, Phases Identification and Control in Directed Energy Deposited Inconel 625+TiC Metal Matrix Composites: *Baolong Zheng*¹; Sen Jiang¹; James Haley¹; Bingqing Chen²; Jiayu Liang²; Shuai Huang²; Yizhang Zhou¹; Enrique Laverna¹; Julie Schoenung¹; ¹University of California, Irvine; ²Beijing Institute of Aeronautical Materials

4:10 PM

Local Residual Stress Measurement of AM Materials at the Micron Scale: *Joseph Newkirk*¹; Elizabeth Burns¹; ¹Missouri University of Science & Technology

4:30 PM

Predicting Residuals Stress of AM Parts as a Function of SLM Process Parameters Using Experiments and Simulation: *Umberto Scipioni Bertoli*¹; Cornelia Altenbuchner²; Richard Otis²; Eleftherios Gdoutos³; Andrew Shapiro²; Julie Schoenung¹; ¹University of California Irvine; ²NASA JPL; ³California Institute of Technology

4:50 PM

Comparison of Reduced Order Numerical Residual Stress Predictions to Neutron Diffraction Measurements of Laser Powder Bed Fusion Parts: *Kyle Johnson*¹; Donald Brown²; Bjorn Clausen²; Bradley Jared¹; Kurtis Ford¹; Joseph Bishop¹; ¹Sandia National Laboratories; ²Los Alamos National Laboratory

5:10 PM

Uncertainty Quantification of Powder Bed Fusion Distortion and Residual Stress Predictions: Piyush Ranade¹; Brijesh Kumar¹; Alonso Peralta¹; *Mustafa Megahed*²; ¹Honeywell Aerospace; ²Esi Group

Additive Manufacturing of Metals: Applications of Solidification Fundamentals — Multi-scale Modeling

Sponsored by: TMS: Additive Manufacturing Committee

Program Organizers: Alex Plotkowski, Oak Ridge National Laboratory; Lang Yuan, University of South Carolina; Kevin Chaput, Air Force Research Laboratory; Mohsen Asle Zaeem, Colorado School of Mines; Sudarsanam Babu, The University of Tennessee, Knoxville; Wenda Tan, University of Utah

Wednesday PM
March 13, 2019

Room: 224
Location: Henry B. Gonzalez
Convention Center

Session Chairs: Kevin Chaput, Air Force Research Laboratory; Alex Plotkowski, Oak Ridge National Laboratory

2:00 PM Invited

Multi-scale Simulation of Solidification Microstructure Evolution in a Binary Alloy during Laser Additive Manufacturing: *Yachao Wang*¹; Jing Shi¹; ¹Univ of Cincinnati

2:30 PM

Shaping Laser Beam for Microstructural Control during Metal Additive Manufacturing: *Rongpei Shi*¹; Saad Khairallah¹; Tien Roehling¹; Joseph Mckeown¹; Manyalibo Matthews¹; ¹LLNL

2:50 PM

Effects of Scan Pattern on Solidification Condition and Resultant Grain Structure in Electron Beam Additive Manufacturing: A Model-based Investigation: *Wenda Tan*¹; Shardul Kamat¹; Xuxiao Li¹; Benjamin Stump²; Alex Plotkowski²; ¹University of Utah; ²Oak Ridge National Laboratory

3:10 PM

Microstructure and Mechanical Property Prediction of Additively Manufactured H13 Tool Steel via Integrated Computational Materials Modeling: Neil Bailey¹; *Yung Shin*¹; ¹Purdue Univ

3:30 PM Break

3:50 PM

Prediction of Solidification Microstructure for Powder Bed Fusion Additive Manufacturing: Antonio Magana¹; Ryan Lenart¹; *Mohsen Eshraghi*¹; ¹California State University, Los Angeles

4:10 PM

Calibrated Monte Carlo Models of Microstructure Evolution for Additive Manufacturing: *Theron Rodgers*¹; Daniel Moser¹; Fadi Abdeljawad²; Mario Martinez¹; Kurtis Ford¹; Bradley Trembacki¹; Kyle Johnson¹; John Mitchell¹; Jonathan Madison¹; ¹Sandia National Laboratories; ²Clemson University

4:30 PM

Combined Molecular Dynamics and Phase Field Simulation Study of Directional Solidification of NiTi Alloy: *Sepideh Kavousi*¹; Brian Novak¹; Dorel Moldovan¹; ¹Louisiana State University

4:50 PM

The Role of High Performance Computing in Enabling Additive Manufacturing: *Veena Tikare*¹; Joseph Bishop¹; David Littlewood¹; Mario Martinez¹; John Mitchell¹; Joshua Robbins¹; Theron Rodgers¹; Bart van Bloemen Waanders¹; ¹Sandia National Laboratories

Additive Manufacturing of Metals: Fatigue and Fracture III — Session IV

Sponsored by: TMS: Additive Manufacturing Committee
Program Organizers: Nikolas Hrabe, NIST-Boulder; Steve Daniewicz, University of Alabama; John Lewandowski, Case Western Reserve Univ; Nima Shamsaei, Auburn University; Mohsen Seifi, ASTM International/Case Western Reserve University

Wednesday PM
March 13, 2019

Room: 221B
Location: Henry B. Gonzalez
Convention Center

Session Chair: John Lewandowski, Case Western Reserve University

2:00 PM Invited

A Statistical Framework to Qualify the Low Cycle Fatigue Performance of Additively Manufactured Steel Replacement Parts: *Aaron Stebner*¹; ¹Colorado School of Mines

2:30 PM

A New Perspective on Visualizing the Elastic Limit and the Necessity of 6D Limit Hypersurfaces: *Zachary Brunson*¹; *Aaron Stebner*¹; ¹Colorado School of Mines

2:50 PM

From Microstructural Design to Surface Engineering: a Tailored Approach for Improving Fatigue Life of Additively Manufactured Lattice Titanium: *S. M. Ahmadi*¹; *C. Ayas*¹; *A. A. Zadpoor*¹; *V. A. Popovich*¹; ¹Delft University of Technology

3:10 PM

Surface Roughness Effects on Rotating-Bending Fatigue Behavior of Additive Manufactured Stainless Steel 316L: *Ross Wykoff*¹; *Jutima Simsiriwong*¹; ¹University of North Florida

3:30 PM Break

3:50 PM Invited

Qualification Research and the Effects of Defects Studies in Laser Powder Bed Fusion of AlSi10Mg: *Brett Conner*¹; ¹Youngstown State University

4:20 PM

Fatigue Behavior of Selective Laser Melted Porous Iron in Air and in Simulated Body Fluid: *Yageng Li*¹; *Xiangyu Zhang*²; *Karel Lietaert*³; *Marius Leeftang*¹; *Behdad Pouran*⁴; *Harrie Weinans*⁴; *Jie Zhou*¹; *Amir Zadpoor*¹; ¹Delft University of Technology; ²Tsinghua University; ³3D Systems Leuven; ⁴University Medical Center Utrecht

4:40 PM

Finite Element Failure Analysis of Lattice Structures: *Behzad Bahrami Babamir*; *Andrew Minor*¹; *Hesam Askari*²; *Kavan Hazeli*¹; ¹University of Alabama in Huntsville; ²The University of Rochester

5:00 PM

Fracture Toughness and Fatigue Strength of Selective Laser Melted Aluminium-Silicon: An Overview: *Leonhard Hitzler*¹; *Enes Sert*²; *Markus Merkel*³; *Andreas Öchsner*²; *Ewald Werner*¹; ¹Technical University Munich; ²Esslingen University of Applied Sciences; ³Aalen University of Applied Sciences

Additive Manufacturing of Metals: Microstructural Evolution and Phase Transformations — Al- and Cu-based Systems

Sponsored by: TMS: Phase Transformations Committee, TMS: Additive Manufacturing Committee, TMS: High Temperature Alloys Committee

Program Organizers: Bij-Na Kim, LPW Technology / Lancaster University; Eric Lass, National Institute of Standards and Technology; Mohsen Asle Zaeem, Colorado School of Mines; Sudarsanam Babu, The University of Tennessee, Knoxville; Ryan Dehoff, Oak Ridge National Laboratory; Gerhard Fuchs, University of Florida; Chantal Sudbrack, QuesTek Innovations LLC

Wednesday PM
March 13, 2019

Room: 221C
Location: Henry B. Gonzalez
Convention Center

Session Chairs: Bij-Na Kim, LPW Technology; Mark Jepson, Loughborough University

2:00 PM Invited

Microstructure Evolution in Nickel Aluminium Bronze Produced by Wire Arc Additive Manufacturing for Marine Applications: *Constantinos Goulas*¹; *Wei Ya*²; *Marcel Hermans*³; *Ian Richardson*³; ¹Rotterdam Fieldlab Additive Manufacturing / TU Delft; ²Rotterdam Fieldlab Additive Manufacturing / University of Twente; ³TU Delft

2:30 PM

The Morphology, Crystallography, and Chemistry of Phases in Wire-arc Additively Manufactured Nickel Aluminum Bronze: *Dharmendra Chhalasani*¹; *Amir Hadadzadeh*¹; *Babak Shalchi Amirkhiz*²; *Mohsen Mohammadi*¹; ¹Marine Additive Manufacturing Centre of Excellence; ²CanmetMATERIALS

2:50 PM

Local Variations in Dissolved Si and Mechanical Properties within Additively Manufactured AlSi10Mg Parts: *John Fite*¹; *Tim Wehs*¹; *John Slotwinski*¹; ¹Johns Hopkins University

3:10 PM

Operando Quantification of the Phase Transformations in Additive Manufacturing: *Samuel Clark*¹; *Chu Lun Alex Leung*¹; *Yunhui Chen*¹; *Lorna Sinclair*²; *Sebastian Marussi*²; *Andre Phillion*³; *Leigh Stanger*⁴; *Jon Willmott*⁴; *Mohammed Azeem*¹; *Robert Attwood*⁵; *Margie Olbinado*⁶; *Alexander Rack*⁶; *Veijo Honkimäki*⁶; *Peter Lee*¹; ¹University College London; ²University of Manchester; ³McMaster University; ⁴University of Sheffield; ⁵Diamond Light Source; ⁶European Synchrotron Radiation Facility

3:30 PM Break

3:50 PM

Microstructural Engineering of High-strength Aluminium-alloys for Additive Manufacturing: *Hiren Kotadia*¹; *Greg Gibbons*¹; *Amit Das*¹; ¹WMG, University of Warwick

4:10 PM

The Effect of Nano-TiB₂ on Grain Refinement and Texture Modification in Selective Laser Melting Fabricated AlSi10Mg: *Xiaoping Li*¹; *Charlie Kong*¹; *Gang Ji*²; *Zhe Chen*³; *Jozef Vleugels*⁴; *Jan Van Humbeeck*⁴; *Jean-Pierre Kruth*⁴; ¹University of New South Wales; ²Unite Matériaux et Transformations, CNRS UMR 8207, Université Lille 1; ³Shanghai Jiao Tong University; ⁴KU Leuven

4:30 PM

Microstructure Evolution in Al-Ce and Al-Co Systems During Laser Glazing: *Cain Hung*¹; *Yu Sun*¹; *Sanjeev Nayak*¹; *Rainer Hebert*¹; *Pamir Alpay*¹; ¹University of Connecticut

4:50 PM

Influence of Nitrogen on Microstructure, Mechanical Properties and Martensitic Phase Transformation of Co-26Cr-5Mo-5W alloys by Selective Laser Melting: *Bo Wang*¹; *Xinglong An*¹; *Fei Liu*¹; *Min Song*¹; *Song Ni*¹; *Shaojun Liu*¹; ¹Powder Metallurgy Research Institute, Central South University

5:10 PM

Effect of Single Pass Laser Surface Treatment on Microstructure Evolution of Inoculated Zr47.5Cu45.5Al5Co2 and Non Inoculated Zr65Cu15Al10Ni10 Bulk Metallic Glass Matrix Composites: *Muhammad Rafique*¹; Milan Brandt¹; ¹RMIT University

Additive Manufacturing: Materials Design and Alloy Development — Structural Alloy Design for AM I

Sponsored by: TMS: Additive Manufacturing Committee, TMS: Integrated Computational Materials Engineering Committee

Program Organizers: Behrang Poorganji, GE Additive; James Saal; Hunter Martin, HRL Labs; Orlando Rios, Oak Ridge National Laboratory

Wednesday PM
March 13, 2019

Room: 221D
Location: Henry B. Gonzalez
Convention Center

Session Chair: To Be Announced

2:00 PM Invited

Nickel-base Superalloy Design for Direct Metal Laser Melting: *Laura Dial*¹; Timothy Hanlon¹; Voramon Dheeradhada¹; Vipul Gupta¹; Andrew Wessman²; ¹GE Global Research; ²GE Additive

2:30 PM

The Development of a First-Generation Gamma Prime Strengthened Nickel-Based Superalloy for High Temperature Applications: *Andre Nemeth*¹; David Crudden¹; Sabin Sulzer²; Paul Bagot²; Michael Moody²; Roger Reed²; ¹Oxmet Technologies Ltd; ²University of Oxford

2:50 PM

Design of Gamma-prime Strengthened Co-based Superalloys for Additive Manufacturing Applications: *Eric Lass*¹; ¹National Institute of Standards and Technology

3:10 PM

Design and Development of WSU 100 Nickel-Base Superalloy for Additive Manufacturing: *Guru Dinda*¹; Abhishek Ramakrishnan¹; Husam Alrehaili¹; Praveen Sreeramagiri¹; Ajay Bhagavatam¹; ¹Wayne State University

3:30 PM

Development of Superelastic Nickel-Titanium-Hafnium Alloys for Additive Manufacturing: *Behnam Aminahmadi*¹; Tom Duerig²; Ronald Noebe³; Aaron Stebner¹; ¹Colorado School of Mines; ²Confluent Medical Technologies; ³NASA Glenn Research Center

3:50 PM Break

4:10 PM Invited

Materials Development for Solid-state Additive Manufacturing Processes: *Olaf Andersen*¹; Thomas Studnitzky¹; Bernd Kieback²; ¹Fraunhofer IFAM; ²Technische Universität Dresden

4:40 PM

Aluminum-cerium Alloys Tailored to the Direct Metal Write (DMW) Additive Manufacturing (AM): *Max Neveau*¹; Michael Kesler¹; Hunter Henderson¹; Zachary Sims¹; William Carter¹; Tian Li²; Orlando Rios¹; ¹Oak Ridge National Laboratory; ²Lawrence Livermore National Laboratory

5:00 PM

Next Generation High Performance Aluminum for Additive Manufacturing: *Yuzheng Zhang*¹; Sam Tonneslan²; Eliana Fu²; Sichang Lu¹; Andrew Parker¹; Mark Sommer¹; Bill Harrigan¹; Al Sommer¹; ¹Gamma Alloys; ²Relativity Space

5:20 PM

New Al-Ce Alloys for Additive Manufacturing: *Ryan Dehoff*¹; Alex Plotkowski¹; List Fred¹; Peeyush Nandwana¹; Hunter Henderson¹; Rios Orlando¹; ¹Oak Ridge National Laboratory

Additive Manufacturing: Solid State Processing of Metals and Ceramics — Extrusion, Powder Lithography, Direct Write

Sponsored by: TMS: Powder Materials Committee, TMS: Additive Manufacturing Committee

Program Organizers: James Paramore, US Army Research Laboratory; Amy Elliott, Oak Ridge National Laboratory; Matthew Dunstan, Us Army Research Lab; Markus Chmielus, University of Pittsburgh; Nihan Tuncer, Desktop Metal

Wednesday PM
March 13, 2019

Room: 223
Location: Henry B. Gonzalez
Convention Center

Session Chair: James Paramore, United States Army Research Laboratory

2:00 PM Invited

Additive Manufacturing using Ordered Powder Lithography: *Matthew Holcomb*¹; ¹Grid Logic Incorporated

2:40 PM

Initial Evaluation of Ti-6Al-4V Samples Produced by Ordered Powder Lithography: *Vincent Hammond*¹; Matthew Holcomb²; Nathaniel Saenz¹; James Paramore¹; Brady Butler¹; Matthew Dunstan¹; George Caravias²; ¹US Army Research Laboratory; ²Grid Logic, Inc

3:00 PM Invited

Processing and Print Parameters in BMD-Based Additive Manufacturing: *Alexander Barbat*¹; ¹Desktop Metal

3:40 PM Break

4:00 PM

Shaping, Debinding and Sintering as a Low Cost Additive Manufacturing Method of Solid Metal Compounds: *Yvonne Thompson*¹; Joamin Gonzalez-Gutierrez²; Christian Kukla²; Peter Felfer¹; ¹WWI FAU Erlangen; ²Montanuniversität Leoben

4:20 PM

Sintering Kinetics in Direct Ink Write Additive Manufacturing: A Mesoscopic Modeling Approach: *Fadi Abdeljawad*¹; Dan Bolintineanu²; Adam Cook²; Harlan Brown-Shaklee²; Christopher DiAntonio²; Dan Kammler²; Allen Roach²; ¹Clemson University; ²Sandia National Laboratories

Advanced Characterization Techniques for Quantifying and Modeling Deformation — Session VI

Sponsored by: 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; C. Tatan, Massachusetts Institute of Technology; M Arul Kumar, Los Alamos National Laboratory

Wednesday PM
March 13, 2019

Room: 302A
Location: Henry B. Gonzalez
Convention Center

Session Chairs: Samantha Daly, University of California, Santa Barbara; Shujuan Wang, Los Alamos National Laboratory

2:00 PM Invited

Experimental and Numerical Characterization of Local Stresses Associated with Twinning in HCP Magnesium: *Carlos Tome*¹; M Arul Kumar¹; Hareesh Tummala¹; Yue Liu²; Rodney McCabe¹; Bjorn Clausen¹; Laurent Capolungo¹; Wenjun Liu³; Jon Tischler³; Jian Wang⁴; ¹Los Alamos National Laboratory; ²Shanghai Jiao Tong University; ³Argonne National Laboratory; ⁴University of Nebraska-Lincoln

2:30 PM

Crystal Plasticity Model for Discrete Evolution of Deformation Twinning in HCP Metals and Alloys: *Satyapriya Gupta*¹; Philip Eisenlohr¹; ¹Michigan State University

2:50 PM

A Statistical Analysis of Twinning in Rare Earth Magnesium Alloy WE43 using Fully Automated Post-processing in MTEX: *Daniel Savage*¹; Saeede Ghorbanpour¹; William Feather¹; Marko Knezevic¹; ¹University of New Hampshire

3:10 PM

Deformation Twinning under Stress Gradient in Body-centered Cubic Tantalum and Niobium: *Kui Du*¹; Binbin Jiang¹; Aidong Tu¹; Hao Wang¹; Hengqiang Ye¹; ¹Institute of Metal Research, Cas

3:30 PM Break

3:50 PM Invited

Characterizing Microstructure-Property Relationships through Microscale Strain Mapping and Large Data Analysis: Zhe Chen¹; *Samantha Daly*¹; ¹Univeristy of California, Santa Barbara

4:20 PM

Fundamental Issues Associated with {11-22} Twinning in Titanium: *Mingyu Gong*¹; Dongyue Xie¹; Shun Xu¹; Shunjuan Wang²; Christophe Schuman³; Jean-Sébastien Lecomte³; Jian Wang¹; ¹University of Nebraska-Lincoln; ²Los Alamos National Laboratory; ³Universite de Lorraine

4:40 PM

In Situ High Resolution TEM on Twinning Nucleation in BCC Crystals: *Scott Mao*¹; Jiangwei Wang²; ¹University of Pittsburgh; ²Zhejiang University

5:00 PM

Three-dimensional Nature of {0-112} Deformation Twin in Magnesium: *Pengzheng Tang*¹; Mingyu Gong²; Yue Liu¹; Rodney McCabe³; Jian Wang²; Carlos Tomé³; ¹Shanghai Jiao Tong University; ²University of Nebraska-Lincoln; ³Los Alamos National Laboratory

5:20 PM

Microstructural Evaluation of the Onset of Deformation Twinning in FCC Metals at High Strain Rate: *Daniel Foley*¹; Kyle Matthews¹; Cassandra Pate¹; Nicholas Savino¹; Asher Leff²; Marc De Graef³; Mitra Taheri¹; ¹Drexel University; ²Army Research Laboratory, Adelphi Laboratory Center; ³Carnegie Mellon University

5:40 PM

Deformation Behavior during Bending in AA6xxx Alloys: *Sin Ting Cynthia Chang*¹; Miroslav Smid¹; Ivo Kubena²; Samy Hocine¹; Helena Van Swygenhoven¹; ¹Paul Scherrer Institute; ²Institute of Physics of Materials ASCR

Advanced High-Strength Steels III — High-Performance Steels I

Sponsored by: TMS: Steels Committee

Program Organizers: Amy Clarke, Colorado School of Mines; MingXin Huang, University of Hong Kong; C. Tasan, Massachusetts Institute of Technology; Kester Clarke, Colorado School of Mines; Ana Luiza Araujo, Colorado School of Mines

Wednesday PM
March 13, 2019

Room: 205
Location: Henry B. Gonzalez
Convention Center

Session Chair: To Be Announced

2:00 PM

Characterization and Modeling of Martensitic Transformation Crystallography Toward Improved Reconstruction of Prior Austenite Microstructures: *Eric Payton*¹; Alexander Brust²; Stephen Niezgodza²; ¹Air Force Research Laboratory; ²Ohio State University

2:20 PM

High Angular Resolution Electron Backscatter Diffraction Studies of Tetragonality in Fe-C Martensitic Steels: *Angus Wilkinson*¹; Tomohito Tanaka²; ¹University of Oxford; ²Nippon Steel & Sumitomo Metal Corporation

2:40 PM

Effect of Carbon Content on Strengthening Behavior with Grain Refinement on Lath Martensite Structure: *Hiroyuki Kawata*¹; Yoshiaki Honda¹; Kengo Takeda¹; ¹Nippon Steel & Sumitomo Metal Corporation

3:00 PM

Effects of Short-time Tempering on Mechanical and Microstructural Behavior in Medium Carbon, High Strength Steel: *Virginia Judge*¹; John Speer¹; Amy Clarke¹; ¹Colorado School of Mines

3:20 PM Break

3:40 PM

Ausforming and Tempering of a Computationally Designed Ultra-High Strength Steel: *Yiwei Sun*¹; Johny Quan¹; Karl Mattlin²; Darrell Herling²; Thomas Kozmel³; Suveen Mathaudhu¹; ¹University of California Riverside; ²Pacific Northwest National Laboratory; ³QuesTek Innovations LLC

4:00 PM

Exploring Novel Design Guidelines for Advanced Wear-resistant Steels: *Gianluca Roscioli*¹; Cemal Tasan¹; ¹Massachusetts Institute of Technology

4:20 PM

In Situ Study of Phase Transformations in Electrodeposited Fe-C Coating: *Jacob Nielsen*¹; Per Møller¹; Karen Pantleon¹; ¹The Technical University of Denmark

4:40 PM

Characterization of FeMnAl Steel Structure-processing-properties Relationships: *Katherine Sebeck*¹; Ian Toppler¹; Demetrios Tzelepis¹; Krista Limmer²; Daniel Field²; Matthew Rogers¹; ¹TARDEC; ²ARL

5:00 PM

Flash Bainite: 2000MPa Armor Technology Leads to Cold Stamping 1500 to 1800MPa Sheet for Structural and Energy Absorbing Components: *Gary Cola*¹; ¹SFP Works LLC & Sirius Protection LLC

Advanced Magnetic Materials for Energy and Power Conversion Applications — Development and Application of Soft Magnetic Materials for Transformers and Inductors

Sponsored by: Federation of European Materials Societies (FEMS), TMS Functional Materials Division, TMS: Magnetic Materials Committee

Program Organizers: Frank Johnson, Niron Magnetics, Inc.; Paul Ohodnicki, National Energy Technology Laboratory; Alex Leary, Nasa Grc; Orlando Rios, Oak Ridge National Laboratory; Alessandra Hool, ESM Foundation

Wednesday PM
March 13, 2019

Room: 225B
Location: Henry B. Gonzalez
Convention Center

Session Chair: Kevin Byerly, National Energy Technology Laboratory

2:00 PM Invited

FeNi-based Metal Amorphous Nanocomposite (MANC) Soft Magnetic Materials (SMM) for Motor Applications: *Michael McHenry*¹; Natan Aronhime¹; Satoru Simizu¹; Paul Ohodnicki¹; Kevin Byerly¹; ¹Carnegie Mellon University

2:30 PM Invited

High Resistivity Magnetic Grain Boundary Nano-inclusions for Concurrent Ultra Low Loss and Sustained High Permeability in Ferrite Inductor Cores: *Parisa Andalib*¹; Alexander Sokolov¹; Afam Nwokol¹; David Pleteau¹; Charles Evans¹; Justin Paik¹; William Fowle¹; Vincent Harris¹; ¹Northeastern University

3:00 PM

High Temperature Performance of Soft Magnetic Nanocomposites: *Alex Leary*¹; Vladimir Keylin¹; Grant Feichter¹; Ron Noebe¹; Randy Bowman¹; ¹NASA GRC

3:20 PM

Magnetic Properties of Single Crystalline Itinerant Ferromagnet AlFeS₂SBS₂: *Tej Lamichhane*¹; Li Xiang¹; Qisheng Lin²; Tribhuwan Pandey³; David Parker³; Tae-Hoon Kim²; Lin Zhou²; Matthew Kramer²; Sergey Bud'ko¹; Paul Canfield¹; ¹Iowa State University; ²Ames Laboratory; ³Oak Ridge National Laboratory

3:40 PM Break

4:00 PM

Melt Spun Flake Pressed Fe-6.5%Si Bulk Soft Magnet with Superior Magnetic and Mechanical Properties: *Gaoyuan Ouyang*¹; Brandt Jensen²; Kevin Dennis²; Wei Tang²; Chaochao Pan¹; Jun Cui¹; ¹Iowa State University; ²Ames Laboratory

4:20 PM

Minnealloy: A New Soft Magnetic Material with High Saturation Flux Density: Md Mehedi¹; Yanfeng Jiang²; Bin Ma²; Pranav Suri¹; David Flannigan¹; Jianping Wang¹; ¹CEMS, University of Minnesota; ²ECE, University of Minnesota

4:40 PM Invited

Phase Evolution of Nanostructured Fe-Si-Al-based Intermetallic Phases in Soft Magnetic Alloys: *Matthew Willard*¹; Maria Daniil²; ¹Case Western Reserve University; ²Bard High School Early College

5:10 PM Invited

Soft Magnetic Fe(Co)-based Nanocrystalline Alloys for Applications at Elevated Temperatures: *Ivan Skorvanek*¹; Branislav Kunca¹; Frantisek Andrejka¹; Jozef Marcin¹; Peter Svec²; ¹Institute of Experimental Physics Sas; ²Institute of Physics SAS

Advanced Microelectronic Packaging, Emerging Interconnection Technology, and Pb-free Solder — 3D Microelectronic Packaging and Emerging Interconnects II

Sponsored by: TMS: Electronic Packaging and Interconnection Materials Committee

Program Organizers: Kazuhiro Nogita, University of Queensland; Tae-Kyu Lee, Portland State University; Yan Li, Intel Corporation; Christopher Gourlay, Imperial College London; Zhi-Quan Liu, Chinese Academy of Sciences; Rahul Panat, Carnegie Mellon University; Albert T. Wu, National Central University; Andre Delhaise, University of Toronto; Mohd Arif Salleh, Universiti Malaysia Perlis

Wednesday PM
March 13, 2019

Room: 216A
Location: Henry B. Gonzalez
Convention Center

Session Chairs: Yan Li, Intel Co.; Chih Chen, National Chao Tung University

2:00 PM Invited

Pressure and Pressureless Silver Sintering of SiC MOSFET Power Module with Si₃N₄ Direct Bonded Copper: *Won Sik Hong*¹; Mi Song Kim¹; Chulmin Oh¹; ¹Korea Electronics Technology Institute

2:30 PM

Direct Bonding of Nanotwinned Ag Thin Films at Low Temperature: *Leh-Ping Chang*¹; Fan-Yi Ouyang¹; Shin-Yi Huang²; ¹National Tsing Hua University; ²Industrial Technology Research Institute

2:50 PM

Evolution of the Thermal Conductivity of Sintered Silver Joints with their Porosity Predicted by the Finite Element Analysis of Real 3D Microstructures: *Xavier Milhet*¹; Loic Signor¹; Prasanth Kumar¹; Benjamin Tressou¹; Carole Nadot-Martin¹; James Carr¹; José Ordonnez-Miranda¹; Karl Joulain¹; ¹Prime Institute CNRS ENSMA

3:10 PM

Study the Microstructure Evolution of Cu/In and Cu/In/Ni for Fine Pitch Interconnects: *Yi-Wun Wang*¹; Han-Tang Hung¹; Yu-Shan Chiu¹; C.R. Kao¹; ¹National Taiwan University

3:30 PM Break

3:50 PM

Low-temperature and Pressureless Cu-to-Cu Bonding By Microfluidic Electroless Interconnection Process: *Han-Tang Hung*¹; S. Yang¹; I A. Weng¹; C. R. Kao¹; ¹National Taiwan University

4:10 PM

Microstructural Evolution of High (111)-Oriented Nanotwinned Copper during Annealing and Low Temperature Cu-Cu Direct Bonding Process: *Yung-Ting Tai*¹; Fan-Yi Ouyang¹; Yu-Shien Lu¹; Leh-Ping Chang¹; ¹National Tsing Hua University

4:30 PM

Chip-to-chip Cu Direct Bonding in N₂ Ambient with (111)-Oriented Nanotwinned Cu Microbumps: *Jing-Ye Juang*¹; Kai-Cheng Shie¹; Yu-Jin Li¹; Po-Ning Hsu¹; K. N. Tu¹; Chih Chen¹; ¹National Chiao Tung University

4:50 PM

Low Temperature Cu-to-Cu Direct Bonding with Chemical Mechanical Planarized Highly <111>-orientated Nanotwinned Cu Films: *Hong-Che Liu*¹; Chih Chen¹; ¹National Chiao Tung University

Advanced Real Time Imaging — Iron and Steelmaking III

Sponsored by: TMS: Alloy Phases Committee

Program Organizers: Jinichiro Nakano, US DOE - National Energy Tech Lab; P.Chris Pistorius, Carnegie Mellon University; Candan Tamerler, University of Kansas; Hideyuki Yasuda, Kyoto University; Zuotai Zhang, Southern University Of Science And Techn; Neslihan Dogan, McMaster University; Wanlin Wang, Central South University; Noritaka Saito, Kyushu University; Yongsug Chung, Korea Polytechnic University; Bryan Webler, Carnegie Mellon University

Wednesday PM
March 13, 2019

Room: 302B
Location: Henry B. Gonzalez
Convention Center

Session Chair: Neslihan Dogan, McMaster University

2:00 PM Invited

Effect of CaO Substitution with BaO in Steelmaking-based Slags for Development of Fluorine-free Slag Refining: *Zhanjun Wang*¹; *Il Sohn*¹; ¹Yonsei University

2:30 PM

Study of Mold Flux Thermal Property by using Thermal Imaging Enhanced Inferred Emitter Technique: *Kaixuan Zhang*¹; Wanlin Wang¹; Haihui Zhang¹; ¹Central South University

2:50 PM

Sub-rapid Solidification Study by Using Droplet Solidification Technique: *Cheng Lu*¹; Wanlin Wang¹; ¹Central South University

3:10 PM

Time Evolution of AHSS Oxidation: *Mary Story*¹; *Bryan Webler*¹; ¹Carnegie Mellon University

3:30 PM Break

3:50 PM Invited

Electrocapillary Phenomena in KCl Aqueous Solution and Ionic Melts: *Hirokazu Konishi*¹; Eiichi Takeuchi²; Hideki Ono³; Yuichiro Koizumi¹; ¹Osaka University; ²Kinki Polytechnic College Kyoto; ³University of Toyama

4:20 PM

Comparison of Dissolution Kinetics of Non-metallic Inclusions in Steelmaking Slags: *Mukesh Sharma*¹; Neslihan Dogan¹; ¹McMaster University

4:40 PM

Imaging Pyrometry – An Overview: *Ravindra Nugehalli*¹; ¹New Jersey Institute of Technology

Advances in Computational Methods for Damage Mechanics and Failure Phenomena — Crystal Plasticity Methods I

Sponsored by: TMS: Computational Materials Science and Engineering Committee

Program Organizers: Srujan Rokkam, Def-Aero, Advanced Cooling Technologies Inc; Michael Tonks, University of Florida; Remi Dingreville, Sandia National Laboratories; Jaafar El-Awady, Johns Hopkins University

Wednesday PM
March 13, 2019

Room: 303C
Location: Henry B. Gonzalez
Convention Center

Session Chairs: Jeffrey Lloyd, US Army Research Laboratory ; Marat Latypov, University of California, Santa Barbara

2:00 PM **Invited**

Shape and Size-dependent Micropolar Crystal Plasticity for the Role of Annealing Twins in Micromechanics of Ni-base Superalloys: *Marat Latypov*¹; Jean-Charles Stinville¹; Jason Mayeur²; Tresa Pollock¹; Irene Beyerlein¹; ¹University of California, Santa Barbara; ²CFD Research Corporation

2:30 PM

A Multiphysics, Mesoscale Framework to Predict the Effect of Diffusion on Creep-fatigue Life for High Temperature Applications: *Andrea Rovinelli*¹; Mark Messner¹; David Parks²; T.-L. Sham¹; ¹Argonne National Laboratory; ²Massachusetts Institute of Technology

2:50 PM

Glissile Dislocation Junction Reactions in Continuum Dislocation Dynamics: *Peng Lin*¹; Vignesh Vivekanandan¹; Grethe Winther²; Anter El-Azab¹; ¹Purdue University; ²Technical University of Denmark

3:10 PM

Intergranular Fracture Prediction via Multi-scale Simulations: *Bertrand Sicaud*¹; Laurent Van Brutzel¹; Maxime Sauzay¹; ¹CEA

3:30 PM **Break**

3:50 PM **Invited**

Understanding the Role of Rate Dependence, Temperature Dependence, and Hardening on the Localization and Failure of Solid Alloy Bars under Torsion: *James Foulk*¹; Wei-Yang Lu¹; Huiqing Jin¹; Jakob Ostien¹; ¹Sandia National Laboratories

4:20 PM

High-throughput Crystal Plasticity Simulations of Intergranular Damage and Failure: Thao Nguyen¹; DJ Luscher²; *Justin Wilkerson*¹; ¹Texas A&M University; ²Los Alamos National Laboratory

4:40 PM

Simulating Particle-initiated Failure in Strongly Anisotropic Metals: *Jeffrey Lloyd*¹; ¹US Army Research Laboratory

5:00 PM

Macro-zone Size Effect in Ti Alloys Computed with FFT-based Crystal EVP Simulations: *Azdine Nait-ali*¹; Samuel Hémerly¹; ¹Institut Pprime

5:20 PM

Numerical Prediction of Ductile Fracture in Biaxially Stretched Sheet Metal: *Ahmed Abdelkader*¹; Chahinaz Saleh²; ¹Enppi; ²Cairo University

5:40 PM

Eulerian Formulation for Brittle Fragmentation using Continuum Damage Mechanics: *Vinamra Agrawal*¹; ¹Auburn University

Algorithm Development in Materials Science and Engineering — Applications of Algorithms for Study and Design of Materials

Sponsored by: TMS: Computational Materials Science and Engineering Committee, TMS: Phase Transformations Committee, TMS: Integrated Computational Materials Engineering Committee
Program Organizers: Mohsen Asle Zaeem, Colorado School of Mines; Garritt Tucker, Colorado School of Mines; Prasanna Balachandran, University of Virginia; Douglas Spearot, University of Florida; Charudatta Phatak, Argonne National Laboratory; Srinivasan Srivilliputhur, University of North Texas

Wednesday PM
March 13, 2019

Room: 304A
Location: Henry B. Gonzalez
Convention Center

Session Chair: Vahid Tari, Eaton Corporate Research & Technology

2:00 PM

Algorithm for the Numerical Solution of the 2-parameter Weibull Model: Implication for the Probability Distribution Detailing of Steel-rebar Corrosion-inhibition Effectiveness: *Joshua Okeniyi*¹; Stephen Akinlabi²; Esther Akinlabi²; Elizabeth Okeniyi¹; ¹Covenant University, Ota, Nigeria; ²University of Johannesburg

2:20 PM

Phase-field Modeling of the Effect of Deformed State on Recrystallization in Metals: *Ahmed Hamed*¹; Larry Aagesen²; Grethe Winther³; David Hurley²; Anter El-Azab¹; ¹Purdue University; ²Idaho National Laboratory; ³Technical University of Denmark

2:40 PM

Viscoplastic Self-Consistent Modeling of High Speed Machining of Dual Phase Ti-6Al-4V Using the Mechanical Threshold Stress Flow Stress Model: *Jason Allen*¹; Eric Hoar¹; Elham Mirkoohi¹; Peter Bocchini²; Anthony Rollett³; Steven Liang¹; Hamid Garmestani¹; ¹Georgia Institute of Technology; ²The Boeing Company; ³Carnegie Mellon University

3:00 PM

Buoyancy-Induced Flow Pattern During Dendritic Solidification: *Elaheh Dorari*¹; Mohsen Eshraghi²; Sergio Felicelli¹; ¹The University of Akron; ²California State University, Los Angeles

Alloys and Compounds for Thermoelectric and Solar Cell Applications VII — Session VI

Sponsored by: TMS: Alloy Phases Committee
Program Organizers: Sinn-wen Chen, National Tsing Hua University; Franck Gascoin, Ensicaen University of Caen; Soon-Jik Hong, Kongju National Univ; Philippe Jund, Montpellier University; Lan Li, Boise State University; Takao Mori, Nims; Hsin-Jay Wu, National Sun Yat-sen University; Tiejun Zhu, Zhejiang University

Wednesday PM
March 13, 2019

Room: 216B
Location: Henry B. Gonzalez
Convention Center

Session Chairs: Sinn-wen Chen, National Tsing Hua University; Chien-Neng Liao, National Tsing Hua University

2:00 PM **Invited**

Materials Informatics of Thermoelectric Materials using Big Literature Data: *Yukari Katsura*¹; Masaya Kumagai²; Takushi Kodani¹; Riku Sato¹; Yuki Ando³; Sakiko Gunji¹; Yoji Imai³; Kaoru Kimura¹; Koji Tsuda¹; ¹University of Tokyo, NIMS; ²RIKEN, Sakura Internet Inc.; ³RIKEN, NIMS

2:20 PM **Invited**

Nowotny Chimney Ladder Phases for Thermoelectric Applications: *Xi Chen*¹; ¹The University of Texas at Austin

2:40 PM Invited

Current-induced Boundary Modification and Precipitation in Telluride Based Thermoelectric Materials: *Chien-Neng Liao*¹; Yao-Hsiang Chen¹; Chun-Yen Lan¹; ¹National Tsing Hua University

3:00 PM Invited

Optical Properties of Thermoelectric Materials: *Peng Jiang*¹; ¹Dalian Institute of Chemical Physics, Chinese Academy of Sciences

3:20 PM Invited

Origin of the Ultralow Thermal Conductivity in Single-crystalline SnSe: *Pai-Chun Wei*¹; Cheng-Rong Hsing²; Ching-Ming Wei²; ¹King Abdullah University of Science and Technology; ²Academia Sinica

3:40 PM Break

4:00 PM Invited

Suppression of Atom Motion and Metal Deposition in Mixed Ionic/Electronic Conductors: *Pengfei Qiu*; Xun Shi¹; Lidong Chen¹; ¹Shanghai Institute of Ceramics, Chinese Academy of Sciences

4:20 PM Invited

Neutron Scattering Study on the Lattice Thermal Conductivity of Sb-doped ZrNiSn: *Jie Ma*¹; Qingyong Ren¹; Chenguang Fu²; Jiong Yang³; Tiejun Zhu⁴; ¹Shanghai Jiao Tong University; ²Max Planck Institute for Chemical Physics of Solids; ³Shanghai University; ⁴Zhejiang University

4:40 PM Invited

Lattice Dynamics of Layered AMg₂Pn₂ Zintl Compounds: *Alexandra Zevalkink*¹; Wanyue Peng¹; Guido Petretto²; Geoffroy Hautier²; ¹Michigan State University; ²U. Louvain

5:00 PM

Oxide Formation Mechanism and their Effect on the Microstructure and Thermoelectric Properties of p-Type Bi_{0.5}Sb_{1.5}Te₃ Alloys: *May Likha Lwin*¹; Peyala Dharmiah¹; Babu Madavali¹; Lee Chul-Hee¹; Shin Dong-won¹; Jeong Kwang-yong¹; Hong Soon-Jik¹; ¹Kongju National University

5:20 PM Concluding Comments

3:20 PM

Simulation and experiment study on carbonization process of calcified slag with different ventilation modes: *Guanting Liu*¹; Yan Liu¹; Xiaolong Li¹; Weihua Sun¹; Zimu Zhang¹; Zhang Tingan¹; ¹Northeastern Univ

3:45 PM Break

4:00 PM

An Ecological Approach to the Rehabilitation of Bauxite Residue: Elisa Di Carlo¹; *Ronan Courtney*¹; ¹University of Limerick

4:25 PM

Quantitative X-ray diffraction study into bauxite residue mineralogical phases: *John Vogrin*¹; Harrison Hodge¹; Talitha Santini²; Hong Peng¹; James Vaughan¹; ¹The University of Queensland; ²The University of Western Australia

4:50 PM

Technospheric mining of rare earth elements and refractory metals from bauxite residue: *Gisele Azimi*¹; ¹University of Toronto

5:15 PM

Migration of iron, aluminum and sodium within pre-reduction-smelting separation of bauxite residue: Jian Pan¹; *Siwei Li*¹; Deqing Zhu¹; Jiwei Xu¹; Jianlei Chou¹; ¹Central South University

Aluminum Alloys, Processing and Characterization — Characterizations and Applications of Aluminum Alloys

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

Program Organizer: Hiromi Nagaumi, Soochow University

Wednesday PM
March 13, 2019

Room: 007A
Location: Henry B. Gonzalez
Convention Center

Session Chair: Zhihong Jia, Chongqing university

Alumina & Bauxite — Bauxite Residue: Management and Valorization

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

Program Organizer: Sebastien Fortin, Rio Tinto - Aluminium Technology Solutions - ARDC

Wednesday PM
March 13, 2019

Room: 006A
Location: Henry B. Gonzalez
Convention Center

Session Chairs: Katy Tsesmelis, International Aluminium Institute; Markus Graefe, Emirates Global Aluminium; Talitha Santini, The University of Western Australia; Sumedh Gostu, Air-Liquide

2:00 PM Introductory Comments

2:05 PM

Use of two filtration stages for bauxite residue: Roberto Seno¹; Rodrigo Moreno¹; *Heri Nakamura*¹; ¹CBA

2:30 PM

Environmental Friendly Transformation Of The First And Oldest Alumina Refinery In The World: *Laurent Guillaumont*¹; ¹Alteo Gardanne

2:55 PM

Accelerating Bauxite Residue Remediation with Microbial Biotechnology: *Talitha Santini*¹; K. Warren²; M. Raudsepp³; N. Carter²; A. Chiu²; J. Hamilton²; S. Couperthwaite⁴; G. Southam²; G.W. Tyson²; L.A. Warren⁵; ¹The University of Western Australia; ²The University of Queensland; ³The University of Queensland; ⁴The University of Alberta; ⁵Queensland University of Technology; ⁶The University of Toronto, Toronto

2:00 PM Introductory Comments

2:05 PM

Effect of Homogenization on Centerline Segregation of Twin Roll Cast Aluminum Alloy AA 8011: Sooraj Patel¹; *Jyoti Mukhopadhyay*¹; ¹Indian Institute of Technology, Gandhina

2:30 PM

Effect of Mg and Si Content in Aluminum Alloys on Friction Surfacing Processing Behavior: *Jonas Ehrlich*¹; Arne Roos²; Stefanie Hanke¹; ¹Universität Duisburg-Essen; ²Helmholtz-Zentrum Geesthacht

2:55 PM

Mechanical properties evolution for 8xxx foil stock materials by alloy optimization -literature review and experimental research-: *Erik Santora*¹; Josef Berneder¹; Florian Simetsberger¹; Martin Doberer²; ¹AMAG Rolling GmbH; ²Constantia Teich GmbH

3:20 PM

Effects of Zr additions on structure and microhardness evolution of eutectic Al-6Ni alloy: *Chanun Suwanpreecha*¹; Phromphong Pandee²; Ussadawut Patakham³; David Dunand⁴; Chaowalit Limmaneevichitr²; ¹King Mongkut's University of Technology Thonburi (KMUTT); ²King Mongkut's University of Technology Thonburi (KMUTT); ³National Metal and Materials Technology Center; ⁴Northwestern University

3:45 PM Break

4:00 PM

Microstructure and mechanical properties of an Al-Zr-Er high temperature alloy microalloyed with tungsten: *Amir R. Farkoosh*¹; David Dunand¹; David N. Seidman¹; ¹Northwestern University

4:25 PM

Effect of Nickel Foil Thickness on Microstructure and Microhardness of Steel/Aluminum alloy Dissimilar Laser Welding Joints: *Xiaonan Wang*¹; Xiaming Chen¹; Wenping Weng¹; Hiromi Nagaumi¹; ¹Soochow University

4:50 PM

Residual Stress Characterization for Marine Gear Cases in As-Cast and T5 Heat Treated Conditions with Application of Neutron Diffraction: *Joshua Stroh*¹; Dmitry Sediako¹; ¹UBC Okanagan

5:15 PM

Microstructural and Dry Sliding Friction Studies of Aluminum Matrix Composites Reinforced PKS Ash Developed Via Friction Stir Processing: *Romeo Fono-Tamo*¹; Jen Tien-Chien¹; ¹University of Johannesburg

Aluminum Reduction Technology — Fundamentals in Cell Behavior, Inert Anodes and other Research

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

Program Organizer: Marc Dupuis, GeniSim Inc

Wednesday PM

March 13, 2019

Room: 004

Location: Henry B. Gonzalez Convention Center

Session Chairs: Mark Dorreen, University of Auckland; Zhaohui Wang, SINTEF

2:00 PM Introductory Comments

2:05 PM

Transfer processes in the bath of high amperage aluminium reduction cell: Peter Polyakov¹; *Andrey Yasinskiy*²; Andrey Zavadyak³; Andrey Polyakov²; Iliya Puzanov³; Yuri Mikhalev²; Sergey Shakhrai²; Nikita Sharypov²; Olga Yushkova²; ¹Light Metals Ltd; ²Siberian Federal University; ³RUSAL ETC

2:30 PM

Microstructure and properties analysis of Aluminium Smelter Crust: *Shanghai Wei*¹; Jingjing Liu¹; Chathuni Ranaweera²; Tania Groutso³; Mark Taylor¹; ¹NZ Product Accelerator, Dept of Chemical & Materials Engineering; ²Dept of Chemical & Materials Engineering, University of Auckland; ³Light Metal Research Centre, University of Auckland

2:55 PM

Sideledge in Aluminium Cells: Further Considerations Concerning the Trench at the Metal-Bath Boundary: *Asbjorn Solheim*¹; Eirik Hjertenæs²; Kati Tschöpe²; Marian Kucharik²; Nancy Holt²; ¹SINTEF Industry; ²Hydro Aluminium

3:20 PM

In situ evolution of the frozen ledge under cold anode: *Donald Picard*¹; Jayson Tessier²; Dany Gauthier²; Houshang Alamdari¹; Mario Fafard¹; ¹Université Laval; ²Alcoa Corporation

3:45 PM Break

4:00 PM

Aluminum electrolysis with multiple vertical non-consumable electrodes in a low temperature electrolyte: *Guðmundur Gunnarsson*¹; Guðbjörg Óskarsdóttir¹; Sindri Frostason¹; Jón Magnússon²; ¹Innovation Center Iceland; ²Arctus Metals ehf.

4:25 PM

Anode overvoltages on the industrial carbon blocks: Peter Polyakov¹; *Andrey Yasinskiy*²; Andrey Polyakov²; Andrey Zavadyak³; Yuri Mikhalev²; Iliya Puzanov³; ¹Light Metals Ltd; ²Siberian Federal University; ³RUSAL ETC

4:50 PM

Development of a drag probe for in-situ velocity measurement of molten aluminum in electrolysis cell: *Samaneh Poursaman*¹; Mounir Baiteche¹; Donald Picard¹; Donald Ziegler²; Louis Gosselin¹; Mario Fafard¹; ¹Aluminium Research Centre - REGAL, Laval University; ²Alcoa Primary Metals, Alcoa Technical Center

5:15 PM Concluding Comments

Bio-Nano Interfaces and Engineering Applications — Bionano Interfaces V

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

Wednesday PM

March 13, 2019

Room: 217C

Location: Henry B. Gonzalez Convention Center

Session Chairs: Hendrik Heinz, University of Colorado; Kalpana Katti, North Dakota State University

2:00 PM Invited

Collagen-Mineral Interactions Impact Macroscale Properties of Fibril in Bone: *Dinesh Katti*¹; Kalpana Katti¹; ¹North Dakota State University

2:30 PM

Mechanics of cellular/intracellular packing of one-dimensional nanomaterials: *Guijin Zou*¹; Xin Yi²; Huajian Gao¹; ¹Brown University; ²Peking University

2:50 PM Invited

Atomic Scale Chemical Imaging of Interfaces and Interphases in Tooth Biominerals: *Derk Joester*¹; ¹Northwestern University

3:20 PM Break

3:40 PM Invited

The interaction of gold nanoparticles with biomolecules: insights from atomistic and multiscale simulations: *Stefano Corni*¹; ¹University of Padova

4:10 PM Invited

Atomistic simulations of long time-scale phenomena at bio-hybrid interfaces: *Lucio Colombi Ciacchi*¹; ¹University of Bremen

4:40 PM Invited

Predicting Spatial Organization of Amino Acids and Peptides on Graphene Surfaces: *Tiffany Walsh*¹; ¹Deakin University

5:10 PM

Binding Mechanisms of all 20 Natural Amino Acids to (hkl) Facets of Hydroxyapatite as a Function of pH: *Sam Hoff*¹; Juan Liu¹; Hendrik Heinz¹; ¹University of Colorado Boulder

Biological Materials Science — Biomaterials (Implants and Devices)

Sponsored by: TMS Functional Materials Division, TMS Structural Materials Division, TMS: Biomaterials Committee
Program Organizers: Rajendra Kasinath, DePuy Synthes (Johnson and Johnson); Steven Naleway, University of Utah; Vinoy Thomas, University of Alabama at Birmingham; Jing Du, Penn State University

Wednesday PM

March 13, 2019

Room: 007D

Location: Henry B. Gonzalez Convention Center

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

2:00 PM Invited

Damage Tolerance in Dental Restorative Materials: *Jamie Kruzic*¹; Carina Tanaka¹; ¹UNSW Sydney

2:30 PM

Dental materials through microstructural control of phosphates: *Steven Naleway*¹; Jerry Howard¹; Isaac Nelson¹; John Colombo¹; Krista Carlson¹; ¹Univ of Utah

2:50 PM

Developments in Bioabsorbable BioMg 250 Mg Alloy: *Jake Edick*¹; Raymond Decker¹; Stephen LeBeau¹; ¹nanoMAG, LLC

3:10 PM

Investigation of Biodegradable Zn-Li-Cu Alloys for Orthopaedic and Cardiovascular Applications: *Jacob Young*¹; Ramana Reddy¹; ¹University of Alabama

3:30 PM Break

3:50 PM Invited

Nanoparticles guided non-classical antibiofilm efficacy for tissue engineering: *Anil Kishen*¹; ¹University of Toronto

4:20 PM Invited

Bioactive Ceramic Glasses: Extracting More Value from an Existing Material: *John Nychka*¹; ¹Univ of Alberta

4:50 PM Invited

Shape Optimization of Dental Restorations: *Alex Fok*¹; ¹University of Minnesota

5:20 PM

Low Temperature Air Plasma Modification of Electrospun Soft Materials and Bio-interfaces: *Vinoy Thomas*¹; Bernabe Tucker¹; Kunning Xu²; Paul Becker¹; Yogesh Vohra¹; ¹University of Alabama at Birmingham; ²University of Alabama in Huntsville

5:40 PM

Solution deposited Hydroxyapatite: Meeting the need for conformal coatings for porous metal implants: *Rajendra Kasinath*¹; Stephanie Vass¹; Haibo Qu¹; Danny Etensohn¹; Bryan Smith¹; ¹DePuy Synthes (Johnson and Johnson)

Bulk Metallic Glasses XVI — Structures and Modeling I

Sponsored by: TMS: Mechanical Behavior of Materials Committee
Program Organizers: Xie Xie, FCA US LLC; Peter Liaw, University of Tennessee; Yanfei Gao, University of Tennessee; Hahn Choo, University of Tennessee; Yunfeng Shi, Rensselaer Polytechnic Institute; Gongyao Wang, Alcoa; Robert Maass, University of Illinois at Urbana-Champaign; Muhammad Rafique, RMIT University

Wednesday PM
March 13, 2019

Room: 206B
Location: Henry B. Gonzalez
Convention Center

Session Chairs: Wediong Li, The Goodyear Tire & Rubber Co;
Katharine Flores, Washington Univ

2:00 PM Invited

Making glassy solids ductile at room temperature by imparting flexibility into their amorphous structure: *Evan Ma*¹; ¹Johns Hopkins Univ

2:20 PM Invited

Shear-band operations in the fracture of bulk metallic glasses: *Weidong Li*¹; ¹The Goodyear Tire & Rubber Co

2:40 PM Invited

Structural and thermomechanical heterogeneities in shear banding dynamics in metallic glasses: *Xue Wang*¹; *Yanfei Gao*¹; ¹University of Tennessee

3:00 PM Invited

Are Hints about Glass Forming Ability Hidden in the Liquid Structure?: *Juan Wang*¹; Ryogo Suzuki¹; Anupriya Agrawal¹; *Katharine Flores*¹; ¹Washington Univ

3:20 PM Invited

Chemical Variation Induced Nanoscale Spatial Heterogeneity in Metallic Glasses: *Neng Wang*¹; *Feng Yan*¹; *Lin Li*¹; ¹Univ of Alabama

3:40 PM Break

4:00 PM Invited

Combining modeling with 4D STEM to explore the nanoscale origins of structure-property relationship in metallic glasses: *Pengyang Zhao*¹; *Ju Li*²; *Jinwoo Hwang*¹; *Yunzhi Wang*¹; ¹The Ohio State University; ²Massachusetts Institute of Technology

4:20 PM

Simulations on shear banding in ultra-thin metallic glasses: *Guang-Ping Zheng*¹; ¹Hong Kong Polytechnic University

4:40 PM

Deformation mechanism of nanostructured metallic glass: *Sara Adibi Sedeh*¹; ¹Texas A&M University

5:00 PM Invited

Sample-size and temperature effects in deformation behavior of bulk metallic glasses: *Chandra Sekhar Meduri*¹; *Golden Kumar*¹; ¹Texas Tech Univ

Cast Shop Technology — Melt Treatment

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

Program Organizer: Pierre-Yves Menet, Constellium Technology Center

Wednesday PM
March 13, 2019

Room: 007B
Location: Henry B. Gonzalez
Convention Center

Session Chair: Johannes Morscheiser, Aleris Rolled Products Germany

2:00 PM Introductory Comments

2:05 PM

Furnace Atmosphere and Dissolved Hydrogen in Aluminium: *Martin Syvertsen*¹; *Anne Kvithyld*²; *Eilif Gundersen*³; *Inge Johansen*³; *Thorvald Engh*⁴; ¹SINTEF Materials and Chemistry; ²SINTEF Industry; ³Hydro Aluminium; ⁴NTNU

2:25 PM

Miniature vacuum degassing system: *Allen Chan*¹; *Ray Peterson*²; ¹Praxair, Inc.; ²Real Alloy LLC

2:45 PM

Impact of the filter roughness on the filtration efficiency for aluminum melt filtration: *Claudia Voigt*¹; *Björn Dietrich*¹; *Mark Badowski*²; *Margarita Gorshunova*²; *Gotthard Wolf*³; *Christos G. Aneziris*¹; ¹TU Bergakademie Freiberg; ²Hydro Aluminium Rolled Products GmbH

3:05 PM

Influence of the wetting behavior on the aluminum melt filtration: *Claudia Voigt*¹; *Lisa Ditscherlein*¹; *Eric Werzner*¹; *Tilo Zienert*¹; *Rafal Nowak*²; *Urs Peuker*¹; *Natalia Sobczak*²; *Christos Aneziris*¹; ¹TU Bergakademie Freiberg; ²Foundry Research Institute

3:25 PM Break

3:40 PM

Aluminium Filtration of Bonded Particle Filters: *Britt Elin Gihleengen*¹; *Terje Haugen*²; *Inge Johansen*²; *Eilif Gundersen*²; *Shahid Akhtar*²; *Ulrik Aalborg Eriksen*³; *Sarina Bao*⁴; *Martin Syvertsen*⁴; *Anne Kvithyld*⁴; ¹Hycast; ²Hydro; ³NTNU; ⁴SINTEF Materials & Chemistry

4:00 PM

Evaluation of Filtration Efficiency of Ceramic Foam Filters (CFF) Using a Hydraulic Water System: *Massoud Hassanabadi*¹; Petr Bilek²; Shahid Akhtar³; Ragnhild E. Aune¹; ¹Norwegian University of Science and Technology (NTNU); ²Technical University of Liberec; ³Hydro Aluminium, Karmøy Primary Production

4:20 PM

Drain Free Filtration (DFF) – A New CFF Technology: *Ulf Tundal*¹; Idar Steen¹; Åge Strømsvåg¹; Terje Haugen²; John Olav Fagerlie²; Arild Håkonsen²; ¹Hydro Aluminium; ²Hycast AS

4:40 PM

Laboratory scale study of reverse priming in aluminium filtration: *Tanja Pettersen*¹; Martin Syvertsen¹; Sarina Bao¹; Freddy Syvertsen²; Britt Elin Gihleengen³; Ulf Tundal⁴; ¹SINTEF Industry; ²Syvertsen Støperikonsult; ³Hycast AS; ⁴Hydro Aluminium

5:00 PM

Estimation of Aluminum Melt Filtration Efficiency Using Automated Image Acquisition and Processing: *Hannes Zedel*¹; Robert Fritzsche²; Ragnhild E. Aune³; ¹Dept. of Neuroscience, Carl von Ossietzky University of Oldenburg (UOL), Oldenburg, Germany; ²Pyrotek, EMP Technologies Limited, Faraday House, Eastern Avenue, Stretton, Burton on Trent, Staffordshire, UK; ³Dept. of Materials Science and Engineering, Norwegian University of Science and Technology (NTNU), Trondheim, Norway

Ceramic Materials for Nuclear Energy Research and Applications — In Reactor Fuel Behavior

Sponsored by: TMS: Nuclear Materials Committee

Program Organizers: Yongfeng Zhang, Idaho National Laboratory; Xian-ming (David) Bai, Virginia polytechnic Institute and State University; David Andersson, Los Alamos National Laboratory; Thierry Wiss, European Commission- JRC -Institute of Transuranium Elements

Wednesday PM
March 13, 2019

Room: 214B
Location: Henry B. Gonzalez
Convention Center

Session Chairs: Andrea Jokisaari, Idaho National Laboratory; Isabella J. Van Rooyen, Idaho National Laboratory

2:00 PM Invited

A model of fission gas release and swelling in UO₂ for engineering fuel analysis: *Giovanni Pastore*¹; Lelio Luzzi²; Paul Van Uffelen³; ¹Idaho National Laboratory; ²Politecnico di Milano; ³European Commission, JRC-Karlsruhe

2:30 PM

Revisiting the diffusion mechanism of helium in UO₂: A DFT+U study: *Xiang-Yang Liu*¹; David Andersson¹; ¹Los Alamos National Laboratory

2:50 PM Invited

Multi-Scale Modeling of Fission Gas Release in UO₂ Nuclear Fuel: *Larry Aagesen*¹; Yongfeng Zhang¹; Daniel Schwen¹; Michael Tonks²; Giovanni Pastore¹; ¹Idaho National Labs; ²University of Florida

3:20 PM

Neutron irradiation performance of chemical vapor deposited SiC fuel systems at high temperatures and burnups: *Isabella Van Rooyen*¹; Karen Wright¹; Thomas Lillo¹; Subhashish Meher¹; William Skerjanc¹; Yong Yang²; Fei Gao³; ¹Idaho National Laboratory; ²University of Florida; ³University of Michigan

3:40 PM Break**4:00 PM Invited**

Irradiation effects on nuclear fuel: *Vincenzo Rondinella*¹; Thierry Wiss¹; Dimitrios Papaioannou¹; Dragos Staicu¹; Stephane Bremier¹; Ondrej Benes¹; Paul Van Uffelen¹; ¹EC-JRC

4:30 PM

Probing the thermodynamic and kinetic factors leading to the development of high burnup structure in UO₂: *Andrea Jokisaari*¹; ¹Idaho National Laboratory

4:50 PM

Microstructural and micro-chemical comparisons of AGR-1 and AGR-2 TRISO UCO Fuel Kernels Irradiated in the Advanced Test Reactor: *Zhenyu Fu*¹; Lingfeng He²; Isabella Rooyen²; Yong Yang¹; ¹Univ of Florida; ²Idaho National Laboratory

5:10 PM

Characterization of the Irradiation Effects in Nuclear Graphite: *José Arregui-Mena*¹; Philip Edmondson¹; Robert Worth²; Cristian Contescu¹; Timothy Burchell¹; Yutai Katoh¹; ¹Oak Ridge National Laboratory; ²The University of Manchester

Characterization of Materials through High Resolution Imaging — Imaging II

Sponsored by: TMS: Advanced Characterization, Testing, and Simulation Committee

Program Organizers: Ross Harder, Argonne National Laboratory; Richard Sandberg, Los Alamos National Laboratory; Xianghui Xiao, Argonne National Laboratory; Brian Abbey, La Trobe University; Saryu Fensin, Los Alamos National Laboratory; Ana Diaz, Paul Scherrer Institut; Mathew Cherukara, Argonne National Laboratory

Wednesday PM
March 13, 2019

Room: 303A
Location: Henry B. Gonzalez
Convention Center

Session Chair: To Be Announced

2:00 PM Invited

Exploring Ion-Irradiation Damage using Bragg Coherent X-ray Imaging and 3D Transmission Electron Microscopy: *Felix Hofmann*¹; Nicholas Phillips¹; Hongbing Yu¹; Ross Harder²; Wenjun Liu²; ¹University of Oxford; ²Argonne National Lab

2:30 PM Invited

Three-dimensional imaging of vortex phases in ferroic materials: *Dmitry Karpov*¹; Ross Harder²; Turab Lookman³; Edwin Fohtung⁴; ¹New Mexico State University; ²Argonne National Lab; ³Los Alamos National Lab; ⁴New Mexico State University/ Los Alamos National Lab

2:50 PM

Multi-reflection Bragg Coherent Diffractive Imaging of real-world materials samples: *Nicholas Phillips*¹; Ross Harder²; Wenjun Liu²; Ruqing Xu²; Gareth Hughes¹; James Douglas¹; Paul Bagot¹; Felix Hofmann¹; ¹University of Oxford; ²APS - Argonne National Laboratory

3:10 PM

Direct Observation of Point to Parallel Array Cu GB Segregation Behavior in Al Alloy 7075: *Prakash Parajuli*¹; Ruben Mendoza-Cruz¹; Arturo Ponce¹; Miguel Yacaman¹; ¹University of Texas at San Antonio

3:30 PM Break**3:50 PM**

3D Mapping of Subgrains with High Resolution 3DXRD: *Mustafacan Kutsal*¹; Marta Majkut¹; Can Yildirim¹; Phil Cook¹; Yubin Zhang²; Jon Wright¹; Carsten Detlefs¹; Henning Poulsen²; ¹European Synchrotron Radiation Facility; ²Technical University of Denmark

4:10 PM

High throughput nano-size precipitates characterization of steels with unprecedented statistics: transmission Kikuchi diffraction on extraction replicas: *Arunodaya Bhattacharya*¹; Chad Parish¹; Jean Henry²; Ying Yang¹; Lizhen Tan¹; Yutai Katoh¹; ¹Oak Ridge National Laboratory; ²CEA-Saclay

4:30 PM Invited

Multimodal imaging using hard X-ray speckle: *Marie-Christine Zdora*¹; ¹Diamond Light Source, University College London

4:50 PM

Deformation Behavior of Functionally Graded Polymeric Foams using X-ray Tomography: *Arun Sundar Singaravelu*¹; Jason Williams¹; Mark Henderson²; Chris Holmes³; Nikhilesh Chawla¹; ¹Center for 4D Materials Science, Arizona State University; ²Future Team, Adidas; ³Future Team, Adidas AG

5:10 PM

A Fast Algorithm for Improving Reconstruction Quality with Incomplete Tomography Data: *Xianghui Xiao*¹; Ronald Agyei²; Michael Sangid²; ¹Argonne National Laboratory; ²Purdue University

Characterization of Minerals, Metals, and Materials — Non-ferrous Metals and Processes

Sponsored by: 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; Yunus Kalay, Middle East Technical University; John Carpenter, Los Alamos National Laboratory; Jiann-Yang Hwang, Michigan Technological Univ; Sergio Monteiro, Military Institute of Engineering; Chenguang Bai, Chongqing Univ; Juan Escobedo-Diaz, University of New South Wales; Pasquale Russo Spena, Free University of Bozen-Bolzano; Ramasis Goswami, Naval Research Laboratory

Wednesday PM
March 13, 2019

Room: 212B
Location: Henry B. Gonzalez
Convention Center

Session Chairs: Jiann-Yang Huang, Michigan Technological University; Pasquale Russo Spena, Free University of Bozen-Bolzano

2:00 PM Introductory Comments

2:05 PM Invited

Predicting ultrasound resonance of polycrystalline materials by multiscale modeling: application to Nickel-base superalloys: *Marie-Agathe Charpagne*¹; Marat Latypov¹; Brent Goodlet¹; Mason Souther¹; Ben Bales¹; Mickael Kirka²; Tresa Pollock¹; ¹University of California Santa Barbara; ²Oak Ridge National Laboratory

2:25 PM Invited

Investigation of Epsilon to Tau phase transformation in MnAl Alloys: *Yunus Kalay*¹; Merve Genc Unalan¹; Ozgun Acar¹; ¹Middle East Technical Univ

2:45 PM

Thermodynamic Measurement Al-Li Alloy by Mass Spectrometry: *Yuto Kobayashi*¹; *Takashi Nagai*¹; ¹Chiba Institute of Technology

3:05 PM

Adsorption Behavior of Cu(II) to Silica-Humics Composite Aerogels: *Guihong Han*¹; Pengfei Tang¹; Hongyang Wu¹; Jun Ma¹; Xiaomeng Yang¹; Yongsheng Zhang¹; ¹Zhengzhou University

3:25 PM

A Combinatorial Investigation of Cu-Nb Metallic Glass Thin Films: *Mohammad Abboud*¹; Amir Motallebzadeh²; Sezer Ozerine¹; ¹Middle East Technical University; ²Koç University

3:45 PM Break

4:00 PM

Inter- and Transgranular Nucleation and Growth of Voids in Shock Loaded Copper Bicrystals: *Elizabeth Fortin*¹; Benjamin Shaffer¹; Saul Opie¹; Matthew Catlett²; Pedro Peralta¹; ¹Arizona State Univ; ²Los Alamos National Laboratory

4:20 PM

Identification of the Crystal Structure of the Ti₃Pt₃ Compound—Preliminary Results: *Karem Tello*¹; Raul Cardoso-Gil²; Fernanda Arancibia¹; Claudio Aguilar¹; Nubia Caroca-Canales²; Michael Kaufman³; ¹Univ Tecnica Federico Santa Maria; ²Max-Planck-Institut für Chemische Physik fester Stoffe; ³Colorado School of Mines

4:40 PM

Alloying and Annealing Effects on Grain Boundary Character Evolution of Al Alloy 7075 Thin Films: an ACOM-TEM Analysis: *Prakash Parajuli*¹; Ruben Mendoza-Cruz¹; Miguel Yacaman¹; Arturo Ponce¹; ¹University of Texas at San Antonio

5:00 PM

Influence of Strain Rate and Microstructure on the Substructure Evolution and Mechanical Properties of Ti-407: *Zachary Kloenne*¹; Gopal Viswanathan¹; Matt Thomas²; M.H. Lorreto³; Hamish Fraser¹; ¹The Ohio State University; ²TIMET; ³University of Birmingham

5:20 PM

Deformation mechanisms of Mg-Zn-Y alloys with LPSO phase studied by various in-situ methods: *Kludia Horvath*¹; Daria Drozdenko¹; Kristián Máthi¹; Jan Capek²; Gerardo Garcés³; Dong Ma⁴; Ke An⁴; Patrik Dobron¹; ¹Charles University; ²Lab Neutron Scattering & Imaging, Paul Scherrer Institut; ³CENIM-CSIC; ⁴Chemical and Engineering Materials Division, Spallation Neutron Source, Oak Ridge National Laboratory

Characterization of Minerals, Metals, and Materials — Polymer and Composite Materials

Sponsored by: 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; Yunus Kalay, Middle East Technical University; John Carpenter, Los Alamos National Laboratory; Jiann-Yang Hwang, Michigan Technological Univ; Sergio Monteiro, Military Institute of Engineering; Chenguang Bai, Chongqing Univ; Juan Escobedo-Diaz, University of New South Wales; Pasquale Russo Spena, Free University of Bozen-Bolzano; Ramasis Goswami, Naval Research Laboratory

Wednesday PM
March 13, 2019

Room: 212A
Location: Henry B. Gonzalez
Convention Center

Session Chairs: Sergio Monteiro, UENF; Jinhong Li, China University of Geosciences

2:00 PM Introductory Comments

2:05 PM

Two Fibers Used in the Colombian Amazonia and Its Uses as Potential Reinforcement for Composite Materials: *Henry Colorado*¹; Claudio Aguilar²; ¹Universidad De Antioquia; ²Universidad Técnica Federico Santa Maria

2:25 PM

Visualizing stress distribution of ceramic/epoxy composite under non-linear deformation using micro-mechanical Raman spectroscopy: *Abhijeet Dhiman*¹; Chandra Prakash¹; Vikas Tomar¹; ¹Purdue University

2:45 PM

Development and Characterization of Epoxy Based Polymer Matrix Hybrid Composite Using Chicken Feather, Coir Fiber and Egg Shell Powder: *Saju Kuriakose*¹; Sandesh Kiran Swamidas¹; *Rajaprakash Mruthunjayappa*¹; ¹University Visvesvaraiha College of Engineering (UVCE), Bangalore University

3:05 PM

Flexural Mechanical Characterization of Polyester Composites Reinforced with Sisal Fabric: *Frederico Margem*¹; Sergio Monteiro²; Andre Gomes¹; Glenio Daniel¹; Vinicius Barbosa¹; Alexandre Amorin¹; Victor Souza¹; ¹Uniredentor; ²IME

3:25 PM

High Energy Radiation Effects on the Mechanical and Rheometric Properties of Butyl Rubber Compounds: *Sandra Scagliusi*¹; Elizabeth Cardoso¹; Ademar Lugão¹; ¹IPEN

3:45 PM Break

4:00 PM

Cost Evaluation of Polymeric Composites Reinforced by Natural Fibers: *Felipe Perisse Duarte Lopes*¹; Carlos Fontes Vieira¹; ¹UENF

4:20 PM

Influence of Albizzia lebbbeck Benth pods particulate on Mechanical Properties of Low Density Polyethylene: *Oluwashina Gbenedor*¹; Emmanuel Akpan²; Festus Osabumwenre¹; Samson Adeosun¹; ¹University of Lagos; ²Institut für Verbundwerkstoffe

Computational Approaches for Big Data, Artificial Intelligence and Uncertainty Quantification in Computational Materials Science — AI Applied to General Materials Science

Sponsored by: TMS: Computational Materials Science and Engineering Committee

Program Organizers: Liang Qi, University of Michigan; Francesca Tavazza, National Institute of Standards and Technology; Christopher Woodward, Air Force Research Laboratory; Adrian Sabau, Oak Ridge National Laboratory; Houlong Zhuang, Arizona State University; Sugata Chowdhury, National Institute of Standards and Technology

Wednesday PM

March 13, 2019

Room: 305

Location: Henry B. Gonzalez Convention Center

Session Chair: To Be Announced

2:00 PM Invited

An autonomous characterization system for limited-data experimental materials screening: Composition spread thin film experiments: *Brian DeCost*¹; Heshan Yu²; Xiaohang Zhang²; Seunghun Lee²; Yangang Liang²; Jason Hatrick-Simpers¹; Ichiro Takeuchi²; Aaron Kusne¹; ¹NIST; ²University of Maryland

2:30 PM

A machine learning framework to improve nanoHUB prediction capabilities using existing tool data: *Saaketh Desai*¹; Sam Reeve¹; Alejandro Strachan¹; ¹Purdue University

2:50 PM Invited

Characterizing the Likelihood of Success of using Machine Learning to Design Novel Materials: *Yoolhee Kim*¹; ¹Citrine Informatics

3:20 PM

Perspectives on the Impact of Machine Learning, Deep Learning, and Artificial Intelligence on Materials, Processes, and Structures Engineering: *Dennis Dimiduk*¹; Elizabeth Holm²; Stephen Niezgod³; ¹BlueQuartz Software LLC; ²Carnegie Mellon University; ³The Ohio State University

3:40 PM Break

4:00 PM Invited

Developing Fast-Running Simulations Models for Manufacturing Using Deep Learning: *Victor Castillo*¹; ¹LLNL

4:30 PM Invited

Software tools, crystal descriptors, and applications of machine learning applied to materials design: *Anubhav Jain*; ¹

5:00 PM

Towards predictive synthesis of computer-designed inorganic materials: *Muratahan Aykol*¹; ¹Toyota Research Institute

Computational Materials Discovery and Design — Computational Methods for Materials Discovery and Design III

Sponsored by: TMS: Computational Materials Science and Engineering Committee

Program Organizers: Oliver Johnson, Brigham Young University; Arunima Singh, Arizona State University; Jake Bair, Pacific Northwest National Lab; Christopher Weinberger, Colorado State University; Timofey Frolov, Lawrence Livermore National Laboratory; Ning Zhang, Colorado School of Mines; Fadi Abdeljawad, Clemson University; Richard Hennig, Univ of Florida; Mikhail Mendeleev, Ames Laboratory; Avinash Dongare, University of Connecticut

Wednesday PM

March 13, 2019

Room: 304C

Location: Henry B. Gonzalez Convention Center

Session Chair: To Be Announced

2:00 PM

Building microstructure evolution linkages for sintering of polycrystalline ceramics: *Yuksel Yabansu*¹; Veronika Rehn²; Johannes Hotzer²; Britta Nestler²; Surya Kalidindi¹; ¹Georgia Institute of Technology; ²Karlsruhe Institute of Technology

2:20 PM

A Machine Learning Approach for Process Optimization of Polycrystalline Materials: *Pinar Acar*¹; ¹Virginia Tech

2:40 PM

Reduced-order model for microstructure evolution simulation in solid oxide fuel cell with dynamic discrepancy reduced modeling: *Yinkai Lei*¹; Tian-Le Cheng¹; You-Hai Wen¹; David Mebane²; ¹National Energy Technology Laboratory; ²West Virginia University

3:00 PM

Grain Growth in Yttria-Doped Alumina - A Simulation Study: *Philip Goins*¹; William Frazier¹; ¹Army Research Lab

3:20 PM Break

3:40 PM

CALPHAD-guided Alloy Design and Processing of Novel Ceramics and Cermets in Titanium-Boron System: *K. S. Ravi Chandran*¹; Jun Du¹; Vikas Jindal²; Anthony Sanders³; ¹Univ of Utah; ²IIT-BHU; ³Ortho Development Corporation

4:00 PM

Multi-Objective Design of Functionally Graded Materials in Multicomponent Alloy Systems: *Tanner Kirk*¹; Olga Eliseeva¹; Richard Malak¹; Raymundo Arroyave¹; Ibrahim Karaman¹; ¹Texas A&M University

4:20 PM

Optimisation of plasticity-induced transformations and strengthening in TRIP/TWIP titanium alloys: *Madeleine Bignon*¹; Pedro Rivera Diaz-del-Castillo²; Gérard Ramstein¹; Emmanuel Bertrand¹; Franck Tancret¹; ¹Université de Nantes; ²University of Lancaster

Computational Thermodynamics and Kinetics — Microstructural Evolution I

Sponsored by: TMS: Computational Materials Science and Engineering Committee

Program Organizers: Fadi Abdeljawad, Clemson University; Hesam Askari, University of Rochester; Emine Gulsoy, Northwestern Univ; Joel Berry, University of Pennsylvania; Damien Tourret, IMDEA Materials; Mohsen Asle Zaeem, Colorado School of Mines; James Morris, Oak Ridge National Laboratory

Wednesday PM
March 13, 2019

Room: 225C
Location: Henry B. Gonzalez
Convention Center

Session Chair: To Be Announced

2:00 PM Invited

The Thermodynamic and Kinetic effects of Microalloying Elements in Al-Cu alloys: *Patrick Shower*¹; James Morris¹; Dongwon Shin¹; Amit Shyam¹; ¹Oak Ridge National Laboratory

2:30 PM

Phase-Field Modeling of Grain-Boundary Grooving and Migration under Electric Current and Thermal Gradient: *Supriyo Chakraborty*¹; Praveen Kumar²; Abhik Choudhury²; ¹The Ohio state University; ²Indian Institute of Science

2:50 PM

Stabilization of intermetallic precipitates against coarsening through interface engineering: A phase-field study: *Sourabh Kadambi*¹; Fadi Abdeljawad²; Srikanth Patala¹; ¹North Carolina State Univ; ²Clemson University

3:10 PM Invited

Toward Equilibrium: *Marius Stan*¹; Noah Paulson¹; ¹Argonne National Lab

3:40 PM Break

4:00 PM Invited

Effect of magnetic fields on microstructure evolution: *Philip Goins*¹; Heather Murdoch¹; Efrain Hernandez-Rivera¹; Mark Tschopp¹; ¹Army Research Lab

4:30 PM

A Thermodynamically Consistent Phase-Field Modeling framework for Micro-Elasto-Viscoplasticity: *Youhai Wen*¹; Tianle Cheng¹; ¹Netl/Doe

4:50 PM

Modeling of Volume Diffusion Controlled Phase Transformations in Multiphase Multicomponent Alloy Systems by Minimization of Gibbs Energy: *Anders Salvén*¹; ¹InnoXinetix AB

5:10 PM

Phase-field modeling of self-organization in physical vapor-deposited alloy films with coherent elastic misfit: *Rahul Raghavan*¹; Kumar Ankit¹; ¹School for Engineering of Matter, Transport and Energy, Arizona State University

Deformation and Damage Behavior of High Temperature Alloys — Superalloys: Processing and Environmental-Assisted Mechanisms

Sponsored by: TMS Structural Materials Division, TMS: High Temperature Alloys Committee

Program Organizers: Michael Titus, Purdue University; Qiang Feng, University of Science and Technology Beijing; Akane Suzuki, GE Global Research; Jonathan Cormier, ENSMA - Institut Pprime - UPR CNRS 3346; Sammy Tin, Illinois Institute of Technology; Martin Detroit, National Energy Technology Laboratory

Wednesday PM
March 13, 2019

Room: 301C
Location: Henry B. Gonzalez
Convention Center

Session Chairs: Sammy Tin, Illinois Institute of Technology; Akane Suzuki, GE Global Research

2:00 PM

Influence of Thermomechanical Processing and Hot Deformation on microstructural evolution towards building a comprehensive model for metadynamic recrystallization kinetics in alloy IN625: *Benjamin Adam*¹; Graham Tewksbury¹; John Walters²; Chris Bergner³; ¹Portland State Univ; ²SFTC; ³FDMC

2:20 PM

Hot forging of a nickel-base superalloy – dynamic recrystallisation and deformation mechanisms in ATI 718Plus®: *Christiane Kien*¹; Christos Argyrakis²; Cathie Rae¹; ¹University of Cambridge; ²Rolls-Royce plc.

2:40 PM

Processing and Microstructural Conditions Contributing to Abnormal Grain Growth in Ni-based Superalloys: *Byron Mearthur*; Amy Clarke¹; Kester Clarke¹; Michael Kaufman¹; Kevin Severs²; ¹Colorado School of Mines; ²ATI

3:00 PM

Microstructure and mechanical properties of rotary friction welding of a new wrought Ni-Fe based superalloy: *Yaxin Xu*¹; Wenya Li¹; ¹Northwestern Polytechnical University

3:20 PM Break

3:40 PM

Tribological Behavior of Alloys 800H and 617 at Elevated Temperatures and in Impure Helium Environments: *Valentin Pauly*¹; Malcolm Clark¹; Joseph Kern¹; Carter Tesch¹; Oyelayo Ajayi²; Dileep Singh²; David Grierson¹; Kumar Sridharan¹; ¹University of Wisconsin-Madison; ²Argonne National Laboratory

4:00 PM

Effect of Multiaxiality and Oxidation on the Kinetics of Microstructural Instabilities in Nickel-based Single Crystal Superalloys for Extreme Environment: *Seungjun Lee*¹; Jean Briac le Graverend¹; ¹Tamu

4:20 PM

Effect of the environment and pre-cracked non-metallic inclusions on lifetime variability of AD730™: *Adèle Govaere*¹; Florence Hamon²; Anne-Laure Rouffé³; Jean-Michel Franchet³; Jonathan Cormier⁴; Patrick Villechaise²; ¹SAFRAN Tech & Institut Pprime; ²CNRS - Institut Pprime; ³SAFRAN Tech; ⁴ISAE-ENSMA & Institut Pprime

4:40 PM

High temperature oxidation of Co-base superalloys: Investigating the 3D structures of oxide scales by means of X-ray NanoCT, FIB tomography and analytical TEM: *Malte Lenz*¹; Nadine Buchinger¹; Jan Rosiwall¹; Yolita Eggeler¹; Silvan Englisch¹; Janis Wirth¹; Martin Weiser¹; Sannakaisa Virtanen¹; Erdmann Spiecker¹; ¹Univ Erlangen Nuernberg

Effective Business Improvement Methodologies for the Minerals, Metals, and Materials Industries — Effective Business improvement methodologies for the Minerals, Metals, and Materials industries

Program Organizers: Barry Sadler, Net Carbon Consulting Pty Ltd; Eric Schmidt, Vallourec Star; Robert Hyers, University of Massachusetts

Wednesday PM
March 13, 2019

Room: 303B
Location: Henry B. Gonzalez
Convention Center

Session Chair: Barry Sadler, Net Carbon Consulting Pty Ltd

2:00 PM Introductory Comments

2:10 PM

Case Studies of Continuous Improvement Projects in the Metals Industry: *Cynthia Belt*¹; ¹Metals Energy Management LLC

2:40 PM

The Value of Investigating and Trending Minor Failures to Prevent Major Incidents: Jedediah Redman¹; *Nicholas Cherolis*²; Daniel Benac¹; Dorothy Shaffer¹; ¹Baker Engineering and Risk Consultants; ²Baker Engineering and Risk Consultants, Inc.

3:10 PM

Process Stability – the Key to Improvement in Mining, Smelting and Process Industries: *Keith Sinclair*¹; ¹Sinclair Associates, Inc.

3:40 PM Break

4:00 PM

Business Development Strategies and Approaches in Minerals, Metals and Materials - an Industrial Gas Supplier's Perspective: *Adrian Deneys*¹; ¹Praxair, Inc.

4:30 PM Demonstration

4:50 PM Panel Discussion

5:20 PM Concluding Comments

Environmentally Assisted Cracking: Theory and Practice — Environmentally Assisted Embrittlement and Failure

Program Organizers: Bai Cui, University of Nebraska Lincoln; Raul Rebak, GE Global Research; Srujan Rokkam, Def-Aero, Advanced Cooling Technologies Inc

Wednesday PM
March 13, 2019

Room: 214C
Location: Henry B. Gonzalez
Convention Center

Session Chairs: Reiner Kirchheim, University of Göttingen; Jian Luo, University of California, San Diego

2:00 PM Invited

Plasticity and fracture affected by the uptake of chemical elements from the environment: *Reiner Kirchheim*¹; ¹University of Goettingen

2:40 PM

The effect of hydrogen on the plastic deformation of metals as predicted from discrete dislocation dynamics simulations: *Yejun Gu*¹; Jaafar El-Awady¹; ¹Johns Hopkins Univ

3:00 PM

Environmental influences on crack formation and fracture mechanical behavior of a beta-stabilized gamma-TiAl alloy: *Christian Loeffl*¹; Holger Saage¹; Mathias Göken²; ¹University of Applied Sciences Landshut; ²Friedrich-Alexander-University Erlangen-Nürnberg

3:20 PM

Environmentally-assisted cracking of a Ni-based superalloy closure weld in the presence of rocket propellant: *David Dawicke*¹; Jacob Hochhalter²; Mark McClure³; Mika Myers³; James Burns⁴; Kirk Sneddon⁵; Heather Hickman⁶; Richard Russell⁷; ¹Analytical Services & Materials, Inc.; ²Nasa Langley Research; ³NASA White Sands Test Facility; ⁴University of Virginia; ⁵Arde Inc.; ⁶NASA Glenn Research Center; ⁷NASA Kennedy Space Center

3:40 PM Break

4:00 PM Invited

A Review of Grain Boundary Adsorption, Wetting and Transformations: Implications in Liquid Metal and Grain Boundary Embrittlement and Beyond: *Jian Luo*¹; ¹University of California, San Diego

4:40 PM

Liquid metal embrittlement of austenitic steels: recent results: *Auger Thierry*¹; Bassem Barkia¹; Jean-Louis Courrouau²; Fosca Di Gabriele³; Anna Hojna³; Michal ChoCholousek³; ¹CNRS/ENSAM/CNAM; ²CEA; ³CVR

5:00 PM

Liquid Metal Embrittlement of Engineering Alloys by eGaIn: Data-driven Experimental Design Using Sequential Learning: *Justin Norkett*¹; Victoria Miller¹; ¹North Carolina State University

Fatigue in Materials: Multi-scale and Multi-environment Characterizations and Computational Modeling — Load and Environment Interaction Effects on the Mechanical Response during Fatigue

Sponsored by: TMS: Computational Materials Science and Engineering Committee, TMS: Integrated Computational Materials Engineering Committee

Program Organizers: Jean-Briac le Graverend, Texas A&M University; Ashley Spear, University of Utah; Antonios Kontsos, Drexel Univ; Garrett Pataky, Clemson University; Filippo Berto, Norwegian University of Science and Technology

Wednesday PM
March 13, 2019

Room: 301B
Location: Henry B. Gonzalez
Convention Center

Session Chair: Jean-Briac le Graverend, Texas A&M University

2:00 PM

Characterization of the effects of high altitude environments on dislocation structure evolution during fatigue loading of 7075-T651: *Adam Thompson*¹; Zachary Harris¹; James Burns¹; ¹University of Virginia

2:20 PM

Probabilistic Dwell Fatigue Life Prediction in Microtextured Ti-6Al-4V: *Sushant Jha*¹; Joseph Tucker²; James Larsen³; Reji John³; Adam Pilchak³; ¹University of Dayton Research Institute; ²Exponent, Inc.; ³US Air Force Research Laboratory

2:40 PM

Invitro Fatigue Behavior of NiTi Shape Memory Wire: *Lakhindra Marandi*¹; Indrani Sen¹; ¹IIT Kharagpur

3:00 PM

Short crack growth of metastable austenitic and martensitic stainless steels under hydrogen influence: *Sven Brück*¹; Volker Schippel¹; Hans-Jürgen Christ¹; Claus-Peter Fritzen¹; Martina Schwarz²; Stefan Weihe²; ¹Universitaet Siegen; ²Universität Stuttgart

3:20 PM Break

3:40 PM

Twinning in (a+B) titanium alloy submitted to dwell fatigue loading: *Cyril Lavogiez*¹; Samuel Hémerly¹; Patrick Villechaise¹; ¹Prime Institute

4:00 PM Invited

Experimental and computational studies of crack growth in steel Alloy 709 at elevated temperatures under fatigue and creep loading: *Gabriel Potirniche*¹; Jose Ramirez²; Nicholas Shaber¹; Martin Taylor¹; Robert Stephens¹; Indrajit Charit¹; ¹University Of Idaho

4:20 PM

The fatigue life of AISI 4140 in the VHCF regime at high temperatures: *Alexander Schmiedel*¹; Horst Biermann¹; Anja Weidner¹; ¹TU Bergakademie Freiberg

4:40 PM

Creep-fatigue deformation in 9-Cr1MoV base metal and weldments: *Harrison Whitt*¹; Tyler Payton¹; Wei Zhang¹; Michael Mills¹; ¹Ohio State University

Fracture Processes of Thin Films and Nanomaterials — Thin Film and Interface Fracture

Sponsored by: TMS Materials Processing and Manufacturing Division, TMS: Nanomechanical Materials Behavior Committee
Program Organizers: Daniel Kiener, University of Leoben; Megan Cordill, Erich Schmid Institute; Johannes Ast, Empa, Swiss Federal Laboratories for Materials Science and Technology; Brad Boyce, Sandia National Labs

Wednesday PM
March 13, 2019

Room: 217B
Location: Henry B. Gonzalez
Convention Center

Session Chairs: Megan Cordill, Erich Schmid Institute of Materials Science; Corinne Packard, Colorado School of Mines

2:00 PM Invited

Analysis of fracture surface morphology in microscale GaAs and Ge films: *Corinne Packard*¹; ¹Colorado School of Mines

2:20 PM

Interfacial Fracture Toughness of GaN Film on Diamond Substrate for Application in Ultra-high Power Radio Frequency Devices: *Dong Liu*¹; Stephen Fabes²; Daniel Francis³; Martin Kuball¹; ¹University of Bristol; ²University of Oxford; ³Akash Systems

2:40 PM

Dependence of the Fracture Toughness of Freestanding Metallic Thin Films on their Yield Strength and Microstructure: *Benoit Merle*¹; Eva Preiß¹; Mathias Göken¹; ¹University Erlangen-Nürnberg (FAU)

3:00 PM

Alloying effects on ductility of nanostructured Cu-X (X = Zr and W) thin films: *Jiantuo Zhao*¹; Jinyu Zhang¹; Gang Liu¹; Jun Sun¹; ¹Xi'an Jiaotong University

3:20 PM Invited

Impact of alloying and interfaces on fracture toughness of transition metal nitrides and borides: *Paul Mayrhofer*¹; ¹TU Wien

3:40 PM Break

4:00 PM Invited

In Situ Stable Fracture of Ceramic Interfaces Tested Under Environmental Conditions: *Giorgio Semicola*¹; *Finn Giuliani*¹; ¹Imperial College London

4:20 PM

In-situ fracture of reliability relevant interfaces in microelectronic devices: *Markus Alfreider*¹; Johannes Zechner²; Daniel Kiener¹; ¹University of Leoben; ²KAI Kompetenzzentrum Automobil- und Industrieelektronik GmbH

4:40 PM

Mechanical behavior of ultrastable amorphous thin film: *Sun-Young Park*¹; Jeong-Hyun Woo¹; Ju-Young Kim¹; ¹UNIST

Friction Stir Welding and Processing X — Lightweight Materials

Sponsored by: TMS: Shaping and Forming Committee
Program Organizers: Yuri Hovanski, Brigham Young University; Rajiv Mishra, University of North Texas; Yutaka Sato, Tohoku University; Piyush Upadhyay, Pacific Northwest National Laboratory; David Yan, San Jose State University

Wednesday PM
March 13, 2019

Room: 210A
Location: Henry B. Gonzalez
Convention Center

Session Chair: To Be Announced

2:00 PM Panel Discussion: Learn from the founders - More than 100 years of experience in academic friction stir related research

3:00 PM Invited

High Speed Friction stir lap welding of Al alloys: *Piyush Upadhyay*¹; Xiao Li²; Tim Roosendaal²; ¹Pacific Northwest National Laboratory; ²Pacific Northwest National Laboratory

3:20 PM

Processing and Properties of Engineered Metal Matrix Composites Produced Via Co-Extrusion for High-Temperature Friction Stir Welding: *Paul Brune*¹; Jeremy Watts¹; Gregory Hilmas¹; ¹Missouri Univ of Science & Tech

3:40 PM Break

4:00 PM Invited

Friction Stir Welding of lap joints using new Al-Li alloys for stringer-skin joints: *Egoitz Aldanondo*¹; Ekaitz Arruti¹; Alberto Echeverria¹; Iñaki Hurtado²; ¹IK4-LORTEK; ²Mondragon Unibertsitatea, Faculty of Engineering (MU-ENG)

4:20 PM

Friction Stir Weld Behavior of Aluminum-Cerium alloys: *Devany Sweitzer*¹; ¹Vanderbilt University

4:40 PM

Tool shoulder end features on material flow and mechanical properties during friction stir welding of Al-Mg-Si alloy: *Krishna Kishore Mugada*¹; Kumar Adepu²; ¹Gayatri Vidya Parishad College of Engineerin; ²NIT Warangal

Friction Stir Welding and Processing X — Simulation

Sponsored by: TMS: Shaping and Forming Committee
Program Organizers: Yuri Hovanski, Brigham Young University; Rajiv Mishra, University of North Texas; Yutaka Sato, Tohoku University; Piyush Upadhyay, Pacific Northwest National Laboratory; David Yan, San Jose State University

Wednesday PM
March 13, 2019

Room: 210B
Location: Henry B. Gonzalez
Convention Center

Session Chair: To Be Announced

2:00 PM Invited

Use of the TPM model to illuminate differences between conventional and stationary shoulder FSW: *Tony Reynolds*¹; ¹University of South Carolina

2:20 PM

Numerical model to estimate tool wear and worn-out pin shape during friction stir welding of CuCrZr alloy: *Pankaj Sahlot*¹; Amit Arora²; ¹PDPU Gandhinagar and IIT Gandhinagar; ²IIT Gandhinagar

2:40 PM Invited

Probing Tool Durability in Stationary Shoulder Friction Stir Welding: *Buchibabu Vicharapu*¹; Huihong Liu¹; Hidetoshi Fujii¹; Ninshu Ma¹; Amitava De²; ¹Joining and Welding Research Institute, Osaka University; ²Indian Institute of Technology Bombay

3:00 PM

Finite element modeling for improving tool durability and weldability in friction stir welding of high strength materials: Chiranthan Ramesh¹; Viswanath chinthapenta¹; Amit Chaudhary²; *Murshid Imam*²; ¹Indian Institute of Technology Hyderabad; ²Indian Institute of Technology Patna

3:20 PM Break**3:40 PM Invited**

On the Material Bonding Behaviors in Friction Stir Welding: *Gaoqiang Chen*¹; Han Li¹; Qingyu Shi¹; ¹Tsinghua University

4:00 PM Invited

Mechanical characterization of the interface obtained in friction-stir-welded joints using cohesive zone modeling: *Varun Gupta*¹; Erin Barker²; Piyush Upadhyay²; Darrell Herling²; ¹Pacific Northwest National Laboratory; ²Pacific Northwest National Laboratory

4:20 PM

Investigation of Interfacial Diffusion during Dissimilar Friction Stir Welding: *Nikhil Gotawala*¹; Amber Shrivastava¹; ¹IIT Bombay

4:40 PM

Effect of actual thermo-physical properties on heat transfer and material flow for dissimilar weld— Al 6061-T6 and AZ31: Amit Singh¹; Pankaj Sahlot¹; *Amit Arora*¹; ¹IIT Gandhinagar

5:00 PM

Probing texture evolutions during friction stir processing of a Mg alloy: in-situ, real-time neutron diffraction study: *Yuan Li*¹; Ke An²; Zhili Feng²; Hahn Choo¹; ¹University of Tennessee; ²Oak Ridge National Laboratory

Heterogeneous and Gradient Materials (HGM III): Tailoring Mechanical Incompatibility for Superior Properties — Deformation, Fracture and Fatigue

Program Organizers: Yuntian Zhu, North Carolina State University; Kei Ameyama, Ritsumeikan University; Irene Beyerlein, University of California, Santa Barbara; Yves Brechet, Grenoble-INP; Huajian Gao, Brown Univ; Hyoung Seop Kim, Pohang University of Science and Technology; Ke Lu, Institute of Metal Research; Xiaolei Wu, Chinese Academy of Sciences

Wednesday PM
March 13, 2019

Room: 209
Location: Henry B. Gonzalez
Convention Center

Session Chairs: Irene Beyerlein, University of California, Santa Barbara; Lei Lu, Institute of Metal Research; Yunzhi Wang, Ohio State University; Shoichi Kikuchi, Shizuoka University

2:00 PM Invited

Fatigue Crack Initiation and Propagation Behaviors in CP titanium and Ti-6Al-4V alloy with a Bimodal Harmonic Structure: *Shoichi Kikuchi*¹; Yoshikazu Nakai²; ¹Shizuoka University; ²Kobe University

2:25 PM

Propagating instabilities in architected materials: *Antoine-Emmanuel Viard*¹; Samuel Forest²; Justin Dirrenberger¹; ¹PIMM Arts et Métiers ParisTech; ²Mines ParisTech

2:45 PM

Localized corrosion behaviour and surface softening of AA7150 after ultrasonic shot peening: *Qingqing Sun*¹; Qingyou Han²; ¹IMR CAS; ²Purdue University

3:05 PM

Low temperature deformation of Cu/Nb nanolaminates: Rolf Schaarschuch¹; Lutz Hollang¹; Carl-Georg Oertel¹; Irene Beyerlein²; Nathan Mara³; *Werner Skrotzki*¹; ¹TU Dresden; ²UC Santa Barbara; ³University of Minnesota

3:25 PM

Pre-tension effect on cyclic response of Cu with highly oriented nano-scale twins: *Qingsong Pan*¹; Haofei Zhou²; Huajian Gao²; Lei Lu¹; ¹Institute of Metal Research, Chinese Academy of Sciences; ²School of Engineering, Brown University

3:45 PM Break**4:05 PM Invited**

Fracture behavior of metal-ceramic and metal-metal nanolaminates: *Jon Molina-Aldaregu*¹; ¹Imdea Materials Institute

4:30 PM

Transition from the thickness-dependent to thickness-independent strength in the nano-twinned metals: *Caizhi Zhou*¹; Sixie Huang¹; Irene Beyerlein²; ¹Missouri University of Science And Technology; ²University of California at Santa Barbara

4:50 PM

Regulating shear-dominant displace processes by nano-scale concentration modulations: Jiaming Zhu¹; Dong Wang²; Yipeng Gao³; Tongyi Zhang¹; *Yunzhi Wang*³; ¹Hong Kong University of Science and Technology; ²Xi'an Jiao Tong University; ³Ohio State Univ

5:10 PM

Mechanical Interface Energies within Gradient Plasticity, Nanoindentation and Molecular Dynamics: *Katerina Aifantis*¹; ¹University of Florida

High Entropy Alloys VII — Structures and Mechanical Properties III

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

Wednesday PM
March 13, 2019

Room: 207A
Location: Henry B. Gonzalez
Convention Center

Session Chairs: Jeffrey Hawk, National Energy Technology Lab; Haruyuki Inui, Kyoto University

2:00 PM Invited

Metastability Driven Hierarchical Microstructural Engineering: Overview of Strength-Ductility Paradigms in Complex Concentrated Alloys: *Rajiv Mishra*¹; S. Nene¹; M. Frank¹; M. Komarasamy¹; S. Sinha¹; K. Liu¹; S. Shukla¹; ¹Univ of North Texas

2:20 PM Invited

Deformation Behavior of High Entropy Ceramics: *Kenneth Vecchio*¹; Tyler Harrington¹; Josh Gild¹; Pranab Sarker²; Cormac Toher²; Olivia Dippo¹; Eduardo Marin¹; Lucas Borowski¹; Jian Luo¹; Stefano Curtarolo²; Donald Brenner³; ¹Univ of California San Diego; ²Duke University; ³North Carolina State University

2:40 PM Invited

Small-scale plastic deformation of high entropy alloys: Mayur Pole¹; Saideep Muskeri¹; Vahid Hasannaemi¹; *Sundeep Mukherjee*¹; ¹Univ of North Texas

3:00 PM Invited

Single-crystal mechanical properties of equiatomic CrMnFeCoNi high-entropy alloy and its derivative equiatomic quaternary and ternary medium-entropy alloys: *Haruyuki Inui*¹; Easo George²; ¹Kyoto University; ²Oak Ridge National Laboratory

3:20 PM

Enhancing strength and strain hardenability via deformation twinning in fcc-based high entropy alloys reinforced with intermetallic compounds: *Deep Choudhuri*¹; Bharat Gwalani¹; Mageshwari Komarasamy¹; Srivilliputhur Srinivasan¹; Rajiv Mishra¹; Rajarshi Banerjee¹; ¹Univ of North Texas

3:40 PM Break

4:00 PM Invited

Creep performance of single phase FCC high entropy alloys: *Kyle Rozman*¹; Martin Detrois¹; Paul Jablonski¹; Michael Gao¹; Jeffrey Hawk¹; ¹National Energy Technology Laboratory

4:20 PM Invited

Neutron Scattering Mapping to Investigate the Fatigue-crack Propagation in an Equiatomic CoCrFeMnNi High-Entropy Alloy: *Bo-Hong Lai*¹; Rui Feng²; Soo Yeol Lee³; Yao-Jen Chang⁴; Stefanus Harjo⁵; Yuan-Wei Chang¹; Yu-Lih Huang¹; Chu-Chun Kao¹; Hung-Sheng Chou¹; Liaw Peter²; An-Chou Yeh⁴; E-Wen Huang¹; ¹Department of Materials Science and Engineering, National Chiao Tung University; ²Department of Materials Science and Engineering, University of Tennessee; ³Department of Materials Science and Engineering, Chungnam National University; ⁴Department of Materials Science and Engineering, National Tsing Hua University; ⁵J-PARC Center, Japan Atomic Energy Agency,

4:40 PM

On the nature of plastic flow in CoCrFeMnNi alloy under high-velocity shear deformation: *Shwetabh Yadav*¹; Andrew Kustas²; Nicolas Argibay²; *Dinakar Sagapuram*¹; ¹Texas A&M Univ; ²Sandia National Laboratories

5:00 PM

High Strain Rate Deformation of Dual-Phase High Entropy Alloys: *Prasenjit Khanikar*¹; Samrat Tamuly¹; ¹Indian Institute of Technology Guwahati

High Entropy Alloys VII — Thermal and Other Properties II

Sponsored by: TMS: Alloy Phases Committee

Program Organizers: Xie Xie, FCA US LLC; Peter Liaw, University of Tennessee; Michael Gao, National Energy Technology Laboratory; E-Wen Huang, National Chiao Tung University; Gongyao Wang, Alcoa Technical Center; Srivatsan Tirumalai, The University of Akron

Wednesday PM
March 13, 2019

Room: 207B
Location: Henry B. Gonzalez
Convention Center

Session Chairs: Jaimie Tiley, AFOSR/RTA1; E-Wen Huang, National Chiao Tung University

2:00 PM Invited

Radiation effects in high entropy alloys: Similarities and differences with conventional alloys: *Steven Zinkle*¹; Tengfei Yang¹; Congyi Li¹; ¹University of Tennessee

2:20 PM

Phase stability and solid solution strengthening in fcc high-entropy alloys investigated by a diffusion couple approach: *Karsten Durst*¹; Enrico Bruder¹; Tom Keil¹; ¹Tu Darmstadt

2:40 PM

Diffusion in fcc AlCoCrFeNi High Entropy Alloys: *Abhishek Mehta*¹; Le Zhou¹; Yongho Sohn¹; ¹Univ of Central Florida

3:00 PM Invited

Transformation induced softening and plasticity in high entropy alloys: *Jia Li*¹; Qihong Fang¹; Bin Liu²; Yong Liu²; ¹State Key Laboratory of Advanced Design and Manufacturing for Vehicle Body, Hunan University; ²State Key Laboratory of Powder Metallurgy, Central South University

3:20 PM Invited

High-Entropy Metal Diborides and Fluorite/Pervoskite Oxides: *Jian Luo*¹; Joshua Gild¹; Tyler Harrington¹; Sicong Jiang¹; Kenneth Vecchio¹; Cormac Toher²; Pranab Sarker²; Stefano Curtarolo²; Jeffrey Braun³; Lavina Backman³; Patrick Hopkins³; Elizabeth Opila³; Samuel Daigle⁴; Donald Brenner⁴; Jon-Paul Maria⁵; ¹Univ of California San Diego; ²Duke University; ³University of Virginia; ⁴NCSU; ⁵PSU

3:40 PM Break

4:00 PM

Phase transformations of HfNbTaTiZr high entropy alloy at intermediate temperature: *Shuying Chen*¹; Peter K Liaw¹; Jien-Wei Yeh²; ¹Univ of Tennessee; ²National Tsing Hua University, Hsinchu, Taiwan

4:20 PM

Phase formation and magnetic properties of FeMnCoCrAl based high entropy alloy thin films: *Marshal Amalraj*¹; ¹Materials Chemistry, RWTH Aachen University.

4:40 PM

Investigation of Interdiffusion in High Entropy Alloys: *Mohammad Afikuzzaman*¹; Irina Belova¹; *Graeme Murch*¹; ¹Univ of Newcastle

5:00 PM

Radiation resistant high entropy alloys for fast reactor cladding applications: *Anna Kareer*¹; David Armstrong¹; Angus Wilkinson¹; ¹University of Oxford

Hume-Rothery Symposium – Bulk and Interfacial Thermodynamics of Complex Materials: Insights Derived from Integrating Modeling and Experiment — Fundamental Thermodynamics and Kinetics of Alloys

Sponsored by: TMS: Alloy Phases Committee

Program Organizers: Raymundo Arroyave, Texas A&M University; Michael Gao, National Energy Technology Laboratory; Jeffrey Hoyt, McMaster Univ; Saryu Fensin, Los Alamos National Laboratory

Wednesday PM
March 13, 2019

Room: 304B
Location: Henry B. Gonzalez
Convention Center

Session Chair: To Be Announced

2:00 PM Invited

Thermal expansion anomalies of silicon originate primarily from phonon anharmonicity with zero-point energy: *Brent Fultz*¹; Dennis Kim¹; Olle Hellman¹; ¹California Institute of Technology

2:30 PM Invited

Precursors to frustration in the lattice dynamics of ferroic materials: *Michael Manley*¹; ¹Oak Ridge National Laboratory

3:00 PM Invited

Thermodynamics of dynamically unstable crystals: *Anton Van Der Ven*¹; John Thomas¹; Maxwell Radin¹; Jonathon Bechtel¹; ¹Univ of California

3:30 PM Break

3:50 PM Invited

Chemical Short Range Order in Molten Ni Based Superalloys: *Christopher Woodward*¹; James Lill²; Michael Wodom³; ¹Air Force Research Lab; ²Engility Inc; ³Carnegie Mellon University

4:20 PM Invited

The chemical potentials of atoms and vacancies in mechanically stressed solids: *Yuri Mishin*¹; ¹George Mason Univ

4:50 PM Invited

Insights into the oxidation mechanisms of Ti and Ni alloys: *Talia Barth*¹; Paul Chao¹; Kathleen Chou¹; Peng-Wei Chu¹; *Emmanuelle Marquis*¹; ¹Univ of Michigan

Interfaces in Structural Materials: An MPMD Symposium in Honor of Stephen M. Foiles — Mechanical Behavior II: A Joint Session with Mechanical Behavior Related to Interfacial Physics III

Sponsored by: The Minerals, Metals and Materials Society, TMS; Computational Materials Science and Engineering Committee
Program Organizers: Fadi Abdeljawad, Clemson University; Eric Homer, Brigham Young University; Elizabeth Holm, Carnegie Mellon University; Mark Asta, Univ of California Berkeley

Wednesday PM
March 13, 2019

Room: 302C
Location: Henry B. Gonzalez
Convention Center

Session Chair: To Be Announced

2:00 PM Invited

Mesoscopic studies of dislocation interactions with biphasic interfaces: *Irene Beyerlein*¹; Shuozhi Xu¹; Abigail Hunter²; ¹University of California Santa Barbara; ²Los Alamos National Laboratory

2:30 PM

Atomistic simulations of dislocation-grain boundary interactions during multiaxial loading: *Maxime Dupraz*¹; *Helena Van Swygenhoven*¹; ¹Paul Scherrer Institut

2:50 PM

Atomistic simulations of interaction between basal <a> dislocations and three-dimensional twins in Magnesium: *Mingyu Gong*¹; Guisen Liu¹; Jian Wang¹; Laurent Capolungo²; Carlos Tomé²; ¹University of Nebraska-Lincoln; ²Los Alamos National laboratory

3:10 PM Invited

Effect of grain boundary structure on its Dynamic Response using Molecular Dynamics: *Saryu Fensin*¹; Timothy Frolov²; ¹Los Alamos National Laboratory; ²Lawrence Livermore National Laboratory

3:40 PM Break

4:00 PM Invited

Tailoring mechanical behavior with one- and two-dimensional complexes: *Timothy Rupert*¹; ¹University of California Irvine

4:30 PM

Deformation Mechanisms in Nanocrystalline Pt-Au: Competition of Grain Boundary Embrittlement and Compositional Crack Arrest: *Nathan Heckman*¹; Stephen Foiles¹; Christopher O'Brien¹; Michael Chandross¹; Christopher Barr¹; Nicolas Argibay¹; Khalid Hattar¹; Ping Lu¹; David Adams¹; Brad Boyce¹; ¹Sandia National Laboratories

4:50 PM

Effect of a Vertical Twin Boundary on the Mechanical Property of Bicrystalline Copper Micropillars: *DeAn Wei*¹; Haidong Fan²; Jing Tang²; Xu Zhang¹; ¹Southwest Jiaotong university; ²Sichuan University

5:10 PM

Atomic structure of gamma/alpha2 interface and its influence on plastic deformation of lamellar TiAl alloys: Aidong Tu¹; Chunyu Teng²; *Hao Wang*¹; Dongsheng Xu¹; Yun Fu²; Zhanyong Ren²; Rui Yang¹; ¹Institute of Metal Research, Chinese Academy of Sciences, 110016 Shenyang, China; ²AVIC China Aero-Polytechnology Establishment, 100028 Beijing, China

Magnesium Technology 2019 — Fundamentals, Mechanical Behavior, Twinning, Plasticity, Texture and Fatigue I

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

Program Organizers: Vineet Joshi, Pacific Northwest National Laboratory; Brian Jordon, University of Alabama; Dmytro Orlov, Lund University; Neale Neelameggham, IND LLC

Wednesday PM
March 13, 2019

Room: 005
Location: Henry B. Gonzalez
Convention Center

Session Chairs: Sean Agnew, University of Virginia; Petra Maier, Stralsund University Of Applied Sciences

2:00 PM Invited

Evolution of the Intermetallic Particle Distribution in Thixomolded Magnesium Alloys: Benjamin Anthony¹; Brady Dowdell¹; *Victoria Miller*¹; ¹North Carolina State University

2:30 PM Invited

Revealing the Role of Combined Loading on the Tension – Compression Asymmetry in a Textured AZ31 Magnesium Alloy: *Chaitanya Kale*¹; Kiran Solanki¹; ¹Arizona State University

3:00 PM

An investigation of detwinning behavior of in-plane compressed E-form Mg alloy during the in-situ tensile test: *Jaiveer Singh*¹; Min-Seong Kim¹; Seong-Eum Lee¹; Joo-Hee Kang²; Shi-Hoon Choi¹; ¹Sunchon National University, Suncheon, Republic of Korea; ²Korea Institute of Materials Science, Changwon, Republic of Korea

3:20 PM

Characterization of staggered twin formation in HCP magnesium: *M Arul Kumar*¹; Brandon Leu²; Paul Rottmann²; Luoning Ma³; Irene Beyerlein²; ¹Los Alamos National Laboratory; ²University of California Santa Barbara; ³Johns Hopkins University

3:40 PM Break

4:00 PM

Dislocation behavior and grain boundary segregation of Mg-Zn alloys: *Hyo-Sum Jang*¹; Byeong-Joo Lee¹; ¹Pohang University of Science and Technology (POSTECH)

4:20 PM

Effect of hot working on the high cycle fatigue behavior of WE43 rare earth magnesium alloy: *Saeede Ghorbanpour*¹; Brandon McWilliams²; Marko Knezevic¹; ¹Department of Mechanical Engineering, University of New Hampshire; ²Weapons and Materials Research Directorate, US Army Research Laboratory

4:40 PM

Effect of solute atoms on the twinning deformation in magnesium alloys: *Jing Tang*¹; Wentao Jiang¹; Xiaobao Tian¹; Haidong Fan¹; ¹Sichuan University

5:00 PM

First-principles investigation of the effects of solutes on the ideal shear resistance and electronic properties of magnesium: *Pulkit Garg*¹; Ilaksh Adlakh²; Kiran Solanki¹; ¹Arizona State University; ²Indian Institute of Technology, Madras

5:20 PM

Inverse Optimization to Design Processing Paths to Tailor Formability of Mg Alloys: *Wahaz Nasim*¹; Joshua Herrington¹; Amine Benzerga¹; Jyhwen Wang¹; Ibrahim Karaman¹; ¹Texas A&M University

Mechanical Behavior of Nuclear Reactor Components — Microstructure Effects II

Sponsored by: TMS: Nuclear Materials Committee
Program Organizers: Clarissa Yablinsky, Los Alamos National Laboratory; Assel Aitkaliyeva, University of Florida; Khalid Hattar, Sandia National Laboratories; Janelle Wharry, Purdue University; Laurent Capolungo, Los Alamos National Laboratory; Eda Aydogan, Los Alamos National Laboratory

Wednesday PM
March 13, 2019
Room: 215
Location: Henry B. Gonzalez
Convention Center

Session Chairs: Eda Aydogan, Los Alamos National Laboratory; Xian-Ming Bai, Virginia Polytechnic Institute

2:00 PM Invited

Mechanical Property Changes in Ni-based Alloys with Long Range Order Formation: *Julie Tucker*¹; Fei Teng¹; Nicholas Aerne¹; Li-Jen Yu²; Emmanuelle Marquis²; Hi Vo³; Peter Hosemann³; ¹Oregon State University; ²University of Michigan-Ann Arbor; ³University of California-Berkeley

2:30 PM

Deformation Behavior and Microstructural Evolution of Depleted Uranium - 10 wt% Molybdenum: *Cody Miller*¹; Rodney McCabe¹; Daniel Coughlin¹; ¹Los Alamos National Laboratory

2:50 PM Invited

Amorphous intergranular films for improved performance under irradiation: *Timothy Rupert*¹; Jennifer Schuler¹; Brad Boyce²; Khalid Hattar²; ¹University of California Irvine; ²Sandia National Laboratories

3:20 PM

Directional Dependence of Irradiated Damage in W: *Byeongchan Lee*¹; Youhwan Jo¹; ¹Kyung Hee University

3:40 PM Break

4:00 PM

Mechanical and Structural Transformation of Tungsten Implanted with He Ions: *Mehdi Balooch*¹; Frances Allen¹; David Frazer¹; Peter Hosemann¹; ¹UC Berkeley

4:20 PM

In-situ Observations of the Role of Stress-State on Strain to Failure of Non-hydrided and Hydrided Zircaloy-4: *Brian Cockeram*¹; Kwai Chan²; Bruce Kammenzind¹; ¹Nnl Bettis Laboratory; ²Southwest Research Institute

4:40 PM

A New RPV High Fluence Low Flux RPV Embrittlement Model for the International Surveillance Database: *Takuya Yamamoto*¹; Peter Wells¹; Nathan Almirall¹; G. Robert Odette¹; ¹University of California Santa Barbara

Nanoarchitected and Morphology-controlled Nanoporous Materials — Metamaterials-MOFs-nano Architected

Sponsored by: TMS Materials Processing and Manufacturing Division, TMS: Mechanical Behavior of Materials Committee
Program Organizers: Niaz Abdolrahim, University of Rochester; John Balk, Univ of Kentucky; Michael Demkowicz, Texas A&M Univ; Christoph Eberl, Fraunhofer IWM

Wednesday PM
March 13, 2019
Room: 214A
Location: Henry B. Gonzalez
Convention Center

Session Chair: To Be Announced

2:00 PM Invited

Tunable and multi-functional 3D printed mechanical metamaterials: *Kathryn Matlack*¹; Ignacio Arretche¹; Connor Pierce¹; Chaitanya Nimmagadda¹; ¹University of Illinois at Urbana-Champaign

2:30 PM Invited

Three-dimensional (3D) nano-architected meta-materials: *Julia Greer*¹; Andrey Vyatskikh¹; Carlos Portela¹; Xiaoxing Xia¹; Kai Narita¹; ¹California Institute of Technology

3:00 PM

Programmable mechanical metamaterials by structural hierarchy: Matthew Berwind¹; *Chris Eberl*¹; ¹Fraunhofer Society

3:20 PM Break

3:50 PM

Laser Ablation Synthesis in Solution (LASiS) as a facile strategy for the synthesis of Metal Organic Frameworks (MOFs) with tunable size and morphology: *Erick Ribeiro*¹; Seyyed Ali Davari¹; Sheng Hu¹; Dibyendu Mukherjee¹; Bamin Khomami¹; ¹Univ of Tennessee Knoxville

4:10 PM Invited

New Nanoarchitected Materials via Liquid Metal Dealloying: *Jonah Erlebacher*¹; Bernard Gaskey¹; Alyssa Chuang¹; Gina Greenidge¹; ¹Johns Hopkins Univ

4:40 PM

Towards Digitally Controlled Hierarchical Nanoporous Architectures: *Juergen Biener*¹; ¹Lawrence Livermore National Laboratory

5:00 PM

Processing of Novel Pseudomorphic Cu-Mo Hierarchies in Thin Film Nanoarchitectures: *Benjamin Derby*¹; Yuchi Cui¹; Jon Baldwin²; Raymundo Arroyave³; Michael Demkowicz³; Amit Misra¹; ¹University of Michigan; ²Los Alamos National Laboratory; ³Texas A&M University

Phase Transformations and Microstructural Evolution — Phase Transformation in Non-ferrous Alloys III

Sponsored by: TMS: Phase Transformations Committee
Program Organizers: Sophie Primig, Univ of New South Wales; Deep Choudhuri, University of North Texas; Klaus-Dieter Liss, Guangdong Technion – Israel Institute of Technology; Megumi Kawasaki, Oregon State University; Matthew Steiner, University of Cincinnati; Yufeng Zheng, Ohio State University; Ashley Paz y Puente, University of Cincinnati; Juan Escobedo-Diaz, University of New South Wales; Dhriti Bhattacharyya, ANSTO; Rajarshi Banerjee, University of North Texas

Wednesday PM
March 13, 2019
Room: 225D
Location: Henry B. Gonzalez
Convention Center

Session Chair: To Be Announced

2:00 PM

In-situ and time-resolved diffraction studies to track metals under phase transformations and microstructural evolution: *Klaus-Dieter Liss*¹; ¹Guangdong Technion - Israel Institute of Technology (GTIIT)

2:20 PM

Microstructure Evolution and Mechanical Properties of Heavily Cold-rolled and Subsequently Heat-treated Cu-3wt.%Ti with Nano-lamellar Structure: *Kenji Koike*¹; Kester Clarke¹; Amy Clarke¹; ¹Colorado School of Mines

2:40 PM

Microstructure evolution in large-grained, fully-solutionized Mg-9Al (wt%) alloy during uniaxial compression at elevated temperatures: *Suhas Eswarappa Prameela*¹; Steven Lavenstein¹; Roshan Plamthottam¹; Jaafar El-Awady¹; Laszlo Kecskes²; Tomoko Sano³; Timothy Weihs¹; ¹Johns Hopkins University; ²MatSys ; ³ARL

3:00 PM

Phase microstructure evolution observed by local magnetic force microscopy in (Mn,Fe)₂(P,Si): *Timothy Brown*¹; Patrick Shamberger¹; ¹Texas A&M Univ

3:20 PM

Shape Memory Behavior of Ni_{49.5}Ti_{50.5} Processing-Induced Strain Glass Alloys: Robert Wheeler¹; Jesse Smith¹; Nathan Ley¹; *Anit Gir²*; Marcus Young¹; ¹University of North Texas; ²US Army Research Laboratory

3:40 PM Break

4:00 PM

Age-hardening of AlMg alloys with additions of Zn and Cu: *Lukas Stemper¹*; Bernhard Mitas¹; Thomas Kremmer¹; Steffen Otterbach²; Peter Uggowitzer³; Stefan Pogatscher¹; ¹Montanuniversität Leoben; ²Audi AG; ³ETH Zürich

4:20 PM

Effect of grain boundary misorientation on η phase precipitation in Ni-base superalloy 718Plus: *Bader Alabbad¹*; Sammy Tin¹; ¹Illinois Institute of Technology

4:40 PM

Shape Memory Properties of NiTi-based Nanoparticles Fabricated by Phase-separation and Dealloying: *Ji Young Kim¹*; So Yeon Kim¹; Sang Jun Kim¹; Wook ha Ryu²; Eun Soo Park¹; ¹Seoul National University; ²Tohoku University

5:00 PM

Phase transformations of Ti-Nb-Zr-O biomedical alloy prepared by spark plasma sintering: *Jiri Kozlik¹*; Josef Stráský¹; Tomas Chraska²; Miloš Janeček¹; ¹Charles University; ²Czech Academy of Science

Powder Processing of Bulk Nanostructured Materials — Nanocomposites

Sponsored by: TMS: Powder Materials Committee

Program Organizers: Zachary Cordero, Rice University; Deliang Zhang, Shanghai Jiao Tong Univ; Brady Butler, US Army Research Laboratory; Ma Qian, RMIT University (Royal Melbourne Institute of Technology)

Wednesday PM
March 13, 2019

Room: 211
Location: Henry B. Gonzalez
Convention Center

Session Chair: Dor Amram, MIT

2:00 PM

Synthesis of bulk metal matrix nanocomposites reinforced by nanodiamonds: *Andrea Bachmaier¹*; Andreas Katzensteiner¹; Reinhard Pippan¹; ¹Erich Schmid Institute, Austrian Academy of Sciences

2:20 PM

Intragranular dispersion of 1D nanostructure comprehensively improves properties in metal alloys: *Kangpyo So¹*; Ju Li¹; ¹Mit

2:40 PM

Designing C/CNT-coated Ti-6Al-4V powders for high-performance nano-sized TiC and CNT synergistically reinforced Ti-6Al-4V composites: *Yafeng Yang¹*; Shaofu LI¹; ¹Institute of Processing Engineering Chinese Academy of Science

3:00 PM

Carbon Nanotube Coated Conductors: *Terry Holesinger¹*; Pouria Khanbolouki²; Mehran Tehrani²; ¹Los Alamos National Laboratory; ²University of New Mexico

3:20 PM

Multi-scale mechanical properties of a Titanium-Boron Nitride nanotube (BNNT) composite synthesized by Spark plasma sintering: *Jennifer Bustillos¹*; Pranjal Nautiyal¹; Cheng Zhang¹; Benjamin Boesl¹; Arvind Agarwal¹; ¹Florida International Univ

3:40 PM Break

4:00 PM

Nano-carbon reinforced metal matrix composites fabricated by powder metallurgy process: *Katsuyoshi Kondoh¹*; Biao Chen²; Junko Umeda¹; ¹Osaka Univ; ²Northwestern Polytechnical University

4:20 PM

A cationic-specie-hybridized micro-scale framework of copper phthalocyanine: *Jia-Lin Hsu¹*; Kai-Wei Liu¹; ¹Texas A&M Transportation Institute

4:40 PM

Reactive Spark Plasma Sintering of BCN Phase from 2D Graphene - Boron Nitride Nanosheets: Microstructural Evolution and Tribological Properties: *Archana Loganathan¹*; Amit Sharma²; Pranjal Nautiyal¹; Satyam Suwas²; Benjamin Boesl¹; Arvind Agarwal¹; ¹Florida International Univ; ²Indian Institute of Science

5:00 PM

Microstructure of β -FeSi₂ - Si_{1-y}Ge_y Thermoelectric Nanocomposites by React/Transform Spark Plasma Sintering: *Naiming Liu¹*; Wade Jensen¹; Mona Zebarjadi¹; *Jerrold Floro¹*; ¹University of Virginia

Recent Advances in Functional Materials and 2D/3D Processing for Sensors and Electronic Applications — Printed Electronics I: Functional Materials and Devices

Sponsored by: TMS: Thin Films and Interfaces Committee

Program Organizers: Pooran Joshi, Oak Ridge National Laboratory; Ravindra Nuggehalli, New Jersey Institute of Tech; Jud Ready, Georgia Institute of Technology; Anming Hu, Univ of Tennessee; Tolga Aytug, Oak Ridge National Laboratory; Konstantinos Sierros, West Virginia University; Wenchao Zhou, University Of Arkansas

Wednesday PM
March 13, 2019

Room: 217D
Location: Henry B. Gonzalez
Convention Center

Session Chairs: Konstantinos Sierros, West Virginia University; Megan Cordill, Erich Schmid Institute for Materials Science

2:00 PM Invited

Develop Solution-based, Direct-printing Processes of Inorganic Semiconductors for Electronics and Energy Applications: *Chih-hung Chang¹*; Rajiv Malhotra²; Kostas Sierros³; ¹Oregon State University; ²Rutgers University; ³West Virginia University

2:30 PM Invited

Highly conductive wiring and reliable bonding for stretchable electronics: *Cai-Fu Li¹*; Hao Zhang¹; Wanli Li¹; Tohru Sugahara¹; Zhi-Quan Liu²; Katsuaki Suganuma¹; ¹Osaka University; ²Institute of Metal Research, Chinses Academy of Sciences

3:00 PM Invited

Ink Design for Continuous Direct Writing: Controlling Complex Metal-Oxide Mesostructures: *Maria Torres Arango¹*; Konstantinos Sierros²; ¹Brookhaven National Laboratory; ²West Virginia University

3:30 PM Break

3:50 PM Invited

3D Printing of Pharmaceuticals and Transdermal Drug Delivery – An Overview: *David Bird¹*; Emel Eker²; Nuggehalli Ravindra³; ¹US Army ARDEC; ²Secaucus High School; ³New Jersey Institute of Technology

4:20 PM

Formulation of Curable Resins Utilized in Stereolithography: *David Bird¹*; Elbert Caravaca¹; Joseph Laquidara¹; Keith Luhmann¹; Nuggehalli Ravindra²; ¹US Army ARDEC; ²New Jersey Institute of Technology

4:40 PM Invited

Low-temperature Projection Selective Sintering of Phase Change Materials for Electronics Packaging: *Yayue Pan*¹; Malek Nofal¹; ¹University of Illinois At Chicago

5:10 PM

Surface Force-Driven Direct Ink Writing of Titanium Dioxide Thin Films for Photovoltaics: *Guy Cordonier*¹; Joseph Bright¹; Nianqiang Wu¹; Konstantinos Sierros¹; ¹West Virginia University

5:30 PM

A 'press and go' fabrication technique for a flexible, biofuel cell patch for power generation and glucose sensing: *Biao Leng*¹; Nugehalli Ravindra¹; Zafar Iqbal¹; ¹New Jersey Institute of Technology

Recent Developments in Biological, Structural and Functional Thin Films and Coatings — Functional Films and Coatings I

Sponsored by: TMS: Thin Films and Interfaces Committee
Program Organizers: Adele Carrado, IPCMS - CNRS; Nancy Michael, Univ of Texas Arlington; Gerald Ferblantier, Icube Laboratory; Heinz Palkowski, Clausthal University of Technology; Ramana Chintalapalle, University of Texas at El Paso; Ravindra Nugehalli, New Jersey Institute of Tech; Vikas Tomar, Purdue University

Wednesday PM
March 13, 2019

Room: 217A
Location: Henry B. Gonzalez
Convention Center

Session Chairs: Nugehalli M Ravindra, New Jersey Institute of Technology; Heinz Palkowski, Clausthal University of Technology

2:00 PM Keynote

Recent developments in Hafnia-based thin film memristors: *Ashfaq Adnan*¹; Adrian Martinez¹; ¹University of Texas at Arlington

2:35 PM Invited

3D Printed Metal Films: Md. Taibur Rahman¹; *Rahul Panat*¹; Chintalapalle V. Ramana²; ¹Carnegie Mellon University; ²University of Texas at El Paso

3:05 PM

Characterization of Self-Lubricating Coatings Deposited by Plasma Enhanced Magnetron Sputtering: *Forest Thompson*¹; Frank Kustas²; Kent Coulter³; Grant Crawford¹; ¹South Dakota School of Mines and Technology; ²NanoCoatings, Inc.; ³Southwest Research Institute

3:25 PM Break

3:45 PM Keynote

Control of friction and adhesion at nanoscale: how surface heterogeneities can affect interfacial forces?: *Karine Mougini*¹; ¹Institut De Science Des Matériaux De Mulhouse

4:20 PM Invited

Friction conditions on deep drawing tool radii when using volatile media as lubrication substitute: *Gerd Reichardt*¹; Mathias Liewald¹; ¹University of Stuttgart

4:45 PM Invited

Investigation of Friction and Adhesion Behavior of Textured Workpieces and Coated Tools under Dry Tribological Contact: T. Bergs¹; P. Mattfeld¹; D. Trauth¹; R. Mannens¹; K. Bobzin¹; *Rafael Hild*¹; ¹IOT RWTH Aachen

5:10 PM

Effects of Emissivity on Combustion Behavior of Energetic Materials: *Elbert Caravaca*¹; David Bird¹; Henry Grau¹; Viral Panchal¹; Nugehalli Ravindra²; ¹US Army ARDEC; ²New Jersey Institute of Technology

REWAS 2019: Secondary and Byproduct Sources of Materials, Minerals, and Metals — Circularity and Materials Availability

Sponsored by: TMS Extraction and Processing Division, TMS Light Metals Division, TMS: Recycling and Environmental Technologies Committee

Program Organizers: Gabrielle Gaustad, Rit; Camille Fleuriault, Gopher Resource; Neale Neelameggham, IND LLC; Elsa Olivetti, Massachusetts Institute of Tech

Wednesday PM
March 13, 2019

Room: 007C
Location: Henry B. Gonzalez
Convention Center

Session Chair: To Be Announced

2:00 PM Invited

Challenges of the Circular Economy: *Markus Reuter*¹; ¹Helmholtz-Institute Freiberg for Resource Technology

2:25 PM

Circular Cities, E-mobility and the Metals Industry – A World in Transition: *Christina Meskers*¹; Mark Caffarey¹; Maurits Van Camp¹; ¹Umicore

2:45 PM

The Role of Scrap Recycling in the USA, for the Circular Economy. A Case Study of Copper Scrap Recycling: *Phillip Mackey*¹; Nubia Cardona Valencia²; ¹Mackey Technologies; ²Deltamet Consultants

3:05 PM

Comparing Secondary and Byproduct Sources of Rare Earth Metals: *Gabrielle Gaustad*¹; Alexandra Leader¹; Eric Williams¹; Saptarshi Das¹; ¹Rochester Institute of Technology

3:25 PM

Advancing the State of Prospective Materials Criticality Screening: Integrating Structural Commodity Market and Incentive Price Formation Insights: *Tanguy Marion*¹; Rich Roth¹; Michele Bustamante¹; ¹Massachusetts Institute of Technology

3:45 PM Break

4:05 PM

Mining Value from Waste Initiative: Towards a Low Carbon and Circular Economy: *Janice Zinck*¹; Bryan Tisch¹; ¹Natural Resources Canada

4:25 PM

Exploring Key Drivers of Future Copper Supply and Demand Using a Fully Dynamic Market Simulation: Jingshu Zhang¹; Omar Sweit²; Richard Roth¹; *Randolph Kirchain*¹; ¹Massachusetts Institute of Technology; ²University of British Columbia

4:45 PM

Towards a Solid Waste Economy in Colombia: An Analysis With Respect to Other Leading Economies and Latin America: Julian Rúa-Restrepo¹; Gloria Echeverri²; *Henry Colorado*¹; ¹Universidad De Antioquia; ²Universidad Autónoma Latinoamericana Unaula

5:05 PM

Cobalt Criticality and Availability in the Wake of Increased Electric Vehicle Demand: A Short-Term Scenario Analysis: *Danielle Beatty*¹; Xinkai Fu; Michele Bustamante²; Gabrielle Gaustad³; Callie Babbitt³; Randolph Kirchain²; Richard Roth; Elsa Olivetti²; ¹University of Utah; ²Massachusetts Institute of Technology; ³Rochester Institute of Technology

Scandium Extraction and Use in Aluminum Alloys — Aluminium Scandium Alloys

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

Program Organizers: Nigel Ricketts, Altrius Engineering Services; John Grandfield, Grandfield Technology Pty Ltd

Wednesday PM
March 13, 2019

Room: 006D
Location: Henry B. Gonzalez
Convention Center

Session Chair: To Be Announced

2:00 PM Introductory Comments

2:05 PM

Grain refinement of Al₄CuTi based alloy with Zr, Sc, Er and TiB₂: Jiehua Li¹; Peter Schumacher¹; ¹Montanuniversität Leoben

2:30 PM

Optimised composition and process design to develop Sc-enhanced wrought Al-Si alloys: Jayshri Dumbre¹; Timothy Langan²; Thomas Dorin³; Nick Birbilis¹; ¹Monash University; ²Clean TeQ Ltd.; ³Deakin University

2:55 PM

Developments in Aluminum-Scandium-Ceramic and Aluminum-Scandium-Cerium Alloys: David Weiss¹; ¹ECK Industries Inc

3:20 PM Break

3:35 PM

Developing an optimised homogenisation process for Sc and Zr containing Al-Mg-Si alloys: Steven Babaniaris¹; Mahendra Ramajayam¹; Lu Jiang¹; Timothy Langan²; Thomas Dorin¹; ¹Deakin University - Institute for Frontier Materials; ²Clean TeQ Ltd.

4:00 PM

Effect of Scandium on Wire Arc Additive Manufacturing of 5 Series Aluminium Alloys: Andrew Sales¹; Nigel Ricketts²; ¹AML Technologies; ²Altrius Engineering Services

4:25 PM

Heat Treatments for Precipitation of Scandium-Containing Dispersoids in Si-Containing Aluminum Alloys: Timothy Langan¹; Avishan Shomali²; Pinaki Mukherjee²; Thomas Wood²; Paul Sanders³; ¹Cleanteq; ²Michigan Technological University; ³Michigan Technological University

4:50 PM

Effect of Mg Content on Al₃Sc-dispersoid Formation in Cast Billets of Al-Mg-Sc Alloys: Paul Sanders¹; Tom Wood¹; Carson Williams¹; Tim Langan²; ¹Michigan Technological Univ; ²Clean TeQ Holdings Limited

Science Policy within the Materials Research Community — Getting Involved in Science Policy

Sponsored by: TMS: Education Committee

Program Organizers: Kathleen Chou, University of Michigan; Ashley Hilmas, University of Michigan; Peter Meisenheimer, University of Michigan; Max Powers, University of Michigan; Brian Tobelmann, University of Michigan

Wednesday PM
March 13, 2019

Room: 008B
Location: Henry B. Gonzalez
Convention Center

Session Chair: To Be Announced

2:00 PM Invited

Advocating the Vital Importance of Support for Materials Research and Engineering Education in our Representative Democracy: Iver Anderson¹; ¹Iowa State University, Ames Laboratory

2:30 PM Invited

How Science Policy Really Gets Done in Congress: Scott Litzelman¹

3:00 PM Invited

From the Lab to The Hill: How to Get a Job in Policy and What You'll Do When You Get There: Edward Herderick¹; ¹The Ohio State University

3:30 PM Break

3:50 PM Panel Discussion: The panelist include Iver E. Anderson, Iowa State University/Ames Laboratory; Edward D. Herderick, Ohio State University; and John Allison, University of Michigan.

4:55 PM Concluding Comments

Solar Cell Silicon — Properties, Impurities, and Refining

Sponsored by: TMS: Materials Characterization Committee

Program Organizers: Shadia Ikhmayies, Al Isra University; Neale Neelameggham, IND LLC; York Smith, University of Utah; Leili Tafaghodi, University of British Columbia

Wednesday PM
March 13, 2019

Room: 008A
Location: Henry B. Gonzalez
Convention Center

Session Chair: To Be Announced

2:00 PM Introductory Comments

2:05 PM

The Influence of Boron Dopant on the Structural and Mechanical Properties of Silicon: First Principles Study: Shadia Ikhmayies¹; Yasemin Çiftci²; ¹Al Isra University; ²Gazi University

2:25 PM

The Influence of Phosphorus Dopant on the Structural and Mechanical Properties of Silicon: Shadia Ikhmayies¹; Yasemin Çiftci²; ¹Al Isra University; ²Gazi University

2:45 PM

Simple and high-effective purification of metallurgical grade silicon through metal assisted chemical leaching: Fengshuo Xi¹; Shaoyuan Li¹; Wenhui Ma¹; Kuixian Wei¹; Jijun Wu¹; Keqiang Xie¹; Yun Lei¹; Zhengjie Chen¹; Jie Yu¹; Xiaohan Wan¹; Bo Qin¹; ¹Kunming University of Science and Technology

3:05 PM

Boron Removal from Molten Silicon by Ammonia Gas Blowing: Xuanyi He¹; Zhiyuan Chen¹; Kazuki Morita¹; ¹University of Tokyo

3:25 PM

Slag refining of ferrosilicon alloys using SiO₂-Al₂O₃-CaO ternary system: Ozair Rajani¹; Leili Tafaghodi¹; Ali Hosseinpour¹; ¹UBC Materials Engineering

Solidification Processing of Light Metals and Alloys: An MPMD Symposium in Honor of David StJohn — Titanium Alloys and Research Partnerships

Sponsored by: TMS: Solidification Committee

Program Organizers: Mark Easton, RMIT University; Ma Qian, RMIT University (Royal Melbourne Institute of Technology); John Grandfield, Grandfield Technology Pty Ltd; Norbert Hort, Helmholtz-Zentrum Geesthacht; Mark Jolly, Cranfield University

Wednesday PM
March 13, 2019

Room: 006C
Location: Henry B. Gonzalez
Convention Center

Session Chairs: Matthew Dargusch, University of Queensland;
Helmut Kaufmann, AMAG

2:00 PM Invited

A History of the Global Light Metals Alliance: *Jennifer Jackman*¹; Kumar Sadayappan¹; Mark Easton²; ¹CanmetMATERIALS; ²RMIT University

2:20 PM Invited

Capability Through Collaboration: The Defence Materials Technology Centre: *Matthew Dargusch*¹; ¹Defence Materials Technology Centre, The University of Queensland

2:40 PM Invited

The CAST Cooperative Research Centre: Lessons for Research Collaboration: *John Grandfield*¹; Mark Easton²; ¹Grandfield Technology Pty Ltd; ²RMIT University

3:00 PM

Developing Sustainable Metallic Materials through Industry and Research Collaboration: *Zhongyun Fan*¹; ¹Brunel University

3:20 PM Break

3:40 PM Keynote

Identifying and understanding the influence of columnar beta-phase boundaries on the tensile and fatigue properties of additively manufactured Ti-6Al-4V alloy: *Ma Qian*¹; Huiping Tang²; Jian Wang²; ¹RMIT University (Royal Melbourne Institute of Technology); ²State Key Laboratory of Porous Metal Materials, Northwest Institute for Non-ferrous Metal Research

4:00 PM

Composition Optimization and Solidification Behavior of Cast High Temperature Titanium Alloy: *Hongchao Kou*¹; Tingting Huang¹; Fengming Qiang¹; Zhigang Sun¹; ¹NWPU

4:20 PM

R & D of New Titanium Alloys In China: *Yongqing Zhao*¹; ¹Northwest Institute for Nonferrous Metal Research

4:40 PM Invited

Selective laser melting: case studies in aluminium and titanium alloys: *Peng Cao*¹; Ruidi Li²; Tiejun Yuan²; ¹The University Of Auckland; ²Central South University

5:00 PM

High Strength Ti-6Al-4V Composites by in situ Generated Stable Nanoparticles: *Soumya Vinod*¹; Baburaj Eranezhuth¹; Laverne Smith¹; Jun Guan²; Viktor Hadjiev²; Kenneth White²; James Meen²; ¹Clarkson Aerospace Corp.; ²University of Houston

5:20 PM Concluding Comments

Thermo-mechanical Response of Materials Investigated through Novel in-situ Experiments and Modeling — Session VI

Sponsored by: TMS Functional Materials Division, TMS Structural Materials Division, TMS: Advanced Characterization, Testing, and Simulation Committee, TMS: Thin Films and Interfaces Committee
Program Organizers: Saurabh Puri, Microstructure Engineering; Robert Wheeler, Microtesting Solutions LLC; Dongchan Jang, Kaist; Amit Pandey, LG Fuel Cell Systems; Josh Kacher, Georgia Institute of Technology; Dhriti Bhattacharyya, Australian Nuclear Science and Technology Organization

Wednesday PM
March 13, 2019

Room: 301A
Location: Henry B. Gonzalez
Convention Center

Session Chairs: Dongchan Jang, KAIST; Robert Wheeler,
Microtesting Solutions LLC

2:00 PM Keynote

Use of Raman Spectroscopy to Study Plastic Deformation in Silicate Glasses: *Shefford Baker*¹; Nicole Wiles¹; Zachary Rouse¹; Sanjit Bhowmick²; Praveena Manimunda²; Thomas Wyrobek²; S.A. Syed Asif²; ¹Cornell Univ; ²Bruker Nano Surfaces

2:40 PM

Combining Raman spectroscopy and nanoindentation to probe temperature and pressure induced structural changes: *Praveena Manimunda*¹; Eric Hintsala¹; Douglas Stauffer¹; Sanjit Bhowmick¹; Syed Asif¹; ¹Bruker Nano Surfaces

3:00 PM

Mechanical properties of Mg-LPSO alloys during hot deformation: *Daria Drozdenko*¹; Kristián Máthys²; Michiaki Yamasaki¹; Yoshihito Kawamura¹; ¹Kumamoto University; ²Charles University

3:20 PM

Monitoring Fabrication and Operation of Ceramic Materials by the Acoustic Emission Technique: *Frantisek Chmelik*¹; Michal Knapek¹; Patrik Dobron¹; Stefan Csáki¹; Peter Minárik¹; ¹Charles University

3:40 PM

Curling in Bi-component Applications: *Akanksha Garg*¹; Yinglong Chen¹; Pavan Valavala¹; Fabricio Arteaga Larios¹; Jill Martin¹; ¹The Dow Chemical Company

4:00 PM Break

4:20 PM

Thermo-Mechanical Damage Evolution of Energetic Materials in Elevated Temperature Environments: *Judith Brown*¹; William Erikson¹; Marcia Cooper¹; Shuyue Guo¹; Scott Roberts¹; Dan Bolinteanu¹; ¹Sandia National Laboratories

4:40 PM

In-Situ Studies of a Micron-Scale Impact-Induced Thermo-Mechanical Failure: *Mostafa Hassani-Gangaraj*¹; David Veysset¹; Keith Nelson¹; Christopher Schuh¹; ¹Massachusetts Institute of Technology

5:00 PM

In-situ Investigation of Thermo-mechanical Properties of a Free-standing Boron Nitride Nanotube Buckypaper: *Pranjal Nautiyal*¹; Cheng Zhang¹; Benjamin Boesl¹; Arvind Agarwal¹; ¹Florida International University

Ultrasonic Processing of Liquid and Solidifying Alloys — Mechanisms and Applications of Ultrasonic Processing

Sponsored by: TMS Light Metals Division, TMS Materials Processing and Manufacturing Division, TMS: Process Technology and Modeling Committee

Program Organizers: Dmitry Eskin, Brunel University; Laurentiu Nastac, University of Alabama; Koulis Pericleous, University of Greenwich; Iakovos Tzanakis, Oxford Brookes University

Wednesday PM
March 13, 2019

Room: 006B
Location: Henry B. Gonzalez
Convention Center

Session Chairs: Laurentiu Nastac, University of Alabama; Iakovos Tzanakis, Oxford Brookes University

2:00 PM Introductory Comments

2:05 PM Invited

Effect of Ultrasonication on the Solidification Microstructure in Al and Mg-Alloys: *Hiren Kotadia*¹; X Zhang²; J Depner²; M Qian³; A Das²; ¹WMG, University of Warwick; ²Swansea University; ³MIT University

2:30 PM Invited

Development and Application of Large-sized Sonotrode Systems for Ultrasonic Treatment of Molten Aluminum Alloys: *Sergey Komarov*¹; Takuya Yamamoto¹; ¹Tohoku University

2:55 PM

Altering the Microstructure Morphology by Ultrasound Melt Processing during 6XXX Aluminium DC-Casting: *Georges Salloum-Abou-Jaoude*¹; Dmitry Eskin²; G.S.B. Lebon²; Carla Barbatti¹; Philippe Jarry¹; Martin Jarrett¹; ¹Constellium; ²Brunel University London

3:15 PM

Effect of Acoustic Streaming on Degassing Level of A356 Al Alloy by Ultrasonic Melt Treatment: *Jeong-Il Youn*¹; Young Ki Lee¹; Young Jig Kim¹; Ja Uk Koo²; ¹Sungkyunkwan University; ²DR AXION

3:35 PM Break

4:05 PM Invited

Cellular Automation Finite Element Modeling of the Evolution of the As-cast Microstructure of an Ultrasonically Treated Al-2Cu Alloy: *Gui Wang*¹; Paul Croaker²; Matthew Dargusch¹; Damian McGuckin³; David StJohn¹; ¹The University of Queensland; ²University of New South Wales; ³Pacific Engineering Systems International

4:30 PM

In Situ Detection of Non-Metallic Inclusions in Aluminum Melt (1xxx) - Comparison Between a Newly Developed Ultrasonic Technique and LiMCA and PoDFA Method: *Friederike Feikus*¹; Florian Funken¹; Thomas Waschki²; Andreas Buehrig-Polaczek¹; ¹Foundry Institute RWTH Aachen University; ²Fraunhofer Institute for Nondestructive Testing (IZFP)

4:50 PM

Crystallization behavior of iron-containing intermetallic compounds in Al-Si alloy under ultrasonic treatment: *Yubo Zhang*¹; Tongmin Wang¹; Tingju Li¹; ¹Dalian University of Technology

5:10 PM

Microstructure and Mechanical Properties of Dispersion-Strengthened Aluminum-Magnesium Alloys Obtained Using Ultrasonic Treatment of Melt: *Alexander Vorozhtsov*¹; Anton Khrustalev¹; Ilya Zhukov¹; Alexander Kozulin¹; Evgeny Alifirenko²; ¹Tomsk State University; ²The Federal State Unitary Enterprise “Central Research Institute of Structural Materials “Prometei” Named by I.V. Gorynin of National Research Center “Kurchatov Institute”

10th International Symposium on High Temperature Metallurgical Processing — Preparation of Alloys and Materials I

Sponsored by: TMS: Pyrometallurgy Committee

Program Organizers: Tao Jiang, Central South University; Jiann-Yang Hwang, Michigan Technological Univ; Dean Gregurek, RHI Magnesita; Zhiwei Peng, Central South University; Jerome Downey, Montana Technological University; Baojun Zhao, University of Queensland; Onuralp Yucel, Istanbul Technical University; Ender Keskinilic, Atilim University; Rafael Padilla, Univ of Concepcion; Elsa Olivetti, Massachusetts Institute of Tech; Camille Fleuriault, Gopher Resource

Thursday AM
March 14, 2019

Room: 208
Location: Henry B. Gonzalez
Convention Center

Session Chairs: Jerry Downey, Montana Tech of The University of Montana; Chenguang Bai, Chongqing Univ

8:30 AM

Effects of Electrolytic Parameters on the Preparation of Al-Sc Master Alloy in Na₃AlF₆-K₃AlF₆-AlF₃ Melt: *Kai Yang*¹; Zhongliang Tian¹; Xun Hu¹; Yanqing Lai¹; Jie Li¹; ¹Central South University

8:50 AM

Investigation of the Effect of Tri- Nano Additives on Wear Rate and Hardness of AISI 5130 Steel during Machining: *Adeniran Afolalu*¹; ¹Covenant University

9:10 AM

Numerical Simulation Study on the Position Layout of the Permeable Brick at the Bottom of 300t Reblown Converter: *Yun Huang*¹; ¹Chong Qing University

9:30 AM

Optimization of Continuous Casting Process of 23MnNiCrMo54 Steel: Yang Wang¹; Ping Shen¹; Juan Cheng¹; Qiankun Yang¹; Dong Zhang¹; Jianxun Fu¹; ¹Shanghai University

9:50 AM Break

10:10 AM

Optimization of Zn-Al-Fe Alloy Vacuum Distillation Experiments by Response Surface Methodology: *Zhenghao Pu*¹; Yifu Li¹; Bin Yang¹; Huan Zhang¹; ¹Kunming university of science and technology

10:30 AM

Review on Preparation of Medium- and Low-carbon Ferrochrome Alloys: *Ting Hu*¹; Hua Liu¹; Bingguo Liu¹; Linqing Dai¹; Libo Zhang¹; Shenghui Guo¹; ¹Kunming University of Science and Technology

10:50 AM

Study on Separation of Sn-Sb alloy by Vacuum Distillation: *YanJun You*¹; Zhenghao Pu¹; Yifu Li¹; Bin Yang¹; Junjie Xu¹; ¹Kunming University of Science and Technology

11:10 AM

TCOX: Predicting Complex Metallurgical Processes for Steel and Slag Interactions: Lina Kjellqvist¹; Paul Mason²; ¹Thermo-Calc Software AB; ²Thermo-Calc Software Inc

11:30 AM

Statistical Optimization of Tungsten Carbide Synthesis Parameters: *Grant Wallace*¹; Jerome Downey¹; Jannette Chorney¹; Trenin Bayless¹; Katie Schumacher¹; ¹Montana Tech

10th International Symposium on High Temperature Metallurgical Processing — Treatment and Recycling of Wastes

Sponsored by: TMS: Pyrometallurgy Committee

Program Organizers: Tao Jiang, Central South University; Jiann-Yang Hwang, Michigan Technological Univ; Dean Gregurek, RHI Magnesita; Zhiwei Peng, Central South University; Jerome Downey, Montana Technological University; Baojun Zhao, University of Queensland; Onuralp Yücel, Istanbul Technical University; Ender Keskinilic, Atilim University; Rafael Padilla, Univ of Concepcion; Elsa Olivetti, Massachusetts Institute of Tech; Camille Fleuriaux, Gopher Resource

Thursday AM
March 14, 2019

Room: 209
Location: Henry B. Gonzalez
Convention Center

Session Chairs: Zhiwei Peng, Central South university; Camille Fleuriaux, Gopher Resource

8:30 AM Introductory Comments

8:35 AM

Effect of Chemical Composition on the Crystallization Behavior of Rare Earth Phase in Slag: *Tengfei Ma*¹; Fu Feng¹; Xuefeng She¹; Jingsong Wang¹; Qingguo Xue¹; ¹University of Science & Tech Beijing

8:55 AM

Effects of Steel Scrap Oxidation on the Scrap Preheating Process in an Electric Arc Furnace: Guangwu Tang¹; Yuchao Chen¹; Armin Silaen¹; Yury Kroto²; *Chenn Zhou*¹; ¹Purdue Univ Northwest; ²Steel Dynamics Inc.

9:15 AM

Enriching and Separating Iron Impurity from Galvanizing Dross by Super-gravity Technology: *Anjun Shi*¹; Zhe Wang¹; Lei Guo¹; Zhancheng Guo¹; ¹University of Science and Technology Beijing

9:35 AM

Industrial Practice and Process Improvement of RHF Process in China: *Chaozhen Cao*¹; Fangxin Yan¹; Xin Li¹; Fuming Zhang¹; ¹Beijing Shougang International Engineering Technology Co., Ltd.

9:55 AM

Study on Modification of Inclusions in 16MnCrS5 Gear Steel by Mg Content: *Qtankun Yang*¹; Zhiqi Zeng¹; Juan Cheng¹; Dong Zhang¹; Ping Shen¹; Yang Wang¹; Jianxun Fu¹; ¹Shanghai University

10:15 AM Break

10:35 AM

Parameters of the Metallic Calcium Reduction from Magnesium Production Residues: Kerem Tasyurek¹; *Onuralp Yücel*¹; Mehmet Bugdayci²; ¹Istanbul Technical University; ²Yalova University

10:55 AM

Production of Premium Grade Iron Nuggets from the Pudo Iron Ores using End-of-life Rubber Tyre as Reductant: *James Dankwah*¹; James Dankwah¹; Jessica Dankwah¹; Emmanuel Abotar¹; Pramod Koshy¹; ¹Univ of Mines and Technology

11:15 AM

Smelting Studies for Recovery of Iron from Red Mud: *Ender Keskinilic*¹; Saeid Pournaderi²; Ahmet Geveci³; Yavuz A. Topkaya³; ¹Atilim University; ²Agri Ibrahim Cecen University; ³Middle East Technical University

11:35 AM

Optimization on Drying of Acid Leaching Slag by Microwave Heating using Response Surface Methodology: *Xuemei Zheng*¹; Aiyuan Ma¹; Hairong Gao¹; Xiaoling Li¹; Xianzhu He¹; Min Sun¹; Fengjiao Gu¹; ¹Liupanshui Normol University

11:55 AM Concluding Comments

5th Symposium on Advanced Materials for Energy Conversion and Storage — Energy Conversion with Emphasis on SOFCs III

Sponsored by: TMS: High Temperature Alloys Committee

Program Organizers: Amit Pandey, LG Fuel Cell Systems; Partha Mukherjee, Purdue University; Surojit Gupta, University of North Dakota; Kyle Brinkman, Clemson Univ; Jung Pyung Choi, Pacific Northwest National Laboratory; Soumendra Basu, Boston University; Paul Ohodnicki, National Energy Technology Laboratory

Thursday AM
March 14, 2019

Room: 225A
Location: Henry B. Gonzalez
Convention Center

Session Chairs: Jung Pyung Choi, Pacific Northwest National Laboratory; Soumendra Basu, BU

8:30 AM Invited

Measuring Chromium in SOFC Systems: *Jeffrey Fergus*¹; ¹Auburn University

8:55 AM Invited

Poisoning and Recovery Mechanism of SOFC Cathode: *Teruhisa Horita*¹; ¹Aist

9:20 AM Invited

Rare Earth Nickelate Cathodes for Air Independent Operation of Solid Oxide Fuel Cells: *Srikanth Gopalan*¹; Jane Banner¹; ¹Boston U

9:45 AM Break

10:05 AM Introductory Comments

10:10 AM Invited

Heterostructuring Using Core-Shell Nanosynthesis: *Srikanth Gopalan*¹; Ben Levitas¹; ¹Boston U

10:35 AM

Atomic Scale Study of the Anti-vortex Domain Structure in Polycrystalline Ferroelectric: *Xiaobao Tian*¹; xiaoqiao he²; haidong fan¹; ¹sichuan university; ²City University of Hong Kong

10:55 AM Invited

Electrophoretic Deposition of Gadolinium-doped Ceria as a Barrier Layer on Yttrium-stabilized Zirconia Electrolyte for Solid Oxide Fuel Cells: Shanshan Hu¹; Wenyuan Li¹; *Xingbo Liu*¹; ¹West Virginia University

Additive Manufacturing and Welding: Physical and Mechanical Metallurgy of Rapidly Solidified Metals — Properties

Sponsored by: TMS: Additive Manufacturing Committee

Program Organizers: Allison Beese, Pennsylvania State University; Eric Lass, National Institute of Standards and Technology; David Bourell, University of Texas; John Carpenter, Los Alamos National Laboratory; Kester Clarke, Colorado School of Mines; Daniel Coughlin, Los Alamos National Laboratory; Christian Leinenbach, Empa, Swiss Federal Laboratories for Materials Science and Technology; Behrang Poorganji, GE Additive; Judy Schneider, University of Alabama At Huntsville; Lee Semiatin, US Air Force Research Laboratory; Mark Stoudt, National Institute of Standards and Technology; Chantal Sudbrack, QuesTek Innovations LLC

Thursday AM
March 14, 2019

Room: 221A
Location: Henry B. Gonzalez
Convention Center

Session Chair: Daniel Coughlin, Los Alamos National Laboratory

8:30 AM Invited

Examination of the Influence of Additive Processing on the Mechanical Properties and Corrosion of Alloy 625: *Richard Ricker*¹; Mark Stoudt¹; Lyle Levine¹; Eric Lass¹; Thien Phan¹; Daniel Ng¹; ¹National Institute of Standards & Tech

9:00 AM

The Creep Behavior of Additively Manufactured Inconel 625: *Kwangtae Son*¹; Michael Kassner¹; Lyle Levine²; Thien Phan²; Mark Stoudt²; Kee-Ahn Lee³; ¹University of Southern California; ²NIST; ³Inha University

9:20 AM

Improving the Printability of Nickel Superalloys for Selective Laser Melting: *Yevgeni Brif*¹; Iain Todd¹; ¹University of Sheffield

9:40 AM

Evolution of Deformation Structures Across Length Scales from Fabrication to Fracture in Additively Manufactured 316L Stainless Steel: *Kaila Bertsch*¹; Gabriel Meric de Bellefon¹; Behzad Rankouhi¹; Dan Thoma¹; ¹University of Wisconsin-Madison

10:00 AM Break**10:20 AM**

Characterization of Anisotropy within Additively Manufactured Titanium for Topology Optimization: *Matthew Vaughn*¹; Justin Unger¹; Andrew Gaynor²; Brandon McWilliams²; James Guest¹; Kevin Hemker¹; ¹Johns Hopkins University; ²U.S. Army Research Laboratory

10:40 AM

Microstructure and Hardness Evaluation of Al Alloys after a Single Laser Scan in Powder Bed Fusion: *Holden Hyer*¹; Le Zhou¹; Abhishek Mehta¹; Yongho Sohn¹; ¹Univ of Central Florida

11:00 AM

Effect of Post Processing on Additively Manufactured WE43 Magnesium Alloy: *Leila Sorkhi*¹; James Tomich²; Joshua Hammell²; Fernando Vazquez¹; Grant Crawford¹; ¹Department of Materials and Metallurgical Engineering, South Dakota School of Mines and Technology; ²Additive Manufacturing Laboratory, South Dakota School of Mines and Technology

11:20 AM

Structure / Property (Constitutive and Dynamic Strength / Damage) Characterization of Additively Manufactured (AM) Tantalum: *George Gray*¹; Veronica Livescu¹; Carl Trujillo¹; Daniel Martinez¹; David Jones¹; ¹Los Alamos National Lab

Additive Manufacturing of Metals: Applications of Solidification Fundamentals — Process-microstructure Relationships I

Sponsored by: TMS: Additive Manufacturing Committee
Program Organizers: Alex Plotkowski, Oak Ridge National Laboratory; Lang Yuan, University of South Carolina; Kevin Chaput, Air Force Research Laboratory; Mohsen Asle Zaeem, Colorado School of Mines; Sudarsanam Babu, The University of Tennessee, Knoxville; Wenda Tan, University of Utah

Thursday AM
March 14, 2019

Room: 224
Location: Henry B. Gonzalez
Convention Center

Session Chairs: Michael Kirka, ORNL; Lee Yousub, ORNL

8:30 AM

Controlling Residual Stress through Changes to Thermal History in Additively Manufactured SS316L: *John Roehling*¹; William Smith¹; Gabriel Guss¹; Bey Vrancken¹; Joseph McKeown¹; Manyalibo Matthews¹; ¹Lawrence Livermore National Laboratory

8:50 AM

Processing-structure Relationships from 3D Characterization of Electron Beam Melted Inconel 718: *Andrew Polonsky*¹; Narendran Raghavan²; McLean Echlin¹; Michael Kirka²; Ryan Dehoff²; Tresa Pollock¹; ¹Univ of California, Santa Barbara; ²Oak Ridge National Laboratory

9:10 AM

Evolution of a Gradient Microstructure in Direct Metal Laser Sintered AlSi10Mg: *Amir Hadadzadeh*¹; Babak Shalchi Amirkhiz²; Brian Langelier³; Jian Li²; Mohsen Mohammadi¹; ¹Marine Additive Manufacturing Centre of Excellence-University of New Brunswick; ²CanmetMATERIALS-Natural Resources Canada; ³Canadian Centre for Electron Microscopy (CCEM)-McMaster University

9:30 AM

Microstructure-properties Relationships for Alloy Hastelloy X Fabricated by Additive Manufacturing: *Sebastien Dryepondt*¹; Mike Kirka¹; Fred List¹; ¹Oak Ridge National Lab

9:50 AM

Microstructure Modeling in Wire Arc Additive Manufacturing Process: *Ranadip Acharya*¹; Alex Staroselsky¹; John Sharon¹; Kenneth Smith¹; Michael Klecka¹; Tahany El-Wardany¹; William Tredway¹; ¹Utc Research Center

10:10 AM Break**10:30 AM**

Solidification of Additively Manufactured Nanofunctionalized Metals: *Mark O'Masta*¹; Eric Clough¹; Jacob Hundley¹; John Martin¹; ¹HRL Laboratories

10:50 AM

The Effect of Process Parameters on Microstructural Evolution in Reduced-dimensionality Samples during Additive Manufacturing: *Kaila Bertsch*¹; Bailey Kuehl¹; Dan Thoma¹; ¹University of Wisconsin-Madison

11:10 AM

Effect of a Vertical Magnetic Field on the Microstructure and Tensile Properties of AlSi10Mg Alloy Produced via Laser Additive Manufacturing: *Dafan Du*¹; Anping Dong¹; Da Shu¹; Baode Sun¹; ¹Shanghai Jiao Tong University

11:30 AM

The Effect of Applied Magnetic Field on Laser Additive Manufacturing: *Andrew Kao*¹; Teddy Gan¹; Ivars Krastins¹; Biao Cai²; Koulis Pericleous¹; ¹University Of Greenwich; ²University of Birmingham

Additive Manufacturing of Metals: Fatigue and Fracture III — Session V

Sponsored by: TMS: Additive Manufacturing Committee
Program Organizers: Nikolas Hrabe, NIST-Boulder; Steve Daniewicz, University of Alabama; John Lewandowski, Case Western Reserve Univ; Nima Shamsaei, Auburn University; Mohsen Seifi, ASTM International/Case Western Reserve University

Thursday AM
March 14, 2019

Room: 221B
Location: Henry B. Gonzalez
Convention Center

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

8:30 AM Invited

Additive Materials Behavior: Fatigue Case Studies: *Amber Andreaco*¹; Eric Ott¹; Rajendra Kelkar¹; ¹GE Additive

9:00 AM

Effect of Laser Shock Peening Processing Parameters on the Microstructure, Residual Stress, and Fatigue Behavior of Additive Manufactured CoCr Alloy: *Micheal Kattoura*¹; Jan Kaufman²; Boetang Twum Donkor¹; Seetha Ramaiah Mannava¹; Vijay Vasudevan¹; ¹University of Cincinnati; ²HiLASE Centre

9:20 AM

The Effect of Heat -treatment and Alloying of Ni-Ti Alloy with Copper on Improving its Fatigue Life: *Wisam Abu Jadayil*¹; *Duaa Sehan*¹; ¹American University of Ras Al Khaimah

9:40 AM

Role of Multi-scale Microstructural Features in Tensile, Compressive, Fatigue, and Fracture Behavior of Direct Metal Laser Sintered Inconel-718: *Nicholas Ferreri*¹; Saeede Ghorbanpour¹; Jonathan Bicknell²; Sven Vogel³; Marko Knezevic¹; ¹University of New Hampshire; ²Turbocam International; ³Los Alamos National Laboratory

10:00 AM Break

10:20 AM Invited

Sources of Scatter in the Fatigue Behavior of Ti-6Al-4V Fabricated via Electron Beam Melting: *Peeyush Nandwana*¹; Sean Yoder¹; Vincent Paquit¹; Michael Kirka¹; Ercan Cakmak¹; Sudarsanam Babu¹; Ryan Dehoff¹; ¹Oak Ridge National Laboratory

10:50 AM

Implications of Post-processing Induced Microstructural Changes on the Deformation and Fracture Behavior of Additively Manufactured Ti6Al4V Alloy: *Lara Draelos*¹; Xinzhu Zheng¹; Ryan Dehoff²; Peeyush Nandwana²; Ankit Srivastava¹; ¹Texas A&M University; ²Oak Ridge National Laboratory

11:10 AM

Manipulation of Texture and Fracture Toughness in Additively Manufactured Ti-6Al-4V Parts: *Jake Benzing*¹; Nikolas Hrabe¹; Enrico Lucon¹; Ryan White¹; Magnus Ahlfors²; ¹National Institute of Standards and Technology - Boulder, CO; ²Quintus Technologies

11:30 AM

Effects of Hot Isostatic Pressing Temperature on the Static and Dynamic Properties of Selective Laser Melted Ti-6Al-4V Solid Material: *Oscar Quintana*¹; William Relue¹; Nia Hightower¹; DePuy Synthes

Additive Manufacturing of Metals: Microstructural Evolution and Phase Transformations — Ti-based Systems

Sponsored by: TMS: Phase Transformations Committee, TMS: Additive Manufacturing Committee, TMS: High Temperature Alloys Committee

Program Organizers: Bij-Na Kim, LPW Technology / Lancaster University; Eric Lass, National Institute of Standards and Technology; Mohsen Asle Zaeem, Colorado School of Mines; Sudarsanam Babu, The University of Tennessee, Knoxville; Ryan Dehoff, Oak Ridge National Laboratory; Gerhard Fuchs, University of Florida; Chantal Sudbrack, QuesTek Innovations LLC

Thursday AM
March 14, 2019

Room: 221C
Location: Henry B. Gonzalez
Convention Center

Session Chair: Ryan Dehoff, Oak Ridge National Lab

8:30 AM Invited

Processing - Microstructure - Property Relationships in EBM processed Ti-6Al-4V: *Soumya Nag*¹; Richard DiDomizio¹; Mallikarjun Karadge¹; Ian Spinelli¹; David Bogdan¹; Voramon Dheeradhada¹; Mattias Fager²; Jessica Shepard²; Isak Elfstrom²; ¹GE Global Research; ²GE Additive

9:00 AM

Micromechanical Behavior and Thermal Stability of a Dual-Phase a+a' Titanium Alloy Produced by Additive Manufacturing: *Charlotte de Formanoir*¹; Sébastien Allain²; Guilhem Martin³; Frédéric Prima⁴; Yves Bréchet³; Stéphane Godet⁵; ¹KU Leuven; ²Université de Lorraine; ³Université de Grenoble; ⁴Chimie ParisTech; ⁵Université Libre De Bruxelles

9:20 AM

Hydrogen-enabled Heat Treatment for Improving the Mechanical Properties and Reliability of Additively Manufactured Titanium Alloy Components: *James Paramore*¹; Brady Butler¹; Jonathan Ligda¹; Nathaniel Saenz¹; Matthew Dunstan¹; ¹United States Army Research Laboratory

9:40 AM

Powder Feedstock Dependent Mechanical Properties of Ti based Materials Prepared by Powder Bed Fusion: *Sardar Farhat Abbas*¹; Bin Lee²; Suk Hee Park²; Yong Son²; Sanghyun Lee²; Taek-Soo Kim²; ¹University of Science & Technology (UST); ²Korea Institute of Industrial Technology

10:00 AM Break

10:20 AM

Towards Building Tailored Microstructures in Additively Manufactured Ti-6Al-4V Alloy by Combining a Mesoscale Phase Field Model with a Continuum Scale Thermal Finite Element Model: *Patrick O'Toole*¹; Dayalan Gunasegaram¹; Anthony Murphy¹; Vu Nguyen¹; Sharen Cummins¹; ¹Commonwealth Scientific Industrial Research Organisation (CSIRO)

10:40 AM

Phase-field Simulation of Microstructure Evolution during Additive Manufacturing of Ti-6Al-4V Alloys: *Yanzhou Ji*¹; Lei Chen²; Long-Qing Chen¹; ¹Pennsylvania State University; ²Mississippi State University

11:00 AM

Microstructure Investigation of Ti-6Al-4V Builds with Superior Ductility Produced by Direct Laser Melting: *Kun Yang*¹; Geoff de Looze¹; Robert Wilson¹; ¹Metal Industries, CSIRO Manufacturing

11:20 AM

Prediction of the Resultant Phases and Hardness of Laser Direct Deposited Ti6Al4V: Shunyu Liu¹; Kyung-Min Hong¹; Christopher Katinas¹; Yung Shin¹; ¹Purdue University

11:40 AM

Production of Ti-6Al-4V Alloy by 3D Electron Beam Melting Technique and Development of its Post Treatments: *Merve Nur Dogu*¹; Ziya Esen²; Arcan F. Dericioglu¹; Evren Tan³; Berkay Gumus³; ¹Middle East Technical University; ²Cankaya University; ³ASELSAN

12:00 PM Concluding Comments

Additive Manufacturing: Materials Design and Alloy Development — Structural Alloy Design for AM II

Sponsored by: TMS: Additive Manufacturing Committee, TMS: Integrated Computational Materials Engineering Committee

Program Organizers: Behrang Poorganji, GE Additive; James Saal; Hunter Martin, HRL Labs; Orlando Rios, Oak Ridge National Laboratory

Thursday AM
March 14, 2019

Room: 221D
Location: Henry B. Gonzalez
Convention Center

Session Chair: To Be Announced

8:30 AM

Innovative Design of Metallic Materials using Additive Manufacturing: *Dan Thoma*¹; Behzad Rankouhi¹; Krishnan Suresh¹; Janine Erickson¹; Kaila Bertsch¹; Gabriel Meric De Bellefon¹; ¹Univ of Wisconsin - Madison

8:50 AM

Al Alloy Design for Additive Manufacturing: *Mageshwari Komarasamy*¹; Kaimiao Liu¹; Le Zhou²; Holden Hyer²; Yongho Sohn²; Rajiv S. Mishra¹; ¹University of North Texas; ²University of Central Florida

9:10 AM

Improving the printability of Al-alloys through elemental powder blending approach: *Amin S. Azar*¹; Mohammed M'hamdi¹; Even W. Hovig²; Vegard Brøtan¹; ¹Sintef; ²NTNU

9:30 AM

Surface Inoculation of Aluminium Powders for Additive Manufacturing Guided by Differential Fast Scanning Calorimetry: *Lennart Tasche*¹; Kay-Peter Hoyer¹; Evgeny Zhuravlev²; Guido Grundmeier³; Mirko Schaper¹; Olaf Keßler⁴; ¹Paderborn University; ²University of Rostock, Competence Center °CALOR; ³Paderborn University; ⁴University of Rostock

9:50 AM

Additive Manufacturing Alloys: Fabrication of Aluminum Matrix Composites: *Jakob Hamilton*¹; Mouda Tung²; Ola Harrysson²; Shalabh Gupta³; Iris Rivero³; Christopher Rock²; ¹Iowa State University; ²North Carolina State University; ³Ames Laboratory; ⁴Rochester Institute of Technology

10:10 AM Break

10:30 AM

Solubility of Ni, Co and Mn in a Lightweight Al-based High Temperature Intermetallic Phase: *Sujeily Soto-Medina*¹; Biswas Rijal¹; Lilong Zhu¹; Richard Hennig¹; Michele Manuel¹; ¹University of Florida

10:50 AM

Microstructure and Mechanical Properties of Novel a/B Titanium Alloys Designed for Additive Manufacturing: *Marco Simonelli*¹; Nesma Aboulkhair¹; Yau Yau Tse²; Adam Clare¹; Richard Hague¹; ¹University Of Nottingham; ²Loughborough University

11:10 AM

Understanding the Transitional Properties of Laser Deposited, Compositionally Graded Structures: *Himanshu Sahasrabudhe*¹; ¹Michigan State University

11:30 AM

Advantages of Novel Al-Si Alloy with Cu Additive for Printing Parts via SLM Process: Viktor Mann¹; Alexander Krokhin¹; Roman Vakhromov²; Dmitriy Ryabov¹; Vladimir Korolev²; Daria Daubarayte³; *Ivan Mikhailov*³; ¹RUSAL Global Management B.V.; ²Light Materials and Technologies Institute; ³Light Material and Technologies Institute

Additive Manufacturing: Solid State Processing of Metals and Ceramics — Binder Jetting I

Sponsored by: TMS: Powder Materials Committee, TMS: Additive Manufacturing Committee

Program Organizers: James Paramore, US Army Research Laboratory; Amy Elliott, Oak Ridge National Laboratory; Matthew Dunstan, US Army Research Lab; Markus Chmielus, University of Pittsburgh; Nihan Tuncer, Desktop Metal

Thursday AM
March 14, 2019

Room: 223
Location: Henry B. Gonzalez
Convention Center

Session Chair: Amy Elliott, Oak Ridge National Laboratory

8:30 AM Invited

Single Pass Binder Jetting of Stainless Steel: *Brian Kernan*¹; Lisa Maiocco¹; Steve Hudelson¹; C. Renner¹; Lindsay Hunting¹; Matt McCambridge¹; Emanuel Sachs¹; Paul Hoisington¹; Alex Legendre¹; Kelvin Wiebe¹; Michael Gibson¹; ¹Desktop Metal

9:10 AM

Densification of H13 Tool Steel Components Fabricated via Binder Jet Additive Manufacturing for Tooling Applications: *Peeyush Nandwana*¹; Derek Siddel¹; Chris Shafer¹; Amy Elliott¹; ¹Oak Ridge National Laboratory

9:30 AM

Binder Development in Binder Jet Additive Manufacturing for Sand-Casting: *Dustin Gilmer*¹; Michelle Lehmann¹; Amy Elliott²; Tomonori Saito²; ¹University of Tennessee; ²Oak Ridge National Laboratory

9:50 AM

Determination of Saturation Limits in Binder Jetting: *Nathan Crane*¹; Jeremy Crane¹; ¹University of South Florida

10:10 AM Break

10:30 AM

Binder Development for Binder Jet Additive Manufacturing: Dustin Gilmer¹; Michelle Lehmann¹; Amy Elliott¹; *Tomonori Saito*¹; ¹Oak Ridge National Laboratory

10:50 AM

The Effect of Powder Characteristics on the Binder Jet Process: Derek Siddel¹; Chris Shafer¹; Desarae Goldsby¹; Peeyush Nandwana¹; *Amy Elliott*¹; ¹Oak Ridge National Laboratory

11:10 AM

Binder Jetting Printing of Functional Ceramics: Luis Chavez¹; Carlos Diaz¹; Christian Rodarte¹; David Espalin¹; Ryan Wicker¹; *Yirong Lin*¹; ¹University of Texas at El Paso

11:30 AM

Mitigating Distortion During Sintering of Binder-Jet Printed Ceramics: *Lynnora Grant*¹; Magdi Alameen¹; C. Higgs¹; Zachary Cordero¹; ¹Rice University

Advanced Characterization Techniques for Quantifying and Modeling Deformation — Session VII

Sponsored by: 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; C. Tasan, Massachusetts Institute of Technology; M Arul Kumar, Los Alamos National Laboratory

Thursday AM
March 14, 2019

Room: 302A
Location: Henry B. Gonzalez
Convention Center

Session Chairs: M Arul Kumar, Los Alamos National Laboratory; Rodney McCabe, Los Alamos National Laboratory

8:30 AM

Three-dimensional Microstructure Effects on Twin Nucleation and Growth in HCP Metals: *Rodney McCabe*¹; Shujuan Wang¹; Thomas Nizolek¹; Arul Mariyappan¹; ¹Los Alamos National Laboratory

8:50 AM

Intra-grain Elastic Strain Reconstruction from Near-field High Energy X-ray Diffraction Microscope Data: *Yu-Feng Shen*¹; He Liu¹; Robert Suter¹; ¹Carnegie Mellon University

9:10 AM

The Competition Between Deformation Twin Nucleation and Thickening in Nanostructured FCC Materials: *Matthew Daly*¹; Ashok Kumar²; Glenn Hibbard²; Chandra Veer Singh²; ¹University of Illinois at Chicago; ²University of Toronto

9:30 AM

Study of Temperature Dependence of Plasticity in β -tin and Titanium using Nanoindentation and Constitutive Modelling: *Zhuowen Zhao*¹; Aritra Chakraborty¹; Thomas Bieler¹; Jon Molina-Aldareguia²; Martin Crimp¹; Philip Eisenlohr¹; ¹Michigan State University; ²IMDEA Materials

9:50 AM Break

10:10 AM

To twin or Not to Twin in Boron Carbide: *Kelvin Xie*¹; Rich Haber²; Jim McCauley³; Kevin Hemker³; ¹Texas A&M University; ²Rutgers University; ³Johns Hopkins University

10:30 AM

Understanding the Mechanical Response of Brittle Single Crystals Combining Micromechanic Analyses and Simulations: *Manuel Gruber*¹; Alexander Leitner¹; Peter Supancic¹; Daniel Kiener¹; Raul Bermejo¹; ¹University of Leoben

10:50 AM

Effect of Severe Shear Deformation and Crystal Orientation on the Local Hardness of Ti-6Al-4V Chips Obtained from Turning using Nanoindentation Mapping and Electron Backscatter Diffraction Mapping: *Jiawei Lu*¹; Thomas Bieler¹; Patrick Kwon¹; ¹Michigan State University

11:10 AM

Quantifying In-plane Deformation by Integrating Indentation and Digital Image Correlation: *Mengying Liu*¹; Ian McCue¹; Michael Demkowicz²; ¹Texas A&M University

11:30 AM

Stress Obtained from Digital Image Correlation for Two Dimensional Microstructures: *Benjamin Cameron*¹; Cem Tasan¹; ¹Massachusetts Institute of Technology

11:50 AM

On the Shear Band Nucleation and Flow Transitions in Cutting of Metals: *Shwetabh Yadav*¹; Dinakar Sagapuram¹; ¹Texas A&M University

Advanced High-Strength Steels III — High-Performance Steels II

Sponsored by: TMS: Steels Committee

Program Organizers: Amy Clarke, Colorado School of Mines; MingXin Huang, University of Hong Kong; C. Tasan, Massachusetts Institute of Technology; Kester Clarke, Colorado School of Mines; Ana Luiza Araujo, Colorado School of Mines

Thursday AM
March 14, 2019

Room: 205
Location: Henry B. Gonzalez
Convention Center

Session Chair: To Be Announced

8:30 AM

Phase Transformations in High-nickel Steel Weld Deposits with a Non-equilibrium Hierarchical Microstructure: *Amir Farkoosh*¹; Daniel Bechetti²; Matthew Sinfield²; Jeffrey Farren²; David Seidman³; ¹Northwestern University; ²Naval Surface Warfare Center; ³Northwestern University

8:50 AM

High-alloy CrMnNi Cast Steel Studied by Nano Indentation: *Robert Lehnert*¹; Anja Weidner¹; Mykhalo Motylenko¹; Horst Biermann¹; ¹Technische Universität Freiberg

9:10 AM

Dynamic Deformation Behavior of an Fe-Ni-C High Strength, High Toughness Steel: *Ian Harding*¹; Sharvan Kumar¹; ¹Brown University

9:30 AM

The Stability of Precipitated Austenite in Fe-10Ni-0.5 Mn-0.1C Steel: *Ian Harding*¹; Isabelle Mouton²; Baptiste Gault²; Dierk Raabe²; Sharvan Kumar¹; ¹Brown University; ²Max Planck Institut für Eisenforschung GmbH

9:50 AM Break

10:10 AM

Effect of Aging on the Microstructural Evolution in a New Design of Maraging Steels with Carbon: Peng Gong¹; *William Rainforth*¹; ¹The University of Sheffield

10:30 AM

Rapid Screening of Mechanical Responses of Lath Martensite in a New Generation of Maraging Steels: Effect of B and Nb: *Sepideh Parvinian*¹; Surya Kalidindi¹; Hamid Garmestani¹; ¹Georgia Institute of Technology

10:50 AM

Interplay of Microstructure and Deformation Behavior in Low Lattice Misfit Precipitates-Containing 19Ni3Mo1.5Ti Maraging Steel: *Kun Li*¹; Bing Yu¹; R.D.K. Misra¹; ¹UTEP

11:10 AM

High-strength T91 Ferritic/Martensitic Steel by Thermo-mechanical Treatment: *Zhongxia Shang*¹; Jie Ding¹; Cuncai Fan¹; Miao Song²; Jin Li¹; Qiang Li¹; Sichuang Xue¹; Karl Hartwig³; Xinghang Zhang¹; ¹Purdue University; ²University of Michigan; ³Texas A&M University

11:30 AM

Structure and Properties of Oxide Dispersion Strengthened Austenitic Stain Less Steels: P Sai Karthik¹; *Vijay Ravula*¹; M Ramakrishna¹; A.V Reddy¹; G Sundararajan¹; ¹International Advanced Research Centre Arci

Advanced Magnetic Materials for Energy and Power Conversion Applications — Development in Rare Earth Free Permanent Magnets

Sponsored by: Federation of European Materials Societies (FEMS), TMS Functional Materials Division, TMS: Magnetic Materials Committee

Program Organizers: Frank Johnson, Niron Magnetics, Inc.; Paul Ohodnicki, National Energy Technology Laboratory; Alex Leary, Nasa Grc; Orlando Rios, Oak Ridge National Laboratory; Alessandra Hool, ESM Foundation

Thursday AM
March 14, 2019

Room: 225B
Location: Henry B. Gonzalez
Convention Center

Session Chair: Hunter Henderson, Oak Ridge National Laboratory

8:30 AM Invited

Exploring New Magnetic Materials Using Bottom-up Processing: *Jeffrey Shield*¹; ¹University of Nebraska

9:00 AM Invited

Permanent Magnets Based on MnAl: Microstructure, Magnetic Properties and Thermal Stability: *Thomas G. Woodcock*¹; ¹IFW Dresden

9:30 AM

Investigation of Heat Treating, Powder Processing, and Properties of Gas Atomized High Ti alnico and Co-Lean alnico for use in Permanent Magnet Motors: *Emily Rinko*¹; Iver Anderson²; Aaron Kassen¹; Emma White²; Wei Tang²; Lin Zhou²; Jason Pries³; Matthew Kramer²; ¹Iowa State University; ²Ames Laboratory; ³Oak Ridge National Laboratory

9:50 AM Break

10:10 AM Invited

Recent Advances in Theoretical and Experimental Study of Rare-earth-free a²-Fe₁₆N₂ Magnet: Bin Ma¹; *Jianping Wang*¹; Md Mehedi¹; Yanfeng Jiang¹; ¹ECE, University of Minnesota

10:40 AM Invited

Role of Solidification and Phase Section in Magnet Alloy Production: *Matthew Kramer*¹; ¹Ames Laboratory

11:10 AM

Increasing Anisotropy in (Nd,Zr,Y)Fe₁₀Si₂ Nitrogenated Alloys: *Cristina Echevarria-Bonet*¹; Clara Garcia-Astain¹; Rajasekhar Madugundo¹; Andres Martin-Cid¹; Daniel Salazar¹; Jürgen Gassmann²; Jose Manuel Barandiaran¹; George Hadjipanayis³; ¹BCMaterials; ²Fraunhofer IWKS; ³University of Delaware

Advanced Microelectronic Packaging, Emerging Interconnection Technology, and Pb-free Solder — Pb-free Solder Alloys II

Sponsored by: TMS: Electronic Packaging and Interconnection Materials Committee

Program Organizers: Kazuhiro Nogita, University of Queensland; Tae-Kyu Lee, Portland State University; Yan Li, Intel Corporation; Christopher Gourlay, Imperial College London; Zhi-Quan Liu, Chinese Academy of Sciences; Rahul Panat, Carnegie Mellon University; Albert T. Wu, National Central University; Andre Delhaise, University of Toronto; Mohd Arif Salleh, Universiti Malaysia Perlis

Thursday AM
March 14, 2019

Room: 216A
Location: Henry B. Gonzalez
Convention Center

Session Chairs: Zhi-Quan Liu, Chinese Academy of Sciences; Liang Zhang, Jiangsu Normal University; Kazuhiro Nogita, The University of Queensland

8:30 AM

Role of Surface Chemistry of Solder Particles in Performance of Solder Pastes: *Amir H. Nobari*¹; Arslane Bouchemit²; Ana Da Silva Marques¹; Sylvain St-Laurent¹; Gilles L'Espérance²; ¹5N Plus Inc - Micro Powders; ²École Polytechnique de Montréal

8:50 AM

The Thermomechanical Reliability at High Temperatures of Pb Free Solders: *Faramarz Hadian*¹; Harry Schoeller²; Eric Cotts¹; ¹Binghamton University; ²Universal Instruments Corporation

9:10 AM

Length Scale of the Cellular Microstructure Tailoring Tensile Properties of Zn-20wt.%Sn-2wt.%Cu Solder Alloy: Cesar Mangualde¹; Rodrigo Reyes¹; *José Spinelli*¹; ¹Universidade Federal de São Carlos - UFSCar

9:30 AM

Refined Manufacturing Acceleration Process (ReMAP) M3: Thermal Preconditioning and Restoration of Bismuth-Containing Lead-Free Solder Alloys: *Andre Delhaise*¹; Polina Snugovsky¹; Jeffrey Kennedy¹; David Hillman²; Stephan Meschter³; David Adams²; Milea Kammer⁴; Warren Harper⁴; Marianne Romansky¹; Joseph Juarez⁴; Ivan Straznický⁶; Ivan Tan¹; Ivan Matijevic⁶; Leonid Snugovsky⁶; Mikaella Brillantes⁶; Ross Wilcoxon²; Doug Perovic⁶; ¹Celestica; ²Rockwell-Collins; ³BAE Systems; ⁴Honeywell Aerospace; ⁵Curtiss-Wright; ⁶University of Toronto

9:50 AM Break

10:10 AM

Effect of Ag on the Mechanical Properties of Bi-Ag Solder Alloys Using Single-lap Shear Test Method: *Azmah Hanim Mohamed Ariff*¹; ¹Department of Mechanical and Manufacturing Engineering

10:30 AM

The Microstructure Evolution and Oxidation Characteristics of Sn58Bi Solder Joints under the Oxidizing Environment: *Yishu Wang*¹; Limin Ma¹; Fu Guo¹; ¹Beijing University of Technology

10:50 AM Concluding Comments

Advanced Real Time Imaging — Phase Transformation I

Sponsored by: TMS: Alloy Phases Committee

Program Organizers: Jinichiro Nakano, US DOE - National Energy Tech Lab; P.Chris Pistorius, Carnegie Mellon University; Candan Tamerler, University of Kansas; Hideyuki Yasuda, Kyoto University; Zuotai Zhang, Southern University Of Science And Techn; Neslihan Dogan, McMaster University; Wanlin Wang, Central South University; Noritaka Saito, Kyushu University; Yongsug Chung, Korea Polytechnic University; Bryan Webler, Carnegie Mellon University

Thursday AM
March 14, 2019

Room: 302B
Location: Henry B. Gonzalez
Convention Center

Session Chairs: Noritaka Saito, Kyusyu University; Hideyuki Yasuda, Kyoto University

8:30 AM Invited

Characterising Local Phase Transformations and Kinetics using In Situ High Voltage TEM: *Kazuhiro Nogita*¹; Flora Somidin¹; Hiroshi Maeno²; Xuan Tran²; Stuart McDonald¹; M.A.A. Mohd Salleh³; Syo Matsumura²; ¹University of Queensland; ²Kyushu University; ³Universiti Malaysia Perlis

9:00 AM

Time-resolved Fast-Tomography for Observing Solidification in Metallic Alloys: *Hideyuki Yasuda*¹; Yuta Tomiyori¹; Takuya Kawarasaki¹; Yuichi Kato¹; Kohei Morishita²; Kentaro Kajiwara³; Akihisa Takeuchi³; Kentaro Uesugi³; ¹Kyoto University; ²Kyushu University; ³JASRI/SPRING-8

9:30 AM

Combined Synchrotron Radiography and EBSD Studies of Solder Joint Solidification: *Jingwei Xian*¹; Sergey Belyakov¹; M.A.A. Mohd Salleh²; Kazuhiro Nogita³; Hideyuki Yasuda⁴; Christopher Gourlay¹; ¹Imperial College London; ²Universiti Malaysia Perlis (UniMAP); ³The University of Queensland; ⁴Kyoto University

9:50 AM

Microstructure Formation of Solder Alloys During Soldering using Synchrotron Radiography Imaging: *Mohd Arif Mohd Salleh*¹; S. D. McDonald²; H. Yasuda³; S. A. Belyakov⁴; J.W. Xian⁴; C. M. Gourlay⁴; K. Nogita²; ¹University Malaysia Perlis; ²University of Queensland; ³Kyoto University; ⁴Imperial College

10:10 AM Break

10:30 AM Invited

Characterization of Microstructural Development by Combining High Temperature Microscopy with Differential Thermal Analysis: *Suk-Chun Moon*¹; Dominic Phelan¹; Rian Dippenaar¹; ¹University of Wollongong

11:00 AM

Quantitative Thermal Analysis of Solidification in a High Temperature Laser-Scanning Confocal Microscope: *Dasith Liyanage*¹; Suk-Chun Moon¹; Madeleine Du Toit¹; Rian Dippenaar¹; ¹University of Wollongong

11:20 AM

In Situ Investigation of Pt-Rh Thermocouple Degradation by P-bearing Gases: *Anna Nakano*¹; Jinichiro Nakano¹; James Bennett²; ¹U.S. Department of Energy National Energy Technology Laboratory/ AECOM; ²U.S. Department of Energy, National Energy Technology Laboratory

Advances in Computational Methods for Damage Mechanics and Failure Phenomena — Atomistic and Coarse-grained Methods

Sponsored by: TMS: Computational Materials Science and Engineering Committee

Program Organizers: Srujan Rokkam, Def-Aero, Advanced Cooling Technologies Inc; Michael Tonks, University of Florida; Remi Dingreville, Sandia National Laboratories; Jaafar El-Awady, Johns Hopkins University

Thursday AM
March 14, 2019

Room: 301C
Location: Henry B. Gonzalez
Convention Center

Session Chairs: Avinash Dongare, University of Connecticut; Kiran Solanki, Arizona State University

8:30 AM Invited

Atomistic Simulation Methods for Computing Character Angle and Stress-State Dependent Dislocation Properties: *Douglas Spearot*¹; Khanh Dang¹; ¹University of Florida

9:00 AM

Role of Interstitial Oxygen Impurity Effects on Macroscopic Deformation and Fatigue Behavior of Commercially Pure Titanium: Benyamin Bazehhour¹; Chaitanya Kale¹; *Kiran Solanki*¹; ¹Arizona State University

9:25 AM

Computational Investigation of the Titanium Dioxide's Mechanical Properties using Multiscale Modeling: *Chun-Teh Chen*¹; Grace Gu²; ¹Massachusetts Institute of Technology; ²University of California, Berkeley

9:45 AM

Variational and Multiscale Modeling of Amorphous Silica Glass: *William Schill*¹; Michael Ortiz¹; ¹California Institute Of Technology

10:10 AM Break**10:30 AM Invited**

Quasi-Coarse-Grained Dynamics Simulations to Investigate the Mechanisms of Void Nucleation and Evolution during Dynamic Failure of Multiphase Metallic Materials at the Mesoscales: *Avinash Dongare*¹; Sergey Galitskiy¹; Sumit Suresh¹; ¹University of Connecticut

11:00 AM

Modeling the Nucleation, Growth and Coalescence Behavior of Voids during Spall Failure of Al Microstructures at Mesoscales using Quasi-Coarse-Grained Dynamics (QCGD) Simulations: *Garvit Agarwal*¹; Avinash Dongare¹; ¹University of Connecticut

11:20 AM

Modeling of Spall Behavior of Aluminum due to Laser Induced Shock at the Mesoscales: *Sergey Galitskiy*¹; Dmitriy Ivanov²; Avinash Dongare¹; ¹University of Connecticut; ²University of Kassel

11:40 AM

Kinetics of Micro-structure Evolution and Failure of Mg with Supersaturated Vacancies: *Sara Adibi Sedeh*¹; Justin Wilkerson¹; ¹Texas A&M University

Advances in Computational Methods for Damage Mechanics and Failure Phenomena — Non-local Methods: Peridynamics and Phase-field

Sponsored by: TMS: Computational Materials Science and Engineering Committee

Program Organizers: Srujan Rokkam, Def-Aero, Advanced Cooling Technologies Inc; Michael Tonks, University of Florida; Remi Dingreville, Sandia National Laboratories; Jaafar El-Awady, Johns Hopkins University

Thursday AM
March 14, 2019

Room: 303C
Location: Henry B. Gonzalez
Convention Center

Session Chairs: Srujan Rokkam, ACT Inc; Michael Tonks, University of Florida

8:30 AM Invited

Peridynamic Analysis of Material Failure: *Stewart Silling*¹; ¹Sandia National Laboratories

9:00 AM

A Generalized Peridynamic Framework for Modeling Corrosion Mechanics, Damage and Failure in Metallic Alloys: *Srujan Rokkam*¹; Masoud Behzadinasab²; Max Gunzburger³; Nam Phan⁴; Kishan Goel⁴; ¹Def-Aero R&D Group, ACT Inc. ; ²Def-Aero, Advanced Cooling Technologies Inc; ³Florida State University; ⁴Naval Air Systems Command

9:20 AM

A Simplified Nonlocal Multiphysics Model for Local Corrosion: *Eitan Lees*¹; Sachin Shanbhag¹; Srujan Rokkam²; Max Gunzburger²; ¹Florida State University; ²Def-Aero, Advanced Cooling Technologies Inc

9:40 AM

A Stabilized Hypoelastic Constitutive Correspondence Model for Peridynamics: *Masoud Behzadinasab*¹; John Foster¹; ¹University of Texas at Austin

10:00 AM Break**10:20 AM**

A Modified Phase-Field Model for Quantitative Simulation of Crack Propagation in Single-Phase and Multi-Phase Materials: *Arezoo Emdadi*¹; *Mohsen Asle Zaeem*²; ¹Missouri University of Science and Technology; ²Colorado School of Mines

10:40 AM

Uncertainty Quantification and Validation of a UO₂ Phase Field Fracture Model: *Chaitanya Bhawe*¹; Michael Tonks¹; Jie Lian²; ¹University of Florida; ²Rensselaer Polytechnic Institute

11:00 AM

Phase-field Modeling of Coupled Amorphization and Fracture in Boron Carbide: *Lei Cao*¹; ¹University of Nevada, Reno

11:20 AM

Phase-field Modeling of Microstructure Dependent Fracture in Anisotropic UO₂ Polycrystals: *Wen Jiang*¹; Larry Aagesen¹; Yongfeng Zhang¹; ¹Idaho National Laboratory

11:40 AM

Effect of Multi-gating System on Solidification of Molten Metals in Spur Gear Casting: A Simulation Approach: *Oluseyi Ajayi*¹; Enesi Salawu¹; ¹Covenant University, Ota, Nigeria

Aluminum Alloys, Processing and Characterization — Casting and Solidification

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

Program Organizer: Hiromi Nagaumi, Soochow University

Thursday AM
March 14, 2019

Room: 007A
Location: Henry B. Gonzalez
Convention Center

Session Chair: Dmitry Eskin, Brunel University

8:30 AM Introductory Comments

8:35 AM

Comparison of Diversified Casting Methods on Mechanical and Microstructural Properties of 5754 Aluminum Alloy for Automotive Applications: *Ali Malcioglu*¹; Cisem Dogan¹; Canan Inel¹; ¹Asas Alüminyum San. Tic. A.Ş

9:00 AM

The effect of high speed direct chill casting on microstructure and mechanical properties of Al-Mg-Si-Fe alloy: *Haitao Zhang*¹; Dongtao Wang²; Jianzhong Cui²; Hiromi Nagaumi¹; Weizhong Fan³; ¹Soochow University; ²Northeastern University; ³Guangdong Hongbang Metal Aluminum Co.,Ltd

9:25 AM

Multi-Component High Pressure Die Casting (M-HPDC): Temperature Influence on the Bond Strength of Metal-Plastic-Hybrids Manufactured by M-HPDC: *Patrick Messer*¹; Arthur Bulinger¹; Uwe Vroomen¹; Andreas Bührig-Polaczek¹; ¹RWTH Aachen University

9:50 AM

On Microstructures, Textures and Formability of AA6xxx Alloy Sheets from DC and CC Processing: *Xiyu Wen*¹; Randall Bowers¹; Shridas Ningileri¹; ¹Secat Inc

10:15 AM Break

10:30 AM

Prototyping of a high pressure die cast Al-Si alloy using plaster mold casting to replicate corresponding mechanical properties: *Toni Bogdanoff*¹; Ehsan Ghassemali¹; Martin Riestra¹; Salem Seifeddine¹; ¹Jonkopung Univ

10:55 AM

Reduction of Aluminium Ingot Cooling Time in DC Casting Process: *Josée Colbert*¹; André Larouche¹; ¹Rio Tinto

11:20 AM

Impact of the Main Casting Process Parameters on Floating Crystals in Al Alloys DC-Cast Ingots: *Mousa Javidani*¹; Martin Fortier¹; Josée Colbert¹; ¹Rio Tinto

Aluminum Reduction Technology — Environmental Issues including PFC Emissions

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

Program Organizer: Marc Dupuis, GeniSim Inc

Thursday AM
March 14, 2019

Room: 004
Location: Henry B. Gonzalez
Convention Center

Session Chair: Stephan Broek, Hatch Ltd

8:30 AM Introductory Comments

8:35 AM

Understanding of co-evolution of PFC emission in EGA smelter with opportunities and challenges to lower: *Ali Jassim*¹; Sergey Akhmetov¹; Abdalla Ahmed Alzarooni¹; Daniel Whitfield¹; Barry Welch²; ¹EGA; ²UNSW

9:00 AM

Results from Fluoride Emission Reduction Projects in Alcoa Baie Comeau: *Stephan Broek*¹; *Yves Béliveau*²; Stephen Lindsay²; Julie Dontigny¹; Sylvain Bouthillier¹; Carl Dore¹; Diego Oitaben¹; ¹Hatch Ltd; ²Alcoa

9:25 AM

Validation of PFC slope at Alcoa Canadian smelters with anode effect assessment and future implications to add low voltage emissions into total PFC emissions: *Christine Dubois*¹; *Luis Espinoza-Nava*¹; Eliezer Batista¹; Alexandre Martin-Dubreuil¹; ¹Alcoa

9:50 AM

SPL as a carbon injection source in an EAF: A process study: *Vishnuvardhan Mambakkam*¹; Robert Alicandri¹; *Kinnor Chattopadhyay*¹; ¹University of Toronto

10:15 AM Break

10:30 AM

Migration Behavior of Fluorides in Spent Potlining during Vacuum Distillation Method: *Nan Li*¹; *Lei Gao*²; *Kinnor Chattopadhyay*³; ¹Hong He University; ²Kunming University of Science and Technology; ³University of Toronto

10:55 AM

HF and SO₂ Multipoint monitoring on large Gas Treatment Centers (GTCs) with Prewarning Abilities: *Anders Sorhuus*¹; Sivert Ose¹; Eivind Holmeffjord¹; ¹GE Power

11:20 AM

DFT study on COS oxidation reaction mechanism: *Jie Li*¹; *Tianshuang Li*¹; Hongliang Zhang¹; Jingkun Wang¹; Kena Sun¹; Jin Xiao¹; ¹Central South Univ

11:45 AM Concluding Comments

Bio-Nano Interfaces and Engineering Applications — Bio-Nano Interfaces VI

Sponsored by: TMS Functional Materials Division, TMS Structural Materials Division, TMS: Biomaterials Committee

Program Organizers: Candan Tamerler, University of Kansas; Kalpana Katti, North Dakota State University; Po-Yu Chen, National Tsing Hua University; Hendrik Heinz, University of Colorado Boulder; Terry Lowe, Colorado School of Mines

Thursday AM
March 14, 2019

Room: 217C
Location: Henry B. Gonzalez
Convention Center

Session Chairs: Candan Tamerler, UNIVERSITY OF Kansas; Hendrik Heinz, University of Colorado

8:30 AM

Engineered Enzyme/Gold Biomaterial Interface Offers Improved Catalytic Stability: *Rachel Litz*¹; Mark Richter¹; Candan Tamerler¹; ¹University of Kansas

8:50 AM

Generation of Nanoparticle-embedded Honeycomb like Porous Scaffolds via a Microfluidic T-junction: *Xinyue Jiang*¹; Merve Gultekinoglu¹; Cem Bayram¹; Kezban Ulubayram¹; Mohan Edirisinghe¹; ¹University College London

9:10 AM Invited

Bio Nano Data Convergence: Establishment of a Biomaterials Ontology: *Rebecca Reiss*¹; Terry Lowe²; ¹New Mexico Institute of Mining and Technology; ²Colorado School of Mines

9:40 AM

Biomimetic Wrinkle Graphene Surfaces with Switchable Adhesion: *Zhenhai Xia*¹; Yiyang Wan²; Yong Gao¹; ¹Northwestern Polytechnical University; ²University of North Texas

10:00 AM Break**10:20 AM**

Mechanics of Collagen Fibril-CNT Composites: *Marco Fielder*¹; Arun Nair¹; ¹Univ of Arkansas

10:40 AM

Transparent Titanium Dioxide Nanotubes: Processing, Characterization, and Application in Establishing Cellular Response Mechanisms: *Jevin Meyerink*¹; Divya Kota¹; Scott Wood¹; Brandon Scott¹; Robert Anderson¹; Grant Crawford¹; ¹South Dakota School of Mines & Tech

Biological Materials Science — Biorelated Applications

Sponsored by: TMS Functional Materials Division, TMS Structural Materials Division, TMS: Biomaterials Committee
Program Organizers: Rajendra Kasinath, DePuy Synthes (Johnson and Johnson); Steven Naleway, University of Utah; Vinoy Thomas, University of Alabama at Birmingham; Jing Du, Penn State University

Thursday AM
 March 14, 2019

Room: 007D
 Location: Henry B. Gonzalez
 Convention Center

Session Chairs: Rajendra Kasinath, DePuy Synthes, Johnson and Johnson; David Restrepo, University of Texas San Antonio

8:30 AM

Antibacterial Mechanism of Cu-bearing stainless steel: Xinrui Zhang¹; *Chunguang Yang*¹; Ke Yang¹; ¹Institute of Metal Research

8:50 AM

Trends in technology of operative antibiotic therapy: A Review: *Matthew Siegel*¹; Daniel Li¹; Elan Volchenko¹; Rachel Bergman²; Fei Yang³; Dawei Li³; Decheng Wu³; ¹Northwestern University; ²University of Michigan; ³Chinese Academy of Sciences

9:10 AM

Freeze casting using tri-axial magnetic field control to fabricate materials inspired by bone: *Isaac Nelson*¹; Taylor Ogden¹; Paul Wadsworth¹; Max Mroz¹; Jake Abbott¹; Steven Naleway¹; ¹University of Utah

9:30 AM

Selective laser melted biodegradable porous iron: *Yageng Li*¹; Holger Jahr²; Karel Lietaert³; Prathyusha Pavanram²; Aytac Yilmaz¹; Laura Fockaert¹; Marius Leeflang¹; Behdad Pouran⁴; Yaiza Gonzalez-Garcia¹; Harrie Weinans¹; Johannes Mol¹; Jie Zhou¹; Amir Zadpoor¹; ¹Delft University of Technology; ²University Hospital RWTH Aachen; ³3D Systems Leuven; ⁴University Medical Center Utrecht

9:50 AM

The role of temperature in the superficial oxidation of Ti-15Zr-Mo alloys for use as biomaterials: *Diego Correa*¹; Luis Rocha²; Carlos Grandini³; ¹IFSP - Campus Sorocaba; ²UNESP – Univ Estadual Paulista, Brazilian Branch Institute of Biomaterials, Tribocorrosion and Nanomedicine; ³UNESP – Univ Estadual Paulista, Laboratório de Anelasticidade e Biomateriais

10:10 AM Break**10:30 AM**

Accelerating degradation rate and enhanced osseointegration of Zn composited with Mg: *Yufeng Zheng*¹; ¹Peking Univ

10:50 AM

Accumulation of Biofilm on Ti-6Al-4V Alloy Fabricated Using Additive-layer-manufacturing: *Mari Koike*¹; Tetsuro Horie¹; Richard Mitchell²; Toru Okabe³; ¹The Nippon Dental University; ²University of Kentucky College of Dentistry; ³Baylor College of Dentistry

11:10 AM

Computational Investigation of Mechanical Behavior of Staggered Composites: *Liqiang Lin*¹; Mohammad Maghsoudi Ganjeh¹; Xiaodu Wang¹; Xiaowei Zeng¹; ¹University of Texas at San Antonio

11:30 AM

Magnesium based microfabricated biodegradable power source transient implantable Devices: *Zia Ur Rahman*¹; Waseem Haider¹; ¹Central Michigan University

11:50 AM

Electrochemical Corrosion Protocol for Biomaterial Alloys: *Vineeth Kumar Gattu*¹; Javier Obregon²; J Ernesto Indacochea²; William Ebert¹; ¹Argonne National Laboratory; ²University of Illinois at Chicago

Bulk Metallic Glasses XVI — Thermal and Other Properties

Sponsored by: TMS: Mechanical Behavior of Materials Committee
Program Organizers: Xie Xie, FCA US LLC; Peter Liaw, University of Tennessee; Yanfei Gao, University of Tennessee; Hahn Choo, University of Tennessee; Yunfeng Shi, Rensselaer Polytechnic Institute; Gongyao Wang, Alcoa; Robert Maass, University of Illinois at Urbana-Champaign; Muhammad Rafique, RMIT University

Thursday AM
 March 14, 2019

Room: 206B
 Location: Henry B. Gonzalez
 Convention Center

Session Chairs: Robert Maass, University of Illinois at Urbana-Champaign; Fan Zhang, CompuTherm LLC

8:30 AM Invited

Stress- and Temperature-driven Structural Dynamics in a Zr-based Metallic Glass: Amlan Das¹; *Robert Maass*¹; ¹University of Illinois At Urbana-Champaign

8:50 AM Invited

Evaluation of the Glass Forming Ability of Multi-component Bulk Metallic Glasses by High Throughput Calculation: *Fan Zhang*¹; Chuan Zhang¹; Weisheng Cao¹; Shuanglin Chen¹; ¹CompuTherm LLC

9:10 AM Invited

Bulk Metallic Glasses: Correlations between Structure, Stability & Glass Forming Ability: *Kevin Laws*¹; Daniel Miracle²; Dmitri Louzguine-Luzgin³; ¹University of New South Wales; ²Air Force Research Laboratory; ³Tohoku University

9:30 AM

Probing Heat Generation during Shear Band Operation by Localized Boiling: *David Brennhaugen*¹; Konstantinos Georgarakis²; Yoshihiko Yokoyama³; Koji Nakayama³; Lars Arnberg¹; Ragnhild Aune¹; ¹Ntnu; ²Cranfield University; ³Tohoku University

9:50 AM Invited

Bulk Metallic Glasses as Highly Catalytic Materials: Vahid Hasannaemil¹; *Sundeep Mukherjee*¹; ¹Univ of North Texas

10:10 AM Break**10:30 AM Invited**

Modulating Crystallinity of a Ti-Zr-Based Composite Bulk Metallic Glass Matrix: *Kevin Kaufmann*¹; Tyler Harrington¹; Mojtaba Samiee¹; Xiao Liu¹; Huikai Cheng²; Kenneth Vecchio¹; ¹Univ of California San Diego; ²Thermo Fisher Scientific

10:50 AM Invited

Effect of oxygen on the glass formation and mechanical properties of industrial grade Zr based bulk metallic glasses: Y.X. Wang¹; *Li Yi*¹; ¹Institute of Metal Research, CAS

11:10 AM

Physical origin of vibration-enhanced thermoplastic formability of supercooled liquid metallic glass: *Ning Li*¹; Zu Li¹; ¹Huazhong University of Science and Technology

11:30 AM

Phase Equilibria of the Cu-Zr-Ti Ternary System at 703°C and the Thermodynamic Assessment and Metallic Glass Region Prediction of the Cu-Zr-Ti Ternary System: *Chu Hsuan Wang*¹; Gita Novian Hermana¹; Chih Hung Lin¹; Hsien Ming Hsiao²; Yee Wen Yen¹; ¹Taiwan Tech; ²Taiwan Institute of Nuclear Energy Research

Cast Shop Technology — Continuous Casting

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

Program Organizer: Pierre-Yves Menet, Constellium Technology Center

Thursday AM
March 14, 2019

Room: 007B
Location: Henry B. Gonzalez
Convention Center

Session Chair: Kai Karhausen, Hydro Aluminium Rolled Products GmbH

8:30 AM Introductory Comments

8:35 AM

Horizontal Single Belt Casting of Aluminum Sheet Alloys: *Roderick Guthrie*¹; Mihaiela Isac¹; ¹McGill Metals Processing Centre

9:00 AM

Cast Strip Surface Topography Study and Thermomechanical Processing of 1050 Alloy Produced by One Copper Shell Roll Caster: *Dionisios Spathis*¹; John Tsiros¹; Andreas Mavroudis¹; ¹Hellenic Aluminum Industry

9:25 AM

Influence of Strip Thickness on As-cast Material Properties of Twin-roll Cast Aluminum Alloys: *Vakur Akdogan*¹; Cemil Isiksacan¹; Hatice Mollaoglu Altuner¹; Onur Birbasar¹; Mert Günyüz¹; ¹Assan Aluminum

9:50 AM

Softening Behavior of Direct Chill and Twin-Roll Cast AA 3105 Alloy: *Mert Gülver*¹; Onur Meydanoglu¹; Cemil Isiksacan¹; ¹Assan Alüminyum San. Ve Tic. As

Characterization of Materials through High Resolution Imaging — Modeling and Computation for High Resolution Imaging

Sponsored by: TMS: Advanced Characterization, Testing, and Simulation Committee

Program Organizers: Ross Harder, Argonne National Laboratory; Richard Sandberg, Los Alamos National Laboratory; Xianghui Xiao, Argonne National Laboratory; Brian Abbey, La Trobe University; Saryu Fensin, Los Alamos National Laboratory; Ana Diaz, Paul Scherrer Institut; Mathew Cherukara, Argonne National Laboratory

Thursday AM
March 14, 2019

Room: 303A
Location: Henry B. Gonzalez
Convention Center

Session Chair: To Be Announced

8:30 AM Invited

Deep Learning of Inverse Problems in Scanning Transmission Electron Microscopy/Scattering: *Nouamane Laanait*¹; ¹Oak Ridge National Laboratory

9:00 AM Invited

Coherent diffraction imaging at high X-ray energies: *S Maddali*¹; J. -S. Park²; P. Kenesei²; J. Almer²; W. Cha²; R. Harder²; Y. Nashed²; S. O. Hruszkewycz²; ¹TMS; ²Argonne National Laboratory

9:20 AM Invited

Computational Investigation of Limits of Bragg Coherent Diffraction Imaging: *Hande Ozurk*¹; ¹Ozyegin University

9:40 AM

STEM Diffraction Contrast Image Simulations for Complex Dislocation Configurations: *Joseph Tessmer*¹; Saransh¹; Marc De Graef¹; ¹Carnegie Mellon Univ

10:00 AM Break

10:20 AM Invited

Deep neural networks for feature extraction and image reconstruction from coherent X-ray diffraction imaging data: *Mathew Cherukara*¹; Youssef Nashed¹; Ross Harder¹; ¹Argonne National Lab

10:40 AM Invited

Learning CDI Reconstructions With Backpropagation: *Youssef Nashed*¹; ¹Argonne National Laboratory

11:00 AM

Multi-angle Bragg Projection Ptychography with probe retrieval: *Peng Li*¹; Felix Hofmann²; Steven Leake³; Marc Allain⁴; Virginie Chamard¹; ¹Institut Fresnel, CNRS; ²University of Oxford; ³European Synchrotron Radiation Facility; ⁴Institut Fresnel, Aix-Marseille University

11:20 AM Invited

Sparse Dictionary Learning Methods for Coherent X-ray Diffractive Imaging: *Ashish Tripathi*¹; Brendt Wohlberg¹; Richard Sandberg¹; ¹Los Alamos National Laboratory

11:40 AM

Photoelastic Ptychography for Anisotropic Imaging of Optically Transparent Samples: Guido Cadenazzi¹; Nicholas Anthony¹; *Brian Abbey*¹; ¹La Trobe Univ

Characterization of Minerals, Metals, and Materials — Analysis of Surfaces and Interfaces

Sponsored by: 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; Yunus Kalay, Middle East Technical University; John Carpenter, Los Alamos National Laboratory; Jiann-Yang Hwang, Michigan Technological Univ; Sergio Monteiro, Military Institute of Engineering; Chenguang Bai, Chongqing Univ; Juan Escobedo-Diaz, University of New South Wales; Pasquale Russo Spena, Free University of Bozen-Bolzano; Ramasis Goswami, Naval Research Laboratory

Thursday AM
March 14, 2019

Room: 212A
Location: Henry B. Gonzalez
Convention Center

Session Chairs: John Carpenter, Los Alamos National Lab; Zhiwei Peng, Central South University

8:30 AM Introductory Comments

8:35 AM Invited

A forward model for rapid characterization of grain orientations in a-Ti using polarized-light: *Brahim Akdim*¹; Christopher Woodward²; Michael Uchic²; ¹UES Inc/AFRL; ²AFRL

8:55 AM

Analyzing preferential localized corrosion along coherent twin boundaries in pure nickel via EBSD and micro-CT: *Mengying Liu*¹; Matteo Seita²; Michael Demkowicz¹; ¹Texas A&M Univ; ²Nanyang Technological University

9:15 AM

Friction Stir Welding of Aluminum Alloys and Steels: Issues and Solutions: *Mian Wasif Safeen*¹; Pasquale Russo Spena¹; ¹Free University of Bozen-Bolzano

9:35 AM

Characterization of Interfacial Bond Surfaces in Explosively Bonded 304L Stainless Steel: *Thomas Ivanoff*¹; Olivia Underwood¹; Jonathan Madison¹; Lisa Deibler¹; Jeffrey Rodelas¹; ¹Sandia National Laboratories

9:55 AM

Surface tension, specific heat and eutectic solidification of substantially undercooled liquid Ti-Si alloy: *Kai Zhou*¹; Bingbo Wei¹; ¹Northwestern Polytechnical University

10:15 AM

Magnetic characterization of CarTech® Hypocore™ Alloy at cryogenic temperatures: Vamsi Meka¹; Eric Fitterling²; *Tanjore Jayaraman*¹; ¹University of Michigan-Dearborn; ²Carpenter Technology Corporation

Characterization of Minerals, Metals, and Materials — Ferrous Materials and Processes

Sponsored by: 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; Yunus Kalay, Middle East Technical University; John Carpenter, Los Alamos National Laboratory; Jiann-Yang Hwang, Michigan Technological Univ; Sergio Monteiro, Military Institute of Engineering; Chenguang Bai, Chongqing Univ; Juan Escobedo-Diaz, University of New South Wales; Pasquale Russo Spena, Free University of Bozen-Bolzano; Ramasis Goswami, Naval Research Laboratory

Thursday AM
March 14, 2019

Room: 212B
Location: Henry B. Gonzalez
Convention Center

Session Chairs: Mingming Zhang, ArcelorMittal; Donato Firrao, Politecnico di Torino

8:30 AM **Introductory Comments**

8:35 AM **Invited**

Is the 200 ksi limit still valid for mechanical applications of quenched and tempered steels?: *Donato Firrao*¹; PaoloM Matteis¹; Antonio De Sario²; ¹Politecnico Di Torino; ²VI.MI. Fasteners

8:55 AM **Invited**

Evolution of Precipitates during Rolling and Annealing Process in Non-oriented Electrical Steel: Qiang Ren¹; *Lifeng Zhang*¹; Yan Luo¹; Lin Cheng¹; Piotr Roman Scheller¹; ¹Univ of Science & Technology Beijing

9:15 AM

Structure and magnetic properties of a medium-entropy Fe46Co34Ni20 alloy powder: Anuj Rathi¹; *Tanjore Jayaraman*¹; ¹University of Michigan-Dearborn

9:35 AM

Characterization of Water- and Gas- Atomized 17-4 PH Stainless Steel Powder Precursors for Additive Manufacturing: Harish Irrinki¹; Satya Ganti²; Rachel Reed²; *Veeraraghavan Sundar*²; Sundar Atre¹; ¹University of Louisville; ²UES Inc

9:55 AM **Break**

10:10 AM

Evolution of microstructure and mechanical properties of 20Cr13 under cavitation erosion: *Guiyan Gao*¹; ¹Beihang university

10:30 AM

Fe-Co-2V Soft Ferromagnetic Alloy Characterization and Constitutive Model Development: *Kyle Johnson*¹; Bo Song¹; Brett Sanborn¹; Jay Carroll¹; Don Susan¹; Andrew Kustas¹; Scott Grutzik¹; Adam Brink¹; ¹Sandia National Laboratories

10:50 AM

The Influence of Strain Rate and Temperature on the Shear Response of 1018 Steel: *Roberta Beal*¹; George T. (Rusty) Gray III¹; Veronica Livescu¹; ¹Los Alamos National Laboratory

11:10 AM

The effect of phase size on the Quasi-Static and Dynamic loading of Lean Duplex Stainless Steel 2101: Tayla Nankivell¹; *Juan Escobedo-Diaz*¹; Ali Ameri¹; Zakaria Quadir²; Con Logos³; ¹University of New South Wales; ²Curtin University; ³Outokumpu

11:30 AM

Exploring accurate structure, composition and mechanical properties of η carbides in high tungsten iron-base alloy: High-throughput mapping and DFT calculations: *Yujie Meng*¹; Xiaoyu Chong²; Jing Feng²; ¹Nanomechanics Inc; ²Kunming University of Science and Technology

11:50 AM

Preparation of Magnesium Aluminum Ferrite Spinel by Microwave Sintering: *Huimin Tang*¹; Zhiwei Peng¹; Foquan Gu¹; Lei Ye¹; Liancheng Wang¹; Leixia Zheng¹; Weiguang Tian²; Mingjun Rao¹; Guanghui Li¹; Tao Jiang¹; ¹Central South Univ; ²Guangdong Guangqing Metal Technology Co. Ltd

Computational Approaches for Big Data, Artificial Intelligence and Uncertainty Quantification in Computational Materials Science — Uncertainty Quantification and AI-model Development in Atomistic Simulations

Sponsored by: TMS: Computational Materials Science and Engineering Committee

Program Organizers: Liang Qi, University of Michigan; Francesca Tavazza, National Institute of Standards and Technology; Christopher Woodward, Air Force Research Laboratory; Adrian Sabau, Oak Ridge National Laboratory; Houlong Zhuang, Arizona State University; Sugata Chowdhury, National Institute of Standards and Technology

Thursday AM
March 14, 2019

Room: 305
Location: Henry B. Gonzalez
Convention Center

Session Chair: To Be Announced

8:30 AM **Invited**

High-Performance Computing in Artificial Neural Networks Atomistic Simulations: *Vesselin Yamakov*¹; Edward Glaesgen²; Yuri Mishin³; ¹National Institute of Aerospace; ²NASA Langley Research Center; ³George Mason University

9:00 AM

Automated sensitivity analysis for high-throughput ab initio calculations: *Jan Janssen*¹; Tilmann Hickel¹; Joerg Neugebauer¹; ¹Max-Planck-Institute

9:20 AM **Invited**

Machine-learned potentials for complex alloy systems: *John Kitchin*¹; ¹Carnegie Mellon University

9:50 AM

Addressing uncertainty associated with classical interatomic potential choice: *Lucas Hale*¹; Zachary Trautt¹; ¹National Institute Of Standards And Tech

10:10 AM **Break**

10:30 AM **Invited**

Modeling Complex Phenomena in 2D Materials using First-Principles Theory Based Machine Learning Force Fields: Yang Yang¹; Hongxiang Zong²; Hua Wang¹; Xiaodong Ding²; *Xiaofeng Qian*¹; ¹Texas A&M Univ; ²Xi'an Jiaotong University

11:00 AM

Machine learning with force-field inspired descriptors for materials: fast screening and mapping energy landscape: *Kamal Choudhary*¹; Brian DeCost¹; Francesca Tavazza¹; ¹University of Maryland (NIST)

11:20 AM

GB Property Localization: Inference and Uncertainty Quantification of GB Structure-Property Models from Indirect Polycrystal Measurements: Christian Kurniawan¹; David Fullwood¹; Eric Homer¹; *Oliver Johnson*¹; ¹Brigham Young University

11:40 AM

Workflow for High-Throughput Atomistic Models of Ceramic Interfaces: *Shawn Coleman*¹; Matthew Guziewski¹; Caleb Carlin¹; ¹U.S. Army Research Laboratory

Computational Thermodynamics and Kinetics — Microstructural Evolution II

Sponsored by: TMS: Computational Materials Science and Engineering Committee

Program Organizers: Fadi Abdeljawad, Clemson University; Hesam Askari, University of Rochester; Emine Gulsoy, Northwestern Univ; Joel Berry, University of Pennsylvania ; Damien Tourret, IMDEA Materials; Mohsen Asle Zaeem, Colorado School of Mines; James Morris, Oak Ridge National Laboratory

Thursday AM
March 14, 2019

Room: 225C
Location: Henry B. Gonzalez
Convention Center

Session Chair: To Be Announced

8:30 AM

Parallel computing enhanced phase-field method; GPGPU and OpenMP: *Kunok Chang*¹; ¹Kyung Hee University

8:50 AM

Modeling the Widmanstätten lath Structure in Zr Quenched from the Beta Phase: *Richard Smith*¹; Linda Rishel¹; ¹Naval Nuclear Laboratory

9:10 AM

Physics of point defects and defect clusters in fcc and bcc metals: *Daniel Vizoso*¹; Chaitanya Deo¹; Remi Dingreville²; ¹Georgia Institute of Technology; ²Sandia National Laboratories

9:30 AM

Experimental investigations and thermodynamic modeling of the Al-Cr-Fe system: *Maximilian Rank*¹; Peter Franke¹; Hans J. Seifert¹; ¹Karlsruhe Institute of Technology (KIT)

9:50 AM

2D simulation of gradient zone formation in cemented carbides with conventional and alternative binders: *Armin Salmasi*¹; Henrik Larsson¹; Andreas Blomqvist²; Stella Sten¹; ¹KTH Royal Institute of Tech; ²Sandvik Coromant AB

Computational Thermodynamics and Kinetics — Nuclear Materials and Radiation Effects

Sponsored by: TMS: Computational Materials Science and Engineering Committee

Program Organizers: Fadi Abdeljawad, Clemson University; Hesam Askari, University of Rochester; Emine Gulsoy, Northwestern Univ; Joel Berry, University of Pennsylvania ; Damien Tourret, IMDEA Materials; Mohsen Asle Zaeem, Colorado School of Mines; James Morris, Oak Ridge National Laboratory

Thursday AM
March 14, 2019

Room: 301A
Location: Henry B. Gonzalez
Convention Center

Session Chair: To Be Announced

8:30 AM Invited

Nanoprecipitate structures in driven immiscible ternary alloy systems: *Pascal Bellon*¹; Qun Li²; Robert Averback²; ¹Univ of Illinois Urbana-Champaign; ²Univ of Illinois Urbana-Champaign

9:00 AM

Origin of phase segregation in irradiated high-entropy alloys: Multi-scale modelling from ab-initio Hamiltonian and experimental validation in W-Ta-Cr-V system: *Duc Nguyen-Manh*¹; Damian Sobieraj²; Jan S. Wrobel²; Osman El Atwani³; Arun Deveraj³; Enrique Martinez Saez³; ¹United Kingdom Atomic Energy Authority; ²Warsaw University of Technology; ³Los Alamos National Laboratory

9:20 AM

New helium bubble growth mode at a symmetric grain-boundary in tungsten: accelerated molecular dynamics study: *Xiang-Yang Liu*¹; Blas Uberuaga¹; Danny Perez¹; Art Voter¹; ¹Los Alamos National Laboratory

9:40 AM Invited

Mesosopic scale models for out of equilibrium microstructure evolution: *Nana Ofori-Opoku*¹; ¹Canadian Nuclear Laboratories

10:10 AM Break

10:30 AM Invited

Computational thermodynamics and kinetics for nuclear applications at Idaho National Laboratory: *Andrea Jokisaari*¹; Larry Aagesen¹; Daniel Schwen¹; Benjamin Beeler¹; Chao Jiang¹; Sebastian Schunert¹; Yongfeng Zhang¹; ¹Idaho National Laboratory

11:00 AM

First-principles studies of thermodynamic and thermal transport properties of uranium aluminides for nuclear applications: *Zhi-Gang Mei*¹; Abdellatif Yacout¹; Jiong Yang¹; ¹Argonne National Lab

11:20 AM

Thermodynamics and kinetics of noble gas atoms in bcc transition metals: *Chao Jiang*¹; Yongfeng Zhang¹; Yipeng Gao¹; Jian Gan¹; ¹Idaho National Laboratory

11:40 AM

Computational study of hydrogen behavior in long-term dry stored spent fuel cladding: *Kunok Chang*¹; ¹Kyung Hee University

12:00 PM

Tensile and Thermal Creep Behavior of a Novel Copper Alloy for Fusion Energy Applications: *Ling Wang*¹; Ying Yang²; Ce Zheng³; Lance Snead⁴; Steven Zinkle¹; ¹University Of Tennessee; ²Oak Ridge National Laboratory; ³North Carolina State University; ⁴Stony Brook University

Environmentally Assisted Cracking: Theory and Practice — Environmentally Assisted Cracking in Aluminum Alloys

Program Organizers: Bai Cui, University of Nebraska Lincoln; Raul Rebak, GE Global Research; Srujan Rokkam, Def-Aero, Advanced Cooling Technologies Inc

Thursday AM
March 14, 2019

Room: 214C
Location: Henry B. Gonzalez
Convention Center

Session Chairs: Nikhilesh Chawla, Arizona State University; Bai Cui, University of Nebraska-Lincoln

8:30 AM Invited

Probing Mechanisms of Corrosion in Aluminum Alloys by Correlative Tomography and Microscopy: *Nikhilesh Chawla*¹; Sridhar Niverty¹; Jacob Graber¹; Tyler Stannard¹; Francesco De Carlo²; Xianghui Xiao²; Vincent De Andrade²; ¹Arizona State University; ²Advanced Photon Source

9:10 AM

Degradation and Stress Corrosion Cracking in Highly Sensitized Al-Mg During Overly Cathodic Polarization: *Matthew McMahon*¹; John Scully¹; James Burns¹; ¹Univ of Virginia

9:30 AM

Nanoscale 4D Microstructural Characterization of corrosion in Aluminum alloys using Transmission X-Ray Microscopy (TXM): *Sridhar Niverty*¹; Jacob Graber¹; C.Shashank Kaira¹; Vincent De Andrade²; Francesco De Carlo²; Nikhilesh Chawla¹; ¹Arizona State Univ; ²Argonne National Laboratory

9:50 AM

Direct Evidence of Pit to Crack Transition in Al 7075: *Ramasis Goswami*¹; Attilio Arcari²; ¹Naval Research Laboratory; ²Excet Inc., Corrosion Science and Engineering

10:10 AM Break

10:30 AM

Environmentally Assisted Cracking in Field-Retrieved 5XXX Aluminum Alloys: *Benjamin Palmer*¹; John Lewandowski¹; ¹Case Western Reserve Univ

10:50 AM

Accounting for Intra-temper Sensitization Variations within 5XXX Series Aluminum Alloys in Predictive Modeling: *Matthew Steiner*¹; Likun Sun¹; ¹University of Cincinnati

11:10 AM

Role of mechanical deformation on the corrosion susceptibility of Al7075 aluminum alloy: *Vikrant Beura*¹; Chaitanya Kale¹; Kiran Solanki¹; ¹Arizona State University

11:30 AM

Role of deformation on the localized corrosion behavior of aluminum 5083 alloy: *Chaitanya Kale*¹; Vikrant Beura¹; Cyril Williams²; Kiran Solanki¹; ¹Arizona State University; ²Army Research Lab

Fatigue in Materials: Multi-scale and Multi-environment Characterizations and Computational Modeling — Multi-scale and Multi-physics Models in Fatigue to Better Predict Behavior and Lifetime

Sponsored by: TMS: Computational Materials Science and Engineering Committee, TMS: Integrated Computational Materials Engineering Committee

Program Organizers: Jean-Briac le Graverend, Texas A&M University; Ashley Spear, University of Utah; Antonios Kotsos, Drexel Univ; Garrett Pataky, Clemson University; Filippo Berto, Norwegian University of Science and Technology

Thursday AM
March 14, 2019

Room: 301B
Location: Henry B. Gonzalez
Convention Center

Session Chair: Jean-Briac le Graverend, Texas A&M University

8:30 AM

Micromechanical modeling of inclusion induced fatigue damage in high strength martensitic steels: *Matti Lindroos*¹; Anssi Laukkanen¹; Tom Andersson¹; ¹Vtt Research Center Of Finland

8:50 AM

A Self-consistent Parametric Homogenization Framework for Fatigue in Ni-based Superalloys: *George Weber*¹; Max Pinz¹; Akbar Bagri¹; Somnath Ghosh¹; ¹Johns Hopkins University

9:10 AM

Atomistic-based analysis of fatigue crack propagation mechanisms in FCC metals: *Eyoulëki Awi*¹; Maxime Sauzay¹; Laurent Van Brutzel¹; Zhengxuan Fan²; Olivier Hardouin Duparc³; ¹The French Atomic Energy and Alternative Energies Commission; ²ONERA, The French Aerospace Lab; ³Ecole Polytechnique

9:30 AM

Simulation of fatigue crack propagation in complex Al2024T351 structures: *Henry Proudhon*¹; Raphaël Cusset¹; Marta Dragon-Louisset²; Vincent Jacques²; Laura Bonne²; Farida Azzouz¹; Jacques Besson¹; ¹Mines Paristech Centre Des Materiaux; ²Dassault Aviation

9:50 AM Break

10:10 AM

A Multi-scale Model for Fatigue Crack Initiation in Polycrystalline Titanium Alloys: *Shravan Kotha*¹; Ozturk Deniz¹; Adam Pilchak²; Somnath Ghosh¹; ¹Johns Hopkins University; ²Air Force Research Laboratory

10:30 AM

The deformation behaviors of commercially pure titanium grade 1 and grade 2 sheets under monotonic and cyclic loading: Chao Ma¹; Peidong Wu²; Takayuki Hama³; Xiaoqian Guo¹; Xianbiao Mao¹; *Huamiao Wang*⁴; ¹China University of Mining and Technology; ²McMaster University; ³Kyoto University; ⁴Shanghai Jiao Tong University

10:50 AM

Finding the Physical basis for fatigue crack growth: Accounting of mean stress effects through the concept of change in net-section strain energy: *K. S. Ravi Chandran*¹; ¹Univ of Utah

Fracture Processes of Thin Films and Nanomaterials — Local Fracture Processes: Insights from Experiments and Modeling

Sponsored by: TMS Materials Processing and Manufacturing Division, TMS: Nanomechanical Materials Behavior Committee
Program Organizers: Daniel Kiener, University of Leoben; Megan Cordill, Erich Schmid Institute; Johannes Ast, Empa, Swiss Federal Laboratories for Materials Science and Technology; Brad Boyce, Sandia National Labs

Thursday AM
March 14, 2019

Room: 217B
Location: Henry B. Gonzalez
Convention Center

Session Chairs: Daniel Kiener, Montanuniversität Leoben; Bernhard Völker, Max-Planck-Institut für Eisenforschung

8:30 AM Invited

Improving mechanical properties of mixed transition metal carbide reinforcements in steel: Lionel Michelet¹; Marta Fornabaio¹; *Goran Zagar*¹; Lea Deillon¹; Andreas Mortensen¹; ¹École Polytechnique Fédérale de Lausanne (EPFL)

8:50 AM

Designing new hard coating material systems utilizing ab initio DFT calculations: *Bernhard Völker*¹; Rafael Soler²; Stefan Gleich²; Jan-Ole Achenbach¹; Christoph Kirchlechner²; Christina Scheu²; Gerhard Dehm²; Jochen M. Schneider¹; ¹Materials Chemistry, RWTH Aachen University; ²Max-Planck-Institut für Eisenforschung GmbH

9:10 AM Invited

From quantum to continuum mechanics: Studying the fracture toughness of transition metal nitrides and oxynitrides: James Gibson¹; Holger Rueß¹; Shahed Rezaei¹; Marcus Hans¹; Denis Music¹; Stephan Wulfinghoff¹; Stefanie Reese¹; Jochen Schneider¹; *Sandra Korte-Kerzel*¹; ¹RWTH Aachen University

9:30 AM

Using the Steady-State Work Density Gradient Crack Tip Parameter to Characterize Steady State Crack Growth in Metal Thin Films: Wade Lanning¹; Syed Javaid¹; *Christopher Muhlstein*¹; ¹Georgia Institute of Tech

9:50 AM

Size dependent fracture behaviors of metallic glass nanolaminates: *Xinghang Zhang*¹; Zhe Fan²; Jian Wang³; ¹Purdue University; ²Oak Ridge National Lab; ³University of Nebraska, Lincoln

10:10 AM Break

10:30 AM Invited

In Situ Transmission Electron Microscopy Observation on Fracture Process of High Entropy Alloys: *Qian Yu*¹; Qiaoqian Fu¹; Robert Ritchie²; Bernd Gludovatz²; Easo George³; ¹Zhejiang University; ²LBL; ³ORNL

10:50 AM

Interface Control of Fracture in Multilayer Films: *Cynthia Volkert*¹; ¹University of Goettingen

11:10 AM

In-Situ TEM on Crack Growth and Dislocation Shielding in Metallic Thin Foils: *Scott Mao*¹; ¹University of Pittsburgh

11:30 AM

Unravelling the Role of Interfaces on the Shock Response of Nanocrystalline Cu/Ta Alloys: *Jie Chen*¹; Avinash Dongare¹; ¹University of Connecticut

Friction Stir Welding and Processing X — Controls and Inspection

Sponsored by: TMS: Shaping and Forming Committee
Program Organizers: Yuri Hovanski, Brigham Young University; Rajiv Mishra, University of North Texas; Yutaka Sato, Tohoku University; Piyush Upadhyay, Pacific Northwest National Laboratory; David Yan, San Jose State University

Thursday AM
March 14, 2019
Room: 210B
Location: Henry B. Gonzalez
Convention Center

Session Chair: Glenn Grant, Pacific Northwest National Laboratory

8:30 AM Panel Discussion Learn from the founders - More than 100 years of experience in academic friction stir related research

9:30 AM Invited
Developing and Deploying FSW&P through Standardization: *Dwight Burford*¹; ¹Joining Innovations LLC

9:50 AM
Economics of commercialization: An industrial case study of how to resolving CAPEX and OPEX barriers: *Dale Fleck*¹; ¹MegaStir

10:10 AM Break

10:30 AM
Advances in Signal Processing for Friction Stir Welding Temperature Control: *Brandon Taysom*¹; Carl Sorensen¹; ¹Brigham Young University

10:50 AM Invited
Improved Techniques Tool Temperature Measurement, Reporting and Interpretation: *Kenneth Ross*¹; Scott Whalen²; Md Reza-E-Rabby²; Martin McDonnell³; ¹Pacific Northwest National Laboratory ; ²Pacific Northwest National Laboratory; ³US Army-TARDEC

11:10 AM
Using Spindle Speed vs Spindle Power as the Manipulated Variable for Temperature Control in Friction Stir Welding: *Brandon Taysom*¹; Carl Sorensen¹; ¹Brigham Young University

11:30 AM
Intermittent Flow of Material and Force Based Defect Detection during Friction Stir Welding of Aluminum Alloys: *Daniel Franke*¹; Michael Zinn¹; Frank Pfefferkorn¹; ¹University of Wisconsin Madison

11:50 AM
Realization of Conventional, Stationary Shoulder and Dual Rotation FSW with an Adaptive FSW Spindle Construction: *Michael Grätzel*¹; Konstantin Schick-Witte¹; Jean Pierre Bergmann¹; ¹Technische Universität Ilmenau

Friction Stir Welding and Processing X — Derivative Technologies

Sponsored by: TMS: Shaping and Forming Committee
Program Organizers: Yuri Hovanski, Brigham Young University; Rajiv Mishra, University of North Texas; Yutaka Sato, Tohoku University; Piyush Upadhyay, Pacific Northwest National Laboratory; David Yan, San Jose State University

Thursday AM
March 14, 2019
Room: 210A
Location: Henry B. Gonzalez
Convention Center

Session Chair: To Be Announced

8:30 AM Invited
Assessing the performance of aluminum alloy heat exchangers manufactured by Stationary Shoulder Friction Stir Channeling: *Joao Gandra*¹; ¹TWI Ltd

8:50 AM
Copper-Graphite Composite Wire Made by Shear-Assisted Processing and Extrusion: *Xiao Li*¹; Glenn Grant¹; Chen Zhou²; Hongliang Wang²; Thomas Perry²; James Schroth²; ¹Pacific Northwest National Lab; ²General Motors

9:10 AM
Joining AA7099 to Ni-Cr-Mo Steel Using Friction Stir Dovetailing: *Md Reza-E-Rabby*¹; Scott Whalen¹; Kenneth Ross¹; Martin McDonnell²; ¹Pacific Northwest National Laboratory; ²U.S. Army Tank Automotive Research Development and Engineering Center

9:30 AM
Fatigue and Fracture of Solid-state Additive Manufacturing of Aluminum alloy 6061: *Benjamin Rutherford*¹; Dustin Avery¹; Brian Jordon¹; ¹University of Alabama

9:50 AM Break

10:10 AM
Fatigue Behavior of Friction Stir Welding and Additive Friction Stir Deposition Repair Methods for Aluminum Alloys: *Conner Cleek*¹; Dustin Avery¹; Brian Jordon¹; Paul Allison¹; ¹The University of Alabama

10:30 AM Invited
Material flow and microstructure evolution in corner friction stir welding of 5083 Al alloy using Ad-Stir technique: *Kunitaka Masaki*¹; Hiroshi Saito¹; Koji Nezak¹; Shoko Kitamoto²; Yutaka Sato²; Hiroyuki Kokawa²; ¹IHI Corporation; ²Tohoku University

10:50 AM
Additive Friction Stir Deposition of Metals and Composites: *Hang Yu*¹; ¹Virginia Tech

11:10 AM
Joining of Lightweight Dissimilar Materials by Friction Self-Pierce Riveting: *Yong Chae Lim*¹; Charles Warren¹; Jian Chen¹; Zhili Feng¹; ¹Oak Ridge National Laboratory

High Entropy Alloys VII — Alloy Development and Applications III

Sponsored by: TMS: Alloy Phases Committee

Program Organizers: Xie Xie, FCA US LLC; Peter Liaw, University of Tennessee; Michael Gao, National Energy Technology Laboratory; E-Wen Huang, National Chiao Tung University; Gongyao Wang, Alcoa Technical Center; Srivatsan Tirumalai, The University of Akron

Thursday AM
March 14, 2019

Room: 207B
Location: Henry B. Gonzalez
Convention Center

Session Chairs: Jim Hu, Honda R&D Americas, Inc.; Hyoung Kim, POSTECH

8:30 AM Invited

Design of High-Strength High-Entropy Alloys: *Hyoung Seop Kim*¹; Jongun Moon¹; Jae Wung Bae¹; Jeong Min Park¹; ¹Postech

8:50 AM Invited

Efficient Exploration of the High Entropy Alloy Composition-Phase space: *Raymundo Arroyave*¹; Anas Abu-Odeh²; Tanner Kirk¹; Richard Malak¹; ¹Texas A & M University; ²University of California-Berkeley

9:10 AM Invited

fcc/B2 precipitation hardenable AlXCoCrFeNi high entropy alloy microstructures: Single phase fcc vs. dual phase fcc-bcc: Bharat Gwalani¹; Sindhura Gangireddy¹; Deep Choudhuri¹; Rajiv S Mishra¹; *Rajarshi Banerjee*¹; ¹University of North Texas

9:30 AM Invited

Development of oxide-dispersion strengthening medium entropy alloy: *Bin Liu*¹; Yong Liu¹; Ao Fu¹; Yong Yang²; Qigong Fang³; ¹Central South University; ²City University of Hongkong; ³Hunan University

9:50 AM Break

10:10 AM

Strain path affected microstructure and texture formation in an equiatomic CoCrFeMnNi High Entropy Alloy: Seelam Reddy¹; Mohammed Ahmed¹; G Sathiaraj¹; *Pinaki Bhattacharjee*¹; ¹Indian Institute of Tech

10:30 AM Invited

Development of oxidation resistant refractory high entropy alloys for high temperature structural applications: *Bronislava Gorr*¹; Franz Mueller¹; Steven Schellert¹; Hans Christ¹; Hans Chen²; Alexander Kauffmann²; Martin Heilmaier²; ¹University Of Siegen; ²Karlsruher Institut fuer Technologie (KIT)

10:50 AM Invited

Hierarchical microstructure and strengthening mechanisms of a CoCrFeNiMn high entropy alloy additively manufactured by selective laser melting: *Zhiguang Zhu*¹; Quy-bau Nguyen¹; Peter K. Liaw²; Mui-ling Nai¹; Jun Wei¹; ¹Singapore Institute of Manufacturing Technology; ²The University of Tennessee

11:10 AM

Production of AlCoCrFeNiME Based High Entropy Alloys via Self Propagating High Temperature Synthesis: *Murat Alkan*¹; Esra Dokumaci¹; Berkay Türkoglu¹; Aslihan Kara¹; Büsra Aksu¹; Dilan Ugurluer¹; ¹DEU

11:30 AM

Synthesis and characterization of nanocrystalline Fe_{26.67}Co_{26.67}Ni_{26.67}Al₁₀Si₁₀ alloy powders: Kathem Bazzi¹; Anuj Rath¹; Vamsi Meka¹; *Tanjore Jayaraman*¹; ¹University of Michigan-Dearborn

High Entropy Alloys VII — Mechanical and Other Properties I

Sponsored by: TMS: Alloy Phases Committee

Program Organizers: Xie Xie, FCA US LLC; Peter Liaw, University of Tennessee; Michael Gao, National Energy Technology Laboratory; E-Wen Huang, National Chiao Tung University; Gongyao Wang, Alcoa Technical Center; Srivatsan Tirumalai, The University of Akron

Thursday AM
March 14, 2019

Room: 207A
Location: Henry B. Gonzalez
Convention Center

Session Chairs: Marc Meyers, University of California, San Diego; Tirumalai Srivatsan, The University of Akron

8:30 AM Invited

Superior Dynamic Behavior of CrCoNi-based High-entropy Alloys: *Marc Meyers*¹; Zezhou Li¹; Shiteng Zhao²; Bingfeng Wang³; Yong Liu³; Peter Liaw⁴; Robert Ritchie²; ¹University of California, San Diego; ²Lawrence Berkeley Laboratory; ³Central South University; ⁴University of Tennessee

8:50 AM Invited

Unprecedented strength-ductility synergy in ultrafine-grained eutectic high-entropy alloys by inheriting the lamellar nature: *Yunbo Zhong*¹; Peijian Shi¹; Tianxiang Zheng¹; Zhongming Ren¹; Xueling Hou²; Jianchao Peng²; Pengfei Hu²; Yanfei Gao³; Weili Ren¹; Peter Liaw³; ¹State Key Laboratory of Advanced Special Steel & Shanghai Key Laboratory of Advanced Ferrometallurgy & School of Materials Science and Engineering, Shanghai University; ²Laboratory for Microstructures, Shanghai University; ³Department of Materials Science and Engineering, University of Tennessee

9:10 AM Invited

High-Throughput Methods For Predicting And Characterizing The Strength Of Single-Phase High Entropy Alloys: *Michael Kaufman*¹; Francisco Coury¹; Paul Wilson²; John Copley¹; Yaofeng Guo¹; Amy Clarke¹; ¹Colorado School of Mines; ²Boeing

9:30 AM

Low-cycle fatigue behavior of a multiphase high-entropy alloy: *Rui Feng*¹; Xie Xie¹; Dunji Yu²; Yan Chen²; Ke An²; Peter Liaw¹; ¹Univ of Tennessee, Knoxville; ²Oak Ridge National Laboratory

9:50 AM

Low temperature deformation of CrMnFeCoNi high-entropy alloy: *Dan Sathiaraj G*¹; R Schaarschuch¹; C-G Oertel¹; E.P George²; W Skrotzki¹; ¹Institute of Solid State and Materials Physics, Dresden University of Technology; ²Oak Ridge National Laboratory

10:10 AM Break

10:30 AM Invited

High throughput corrosion screening of Al-CoCrFeNi combinatorial high entropy alloys: *Yunzhu Shi*¹; Rui Feng²; Philip Rack²; Bin Yang³; Ying Zhao¹; Peter Liaw²; ¹Chinese Acad. Sci., Shenzhen Inst. of Adv. Tech.; ²The University of Tennessee; ³University of Science and Technology Beijing

10:50 AM Invited

Deformation Modes and strength-ductility combination of FCC-structured high-entropy alloys: *Jian Wang*¹; Kaisheng Ming²; ¹University of Nebraska-Lincoln; ²Beihang University

11:10 AM Invited

Nuclear and magnetic phase stability of FCC-to-HCP transformation-induced plasticity high entropy alloy and its effect on work-hardening behavior: Sichao Fu¹; Hongbin Bei¹; Tao Zou¹; Zheng Gai¹; Tingkun Liu¹; Dunji Yu¹; Yan Chen¹; *Ke An*¹; ¹Oak Ridge National Laboratory

11:30 AM

Size-Affected Plasticity in Eutectic High Entropy Alloy Nanocomposite: *Zhaoyi Ding*¹; Q. He¹; D. Chung¹; Q. Wang²; Y. Yang¹; ¹City University of Hong Kong; ²City University of Hong Kong/Shanghai University

High Entropy Alloys VII — Structures and Mechanical Properties IV

Sponsored by: TMS: Alloy Phases Committee

Program Organizers: Xie Xie, FCA US LLC; Peter Liaw, University of Tennessee; Michael Gao, National Energy Technology Laboratory; E-Wen Huang, National Chiao Tung University; Gongyao Wang, Alcoa Technical Center; Srivatsan Tirumalai, The University of Akron

Thursday AM
March 14, 2019

Room: 008B
Location: Henry B. Gonzalez
Convention Center

Session Chairs: Paul Jablonski, National Energy Technology Laboratory; Rajarshi Banerjee, University of North Texas

8:30 AM Invited

Ultra-high strength and anomalous hardening in FCC Medium / High Entropy Alloys: Connor Stone¹; Jiashi Miao¹; Easo George¹; Michael Mills¹; ¹Ohio State University

8:50 AM Invited

Size effect and strain-rate sensitivity of fcc alloys – from single elements to high entropy: Yuan Xiao¹; Ralph Spolenak¹; Jeffrey Wheeler¹; ¹ETH Zurich

9:10 AM

Effect of annealing on microstructure and mechanical properties Al-Nb-Hf-Sc-Ti-Zr high entropy alloy: Lukasz Rogal¹; Piotr Bobrowski¹; Fritz Körmann¹; Blazej Grabowski¹; ¹Institute Of Metallurgy And Materials Sc

9:30 AM Invited

Microstructure and Mechanical Properties of High-Entropy Alloy Co₂₀Cr₂₆Fe₂₀Mn₂₀Ni₁₄ Processed by High-Pressure Torsion at 77 K and 300 K: Jongun Moon¹; Yuanshen Qi²; Elena Tabachnikova³; Yuri Estrin⁴; Soo-Hyun Joo⁵; Hyoung Seop Kim¹; ¹POSTECH; ²Technion – Israel Institute of Technology; ³B. Verkin Institute for Low Temperature Physics and Engineering of National Academy of Sciences of Ukraine; ⁴Monash University; ⁵Tohoku University

9:50 AM Invited

Strain-rate Effect on the Tensile Behavior of CoCrFeNi and CoCrFeMnNi High Entropy Alloys: Mitra Shabani¹; Joseph Indeck²; Garrett Pataky¹; Kavan Hazeli²; Paul Jablonski³; ¹Clemson University; ²University of Alabama - Huntsville; ³National Energy Technology Laboratory

10:10 AM Break

10:30 AM Invited

Thermomechanical processing to achieve high strength in an FCC based high entropy alloy via L12 precipitation: Sriswaroop Dasari¹; Bharat Gwalani¹; Vishal Soni¹; Abhinav Jagetia¹; Rajarshi Banerjee¹; ¹University of North Texas

10:50 AM

A Study on the Mechanical Behavior in Interstitial Element Bearing High Entropy Alloys: Jung Soo Lee¹; Kook Noh Yoon¹; Hyun Seok Oh¹; Sang Jun Kim¹; Eun Soo Park¹; ¹Seoul National University

11:10 AM Invited

Microstructural refinement and deformation twinning during equal channel angular extrusion of equiatomic CoCrFeMnNi HEA at elevated temperatures: Sezer Picak¹; Havva Cansu Yilmaz²; Yuri I. Chumlyakov³; Ibrahim Karaman²; ¹Department of Mechanical Engineering, Texas A&M University; ²Department of Materials Science and Engineering, Texas A&M University; ³Tomsk State University, Siberian Physical Technical Institute

11:30 AM Invited

Laser processing as a high-throughput method to investigate microstructure-processing relationships in a high entropy alloy: Mu Li¹; Rohan Mishra¹; Katharine Flores¹; ¹Washington University In St. Louis

ICME Education in Materials Science and Mechanical Engineering — ICME Education in Materials Science and Mechanical Engineering

Sponsored by: TMS Materials Processing and Manufacturing Division, TMS: Education Committee, TMS: Integrated Computational Materials Engineering Committee, TMS: Alloy Phases Committee
Program Organizers: Wei Xiong, University of Pittsburgh; Michele Manuel, University of Florida; Danielle Cote, Worcester Polytechnic Institute; Mohsen Asle Zaeem, Colorado School of Mines; Krista Limmer, US Army Research Laboratory

Thursday AM
March 14, 2019

Room: 304A
Location: Henry B. Gonzalez
Convention Center

Session Chairs: Mohsen Zaeem, Colorado School of Mines; Krista Limmer, US Army Research Laboratory; Michele Manuel, University of Florida; Danielle Cote, Worcester Polytechnic Institute; Alexis Lewis, National Science Foundation

8:30 AM Invited

Education of Thermodynamics, CALPHAD, and ICME: Zi-Kui Liu¹; ¹Pennsylvania State University

8:50 AM Invited

Opportunities and Challenges for Implementing ICME in University Education: David McDowell¹; ¹Georgia Institute of Technology

9:10 AM Invited

Cross society integration of ICME within the digital engineering paradigm of aerospace engineering: Michael Sangid¹; John Matlik²; Ben Thacker³; Charles Ward⁴; Mat French²; Sankaran Mahadevan⁵; Nathan Hartman¹; ¹Purdue University; ²Rolls-Royce Corporation; ³Southwest Research Institute; ⁴Air Force Research Laboratory; ⁵Vanderbilt University

9:30 AM Invited

Perspectives on ICME Education From a Converted Empiricist: William Hamm¹; ¹Materials Design

9:50 AM Invited

Computational Materials Science and Engineering Education: Present and Future: Raúl Enrique¹; Mark Asta²; Katsuyo Thornton¹; ¹University of Michigan; ²University of California, Berkeley

10:10 AM Break

10:25 AM Invited

Education in Computational Thermodynamics, ICME and Materials Design – the KTH experience: John Agren¹; ¹Royal Institute of Tech

10:45 AM Invited

ICME Applied in the Undergraduate Capstone Senior Design Sequence: Paul Sanders¹; ¹Michigan Technological Univ

11:05 AM Invited

Integrating Computational Materials Engineering into the Curriculum - Challenges and Options: Vilupanur Ravi¹; ¹Cal Poly Pomona

11:25 AM Invited

ICME Education at Northwestern: Greg Olson¹; ¹Northwestern University & QuesTek Innovations LLC

11:45 AM Panel Discussion Coordinated by Dr. Alexis Lewis

Interfaces in Structural Materials: An MPMD Symposium in Honor of Stephen M. Foiles — Interface-defect Interactions I

Sponsored by: The Minerals, Metals and Materials Society, TMS: Computational Materials Science and Engineering Committee
Program Organizers: Fadi Abdeljawad, Clemson University; Eric Homer, Brigham Young University; Elizabeth Holm, Carnegie Mellon University; Mark Asta, Univ of California Berkeley

Thursday AM
March 14, 2019

Room: 302C
Location: Henry B. Gonzalez
Convention Center

Session Chair: To Be Announced

8:30 AM Invited

Correlative Studies of Segregation at Grain Boundaries and Heterophase Interfaces at an Atomic Scale: *David Seidman*¹; ¹Northwestern Univ

9:00 AM

Modelling of equilibrium and non equilibrium boron segregation at austenitic grain boundaries: *Frederic Danoix*¹; Nicolas Rolland²; Claire Debreux²; Thomas Sourmail³; Simon Catteau³; Didier Blavette²; ¹Cnrs - Universite De Normandie Rouen; ²UNIROUEN; ³Ascometal

9:20 AM

Solute Effects on Twin Nucleation and Growth in Ti alloys: *Mohammad Shahriar Hooshmand*¹; Maryam Ghazisaeidi¹; ¹Ohio State University

9:40 AM Invited

Loss of Stability in Nanocrystalline Alloys by Grain Boundary Desegregation: *Christopher Schuh*¹; Dor Amram¹; Zengbao Jiao¹; Wenting Xing¹; Malik Wagih¹; ¹MIT

10:10 AM Break

10:30 AM Invited

Defect Interactions with Semi-Coherent Interfaces in Ionic Materials: *Blas Ueberuaga*¹; Pratik Dholabhai²; Enrique Martinez¹; Kedarnath Kolluri¹; Xiang-Yang Liu¹; ¹Los Alamos National Lab; ²Rochester Institute of Technology

11:00 AM

Effect of Zn and H on grain boundary embrittlement in Al: *Oleg Kontsevoi*¹; Gregory Olson¹; ¹Northwestern Univ

11:20 AM

Nonequilibrium Molecular Dynamics Simulations of Ejecta Formation in Helium-implanted Copper: *Rachel Flanagan*¹; Saryu Fensin²; Timothy Germann²; Marc Meyers¹; ¹University of California, San Diego; ²Los Alamos National Laboratory

11:40 AM

The role of Nb₃Sn/Nb interface on microstructural defects in Nb₃Sn coatings on Nb for superconducting radiofrequency cavities: *Jaeyel Lee*¹; Sam Posen²; Zugang Mao¹; Yulia Trenikhina²; Kai He¹; Daniel Hall³; Matthias Liepe³; David Seidman¹; ¹Northwestern University; ²Fermi National Accelerator Laboratory; ³Cornell University

Irradiation Effects on Phase Transformations in Nuclear Reactor Materials — Multicomponent Alloys and Advanced Characterization Techniques

Sponsored by: TMS: Phase Transformations Committee
Program Organizers: Janelle Wharry, Purdue University; Kester Clarke, Colorado School of Mines; Julie Tucker, Oregon State University; Par Olsson, KTH Royal Institute of Technology; Dhriti Bhattacharyya, ANSTO; Mohsen Asle Zaeem, Colorado School of Mines; Arun Devaraj, Pacific Northwest National Laboratory

Thursday AM
March 14, 2019

Room: 214B
Location: Henry B. Gonzalez
Convention Center

Session Chairs: Dhriti Bhattacharyya, Australian Nuclear Science and Technology Organisation; Kester Clarke, Colorado School of Mines

8:30 AM Invited

Irradiation Effects on Precipitation in Multiconstituent Steels: *G. Robert Odette*¹; Nathan Almirall¹; Peter Wells¹; Takuya Yamamoto¹; Emmanuelle Marquis²; Shipeng Shu³; Dane Morgan³; Jia-Hong Ke⁴; Huibin Ke⁵; ¹UC Santa Barbara; ²University of Michigan; ³University of Wisconsin-Madison; ⁴Oregon State University; ⁵Ohio State University

8:55 AM

Irradiation responses of Al_{0.3}CoCrFeNi high entropy alloy at elevated temperatures: *Tengfei Yang*¹; Wei Guo²; Jonathan Poplawsky²; Dongyue Li³; Ling Wang¹; Yao Li¹; Zhanfeng Yan⁴; Yong Zhang³; Yugang Wang⁴; Steven Zinkle¹; ¹Department of Nuclear Engineering, University of Tennessee; ²Center for Nanophase Materials Sciences, Oak Ridge National Laboratory; ³State Key Laboratory for Advanced Metals and Materials, University of Science and Technology Beijing; ⁴State Key Laboratory of Nuclear Physics and Technology, Center for Applied Physics and Technology, Peking University

9:15 AM

Comparing Irradiation Effects in High Entropy Alloys and 316H Stainless Steel: *Wei-Ying Chen*¹; Yiren Chen¹; Naoyuki Hashimoto²; Jonathan Poplawsky³; Xiang Liu⁴; Jien-Wei Yeh⁵; Wei Guo³; Ko-Kai Tseng³; Krishnamurti Natesan¹; ¹Argonne National Laboratory; ²Hokkaido University; ³Oak Ridge National Laboratory; ⁴Idaho National Laboratory; ⁵National Tsing Hua University

9:35 AM

High irradiation resistance and elemental segregation in nanocrystalline W-based refractory high entropy alloy: *Osman El-Atwani*¹; Meimei Li²; Nan Li¹; Arun Devaraj³; Duc Nguyen-Manh⁴; Stuart Maloy¹; Enrique Martinez¹; Matthew Schneider¹; ¹Los Alamos National Lab; ²Argonne National Laboratory; ³Pacific Northwest National Laboratory; ⁴United Kingdom Atomic Energy Authority

9:55 AM Break

10:15 AM Invited

Using advanced microscopy methods to understand phase transformations in irradiated materials: *Philip Edmondson*¹; ¹Oak Ridge National Laboratory

10:40 AM

Irradiation Assisted Strain-induced Phase Transformation in Neutron Irradiated Austenitic 304L Stainless Steel Laser Weldments: *Keyou Mao*¹; Cheng Sun²; Paula Freyer³; Frank Garner⁴; Janelle Wharry¹; ¹Purdue University; ²Idaho National Laboratory; ³Westinghouse Electric Company LLC; ⁴Texas A&M University

11:00 AM

In-situ X-ray Study of the Deformation Wave Phenomenon in a Neutron-Irradiated 316 Stainless Steel: *Xuan Zhang*¹; Meimei Li¹; Chi Xu²; Yiren Chen¹; Jun-Sang Park¹; Jonathan Almer¹; ¹Argonne National Lab; ²University of Florida

11:20 AM

In situ TEM studies on the stability of nanotwinned metals and alloys under irradiation at elevated temperature: *Cuncai Fan*¹; Jin Li¹; Zhongxia Shang¹; Youxing Chen²; Sichuang Xue¹; Haiyan Wang¹; Xinghang Zhang¹; ¹Purdue University; ²University of Minnesota

11:40 AM

Microstructural and mechanical properties of crystalline materials containing He-bubble superlattice: *Miroslav Popovic*¹; Mehdi Balooch¹; Peter Hosemann¹; ¹Univ of California Berkeley

Magnesium Technology 2019 — Fundamentals, Mechanical Behavior, Twinning, Plasticity, Texture and Fatigue II

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

Program Organizers: Vineet Joshi, Pacific Northwest National Laboratory; Brian Jordon, University of Alabama; Dmytro Orlov, Lund University; Neale Neelameggham, IND LLC

Thursday AM
March 14, 2019

Room: 005
Location: Henry B. Gonzalez
Convention Center

Session Chairs: Chamini Mendis, Brunel University; Domonkos Tolnai, Helmholtz-Zentrum Geesthacht

8:30 AM

Recent progress in development and applications of Mg alloy thermodynamic database: *Rainer Schmid-Fetzer*¹; ¹Clausthal Univ of Technology

8:50 AM

Hardening Effects of Precipitates with Different Shapes on the Twinning in Magnesium Alloys: *Haidong Fan*¹; Jaafar El-Awady²; Dierk Raabe¹; ¹Max-Planck-Institut Für Eisenforschung; ²Johns Hopkins University

9:10 AM

Isometric Tilt Grain Boundaries and Solute Segregation in a Deformed Mg-Zn-Ca Alloy: *Yuman Zhu*¹; Jian-Feng Nie¹; ¹Monash Univ

9:30 AM

Metallography of Mg Alloys: *Norbert Hort*¹; Victor Floss²; Sarkis Gavras¹; Gert Wiese¹; Domonkos Tolnai¹; ¹Helmholtz-Zentrum Geesthacht; ²Helmut Schmidt University

9:50 AM

Microstructural and Mechanical Behavior of High-Shear Solid-State Deposition of Rare Earth Magnesium Alloy WE43: Zack McClelland¹; *Dustin Avery*²; C.J.T. Mason²; Oscar Rivera²; Chris Leah²; Paul Allison²; J.B. Jordon²; R.L. Martens²; Nanci Hardwick³; ¹US Army ERDC; ²The University of Alabama; ³MELD Manufacturing

10:10 AM Break

10:30 AM

Modeling the 3D plastic anisotropy of a Magnesium alloy processed using severe plastic deformation: *Joshua Herrington*¹; Yazid Madi²; Jacques Besson³; Amine Benzerga¹; ¹Texas A&M University; ²Mines ParisTech & EPF; ³Mines ParisTech

10:50 AM

Multiaxial Cyclic Response of Low Temperature Closed-die Forged AZ31B Mg Alloy: Dwayne Toscano¹; *Sugrib Shaha*¹; Seyed Behravesht¹; Bruce Williams²; Hamid Jahed²; ¹University of Waterloo; ²CanmetMATERIALS

11:10 AM

Thermo-mechanical processing of EZK alloys in a synchrotron radiation beam: *Domonkos Tolnai*¹; Marie-Anne Dupont²; Serge Gavras¹; Kristián Máthi³; Klaudia Horváth³; Andreas Stark¹; Norbert Schell¹; ¹Helmholtz-Zentrum Geesthacht; ²University of Bordeaux; ³Charles University

11:30 AM

Unveiling the Role of Super-Jogs and Dislocation Induced Atomic-Shuffling on Controlling Plasticity in Magnesium: Kinshuk Srivastava¹; Satish Rao¹; *Jaafar El-Awady*¹; ¹Johns Hopkins University

Mechanical Behavior of Nuclear Reactor Components — Defect Evolution II

Sponsored by: TMS: Nuclear Materials Committee

Program Organizers: Clarissa Yablinsky, Los Alamos National Laboratory; Assel Aitkaliyeva, University of Florida; Khalid Hattar, Sandia National Laboratories; Janelle Wharry, Purdue University; Laurent Capolungo, Los Alamos National Laboratory; Eda Aydogan, Los Alamos National Laboratory

Thursday AM
March 14, 2019

Room: 215
Location: Henry B. Gonzalez
Convention Center

Session Chairs: Laurent Capolungo, Los Alamos National Laboratory; Phil Edmondson, Oak Ridge National Laboratory

8:30 AM Invited

Effects of irradiation on the kinetics of precipitation in Fe-Cr-C alloys: *Frederic Soisson*¹; Estelle Meslin¹; Olivier Tissot¹; ¹Cea Saclay

9:00 AM

Investigation of Radiation Temperature and Straining Temperature Effects on the Screw Dislocation Mobility Evolution in Irradiated Ferritic Grains Using 3D Dislocation Dynamics: *Yang Li*¹; Christian Robertson¹; Xianfeng Ma²; Biao Wang²; ¹DEN-Service de Recherches Métallurgiques Appliquées, CEA, Université Paris-Saclay; ²Sino-French Institute of Nuclear Engineering and Technology, Sun Yat-sen University

9:20 AM

Property-Property Correlations of Tensile, Shear-Punch, Hardness Measurements and Microstructure Property Relations from the UCSB ATR2 Experiment Database: *Takuya Yamamoto*¹; Nathan Almirall¹; Peter Wells¹; Kirk Fields¹; David Gragg¹; G. Robert Odette¹; ¹University of California Santa Barbara

9:40 AM

Radiation effects on HT9 tempered martensitic steels as a function of nitrogen content and deformation: *Eda Aydogan*¹; Bjorn Clausen¹; Donald Brown¹; Matthew Chancey¹; Yongqiang Wang¹; Daniel Coughlin¹; Cody Miller¹; Stuart Maloy¹; ¹Los Alamos National Laboratory

10:00 AM Break

10:20 AM Invited

The Role of Non-Equilibrium Grain Boundary Structure in Radiation Tolerance and Thermal Stability: *Mitra Taheri*¹; ¹Drexel Univ

10:50 AM

The effect of grain boundaries and second-phase particles on notch-tip hydride reorientation in zirconium alloys: *Said El Chamaa*¹; Mark Wenman¹; Catrin Davies¹; ¹Imperial College London

11:10 AM

Strength and ductility enhancement of T91 ferritic/martensitic steel by partial tempering treatment: Zhongxia Shang¹; Jie Ding¹; Cuncai Fan¹; Miao Song²; Jin Li¹; Qiang Li¹; Sichuang Xue¹; Karl Hartwig³; *Xinghang Zhang*¹; ¹Purdue University; ²University of Michigan; ³Texas A&M University

11:30 AM

Thermal and Irradiation Climb in Discrete Dislocation Dynamics: *Aaron Kohnert*¹; Laurent Capolungo¹; ¹Los Alamos National Lab

Mechanical Behavior Related to Interface Physics III — Nanocomposites I

Sponsored by: TMS Materials Processing and Manufacturing Division, TMS: Nanomechanical Materials Behavior Committee
Program Organizers: Jason Trelewicz, Stony Brook University; Nathan Mara, University of Minnesota; Erica Lilleodden, Helmholtz-Zentrum Geesthacht; Siddhartha Pathak, University of Nevada, Reno; Jordan Weaver, National Institute of Standards and Technology; Marc Legros, CEMES-CNRS

Thursday AM
March 14, 2019

Room: 304B
Location: Henry B. Gonzalez
Convention Center

Session Chair: To Be Announced

8:30 AM

Shock Response of Cu/Ta Multilayered Systems at the Atomic Scales: *Jie Chen*¹; Suveen Mathaudhu²; Naresh Thadhani³; Avinash Dongare¹; ¹University of Connecticut; ²University of California, Riverside; ³Georgia Institute of Technology

8:50 AM

Mechanical Properties of Amorphous Silicon Nanoparticles: Dimitrios Kilymis¹; *Celine Gerard*¹; Laurent Pizzagalli¹; ¹Institut Pprime - Cnrs

9:10 AM Invited

Recent developments in micromechanical analysis of nanostructured materials: low temperatures, high strain rates, and novel sample geometries: *Jakob Schwiedrzik*¹; ¹Empa

9:40 AM

The effect of coherent interface on strain-rate sensitivity of Cu-based nanolayers: *Kunming Yang*¹; Yue Liu¹; Engang Fu²; Xinghang Zhang³; ¹Shanghai Jiao Tong University; ²Peking University; ³Purdue University

10:00 AM Break

10:20 AM Invited

Interface-morphology effects on nanomechanical behavior of co-sputtered Cu-Mo thin films: *Amit Misra*¹; ¹University of Michigan

10:50 AM

Deformation Behavior of Nanolayered Metal/Ceramic Composites under Tensile Loading: Microstructural and Size Effects: Somya Singh¹; R. Berlia¹; L.W. Yang²; A.J. Palomares²; J. Llorca²; K. Baldwin³; N. Mara⁴; J. Rajagopalan¹; J.M. Molina-Aldareguia²; *N. Chawla*¹; ¹Arizona State University; ²IMDEA Materials Institute; ³Los Alamos National laboratory; ⁴University of Minnesota

11:10 AM

The role of 3D interface structure in plastic deformation of Cu/Nb nanocomposites: *Youxing Chen*¹; Justin Cheng¹; Jon Baldwin²; Nan Li²; Jason Myers¹; Richard Hoagland²; Xiang-Yang Liu²; Nathan Mara¹; ¹University of Minnesota; ²Los Alamos National Laboratory

11:30 AM Invited

Identifying deformation and fracture processes in interface-dominated materials: *Daniel Kiener*¹; Inas Issa¹; Markus Alfreider¹; Michael Wurmshuber¹; Otmar Kolednik²; Verena Maier-Kiener¹; ¹University of Leoben; ²Austrian Academy of Sciences

Nanoarchitected and Morphology-controlled Nanoporous Materials — Synthesis

Sponsored by: TMS Materials Processing and Manufacturing Division, TMS: Mechanical Behavior of Materials Committee
Program Organizers: Niaz Abdolrahim, University of Rochester; John Balk, Univ of Kentucky; Michael Demkowicz, Texas A&M Univ; Christoph Eberl, Fraunhofer IWM

Thursday AM
March 14, 2019

Room: 214A
Location: Henry B. Gonzalez
Convention Center

Session Chair: To Be Announced

8:30 AM Invited

Hierarchical Bulk Nanoporous Aluminum for On-board Hydrogen Generation by Hydrolysis: *Eric Detsi*¹; John Corsi¹; Jintao Fu¹; Zeyu Wang¹; ¹Univ of Pennsylvania

9:00 AM

Synthesis of Mesoporous Copper Oxide (CuO) Using Inverse Micelle Method for Non-enzymatic Biosensors: *Sung Gue Heo*¹; Won-Sik Yang¹; Kyoung-Tae Park¹; Taek-Soo Kim¹; Kyoung Mook Lim¹; Seok-Jun Seo¹; ¹Korea Institute of Industrial Technology

9:20 AM

Bi-continuous Pattern Formation in Solid-State Thin Films via Solid-State Interfacial Dealloying: *Chonghang Zhao*¹; Kim Kisslinger²; Xiaojing Huang²; Hanfei Yan²; Fernando Camino²; Yong Chu²; Yu-chen Karen Chen-Wiegart¹; ¹Stony Brook University; ²Brookhaven National Laboratory

9:40 AM

Fabrication of Np Metals Using Thermal Dealloying in Vacuum: Maria Kosmidou¹; Tyler Maxwell¹; Michael Detisch¹; *Nicolas Briot*¹; T. John Balk¹; ¹University of Kentucky

10:00 AM Break

10:30 AM Invited

Processing and mechanical performance of carbon-based nanoarchitected materials: *Lorenzo Valdevit*¹; ¹University Of California, Irvine

11:00 AM

PH-Controlled Dealloying Route to Hierarchical Bulk Nanoporous Zn Derived from Metastable Alloy for Hydrogen Generation by Hydrolysis of Zn in Neutral Water: *Jintao Fu*¹; Eric Detsi¹; ¹University of Pennsylvania

11:20 AM

Magic oxygen in metallic glasses: tuning Cu-Ag porous nanomembrane into nanoporous Ag-Cu@Ag core-shell alloy: *Xue Liu*¹; Ke-Fu Yao²; ¹Institute of Materials, China Academy of Engineering Physics; ²Tsinghua University

11:40 AM

Nanoporous Au by Free-Corrosion Dealloying in Water: Heng Wei¹; *Zeyu Wang*¹; Jintao Fu¹; Eric Detsi¹; ¹University of Pennsylvania

Phase Transformations and Microstructural Evolution — Phase Transformation in Non-ferrous Alloys IV

Sponsored by: TMS: Phase Transformations Committee

Program Organizers: Sophie Primig, Univ of New South Wales; Deep Choudhuri, University of North Texas; Klaus-Dieter Liss, Guangdong Technion – Israel Institute of Technology; Megumi Kawasaki, Oregon State University; Matthew Steiner, University of Cincinnati; Yufeng Zheng, Ohio State University; Ashley Paz y Puente, University of Cincinnati; Juan Escobedo-Diaz, University of New South Wales; Dhriti Bhattacharyya, ANSTO; Rajarshi Banerjee, University of North Texas

Thursday AM
March 14, 2019

Room: 225D
Location: Henry B. Gonzalez
Convention Center

Session Chair: To Be Announced

8:30 AM

Phase transformations and evolution of rapid solidification microstructures in Al-Cu alloys during sequences of laser-induced rapid thermal transients: *Vishwanadh Bathula*¹; Jorg Wiezorek¹; Joseph McKeown²; ¹University of Pittsburgh; ²Lawrence Livermore National Laboratory

8:50 AM

Exploring phase transformations in the Au-Zn-Al system: *Taylor Jacobs*¹; Seth Imhoff¹; Sven Vogel¹; Mark Ortega¹; Chris Baxter¹; Eunice Solis¹; Sendin Bajric¹; Carlos Archuleta¹; Meghan Gibbs¹; Clarissa Yablinsky¹; ¹Los Alamos National Laboratory

9:10 AM

Enhanced athermal ϵ -martensite in Co-Cr alloys under rapid solidification conditions: *Hugo Lopez*¹; Ana Ramirez-Ledesma²; Julio Juarez-Islas²; ¹Univ of Wisconsin; ²Universidad Nacional Autónoma de México

9:30 AM

Thermo-mechanical Property Design through Computational Modeling for Advanced Powder Metallurgy: *Derek Tsaknopoulos*¹; Bryer Sousa¹; Danielle Cote¹; Victor Champagne²; ¹Worcester Polytechnic Institute; ²U.S. Army Research Laboratory

9:50 AM

Superelasticity and Superplasticity in Shape Memory Yttria Stabilized Tetragonal Zirconia Nanoparticles: *Ning Zhang*¹; Mohsen Asle Zaem¹; ¹Colorado School of Mines

10:10 AM Break

10:30 AM

Order-disorder morphologies in rapidly solidified Ni₃Ge intermetallic: *Nafisul Haque*¹; Robert Cochrane¹; Andrew Mullis¹; ¹Univ of Leeds

10:50 AM

Superplastic behavior of a modified 3000 series aluminum alloy: *Francisco Flores*¹; Davaadorj Bayansan¹; David Seidman²; David Dunand²; Nhon Vo¹; ¹NanoAl LLC; ²Northwestern University

11:10 AM

Precipitation Hardening of Supersaturated Al-Sc-Zr Produced via Melt-Spinning: *Yang Yang*¹; Paul Sanders¹; ¹Michigan technological university

11:30 AM

Microstructural and mechanical property of Ti - STS dissimilar joints by brazing with Zr-Ti metallic glass filler and intermediate layers: *Jin Soo Park*¹; Da Hye Song¹; Jin Kyu Lee¹; ¹Kongju National Univ

Powder Processing of Bulk Nanostructured Materials — Structural Evolution and Thermal Stability

Sponsored by: TMS: Powder Materials Committee

Program Organizers: Zachary Cordero, Rice University; Deliang Zhang, Shanghai Jiao Tong Univ; Brady Butler, US Army Research Laboratory; Ma Qian, RMIT University (Royal Melbourne Institute of Technology)

Thursday AM
March 14, 2019

Room: 211
Location: Henry B. Gonzalez
Convention Center

Session Chair: Anit Giri, Army Research Laboratory

8:30 AM

Microstructure and Hardness of Nanostructured V-Y Alloys: *Anit Giri*¹; Chad Hornbuckle¹; AJ Roberts¹; Joe Marsico²; Kris Darling¹; ¹US Army Research Laboratory; ²ORISE

9:00 AM

Structural evolution in Fe-Cr alloys – the effect of processing: *Lukas Weissitsch*¹; Martin Stückler¹; Stefan Wurster¹; Andrea Bachmaier¹; ¹Erich Schmid Institute of Materials Science of the Austrian Academy of Sciences

9:20 AM

Thermal Stability Facilitated by Diamantane on Triple Junctions in Bulk Nanocrystalline Aluminum Alloys: *James Earthman*¹; Ali Yousefiani²; Torben Boll³; Martin Heilmair³; ¹University of California, Irvine; ²Boeing Research & Technology; ³Karlsruhe Institute of Technology (KIT), Institute for Applied Materials

9:40 AM

Influences of interstitial and extrusion temperature on grain boundary segregation, Y-Ti-O nanofeatures, and mechanical properties of ferritic steels: *Nana Adomako*¹; Jeoung Kim¹; Jae Bok Seol²; Daniel Haley³; David Hoelzer²; ¹Hanbat National University; ²POSTECH; ³University of Oxford; ⁴Oak Ridge National Laboratory

10:00 AM Break

10:20 AM

Effect of rare earth oxides on the microstructure and mechanical behavior of Fe-Cr based alloys processed via spark plasma sintering: *Arnab Kundu*¹; Indrajit Charit¹; Brian Jaques²; Chao Jiang; ¹Univ of Idaho; ²Boise State University

10:40 AM

High magnetic properties of Nd-Fe-B sintered magnets using multiple sintering process: *Dongwon Shin*¹; Soon Jik Hong¹; Dong Su Kim¹; ¹Kongju National University

Recent Advances in Functional Materials and 2D/3D Processing for Sensors and Electronic Applications — Printed Electronics II: Functional Materials and Devices

Sponsored by: TMS: Thin Films and Interfaces Committee
Program Organizers: Pooran Joshi, Oak Ridge National Laboratory; Ravindra Nuggehalli, New Jersey Institute of Tech; Jud Ready, Georgia Institute of Technology; Anming Hu, Univ of Tennessee; Tolga Aytug, Oak Ridge National Laboratory; Konstantinos Sierros, West Virginia University; Wenchao Zhou, University of Arkansas

Thursday AM
March 14, 2019

Room: 217D
Location: Henry B. Gonzalez
Convention Center

Session Chairs: Wenchao Zhou, University of Arkansas; Tolga Aytug, Oak Ridge National Laboratory

8:30 AM Invited

Direct-write flexible sensors for energy efficient wireless sensor network: *Pooran Joshi*¹; Teja Kuruganti¹; Stephen Killough¹; Yongchao Yu²; Aravind Mikkilineni¹; Anming Hu²; ¹Oak Ridge National Laboratory; ²The University of Tennessee, Knoxville

9:00 AM Invited

Electro-mechanical methods to determine the reliability of flexible electronics: *Megan Cordill*¹; ¹Erich Schmid Institute

9:30 AM

Advancing the Understanding of Continuous Direct-Write Printing by Operando Coherent X-ray Scattering: *Maria Torres Arango*¹; Ruipeng Li¹; Gregory Doerk¹; Lutz Wiegart¹; ¹Brookhaven National Laboratory

9:50 AM Invited

3D Printing of Hierarchical Multifunctional Foams: *Konstantinos Sierros*¹; ¹West Virginia University

10:20 AM Break

10:40 AM

Fabrication of Optically Transparent Glass via a Microfluidic-assisted Sol-Gel 3D-Print: *Yujuan He*¹; Alvin Chang¹; Chih-hung Chang¹; ¹Oregon State University

11:00 AM Invited

Some Research Work on a Novel “Double-Pulse Laser Micro Sintering” Process: *Benxin Wu*¹; ¹Purdue University

11:30 AM Invited

Dissolvable tattoo sensors from advanced manufacturing and materials: *Huanyu Cheng*¹; ¹The Pennsylvania State University

12:00 PM

Electrochemical Detection of Acetaminophen using CeO₂-modified Pt/C catalyst inks: *Aytekin Uzunoglu*¹; ¹Necmettin Erbakan University

Recent Developments in Biological, Structural and Functional Thin Films and Coatings — Functional Films and Coatings II

Sponsored by: TMS: Thin Films and Interfaces Committee
Program Organizers: Adele Carrado, IPCMS - CNRS; Nancy Michael, Univ of Texas Arlington; Gerald Ferblantier, Icube Laboratory; Heinz Palkowski, Clausthal University of Technology; Ramana Chintalapalle, University of Texas at El Paso; Ravindra Nuggehalli, New Jersey Institute of Tech; Vikas Tomar, Purdue University

Thursday AM
March 14, 2019

Room: 217A
Location: Henry B. Gonzalez
Convention Center

Session Chairs: Chintalapalle Ramana, University of Texas El Paso; Nuggehalli M Ravindra, New Jersey Institute of Technology

8:30 AM Keynote

Tailoring Thermal Properties through Ion Beam Modifications: *Khalid Hattar*¹; Ethan Scott²; Cody Dennett³; Christopher Saltonstall¹; Thomas Beechem¹; Patrick Hopkins²; Michael Short³; ¹Sandia National Laboratories; ²University of Virginia; ³Massachusetts Institute of Technology

9:10 AM Invited

Tuning structural, electrical and optical properties of Al-doped ZnO thin films by pulse DC/DC reactive magnetron co-sputtering: *Lirong Sun*¹; John Grant¹; John Jones¹; Neil Murphy¹; ¹Air Force Research Laboratory

9:40 AM

Fabrication and Characterization of Oxide Thin Films for Energy Related Applications: *Ramana Chintalapalle*¹; ¹University Of Texas At El Paso

10:00 AM Break

10:20 AM Keynote

Engineering Second-order Nonlinear Optical Materials by Pulsed Laser Deposition with In Situ Ellipsometry: *John Jones*¹; Cristian Orozco²; Nanthakishore Makeswaran²; Ekaterina Poutrina³; Oded Rabin⁴; Cynthia Bowers⁵; Lirong Sun¹; Chintalapalle Ramana²; Augustine Urbas¹; ¹Air Force Research Laboratory; ²University of Texas at El Paso; ³UES; ⁴University of Maryland; ⁵Wright State University

11:00 AM

Structural, Optical and Electrical Property Evaluation of RF-Sputtered Molybdenum Thin Films: *Anil Krishna Battu*¹; Vishal Zade¹; Ramana Chintalapalle¹; ¹University of Texas at El Paso

11:20 AM

Self Healing in Materials: An Overview: *Samiha Hossain*¹; Nuggehalli Ravindra¹; ¹New Jersey Institute of Technology

Solar Cell Silicon — Slag, Recycling, and Photovoltaics

Sponsored by: TMS: Materials Characterization Committee
Program Organizers: Shadia Ikhmayies, Al Isra University; Neale Neelameggham, IND LLC; York Smith, University of Utah; Leili Tafaghodi, University of British Columbia

Thursday AM
March 14, 2019

Room: 008A
Location: Henry B. Gonzalez
Convention Center

Session Chair: To Be Announced

8:30 AM Introductory Comments

8:35 AM Invited

Physical Separation Methods to Recovery Solar Si for Recycling: *York Smith*¹; ¹Univ of Utah

9:15 AM

Wettability behavior of Si/C and Si-Sn alloy/C system: *Yaqiong Li*¹; Lifeng Zhang¹; ¹Univ of Science & Technology Beijing

9:35 AM

Recycling Silicon Kerf as a Feedstock for Solar Silicon Production: *Jan-Philipp Mai*¹; ¹JPM Industries

9:55 AM Break

10:15 AM

Transmission Electron Microscopy Study of DIO₃ and UV_o Cleaned Silicon Surfaces for Solar Cell Applications: *Haider Ali*¹; Sara Bakhshi¹; Ngwe Zin¹; Winston Schoenfeld¹; Kristopher Davis¹; ¹Univ Of Central Florida

10:35 AM

Phase Diagrams of Al-Si System: *Shadia Ikhmayies*¹; ¹Al Isra University

10:55 AM

Diving Deep into Silane Pyrolysis Chemistry to Enable New Silicon-refining Reactor Technologies: Guro Wyller¹; Anjitha S G¹; Marte Skare¹; Hallgeir Klette¹; *Thomas Preston*¹; ¹Institutt for Energiteknikk

10th International Symposium on High Temperature Metallurgical Processing — Preparation of Alloys and Materials II

Sponsored by: TMS: Pyrometallurgy Committee

Program Organizers: Tao Jiang, Central South University; Jiann-Yang Hwang, Michigan Technological Univ; Dean Gregurek, RHI Magnesita; Zhiwei Peng, Central South University; Jerome Downey, Montana Technological University; Baojun Zhao, University of Queensland; Onuralp Yucel, Istanbul Technical University; Ender Keskinilic, Atılım University; Rafael Padilla, Univ of Concepcion; Elsa Olivetti, Massachusetts Institute of Tech; Camille Fleuriaux, Gopher Resource

Thursday PM
March 14, 2019

Room: 208
Location: Henry B. Gonzalez
Convention Center

Session Chairs: Dean Gregurek, RHI AG Technology Center Leoben; Mingming Zhang, ArcelorMittal Global R&D

2:00 PM **Introductory Comments**

2:05 PM

Experimental Study on the Mechanism of Lead Vapor Condensation Under Vacuum: *Huan Zhang*¹; Zhenghao Pu¹; Yifu Li¹; Junjie Xu¹; Baoqiang Xu¹; Bin Yang¹; ¹Kunming University of Science and Technology

2:25 PM

Effect of Al on the Formation of IAF in Al-Ti-Mg Deoxidized and RE-treated Steel: *Xiaokang Cui*¹; Bo Song¹; Zhen Liu¹; Longfei Li¹; ¹University of Science & Technology Beijing

2:45 PM

Effect of Ce Treatment on the Composition of Nucleation Inclusion in Ti-Mg Complex Deoxidized C-Mn Steel: *Zhen Liu*¹; Bo Song¹; Longfei Li¹; Zeyun Cai¹; Xiaokang Cui¹; ¹University of Science and Technology Beijing

3:05 PM

Effects of La Addition on Inclusions, Microstructures and High Temperature Mechanical Properties of As-cast FeCrAl Alloys: *Yang He*¹; Jianhua Liu¹; Yindong Yang²; Alex McLean²; ¹University of Science and Technology Beijing; ²University of Toronto

3:25 PM Break

3:45 PM

Fabrication of Co-Cr-Mo Alloy Fibers from the Melt by Unidirectional Solidification, and their Microstructure and Mechanical Properties: *Yuui Yokota*¹; Takayuki Nihei²; Masao Yoshino¹; Akihiro Yamaji¹; Yuji Ohashi¹; Shunsuke Kurosawa¹; Kei Kamada¹; Akira Yoshikawa¹; ¹Tohoku University; ²C&A Corporation

4:05 PM

Ferrosilicon Alloy Granulation Process Based on Water Screen Cooling: *Xueqin Li*¹; Feifei Pan¹; Xuewei Lv¹; Wencao He¹; ¹Chongqing University

4:25 PM

Removal of Copper from Fe-Cu Alloy by Using Iodine: Yuichi Takamatsu¹; *Takashi Nagai*¹; ¹Chiba Institute of Technology

4:45 PM **Concluding Comments**

10th International Symposium on High Temperature Metallurgical Processing — Utilization of Complex Ores

Sponsored by: TMS: Pyrometallurgy Committee

Program Organizers: Tao Jiang, Central South University; Jiann-Yang Hwang, Michigan Technological Univ; Dean Gregurek, RHI Magnesita; Zhiwei Peng, Central South University; Jerome Downey, Montana Technological University; Baojun Zhao, University of Queensland; Onuralp Yucel, Istanbul Technical University; Ender Keskinilic, Atılım University; Rafael Padilla, Univ of Concepcion; Elsa Olivetti, Massachusetts Institute of Tech; Camille Fleuriaux, Gopher Resource

Thursday PM
March 14, 2019

Room: 209
Location: Henry B. Gonzalez
Convention Center

Session Chairs: Ender Keskinilic, Atılım University; Bin Yang, University of Science and Technology Beijing

2:00 PM **Introductory Comments**

2:05 PM

Application and Mechanism of Dolomite in High Magnesium Pellets: Feiyu Meng¹; *Tao Jiang*¹; Qiang Zhong¹; Qian Li¹; Yongbin Yang¹; Guanghui Li¹; ¹Central South Univ

2:25 PM

Effect of Core Diameter on the Compressive Strength and Porosity of Itakpe Iron Ore Pellets: *Ugwu Odo*¹; Ugochukwu Nwoke¹; ¹Nnamdi Azikiwe University

2:45 PM

Effect of Reduction Degree on Softening and Melting Behavior of Pellet: *YuZhu Pan*¹; Jingsong Wang¹; ¹University of Science and Technology Beijing

3:05 PM

Effect of TiO₂ on the Viscous Behavior of the CaO-SiO₂-14 Mass% Al₂O₃-8 Mass% MgO-TiO₂ Slag: *Zhengde Pang*¹; Yuyang Jiang¹; Xuewei Lv¹; Zhiming Yan¹; Wencao He¹; ¹Chongqing University

3:25 PM

Formation of Calcium Ferrites in Sintering Process of Raw Materials with Fe₂O₃-CaO-TiO₂: *Xingmin Guo*¹; Yan-Bo Chen¹; Nan Xiang¹; ¹University of Science and Technology

3:45 PM Break

4:05 PM

Granulation of Semisteel by Rotary Disc Atomizer: *Wenchao He*¹; Xuewei Lv¹; Feifei Pan¹; Xueqin Li¹; Zhiming Yan¹; Zhengde Pang¹; ¹Chongqing Univ

4:25 PM

Dissolution Kinetics of Titanium in Carbon-saturated Iron: *Leizhang Gao*¹; Tongxiang Ma¹; Zhiming Yan¹; Meilong Hu¹; ¹Chongqing University

4:45 PM

Microwave Processing of Banded Iron Ore: Veeranjaneyulu Rayapudi¹; *Nikhil Dhawan*¹; ¹IIT-Roorkee

5:05 PM

Research on Mineral Structure and Compositions of Peru Raw Ore: *Wen Pan*¹; Lei Liu²; Ya-peng ZHANG¹; Xia Zhao³; Zhi-xing Zhao¹; ¹Beijing key Lab of Green Recyclable Process for Iron & steel Production Tech; ²Beijing Shougang co., LTD; ³Shougang Institute of Technology

5th Symposium on Advanced Materials for Energy Conversion and Storage — Energy Storage with Emphasis on Batteries IV

Sponsored by: TMS: High Temperature Alloys Committee
Program Organizers: Amit Pandey, LG Fuel Cell Systems; Partha Mukherjee, Purdue University; Surojit Gupta, University of North Dakota; Kyle Brinkman, Clemson Univ; Jung Pyung Choi, Pacific Northwest National Laboratory; Soumendra Basu, Boston University; Paul Ohodnicki, National Energy Technology Laboratory

Thursday PM
March 14, 2019
Room: 225A
Location: Henry B. Gonzalez Convention Center

Session Chairs: Partha P. Mukherjee, Purdue University; George Nelson, University of Alabama, Huntsville

2:00 PM Keynote

Understanding Gas Evolving Reactions and the Effects of Gaseous Products on Li Ion Cycle Life: *Shen Dillon*¹; ¹University of Illinois

2:30 PM Invited

Local Structure and Capacity Fade Correlations in Cathode Materials for Multivalent-ion Intercalation: *Christopher Patridge*¹; ¹D'Youville College

2:55 PM Invited

Sculpting Atomically Disordered Oxides for Fast Ion Conduction: *Ritesh Sachan*¹; Yanwen Zhang²; Matthew Chisholm²; William Weber³; ¹Army Research Office; ²ORNL; ³University of Tennessee

3:20 PM

One Dimensional Nanomaterials for Emerging Energy Storage: *Liqiang Mai*¹; ¹Wuhan University Of Technology

3:40 PM Break

4:00 PM Keynote

Tuning Ionic Mobility in Solid Electrolytes via Lattice Disorder: *Donald Siegel*¹; Kwangnam Kim¹; ¹University Of Michigan

4:30 PM

Iron Doped Gallium Oxide (Ga₂-xFexO₃): Structure, Chemistry and Dielectric Properties: *Swadiptra Roy*¹; Mallesham Bandi¹; Vaithiyalingam Shutthanandan²; Suntharampillai Thevuthasan²; Ramana C.V.¹; ¹University of Texas El Paso; ²PNNL

4:50 PM

High Energy in situ SR-XRD Studies of Pure Pb, Pb-Bi, and Pb-Ba Foils at Elevated Temperatures: Matthew Carl¹; *Michael Wall*¹; Jesse Smith¹; Matthew Raiford²; Tim Ellis²; Yang Ren³; Rick Reidy¹; Marcus Young¹; ¹University of North Texas; ²RSR Technologies; ³Argonne National Laboratory

5:10 PM

Modeling Thermal Resistance of the Interface between Mechanically Contacting Surfaces: *Seyed Aria Hosseini*¹; Seshu Nimmala²; Jackson Harter³; Todd Palmer³; Eric Lenz²; Alex Greaney¹; ¹University Of California, Riverside; ²Lam Research Corporation; ³Oregon State University

5th Symposium on Advanced Materials for Energy Conversion and Storage — Energy Storage with Emphasis on Batteries V

Sponsored by: TMS: High Temperature Alloys Committee
Program Organizers: Amit Pandey, LG Fuel Cell Systems; Partha Mukherjee, Purdue University; Surojit Gupta, University of North Dakota; Kyle Brinkman, Clemson Univ; Jung Pyung Choi, Pacific Northwest National Laboratory; Soumendra Basu, Boston University; Paul Ohodnicki, National Energy Technology Laboratory

Thursday PM
March 14, 2019
Room: 213B
Location: Henry B. Gonzalez Convention Center

Session Chair: Partha P. Mukherjee, Purdue University

2:00 PM Invited

Understanding the Mesoscopic Phase Transformation Kinetics in Intercalation Compounds: Liang Hong¹; Kaiqi Yang¹; *Ming Tang*¹; ¹Rice Univ

2:20 PM

Internal Resistance Temperature Detector Based Solution for Lithium-ion Battery Thermal Events Prediction, Prevention and Control: *Bing Li*¹; Mihit Parekh¹; Ryan Adams¹; Vikas Tomar¹; Vilas Pol¹; ¹Purdue University

2:40 PM

Operando Transmission Electron Microscopy Study of Lithium Storage Mechanisms in Nanoporous Metals: *John Corsi*¹; Eric Stach¹; Eric Detsi¹; ¹University of Pennsylvania

3:00 PM

Aprotic Li/O₂ Batteries: Reactions and Products in Different Electrolytes: Matthias Augustin¹; Per Erik Vullum²; Fride Vullum-Bruer¹; *Ann Mari Svensson*¹; ¹Norwegian University of Science and Technology; ²SINTEF Materials and Chemistry

3:20 PM Break

3:40 PM

Li-ion Capacitors: Combining Energy and Power Densities: *Ganguli Babu*¹; Keiko Kato¹; Pulickel Ajayan¹; ¹Rice University

4:00 PM

Synthesis and Electrocatalytic Properties of Ni-Fe Layered Double Hydroxide Nanomaterials: Mengxin Miao¹; Xiaobo Han¹; Rulong Jia¹; Wei Ma¹; Guihong Han¹; ¹Zhengzhou University

Additive Manufacturing and Welding: Physical and Mechanical Metallurgy of Rapidly Solidified Metals — In Situ Synchrotron Measurements

Sponsored by: TMS: Additive Manufacturing Committee
Program Organizers: Allison Beese, Pennsylvania State University; Eric Lass, National Institute of Standards and Technology; David Bourell, University of Texas; John Carpenter, Los Alamos National Laboratory; Kester Clarke, Colorado School of Mines; Daniel Coughlin, Los Alamos National Laboratory; Christian Leinenbach, Empa, Swiss Federal Laboratories for Materials Science and Technology; Behrang Poorganji, GE Additive; Judy Schneider, University of Alabama At Huntsville; Lee Semiatin, US Air Force Research Laboratory; Mark Stoudt, National Institute of Standards and Technology; Chantal Sudbrack, QuesTek Innovations LLC

Thursday PM
March 14, 2019

Room: 221A
Location: Henry B. Gonzalez
Convention Center

Session Chair: John Carpenter, Los Alamos National Laboratory

2:00 PM Invited

Capturing Microstructure and Defect Formation during Laser Additive Manufacturing using Synchrotron Imaging: *Peter Lee*¹; Chu Lun Alex Leung¹; Sam Clark¹; Yunhui Chen¹; Lorna Sinclair¹; Sebastian Marussi²; Azeem Mohammed¹; Margie Olbinado³; Robert Atwood⁴; Iain Todd⁵; ¹University College London; ²Univ. of Manchester; ³ESRF; ⁴Diamond Light Source; ⁵Univ. of Sheffield

2:30 PM

In Situ and Operando Synchrotron Quantification of Transient Defect Dynamics during Additive Manufacturing of Ti-6Al-4V: *Yunhui Chen*¹; Lorna Sinclair²; Samuel Clark¹; Chu Lun Alex Leung¹; Sebastian Marussi²; Robert Atwood³; Margie Olbinado⁴; Alexander Rack⁴; Iain Todd⁵; Peter Lee¹; ¹University College London; ²The University of Manchester; ³Diamond Light Source; ⁴European Synchrotron Radiation Facility; ⁵The University of Sheffield

2:50 PM

Multi-method Measurements of Residual Elastic Strain/stress in Additively Manufactured Inconel 625: *Thien Phan*¹; Maria Strantz²; Michael Hill³; Thomas Gnaupel-Herold¹; Bjorn Clausen²; Darren Pagan⁴; Donald Brown²; Lyle Levine¹; ¹NIST; ²Los Alamos National Lab; ³UC Davis; ⁴Cornell High Energy Synchrotron Source

3:10 PM

Effects of Residual Stress on Additively Manufactured Stainless Steel: In-situ Synchrotron Experiment and Crystal Plasticity Modeling: *Yin Zhang*¹; Wen Chen²; Tomas Voisin²; Morris Wang²; Ting Zhu¹; ¹Georgia Institute Of Technology; ²Lawrence Livermore National Laboratory

3:30 PM Break

3:50 PM

In Situ Characterization of Deformation Mechanisms in L-PBF 316L Stainless Steels: *Thomas Voisin*¹; Wen Chen¹; Jean-Baptiste Forien¹; Yinmin Wang¹; ¹Lawrence Livermore National Laboratory

4:10 PM

In-situ Dynamic X-ray Radiography Combined with Multi-physics Numerical Modeling to Elucidate Laser-induced Keyhole Dynamics in SS304: *Nadia Kouraytem*¹; Xuxiao Li¹; Ross Cunningham²; Cang Zhao¹; Anthony Rollett²; Tao Sun³; Ashley Spear¹; Wenda Tan¹; ¹University Of Utah; ²Carnegie Mellon University; ³Argonne National Laboratory

4:30 PM

Monitoring AM Process of Ni-based Superalloys Using High-energy X-ray Diffraction: *Chih-Pin Chuang*¹; Tao Sun¹; Niranjan Parab¹; Cang Zhao¹; Yan Gao²; William Carter²; Peter Kenesei¹; Jun-Sang Park¹; Jonathon Almer¹; ¹Argonne National Laboratory; ²GE Global Research Center

4:50 PM

Investigation of the Complex Thermal Exposure of AM Processes Utilizing High Spatio-temporal In-situ DTEM and In-situ Synchrotron X-ray Techniques for Aluminum Based Alloys: *Kai Zwick*¹; Seth Griffith¹; Xiaoshuang Li¹; Christoph Kenel²; Daniel Grolimund³; Dario Ferreira Sanchez²; Joseph McKeown⁴; Christian Leinenbach¹; ¹Empa, Swiss Federal Laboratories for Materials Science and Technology; ²Northwestern University, Department of Materials Science and Engineering; ³Paul Scherrer Institut, Swiss Light Source; ⁴Lawrence Livermore National Laboratory, Condensed Matter and Materials Division

5:10 PM

A Miniaturized Device for In-situ X-rays Investigation during Selective Laser Melting: *Samy Hocine*¹; Daniel Grolimund¹; Steven Van Petegem¹; Helena Van Swygenhoven¹; ¹Paul Scherrer Institut

Additive Manufacturing and Welding: Physical and Mechanical Metallurgy of Rapidly Solidified Metals — Novel Materials and Applications

Sponsored by: TMS: Additive Manufacturing Committee
Program Organizers: Allison Beese, Pennsylvania State University; Eric Lass, National Institute of Standards and Technology; David Bourell, University of Texas; John Carpenter, Los Alamos National Laboratory; Kester Clarke, Colorado School of Mines; Daniel Coughlin, Los Alamos National Laboratory; Christian Leinenbach, Empa, Swiss Federal Laboratories for Materials Science and Technology; Behrang Poorganji, GE Additive; Judy Schneider, University of Alabama At Huntsville; Lee Semiatin, US Air Force Research Laboratory; Mark Stoudt, National Institute of Standards and Technology; Chantal Sudbrack, QuesTek Innovations LLC

Thursday PM
March 14, 2019

Room: 217C
Location: Henry B. Gonzalez
Convention Center

Session Chair: Judy Schneider, University of Alabama At Huntsville

2:00 PM Invited

Metallic Alloys Development for Additive Manufacturing Using Gas Atomization and Selective Laser Melting: *Yongho Sohn*¹; Le Zhou¹; ¹Univ of Central Florida

2:30 PM Invited

Development of Ti-based Materials Tailored to Laser Additive Manufacturing: *Guillermo Requena*¹; Pere Barriobero Vila¹; Joachim Gussone¹; Jan Haubrich¹; Ulrike Hecht²; Angelos Theofilatos²; ¹DLR; ²Access

3:00 PM

Printability and Deformation Behaviour of CrMnFeCoNi High-entropy Alloy Made by Laser Powder Bed Fusion: *Minh-Son Pham*¹; ¹Imperial College London

3:20 PM

3D Printing of Fe-based Bulk Metallic Glass Composites with Combined High Strength and Fracture Toughness: *Ning Li*¹; Jianji Zhang¹; ¹Huazhong University of Science and Technology

3:40 PM Break

4:00 PM

Microstructures and Properties of Tungsten Alloys Prepared Using Laser Melting Deposition Process: *Guomin Le*¹; Shiyu Ma¹; Yingpei Wang¹; Chun Li²; ¹Institute of Materials; ²North China University of Technology

4:20 PM

Effect of Process Parameters on Additively Manufactured Shape Memory Alloys: *Alejandro Hinojos*¹; Soheil Saedi²; Narges Shayesteh Moghaddam³; Ehsan Saghayan⁴; Mohammadreza Nematollahi⁴; Haluk Karaca³; Mohammad Elahinia⁴; Michael Mills¹; ¹The Ohio State University; ²The University of Arkansas at Little Rock; ³The University of Texas at Arlington; ⁴The University of Toledo; ⁵University of Kentucky

4:40 PM

Forming Abrupt Dissimilar Metal Junctions by Additive Manufacturing Techniques: Nick Jones¹; Wenliang Li¹; Jack Beuth¹; *Maarten De Boer*¹; ¹Carnegie Mellon Univ

5:00 PM

Laser Additive Repair of Cast Ni-Al-Bronze Components: *Xinjin Cao*¹; P. Wanjarah¹; J. Gholipour¹; Y. Wang²; ¹National Research Council Canada - Aerospace; ²Defence Research and Development Canada

5:20 PM

Characterization of Interfacial Bond Properties of Additively Manufactured Cladded Surfaces Using Scanning Vibrating Electrode Technique: *Pratik Murkute*¹; Somayeh Pasebani²; Burkan Isgor¹; ¹Oregon State University; ²Oregon State University, Advanced Technology and Manufacturing Institute

Additive Manufacturing of Metals: Applications of Solidification Fundamentals — Process-microstructure Relationships II

Sponsored by: TMS: Additive Manufacturing Committee
Program Organizers: Alex Plotkowski, Oak Ridge National Laboratory; Lang Yuan, University of South Carolina; Kevin Chaput, Air Force Research Laboratory; Mohsen Asle Zaeem, Colorado School of Mines; Sudarsanam Babu, The University of Tennessee, Knoxville; Wenda Tan, University of Utah

Thursday PM
March 14, 2019

Room: 224
Location: Henry B. Gonzalez
Convention Center

Session Chair: Mohsen Zaeem, Missouri University of Science and Technology

2:00 PM Invited

Mechanisms of Morphological Defect Creation in Metal Additive Manufacturing: *Manyalibo Matthews*¹; Nicholas Caltà¹; Aiden Martin¹; Philip DePond¹; Gabe Guss¹; Saad Khairallah¹; Wayne King¹; Alexander Rubenchik¹; Tony van Buuren¹; ¹Lawrence Livermore National Laboratory

2:30 PM

Unravelling Cracking Phenomena during Laser Additive Manufacturing of Ni-based Superalloy by Multi-modal Imaging: *Chu Lun Alex Leung*¹; Samuel Clark¹; Sebastian Marussi²; Leigh Stanger³; Margie Olbinado⁴; Sam Tammam-Williams³; Yunhui Chen¹; Lorna Sinclair¹; Alexander Rack⁴; Jon Willmott³; Iain Todd³; Peter Lee¹; ¹University College London; ²University of Manchester; ³University of Sheffield; ⁴European Synchrotron Radiation Facility

2:50 PM

Rapid Solidification Dynamics in Laser Powder Bed Fusion Additive Manufacturing Process: *Lianghua Xiong*¹; Cang Zhao²; Qilin Guo¹; Luis Escano¹; Minglei Qu¹; Seyed Hojjatzadeh¹; Niranjana Parab²; Kamel Fezzaa²; Wes Everhart³; Tao Sun²; Lianyi Chen¹; ¹Missouri University of Science and Technology; ²Advanced Photon Source, Argonne National Laboratory; ³Department of Energy's Kansas City National Security Campus Managed by Honeywell FM&T

3:10 PM

Powder Flow, Melting and Solidification Process in Additively Manufactured Ni-based Metal Matrix Composites: *Sen Jiang*¹; Baolong Zheng¹; James Haley¹; Bingqing Chen²; Jiayu Liang²; Shuai Huang²; Julie Schoenung¹; Enrique Lavernia¹; ¹University of California Irvine; ²Beijing Institute of Aeronautical Materials

3:30 PM Break

3:50 PM

Microstructural Selection for Lattice Structures using Deposition Optimisation and Cooling Rate Control in Laser Powder Bed Fusion of 316L Stainless Steel: *Filippo Vecchiato*¹; Paul Hooper¹; Mark Wenman¹; ¹Imperial College London

4:10 PM

Fundamentals of Microstructure Evolution for Rapid Solidification Conditions: *Jai Sekhar*¹; ¹Institute of Thermodynamics, Texture and Design

4:30 PM

Finite Element Analysis of Particle Pushing during Selective Laser Melting of AlSi10Mg/AlN Composites: *Marjan Nezaferati*¹; Ali Bakhshinejad¹; Pradeep Rohatgi¹; Benjamin Church¹; ¹Univ of Wisconsin

4:50 PM

Effects of Tungsten Carbide Inoculants on Microstructures and Properties of 17-4 PH and IN718 Processed by SLM: *An-Chou Yeh*¹; Tzu-Hou Hsu¹; I-Ting Ho¹; Sammy Tin²; ¹National Tsing Hua University; ²Illinois Institute of Technology

Additive Manufacturing of Metals: Applications of Solidification Fundamentals — Process Modeling

Sponsored by: TMS: Additive Manufacturing Committee
Program Organizers: Alex Plotkowski, Oak Ridge National Laboratory; Lang Yuan, University of South Carolina; Kevin Chaput, Air Force Research Laboratory; Mohsen Asle Zaeem, Colorado School of Mines; Sudarsanam Babu, The University of Tennessee, Knoxville; Wenda Tan, University of Utah

Thursday PM
March 14, 2019

Room: 216A
Location: Henry B. Gonzalez
Convention Center

Session Chairs: Andrew Kustas, Sandia National Lab; Peeyush Nandwana, ORNL

2:00 PM

Computationally Efficient Thermo-mechanical Modelling in Metal Additive Manufacturing: *Yabin Yang*¹; ¹Sun Yat-Sen University

2:30 PM

Non-equilibrium Solidification Path Estimation for Additive Manufacturing: Abhishek G.S.¹; Durga Ananthanarayanan²; Debashis Kar²; Abhik Choudhury³; *Shyamprasad Karagadde*¹; Sanjay K Sondhi²; ¹Indian Institute of Technology Bombay; ²GE India Industrial Pvt. Ltd.; ³Indian Institute of Science

2:50 PM

Fast Solution Strategies for Transient Heat Conduction Predictions in Powder Bed Fusion Additive Manufacturing: *Alexander Wolfer*¹; Carlos Ruvalcaba¹; Richard Otis²; Saad Khairallah³; Kevin Wheeler⁴; Dogan Timucin⁴; Andy Anderson³; Andrew A. Shapiro²; Jean-Pierre Delplanque¹; ¹University of California, Davis; ²Jet Propulsion Laboratory, California Institute of Technology; ³Lawrence Livermore National Laboratory; ⁴NASA Ames Research Center

3:10 PM

Laser Interaction with Surface in Powder Bed Melting Process and its Impact on Temperature Profile, Bead and Melt Pool Geometry: *Leila Ladani*¹; Faiyaz Ahsan¹; ¹University of Texas at Arlington

3:30 PM Break

3:50 PM

The Microscale Interaction Mechanism Between Laser and Metal Powder in Additive Manufacturing: Simulation and Experiment: Hongze Wang¹; Yu Zou¹; ¹University of Toronto

4:10 PM

Sensitivity of Thermal Predictions to Uncertain Fluid Properties in Additive Manufacturing of Superalloys: *Alex Plotkowski*¹; John Coleman²; Benjamin Stump¹; Matthew Krane²; Jarred Heigel³; Richard Ricker³; Lyle Levine³; Ryan Dehoff¹; ¹Oak Ridge National Laboratory; ²Purdue University; ³NIST

Additive Manufacturing: Solid State Processing of Metals and Ceramics — Binder Jetting II

Sponsored by: TMS: Powder Materials Committee, TMS: Additive Manufacturing Committee

Program Organizers: James Paramore, US Army Research Laboratory; Amy Elliott, Oak Ridge National Laboratory; Matthew Dunstan, US Army Research Lab; Markus Chmielus, University of Pittsburgh; Nihan Tuncer, Desktop Metal

Thursday PM
March 14, 2019

Room: 223
Location: Henry B. Gonzalez
Convention Center

Session Chair: Markus Chmielus, University of Pittsburgh

2:00 PM

Binder Jet Additive Manufacturing and Pressureless Melt Infiltration of Large, Complex WC-Co Parts: *Corson Cramer*¹; Amy Elliott¹; ¹Oak Ridge National Laboratory

2:20 PM

Binder Jetting Additive Manufacturing of Metallic Foam Structures: *Hadi Miyanaaji*¹; Mark Atwater²; Kristopher Darling³; Ashwath Kumar¹; Vincent Hammond³; Christopher Williams¹; ¹Design, Research, and Education for Additive Manufacturing Systems Laboratory Department of Mechanical Engineering, Virginia Tech; ²Safety and Technology, Department of Applied Engineering, Millersville University; ³US Army Research Laboratory, Aberdeen Proving Ground

2:40 PM

Microstructure and Mechanical Properties of Binder Jet 3D Printed Co-Cr-Mo Biomedical Alloy: *Amir Mostafaei*¹; Pierangeli Rodriguez De Vecchis¹; Markus Chmielus¹; ¹University of Pittsburgh

3:00 PM

Microstructure and Mechanical Properties of Binder jet 3D Printed Stellite 6: *Pierangeli Rodriguez De Vecchis*¹; Sumant Wasule²; Amir Mostafaei¹; Markus Chmielus¹; ¹University of Pittsburgh; ²Indian Institute of Technology

3:20 PM

Net-shaping and Densification of Boron Carbide Via Binder Jetting Followed by Pressureless Infiltration: *Amy Elliott*¹; Desarae Goldsby¹; Bianca Haberl¹; Garrett Granroth¹; David Anderson¹; ¹Oak Ridge National Laboratory

3:40 PM Break

4:00 PM

Densification Kinetics of Binder Jet 3D Printed Parts from Gas-atomized Alloy 625 Powder: *Amir Mostafaei*¹; Pierangeli Rodriguez De Vecchis¹; Ian Nettleship¹; Markus Chmielus¹; ¹University of Pittsburgh

4:20 PM

Sintering and Densification Kinetics of Binder Jet 3D Printed Structural and Functional Materials: Amir Mostafaei¹; Pierangeli Rodriguez de Vecchis¹; Erica Stevens¹; Rafael Rodriguez De Vecchis¹; *Markus Chmielus*¹; ¹University of Pittsburgh

4:40 PM

Ductile Fracture in Sintering Materials: In Situ Observations and Discrete Element Simulations: *Joseph Carazzone*¹; Michael Bonar¹; Zachary Cordero¹; ¹Rice University

5:00 PM

Modeling the Effects of Thermal Creep and Sintering in Binder Jet Printed Parts with the Material Point Method: *Jay Billings*¹; ¹Oak Ridge National Laboratory

Advanced High-Strength Steels III — Mechanical Properties of Advanced High-Strength and Microalloyed Steels

Sponsored by: TMS: Steels Committee

Program Organizers: Amy Clarke, Colorado School of Mines; MingXin Huang, University of Hong Kong; C. Tasan, Massachusetts Institute of Technology; Kester Clarke, Colorado School of Mines; Ana Luiza Araujo, Colorado School of Mines

Thursday PM
March 14, 2019

Room: 205
Location: Henry B. Gonzalez
Convention Center

Session Chair: To Be Announced

2:00 PM

Hydrogen Effects on Elastic Properties of Advanced High-strength Steels: *Jinwoo Kim*¹; Haoxue Yan¹; Cemal Cem Tasan¹; ¹Massachusetts Institute of Technology

2:20 PM

Effect of Hydrogen on Grain Refinement Behavior of Pure Fe by High-pressure Torsion-straining: *Hirokazu Sato*¹; Yoshikazu Todaka¹; Koichi Sato²; Nozomu Adachi¹; ¹Toyohashi University of Technology; ²Kagoshima University

2:40 PM

Over Five-times Improved Elongation-to-Fracture of 1180 Dual-Phase Steel by Continuous-Bending-Under-Tension: *Marko Knezevic*¹; Camille Poulin¹; ¹University of New Hampshire

3:00 PM

Comparison of Formability and Microstructural Evolution of C106 Copper and 316L Stainless Steel: *Scott Taylor*¹; Iain Masters¹; Zushu Li¹; Hiren Kotadia¹; ¹WMG

3:20 PM Break

3:40 PM

Use of In Situ Methods to Study Damage Processes in DP1300 with V Additions: *David Wilkinson*¹; Javad Samei¹; Linfeng Zhou¹; ¹McMaster University

4:00 PM

Structural and Microstructural Influence on Deformation and Fracture of Dual-phase Steels: *Xin Zhu Zheng*¹; Shmuel Osovski²; Ankit Srivastava¹; ¹Texas A&M University; ²Technion - Israel Institute of Technology

4:20 PM

Nanoscale Precipitation-strengthening in Single and Dual Phase Steels: *Zhongwu Zhang*¹; Songsong Xu¹; Yu Zhao¹; Junpeng Li¹; ¹Harbin Engineering University

4:40 PM

Effect of Niobium on Microstructure and Mechanical Properties of Nb-Ti Microalloyed Carbide-free Bainitic Steels: *Xi Chen*¹; Fuming Wang¹; Changrong Li¹; Shuai Liu¹; ¹University of Science and Technology Beijing

Advanced Magnetic Materials for Energy and Power Conversion Applications — Development and Application of Soft Magnetic Materials for Electric Machines

Sponsored by: Federation of European Materials Societies (FEMS), TMS Functional Materials Division, TMS: Magnetic Materials Committee

Program Organizers: Frank Johnson, Niron Magnetics, Inc.; Paul Ohodnicki, National Energy Technology Laboratory; Alex Leary, Nasa Grc; Orlando Rios, Oak Ridge National Laboratory; Alessandra Hool, ESM Foundation

Thursday PM
March 14, 2019

Room: 225B
Location: Henry B. Gonzalez
Convention Center

Session Chair: Michael Kesler, Oak Ridge National Laboratory

2:00 PM Invited

Enabling 6.5% Silicon Electric Steel for Motor Application: *Jun Cui*¹; Ouyang Gaoyuan¹; Brandt Jensen²; Chad Macziewski¹; Kevin Dennis²; Senlin Cui¹; Valery Levitas¹; Tao Ma²; Lin Zhou²; Matt Kramer²; ¹Iowa State University; ²Ames Laboratory

2:30 PM Invited

Extremely Thin Large Grain Fe-Co for High Power Devices: *Zafer Turgut*¹; Audry Lee²; Jeremy Shin²; Alex Leary³; John Horwath¹; Gregory Kozlowski⁴; ¹Air Force Research Lab; ²UIUC; ³NASA/GRC; ⁴Wright State University

3:00 PM

Templated Austenitization for Tuned Flux Paths in a Dual Phase, High Cr Steel for Electric Rotor Applications: *Hunter Henderson*¹; Min Zou²; Frank Johnson²; Craig Bridges¹; Michael Brady¹; Michael McGuire¹; Michael Kesler¹; Orlando Rios¹; ¹Oak Ridge National Laboratory; ²General Electric

3:20 PM Break

3:40 PM

Reducing Porosity and Cracks in Fe-Si Soft Magnetic Parts Processed by Selective Laser Melting: *Leonidas Gargalis*¹; Ian Ashcroft¹; Richard Hague¹; Michael Galea¹; ¹University of Nottingham, Center for Additive Manufacturing

4:00 PM

Microstructural Design through Application of Magnetic Field during Electrodeposition: *Heather Murdoch*¹; Denise Yin¹; Efraín Hernández-Rivera¹; Anit Giri¹; ¹US Army Research Laboratory

4:20 PM

Production of High-Resistivity Electrical Steel Alloys by Substitution of Si with Al and Cr: *Brhayan Puentes Rodriguez*¹; David Brice¹; James Mann²; Srinivasan Chandrasekar¹; Kevin Trumble¹; ¹Purdue University; ²University of West Florida

Advanced Real Time Imaging — Phase Transformation II

Sponsored by: TMS: Alloy Phases Committee
Program Organizers: Jinichiro Nakano, US DOE - National Energy Tech Lab; P.Chris Pistorius, Carnegie Mellon University; Candan Tamerler, University of Kansas; Hideyuki Yasuda, Kyoto University; Zuotai Zhang, Southern University Of Science And Techn; Neslihan Dogan, McMaster University; Wanlin Wang, Central South University; Noritaka Saito, Kyushu University; Yongsug Chung, Korea Polytechnic University; Bryan Webler, Carnegie Mellon University

Thursday PM
March 14, 2019

Room: 302B
Location: Henry B. Gonzalez
Convention Center

Session Chairs: Anna Nakano, United States Department of Energy National Energy Technology Laboratory; Jinichiro Nakano, United States Department of Energy National Energy Technology Laboratory

2:00 PM Invited

In Situ Observations of Rapid Solidification of Undercooled Melts using a High-speed Camera: *Jianrong Gao*¹; ¹Northeastern University, China

2:30 PM

In Situ Observations of Phase Transformations in Duplex Stainless Steel by Confocal Laser Scanning Microscopy: *Wangzhong Mu*¹; Hiroyuki Shibata²; Peter Hedström¹; ¹KTH Royal Institute of Technology; ²Tohoku University

2:50 PM

In Situ Measurement of Solute Partition Coefficients in Fe-Cr-Ni-Mo-Cu Alloys by using X-ray Imaging and X-ray Fluorescence Analysis: *Yusuke Kobayashi*¹; Hidekazu Todoroki¹; Kento Dobara²; Cheolhee Nam²; Kohei Morishita²; Hideyuki Yasuda²; ¹Nippon Yakin Kogyo Co., Ltd.; ²Kyoto University; ³Kyushu University

3:10 PM Panel Discussion

3:30 PM Concluding Comments

Advances in Computational Methods for Damage Mechanics and Failure Phenomena — Crystal Plasticity Methods II

Sponsored by: TMS: Computational Materials Science and Engineering Committee
Program Organizers: Srujan Rokkam, Def-Aero, Advanced Cooling Technologies Inc; Michael Tonks, University of Florida; Remi Dingreville, Sandia National Laboratories; Jaafar El-Awady, Johns Hopkins University

Thursday PM
March 14, 2019

Room: 303C
Location: Henry B. Gonzalez
Convention Center

Session Chairs: Michael Sangid, Purdue University; Ill Ryu, The University Of Texas At Dallas

2:00 PM Invited

Microstructural Predictions of Thermo-Mechanical Fracture of H.C. P. Alloys: *Mohammed Zikry*¹; I. Mohammed¹; ¹North Carolina State University

2:30 PM

Multiscale Mechanics of Ductile Damage in HCP Materials: *Shailendra Joshi*¹; Padmeya Indurkar²; ¹University of Houston; ²National University of Singapore

2:50 PM

Parametrically Homogenized Continuum Damage Mechanics (PHCDM) Model for Composites from Micromechanical Analysis: *Xiaofan Zhang*¹; Zhiye Li¹; Daniel O'Brien²; Somnath Ghosh¹; ¹Johns Hopkins University; ²U.S. Army Research Laboratory

3:15 PM

Continuum Dislocation Dynamics at Finite Deformation: Computational Modeling and Preliminary Results: *Kyle Starkey*¹; *Anter El-Azab*¹; *Grethe Winther*²; ¹Purdue University; ²Technical University of Denmark

3:35 PM Break

3:55 PM

Initializing Residual Stresses in Crystal Plasticity Simulations and its Validation using High Energy X-Ray Diffraction Experiments: *Kartik Kapoor*¹; *Diwakar Naragani*¹; *Michael Sangid*¹; ¹Purdue University

4:15 PM

Modelling the Role of Inclusions and Debonded Region on the Fatigue Performance of Ni-based Superalloys: *Ritwik Bandyopadhyay*¹; *Michael Sangid*¹; *Jonathan Dubke*²; ¹Purdue University; ²Rolls-Royce Meridian Center

4:35 PM

Self-healing of Low Angle Grain Boundaries by Vacancy Diffusion and Dislocation Climb: *Yejun Gu*¹; *Yang Xiang*²; *David Srolovitz*³; *Jaafar El-Awady*¹; ¹Johns Hopkins University; ²Hong Kong University of Science and Technology; ³University of Pennsylvania

4:55 PM

Probing Defect-controlled Deformation Mechanisms via Multiscale Discrete Defect Element Method: *Taejoon Park*¹; *Cuong Nguyen*²; *Farhang Pourboghrat*¹; *Ill Ryu*²; ¹The Ohio State University; ²The University Of Texas At Dallas

5:15 PM

Computational Investigation of Crack-Induced Hot-spot Generation in Energetic Composites: *Liqiang Lin*¹; *Justin Wilkerson*²; *Xiaowei Zeng*¹; ¹University of Texas at San Antonio; ²Texas A&M University

5:35 PM Concluding Comments

Aluminum Reduction Technology — Cell Operations, Control and Improvements

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

Program Organizer: Marc Dupuis, GeniSim Inc

Thursday PM
March 14, 2019

Room: 004
Location: Henry B. Gonzalez
Convention Center

Session Chair: Roman Düssel, TRIMET Aluminium SE

2:00 PM Introductory Comments

2:05 PM

Lengthy Power Interruptions and Pot Line Shutdowns: *Alton Tabereaux*¹; *Stephen Lindsay*²; ¹Consultant; ²Alcoa Inc.

2:30 PM

High Amperage Operation at Alcoa Deschambault Booster Section: *Jayson Tessier*¹; *Patrice Doiron*¹; *Donald Ziegler*¹; ¹Alcoa

2:55 PM

Potroom Operations Contributing to Fugitive Roof Dust Emissions from Aluminium Smelters: *David Wong*¹; *Margaret Hyland*²; *Nursiani Tjahyono*¹; *David Cotton*¹; ¹University of Auckland; ²Victoria University of Wellington

3:20 PM

Advancement in Control Logic of HINDALCO Low Amperage Pots: *Shanmukh Rajgire*¹; *Amit Jha*¹; *Amit Gupta*¹; *Manoj Chulliparambil*¹; *Saroj Choudhary*²; *Gaurav Verma*²; *Vibhav Upadhyay*²; *Senthil Nath*²; ¹Aditya Birla Science and Technology Company (P) Ltd; ²Hindalco Industries Ltd, Renukoot

3:45 PM Concluding Comments

Bulk Metallic Glasses XVI — Structures and Characterization

Sponsored by: TMS: Mechanical Behavior of Materials Committee
Program Organizers: *Xie Xie*, FCA US LLC; *Peter Liaw*, University of Tennessee; *Yanfei Gao*, University of Tennessee; *Hahn Choo*, University of Tennessee; *Yunfeng Shi*, Rensselaer Polytechnic Institute; *Gongyao Wang*, Alcoa; *Robert Maass*, University of Illinois at Urbana-Champaign; *Muhammad Rafique*, RMIT University

Thursday PM
March 14, 2019

Room: 207A
Location: Henry B. Gonzalez
Convention Center

Session Chairs: *E-Wen Huang*, National Chiao Tung University; *Matthew Kramer*, Ames Laboratory

2:00 PM Invited

In Situ Observations and Quantification of Metastable States from Amorphous Alloys: *Matthew Kramer*¹; *Fanqiang Meng*¹; *Lin Zhou*¹; *Ryan Ott*¹; ¹Ames Laboratory

2:20 PM Invited

Total Scattering studies of phase transformation kinetics in metallic glasses: *Dong Ma*¹; *Alexandru D. Stoica*¹; ¹Oak Ridge National Lab

2:40 PM Invited

X-ray diffraction study of the correlation between LTR density and plasticity of bulk metallic glasses: *Hui Wang*¹; *Wojciech Dmowski*¹; *Zengquan Wang*¹; *Yoshihiko Yokoyama*²; *Hongbin Bei*³; *Takeshi Egami*¹; ¹University of Tennessee, Knoxville; ²Tohoku University; ³Oak Ridge National Laboratory

3:00 PM Invited

Correlating Structural Heterogeneity to Properties of Metallic Glasses Using 4-Dimensional Scanning Transmission Electron Microscopy: *Soohyun Im*¹; *Jared Johnson*¹; *Gabriel Calderon*¹; *Menglin Zhu*¹; *Pengyang Zhao*¹; *Geun Hee Yoo*²; *Eun Soo Park*²; *Yunzhi Wang*¹; *Jinwoo Hwang*¹; ¹Ohio State University; ²Seoul National University

3:20 PM Invited

Mapping local strain and order in bulk metallic glasses with nanobeam electron diffraction during in situ TEM deformation: *Thomas Pekin*¹; *Christoph Gammmer*²; *Jun Ding*³; *Burak Ozdol*³; *Colin Ophus*³; *Mark Asta*³; *Rob Ritchie*³; *Andrew Minor*³; ¹Univ Of California-Berkeley; ²Montanuniversität Leoben; ³Lawrence Berkeley National Laboratory

3:40 PM Break

4:00 PM Invited

Structure and Dynamics of Metallic Liquids: *Zengquan Wang*¹; *Wojciech Dmowski*¹; *Hui Wang*¹; *Takeshi Egami*¹; ¹University of Tennessee, Knoxville

4:20 PM Invited

Resolving Zr-based Bulk-metallic-glass Composite Distribution with High Fracture and Yield Strength by X-ray Nanodiffraction Mapping: *Bo-Kai Chen*¹; *Pei-Hua Tsai*²; *Jason Shian-Ching Jang*²; *Ching-Shun Ku*³; *Ching-Yu Chiang*³; *Shang-Ju Chiu*³; *Chia-Hsien Lin*³; *Hung-Sheng Chou*¹; *E-Wen Huang*¹; ¹Department of Materials Science and Engineering, National Chiao Tung University; ²Institute of Materials Science and Engineering, National Central University, Taiwan; ³National Synchrotron Radiation Research Center

4:40 PM

Glass formation and crystallization in CuZrAl alloys: *Ivan Kaban*¹; ¹IFW Dresden

5:00 PM

Shockwave Consolidation to Create Bulk Metallic Glass: *David Nemir*¹; *Jan Beck*¹; *Lawrence Murr*¹; *Yirong Lin*²; *Luis Chavez*²; ¹Txl Group, Inc.; ²University of Texas at El Paso

Bulk Metallic Glasses XVI — Structures and Modeling II

Sponsored by: TMS: Mechanical Behavior of Materials Committee
Program Organizers: Xie Xie, FCA US LLC; Peter Liaw, University of Tennessee; Yanfei Gao, University of Tennessee; Hahn Choo, University of Tennessee; Yunfeng Shi, Rensselaer Polytechnic Institute; Gongyao Wang, Alcoa; Robert Maass, University of Illinois at Urbana-Champaign; Muhammad Rafique, RMIT University

Thursday PM
March 14, 2019

Room: 206B
Location: Henry B. Gonzalez
Convention Center

Session Chairs: Alan Needleman, Texas A&M University; Mo Li, Georgia Institute of Technology

2:00 PM Invited

Discrete shear transformation zone plasticity: Babak Kondori¹; Manish Vasoya¹; A. Benzerga¹; *Alan Needleman*¹; ¹Texas A&M

2:20 PM Invited

Pure Shear Deformation and Induced Mechanical Responses in Metallic Glasses: Zhukun Zhou¹; Hao Wang²; *Mo Li*³; ¹Central South University; Georgia Institute of Technology; ²Shenzhen University; ³Georgia Institute of Technology; Central South University

2:40 PM Invited

Local volume as a robust structural measure and its connection to icosahedral content in a model binary amorphous system: *Peter Derlet*¹; ¹Paul Scherrer Institute

3:00 PM Invited

Modeling Metallic Glass Structural Evolution on Long Timescales: *Thomas Hardin*¹; Christopher Schuh¹; ¹Massachusetts Institute of Technology

3:20 PM Invited

Effect of oxygen on the glass forming ability of bulk metallic glasses: *Zi-Kui Liu*¹; Brandon Bocklund¹; Cheng Wang¹; Shun-Li Shang¹; Robert Dillon²; Richard Otis²; Stephen Hales²; ¹Pennsylvania State University; ²California Institute of Technology

3:40 PM Break

4:00 PM

Perturbation Analysis of Amorphous Alloy Formation: *Rahul Basu*¹; ¹Other

4:20 PM

Hierarchical Learning Framework to Resolve Structural Origin of Heterogeneous Deformation in Metallic Glasses: *Qi Wang*¹; Anubhav Jain¹; ¹Lawrence Berkeley National Laboratory

4:40 PM

Origin of Anelasticity in Metallic Glasses: Coupling of Intrinsic Energy Dissipation and External Stimuli: *Yue Fan*¹; ¹University Of Michigan, Ann Arbor

5:00 PM Invited

Machine Learning Prediction of Elastic Properties and Glass Forming Ability of Bulk Metallic Glasses: *San-Qiang Shi*¹; Jie Xiong¹; Tong-Yi Zhang²; ¹Hong Kong Polytechnic Univ; ²Shanghai University

Ceramic Materials for Nuclear Energy Research and Applications — Thermophysical Properties and Irradiation

Sponsored by: TMS: Nuclear Materials Committee
Program Organizers: Yongfeng Zhang, Idaho National Laboratory; Xian-ming (David) Bai, Virginia polytechnic Institute and State University; David Andersson, Los Alamos National Laboratory; Thierry Wiss, European Commission- JRC -Institute of Transuranium Elements

Thursday PM
March 14, 2019

Room: 214B
Location: Henry B. Gonzalez
Convention Center

Session Chairs: Yongfeng Zhang, Idaho National Laboratory; Ahmed Hamed, Purdue University

2:00 PM

Phonon-based lattice thermal conductivity of uranium dioxide: *Ahmed Hamed*¹; Anter El-Azab¹; ¹Purdue University

2:20 PM

First principles prediction of thermal conductivity in irradiated LiAlO₂: Seyed Aria Hosseini¹; Nicholas Whitman²; Todd Palmer²; *P. Alex Greaney*¹; ¹University Of California, Riverside; ²Oregon State University

2:40 PM

Fouling resistant, foulant-agnostic coatings for nuclear reactors and geothermal systems: *Cigdem Toparli*¹; Max Carlson¹; Alexander Slocum¹; Michael Short¹; ¹Massachusetts Institute of Technology

3:00 PM

Radiation tolerance and Helium swelling resistance in amorphous SiOC: *Qing Su*¹; Michael Nastasi¹; ¹University of Nebraska-Lincoln

3:20 PM Break

3:40 PM

Influence of the miscibility gap in the evolution of the microstructure in UO₂-based fuel doped with Nd: *Bernardo Herrero*¹; Fabienne Audubert¹; Yves Pontillon¹; Lionel Desgranges¹; Gianguido Baldinozzi²; Nicolas Clavier³; Martiane Cabié⁴; ¹CEA; ²ECP; ³CNRS; ⁴Université Aix-Marseille

4:00 PM

Revealing anisotropic swelling trends in irradiated hexagonal/trigonal materials: *Arunodaya Bhattacharya*¹; Steven Zinkle²; Chad Parish¹; Takaaki Koyanagi¹; Yutai Katoh¹; ¹Oak Ridge National Laboratory; ²University of Tennessee, Knoxville, and ORNL

Characterization of Materials through High Resolution Imaging — Imaging III

Sponsored by: TMS: Advanced Characterization, Testing, and Simulation Committee

Program Organizers: Ross Harder, Argonne National Laboratory; Richard Sandberg, Los Alamos National Laboratory; Xianghui Xiao, Argonne National Laboratory; Brian Abbey, La Trobe University; Saryu Fensin, Los Alamos National Laboratory; Ana Diaz, Paul Scherrer Institut; Mathew Cherukara, Argonne National Laboratory

Thursday PM
March 14, 2019

Room: 303A
Location: Henry B. Gonzalez
Convention Center

Session Chair: To Be Announced

2:00 PM Invited

Hard x-ray coherent diffraction imaging using nanoscale focusing optics: *Martin Holt*¹; ¹Argonne National Laboratory

2:30 PM Invited

Multi-modal 3D imaging of LiNi_{1-x-y}MnxCoyO₂ cathode material with concentration-gradient: *Xiaojing Huang*¹; Seongmin Bak¹; Hanfei Yan¹; Mingyuan Ge¹; Evgeny Nazaretski¹; Xiao-qing Yang¹; Yong Chu¹; ¹Brookhaven National Laboratory

2:50 PM

Materials characterisation via optical ptychographic imaging: principles and applications: *Guido Cadenazzi*¹; Nick Anthony²; Eugeniu Balaur¹; Keith Nugent¹; Brian Abbey¹; ¹La Trobe University; ²Istituto Italiano di Tecnologia

3:10 PM Invited

Understanding catalyst complexity at synchrotron light sources using hard X-ray ptychography and tomography: *Thomas Sheppard*¹; Yakub Fam¹; Johannes Becher¹; Ana Diaz²; Mirko Holler²; Arne Wittstock³; Gerald Falkenberg⁴; Andreas Schropp⁴; Christian Schroer⁴; Jan-Dierk Grunwaldt¹; ¹Karlsruhe Institute of Technology (KIT); ²Paul Scherrer Institute (PSI); ³University of Bremen; ⁴Deutsches Elektronen-Synchrotron (DESY)

3:30 PM Break**3:50 PM**

Examining Dzyaloshinskii Domain Walls in Asymmetric Pt/Co/Ni/Ir Superlattices using Lorentz TEM: *Maxwell Li*¹; Marc De Graef¹; Vincent Sokalski¹; ¹Carnegie Mellon Univ

4:10 PM

Investigation of helium precipitates in Ta(Ti)/Zr(Ti) composites made by solid metal dealloying: *Sisi Xiang*¹; Ian McCue¹; Yongqiang Wang²; Kelvin Xie¹; Michael Demkowicz¹; ¹Texas A&M University; ²Los Alamos National Laboratory

4:30 PM

Measurements of Irradiation Induced 3D Strain Field at the Nanoscale with X-ray Bragg Coherent Diffraction Imaging: *Richard Sandberg*¹; Mathew Cherukara²; Reeju Pokharel¹; Eric Hahn¹; Wonsuk Cha²; Ross Harder²; Saryu Fensin¹; ¹Los Alamos National Laboratory; ²Argonne National Laboratory

Characterization of Minerals, Metals, and Materials — Characterization and Synthetic Process of Materials

Sponsored by: 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; Yunus Kalay, Middle East Technical University; John Carpenter, Los Alamos National Laboratory; Jiann-Yang Hwang, Michigan Technological Univ; Sergio Monteiro, Military Institute of Engineering; Chenguang Bai, Chongqing Univ; Juan Escobedo-Diaz, University of New South Wales; Pasquale Russo Spena, Free University of Bozen-Bolzano; Ramasis Goswami, Naval Research Laboratory

Thursday PM
 March 14, 2019

Room: 212B
 Location: Henry B. Gonzalez
 Convention Center

Session Chairs: Andrew Brown, ARL; Ramasis Goswami, Naval Research Lab

2:00 PM Introductory Comments**2:05 PM Invited**

Enhancing Microstructural Segmentation of Electron Backscatter Diffraction Data using Multivariate Statistical Analysis: *Angus Wilkinson*¹; David Collins²; Yevhen Zayachuk¹; Rajesh Korla³; Arantxa Vilalta-Clemente⁴; ¹University Of Oxford; ²University of Birmingham; ³IIT Hyderabad; ⁴Université de Normandie Rouen

2:25 PM Invited

Advances in scratch characterization of automotive clearcoats: *Pierre Morel*¹; Linqian Feng²; Nadia Benhamida³; Warren Denning¹; Brandon Frye¹; Andrew Detwiler²; Leslie Baker²; Deepanjan Bhattacharya²; ¹Anton Paar USA; ²Eastman Chemical Company; ³Hyundai-Kia America

2:45 PM

Microwave-Assisted Solid-State Synthesis of Fluorinated Hydroxyapatite: *Qian Peng*¹; Huimin Tang¹; Zhanguai Tang¹; Zhiwei Peng¹; ¹Central South Univ

3:05 PM

Properties of ZnO Micro/Nano Structures on Aluminum Substrates: *Shadia Ikhmayies*¹; Hassan Juwhari²; Bashar Lahlouh²; ¹Al Isra University; ²University of Jordan

3:25 PM

Synthesis and Electrochemical Properties of Molybdenum Disulfide/Graphene Composites: Guihong Han¹; Wei Wang¹; Yanfang Huang¹; Yongqian Duan¹; *Weijun Peng*¹; ¹Zhengzhou University

3:45 PM Break**4:00 PM**

Elucidating Reaction Mechanisms for the Synthesis of SiC-based composite matrices: *Ravit Silverstein*¹; Frank Zok¹; Carlos Levi¹; ¹Materials Department, University of California, Santa Barbara, California

4:20 PM

Construction of form-stable composite phase change materials with simultaneously enhanced latent heat and heat transfer via efficient synergistic effect between expanded vermiculite and carbon nanotubes: *Yong Deng*¹; Jinhong Li¹; ¹China University of Geosciences (Beijing)

4:40 PM

Advancements in the understanding of damage accumulation and fracture of brittle materials: *Tomoko Sano*¹; Brendan Koch²; Calvin Lo²; Timothy Walter¹; James Hogan²; ¹US Army Research Lab; ²University of Alberta

5:00 PM

Synthesis and characterization of PVP/CaCO₃-Ag blend hydrogel by gamma irradiation: study of drug delivery system and antimicrobial activity: *Angelica Zafalon*¹; Vinicius dos Santos¹; Luiz Komatsu¹; Ademar Lugão¹; Vijaya Rangari²; Temesgen Samuel²; Duclerc Parra¹; ¹Ipen-Usp; ²Tuskegee University

Characterization of Minerals, Metals, and Materials — Mineral Processing and Extraction

Sponsored by: 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; Yunus Kalay, Middle East Technical University; John Carpenter, Los Alamos National Laboratory; Jiann-Yang Hwang, Michigan Technological Univ; Sergio Monteiro, Military Institute of Engineering; Chenguang Bai, Chongqing Univ; Juan Escobedo-Diaz, University of New South Wales; Pasquale Russo Spena, Free University of Bozen-Bolzano; Ramasis Goswami, Naval Research Laboratory

Thursday PM
 March 14, 2019

Room: 213A
 Location: Henry B. Gonzalez
 Convention Center

Session Chairs: Mingsheng He, Baowu Iron & Steel Group; Chengguang Bao, Chongqing University

2:00 PM Introductory Comments**2:05 PM**

Microplastics: A Novel Method for Surface Water Sampling and Sample Extraction in Elechi Creek, Nigeria: Example Briggs¹; *Esperidiana de Moura*²; Helio Furusawa²; Marycel Elena Cotrim²; Emeka Oguzie¹; Ademar Lugao²; ¹Federal University Of Technology, Owerri, Imo-State, Nigeria; ²Instituto de Pesquisas Energeticas e Nucleares

2:25 PM

Leaching zinc from crystallization slag by acid leaching: process optimization using response surface methodology: *Guojiang Li*¹; Yongguang Luo¹; Tingfang Xie¹; ¹Yunnan Chihong Zn & Ge Co., Ltd,

2:45 PM

Study on Recovery of Zinc from Metallurgical Solid Waste Residue by Ammoniacal Leaching: *Ma Aiyuan*¹; Xuemei Zheng¹; Shengyou Shi¹; Haiye He¹; Yanhong Rao¹; Guoyan Luo¹; Fang Lu¹; ¹Liupanshui Normol University

3:05 PM

Optimization of Fine Ilmenite Flotation Performed with collectors: *Yankun Wu*¹; Shengpeng Su¹; Weijun Peng¹; Yongsheng Zhang¹; Guixia Fan¹; Guihong Han¹; Yijun Cao¹; ¹Zhengzhou University

3:25 PM Break

3:40 PM

Catalytic Effect of Ferric Iron on the Bioleaching of Arsenopyrite Concentrates by Moderate Thermophile *Sulfobacillus Thermosulfidooxidans*: *Duorui Zhang*¹; Yu Deng¹; Jinlan Xia¹; Zhenyuan Nie¹; Lizhu Liu¹; Yidong Zhao²; Lili Zhang³; Hongying Yang⁴; ¹Key Lab of Biometallurgy of Ministry of Education of China, School of Minerals Processing and Bioengineering, Central South University; ²Beijing Synchrotron Radiation Facility, Institute of High Energy Physics, Chinese Academy of Sciences; ³Shanghai Synchrotron Radiation Facility, Shanghai Institute of Applied Physics, Chinese Academy of Sciences; ⁴School of Metallurgy, Northeastern University

4:00 PM

Arsenic reduction and cobalt removal in the arsenic-containing leachate from alkali leaching of arsenic-containing cobalt/nickel residue: *Jinxi Qiao*¹; Shuang Long²; Zhiqiang Liu³; Xintao Sun¹; Zhaoming Sun¹; Hualei Miao²; Jingyang Chen²; Ailiang Chen¹; ¹Central South University; ²Zhuzhou Smelter Group Company Limited; ³Guangdong Research Institute of Rare Metals

Computational Approaches for Big Data, Artificial Intelligence and Uncertainty Quantification in Computational Materials Science — Uncertainty Quantification for Micro- and Macro-scale Modeling

Sponsored by: TMS: Computational Materials Science and Engineering Committee

Program Organizers: Liang Qi, University of Michigan; Francesca Tavazza, National Institute of Standards and Technology; Christopher Woodward, Air Force Research Laboratory; Adrian Sabau, Oak Ridge National Laboratory; Houlong Zhuang, Arizona State University; Sugata Chowdhury, National Institute of Standards and Technology

Thursday PM
March 14, 2019

Room: 305
Location: Henry B. Gonzalez
Convention Center

Session Chair: To Be Announced

2:00 PM

Evaluation and Representation of Uncertainty in Thermodynamic Phase Diagrams: *Noah Paulson*¹; Brandon Bocklund²; Zi-Kui Liu²; Marius Stan¹; ¹Argonne National Laboratory; ²Pennsylvania State University

2:20 PM

Efficient Propagation of Uncertainty From CALPHAD to Multi-physics Phase Field Microstructure Simulations: *Pejman Honarmandi*¹; Vahid Attari¹; Isaac Benson¹; Raymundo Arroyave¹; Douglas Allaire¹; ¹Texas A & M University

2:40 PM

Bayesian CALPHAD: From Uncertainty Quantification to Model Fusion: *Pejman Honarmandi*¹; Thien Duong¹; Seyede Fatemeh Ghoreishi¹; Douglas Allaire¹; Raymundo Arroyave¹; ¹Texas A&M Univ

3:00 PM

Impact of uncertainty quantification in automated CALPHAD modeling on the design of additively manufactured functionally-graded alloys: *Brandon Bocklund*¹; Lourdes Bobbio¹; Richard Otis¹; ShunLi Shang¹; Allison Beese¹; Zi-Kui Liu¹; ¹Pennsylvania State University

3:20 PM Break

3:40 PM

Uncertainty Quantification in Microstructural Reconstruction of Additively Manufactured Materials: *Pinar Acar*¹; Veera Sundararaghavan²; ¹Virginia Tech University; ²University of Michigan

4:00 PM

Uncertainty Quantification in Solidification Modeling of Additive Manufacturing: *Supriyo Ghosh*¹; E. Chin²; J. Knap²; D. Allaire¹; R. Arroyave¹; ¹Texas A&M University; ²Army Research Laboratory

4:20 PM

Comprehensive Quality Assurance of Additive Manufacturing Ti-6Al-4V by Learning from Prior Studies: *Sen Liu*¹; Branden Kappes¹; Aaron Stebner¹; Xiaoli Zhang¹; ¹Colorado School of Mines

4:40 PM

Quantifying Uncertainty in High Strain Rate Materials Strength With Bayesian Inference: *David Rivera*¹; Jason Bernstein¹; Katie Schmidt¹; Nathan Barton¹; Ana Kupresanin¹; Jeff Florando¹; ¹LLNL

5:00 PM

Error Estimation for Stress Distributions and Macroscale Yield Prediction in Polycrystalline Alloys: *Kamalika Chatterjee*¹; Robert Carson¹; Paul Dawson¹; ¹Cornell University

Computational Thermodynamics and Kinetics — Mechanics

Sponsored by: TMS: Computational Materials Science and Engineering Committee

Program Organizers: Fadi Abdeljawad, Clemson University; Hesam Askari, University of Rochester; Emine Gulsoy, Northwestern Univ; Joel Berry, University of Pennsylvania; Damien Tournet, IMDEA Materials; Mohsen Asle Zaeem, Colorado School of Mines; James Morris, Oak Ridge National Laboratory

Thursday PM
March 14, 2019

Room: 225C
Location: Henry B. Gonzalez
Convention Center

Session Chair: To Be Announced

2:00 PM Invited

Phase-field modeling of swelling and fracture of lithium-silicon electrode materials: *Alain Karma*¹; Ata Mesgarnejad¹; ¹Northeastern Univ

2:30 PM

Dislocation Climb and Jog Nucleation in Molecular Dynamics: *Anas Abu-Odeh*¹; Maeva Cottura¹; Mark Asta¹; ¹UC Berkeley

2:50 PM

Solute-dislocation interactions in Mg from first principles: Slangle c+a angle\$ and twinning dislocations with flexible boundary conditions: *Michael Fellingner*¹; Dallas Trinkle¹; ¹Univ of Illinois Urbana-Champaign

3:10 PM Invited

Trends in stability and mechanical response of metallic glasses: *Izabela Szlufarska*¹; George Bokas¹; Lei Zhao¹; Chaiyapat Tangparajoen¹; ¹University of Wisconsin

3:40 PM Break

4:00 PM Invited

A first-principles computational study of segregation of Sn and Si solutes into fully coherent Cu {111} twin boundary: *Zhe Liu*¹; ¹The University Of Melbourne

4:30 PM

Near-a TRIP Titanium Alloy Design: *Fan Meng*¹; Gregory Olson¹; ¹Northwestern University

4:50 PM

Phase-field study of microstructure control using external fields: *Rupesh Chafle*¹; Somnath Bhowmick¹; *Rajdip Mukherjee*¹; ¹IIT Kanpur

5:10 PM

Estimation of Thermal Expansion using Nonlinear Elasticity Theory: *Ian Winter*¹; Daryl Chrzan¹; ¹University Of California Berkeley

Environmentally Assisted Cracking: Theory and Practice — Stress Corrosion Cracking II

Program Organizers: Bai Cui, University of Nebraska Lincoln; Raul Rebak, GE Global Research; Srujan Rokkam, Def-Aero, Advanced Cooling Technologies Inc

Thursday PM
March 14, 2019

Room: 214C
Location: Henry B. Gonzalez
Convention Center

Session Chairs: Yong Yang, University of Florida; Srujan Rokkam, Advanced Cooling Technologies Inc

2:00 PM **Invited**

Stress Corrosion Cracking Behavior of 316L Stainless Steel Fabricated by Additive Manufacturing: *Yong Yang*¹; Appajosula Rao¹; ¹University of Florida

2:40 PM

Cracking and Fatigue Resistance of High-Strength Nickel Alloys in Oilfield Applications: *Bing Han*¹; ¹Schlumberger

3:00 PM

Similar and Dissimilar Metal Weld Failures in Hydrocracking Service at a Refinery: *Sudhakar Mahajanam*¹; Cesar Espinoza¹; Yenny Cubides²; ¹Pinnacle Advanced Reliability Technologies; ²Texas A&M University

3:20 PM **Break**

3:40 PM

Physics-based modeling of Corrosion Crack Dynamics using meshless Peridynamics Approach: *Srujan Rokkam*¹; Max Gunzburger²; Masoud Behzadinasab¹; Sachin Shanbhag²; Michael Brothers¹; Nam Phan³; Kishan Goel³; ¹Def-Aero, Advanced Cooling Technologies Inc; ²Florida State University; ³Naval Air Systems Command

4:00 PM

The effect of localized stresses and heterogeneous strains on galvanic corrosion in AA7050: *Andrea Nicolas*¹; Alberto Mello¹; Michael Sangid¹; ¹Purdue University

4:20 PM

Influence of Tempering Treatment on Precipitation Behavior, Microstructure, Dislocation Density and Hydrogen Induced Ductility Loss in High Vanadium Hot-rolled X80 Pipeline Steel: *Longfei Li*¹; Bo Song¹; Zeyun Cai¹; Zhen Liu¹; Xiaokang Cui¹; ¹Univ of Science & Technology Beijing

4:40 PM **Concluding Comments**

Fatigue in Materials: Multi-scale and Multi-environment Characterizations and Computational Modeling — Crack Initiation and Propagation during Fatigue

Sponsored by: TMS: Computational Materials Science and Engineering Committee, TMS: Integrated Computational Materials Engineering Committee

Program Organizers: Jean-Briac le Graverend, Texas A&M University; Ashley Spear, University of Utah; Antonios Kontsos, Drexel Univ; Garrett Pataky, Clemson University; Filippo Berto, Norwegian University of Science and Technology

Thursday PM
March 14, 2019

Room: 301B
Location: Henry B. Gonzalez
Convention Center

Session Chair: Garrett Pataky, Clemson University

2:00 PM **Invited**

Initiation and Early Growth of Fatigue Cracks: *Jaroslav Polak*¹; ¹Institute of Physics of Materials

2:40 PM

Fatigue Crack Growth in Pure Al Films: *Syed Javadi*¹; Wade Lanning¹; Christopher Muhlstein¹; ¹Georgia Institute of Tech

3:00 PM

Fatigue crack growth behavior of CrCoFeNiMn and CrCoFeNi High Entropy Alloys: *Garrett Pataky*¹; William Williams¹; Diana Burden¹; Daniel Collins¹; Samuel Jenkins¹; Martha Piness¹; ¹Clemson University

3:20 PM

Fatigue life assessment of microstructurally-thin pressure vessel metallic liners: *Jacob Hochhalter*¹; David Dawicke²; Timothy Ruggles³; William Leser⁴; Patrick Leser⁴; Heather Hickman⁵; Richard Russell⁶; ¹University of Utah; ²Analytical Services & Materials, Inc.; ³National Institute of Aerospace; ⁴Nasa Langley Research; ⁵NASA Glenn Research Center; ⁶NASA Kennedy Space Center

3:40 PM **Break**

4:00 PM

Influence of the stress ratio on the long crack propagation behavior of aluminum wrought alloys in the Very High Cycle Fatigue regime: *Fatih Bülbül*¹; Marcel Wicke²; Tina Kirsten³; Angelika Brückner-Foitz²; Martina Zimmermann³; Hans-Jürgen Christ¹; ¹Universität Siegen; ²Universität Kassel; ³Technische Universität Dresden

4:20 PM

Investigation of load frequency effect on plasticity-induced crack closure during fatigue and creep-fatigue crack growth in steels at high temperatures: *Jose J. Ramirez*¹; Gabriel Potirniche¹; Robert Stephens¹; Indrajit Charit¹; Nicholas Shaber¹; Martin Taylor¹; ¹University of Idaho

Fracture Processes of Thin Films and Nanomaterials — Size Effects on Fracture Processes in Monolithic and Multilayer Materials

Sponsored by: TMS Materials Processing and Manufacturing Division, TMS: Nanomechanical Materials Behavior Committee
Program Organizers: Daniel Kiener, University of Leoben; Megan Cordill, Erich Schmid Institute; Johannes Ast, Empa, Swiss Federal Laboratories for Materials Science and Technology; Brad Boyce, Sandia National Labs

Thursday PM
March 14, 2019

Room: 217B
Location: Henry B. Gonzalez
Convention Center

Session Chairs: Megan Cordill, Erich Schmid Institute of Materials Science; Bo-Shiuan Li, University of Oxford

2:00 PM Invited

Investigating Plasticity Effects on Fracture at the Microscale: The Ductile to Brittle Transition (DBT): *Nathan Mara*¹; Kevin Schmalbach¹; Youxing Chen¹; Eric Hintsala²; William Gerberich¹; ¹University of Minnesota; ²Bruker Nano Surfaces Division

2:20 PM

Understanding Brittle-to-Ductile Transition using Micro-Fracture Tests and HR-EBSD: *Bo-Shiuan Li*¹; David Armstrong¹; Angus Wilkinson¹; Steve Roberts¹; ¹Univ of Oxford

2:40 PM

The meso-scale fracture behavior of single crystalline tungsten based on femtosecond laser processed samples: *Manuel Pfeifenberger*¹; Markus Alfreider²; Anton Hohenwarter²; Daniel Kiener²; Reinhard Pippan¹; ¹Erich Schmid Institute; ²Department of Materials Physics

3:00 PM

Can we measure the crack length during in elastic plastic fracture reliably at the micron scale? A case study in nanocrystalline tungsten: *Ashish Kumar*¹; Christoph Kirchlechner¹; Steffen Brinckmann¹; Gerhard Dehm¹; ¹Max-Planck-Institut für Eisenforschung GmbH

3:20 PM

Impact of internal defects on the deformation of nanocrystalline materials: *Cai zhi Zhou*¹; Sixie Huang¹; ¹Missouri University of Science And Technology

3:40 PM Break

4:00 PM Invited

Enhanced fracture toughness of Mg/Nb laminated composites: *Nan Li*¹; Youxing Chen²; Siddhartha Pathak³; Jian Wang⁴; Amit Misra⁵; Nathan Mara²; ¹Los Alamos National Laboratory; ²University of Minnesota; ³University of Nevada, Reno; ⁴University of Nebraska-Lincoln; ⁵University of Michigan, Ann Arbor

4:20 PM

Constituent constraining effects on the microstructural evolution and fracture behaviors of crystalline/amorphous nanolaminates: *Ya qiang Wang*¹; Jinyu Zhang¹; Gang Liu¹; Jun Sun¹; ¹Xi'an Jiaotong University

4:40 PM

Mechanical deformation of AlN-Ag nano multilayers: *Angelica Saenz-Trevizo*¹; Chelsea Appleget¹; Andrea Hodge¹; ¹University of Southern California

Friction Stir Welding and Processing X — Friction Stir Processing

Sponsored by: TMS: Shaping and Forming Committee
Program Organizers: Yuri Hovanski, Brigham Young University; Rajiv Mishra, University of North Texas; Yutaka Sato, Tohoku University; Piyush Upadhyay, Pacific Northwest National Laboratory; David Yan, San Jose State University

Thursday PM
March 14, 2019

Room: 210B
Location: Henry B. Gonzalez
Convention Center

Session Chair: To Be Announced

2:00 PM Panel Discussion: Learn from Industrial Experts - What answers do they need from research?

3:00 PM

Achieving forced mixing in Cu-based immiscible alloys via friction stir processing: *Mageshwari Komarasamy*¹; Ryan Tharp¹; Subhasis Sinha¹; Saket Thapliyal¹; Rajiv S. Mishra¹; ¹University of North Texas

3:20 PM

Direct application of friction stir processing to weld toes of high-strength low-alloy steel joints: *Hajime Yamamoto*¹; Yoshikazu Danno¹; Kazuhiro Ito¹; Yoshiki Mikami¹; Hidetoshi Fujii¹; ¹Osaka Univ

3:40 PM Break

4:00 PM

Exceptional fatigue strength in cast aluminum alloy A339 modified by friction stir processing: *Kaimiao Liu*¹; Mageshwari Komarasamy¹; Rajiv Mishra¹; Glenn Grant¹; ¹University Of North Texas

4:20 PM

Stationary shoulder friction stir processing: a low heat input grain refinement technique for magnesium alloy: *Vivek Patel*¹; Wenya Li²; Quan Wen²; Yu Su²; Na Li²; ¹Northwestern Polytechnical University, Pandit Deendayal Petroleum University; ²Northwestern Polytechnical University

4:40 PM

Friction Stir Processing (FSP) of Multiwall Carbon Nanotubes and Boron Carbide Reinforced Aluminum Alloy (Al 5083) Composites: *Mahmood Khan*¹; Syed Husain²; Shahid Akhtar³; Ragnhild Aune¹; ¹NTNU; ²Institute of Space Technology (IST); ³Norsk Hydro

5:00 PM

Production of AlSi12CuNiMg/ Al2O3 Micro/Nanodispersed Surface Composites Using Friction Stir Processing for Automotive Applications.: Lavinia Tonelli¹; *Mohamed Refat*²; Stefania Toschi¹; Mohamed Ahmed³; Essam Ahmed³; Alessandro Morri¹; Iman El-Mahallawi⁴; Lorella Ceschini¹; ¹University of Bologna; ²Centre for Simulation Innovation and Advanced Manufacturing, The British University in Egypt; ³Suez University; ⁴Cairo University

Friction Stir Welding and Processing X — Friction Stir Spot Welding

Sponsored by: TMS: Shaping and Forming Committee
Program Organizers: Yuri Hovanski, Brigham Young University; Rajiv Mishra, University of North Texas; Yutaka Sato, Tohoku University; Piyush Upadhyay, Pacific Northwest National Laboratory; David Yan, San Jose State University

Thursday PM
March 14, 2019

Room: 210A
Location: Henry B. Gonzalez
Convention Center

Session Chair: To Be Announced

2:00 PM Panel Discussion: Learn from Industrial Experts - What answers do they need from research?

3:00 PM Invited

Simulation of High Speed Refill Friction Stir Spot Welding in AA 6111: Michael Miles¹; Yuri Hovanski¹; J. Wu¹; B. Larsen¹; ¹Brigham Young University

3:20 PM Invited

Welding Multilayer Materials by Refill Friction Stir Spot Welding: Uceu Suhuddin¹; Dennis Gera¹; Nelson Alcantara²; Jorge dos Santos¹; ¹Helmholtz Zentrum Geesthacht; ²Federal University of São Carlos

3:40 PM Break

4:00 PM Invited

Refill Friction Stir Spot Joining of Aerospace Aluminum Alloys with Additional Corrosion-Inhibitive Compounds: Enkhsaikhan Boldsaikhan¹; Shintaro Fukada²; Mitsuo Fujimoto²; Kenichi Kamimuki³; Hideki Okada³; ¹Wichita State University; ²Kawasaki Heavy Industries, Corporate Technology Division; ³Kawasaki Heavy Industries, Aerospace Division

4:20 PM

Realization of similar and dissimilar stranded wire joints via Friction Stir Spot Welding: Andreas Gester¹; Guntram Wagner¹; ¹Technische Universität Chemnitz

4:40 PM Invited

Friction Stir Spot Welding of Ti-6Al-4V Alloy Plates: Weldability, Microstructure, and Mechanical Integrity: Hyojin Park¹; Yong Chae Lim²; Hahn Choo¹; Suhong Zhang¹; Anming Hu¹; Scott Rose²; Zhili Feng⁴; ¹University of Tennessee; ²Oak Ridge National Laboratory; ³Boeing Research and Technology; ⁴Oak Ridge National Laboratory; University of Tennessee

5:00 PM Invited

Improving porous TC4/UHMWPE friction spot welding joint through controlling welding temperature and force: Muyang Jiang¹; Ke Chen¹; Binxi Chen¹; Min Wang¹; Lanting Zhang¹; Aidang Shan¹; ¹Shanghai Jiao Tong Univ

5:20 PM

Process Time Reduction in Friction Stir Spot Welded EN AW 1050 and EN CW 004A Dissimilar Joints: Tobias Köhler¹; Anna Regensburg¹; Michael Grätzell¹; Moritz Loehlein¹; Jean Pierre Bergmann¹; ¹Technische Universität Ilmenau

High Entropy Alloys VII — Synthesis and Mechanical Properties

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

Thursday PM
March 14, 2019

Room: 207B
Location: Henry B. Gonzalez
Convention Center

Session Chairs: Louis Santodonato, Oak Ridge National Laboratory; Bernd Gludovatz, UNSW Sydney

2:00 PM

High temperature creep behavior of face-centered cubic high entropy alloys: Min-Gu Jo¹; Jin Yoo Suh¹; Woo-Sang Jung¹; Heung Nam Han²; ¹Korea Institute Of Science And Technol; ²Seoul National University

2:20 PM Invited

On microstructure optimization and deformation mechanisms at different strain rates in a precipitation strengthened eutectic high entropy alloy: Bharat Gwalani¹; Sindhura Gangireddy¹; Rajiv S Mishra¹; Rajarshi Banerjee¹; ¹Univ of North Texas

2:40 PM Invited

On the Fracture Behavior of TRIP, TWIP and Dual-Phase High-Entropy Alloys between RT and LN Temperatures: Bernd Gludovatz¹; Yokasundery Muniandy¹; Hyun Seok Oh²; Eun Soo Park²; Robert Ritchie³; ¹UNSW Sydney; ²Seoul National University; ³Lawrence Berkeley National Laboratory

3:00 PM Invited

Dislocation and atomic-scale investigation of deformation mechanisms in high-entropy alloy CoCrFeMnNi at high strain rates: Daniel Foley¹; Shang-Hao Huang¹; Elaf Anber¹; Christopher Barr²; Andrew Lang¹; Leslie Lamberson¹; Mitra Taheri¹; ¹Drexel University; ²Sandia National Laboratories

3:20 PM Invited

A comparative high pressure study of MoNbTaVW and polycrystalline tungsten: Shizhong Yang¹; Tahj Delasbour¹; Oleg Starovoytov¹; David Young¹; Ebrahim Khosravi¹; Shengmin Guo¹; ¹Southern University and A&M College

3:40 PM Break

4:00 PM Invited

High Entropy Alloys with Hexagonal Close-Packed Structure Derived from Thin Film Combinatorial Approach: Artashes Ter-Isahakyan¹; Azin Akbari¹; Thomas Balk¹; ¹University of Kentucky

4:20 PM

On exceptional stability of dislocations in HEAs from CoCrFeMnNi family: Anna Fraczkiewicz¹; Julia Olszewska¹; Michal Proz¹; Marc Legros²; ¹Mines St-Etienne / Sms / Lgf Umr 5307; ²CEMES CNRS

5:00 PM

Refractory high entropy alloys containing non-metallic elements: Aeran Roh¹; Hanuel Kim¹; Seungjin Nam¹; Hyunjoo Choi¹; ¹Kookmin University

4:40 PM

Integrated Experimental and Computational Investigation of strengthening in MnFeCoNi-based Alloys: Dongsheng Wen¹; Chia-Hsiu Chang¹; Sae Matsunaga¹; Michael Titus¹; ¹Purdue University

High Entropy Alloys VII — Thermal and Other Properties III

Sponsored by: TMS: Alloy Phases Committee

Program Organizers: Xie Xie, FCA US LLC; Peter Liaw, University of Tennessee; Michael Gao, National Energy Technology Laboratory; E-Wen Huang, National Chiao Tung University; Gongyao Wang, Alcoa Technical Center; Srivatsan Tirumalai, The University of Akron

Thursday PM
March 14, 2019

Room: 008B
Location: Henry B. Gonzalez
Convention Center

Session Chairs: Qing Wang, Dalian University Of Technology; An-Chou Yeh, National Tsing Hua University

2:00 PM Invited

High temperature properties of Ni-rich high entropy alloys: *An-Chou Yeh*¹; Yung-Ta Chen¹; Hideyuki Murakami²; Jien-Wei Yeh¹; ¹National Tsing Hua University; ²National Institute for Materials Science

2:20 PM Invited

Martensitic Transformations and Shape Memory Characteristics of (TiZrHf)50Ni25Co10Cu15 High Entropy Shape Memory Alloy: *Chih-Hsuan Chen*¹; Yue-Jin Chen¹; ¹National Taiwan University

2:40 PM

Microstructural flexibility in metastable high entropy alloys upon friction stir processing: *Saurabh Nene*¹; Michael Frank¹; Subhasis Sinha¹; Kaimiau Liu¹; Rajiv Mishra¹; Brandon Macwilliams²; Kyu Cho²; ¹University of North Texas; ²U.S. Army Research Laboratory

3:00 PM

Thermal stability of low neutron cross-section Nb-Ti-V-Zr high-entropy alloys for nuclear applications: *Daniel King*¹; Simon Middleburgh²; Tim Lucey³; Michael Cortie⁴; Gregory Lumpkin⁵; Alexander Knowles¹; Imperial College London; ²Bangor University; ³Weir Minerals; ⁴University of Technology Sydney; ⁵Australian Nuclear Science and Technology Organisation

3:20 PM Invited

High Throughput Solid Solution Strengthening Exploration of High Entropy Alloys: *Francisco Coury*¹; Kester Clarke¹; Claudio Kiminami²; Michael Kaufman¹; Amy Clarke¹; ¹Colorado School of Mines; ²Universidade Federal de Sao Carlos

3:40 PM Break

4:00 PM Invited

Resistance-temperature Behavior of AlxCoCrFeNi High Entropy Alloy Films: *Xiaona Li*¹; Chenyu Wang¹; Qing Wang¹; Yue Ma¹; Peter Liaw²; Chuang Dong¹; ¹Dalian University of Technology; ²The University of Tennessee

4:20 PM

Crystallographically degenerate B2 precipitation in a plastically deformed fcc-based high entropy alloy: *Deep Choudhuri*¹; Rajiv Mishra¹; ¹Univ of North Texas

4:40 PM

Elastic dipoles of point defects in HEAs: *Varvenne Celine*¹; Emmanuel Clouet²; ¹Cnrs Aix-Marseille Univ.; ²CEA Saclay

5:00 PM

Entropy contributions to phase stability in concentrated random solid solutions: *Anus Manzoor*¹; *Dilpuneet Aidhy*¹; ¹University Of Wyoming

Interfaces in Structural Materials: An MPMD Symposium in Honor of Stephen M. Foiles — Interface-defect Interactions II

Sponsored by: The Minerals, Metals and Materials Society, TMS: Computational Materials Science and Engineering Committee

Program Organizers: Fadi Abdeljawad, Clemson University; Eric Homer, Brigham Young University; Elizabeth Holm, Carnegie Mellon University; Mark Asta, Univ of California Berkeley

Thursday PM
March 14, 2019

Room: 302C
Location: Henry B. Gonzalez
Convention Center

Session Chair: To Be Announced

2:00 PM Invited

Grain Boundary Microscopic Degrees of Freedom: The Key(s) To Understanding Radiation Damage: *Mitra Taheri*¹; ¹Drexel Univ

2:30 PM

Irradiation and Mechanical Behavior of Nanocrystalline Alloys with Amorphous Intergranular Films: *Jennifer Schuler*¹; Christopher Barr²; Samuel Briggs²; Nathan Heckman²; Khalid Hattar²; Brad Boyce²; Timothy Rupert¹; ¹Univ of California Irvine; ²Sandia National Laboratories

2:50 PM

Absorption of radiation-induced point defects at crystal/amorphous, metal/covalent interfaces: *Sanket Navale*¹; Michael Demkowicz¹; ¹Texas A&M University

3:10 PM

Helium Bubble Formation at Iron-Oxide Interfaces in Nanostructured Ferritic Alloys: *Tiberiu Stan*¹; Yuan Wu²; Jim Ciston³; Takuya Yamamoto²; G.R. Odette²; ¹Northwestern University; ²University of California Santa Barbara; ³Lawrence Berkeley National Laboratory

3:30 PM Break

3:50 PM Invited

Interface Formation and Adhesion Under In-Situ Transmission Electron Microscope: *Scott Mao*¹; Yang He¹; Chongmin Wang²; ¹University of Pittsburgh; ²Pacific Northwest National Laboratory

4:20 PM

Molecular dynamics study of the contact behavior of FCC metallic substrates: *Milad Khajehvand*¹; Panthea Seppehrband¹; ¹Santa Clara University

4:40 PM

High-strength nanotwinned Al solid solution alloys: *Yifan Zhang*¹; Qiang Li¹; Sichuang Xue¹; Jie Ding¹; Dongyue Xie²; Cuncai Fan¹; Ruizhe Su¹; Jin Li¹; Han Wang¹; Haiyan Wang¹; Jian Wang²; Xinghang Zhang¹; ¹Purdue University; ²University of Nebraska-Lincoln

5:00 PM

Interactions of interstitials with coherent twin boundary in Al: A comprehensive first-principles study: *William Yi Wang*¹; Jin Sun²; Chengxiong Zou¹; Quanmei Guan²; Deye Lin³; Jian Tang¹; Liang Zhang⁴; Bin Tang¹; Jun Wang¹; Hongchao Kou¹; Jianying Hou²; Jijun Ma²; Jinshan Li¹; ¹Northwestern Polytechnical Univ; ²CRRC Tangshan Co., LTD, Tangshan; ³Institute of Applied Physics and Computational Mathematics, Beijing; ⁴Shanghai Research Institutes of Materials

Mechanical Behavior of Nuclear Reactor Components — Small Scale Testing

Sponsored by: TMS: Nuclear Materials Committee
Program Organizers: Clarissa Yablinsky, Los Alamos National Laboratory; Assel Aitkaliyeva, University of Florida; Khalid Hattar, Sandia National Laboratories; Janelle Wharry, Purdue University; Laurent Capolungo, Los Alamos National Laboratory; Eda Aydogan, Los Alamos National Laboratory

Thursday PM
March 14, 2019

Room: 215
Location: Henry B. Gonzalez
Convention Center

Session Chairs: Khalid Hattar, Sandia National Laboratory; Tarik Saleh, Los Alamos National Laboratory

2:00 PM Invited

An Overview of Small Scale Mechanical Property Measurements on Irradiated Steels: *Tarik Saleh*¹; Stuart Maloy¹; Takuya Yamamoto²; Tobias Romero¹; Matthew Quintana¹; G. Odette²; ¹Los Alamos National Laboratory; ²University of California, Santa Barbara

2:30 PM

Multiscale Modeling for Nanoindentation of Zirconium Using an Atomistic-to-Continuum Coupling Method: *Yuqing Ding*¹; Vineet Bhakhri¹; Sterling St Lawrence¹; Edmanuel Torres¹; ¹Canadian Nuclear Laboratories

2:50 PM

Combined nanomechanical and high-resolution microscopy to understand plasma-surface interactions in fusion energy materials: *Chad Parish*¹; Kun Wang¹; Thomas Song¹; Matthew Baldwin²; Russell Doerner²; ¹Oak Ridge National Laboratory; ²University of California San Diego

3:10 PM

The Effect of Helium-Implantation on the Deformation Behaviour of Tungsten: X-ray Micro-Diffraction & Crystal-Plasticity: Suchandrima Das¹; Edmund Tarleton¹; Ruqing Xu²; Wenjun Lui²; *Felix Hofmann*¹; ¹University of Oxford; ²Argonne National Lab

3:30 PM Break

3:50 PM

Micropillar compression of hydrogen containing Zircaloy-4 at temperatures to explore the performance of nuclear fuel cladding: *Siyang Wang*¹; Finn Giuliani¹; Ben Britton¹; ¹Imperial College London

4:10 PM

Micromechanical Investigation of Irradiation Effects in Beryllium: *Viacheslav Kuksenko*¹; Chris Densham²; Patrick Hurh³; Steve Roberts⁴; ¹UK Atomic Energy Authority; ²Rutherford Appleton Laboratory; ³Fermi National Accelerator Laboratory; ⁴University of Oxford

4:30 PM

In situ micromechanical testing of He2+ ion irradiated Ni and Ni based superalloys for Gen IV nuclear reactors: *Dhriti Bhattacharyya*¹; Alan Xu¹; Michael Saleh¹; Tao Wei¹; Mihail Ionescu¹; ¹Australian Nuclear Sci & Tech Organization

4:50 PM

Development of a Micropillar Compression Study for MAX Phases in Nuclear Applications: *Julia Pürstl*¹; Thomas Edwards²; William Clegg¹; ¹University of Cambridge; ²Swiss Federal Laboratories for Materials Science and Technology (EMPA)

Mechanical Behavior Related to Interface Physics III — Nanocomposites II

Sponsored by: TMS Materials Processing and Manufacturing Division, TMS: Nanomechanical Materials Behavior Committee
Program Organizers: Jason Trelewicz, Stony Brook University; Nathan Mara, University of Minnesota; Erica Lilleodden, Helmholtz-Zentrum Geesthacht; Siddhartha Pathak, University of Nevada, Reno; Jordan Weaver, National Institute of Standards and Technology; Marc Legros, CEMES-CNRS

Thursday PM
March 14, 2019

Room: 304B
Location: Henry B. Gonzalez
Convention Center

Session Chair: To Be Announced

2:00 PM

Atomistic simulations of shock compression of single-crystal and core-shell Cu@Ni nanoporous metals: *Anupam Neogi*¹; Lijie He¹; Niaz Abdulrahim¹; ¹University of Rochester

2:20 PM Invited

Understanding Plasticity of Nanoscale Al-Al₂Cu Eutectic: *Jian Wang*¹; Shujuan Wang²; Guisen Liu¹; Amit Misra²; ¹University of Nebraska—Lincoln; ²University of Michigan

2:50 PM

Breakdown of the superplastic behaviour of Zn-22Al at the nanoscale: *Mathias Göken*¹; Patrick Feldner¹; Benoit Merle¹; ¹Friedrich-Alexander-University Erlangen-Nürnberg

3:10 PM

Influence of interface structure and chemistry on the mechanics of finite cracks of phase boundaries under irradiation: *Remi Dingreville*¹; Elton Chen¹; Chaitanya Deo²; ¹Sandia National Laboratories; ²Georgia Institute of Technology

3:30 PM Break

3:50 PM

Mechanical behavior of core-shell nanostructures: *Raghuram Santhapuram*¹; Douglas Spearot²; Arun Nair¹; ¹Univ of Arkansas; ²University of Florida

4:10 PM Invited

Deformation behavior and strength of bulk Zr/Nb nanolayered composites: *Marko Knezevic*¹; Daniel Savage¹; Nan Li²; Jordan Weaver³; Nathan Mara⁴; Rodney McCabe²; Sven Vogel²; Irene Beyerlein⁵; ¹University of New Hampshire; ²Los Alamos National Laboratory; ³National Institute of Standards and Technology; ⁴University of Minnesota; ⁵University of California at Santa Barbara

4:40 PM

DFT Study of High Order Elastic Constants and Electronic Properties of Borophene: *Ali Ramazani*¹; Mahdi Faghihnasiri²; Homayoun Jafari³; Mostafa Shabani⁴; Sina Malakpour Estalaki⁵; Ronald G Larson⁶; ¹Massachusetts Institute of Technology (MIT); ²Young Researchers and Elite Club; ³Iran University of Science and Technology; ⁴Shahrood University of Technology; ⁵University of Notre Dame; ⁶University of Michigan-Ann Arbor

5:00 PM Invited

Unraveling material and geometrical effects in Nanoporous Platinum: *Antonia Antoniou*¹; ¹Georgia Institute of Technology

Nanoarchitected and Morphology-controlled Nanoporous Materials — NP Materials-structure Properties-mechanical Behavior II

Sponsored by: TMS Materials Processing and Manufacturing Division, TMS: Mechanical Behavior of Materials Committee
Program Organizers: Niaz Abdolrahim, University of Rochester; John Balk, Univ of Kentucky; Michael Demkowicz, Texas A&M Univ; Christoph Eberl, Fraunhofer IWM

Thursday PM
March 14, 2019

Room: 214A
Location: Henry B. Gonzalez
Convention Center

Session Chair: To Be Announced

2:00 PM Invited

Novel Deformation Mechanism of Small-Volume Copper Containing High Density of Helium Bubbles: *Weizhong Han*¹; ¹Xi'an Jiaotong University

2:30 PM

Characterization of Nanoporous Metals after Nanoindentation through 3D Reconstruction: *Nicolas Briot*¹; T. John Balk¹; ¹University of Kentucky

2:50 PM Invited

In situ irradiation studies of nanoporous metals: *Xinghang Zhang*¹; Jin Li¹; Cuncai Fan¹; ¹Purdue University

3:20 PM Break

3:50 PM Invited

Microstructure evolution of nanoporous gold during dealloying: Insights from atomistic modeling: *Dinh Bao Nam Ngô*¹; Yong Li²; Jürgen Markmann¹; Jörg Weissmüller²; ¹Institute of Materials Research, Materials Mechanics, Helmholtz-Zentrum Geesthacht, Geesthacht, Germany; ²Institute of Materials Physics and Technology, Hamburg University of Technology, Hamburg, Germany

4:20 PM Invited

Copper-Nickel Alloy Foams from Polymer Templates: *David Bahr*¹; Changeun Kim¹; Raheleh Rahimi¹; Ioannis Mastrorakos¹; ¹Purdue Univ

4:50 PM

Real-time USAXS and WAXS studies of morphology evolution in 3D nanoporous gold during electrochemical dealloying: *Sam Welborn*¹; John Corsi¹; Alexander Proschel¹; Eric Detsi¹; ¹University of Pennsylvania

5:10 PM

3D-morphology of Multimodal Porous Cu Fabricated via Chemical dealloying method: *Lijie Zou*¹; Mingyuan Ge²; Chonghang Zhao¹; Wah-Keat Lee²; Fei Chen³; Yu-chen Karen Chen-Wiegart¹; ¹Stony Brook University; ²Brookhaven National Laboratory; ³Wuhan University of Technology

Phase Transformations and Microstructural Evolution — Phase Transformation in Non-ferrous Alloys V

Sponsored by: TMS: Phase Transformations Committee
Program Organizers: Sophie Primig, Univ of New South Wales; Deep Choudhuri, University of North Texas; Klaus-Dieter Liss, Guangdong Technion – Israel Institute of Technology; Megumi Kawasaki, Oregon State University; Matthew Steiner, University of Cincinnati; Yufeng Zheng, Ohio State University; Ashley Paz y Puente, University of Cincinnati; Juan Escobedo-Diaz, University of New South Wales; Dhriti Bhattacharyya, ANSTO; Rajarshi Banerjee, University of North Texas

Thursday PM
March 14, 2019

Room: 225D
Location: Henry B. Gonzalez
Convention Center

Session Chair: To Be Announced

2:00 PM

Microstructure evolution of nickel-based superalloy during grain boundary engineering: *Etienne Martin*¹; Andrew Detor²; Ian Spinelli²; ¹University of Waterloo; ²General Electric Global Research

2:20 PM

Size effect of NbTi filament on the interfacial reaction and properties of lead-free superconducting solder joints: *Sangeeta Santra*¹; Timothy Davies¹; Junliang Liu¹; Guillaume Matthews¹; Chris Grovenor¹; Susannah Speller¹; ¹University of Oxford

2:40 PM

Study of phases demonstrating potential hardening effect in new nickel-base superalloys for turbine discs application: *Laurane Finet*¹; Vladimir A. Esin¹; Loïc Nazé¹; Vincent Maurel¹; ¹MINES ParisTech, PSL Research University, Centre des Matériaux, CNRS UMR 7633, BP 87, 91003

3:00 PM

The effect of pre-stretch deformation on the precipitation and microstructural evolution in Zircaloy-4 alloy during aging: *Shuo Li*¹; Baifeng Luan¹; Qing Liu¹; ¹Chongqing University

3:20 PM

The influence of hot deformation and subsequent aging on the mechanical properties of the nickel superalloy 625: *Simon Malej*¹; Jožef Medved²; Barbara Šetina Batic¹; Franc Tehovnik¹; Jaka Burja¹; Franci Vode¹; Arh Boštjan¹; Matjaž Godec¹; ¹Institute of Metals and Technology; ²Faculty of Natural Sciences and Engineering

3:40 PM Break

4:00 PM

Phase Transformations in metastable γ 946-Ti alloys: *Petr Hrcuba*¹; Jana Smilauerova¹; Pavel Zhanal¹; ¹Charles University In Prague

4:20 PM

Precipitation mechanism of irradiation induced Nb-rich particles in ZrNb alloys: *Zefeng Yu*¹; Adrien Couet¹; Mukesh Bachhav²; ¹University of Wisconsin, Madison; ²Idaho National Laboratory

4:40 PM

Structural Evolution of Dislocation Dipoles and Their Strengthening Effect in Deformed gamma-TiAl: *Hao Wang*¹; Yan He¹; Zhao Liu¹; Gang Zhou¹; Chunguang Bai¹; David Rodney²; Fritz Appel³; Dongsheng Xu¹; Rui Yang¹; ¹Institute of Metal Research, Chinese Academy of Sciences; ²Institut Lumière Matière, Université Lyon 1, CNRS, UMR 5306, F-69622; ³Institute for Materials Research, Helmholtz-Zentrum Geesthacht

5:00 PM

Thermal Decomposition of Quasicrystals in Powder-Processed Icosahedral-Phase-Strengthened Aluminum Alloys: *Hannah Leonard*¹; Sarshad Rommel¹; Sriram Vijayan¹; Thomas Watson²; Sonia Tulyani³; Mark Aindow¹; ¹University of Connecticut; ²Pratt & Whitney; ³UTC Aerospace Systems

Recent Advances in Functional Materials and 2D/3D Processing for Sensors and Electronic Applications — Printed Electronics III: Functional Materials and Devices

Sponsored by: TMS: Thin Films and Interfaces Committee
Program Organizers: Pooran Joshi, Oak Ridge National Laboratory; Ravindra Nuggehalli, New Jersey Institute of Tech; Jud Ready, Georgia Institute of Technology; Anming Hu, Univ of Tennessee; Tolga Aytug, Oak Ridge National Laboratory; Konstantinos Sierros, West Virginia University; Wenchao Zhou, University of Arkansas

Thursday PM
March 14, 2019

Room: 217D
Location: Henry B. Gonzalez
Convention Center

Session Chairs: Anming Hu, University of Tennessee; Yong Kong, The University of Utah

2:00 PM Invited

In situ real time defect detection and residual stress measurement in additive manufacturing: *Xiaodong Li*¹; ¹University of Virginia

2:30 PM

Advances in 2D Material Processing and Application: A Direct-ink Writing Approach Employing Graphene-based Inks for Facile Gas Sensor Patterning and Fabrication: *Harrison Loh*¹; Andrew Graves¹; Charter Stinespring¹; Konstantinos Sierros¹; ¹West Virginia University

2:50 PM

Materials Integration for Flexible Electronics: Transparent Supercapacitors: *Lydia Skolrood*¹; Tolga Aytug¹; Matthew Rager¹; Forrest Brown¹; Wesley Higgins¹; Gabriel Veith¹; Hui Wang¹; Zachary Hood¹; Christopher Rouleau¹; Pooran Joshi¹; ¹Oak Ridge National Laboratory

3:10 PM

Aerosol Jet Printing of Dielectric Polymer Blend for Applications in Flexible CNT Thin Film Transistors: *Alan Phillips*¹; Yongchao Yu²; Justine Valka¹; Nance Ericson¹; Pooran Joshi¹; ¹Oak Ridge National Lab; ²University of Tennessee

3:30 PM Break

3:50 PM Invited

Intercalation of van der Waals layers for multifunctional applications: *Sina Najmaei*¹; Chinedu Ekuma¹; Madan Dubey¹; ¹US Army Research Lab

4:20 PM

Patterning of ZnO Quantum Dots and Poly(methyl methacrylate) Hybrids: *Kathy Lu*¹; Yifeng Lin¹; Richey Davis¹; ¹Virginia Tech

4:40 PM

MARS-Magnetic Augmented Rotation System: *Vishwas Danthi Shivaram*¹; Roulei Liu¹; Navjot Panchhi¹; Laila Al-qarni¹; Rayan Daroowalla²; Shuang Du¹; Yan Liu¹; Tiansee Chow³; Nuggehalli Ravindra¹; ¹New Jersey Institute of Technology; ²Paramus High School; ³Energy Technology Development Inc.

Recent Developments in Biological, Structural and Functional Thin Films and Coatings — Functional Films and Coatings III

Sponsored by: TMS: Thin Films and Interfaces Committee
Program Organizers: Adele Carrado, IPCMS - CNRS; Nancy Michael, Univ of Texas Arlington; Gerald Ferblantier, Icube Laboratory; Heinz Palkowski, Clausthal University of Technology; Ramana Chintalapalle, University of Texas at El Paso; Ravindra Nuggehalli, New Jersey Institute of Tech; Vikas Tomar, Purdue University

Thursday PM
March 14, 2019

Room: 217A
Location: Henry B. Gonzalez
Convention Center

Session Chairs: Gerald Ferblantier, Strasbourg University; Chintalapalle Ramana, University of Texas El Paso

2:00 PM Keynote

High Resolution Ion Beam Analysis of Materials: Past, Present and Future: *Vaithiyalingam Shutthanandan*¹; ¹Pacific Northwest National Lab

2:35 PM Invited

Atomistic modelling of surfaces, nanoparticles and nanoalloys for magnetism, energy and health applications: *Christine Goyhenex*¹; ¹IPCMS

2:55 PM

Evaluation of Transparent WO₃/Mo/WO₃ Multilayer Thin Films: *Alba Leyva*¹; Anil Krishna Battu¹; Nanthkishore Makeswaran¹; Ramana Chintalapalle¹; ¹University of Texas at El Paso

3:15 PM

Effect of Refractory Metal Incorporation on Structure and Properties of β -Ga₂O₃: A Case Study of Molybdenum Incorporated β -Ga₂O₃ Films: *Anil Krishna Battu*¹; Cristian Orozco¹; Ramana Chintalapalle¹; ¹University of Texas at El Paso

3:35 PM Break

3:55 PM Keynote

Ultra-low-energy ion beam synthesis for nanotechnology and nanostructures: *Marzia Carrada*¹; Caroline Bonafos¹; P. Benzo¹; Gérard Ben Assayag¹; B. Pecassou¹; ¹CEMES

4:30 PM

Structural and optical properties of silicon doped quantum dots in silicon oxynitride thin films prepared by plasma enhanced CVD: *Gerald Ferblantier*¹; Fabien Ehrhardt¹; Dominique Muller¹; Daniel Mathiot¹; ¹Icube Laboratory

4:50 PM

Engineering Interfacial Stresses For Optimum Silicon Band-Edge Emission: *Sufian Abedrabbo*¹; Nuggehalli Ravindra²; Anthony Fiory²; ¹Khalifa University of Science and Technology; ²New Jersey Institute of Technology

5:10 PM

Uncooled Microbolometers – An Overview: Sita Rajyalaxmi Marthi¹; *Asahel Bañobre*¹; Nuggehalli Ravindra¹; ¹New Jersey Institute of Technology

10th International Symposium on High Temperature Metallurgical Processing — Poster Session

Sponsored by: TMS: Pyrometallurgy Committee

Program Organizers: Tao Jiang, Central South University; Jiann-Yang Hwang, Michigan Technological Univ; Dean Gregurek, RHI Magnesita; Zhiwei Peng, Central South University; Jerome Downey, Montana Technological University; Baojun Zhao, University of Queensland; Onuralp Yucel, Istanbul Technical University; Ender Keskinilic, Atılım University; Rafael Padilla, Univ of Concepcion; Elsa Olivetti, Massachusetts Institute of Tech; Camille Fleuriaux, Gopher Resource

Monday PM
March 11, 2019

Room: Hall 3
Location: Henry B. Gonzalez
Convention Center

A Literature Review of Heat Capacity Measurement Methods: *Guishang Pei*¹; Junyi Xiang¹; Gang Li¹; Shanshan Wu¹; Feifei Pan¹; Xuewei Lv¹; ¹Chongqing University

A Study on the Supersonic Jet Behavior for the Improvement of Dephosphorization Efficiency in Converter Process: *Jeong Han*¹; ¹Inha University

Application of Offgas Analysis on Predicting Carbon Content of End-point during Steelmaking Process: Rong Cheng¹; *Jiongmeng Zhang*¹; Liangjin Zhang¹; Haitao Ma¹; ¹University of Science and Technology Beijing

Thermodynamic Analysis of Precipitation of La-O-S-As Inclusions in Steel: *Congxiao Li*¹; Hongpo Wang¹; Bin Bai¹; Lei Zhang¹; ¹Chongqing University

Calcination of Strontium Carbonate in Rotary Kiln Furnace: *Rasit Sezer*¹; Emre Yilmaz²; Selim Ertürk²; Cüneyt Arslan²; ¹Karadeniz Technical University; ²Istanbul Technical University

CFD Study on Pulverized Coal Combustion Behavior in the Raceway of an Oxygen Blast Furnace: *Junning Wu*¹; Zhenfeng Zhou¹; Xing Peng¹; Jingsong Wang¹; ¹University of Science and Technology Beijing

Dissolution Reaction of Earthy Graphite in Liquid Steel: Hongyan Yan¹; Xiaojun Hu²; Chao Luo³; *Jinglong Liang*¹; KuoChih Chou²; ¹College of Metallurgy and Energy, North China University of Science and Technology; ²State Key Laboratory of Advanced Metallurgy, University of Science and Technology Beijing; ³Hesteel Group Tangsteel Company

Distribution Behavior of Metals in Copper Alloy under Super-gravity Field: *Long Meng*¹; Zhe Wang¹; Yiwei Zhong¹; Kuiyuan Chen¹; Zhancheng Guo¹; ¹University of Science and Technology Beijing

Effect of H₂/CO Ratio on Gas Consumption and Energy Utilization Rate of Gas-based Direct Reduction Process: *Chenyang Xu*¹; Zheng Anyang¹; Zhang Jianliang¹; Wang Rongrong¹; Li Yang¹; Wang Yaozu¹; Liu Zhengjian¹; ¹University of Science and Technology Beijing

Determination of Effect of Li₂O on the Structure of CaO-Al₂O₃ Based Slag by Molecular Dynamics Simulation and Raman Spectrum: *Sai Wang*¹; Shengping He¹; Boran Jia¹; Qian Wang¹; ¹Chongqing University

Effects of Particle Size of Coke on Iron Ore Sintering Process: *Huaiying Ma*¹; Wen Pan¹; Lei Liu²; Zhidong Zhang²; Chunlai Wang²; ¹Research Institute of Technology, Shougang Group Corporation; ²Shougang Qian'an Steel Company

Electrical Conductivity of TiO₂-FeO-X(SiO₂, CaO) Ternary High Titania Slag: *Kai Hu*¹; Shengping Li¹; Junyi Xiang¹; Xuewei Lv¹; ¹Chongqing University

Experimental Study on Dechlorination of Cold-rolling Sludge at High Temperature Roasting: *Yi Li*¹; Hongwei Cheng¹; Guangshi Li¹; Xiaoyong Mei¹; Xionggang Lu¹; Qian Xu¹; ¹Shanghai University

Extraction Process of Antimony from Stibnite by Electrothermal Volatilization: *Dongbo Li*¹; Xiaohua Yang¹; ¹China ENFI Engineering Corporation

Generation Kinetics of Perovskite in Calcium Ferrite-titania Reaction: *Cheng Yi Ding*¹; Gang Li¹; ¹Chongqing Univ

Influence Factors Analysis on Scavenging of Chlorine Impurity from Crude Titanium Sponge: *Li Liang*¹; Dachun Liu²; ¹Panzhuhua Iron&Steel Research Institute; ²Kunming University of Science and Technology

Kinetic Study on Decomposition and Dissolution of Limestone in Converter Slag: *Haohua Deng*¹; Nan Wang¹; Min Chen¹; Guangzong Zhang¹; ¹Northeastern Univ

Low Grade Phosphorus-containing Iron Ore for the Removal of Cu(II) Ion from Wastewater: Xiaoli Yuan¹; Dongshan Zhou¹; Wentang Xia¹; *Qingyun Huang*¹; ¹Chongqing University of Science and Technology

Mechanism of the Chlorination Roasting of Nickel Sulfide Concentrate with Ammonium Chloride: *Xiaoyong Mei*¹; Hongwei Cheng¹; Cong Xu¹; Guangshi Li¹; Xionggang Lu¹; Qian Xu¹; ¹Shanghai University

Numerical Simulation Investigation on the Flow and Temperature Fields in Tundish with Gas Injection into Ladle Shroud: *Wang Zhou*¹; Tao Zhang²; San-Xing Chen¹; ¹Chongqing CEPREI Industrial Technology Research Institute; ²Chongqing University of Education

Rapid Surface Quenching Technology and its Computing Model of Micro-alloy Steel: *Cheng Juan*¹; Yang Qiankun¹; Wang Yang¹; Zhang Dong¹; Shen Ping¹; Fu Jianxun¹; ¹Shanghai University

Research on Comprehensive Utilization and Harmless Treatment Process of Copper Smelting Slag: *Dongbo Li*¹; Yaguang Guo¹; Shuaibiao Liang¹; Deng Ma¹; ¹China ENFI Engineering Corporation

Recovery of Zinc from Oxide-sulphide Zinc Ore through Oxidation and Chelation: *Kun Yang*¹; Shwei Li¹; Libo Zhang¹; Jinhui Peng¹; ¹Kunming University of Science and Technology

Roasting Behavior and Mechanism of Oxidized Pellets by Blended Hematite and Magnetite Concentrate: Zhang Zhongwu¹; *Yu Zhengwei*¹; Xiang Aiping¹; Li Yafei¹; Lei Jie¹; Long Hongming¹; ¹Anhui University of Tech

Structure-property Correlations of Al₂O₃ ↔ SiO₂ Substitution in Blast Furnace Slag: *Zhiming Yan*¹; Xuewei Lv¹; Ramana Reddy²; Zhengde Pang¹; Wenchao He¹; ¹Chongqing University; ²The University of Alabama

Study of Hot Metal Dephosphorization by Replacing Part of Lime with Limestone: *Haohua Deng*¹; Min Chen¹; Nan Wang¹; ¹Northeastern Univ

Study of Surface Temperature of Continuously Cast Slab by Machine Vision: *Junpeng Liu*¹; Ke Xu¹; Dongdong Zhou¹; Peng Zhou¹; ¹University of Science & Technology Beijing

Study on Energy Utilization of High Phosphorus Oolitic Hematite by Gas-based Shaft Furnace Reduction and Electric Furnace Smelting Process: *Hui Sun*¹; ¹Shenwu Technology Group Corp Co., Ltd.

Study on the Effect of Different CO₂-O₂ Mixture Gas Injection Modes on Vanadium Oxidation: *Zhenglei Guo*¹; Yu Wang¹; Qi Lu¹; Shuchao Wang¹; ¹Chongqing University

The Effects of Solute and Particles on the Microstructure Changes during Directional Annealing in an Ni-Al System: *Chao Yang*¹; Ian Baker¹; ¹Thayer school of Engineering at Dartmouth college

Thermodynamics of Spinel Solid Solutions: *Sergey Shornikov*¹; ¹Vernadsky Institute of Geochemistry of RAS

Thermogravimetric and Kinetic Analyses of Co-combustion of Chlorine-containing Anthracite/bituminous Coal Blends: *Cui Wang*¹; ¹University of Science and Technology Beijing

2019 International Metallurgical Processes Workshop for Young Scholars (IMPROWYS 2019) — Student Poster Session

Sponsored by: TMS Extraction and Processing Division

Program Organizers: Cong Wang, Northeastern University; Amy Clarke, Colorado School of Mines; Kinnor Chattopadhyay, University of Toronto; Bryan Webler, Carnegie Mellon University

Monday PM
March 11, 2019

Room: Hall 3
Location: Henry B. Gonzalez
Convention Center

Funding support provided by: Korean Institute of Metals and
Materials

Corrosion Behavior Mechanism of Super Duplex-stainless Steel in Simulated Seawater Desalination Environment: *Yangang Zhang*¹; Zhangfu Yuan¹; Xiangtao Yu¹; ¹University of Science and Technology Beijing

Development of Bio Treated-oil Palm Fiber Reinforced Kaolin Matrix Composites for Building Bricks Application: *Muideen Adebayo Bodude*¹; Olasunkanmi Adegbuyi¹; Nnaji Ruth Nkiruka¹; ¹University of Lagos

Effect of Roll Surface Profile on Thermal-mechanical Behavior of Continuously Cast Bloom in Soft Reduction Process: *Liang Li*¹; Xiao Zhao¹; Peng Lan¹; Zhanpeng Tie¹; Haiyan Tang¹; Jiaquan Zhang¹; ¹University of Science and Technology Beijing

The Influence of Bath Additives on the Microstructure, Mechanical Properties and Thermal Stability of Nanocrystalline Ni Films Processed by Electrodeposition: *Tamas Kolontsi*¹; Zsolt Czigan²; Laszlo Peter³; Imre Bakonyi³; Jenő Gubicza¹; ¹ELTE Eötvös Loránd University; ²Institute of Technical Physics and Materials Science, Hungarian Academy of Sciences; ³Wigner Research Centre for Physics, Hungarian Academy of Sciences

Thermodynamic Study on Substitution of CO₂ for Ar or O₂ in AOD Smelting Process: *Rongyue Wang*¹; Zhangfu Yuan¹; Xiangtao Yu¹; Jingxia Liu²; ¹University of Science and Technology Beijing; ²Peking University

Additive Manufacturing and Welding: Physical and Mechanical Metallurgy of Rapidly Solidified Metals — Poster Session

Sponsored by: TMS: Additive Manufacturing Committee

Program Organizers: Allison Beese, Pennsylvania State University; Eric Lass, National Institute of Standards and Technology; David Bourell, University of Texas; John Carpenter, Los Alamos National Laboratory; Kester Clarke, Colorado School of Mines; Daniel Coughlin, Los Alamos National Laboratory; Christian Leinenbach, Empa, Swiss Federal Laboratories for Materials Science and Technology; Behrang Poorganji, GE Additive; Judy Schneider, University of Alabama At Huntsville; Lee Semiatin, US Air Force Research Laboratory; Mark Stoudt, National Institute of Standards and Technology; Chantal Sudbrack, QuesTek Innovations LLC

Monday PM
March 11, 2019

Room: Hall 3
Location: Henry B. Gonzalez
Convention Center

A Comparison Study of Microstructures and Mechanical Properties of Additively Manufactured Titanium Alloys: *Thomas Voisin*¹; Jean-Baptiste Forien¹; Yinmin Wang¹; ¹Lawrence Livermore National Laboratory

A Study of Plasma Transfer Arc –Additive Manufacturing Using 17-4 PH Powders: *Sandy El Moghazi*¹; Tonya Wolfe¹; Hani Henein¹; Leijun Li¹; ¹University of Alberta

Additive Manufacturing of 17-4PH Stainless Steel on Ti-6Al-4V Using Pure Vanadium Interlayer: *Nana Adomako*¹; Jeoung Kim¹; Sanghoon Noh²; ¹Hanbat National University; ², Korea Atomic Energy Research Institute

Interface Microstructural Characterization of Titanium to Stainless Steel Dissimilar Friction Welds: *Murali Mohan Cheepu*¹; V Muthupandi²; Woo-Seong Che³; ¹Department of Mechatronics Engineering, Kyung Sung University; ²Department of Metallurgical and Materials Engineering, National Institute of Technology Tiruchirappalli; ³Kyung Sung University

Comparative Austempering Response Between Weld Metals of ADI Weldments with and without Cerium Addition: *Tapan Pal*¹; Tapan Sarkar¹; ¹Jadavpur University

Comparison of Ex Situ X-ray Tomography and In Situ Monitoring to Gain Control over Defects during Laser Powder Bed Fusion: *Jean-Baptiste Forien*¹; Philip Depond¹; Gabe Guss¹; Bradley Jared²; Jonathan Madison²; Elena Garlea³; Hahn Choo⁴; Kin-Ling Sham⁴; Manyalibo Matthews¹; ¹Lawrence Livermore National Laboratory; ²Sandia National Laboratories; ³Y-12 National Security Complex; ⁴University of Tennessee

Effect of Cryo-rolling on Microstructure and Tribological Behaviour of Spray Formed Al-Si Alloy: *Surendra Chourasiya*¹; Gaurav Gautam¹; Devendra Singh¹; ¹Indian Institute of Technology, Roorkee

Effect of Substrate Heating and Beam Focus on Changes in Phase Fraction and Texture in an E-beam AM Ti-6Al-4V Alloy: *Rakesh Kamath*¹; Kin-Ling Sham¹; Hahn Choo¹; Sean Yoder²; Ryan Dehoff²; Yang Ren³; Xianghui Xiao³; ¹University Of Tennessee Knoxville; ²Oak Ridge National Laboratory; ³Argonne National Laboratory

Effects of Beam Oscillation on Porosity & Intermetallic Compounds Formation of Electron Beam Welded DP600 Steel to Al-5754 Alloy Joints: *Soumitra Dinda*¹; Prakash Srirangam²; Gour Gopal Roy¹; ¹Indian Institute Of Technology Kharagpur; ²Warwick Manufacturing Group

Effects of La₂O₃ Addition on the Brazing Dissimilar Joints of WC-Co/1Cr13: A Combined Experimental and Computational Thermodynamics Study: Yaohong Xiao¹; Yi Wang²; Keqin Feng³; *Lei Chen*¹; ¹Mississippi State Univ; ²The Pennsylvania State University; ³Sichuan University

Effects of Ultrasonic Micro-forging on 304 Stainless Steel Fabricated by WAAM: *Laibo Sun*¹; ¹Harbin Engineering University

Evolution of Weld Interface during Rotary Friction Welding between Stainless Steel and Medium Carbon Steel: *Murali Mohan Cheepu*¹; Woo-Seong Che¹; ¹Department of Mechatronics Engineering, Kyung Sung University

Experimental Investigation of High Strength Steels Welded Using High Yield Electrodes for Commercial Vehicle Application: Ramya Gopalakrishnan¹; Dhanasekaran S¹; *Srinivasan S*¹; ¹Ashok leyland

Metallurgical Characteristics of Laser Peened 17-4 PH SS Processed by LENS Technique: *Ipfi Mathoho*¹; Esther Akinlabi¹; Nana Arthur²; Tlotleng Monamme²; Bathusile Masina²; ¹University of johannesburg; ²CSIR

Microstructural Refinement Using Tailored Beam Shapes during Laser Additive Manufacturing: *Tien Roehling*¹; John Roehling¹; Saad Khairallah¹; Gabe Guss¹; Rongpei Shi¹; Joseph McKeown¹; Manyalibo Matthews¹; ¹Lawrence Livermore National Laboratory

Microstructural Study of Soft Metals Produced by Liquid Metal Jetting: *Yaakov Idell*¹; Jason Jeffries¹; Andrew Pascall¹; Kerri Blobaum¹; ¹Lawrence Livermore National Laboratory

Mechanical Property Characterization of Single Scan Laser Tracks of Nickel Super Alloy 625 by Nanoindentation: *Jordan Weaver*¹; Meir Kreitman¹; Jarred Heigel¹; M. Donmez¹; ¹N.I.S.T.

Numerical Assessment of Novel Scan Strategies for Powder Bed Fusion Additive Manufacturing: Ram Ravanur¹; Pam Whitaker²; Chris Sutcliffe¹; Paul Dionne³; Joerg Willems³; *Mustafa Megahed*²; ¹Renishaw / University of Liverpool; ²Renishaw; ³Esi Group

On the Role of Bimodal Powder Size Distribution on Mechanical Properties and Microstructure of Laser Melted 316L Stainless Steel: *Hannah Coe*¹; Somayeh Pasebani¹; ¹Oregon State Univ

Superior-ductility Direct Laser Melted 316L Stainless Steel from New and Recycled Powders and Different Laser Spot Sizes: *Kun Yang¹; Geoff Delooze¹; Robert Wilson¹; ¹Metal Industries, CSIRO Manufacturing*

The Development of Cementless Orthopedic Implants by 3D Printing: *Taeyang Kwak¹; Myungjae Lee²; Yeonbeom Heo¹; Hoonyoung Ban¹; Hansol Seo³; Dohyung Lim¹; ¹Department of Mechanical Engineering, Sejong university; ²Intec Corporation co. Ltd.; ³Samsung Medial Center*

Transient Dynamics of Powder Spattering in Laser Powder Bed Fusion Additive Manufacturing Process Revealed by In-situ High-speed High-energy X-ray Imaging: *Qilin Guo¹; Cang Zhao²; Luis Escano¹; Zachary Young¹; Lianghua Xiong¹; Kamel Fezzaa²; Wes Everhart³; Ben Brown³; Tao Sun²; Lianyi Chen¹; ¹Missouri University Of Science & Tech; ²Argonne National Laboratory; ³Honeywell FM&T*

The Effect of Extrusion Process on the Mechanical Properties of AM AISi10Mg: *Adi Ben-Arty¹; Arie Bussiba²; Gal Hadad¹; ¹Ben Gurion University; ²N.R.C.N*

Additive Manufacturing for Energy Applications — Student Poster Session

Sponsored by: TMS: Nuclear Materials Committee
Program Organizers: Isabella Van Rooyen, Idaho National Laboratory; Subhashish Meher, Idaho National Laboratory; Indrajit Charit, University of Idaho; Somayeh Pasebani, Oregon State University; Chad Duty, University of Tennessee

Monday PM
March 11, 2019
Room: Hall 3
Location: Henry B. Gonzalez Convention Center

Session Chair: Indrajit Charit, University of Idaho

Additively-manufactured Nanostructured Copper: *Jeffrey Graham¹; Kumar Sridharan²; Benjamin Maier²; Hwasung Yeom²; Peter Hosemann¹; David Hoelzer³; Stuart Maloy⁴; ¹Dept of Nuclear Engineering, UC Berkeley; ²University of Wisconsin, Madison; ³Oak Ridge National Laboratory; ⁴Los Alamos National Laboratory*

Fabrication of Cr Cladded Zr-alloys Using Solid State Powder Spray Additive Manufacturing Technology: *Benjamin Maier¹; Hwasung Yeom¹; Greg Johnson¹; Tyler Dabney¹; Kumar Sridharan¹; ¹Univ of Wisconsin-Madison*

Investigation of Manufacturing Oxide Dispersion Strengthened (ODS) Steel Fuel Cladding Tubes using Cold Spray Technology: *Mia Lenling¹; Hwasung Yeom¹; Benjamin Maier¹; Greg Johnson¹; Kumar Sridharan¹; Peter Hosemann²; David Hoelzer³; Stuart Maloy⁴; Jeff Graham²; ¹University of Wisconsin Madison; ²University of California-Berkeley; ³Oak Ridge National Laboratory; ⁴Los Alamos National Laboratory*

Investigation of Process Parameter Optimization for 316L: *Luis Nunez¹; Federico Sciammarella¹; Porfirio Navar¹; David Williams¹; Mark Sliwka¹; Thomas Corbett¹; Daniel Pulscher¹; ¹Northern Illinois University*

Prototyping of a Laboratory-scale Cyclone Separator for Biofuel Production from Biomass Feedstocks Using a Fused Deposition Modeling Printer: *Sam Hansen¹; ¹University of Idaho*

Additive Manufacturing of Metals: Applications of Solidification Fundamentals — Poster Session

Sponsored by: TMS: Additive Manufacturing Committee
Program Organizers: Alex Plotkowski, Oak Ridge National Laboratory; Lang Yuan, University of South Carolina; Kevin Chaput, Air Force Research Labroatory; Mohsen Asle Zaeem, Colorado School of Mines; Sudarsanam Babu, The University of Tennessee, Knoxville; Wenda Tan, University of Utah

Monday PM
March 11, 2019
Room: Hall 3
Location: Henry B. Gonzalez Convention Center

Additive Manufactured 316L Stainless Steel for Biomedical Applications: *Waseem Haider¹; Jahangir Khan Lodhi¹; ¹Central Michigan University*

In Situ Low Cost Stereovision Analysis of Spatter: *Christopher Barrett¹; Carolyn Carradero¹; Evan Harris¹; Eric MacDonald¹; Brett Conner¹; ¹Youngstown State University*

Numerical Simulation on the Single-crystal Grain Structure of GH4169 Superalloy Steel in the Spiral Grain Selector Using Procast Software: *Zheng Chen¹; Lanxin Geng²; Yu Yao³; Yi Cheng³; Jieyu Zhang³; ¹Tongling University and Shanghai University; ²Tongling University; ³Shanghai University*

Powder Packing Density and its Impact on SLM-based Additive Manufacturing: *Taher Abu-Lebdeh¹; Ransford Dampney¹; Vincent Lamberti²; Sameer Hamoush¹; ¹North Carolina A&T State University; ²Y-12 National Security Complex*

Quantifying Laser-matter Interactions and Their Impact on Defect Formation during Additive Manufacturing of Ti-6Al-4V Using In Situ Synchrotron X-ray Imaging: *Lorna Sinclair¹; Yunhui Chen¹; Chu Lun Alex Leung¹; Samuel Clark¹; Sebastian Marussi²; Sam Tammam-Williams³; Leigh Stanger³; Robert Atwood⁴; Margie Olbinado³; Alexander Rack³; Jon Willmott³; Iain Todd³; Peter Lee¹; ¹University College London; ²University of Manchester; ³University of Sheffield; ⁴Diamond Light Source Ltd.; ⁵European Synchrotron Radiation Facility*

Texture Mapping in Electron Beam Welded Dissimilar Cu-SS Joints by Neutron Diffraction: *Soumitra Dinda¹; Jyotirmaya Kar¹; Prakash Srirangam²; Winfried Kockelmann³; Gour Gopal Roy¹; ¹Indian Institute of Technology Kharagpur; ²University of Warwick; ³ISIS Facility*

Additive Manufacturing of Metals: Fatigue and Fracture III — Poster Session

Sponsored by: TMS: Additive Manufacturing Committee
Program Organizers: Nikolas Hrabe, NIST-Boulder; Steve Daniewicz, University of Alabama; John Lewandowski, Case Western Reserve Univ; Nima Shamsaei, Auburn University; Mohsen Seifi, ASTM International/Case Western Reserve University

Monday PM
March 11, 2019
Room: Hall 3
Location: Henry B. Gonzalez Convention Center

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

Effect of Adding Yttrium on the Inclusion Modification and Impact Toughness of E36 Shipbuilding Steel: *Xiaojun Xi¹; Maolin Ye¹; Shufeng Yang¹; Jingshe Li¹; ¹University of Science and Technology Beijing*

Additive Manufacturing of Metals: Microstructural Evolution and Phase Transformations — Poster Session

Sponsored by: TMS: Phase Transformations Committee, TMS: Additive Manufacturing Committee, TMS: High Temperature Alloys Committee

Program Organizers: Bij-Na Kim, LPW Technology / Lancaster University; Eric Lass, National Institute of Standards and Technology; Mohsen Asle Zaeem, Colorado School of Mines; Sudarsanam Babu, The University of Tennessee, Knoxville; Ryan Dehoff, Oak Ridge National Laboratory; Gerhard Fuchs, University of Florida; Chantal Sudbrack, QuesTek Innovations LLC

Monday PM
March 11, 2019

Room: Hall 3
Location: Henry B. Gonzalez
Convention Center

Form Mechanism of Electron-beam Additive Manufacturing of Shaped Titanium Alloy with Thin-walled and Complex Structure: *Shifeng Liu¹; Xin Yang¹; Yaojia Ren¹; ¹Xi'an University of Architecture and Technology*

Ni-TiB₂ Composite for Additive Technology of Direct Metal Deposition: *Vladimir Promakhov¹; Mansur Ziatdinov¹; Aleksandr Zhukov¹; Olga Korsmik²; ¹Tomsk State University; ² Saint Petersburg State Marine Technical University*

The Effects of Heat Treatments on Microstructure, Texture, and Mechanical Properties Evolution in IN718 Cubes Additively Manufactured by Laser Powder Bed Fusion: *Runbo Jiang¹; Anthony Rollett¹; ¹Carnegie Mellon University*

Twin Formation and Deformation Induced Phase Transformation in 304L Stainless Steel Fabricated by Selective Laser Melting: *Zhiguang Zhu¹; Quy-bau Nguyen¹; Mui-ling Nai¹; Jun Wei¹; ¹Singapore Institute of Manufacturing Technology*

Effect of Different Aqueous Electrolytes on Corrosion Resistance of Selective Laser Melted Ti-6Al-4V Alloy: *Ashutosh Sharma¹; Minseok Oh¹; A.K. Srivastava²; Yu Hwan Kim³; Byungmin Ahn¹; ¹Ajou University; ²OP Jindal University, Raigarh, C.G., India; ³Z3DFAB Corp*

Effect of Shielding Gas Flow Rate on Inclusion Evolution and Mechanical Property: *Du-Rim Eo¹; Jung-Wook Cho¹; Sun-Hong Park²; ¹Pohang University of Science and Technology (POSTECH); ²Research Institute of Industrial Science and Technology (RIST)*

Finite Element Simulation of Temperature Distribution in a Selective Laser Melting Process: *Luis Arturo Reyes Osorio¹; Roberto Cabriaes¹; Omar López-Botello²; Patricia Zambrano Robledo¹; ¹Universidad Autonoma De Nuevo Leon; ²Instituto Tecnológico y de Estudios Superiores de Monterrey*

Microstructural Evolution Modeling for Selective Laser Sintering: *Yulan Li¹; Erin Barker¹; ¹Pacific Northwest National Laboratory*

Improvement of the Mechanical Properties of Inconel718 Fabricated by Selective Laser Melting (SLM): *Seren Özer¹; Güney Bilgin¹; Ziya Esen²; Arcan Dericioglu¹; ¹Middle East Technical University; ²Cankaya University*

Additive Manufacturing: Materials Design and Alloy Development — Poster Session

Sponsored by: TMS: Additive Manufacturing Committee, TMS: Integrated Computational Materials Engineering Committee

Program Organizers: Behrang Poorganji, GE Additive; James Saal; Hunter Martin, HRL Labs; Orlando Rios, Oak Ridge National Laboratory

Monday PM
March 11, 2019

Room: Hall 3
Location: Henry B. Gonzalez
Convention Center

Additive Manufacturing of Commercial Metastable β -Ti alloys: *Srinivas Aditya Mantri¹; Eugene Ivanov²; Rajarshi Banerjee¹; ¹University of North Texas; ²Tosoh SMD Inc.*

Bone Growth Investigation around Additive Manufacturing Metal-Ceramics Composite: *Wei Chang¹; Chun-Chieh Wang²; Shao-Ju Shih³; Nien-Ti Tsou¹; Kuan-Ying Tseng¹; Pei-Yi Tsai¹; Wei-Qin Huang⁴; Jo-Chi Tseng⁵; Hung-Sheng Chou¹; E-Wen Huang¹; ¹Department of Materials Science and Engineering, National Chiao Tung University; ²National Synchrotron Radiation Research Center; ³Department of Materials Science and Engineering, National Taiwan University of Science and Technology; ⁴Laser and Additive Manufacturing Technology Center (LAMC) Industrial Technology Research Institute (ITRI); ⁵Deutsches Elektronen-Synchrotron (DESY), Germany*

CFD Modelling in Additive Manufacturing Processes: *Pareekshith Allu¹; ¹Flow Science Inc.*

Gas-Phase Alloying and Sintering Kinetics of 3D Printed Nickel Scaffolds: *Safa Khodabakhsh¹; Ashley Paz y Puente¹; ¹University of Cincinnati*

Integrated Computational and Experimental Study of an Additively Manufactured Hot-work Tool Steel: *Chia-Ying Chou¹; Greta Lindwall¹; Joakim Odqvist¹; Annika Borgenstam¹; ¹KTH Royal Institute of Technology*

Machine Learning Method for Parameter Development: *Voramon Dheeradhada¹; Natarajan Chennimalai Kumar¹; Laura Dial¹; Vipul Gupta¹; Tim Hanlon¹; Joe Vinciguerra¹; ¹GE Global Research*

Mechanical Behavior and Microstructure of Porous Ti Using TiC as Reinforcement: *Shiyuan Liu¹; Jian Wang¹; Tengfei Lu¹; Guibao Qiu¹; Hao Cui¹; ¹Chongqing University*

Mechanical Testing of Additively Manufactured IN625 Thin-walled Elements: *Arunima Banerjee¹; Matthew Vaughn¹; Jamie Guest¹; Kevin Hemker¹; Michael Groeber²; Jonathan Miller²; William Musinski²; Edwin Schwalbach²; Paul Shade²; ¹Johns Hopkins University; ²Air Force Research Laboratory*

Phase Separation in 3D Printing: Opportunity Towards Ordered Metallic Porous Structures without Templates: *Xue Liu¹; ¹Institute of Materials, China Academy of Engineering Physics*

Process Optimization and Performance of Different Lattice Structures of 316L Stainless Steel by Selective Laser Melting (SLM): *Xiaojing Sun¹; ¹Harbin Engineering University*

Processing of Haynes® 282® Alloy by Laser Powder Bed Fusion Technology: *Robert Otto¹; Vegard Brøtan¹; Amin S. Azar¹; Olav Åsebøl¹; ¹Sintef*

Reduction of Micro-Cracking in Inconel 718 Processed by Selective Laser Melting: *Viridiana Lince Quintanilla¹; Rigoberto Guzman¹; Omar Lopez²; Patricia Zambrano¹; ¹Universidad Autonoma de Nuevo León; ²Instituto Tecnológico de Estudios Superiores de Monterrey*

Role of Particle Size Distribution, Layer-thickness and Process Parameters on the Performance of Materials Processed by Direct Metal Laser Melting (DMLM): *Vipul Gupta¹; Kate Gurnon¹; Laura Dial¹; Rajendra Kelkar²; ¹GE Global Research; ²GE Additive*

The Super Powder: Using Computer Vision and Machine Learning to Create a Framework for Associating Powder Characteristics with Properties for Additive Manufacturing: *Srujana Rao Yarasi*¹; Anna Smith¹; Elizabeth Holm¹; Anthony Rollett¹; ¹Carnegie Mellon University

Advances in Surface Engineering — Poster Session

Sponsored by: TMS: Surface Engineering Committee

Program Organizers: Rajeev Gupta, The University of Akron; Sandip Harimkar, Oklahoma State University; Arif Mubarak, PPG Industries; Deepak Kumar, Baker Hughes, A Ge Company; Tushar Borkar, Cleveland State University; Dong Lin, Kansas State University

Monday PM
March 11, 2019

Room: Hall 3
Location: Henry B. Gonzalez
Convention Center

The Wear Behavior of Thermally Sprayed Al-TiC Composite Coatings on the Carbon Steel Substrate: *Rasoul Jamshidi*¹; Omid Bayat¹; Akbar Heidarpour¹; Hamed Aghamohammadi¹; ¹Hamedan University of Technology

Corrosion and Wear Resistance of PTFE-Alumina Coatings Deposited on Aluminium Alloy by a Micro-blasting Process: *Atinuke Oladoye*¹; James Carton²; Ahmad Baroutaji²; Muhammed Obeidi²; Joseph Stokes²; Barry Twomey²; Abdul Olabi²; ¹Metallurgical & Materials Engineering, University of Lagos, Akoka, Nigeria; ²Dublin City University

Microstructure and Properties of NiCrBSi Composite Coatings by Surface Treatment: *Kaiming Wang*¹; Dong Du¹; Baohua Chang¹; ¹Tsinghua University

Surface Enhancement of Mild Steel with ZrO₂ Composite Induced Zinc Based Electrolyte by Electrodeposition Technique: *Ojo Sunday Fayomi*¹; ¹Covenant University

Microstructure and Wear Properties of Cold Sprayed Nanodiamond Aluminum Composite Coating: *Archana Loganathan*¹; Sara Rengifo²; Alexander Hernandez²; Yusuf Emirov²; Cheng Zhang²; Benjamin Boesl²; Jeganathan Karthikeyan³; Arvind Agarwal²; ¹Florida International Univ; ²Florida International University; ³ASB Industries

Alumina & Bauxite — Poster Session

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

Program Organizer: Sebastien Fortin, Rio Tinto - Aluminium Technology Solutions - ARDC

Monday PM
March 11, 2019

Room: Hall 3
Location: Henry B. Gonzalez
Convention Center

Session Chair: Sebastien Fortin, Rio Tinto Aluminium Technology Solutions - ARDC

Application of ozonation for the degradation of organic compounds of Bayer liquor: *Miguel Soplín*¹; Denise Espinosa¹; Marcela Baltazar¹; ¹Universidade de Sao Paulo

Assessment of the Surface Hydrophilicity and Characterization of Alumina Oxidized at Different Temperatures: *Naouel Hezil*¹; Mamoun Fellah²; ¹Abbes Laghrour Khenchela University, Algeria; ²Tribology & Materials Group, Laboratory of Foundry, Annaba University, Algeria.

Intensified desilication-Bayer Process extract alumina from high alumina fly ash: Gong Yanbing¹; Sun Junmin²; Zhang Tingan¹; *Lu Guozhi*¹; ¹Northeastern Univ; ²High-alumina Fly Ash Resources Development and Utilization R&D Center

Aluminum Alloys, Processing and Characterization — Poster Session I - Development of Aluminum Alloy Processing

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

Program Organizer: Hiromi Nagaumi, Soochow University

Monday PM
March 11, 2019

Room: Hall 3
Location: Henry B. Gonzalez
Convention Center

Development of High Thermal Conductivity Aluminum Alloys for the Integrated Plastic / Metal Molding (IMKS): *Hyun Kyu Lim*¹; Wonseok Yang¹; Young Ok Yoon¹; Shae K. Kim¹; ¹Korea Institute Of Industrial Technology

Effect of Alloying Elements on the Thermal Conductivity and Other Properties of Aluminum Alloys Developed as Casting Alloys: *Wonseok Yang*¹; Bonghwan Kim¹; Shae K. Kim¹; Hyun Kyu Lim¹; Do Hyang Kim²; ¹Korea Institute of Industrial Technology; ²Yonsei University

Effect of Cu addition on the microstructure, mechanical and thermal properties of an Al-Si piston alloy: *Suwaree Chankitmongkol*¹; Dmitry Eskin²; Chaowalit Limmaneevichitr¹; ¹King Mongkut's University of Technology Thonburi; ²Brunel University London

Effect of Mn on microstructure and isochronal aging of Al-Ni-Sc alloys: *Phromphong Pandee*¹; Chanun Suwanpreecha¹; Chaowalit Limmaneevichitr¹; ¹King Mongkut's University of Technology Thonburi

Effect of Rare Earth Metals on Microstructure and Mechanical Properties of Aluminum alloys Processed by Extrusion: *Hyo-Sang Yoo*¹; Yong-Ho Kim¹; Hyeon-Taek Son¹; ¹Korea Institute Of Industrial Technology

Effects of alloying elements on mechanical and thermal characteristics in Al-Si-Mg-(Cu) foundry alloys for automotive engine components: *Seweon Choi*¹; Yumi Kim¹; Youngchan Kim¹; Changseog Kang¹; ¹KITECH

Effects of Sc and Zr Addition on Microstructure and Mechanical Properties of Al-3Cu-2Li Alloy: *Yang Wang*¹; ¹Harbin Engineering University

Effects of the strontium addition on microstructure mechanical properties of sand casting A356 alloy during solution treatment: *Myounggyun Kim*¹; ¹Research Institute Of Industrial Science

Effects on microstructure evolution of Al-9Si-0.3Mg alloy by pyrometallurgically produced Sr master alloy: *Ibrahim Goksel Hizli*¹; Derya Dispinar¹; ¹Istanbul University

High strength and corrosion resistant Al alloys at high temperature: *Irena Paulin*¹; Borut Žužek¹; Peter Cvahte²; Matjaž Godec¹; ¹IMT; ²IMPOL

Improvement of the mechanical properties of the aluminum alloy 7075 by ARB: *Omar Velazquez Carrillo*¹; Francisco García Pastor¹; ¹CINVESTAV

Investigation of the microstructure and mechanical properties of cast AA7068 hybrid nanocomposite reinforced with GNPs and SiC: *Mohammad Alipour*¹; ¹University of Tabriz

Microstructure characterization and properties of cast Al-Si-Fe-Zn alloys with high thermal conductivity: Chun Zou¹; *Gu Zhong*¹; Chu Qiu¹; Xinghui Gui¹; ¹Chinalco Materials Application Research Institute Co., Ltd. Suzhou Branch

Modification of A7075 Alloy for Improved Extrudability: *Se-Hoon Kim*¹; Jae-Hyuck Shin¹; Min-Sang Kim¹; Jin-Pyeong Kim¹; Si-Young Sung¹; Beom-Suck Han¹; ¹Korea Automotive Technology Institute

Relationship between Si content and activation energy of Si precipitation in Al-Si Alloys: *Yu-Mi Kim*¹; Se-Weon Choi¹; Young-Chan Kim¹; Chang-seog Kang¹; ¹KITECH

Study on microstructure and mechanical properties of Al-Zn-Cu based alloys with additive elements using extrusion: *Yong-Ho Kim*¹; Hyo-Sang Yoo¹; Hyeon-Taek Son¹; ¹Korea Institute of Industrial Tech

The effect of Ag on the microstructures and properties of Al-Mg alloys: *Haitao Zhang*¹; Bo Zhang²; ¹Northeastern University; ²China Hongqiao Group Limited

Strengthening behaviour of Al-Si alloy containing oxygen atoms: *Jeheon Jeon*¹; Donghyun Bae¹; ¹Yonsei University

Aluminum Alloys, Processing and Characterization — Poster Session II - Characterizations of Aluminum Alloys

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

Program Organizer: Hiromi Nagaumi, Soochow University

Monday PM
March 11, 2019

Room: Hall 3
Location: Henry B. Gonzalez Convention Center

Effect of Microstructure by Electromagnetic field in Continuous Casting of 7xxx series aluminium alloys: *Kyunghyun Kim*¹; Mykola Slazhniev¹; Hyunsuk Sim¹; Sewon Kim¹; Wonjae Kim¹; ¹Dongsan Tech

Effect of multi-pass friction stir welding on the microstructure, mechanical and wear properties of AA6061/CNTs nanocomposites: *Mohammad Alipour*¹; Ali Ghasemi²; Ali Shakiba³; ¹University of Tabriz; ²Islamic Azad University Tehran North Branch; ³University of Tehran

Evaluation of Al/CNT composite fabricated by hot-top continuous casting process: *Young-Sek Yang*¹; Chang-ho Yoon¹; Geun-Woo Lee¹; ¹Foosung Precision Ind. Co., Ltd.

Examination of formability properties of 6xxx alloy extruded profiles for the automotive industry: *Athanasios Vazdirvanidis*¹; Sofia Papadopoulou¹; George Pantazopoulos¹; Andreas Rikos¹; Gregory Simeonidis²; ¹ELKEME S.A.; ²ESEM S.A.

Improvements for The Recognition Rate of Surface Defects of Aluminum Strips: *Xiaoming Liu*¹; Ke Xu¹; Dongdong Zhou¹; ¹University of Science and Technology Beijing

Influence of CNTs nanoparticles incorporation to friction stir welded 6061aluminum alloy on the microstructure and shear punch properties: *Mohammad Alipour*¹; Ali Ghasemi²; Ali Shakiba³; ¹University of Tabriz; ²Islamic Azad University Tehran North Branch; ³University of Tehran

Investigation of Mechanical Properties for 7075 aluminum alloy using Friction Stir Welding (FSW) reinforced with CNTs: *Mohammad Alipour*¹; Ali Ghasemi²; Ali Shakiba³; ¹University of Tabriz; ²Islamic Azad University Tehran North Branch; ³University of Tehran

Mechanical Characterization of Cold Sprayed Aluminum Alloy Powders Using in-situ Micropillar Compression and Tension: *Tyler Flanagan*¹; Benjamin Bedard¹; Mark Aindow¹; Avinash Dongare¹; Harold Brody¹; Aaron Nardi²; Victor Champagne²; Seok-Woo Lee¹; ¹Univ of Connecticut; ²Army Research Laboratory

Microstructure and Surface Finish Evolution During Incremental Sheet Forming of AA 7075: *Maya Nath*¹; Ankush Bansal¹; Jaekwang Shin¹; Randy Cheng¹; Mihaela Banu¹; Alan Taub¹; ¹University of Michigan

Microstructures and mechanical properties of low Si content Al-Si-Mg alloy: *Jia Lina*¹; Zhang Hu¹; Zhou Li¹; ¹Beihang university

Primary Si Refinement in Hyper-eutectic Al-Si alloys using Metal-oxide particles: *Jaehyuck Shin*¹; Sehoon Kim¹; Jinpyeong Kim¹; Gyeongseok Joo¹; Siyoung Sung¹; Beomsuck Han¹; ¹Korea Automotive Technology Institute

Production of Commercially Pure Aluminum Electrical Conductor Strips Via a Single-Step, Machining-Based Technique: *Mohammed Issahaq*¹; Xiaolong Bai¹; Srinivasan Chandrasekar¹; Kevin Trumble¹; ¹Purdue Univ

The Effects of Solidification Cooling Rates on the Mechanical Properties of an A319 Inline-6 Engine Block: *Joshua Stroh*¹; Austin Piche¹; Dimitry Sediako¹; Anthony Lombardi²; Glenn Byczynski²; ¹UBC Okanagan; ²Nemak

The effects of T6 heat treatment and extrusion process on the microstructure and wear behavior of Al7068 aluminum matrix hybrid nanocomposites reinforced with GNPs and SiC nanoparticles: *Mohammad Alipour*¹; ¹University of Tabriz

The Preparation Methods and Application of Aluminum Foam: *Xia Duan*¹; *Zhiwei Dai*¹; Rong Xu¹; Ronghui Mao¹; Binna Song¹; ¹Soochow University

Evaluation of β -phase Formation in 5xxx Aluminum Alloys: *William Golumbskiel*¹; Emily Holcombe¹; Kyle Matthews²; Daniel Foley²; Mitra Taheri²; ¹Naval Surface Warfare Center, Carderock Division; ²Drexel University

Through-thickness Strain Gradient in a Hot Rolled Al-Mg Alloy Obtained by Nanoindentation and Glancing Angle X-Ray Diffraction: *Sepideh Parvinian*¹; Eric Hoar¹; Mehdi Shafiei²; John Hunter²; Hamid Garmestani¹; ¹Georgia Institute of Technology; ²Novelis Global Research and Technology Center

The role of in-situ stacking faults in the deformation mechanism of I-Al: *Miran Joo*¹; Jeheon Jeon¹; Donghyun Bae¹; ¹Yonsei University

Aluminum Reduction Technology — Poster Session

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

Program Organizer: Marc Dupuis, GeniSim Inc

Monday PM
March 11, 2019

Room: Hall 3
Location: Henry B. Gonzalez Convention Center

Study on extraction of lithium carbonate from lithium-rich electrolyte: *Wei Wang*¹; Weijie Chen¹; Yuzhi Li¹; Kejing Wang¹; ¹Henan University of Science and Technology

An efficient heat recovery technology from the exhaust gas of aluminum reduction cells: *Yanan Zhang*¹; Dengpeng Chai¹; Haitao Yue²; Yanfang Wang¹; Qiang Yu¹; ¹Zhengzhou Non-ferrous Metals Research Institute Co.Ltd of CHALCO; ²Henan Zhongfu Aluminium Company Limited

The Application of the “Remote Data-diagnosis Technology Service” (RDTS) for Aluminum Pot Line: *Hong Bo*¹; Tian Qinghong¹; *Yi Xiaobing*¹; ¹Chalico Gami

Study on stress distribution and configuration optimization of Lining Structure for Aluminum Reduction Cell: *Jing Liu*¹; Yungang Ban¹; Yu Mao¹; Qingchen Yang¹; Jihong Mao¹; Hui Dong¹; Fei Dong¹; ¹Northeastern University Engineering & Research Institute Co Ltd

Numerical simulations of power modulation on an industrial scale aluminium reduction cell: *Roman Gutt*¹; Varchasvi Nandana¹; Hendrik Gesell¹; Alessandro Cubeddu¹; Roman Duessel²; Uwe Janoske¹; ¹University of Wuppertal; ²TRIMET Aluminium SE

Bio-Nano Interfaces and Engineering Applications — Poster Session

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

Monday PM
March 11, 2019
Room: Hall 3
Location: Henry B. Gonzalez
Convention Center

The optimization of the process parameters of Direct Energy Deposition(DED) 3D printing in the manufacture of CoCr-Ti interface with Ti porous layer for cementless implants.: *HunYeong Ban*¹; TaeYang Kwak¹; JoonHo Wang²; ChungHee Sonn²; EuiYub Jung²; HanSol Seo²; DoHyounng Lim¹; ¹Sejong University; ²Samsung Medical Center

Biological Materials Science — Poster Session

Sponsored by: TMS Functional Materials Division, TMS Structural Materials Division, TMS: Biomaterials Committee
Program Organizers: Rajendra Kasinath, DePuy Synthes (Johnson and Johnson); Steven Naleway, University of Utah; Vinoy Thomas, University of Alabama at Birmingham; Jing Du, Penn State University

Monday PM
March 11, 2019
Room: Hall 3
Location: Henry B. Gonzalez
Convention Center

Session Chairs: Rajendra Kasinath, DePuy Synthes, Johnson and Johnson; Jing Du, Penn State University; David Restrepo, The University of Texas at San Antonio

3D Printing Bioinspired Composite Materials with Ultrasound Directed Self-Assembly: *Paul Wadsworth*¹; Isaac Nelson¹; Taylor Ogden¹; Steven Naleway¹; ¹University of Utah

A Biodegradable Fe-based Material Alloyed with S, P and Ag with Surface Modification by Laser Ablation: *Matjaz Godec*¹; Aleksandra Kocijan¹; Irena Paulin¹; Crtomir Donik¹; Jaka Burja¹; Peter Gregorcic²; ¹Institute Of Metals And Technology; ²University of Ljubljana

Calcium phosphate microspheres: A novel approach to calcium phosphate cements: *Jerry Howard*¹; Isaac Nelson¹; John Colombo¹; Steven Naleway¹; Krista Carlson¹; ¹University of Utah

Controlled Antibiotic-loaded, Drug-Eluting Implants for Osteomyelitis: *Daniel Li*¹; Elan Volchenko¹; Rachel Bergman²; Matt Siegel¹; Pravin Vence¹; Fei Yang³; Decheng Wu³; ¹Northwestern University; ²University of Michigan; ³Chinese Academy of Sciences

Copper Recovery from Printed Circuit Boards from Smartphones through Bioleaching: *Lidiane Andrade*¹; Carlos Rosario¹; Mariana Carvalho¹; Denise Espinosa¹; Jorge Tenório¹; ¹LAREX

Dependence of the Ferrovandium Power as Additive on Mechanical Property in Porous Ti: Guibao Qiu¹; Jian Wang¹; Shiyuan Liu¹; Yilong Liao¹; Chenguang Bai¹; ¹Chongqing University

Effect of Compaction Pressure on Porosity and Mechanical Properties of Porous Titanium as Bone Substitute Materials: Guibao Qiu¹; *Qingjuan Li*¹; Shiyuan Liu¹; Tengfei Lu¹; ¹Chongqing University

Effect of sintering temperature on tribological behaviour of Ti-Ni alloy for biomedical applications: *Fellah Mamoun*¹; Hezil Naouel²; Mohammed Abdul Samad³; ¹Mechanical Engineering Department, ABBES Laghrour-Khenchela University; ²Materials Sciences Department, ABBES Laghrour - Khenchela University; ³KFUPM University

Impact of Ligand Composition on Protein Corona Formation around Au Nanoparticles: *Sam Hoff*¹; Desiré Di Silvio²; Sergio Moya²; Ronald Ziolo³; Hendrik Heinz¹; ¹University of Colorado Boulder; ²CIC biomaGUNE; ³Centro de Investigación en Química Aplicada

Microstructures and mechanical behavior of porous titanium scaffolds by freeze casting: *Hsiao-Ming Tung*¹; Joe-Ming Chang¹; Guan-Lin Liu¹; ¹Institute Of Nuclear Energy Research

Nanoscale porous bioinspired materials through ice and ultrasound templating: *Max Mroz*¹; Taylor Ogden¹; Isaac Nelson¹; Milo Prisbrey¹; Bart Raeymaekers¹; Steven Naleway¹; ¹University of Utah

Structural basis for the damage tolerance of the low-density cellular structure of cuttlebone: *Ting Yang*¹; Ling Li¹; ¹Virginia Tech

The Development of Nanoclay-Hydroxyapatite Composite Scaffolds for Bone Tissue Engineering: *Solaleh Miar*¹; Sergio Montelongo¹; Akhilesh Gaharwar²; Teja Guda¹; ¹University of Texas at San Antonio; ²Texas A&M University

The Effect of Milling Time on Structural, Friction, and Wear Behavior of Hot Isostatically Pressed Ti-Ni Alloys for Orthopedic Applications: *Fellah Mamoun*¹; Hezil Naouel²; Mohammed Abdul Samad³; Tuahami Mohamed Zne⁴; Alex Montagne⁵; Alain Iost⁶; Alberto Mejias⁵; Stephania Kosman⁵; ¹Mechanical Engineering Department, ABBES Laghrour - Khenchela University; ²Materials Sciences Department, ABBES Laghrour - Khenchela University; ³KFUPM University; ⁴Annaba University; ⁵MSMP, ENSAM Lille

Ceramic Materials for Nuclear Energy Research and Applications — Poster Session

Sponsored by: TMS: Nuclear Materials Committee
Program Organizers: Yongfeng Zhang, Idaho National Laboratory; Xian-ming (David) Bai, Virginia polytechnic Institute and State University; David Andersson, Los Alamos National Laboratory; Thierry Wiss, European Commission- JRC -Institute of Transuranium Elements

Monday PM
March 11, 2019
Room: Hall 3
Location: Henry B. Gonzalez
Convention Center

A three-degree-of-freedom representation of the five-degree-of-freedom grain boundary energy space for uranium dioxide: *Emily Togagai*¹; Evan Hansen¹; Youngfeng Zhang²; Sean Masengale¹; Chandler Williams¹; Axel Seoane¹; ¹BYUI; ²Idaho National Laboratory

Irradiation Effects on Reactor Concrete Structures: *José Arregui-Mena*¹; Alan Giorla¹; G Jellison¹; Elena Tajuelo-Rodriguez¹; Christa Torrence²; Masaki Kawai³; Yann Le Pape¹; Thomas Rosseeil¹; ¹Oak Ridge National Laboratory; ²Texas A&M University; ³Mitsubishi Research Institute

Summary of In-Situ Tritium Measurements from TMIST-3A: *Walter Luscher*¹; David Senor¹; Gary Hoggard²; Kevin Clayton²; ¹Pacific Northwest National Lab; ²Idaho National Laboratory

Thermochemical Investigation of (Fe,Cr,Al)₃O₄ Spinels: *Can Agca*¹; Jake McMurray²; Joerg Neuefeind²; Alexandra Navrotsky¹; ¹Peter A. Rock Thermochemistry Laboratory; ²Oak Ridge National Laboratory

Void dynamics in porous thin films under ion irradiation: *Anter El-Azab*¹; ¹Purdue University

Coatings and Surface Engineering for Environmental Protection — Poster Session

Sponsored by: TMS Surface Engineering Committee
Program Organizers: Arif Mubarak, PPG Industries; Rajeev Gupta, The University of Akron; Raul Rebak, GE Global Research; Michael Mayo, PPG Industries; Brian Okerberg, PPG Industries

Monday PM
March 11, 2019
Room: Hall 3
Location: Henry B. Gonzalez Convention Center

Session Chairs: Arif Mubarak, PPG Industries; Rajeev Gupta, The University of Akron; Raul Rebak, GE Global Research

A multiscale study of the Competitive Adsorption of Atomic Oxygen and Chlorine to the Ni (111) Surface: *Adib Samin*¹; Christopher Taylor²; ¹Los Alamos National Laboratory; ²The Ohio State University

Ceramic Materials as Corrosion Protective Agents for Urethanic Films on Steel ABNT 1020 Fosphotated: *Goncalo Siqueira*¹; Fabio Esper¹; Rocio Hernandez¹; Leonardo Silva¹; José Mauro Oliveira¹; Wanderley Costa¹; Helio Wiebeck¹; ¹USP

Corrosion Behavior of Aluminum Alloy AA7075 Cold Sprayed Coatings: *Ozymandias Agar*¹; Anne Alex¹; Luke Brewer¹; ¹University of Alabama

Effect of Heat Treatment on the Localized Corrosion Resistance of S32101 Duplex Steel in Chloride/sulphate Media: *Roland Loto*¹; Cleophas Loto¹; Akanji Olaitan²; ¹Covenant University; ²Tshwane University of Technology

Localized corrosion behaviour of AA7150 after ultrasonic shot peening: corrosion depth vs. impact energy: *Qingqing Sun*¹; Qingyou Han²; ¹IMR CAS; ²Purdue University

Mechanistic Understanding of Corrosion-Inhibition in Graphene/Polyetherimide Nanocomposites: From Tortuosity to Galvanic Corrosion: *Rachel Davidson*¹; Sarbajit Banerjee¹; ¹Texas A&M University

Salt test methods and controls as a study of corrosion in polluted areas: *Goncalo Siqueira*¹; Emilio da Silva¹; Gabriel Santos¹; Allan Muniz Souza¹; Helio Wiebeck¹; ¹USP

Study of Mechanisms of Cobalt Electrodeposition by Means of Potentiodynamic Polarization Curves: Marli Ohba¹; Tatiana Scarazzato²; Denise Espinosa²; Jorge Alberto Tenório²; Zehbour Panossian¹; ¹Institute for Technological Research; ²Univ of Sao Paulo

The effects of addition of TiO₂ nanoparticles on the corrosion and tribological performance of the thermally spered aluminum coatings: *Nooshin Salimi*¹; Omid Bayat¹; Akbar Heidarpour¹; Hamed Aghamohammadi¹; Rasoul Jamshidi¹; ¹Hamedan University of Technology

A study of Cl adsorption on hydroxylated Cr₂O₃ passive film using Density Functional theory (DFT): *Kofi Oware Sarfo*¹; Pratik Vinod Murkute¹; Burkan O. Isgor¹; Yongfeng Zhang²; Julie D. Tucker¹; Líney Árnadóttir¹; ¹Oregon State University; ²Idaho National laboratory

Mechanisms of oxidation of pure and Si-segregated 945-Ti surfaces: *Somesh Bhattacharya*¹; Ryoji Sahara¹; Kyosuke Ueda²; Takayuki Narushima²; ¹National Institute For Materials Science; ²Tohoku University

The effect of α - α' phase separation due to thermal aging on corrosion behavior of duplex stainless steels: *Pratik Murkute*¹; Kofi Sarfo¹; Thomas Wood¹; Gerardo Zavalsa¹; Yongfeng Zhang²; Líney Árnadóttir¹; Julie Tucker¹; Burkan Isgor¹; ¹Oregon State University; ²Idaho National Laboratory

Towards novel structural material candidates for application in liquid metals: a behavior of Nb, Ti-V and Fe-Cr-Al alloys in Pb and Pb-Bi eutectic: *Miroslav Popovic*¹; Natalia Rubio¹; Peter Hosemann¹; ¹University of California Berkeley

Deformation and Damage Behavior of High Temperature Alloys — Poster Session

Sponsored by: TMS Structural Materials Division, TMS: High Temperature Alloys Committee
Program Organizers: Michael Titus, Purdue University; Qiang Feng, University of Science and Technology Beijing; Akane Suzuki, GE Global Research; Jonathan Cormier, ENSMA - Institut Pprime - UPR CNRS 3346; Sammy Tin, Illinois Institute of Technology; Martin Detours, National Energy Technology Laboratory

Monday PM
March 11, 2019
Room: Hall 3
Location: Henry B. Gonzalez Convention Center

Evaluation of thermomechanical properties of mechanically alloyed UFG Nickel-Yttrium: *Soundarya Srinivasan*¹; Chaitanya Kale¹; Billy Chad Hornbuckle²; Kris Darling²; Kiran Solanki¹; ¹Arizona State University; ²Army Research Laboratory

High Temperature Deformation Behavior in Hierarchical and Single Precipitate Strengthened Ferritic Alloys by In Situ Neutron Diffraction Studies: *Gian Song*¹; Zhiqian Sun²; Lin Li²; Bjørn Clausen³; Shu Yan Zhang⁴; Yanfei Gao²; Peter Liaw²; ¹Kongju National University; ²The University of Tennessee; ³Los Alamos National Laboratory; ⁴Rutherford Appleton Laboratory

Electrode Technology for Aluminum Production — Poster Session

Sponsored by: TMS Light Metals Division, TMS: Aluminum Committee
Program Organizer: Lorentz Petter Lossius, Hydro Aluminium AS

Monday PM
March 11, 2019
Room: Hall 3
Location: Henry B. Gonzalez Convention Center

Session Chair: Michel Hurlimann, R&D Carbon Ltd.

Study Finer Fines in Anode Formulation (Case Study: Almahdi Hormozal Aluminium Smelter): *Mohsen Amerisiahooei*; Alireza Fardani¹; ¹almahdi-south hormoz aluminium smelter

Fatigue in Materials: Multi-scale and Multi-environment Characterizations and Computational Modeling — Poster Session

Sponsored by: TMS: Computational Materials Science and Engineering Committee, TMS: Integrated Computational Materials Engineering Committee
Program Organizers: Jean-Briac le Graverend, Texas A&M University; Ashley Spear, University of Utah; Antonios Kontsos, Drexel Univ; Garrett Pataky, Clemson University; Filippo Berto, Norwegian University of Science and Technology

Monday PM
March 11, 2019
Room: Hall 3
Location: Henry B. Gonzalez Convention Center

The fatigue behavior of the metastable Ti-15Mo and Ti-12Mo-6Zr-2Fe alloys treated in the beta phase field: *Leonardo Campanelli*¹; Cesar Escobar Claros¹; Paulo Sergio da Silva¹; Claudemiro Bolfarini¹; ¹Federal University of Sao Carlos

Friction Stir Welding and Processing X — Poster Session

Sponsored by: TMS: Shaping and Forming Committee

Program Organizers: Yuri Hovanski, Brigham Young University; Rajiv Mishra, University of North Texas; Yutaka Sato, Tohoku University; Piyush Upadhyay, Pacific Northwest National Laboratory; David Yan, San Jose State University

Monday PM
March 11, 2019

Room: Hall 3
Location: Henry B. Gonzalez
Convention Center

Conditions for superplasticity in precipitation and strain hardened aluminium alloys before and after friction stir processing: *Sweta Saroj*¹; Murshid Imam¹; ¹IIT Patna

Durability of friction stir welding tool at high temperature: *Rahul Kesharwani*¹; Murshid Imam¹; Chiranjit Sarkar¹; ¹IIT Patna

Effect of tool shape and rotational speed on the mechanical properties and microstructures of friction stir spot welding in advanced high strength steel: *Jong Gun Lee*¹; Hyun Jun Park¹; Sang Ho Uhm²; Seung Boo Jung¹; ¹Sungkyunkwan University; ²POSCO

Friction stir welding of Al/C composites: *Seeun Shin*¹; Seungjoon Lee²; Hidetoshi Fujii²; ¹Sunchon National University; ²JWRI

Hierarchically microstructured magnesium WE43-B4C-Y2O3 surface composite through friction stir processing: *Kaimiao Liu*¹; Saket Thapliyal¹; Neil MacDonald¹; Tianhao Wang¹; Shivakant Shukla¹; Rajiv Mishra¹; ¹University Of North Texas

Influence of travel speed on microstructural features and mechanical properties of but joints friction stir welded SAF 2205 duplex stainless steel: *Mohamed Ahmed*¹; Mohamed El-Sayed Seleman²; Mahmoud Elkady²; ¹The British University in Egypt; ²Suez University; ³Suez Thermal Power Plant

Investigation on the corrosion and wear behavior of Al6061 by friction stir processing with amorphous and crystalline states of the SiO2 nanoparticles: *Rasoul Jamshidi*¹; Hamed Aghamohammadi¹; Mehrdad Nemat¹; Akbar Heidarpour¹; Yoosof Mazaheri¹; ¹Hamedan University of Technology

Modelling of the post processed tensile test in Friction stir processed of 7075 Aluminum alloy incorporated with Multiwall Carbon nanotube: *Seyed Sajad Mirjavadi*¹; AMS Hamouda²; Ali Ghasemi³; ¹School of Mechanical Engineering, College of Engineering University of Tehran Tehran Iran; ²Qatar University; ³Azad University

Post Processed Shear Punch Test modeling of Friction Stir Processed AZ81 Magnesium Alloy Incorporated with Multiwall Carbon Nanotube: *Seyed Sajad Mirjavadi*

Temperature monitoring and cooling rate in friction stir welding of steels: *Md Anwar Ali Anshari*¹; Murshid Imam¹; Vishwanath Chintapenta²; ¹IIT Patna; ²Indian Institute of Technology Hyderabad

Connecting Residual Stresses with Friction Stir Welding Conditions and Pseudo-heat Index: *Ning Zhu*¹; Luke Brewer¹; ¹University of Alabama Tuscaloosa

Microstructure and corrosion properties of friction stir processed aluminum alloys: Devuri Venkateswarlu¹; Murali Mohan Cheepu²; P. Nageswara Rao¹; Devireddy Krishnaja³; ¹Department of Mechanical Engineering, Marri Laxman Reddy Institute of Technology and Management; ²Department of Mechatronics Engineering, Kyungsung University; ³Department of Mechanical Engineering, Institute of Aeronautical Engineering

Friction stir welding and characterization of magnesium alloy to steels: Xiujuan Jiang¹; Piyush Upadhyay²; Nathan Canfield¹; Tim Roosendaal¹; ¹Pacific Northwest National Laboratory; ²Pacific Northwest National Laboratory

Reduction of Process Forces during Friction Stir Welding with Varying Probe Geometries: *Michael Grätzel*¹; Michael Hasieber¹; Torsten Löhn¹; Jean Pierre Bergmann¹; ¹Technische Universität Ilmenau

General Poster Session — Poster Session

Monday PM
March 11, 2019

Room: Hall 3
Location: Henry B. Gonzalez
Convention Center

A Study on the Mechanical Properties of Glass Fiber-Epoxy Vinylester Composite with Pultrusion Process depends on Exposure time in Salt Spray Corrosion Environment: *MyeongHan Yoo*¹; Min Seok Moon¹; JongIl Rho¹; JoonHyuk Song¹; NaRa Park¹; JeHa Oh¹; YoonHyuk Bang¹; ¹Korea Institute of Carbon Convergence

Appling nanotechnology to seperation of fluride gas with oxygen by carbon nano tube (monte carlo simulatino): *Mohsen Amerisiahoeei*

Barrierless Cu-alloy seed integration for improved reliability in solder bump flip chip applications: *Chon-Hsin Lin*¹; ¹Asia Pacific Institute Of Creativity

Benchmarking strength and fatigue properties of spot impact welds: *Angshuman Kapil*¹; Taeseon Lee¹; Anupam Vivek¹; John Bockbrader²; Tim Abke³; Glenn Daehn¹; ¹The Ohio State University, Department of Materials Science and Engineering; ²Center for Design and Manufacturing Excellence (CDME), The Ohio State University; ³Honda R&D Americas, Inc.

CFD-Simulation of Siphone For primary aluminum production: *Mohsen Amerisiahoeei*

Control of TiC particle size in combustion synthesis method for reinforcement particule: *Yuichiro Murakami*¹; Isao Matsui¹; Naoki Omura¹; ¹National Institute of Advanced Industrial Science And Technology

Corrosion resistance of hot dipping Al-Zn-Si and Zn-Al-Mg-Si alloy coating: *Hui Li*¹; ¹North China University of Science and Technology

Creation of Mechanical Behaviour Diagrams of Twin Roll Cast Aluminum Flat Products Depending on Different Thermomechanical Processes: *Kaan Ipek*¹; Özen Gürsoy¹; Eray Erzi¹; Derya Dispinar¹; ¹Istanbul University

Deformed microstructure evolution in Mg-Zn-Y alloy under impact: *Suyuan Yang*¹; Xingwang Cheng¹; Dan Guo¹; ¹Beijing Institute of Technology

Degradation of organic pollutant by advanced oxidation using the Fenton system Fe (II) / H2O2: *Naouel Hezil*¹; Mamoun Fellah²; ¹Abbes Laghrour Khenchela University, Algeria; ²Tribology & Materials Group, Laboratory of Foundry, Annaba University, Algeria.

Determination of Mechanical Properties of Boron Oxide Particle Reinforced aluminum Alloy Matrix Composites: *Serap Kekek*¹; Özen Gürsoy¹; Eray Erzi¹; Mert Zoraga¹; Derya Dispinar¹; ¹Istanbul University

Effect of decarbonization annealing times on recrystallization microstructure, texture and magnetic properties of Nb-containing grain-oriented silicon steel: *Yunli Feng*¹; ¹North China University of Science and Technology

Effect of heat treatment parameters on hardness and microstructure of AISI 4140 and AISI 4150 steels: Beste Payam¹; *Selim Erturk*¹; Cuneyt Arslan¹; ¹Istanbul Technical University

Encapsulation of Gold Nanorods with Porphyrins for the Potential Treatment of Cancer and Bacterial Diseases: *Sandile Songca*¹; ¹University Of Zululand

Experimental Investigation of AA6061 Composites Reinforced With Fly Ash Fabricated By Friction Stir Processing: *Jyoti Menghani*¹; Sudeep Ingole²; Nikhil Phulari¹; S Pamdya¹; Satish More¹; Dhananjay Bhatt¹; ¹S V National Institute of Technology; ²Always Avant

Fabrication and mechanical property analysis of nano-sphere Ti-Zr-Ni quasicrystal: *Geunhee Yoo*¹; Ji Young Kim¹; Eun Soo Park¹; ¹Seoul National University

High Entropy Alloy Coatings for Erosion Resistance - A Review: *Jyoti Menghani*¹; Sudeep Ingole²; Dhananjay Bhatt¹; Satish More¹; Akash Vyas¹; C Paul³; ¹S V National Institute of Technology; ²Always Avant; ³Raja Ramanna Centre for Advanced Technology

Joining of Titanium and Stainless Steel Alloys via the Application of Refractory Metal Interlayers: *Katherine Namola*¹; Antonio Ramirez¹; Jerry Gould²; ¹OSU; ²EWI

Mechanical property characterization of carbon fiber reinforced 6063 alloy: *Anil Alten*¹; Özen Gürsoy¹; Eray Erzi¹; Gökçe Hapci Agaoglu¹; Derya Dispinar¹; Gökhan Orhan¹; ¹Istanbul University

Microstructure and mechanical properties of beryllium-copper alloy plate modified by friction stir processing: *Kwangjin Lee*¹; ¹KITECH

Molecular Dynamics Simulations of Carbon Fibers Reinforced Within Polyethylene Used to Quantify Decohesion of the Interfacial Region: *Sultana Ababtin*¹; Mark Horstemeyer²; Michael Baskes¹; SungKwang Mun³; Andrew Bowman¹; ¹Mississippi State University; ²Center for Advanced Vehicular Systems (CAVS) Chair; ³Center for Advanced Vehicular Systems (CAVS)

Molten Salt Electrolytic Extraction of Dysprosium using NdFeB magnet scraps: *Kim Jong Ho*¹; ¹Rist

Morphology and Mechanical Properties of Bagasse Nano Particles Reinforced Epoxy Composites: *Suleiman Hassan*¹; Victor Aigbodion¹; ¹Univ Of Lagos

Multiscale modeling of cleavage fracture for a structural steel: *Jinshan He*¹; Xitao Wang¹; Junhe Lian²; Sebastian Münstermann²; ¹University of Science & Technology Beijing; ²RWTH-Aachen University

New Tool for Friction Stir Processing: *Harith Aljobory*¹; ¹Steel industries Co.

Oscillations of Thermoelectric Parameters in Nanostructures IV-VI: Ihor Yurchyshyn¹; *Volodymyr Potyak*²; Vasyl Skrypnik³; Bohdan Kliuchevskiy⁴; ¹Academy of Modern Technologies; ²State enterprise “Center of Scientific and Technical Information”; ³Institute of Innovation Research; ⁴LLC “Company “SKD”

Performance of Low Cost 3D Printed Pylon in Lower Limb Prosthetic Device: *Fariborz Tavangarian*¹; Camila Proano¹; Caleb Zolko¹; ¹Pennsylvania State University, Harrisburg

Phase-field modeling of metal corrosion with passive film formation in electrolyte: *San-Qiang Shi*¹; Talha Ansari¹; ¹Hong Kong Polytechnic Univ

Production of Sr master alloy by pyrometallurgical and its modification capability: *Ibrahim Goksel Hizli*¹; Rasit Sezer²; Ozen Gursoy¹; Cuneyt Arslan³; Derya Dispinar¹; Selim Erturk³; ¹Istanbul University; ²Karadeniz Technial University; ³Istanbul Technial University

Research on Influence of Inclusion Size for IGF Inducing in Different Grain Size for Ti-Mg Shipbuilding Steel: *Ligen Sun*¹; Huirong Li¹; Liguang Zhu¹; ¹North China University of Science and Technology

Sequential Leaching Characteristics of Chromium in AOD Slag-based Cementitious Materials: *Ya-jun Wang*¹; Jun-guo Li²; Ya-nan Zeng²; Xiaoyu Li²; ¹Northeastern University; ²North China University of Science and Technology

Study on the Reaction Behavior of Hydrochloric Acid Containing Titanium Blast Furnace Slag: *Jinglong Liang*¹; Hui Li¹; ¹North China University of Science and Technology

Study on Ultrasonic-assisted metal 3D printing (UAM3P)for making alloys printable without defects: *Saeed Bagherzadeh*¹; Qingyou Han¹; Yanfei Liu¹; ¹Purdue University

The Effect of Electromagnetic Stirring on the Continuous Casting of Hypereutectic Al-Si Alloy Billets: *Kim Jong Ho*¹; ¹Rist

The Effect of Sr Modification on Mechanical Properties and Corrosion Behavior of A360 alloy: *Inal Duygun*¹; Gökçe Hapci Agaoglu¹; Özen Gürsoy¹; Eray Erzi¹; Gökhan Orhan¹; Derya Dispinar¹; ¹Istanbul University

Thermodynamic and Kinetic Analysis of Inhomogeneous Distribution of Solute on Precipitations in as Cast Nb-V-Ti Microalloyed Steel: *Ya-nan Zeng*¹; Jun-guo Li¹; Ya-jun Wang²; ¹North China University of Science and Technology; ²Northeastern University

Thermoelectric Properties of Amorphous Ti50Cu28Ni15Sn7-dispersed Bi0.4Sb1.6Te3 Fabricated by Mechanical Alloying and Vacuum Hot Pressing: *Pee-Yew Lee*¹; ¹National Taiwan Ocean University

Tunable thermal expansion behavior in TbCo2 based alloys: *Zhaning Liu*¹; ¹University of Science and Technology Beijing

Understanding Tip Material Selection Impact on High Temperature Nanoindentation: *Samuel Bacon*¹; Richard Anthony¹; Phil Webb¹; Kurt Johanns¹; Warren Oliver¹; ¹KLA-Tencor

Utilization of primary steelmaking slag as a medium for remediation of arsenic contaminated groundwater: Sumit Suman¹; K. Abhilash Simhachalam¹; *Somnath Basu*¹; ¹Indian Institute of Technology Bombay

ZrO2 doping effects on the Mechanical and structural properties of nanostructured forsterite: *Fariborz Tavangarian*¹; Dakota Mattison¹; ¹Pennsylvania State University, Harrisburg

Heterogeneous and Gradient Materials (HGM III): Tailoring Mechanical Incompatibility for Superior Properties — Poster Session

Program Organizers: Yuntian Zhu, North Carolina State University; Kei Ameyama, Ritsumeikan University; Irene Beyerlein, University of California, Santa Barbara; Yves Brechet, Grenoble-INP; Huajian Gao, Brown Univ; Hyoung Seop Kim, Pohang University of Science and Technology; Ke Lu, Institute of Metal Research; Xiaolei Wu, Chinese Academy of Sciences

Monday PM
March 11, 2019

Room: Hall 3
Location: Henry B. Gonzalez
Convention Center

Effect of martensite distribution on deformation behaviors of dual-phase steel: *Ryota Matsubayashi*¹; Myeong-heom Park¹; Nobuhiro Tsuji¹; ¹Kyoto University

Formation of hard intermetallic phases in Zn-Mg hybrids processed by high-pressure torsion: *David Hernández Escobar*¹; Hakan Yilmazer²; Megumi Kawasaki³; Carl Boehlert¹; ¹Michigan State University; ²Yildiz Technical University; ³Oregon State University

Improved balance between high strength and high electrical conductivity of copper alloys through two-step cryorolling and aging: *Rengeng Li*¹; Enyu Guo¹; Huijun Kang¹; Tongmin Wang¹; ¹Dalian University of Technology

Mesostructure effects on the hypervelocity impact response of additively manufactured interpenetrating phase composites: *Lauren Poole*¹; Matthew French¹; William Yarberry¹; Zachary Cordero¹; ¹Rice University

Synthesis and mechanical characterization of metallic films with precisely tailored heterogeneous microstructures: *Rohit Berlia*¹; Ehsan Izadi¹; Jagannathan Rajagopalan¹; ¹Arizona State University

Ultra-high strength and ductility in a Ni-Cr-Co superalloy with a heterogeneous structure: *Connor Slone*¹; Jiashi Miao¹; Michael Mills¹; ¹Ohio State University

Influence of Ultrasonic shot-peening on the High and Low cycle fatigue properties in 2205 Duplex Stainless Steel: *Yixin Liu*¹; Yufei Jia¹; Xiancheng Zhang¹; ¹East China university of Science and Technology

Strong and Ductile Electrodeposited Bulk Nanocrystalline Nickel: *Yao Yao Jiang*¹; Kai Hu¹; Jing Zhao¹; Jun Yi¹; ¹Laboratory for Microstructures, Institute of Materials, Shanghai University

Aluminum sandwich with heterogeneous density-graded open-cell foam core: *Vasanth Shunmugasamy*¹; Bilal Mansoor²; ¹Texas A&M University at Qatar; ²Texas A&M University at Qatar

Controlled Microporosity for Two-Phase Flow via Powder Bed Fusion: *Scott Roberts*¹; Ben Furst¹; Stefano Cappucci¹; Eric Sunada¹; ¹Jet Propulsion Laboratory

Delamination studies of Nb-Cu laminated composites processed by accumulative roll bonding: Cesar Mariscal Hernandez¹; Rayana Snene²; Kenneth Liechti²; *Francisco Garcia-Pastor*¹; ¹Cinvestav Unidad Saltillo; ²The University of Texas at Austin

Design of Non-equiatomic FeNiCoAl-based high entropy alloys with heterogeneous lamella structure towards strength-ductility Synergy: *Cheng Zhang*¹; Chaoyi Zhu¹; Tyler Harrington¹; Kenneth Vecchio¹; ¹Univ of California San Diego

Development of a Production Chain for Cu-bilayer Products: *Tim Mittler*¹; Thomas Greß¹; Wolfram Volk¹; ¹Technische Universität München

Effect of Grain Size on Mechanical Properties of Dual Phase Steels Composed of Ferrite and Martensite: *Myeong-heom Park*¹; Akinobu Shibata¹; Nobuhiro Tsuji¹; ¹Kyoto University

Friction stir processing and alloying: a novel technique for fabricating heterogeneous and gradient materials: *Tianhao Wang*¹; Rajiv Mishra¹; ¹University of North Texas

Mechanical Behavior and Microstructural evolution in gradient structured copper processed through torsion: *Nageswara Rao Palukuri*¹; Susmitha Modem¹; Abhishek Kumar²; Rahul Singh²; Venkateswarlu Devuri²; ¹Marri Laxman Reddy Institute of Technology and Management; ²Mothilal Nehru Institute of Technology, Allahabad; ³Mritm, Hyderabad

Mesoscale study of the strength and ductility in gradient materials: *Lei Cao*¹; ¹University of Nevada, Reno

Irradiation Effects on Phase Transformations in Nuclear Reactor Materials — Poster Session

Sponsored by: TMS: Phase Transformations Committee
Program Organizers: Janelle Wharry, Purdue University; Kester Clarke, Colorado School of Mines; Julie Tucker, Oregon State University; Par Olsson, KTH Royal Institute of Technology; Dhriti Bhattacharyya, ANSTO; Mohsen Asle Zaeem, Colorado School of Mines; Arun Devaraj, Pacific Northwest National Laboratory

Monday PM
March 11, 2019

Room: Hall 3
Location: Henry B. Gonzalez
Convention Center

Session Chairs: Janelle Wharry, Purdue University; Kester Clarke, Colorado School of Mines; Julie Tucker, Oregon State University; Pär Olsson, KTH Royal Institute of Technology; Dhriti Bhattacharyya, Australian Nuclear Science and Technology Organisation; Mohsen Asle Zaeem, Missouri University of Science & Technology; Arun Devaraj, Pacific Northwest National Laboratory

Using Image Analysis to Quantify the Microstructural Changes during Irradiation of U-Mo Fuels with Different Mo Contents: *Charlyne Smith*¹; Assel Aitkaliyeva¹; Brandon Miller²; Dennis Keiser²; ¹University of Florida; ²Idaho National Laboratory

Design of Alloy Chemistry to Mitigate Fuel-Cladding Chemical Interactions in Uranium-based Metallic Fuels: *Rabi Khanal*¹; Nathan Jerred¹; Michael Benson²; Robert Mariani²; Indrajit Charit¹; Samrat Choudhury¹; ¹Univ of Idaho; ²Idaho National Laboratory

Effects of High Dose Si Ion Irradiation on Aluminum Alloys: *Ziv Ungarish*¹; Benedicte Kapusta²; Pierre Gavaille²; ¹Negev Nuclear Research Center; ²DEN-Service d'Etudes des Matériaux Irradiés, CEA, Université Paris-Saclay, F-91191, Gif-sur-Yvette

In-situ dual beam Kr irradiation and He implantation in high entropy alloys: *Jing Hu*¹; Weiyang Chen¹; Pete Baldo¹; Mark Kirk¹; Meimei Li¹; ¹Argonne National Laboratory

Influence of stored energy in ferritic ODS alloys on the recrystallization behavior: *Yann De Carlan*¹; Benjamin Hary¹; Joel Ribis¹; Amal Issaoui¹; Adrien Vaugoude¹; Roland Loger¹; Thierry Baudin¹; ¹CEA

Irradiation Induced Phase Transformation of Metastable Alloys: *Arun Devaraj*¹; Osman El-Atwani²; Libor Kovarik¹; Meimei Li³; Vishal Soni⁴; Rajarshi Banerjee⁴; Vaithiyalingam Shutthanandan¹; ¹Pacific Northwest National Lab; ²Los Alamos National Laboratory; ³Argonne National Laboratory; ⁴University of North Texas

Low Temperature Radiation Damage and Microstructure Evolution of d-phase 239PuGa Alloys by Neutron Diffraction: *Alice Smith*¹; Jianzhong Zhang¹; Bjørn Clausen¹; Sven Vogel¹; Franz Freibert¹; Donald Brown¹; ¹Los Alamos National Laboratory

Mesoscale Modeling of High Burn-up Structure (HBS) Formation and Evolution in Metallic Fuels: fergany Badry¹; Mohammad abdoelatef¹; Sudipta Biswas²; Andrea Jokisaari²; Daniel Schwen²; Yongfeng Zhang²; *Karim Ahmed*¹; ¹Texas A&M University; ²Idaho National Laboratory

Microstructural response of ODS-EUROFER steel to high dose ion implantation of helium and hydrogen: *Olga Emelianova*¹; Aurelie Gentils¹; Maria Ganchenkova²; Yuriy Yagodzhinsky³; Evgenii Malitckii³; Vladimir Borodin⁴; Pavel Vladimirov⁵; Anton Moeslang³; Igor Golovchanskiy⁶; ¹CNSM, Univ Paris-Sud, CNRS/IN2P3, Université Paris-Saclay; ²National Research Nuclear University MEPhI; ³Aalto University School of Engineering; ⁴National Research Center «Kurchatov Institute»; ⁵Institute for Applied Materials - Applied Materials Physics, Karlsruhe Institute of Technology; ⁶National University of Science and Technology MISIS

Influence of Zircaloy Alloying Elements on Point Defects Formation in ZrO₂ Corrosion Films and Resultant Zircaloy Corrosion Rate: Part 1 Modeling: *William Howland*¹; Paolo Zafred¹; Richard Smith¹; ¹Bechtel Marine Propulsion Company

Quantification of the effect of dose rate on Helium implantation in different materials using a Helium Ion Beam Microscope: *Manfred Virgil Ambat*¹; Mehdi Balooch¹; David Frazer²; Peter Hosemann¹; ¹Univ of California Berkeley; ²Idaho National Laboratory

Microstructural Characterization of High-Entropy Alloy Ion Irradiated at Cryogenic Temperatures: *Michael Moorehead*¹; Calvin Parkin¹; Lingfeng He²; Jing Hu³; Meimei Li³; Adrien Couet¹; Kumar Sridharan¹; ¹University of Wisconsin-Madison; ²Idaho National Laboratory; ³Argonne National Laboratory

Magnesium Technology 2019 — Poster Session

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

Program Organizers: Vineet Joshi, Pacific Northwest National Laboratory; Brian Jordon, University of Alabama; Dmytro Orlov, Lund University; Neale Neelamegham, IND LLC

Monday PM
March 11, 2019

Room: Hall 3
Location: Henry B. Gonzalez
Convention Center

Session Chairs: Eric Nyberg, Brunel University London; J. Jordon, University of Alabama

Correlation between lattice reorientation and nature of alloying elements in Ti and Mg via ab initio calculations: *Gang Zhou*¹; Hao Wang¹; ¹Institute of Metal Research Chinese Academy of Sciences

Development of Manufacturing Processes for Magnesium Sheet: *Amjad Javaid*¹; Frank Czerwinski¹; ¹Canmet, Natural Resources Canada

Effect of baffle plate on separation performance in magnesium electrolysis cell based on thermo-electro-magneto-hydrodynamics coupling model: *Cheng-Lin Liu*¹; Qian-Wen Zhao¹; Jian-Guo Yu¹; ¹East China University of Science and Technology

Forging of Mg-3Sn-2Ca-0.4Al alloy assisted by its processing map and validation through analytical modeling: *Pitcheswara Rao Kamineni*¹; K. Suresh²; Y.V.R.K. Prasad³; Dharmendra Chalasani⁴; Norbert Hort⁵; ¹City University Of Hong Kong; ²Bharathiar University; ³processingmaps.com; ⁴University of New Brunswick; ⁵Helmholtz-Zentrum Geesthacht

Formation of basal texture variations in AZ31 magnesium alloy during extrusion: *Rongshi Chen*¹; M. Jiang²; H Yan¹; C. Xu³; T. Nakata³; S. Kamado³; E. Han¹; ¹Institute of Metal Research, Chinese Academy of Sciences; ²Institute of Metal Research, Chinese Academy of Sciences & Shenzhen University; ³Nagaoka University of Technology

In Situ Characterization of the Deformation Mechanisms Present in Biaxially Loaded Magnesium Alloys: *Zachary Brunson*¹; Aaron Stebner¹; ¹Colorado School of Mines

Influence of CNTs nanoparticles on the microstructure and mechanical properties of friction stir welded AZ81 magnesium alloy: *Mohammad Alipour*¹; Ali Ghasemi²; Ali Shakiba³; ¹University of Tabriz; ²Islamic Azad University Tehran North Branch; ³University of Tehran

Mechanical and corrosion properties of ECAP-processed Mg ZK60 alloy: *Francisco Farias Gonzalez*¹; Francisco García¹; ¹cinvestav

On the microstructure characterization and shear punch properties of the AZ81 magnesium alloy welded by FSW: *Mohammad Alipour*¹; Ali Ghasemi²; Ali Shakiba³; ¹University of Tabriz; ²Islamic Azad University Tehran North Branch; ³University of Tehran

Plain Strain Fracture Toughness (J_I) Behaviour of Mg-6Zn-2Gd Alloy Processed through Hot Rolling: *Raviraj Verma*¹; R. Jayaganthan²; S.K. Nath¹; Srinivasa Rakesh²; A. Srinivasan³; ¹Department of Metallurgical and Materials Engineering, IIT Roorkee; ²Department of Engineering Design, IIT Madras; ³National Institute for Interdisciplinary Science and Technology, CSIR

Tailoring twin boundary mobility in magnesium and its alloys: *Yujie Cui*¹; Yunping Li²; Yuichiro Koizumi³; Akihiko Chiba¹; ¹Tohoku University; ²Central South University; ³Osaka University

Texture evolution and recrystallization of cold-rolled Mg-Al-Zn-Ca alloy sheets: Su Mi Jo¹; Yohan Go¹; Jong Il Kim²; Bong Sun You³; *Young Min Kim*³; ¹Korea University of Science and Technology; ²Chungnam National University; ³Korea Institute Of Materials Science

The effect of alloy elements on oxidation behavior of magnesium alloys: Jiajia Wu¹; *Yuan Yuan*¹; Fusheng Pan¹; Hans Seifert²; ¹Chongqing University; ²Karlsruhe Institute of Technology

Twinning-detwinning in Shock Compressed UFG AMX602 Magnesium via Time-resolved In-situ Synchrotron X-Ray Diffraction: *Cyril Williams*¹; Chaitanya Kale²; Kiran Solanki²; ¹U.S. Army Research Laboratory; ²Arizona State University

Effect of temperature, strain rate, and strain on grain refinement and texture development during dynamic recrystallization of AZ31B Mg Alloy: *Yuan Li*¹; Zhenggang Wu²; Peijun Hou¹; Zhili Feng²; Yang Ren³; Hahn Choo¹; ¹University of Tennessee; ²Oak Ridge National Laboratory; ³Argonne National Laboratory

Refill Friction Stir Spot Welding of High Strength 7050 Aluminum Alloy: *Uceu Suhuddin*¹; Jorge dos Santos¹; ¹Helmholtz Zentrum Geesthacht

Comparison of corrosion behavior in Mg-x Al alloys containing Ca and Y: *Bong Sun You*¹; Jong il Kim²; Ha Nguyen³; Young Min Kim¹; ¹Korea Institute of Materials Science; ²Chungnam National University; ³Korea University of Science & Technology

Deformation behavior of a reticular structured Mg-O-9Al alloy developed by the phase separation process: *Donghyun Bae*¹; Seung Won Kang¹; ¹Yonsei University

Elucidation of Growth Mechanisms and Control of Morphology in Electrodeposited Magnesium Thin Films: *Rachel Davidson*¹; Sarbjit Banerjee¹; ¹Texas A&M

Development of Magnesium and Magnesium Alloy Materials Through Press and Sinter Processing: *Steven Johnson*¹; Jason Alvarez¹; ¹Central Connecticut State University

Heterogeneous Nucleation, Grain Initiation and Grain Refinement of Mg-Alloys: *Zhongyun Fan*¹; ¹Brunel Univ

Sequential double twinning associated with twin-twin interactions in shocked hexagonal metals: *Shun Xu*¹; ¹University of Nebraska-Lincoln

The relationship between long-period stacking-ordered structure (LPSO) and deformation behavior at different strain rates in magnesium rare earth alloys: *Kun Li*¹; R.D.K. Misra¹; ¹UTEP

Texture and microstructure evolution of AZ31 Mg sheet during tensile draw-bending: *Jaehyung Cho*¹; G. Y. Lee¹; K.J. Yeom¹; ¹Korea Institute of Materials Science

Study of the mechanical properties and formability of binary Mg-xCa/RE alloys: *Young-Wook Chae*¹; Jun-Ho Park¹; Jae-Joong Kim¹; Jaiveer Singh²; Min-Seong Kim²; Shi-Hoon Choi²; ¹POSCO; ²Sunchon National University, Suncheon

Materials Processing Fundamentals — Poster Session

Sponsored by: TMS: Process Technology and Modeling Committee
Program Organizers: Guillaume Lambotte, Boston Metal; Jonghyun Lee, Iowa State University; Antoine Allanore, MIT - DMSE; Samuel Wagstaff, Novelis

Monday PM
March 11, 2019

Room: Hall 3
Location: Henry B. Gonzalez
Convention Center

Comparison of turbulence models for flow field calculation in continuous casting with electromagnetic stirring: *Bingzhi Ren*¹; Hongdan Wang¹; Dengfu Chen²; ¹Chongqing University of Science and Technology; ²Chongqing University

High-temperature study of perovskite evaporation: *Sergey Shornikov*¹; ¹Vernadsky Institute of Geochemistry of RAS

Numerical simulation of agglomeration behavior of sintered raw materials during high-speed mixing: *Shanshan Wu*¹; Guishang Pei¹; Gang Li¹; Xuewei Lv¹; ¹Chongqing University

Overview of Electrically Activated Reactive Synthesis (EARS) Of nanotube reinforced intermetallics: *Kaitlin Kehl*¹; Vanessa Bundy¹; Mehul Chauhan¹; Prathmesh Modi¹; John Walker¹; Kevin Yokota¹; Greg Essayan¹; Saman Sharifi¹; Stephanie Halbert¹; K. Morsi¹; ¹San Diego State University

Power consumption model for electrolytic preparation of copper powders using response surface methodology: *Hongdan Wang*¹; Wentang Xia¹; Bingzhi Ren¹; ¹Chongqing Univ

Tensile Properties and Microstructure of Squeeze Cast Magnesium Matrix Composite Reinforced with 35 Vol. % of Al₂O₃ Fibers: *Hongfa Hu*¹; ¹University of Windsor

The Application Prospect of Microwave Sintering Technology in the Preparation of Ti - Base Composite Materials: Xu Wang¹; Yilong Liao¹; Ling Xie¹; *Qiang Su*¹; ¹Mingde College of Guizhou University

Ultrasound for Next-generation Alloy Casting: *Bitong Wang*¹; Andrew Caldwell²; Antoine Allanore²; Douglas Kelley¹; ¹University Of Rochester; ²Massachusetts Institute of Technology

Mechanical Behavior of Nuclear Reactor Components — Poster Session

Sponsored by: TMS: Nuclear Materials Committee

Program Organizers: Clarissa Yablinsky, Los Alamos National Laboratory; Assel Aitkaliyeva, University of Florida; Khalid Hattar, Sandia National Laboratories; Janelle Wharry, Purdue University; Laurent Capolungo, Los Alamos National Laboratory; Eda Aydogan, Los Alamos National Laboratory

Monday PM
March 11, 2019

Room: Hall 3
Location: Henry B. Gonzalez
Convention Center

Session Chair: Clarissa Yablinsky, Los Alamos National Laboratory

Damage evolution characterized with in situ ion beam irradiation transient grating spectroscopy: *Cody Dennett*¹; Khalid Hattar²; Michael Short¹; ¹Massachusetts Institute of Technology; ²Sandia National Laboratories

Grain Boundary Oxidation and Gas Release on Irradiated UO₂: *Geoffrey Beausoleil*¹; Daniel Wachs¹; ¹Battelle Energy Alliance

Investigating the Effects of Existing Damage on Primary Damage Formation in Zirconium: *Jesse Carter*¹; Richard Smith¹; ¹Bettis Laboratory

Investigation of Susceptibility of A533B Steel to Temper Embrittlement: *Mikhail Sokolov*¹; ¹Oak Ridge National Laboratory

Irradiation Resistance of Advanced Ferritic/Martensitic Steel at High Irradiation Doses and Temperatures: *Md Mehadi Hassan*¹; Connor Rietema²; Madhavan Radhakrishnan¹; Zhexian Zhang¹; Kester Clarke²; Amy Clarke²; Eda Aydogan³; Yongqiang Wang³; Osman Anderoglu¹; ¹University of New Mexico; ²Colorado School of Mines; ³Los Alamos National Laboratory

Irradiation resistance of ARB processed CuNb nanolayered composites at very high doses and temperatures: *Zhexian Zhang*¹; Madhavan Radhakrishnan¹; Md Hassan¹; Nathan Mara²; Yongqiang Wang³; Osman Anderoglu¹; ¹University of New Mexico; ²University of Minnesota; ³Los Alamos National Laboratory

Microstructural Evolution of High Density W-Cermets Exposed to Flowing Hydrogen at Temperatures Exceeding 2000 K: *William Carpenter*¹; Kelsa Benensky²; Marvin Barnes²; Dennis Tucker²; ¹South Dakota School of Mines & Tech; ²NASA Marshall Spaceflight Center

Towards Accurate Molecular Dynamics Simulations of Helium Bubble Nucleation in Palladium Tritide: *Xiaowang Zhou*¹; Norman Bartelt¹; Ryan Sills¹; ¹Sandia National Laboratories

Interaction between the hydrogen retention and dislocation reconstruction in tungsten: a QM/MD study: *Yinan Wang*¹; Ben Xu¹; Wei Liu¹; ¹Tsinghua University

Ultrastrong and ductile amorphous Si-O-C alloys: *Kaisheng Ming*¹; Qing Su¹; Jian Wang¹; ¹University of Nebraska-Lincoln

Correlating small scale mechanical properties and microstructure of U-10wt%Mo/Zr fuels: *Tanvi Ajantawalay*¹; ¹University of Florida

Rare Metal Extraction & Processing — Poster Session

Sponsored by: TMS: Hydrometallurgy and Electrometallurgy Committee

Program Organizers: Gisele Azimi, University of Toronto; Hojong Kim, Pennsylvania State University; Shafiq Alam, Univ of Saskatchewan; Takanari Ouchi, The University of Tokyo; Neale Neelameggham, IND LLC; You Qiang, Univ Of Idaho; Alafara Baba, University of Ilorin

Monday PM
March 11, 2019

Room: Hall 3
Location: Henry B. Gonzalez
Convention Center

Session Chair: Gisele Azimi, University of Toronto

Sorption of Uranium with the Application of New Modified Sorbents Based on Natural Minerals: *Ainur Berkinbayeva*¹; *Bagdaulet Kenzhaliyev*²; Tatyana Surkova¹; Marzhan Chukmanova¹; ¹JSC “Institute of Metallurgy and Ore beneficiation”; ²JSC “The Kazakh National research technical University after K.I. Satpaev”

Research on the carbothermic reduction procedure of SrSO₄ with carbon: *Siming Chen*¹; Dongping Duan²; Xingwu Zou³; ¹Key Laboratory of Green Process Engineering, Institute of Process Engineering, Chinese Academy of Sciences; University of Chinese Academy of Sciences; ²Key Laboratory of Comprehensive and Highly Efficient Utilization of Salt Lake Resources, Qinghai Institute of Salt Lakes, Chinese Academy of Sciences; University of Chinese Academy of Sciences; ³Key Laboratory of Comprehensive and Highly Efficient Utilization of Salt Lake Resources, Qinghai Institute of Salt Lakes, Chinese Academy of Sciences

Shape Casting: 7th International Symposium Celebrating Prof. John Campbell's 80th Birthday — Poster Session

Program Organizers: Murat Tiryakioglu, University of North Florida; William Griffiths, University of Birmingham; Mark Jolly, Cranfield University

Monday PM
March 11, 2019

Room: Hall 3
Location: Henry B. Gonzalez
Convention Center

Aluminum Matrixed Graphene Reinforced Composite Materials: *Okan Aydin*¹; Aziz Kocaveli¹; Özen Gürsoy¹; Eray Erzi¹; Derya Dispinar¹; ¹Istanbul University

Influence of Melt Quality on the Fluidity of AlSi12Fe: Ibrahim Goksel Hizli¹; *Meltem Salkir*¹; Ibrahim Kalkan¹; Derya Dispinar¹; ¹Istanbul University

Solidification Processing of Light Metals and Alloys: An MPMD Symposium in Honor of David StJohn — Poster Session

Sponsored by: TMS: Solidification Committee

Program Organizers: Mark Easton, RMIT University; Ma Qian, RMIT University (Royal Melbourne Institute of Technology); John Grandfield, Grandfield Technology Pty Ltd; Norbert Hort, Helmholtz-Zentrum Geesthacht; Mark Jolly, Cranfield University

Monday PM
March 11, 2019

Room: Hall 3
Location: Henry B. Gonzalez
Convention Center

Analysis of the High Purity Aluminum Purification Process Using Zone-refining Technique: *Heli Wan*¹; Baoqiang Xu¹; Jinyang Zhao¹; Bin Yang¹; Yongnian Dai¹; ¹National Engineering Laboratory for Vacuum Metallurgy

Grain Refinement Al- and Mg-alloys by Native Solid Particles through Intensive Melt Shearing: *Jayesh Patel*¹; Zhongyun Fan¹; ¹Brunel University London

TMS-DGM Symposium on Lightweight Metals: A Joint US-European Symposium on Challenges in Light Weighting the Transportation Industry — Poster Session

Sponsored by: DGM (Deutsche Gesellschaft für Materialkunde eV), TMS: Magnesium Committee, TMS: Aluminum Committee

Program Organizers: Eric Nyberg, Brunel University London; Wilhelmus Sillekens, European Space Agency; Juergen Hirsch, Hydro Aluminium Rolled Products GmbH; Norbert Hort, Helmholtz-Zentrum Geesthacht

Monday PM
March 11, 2019

Room: Hall 3
Location: Henry B. Gonzalez
Convention Center

Development of new magnesium alloy strengthened by nano second phase precipitation: *Yuansheng Yang*¹; Tianjiao Luo¹; Minglin He¹; Shaozhen Zhu¹; Jixue Zhou²; Shouqiu Tang²; ¹Institute of Metal Research, Chinese Academy of Sciences; ²Advanced Materials Institute, Shandong Academy of Sciences

Investigating Grain Size Strengthening and Microscale Deformation Mechanisms in Mg Alloys: *Anna Buzolits*¹; Zhe Chen¹; Samantha Daly¹; ¹UCSB

Issues of castability of Magnesium alloys: *Norbert Hort*¹; Muhammad Bilal¹; Mark Easton²; Hajo Dieringa¹; ¹Helmholtz-Zentrum Geesthacht; ²RMIT University

2019 Energy Technologies and Carbon Dioxide Management Symposium — Poster Session

Sponsored by: TMS: Energy Committee

Program Organizers: Tao Wang, Nucor Castrip Arkansas; Xiaobo Chen, RMIT; Donna Guillen, Idaho National Laboratory; Lei Zhang, University of Alaska Fairbanks; Ziqi Sun, Queensland University of Technology; Cong Wang, Northeastern University; Nawshad Haque, CSIRO; John Howarter, Purdue University; Neale Neelameggham, IND LLC

Tuesday PM
March 12, 2019

Room: Hall 3
Location: Henry B. Gonzalez
Convention Center

Characterization of Polymeric Solutions with TiO₂ Photocatalytic Conversion Efficiency Exposed to Different CO₂ Sources: Aline Hernández¹; *Natalia Loera*¹; Gerardo Pérez²; Francisco Blockstrand³; ¹Facultad de Ingeniería, Universidad Anáhuac México; ²Fototecnologías Sostenibles para México, S. A. de C. V.; ³Piur

Comparison between *Lactuca Sativa L.* and *Lolium Perenne*: Phytoextraction Capacity of Ni, Fe and Co from Galvanoplastic Industry: Aline Hernández¹; *Natalia Loera*¹; María Contreras¹; Luis Fischer¹; Diana Sánchez¹; ¹Facultad de Ingeniería, Universidad Anáhuac México

Determination of Crystallite Size and Influence of Coke Calcinations Level on CO₂ Reactivity and Specific Electrical Resistance of Coke: *Mohsen Ameristahooei*¹; Borzu Bahrvand¹; ¹Almahdi-south Hrmoz Aluminim Smelter

Determination of Limiting Current Density, Plateau Length and Ohmic Resistance of a Heterogeneous Membrane for the Treatment of Industrial Wastewaters with Copper Ions in Acid Media: Kayo Barros¹; Jorge Tenório¹; Valentín Pérez-Herranz²; *Denise Espinosa*¹; ¹Univ of São Paulo (USP); ²Universitat Politècnica de València (UPV)

Effect of pH and Potential in Chemical Precipitation of Copper by Sodium Dithionite: *Iara Anes*¹; Amilton Botelho Junior¹; Jorge Tenório¹; Denise Espinosa¹; ¹Escola Politécnica da Universidade de São Paulo

Nitrogen-doped Porous Carbon Derived from Imidazole-functionalized Polyhedral Oligomeric Silsesquioxane: *Felix Ofori Boakye*¹; ¹Wuhan University of Technology

Study of Separation CO with H₂ on Carbon Nanotube by Monte Carlo Simulation in Aluminum Smelter: *Mohsen Ameristahooei*

Thermodynamic and Economic Assessment of an Air-Brayton/ORC Combined Cycle for Microreactors: Joseph Litrel¹; *Donna Guillen*²; Michael McKellar³; ¹Georgia Institute of Technology; ²Idaho National Laboratory; ³University of Idaho

Vinylic and Waterproofing Paint with TiO₂ as Photocatalytic Active Effects in *Lolium perenne* Germination: Aline Hernández¹; *Natalia Loera*¹; Gerardo Pérez²; Francisco Blockstrand³; ¹Facultad de Ingeniería, Universidad Anáhuac México; ²Fototecnologías Sostenibles para México, S. A. de C. V.; ³Piur

Post-combustion Carbon Capture Technology Using CO₂ Separative Membrane and Their Industrial Application: *Jung Lee*¹; Jong-Ho Moon¹; Dahun Lee¹; Woong Jin Oh¹; Jeong-gu Yeo¹; ¹Korea Institute of Energy Research

The Characterizations of Hydrogen From Steam Reforming of Bio-oil Model Compound in Granulated Blast Furnace Slag: *Xin Yao*¹; Qingbo Yu¹; Guowei Xu¹; Qin Qin¹; Ziwen Yan¹; ¹Northeastern University

Preparation and Characterization of Manganese-based Catalysts for Removing NO under Low Temperatures: *Kaijie Liu*¹; Qingbo Yu¹; Junbo San¹; Zhicheng Han¹; Qin Qin¹; ¹Northeastern University

2019 Symposium on Functional Nanomaterials: Synthesis, Integration, and Application of Emerging Nanomaterials — Poster Session: General Functional Nanomaterials

Sponsored by: TMS: Nanomaterials Committee

Program Organizers: Chang-Yong Nam, Brookhaven National Laboratory; Jiyoung Chang, University of Utah; Pei Dong, George Mason University; Yong Lin Kong, University of Utah; Shengfeng Yang, Indiana Univ. Purdue Univ. Indianapolis; SungWoo Nam, University of Illinois

Tuesday PM
March 12, 2019

Room: Hall 3
Location: Henry B. Gonzalez
Convention Center

Session Chairs: Chang-Yong Nam, Brookhaven National Laboratory; Jiyoung Chang, University of Utah; Pei Dong, George Mason University; Yong Lin Kong, University of Utah; SungWoo Nam, University of Illinois at Urbana-Champaign

Adsorption of Fluoride Gases in Aluminum Production using Nano Technology: *Mohsen Ameristahooei*

Biosynthesis and Deposition of Golden Nanoparticles (AuNPs) on Activated Carbon: Laura Garcia-Hernandez¹; Jaqueline Ramirez-Castro¹; Begoña Aguilar-Perez¹; *Pedro Alberto Ramirez-Ortega*¹; Mizraim-Uriel Flores-Guerrero¹; Diana Arenas-Islas²; ¹Universidad Tecnológica de Tulancingo; ²Universidad Autónoma de Baja California

Crystallization and Melting of Polar and Nonpolar Polymer Chains on Graphene Oxide-substrate: Wei Gao¹; *Arman Ghasemi*¹; ¹University of Texas at San Antonio

Effect of the Synthetic Parameter on the Cytotoxicity of CdTe/CdSe Nanoparticles against Osteosarcoma Cell Line: *Vuyelwa Ncapayi*¹; Sandile Songca²; Samuel Oluwafemi³; ¹ Walter Sisulu University, Eastern Cape, South Africa; ² University of Zululand; ³University of Johannesburg

Engineered Nanocomposite Material Properties through Embedding of Smaller Nanoparticles in a Polymer Matrix: *Sanju Gupta*¹; A. Henson¹; ¹Western Kentucky Univ

Experimental Study on Competitive Adsorption of SF₆ Decomposed Components on Nitrogen Doped TiO₂ Nanotubes Sensor: *Jun Zhang*¹; Xiaoxing Zhang¹; Hao Cui¹; Guozhi Zhang²; ¹State Key Laboratory of Power Transmission Equipment & System Security and New Technology, Chongqing University; ²School of Electrical Engineering, Wuhan University

Ferroelectric Properties of Low Temperature Hf_{0.5}Zr_{0.5}O₂ Films: *Si Joon Kim*¹; Jaidah Mohan¹; Harrison Kim¹; Jiyoung Kim¹; ¹University of Texas Dallas

Hydrangea-like VS₄ Microspheres: A Novel Structure Material for High Performance Electrochemical Capacitor Electrode: *ZhengWu Peng*¹; Junkai Feng¹; Bing Xie¹; Hong-Yi Li¹; ¹Chongqing University

Mechanical and Chemical Strengthening of Ceramic Foams by Graphene Oxide Incorporation: *Pratish Rao*¹; Krishna Muralidharan¹; Moe Momayez¹; ¹University of Arizona, Tucson

Molecular Dynamics Investigation of Ternary AgCuNi Alloy Particles: *Serzat Safaltin*¹; Sebahattin Gurmen¹; ¹Istanbul Technical University

Fabrication of Monodispersed Needle-sized Hollow Core Polystyrene Microspheres: Stanley Omorogbe¹; *Esther Ikhuoria*²; Hilary Ifijen¹; Aireguamen Aigbodion¹; Aline Simo³; Malik Maaza³; ¹Rubber Research Institute of Nigeria; ²University of Benin, Benin City, Nigeria; ³Nanosciences African Network (NANOAFNET), iThemba LABS-National Research Foundation

Multi-scale Mechanical Behavior of Three-dimensional Graphene Foam-based Shape Memory Epoxy Composites: *Adeyinka Idowu*¹; Pranjal Nautiyal¹; Mitchell Hopper¹; Benjamin Boesl¹; Arvind Agarwal¹; ¹Florida International University

Preparation and Properties of Novel Graphene Composites: Wanlong Zhang¹; *Haibin Zuo*¹; Jingsong Wang¹; Yingli Liu¹; Yajie Wang¹; ¹University of Science and Technology Beijing

Preparation of 2D g-C₃N₄/TiO₂ Heterojunction Nanocomposites for Photocatalytic Applications: *Pelin Gündogmus*¹; Jongee Park²; Abdullah Özturk¹; ¹Middle East Technical University; ²Atilim University

Role of Growth Rate on the Properties of TiN Thin Films: *Manosi Roy*¹; Dhananjay Kumar¹; ¹North Carolina A & T State University

Self-assembly of Different VO_x Network with Complex Morphologies Prepared by Semi-green Hydrothermal Approach: *Stanley Omorogbe*¹; Esther Ikhuoria²; Hilary Ifijeh¹; Charles Esene¹; ¹Rubber Research Institute of Nigeria; ²University of Benin

Synthesis and Characterization of Silver Nano-particles Using Simple Polyol Method: *Mona Hassan*¹; Ahmed Metwali¹; ¹German University In Cairo

Ternary Quantum Dots –Porphyrin Bio-conjugates: Imaging and Cytotoxicity Studies in Leukaemia (THP-1) Cancer Cell Lines: *Ncediwe Tsolekile*¹; Mangaka Matoetoe¹; Sandile Songca²; Samuel Oluwafemi³; ¹Cape Peninsula University of Technology; ² University of Zululand; ³University of Johannesburg

Understanding the Origin of Ferromagnetism in Akaganeite Nano-sticks: *Seok-Jun Seo*¹; Hessian Khalid¹; Sung Gue Heo¹; Won Sik Yang¹; Kyoung-Tae Park¹; Taek-Soo Kim¹; Kyoung Mook Lim¹; ¹Korea Institute of Industrial Technology

High-performance Field Emission Characteristics of Protruded GO and rGO Sheets on CuO and Cu Nanorods: *Gurjinder Kaur*¹; Raj Kumar¹; Indranil Lahiri¹; ¹Nanomaterials and Applications Lab, Department of Metallurgical and Materials Engineering, Indian Institute of Technology Roorkee, Roorkee 247667, Uttarakhand, India

Fabrication of Hardystonite Nano-bioceramic Coating on 306L Stainless Steel Substrate Using Electrophoretic Method and Evaluation of Its Corrosion Resistance to Improve Medical Performance: *Iman Bagherpour*¹; ¹Islamic Azad University of Shiraz

Adsorption Studies of Rare Earth Ions on Ultrathin Graphitic Carbon Nitride: *Saikat Kuila*¹; Tarun Kundu¹; ¹Indian Institute of Technology Kharagpur

5th Symposium on Advanced Materials for Energy Conversion and Storage — Poster Session

Sponsored by: TMS: High Temperature Alloys Committee

Program Organizers: Amit Pandey, LG Fuel Cell Systems; Partha Mukherjee, Purdue University; Surojit Gupta, University of North Dakota; Kyle Brinkman, Clemson Univ; Jung Pyung Choi, Pacific Northwest National Laboratory; Soumendra Basu, Boston University; Paul Ohodnicki, National Energy Technology Laboratory

Tuesday PM
March 12, 2019

Room: Hall 3
Location: Henry B. Gonzalez
Convention Center

Session Chair: Surojit Gupta, University of North Dakota

Conversion of Soybean Waste to Activated Carbon Spheres for Electrical Double Layer Capacitors: *Fuqian Yang*¹; ¹Univ of Kentucky

Enhanced ZT in Si by Using SiC Dispersoids to Tune Both Electrical and Phonon Transport Properties: *Seyed Aria Hosseini*¹; Jackson Harter²; Devin Coleman¹; Todd Palmer²; Lorenzo Mangolini¹; Alex Greaney¹; ¹University Of California, Riverside; ²Oregon State University

Facile Synthesis of Mesoporous NiCo₂O₄ Fibers with Enhanced Photocatalytic Performance for the Degradation of Organic Dyes under Visible Light Irradiation: Yuchi Wan¹; Jun Chen¹; *Jing Zhan*¹; Yalin Ma¹; ¹Central South Univ

Advanced Characterization Techniques for Quantifying and Modeling Deformation — Poster Session

Sponsored by: 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; C. Tasan, Massachusetts Institute of Technology; M Arul Kumar, Los Alamos National Laboratory

Tuesday PM
March 12, 2019

Room: Hall 3
Location: Henry B. Gonzalez
Convention Center

Additive Manufactured Metal Lattices for Large Deformation and Crush Applications: S. Luong¹; S.D. Meshram¹; S. Basso¹; J. Singh¹; M. Tarusna¹; Mamidala Ramulu¹; Junlan Wang¹; Mitchell Mellor²; *Dwayne Arola*¹; ¹University of Washington; ²The Boeing Company

Atomistic Thermodynamic Force Calculation for Deformation Prediction: *Mulaine Shih*¹; Michael Mills¹; Maryam Ghazisaeidi¹; Peter Anderson¹; ¹Ohio State University

Deformation Driven Grain Growth in ECAE processed AZ31B: *Nicholas Krywopusk*¹; Laszlo Kecskes¹; Timothy Weihs¹; ¹Johns Hopkins University

Effect of Microstructure and Martensite Formation on the Residual Stress Development and Formability of Metastable Austenitic Stainless Steel: *Peijun Hou*¹; Yuan Li¹; Dongchul Chae²; Jun-Sang Park³; Yang Ren³; Ke An⁴; Hahn Choo¹; ¹The University Of Tennessee; ²POSCO Technical Research Laboratory; ³Argonne National Laboratory; ⁴Oak Ridge National Laboratory

Evaluation of Yield Properties Considering Stress Field Analysis of Polyethylene Pipe Using Flat-ended Cylindrical Indentation: *Jongho Won*¹; Seunggyu Kim²; Ohmin Kwon¹; Kyungyul Lee¹; Dongil Kwon¹; ¹Seoul National University; ²Samsung electronics

Insights into In-plane Compression Testing of Aluminum Alloy 2024 and AISI 1008 Steel Sheet Materials: *Dilip Banerjee*¹; Mark Ladicola¹; Chris Calhoun¹; William Luecke¹; ¹National Institute of Standards and Technology

Measuring the Partitioning of Plastic Strain in Precipitate-strengthened Alloys: Robert Jones¹; *Fabio Di Gioacchino*¹; Hojun Lim²; Thomas Edwards³; Caspar Schwalbe¹; Corbett Battaile²; William Clegg¹; ¹Department of Materials Science and Metallurgy, University of Cambridge; ²Department of Computational Materials and Data Science, Sandia National Laboratories; ³EMPA – Swiss Federal Laboratories for Materials Science and Technology

Modeling Crystal Plasticity of Niobium: *Eureka Pai Kulyadi*¹; Philip Eisenlohr¹; Krishnendu Mukherjee²; Thomas Bieler¹; ¹Michigan State University; ²Council of Scientific and Industrial Research- National Metallurgical Laboratory

Modeling the Critical Dynamic Recrystallization of a Ti-22Al-25Nb Alloy During Hot Compression Deformation: *Yu Sun*¹; Lianxi Hu¹; ¹Harbin Institute of Technology

Multiscale Quantitative Mapping of Deformation on Grain Level with X-ray Microscopy: *Mustafacan Kutsal*¹; Can Yildirim¹; Phil Cook¹; Carsten Detlefs¹; Henning Poulsen²; ¹European Synchrotron Radiation Facility; ²Technical University of Denmark

Quasi-plastic Zone Characterization of Regular and Si-doped Boron Carbide: *Sisi Xiang*¹; Bruce Yang²; Richard Haber²; Kelvin Xie¹; ¹Texas A&M University; ²Rutgers University

Role of Hierarchical Martensitic Microstructure on Localized Deformation and Fracture of an Lath-Martensitic Steel Under Impact Loading at Different Temperatures: *Arya Chatterjee*¹; Abhijit Ghosh²; Debalay Chakrabarti³; Rahul Mitra³; ¹School of Engineering, Brown University; ²Indian Institute of Technology Indore; ³Indian Institute of Technology Kharagpur

Simple and Accurate Method to Calculate Circular Dichroism Spectra of Peptides and Proteins in Molecular Dynamics Simulations: *Juan Liu*¹; Zewei Wang¹; Shiyi Wang¹; Carole Perry²; Candan Tamerler³; Hendrik Heinz¹; ¹University of Colorado Boulder; ²Nottingham Trent University; ³University of Kansas

Stacking Fault Energies in Austenitic Stainless Steels: *Benjamin Neding*¹; Peter Hedström¹; ¹Royal Institute of Technology

Understanding Fundamental Mechanisms of Abrasive Wear: An In-Situ Study: *Gianluca Roscioli*¹; Cemal Tasan¹; ¹Massachusetts Institute of Technology

Analysis of Microscopic Strain Distribution in Steel Bar with Load by Neutron: *Tomohiro Ikeda*¹; Andrew Payzant²; Jeffrey Bunn²; Christopher Fancher²; Alan Seid³; Tatsuya Okayama¹; Takashi Katsurai¹; ¹Honda R&D Co., Ltd.; ²Oak Ridge National Laboratory; ³Honda R&D America Inc.

Advanced High-Strength Steels III — Poster Session

Sponsored by: TMS: Steels Committee
Program Organizers: Amy Clarke, Colorado School of Mines; MingXin Huang, University of Hong Kong; C. Tasan, Massachusetts Institute of Technology; Kester Clarke, Colorado School of Mines; Ana Luiza Araujo, Colorado School of Mines

Tuesday PM
March 12, 2019

Room: Hall 3
Location: Henry B. Gonzalez
Convention Center

Characterization of Advanced High Strength Steel using microalloying elements: *Osama Afify*¹; Ahmed Abdelaziz¹; Ayman Fathy²; Ahmed Gomaa²; ¹Materials Engineering Department, German University(GUC) in Cairo, New Cairo, Egypt; ²Ezz Flat Steel, Ain El-Sokhna

Effect of Inclusions Modified by Y-based Rare Earth on the Corrosion Behavior of EH36 Shipbuilding Steel: *Maolin Ye*¹; Xiaojun Xi¹; Libin Zhu¹; Shufeng Yang¹; Jingshe Li¹; ¹University of Science and Technology Beijing

Effect of Prior Ni Plating on Selective Oxidation Behavior and Galvanisability of High Strength Steel: Guangrui Jiang¹; *Haiquan Wang*¹; ¹Shougang

Microstructure and Mechanical Properties of Intercritical Annealed Multiphase Ultrahigh Strength Steel: *Liu Huasai*¹; ¹Shougang Research Institute of Technology

Research on the Microstructure and Mechanical Properties of 980MPa Complex Steel: *Chun Qian Xie*¹; ¹Shougang Research Inst of Technology

The Effect of Ni and Cu Addition on Mechanical Behavior of Thermomechanically Controlled Processed HSLA X100 Steels: Alireza Hosseini Far¹; *Seyyed Hashem Mousavi Anijdan*²; M Abbasi³; ¹Department of Materials Engineering, Science and Research Branch, Islamic Azad University, Tehran, Iran; ²Islamic Azad University; ³2KNT University of Technology, Tehran, Iran

The Influence of Pre-plating on the LME Phenomenon of DP980 during the Spot-welding Based on the Three-point Bending Test: *Xue Bai*¹; Yun Han¹; Guangrui Jiang¹; Yinghua Jiang¹; ¹Shougang Research Institute of Technology

Thermodynamic Properties of Mn and C in TWIP Steel Smelting: *Huaihuang Luan*¹; Jianbin Chen¹; Jinguang Li¹; ¹Shanghai Institution of Technology

Advanced Magnetic Materials for Energy and Power Conversion Applications — Poster Session

Sponsored by: Federation of European Materials Societies (FEMS), TMS Functional Materials Division, TMS: Magnetic Materials Committee

Program Organizers: Frank Johnson, Niron Magnetics, Inc.; Paul Ohodnicki, National Energy Technology Laboratory; Alex Leary, Nasa Grc; Orlando Rios, Oak Ridge National Laboratory; Alessandra Hool, ESM Foundation

Tuesday PM
March 12, 2019

Room: Hall 3
Location: Henry B. Gonzalez
Convention Center

Session Chair: Alex Leary, Glenn Research Center

Crystallization and Hot Extrusion Densification of Amorphous Nd₂Fe₁₄B and Nanocrystalline a-Fe Powders Fabricated by Mechanical Milling: *Jufu Jiang*¹; Ying Wang¹; ¹Harbin Institute of Technology

Effects of Nitrogen Additions on Soft Magnetic Properties of Fe-based Amorphous Alloy: *Song-Yi Kim*¹; A-young Lee¹; Hwi-Jun Kim¹; Min-Ha Lee¹; ¹Korea Institute of Industrial Technology

Engineering of Magnetic Properties of Co-rich Microwires by Joule Heating: Paula Corte-Leon¹; Valentina Zhukova¹; Mihail Ipatov¹; Juan Blanco²; Julian Gonzalez¹; *Arcady Zhukov*¹; ¹Dept Phys Mater, Uni Basque Country; ²Dept. Appl. Phys., Univ. Basque Country

Magnetocaloric Effect of Sintered Binder Jet 3D Printed Ni-Mn-Ga-Cu for Efficient Magnetic Refrigeration: *Rafael Rodriguez De Vecchis*¹; Erica Stevens¹; Markus Chmielus¹; ¹University of Pittsburgh

Micromagnetic Simulation for Exchange Coupling Effect and Magnetic Properties of SmCo₅/a-Fe Nanocomposite Magnets: *Lianxi Hu*¹; Yu Sun¹; Yuan Yuan¹; ¹Harbin Institute of Technology

Structure and Magnetic Properties of Magnetically Soft Fe₆₇Co₂₀B₁₃ Alloy after Crystallisation of Amorphous Ribbon by Ultra-Rapid Annealing: *Maciej Kowalczyk*¹; Jaroslaw Ferenc¹; Jaroslaw Kusmierczyk¹; Przemyslaw Zackiewicz²; Aleksandra Kolano-Burian²; Tadeusz Kulik¹; ¹Faculty of Materials Science and Engineering, Warsaw University of Technology; ²Institute of Non-Ferrous Metals

The Influence of Mn Chemical Partitioning on the Partial Crystallization Behavior in CoFeMnSiBNb Soft Magnetic Materials: *Alicia Wadsworth*¹; Kayla Cole¹; Abhishek Srivastava¹; Alex Leary²; Ronald Noebe²; Tim Mewes¹; Claudia Mewes¹; Gregory Thompson¹; ¹University of Alabama; ²NASA GRC

Advanced Microelectronic Packaging, Emerging Interconnection Technology, and Pb-free Solder — Poster Session

Sponsored by: TMS: Electronic Packaging and Interconnection Materials Committee

Program Organizers: Kazuhiro Nogita, University of Queensland; Tae-Kyu Lee, Portland State University; Yan Li, Intel Corporation; Christopher Gourlay, Imperial College London; Zhi-Quan Liu, Chinese Academy of Sciences; Rahul Panat, Carnegie Mellon University; Albert T. Wu, National Central University; Andre Delhaise, University of Toronto; Mohd Arif Salleh, Universiti Malaysia Perlis

Tuesday PM
March 12, 2019

Room: Hall 3
Location: Henry B. Gonzalez
Convention Center

Session Chairs: Christopher Gourlay, Imperial College London; Kazuhiro Nogita, The University of Queensland

Multi-phase-field Simulation of Electromigration in Polycrystalline Interconnect Line: *Akimitsu Ishii*¹; Akinori Yamanaka¹; ¹Tokyo University of Agriculture and Technology

Microstructure Formation in Sn-Cu Based Lead-free Solder Paste Transient Liquid Phase Sintering during Soldering on Different Substrate: R. Mohd Said¹; *M.A.A. Mohd Salleh*¹; M.I.I. Ramli¹; M.N. Derman¹; N. Saud¹; H. Yasuda²; K. Nogita³; ¹Universiti Malaysia Perlis; ²Kyoto University; ³The University of Queensland (UQ)

PCB Surface Finish in Press-fit Interconnections: *Chulmin Oh*¹; Sangjoo Oh¹; Won Sik Hong¹; ¹Korea Electronics Technology Institute

A Study on TLP Bonding using Metal-deposited Preforms for Power Modules of Automobile: *Seungju Baek*¹; Gyu-Won Jeong¹; Dae Young Park¹; Byung-Suk Lee¹; Han-Bo-Ram Lee²; Yong-Ho Ko¹; ¹Korea Institute of Industrial Technology; ²Incheon National University

Interfacial Phenomena Between Liquid Ga-based Alloys and Ni Substrate: *Tomasz Gancarz*¹; Katarzyna Berent²; Norbert Schell³; Robert Chulist¹; ¹Institute of Metallurgy and Materials Science PAS; ²AGH University of Science and Technology, Academic Centre for Materials and Nanotechnology, Krakow, Poland; ³Institute of Materials Research, Helmholtz-Zentrum Geesthacht, Max-Planck, Germany

Advanced Real Time Imaging — Poster Session

Sponsored by: TMS: Alloy Phases Committee

Program Organizers: Jinichiro Nakano, US DOE - National Energy Tech Lab; P.Chris Pistorius, Carnegie Mellon University; Candan Tamerler, University of Kansas; Hideyuki Yasuda, Kyoto University; Zuotai Zhang, Southern University Of Science And Techn; Neslihan Dogan, McMaster University; Wanlin Wang, Central South University; Noritaka Saito, Kyushu University; Yongsug Chung, Korea Polytechnic University; Bryan Webler, Carnegie Mellon University

Tuesday PM
March 12, 2019

Room: Hall 3
Location: Henry B. Gonzalez
Convention Center

Real-time Imaging of Laser-induced High-velocity Microparticle Impacts: *David Veysset*¹; Yuchen Sun¹; Mostafa Hassani-Gangaraj¹; Steven Kooi¹; Alex Hsieh²; Alexei Maznev¹; Shawn Cole²; Randy Mrozek²; Joseph Lenhart²; Jan Andzelm²; Christopher Schuh¹; Keith Nelson¹; ¹Massachusetts Institute of Technology; ²U.S. Army Research Laboratory

Advances in Computational Methods for Damage Mechanics and Failure Phenomena — Poster Session

Sponsored by: TMS: Computational Materials Science and Engineering Committee
Program Organizers: Srujan Rokkam, Def-Aero, Advanced Cooling Technologies Inc; Michael Tonks, University of Florida; Remi Dingreville, Sandia National Laboratories; Jaafar El-Awady, Johns Hopkins University

Tuesday PM
March 12, 2019
Room: Hall 3
Location: Henry B. Gonzalez Convention Center

Session Chair: Srujan Rokkam, ACT Inc.

A Platform for Crystal Plasticity Finite Element Coding with FEniCS:

*Fabio Di Gioacchino*¹; ¹Department of Materials Science and Metallurgy, University of Cambridge

Validation of a 3D Numerical Model for Stability Analysis of Deep Excavations in Soil: *Yasletty Zamora Hernández*¹; Aldo Durand Farfán¹; ¹Universidade Estadual do Norte Fluminense Darcy Ribeiro

Algorithm Development in Materials Science and Engineering — Poster Session

Sponsored by: TMS: Computational Materials Science and Engineering Committee, TMS: Phase Transformations Committee, TMS: Integrated Computational Materials Engineering Committee
Program Organizers: Mohsen Asle Zaeem, Colorado School of Mines; Garritt Tucker, Colorado School of Mines; Prasanna Balachandran, University of Virginia; Douglas Spearot, University of Florida; Charudatta Phatak, Argonne National Laboratory; Srinivasan Srivilliputhur, University of North Texas

Tuesday PM
March 12, 2019
Room: Hall 3
Location: Henry B. Gonzalez Convention Center

Session Chair: Mohsen Asle Zaeem, Colorado School of Mines

Algorithm for Correlating Different Corrosion Test-variables from Steel-reinforced Concretes Immersed in Corrosive Environment, using Covariance Matrix Method: *Joshua Okeniyi*¹; Modupe Ojewumi¹; Esther Akinlabi²; Elizabeth Okeniyi¹; Stephen Akinlabi²; ¹Covenant University, Ota, Nigeria; ²University of Johannesburg

Predicting Mechanical Properties of Cold-rolled and Recrystallized Metals by Coupled Crystal Plasticity and Phase-field Model: *Kyung Mun Min*¹; Woojin Jeong¹; Pil-Ryung Cha²; Heung Nam Han¹; Seung-Hyun Hong³; Myoung-Gyu Lee¹; ¹Seoul National University; ²Kookmin University; ³Hyundai Motor Company

Alloys and Compounds for Thermoelectric and Solar Cell Applications VII — Student Poster Session

Sponsored by: TMS: Alloy Phases Committee
Program Organizers: Sinn-wen Chen, National Tsing Hua University; Franck Gascoin, Ensicaen University of Caen; Soon-Jik Hong, Kongju National Univ; Philippe Jund, Montpellier University; Lan Li, Boise State University; Takao Mori, Nims; Hsin-Jay Wu, National Sun Yat-sen University; Tiejun Zhu, Zhejiang University

Tuesday PM
March 12, 2019
Room: Hall 3
Location: Henry B. Gonzalez Convention Center

Session Chair: Sinn-wen Chen, National Tsing Hua University

Carrier Mobility of Mg₂Si, PbTe and SnTe from First Principles Calculations: Fanchen Meng¹; Jinlong Ma²; *Jian He*³; Wu Li²; ¹Clemson University; ²Shenzhen University; ³TMS

Evaluation of Ni-P Diffusion Barrier for Thermoelectric Materials: *Chun Hsien Wang*¹; Wen Chih Lin¹; Albert T. Wu¹; ¹National Central University

High Thermoelectric Performance in La-doped n-type Mg₃Sb_{1.5}Bi_{0.5}: *Kazuki Imasato*¹; Max Wood¹; G. Jeffrey Snyder¹; ¹Northwestern University

On the Thermoelectric Properties of REB₆₆ (RE = rare earth) Compounds for High-temperature Applications: *Philipp Sauerchnig*¹; Jean-Baptiste Vaney¹; Takaho Tanaka¹; Toetsu Shishido²; Takao Mori¹; ¹NIMS; ²Tohoku University

Phase Diagrams of Material Systems with Quasicrystalline Phases: *Pei-chia Lo*¹; *Tse-yang Huang*¹; Tzu-ning Kuo¹; Anbalagan Ramakrishnan¹; Sinn-wen Chen²; ¹Department of Chemical Engineering, National Tsing Hua University; ²Department of Chemical Engineering, National Tsing Hua University; High Entropy Materials Center, National Tsing Hua University

Phase Formation of Zn₄Sb₃ in Spark Plasma Sintering and Thermoelectrical Study: *Yamei Liu*¹; Dongwang Yang²; Myles McKenna¹; Jian He¹; Xinfeng Tang²; ¹Clemson University; ²Wuhan University of Technology

Thermoelectric Properties of Y_xAl_yB₁₄ Prepared by Reactive Spark Plasma Sintering: *Hyoung-Won Son*¹; Quansheng Guo¹; Takao Mori¹; ¹National Institute for Materials Science

First-principles Study of the Layered Thermoelectric Material TiNBr: *Shuofeng Zhang*¹; Ben Xu¹; ¹Tsinghua University

Bulk Metallic Glasses XVI — Poster Session

Sponsored by: TMS: Mechanical Behavior of Materials Committee
Program Organizers: Xie Xie, FCA US LLC; Peter Liaw, University of Tennessee; Yanfei Gao, University of Tennessee; Hahn Choo, University of Tennessee; Yunfeng Shi, Rensselaer Polytechnic Institute; Gongyao Wang, Alcoa; Robert Maass, University of Illinois at Urbana-Champaign; Muhammad Rafique, RMIT University

Tuesday PM
March 12, 2019
Room: Hall 3
Location: Henry B. Gonzalez Convention Center

An analysis of configuration entropy effect on the properties in a series of equiatomic ratio metallic glasses: *Jung Soo Lee*¹; Hyun Seok Oh¹; Wan Kim¹; Jin Yeon Kim¹; Eun Soo Park¹; Jia Lun Gu²; KeFu Yao²; Budaraju Srinivasa Murty³; ¹Seoul National University; ²Tsinghua University; ³Indian Institute of Technology Madras

Deformation and hardening behavior in the amorphous alloys and quasicrystal with the same chemical compositions.: *Wan Kim*¹; Eun Soo Park¹; ¹Seoul National University

Effect of Intrinsic Factors on Size-dependent Deformation Behavior of Metallic Glasses: *Ji Young Kim*¹; So Yeon Kim¹; Jin Woo Kim²; Eun Soo Park¹; ¹Seoul National University; ²Massachusetts Institute of Technology

High strength nanostructured Mg-based alloy through optimized crystallization of rapidly quenched amorphous precursors: Hyun-Ah Kim¹; Song-Yi Kim¹; A-Young Lee¹; *Min-Ha Lee*¹; ¹KITECH

Tensile behavior of Cu-coated Pd40Cu30Ni10P20 metallic glassy wire: *Kai Hu*¹; Ishtiaqiu Hussain²; Yao Yao Jiang¹; Chan K.C³; Jun Yi¹; ¹Laboratory for Microstructures, Institute of Materials, Shanghai University.; ²Department of Chemistry, Karakoram International University; ³Department of Industrial and System Engineering, The Hong Kong Polytechnic University

Effective way to fabricate and tailor properties of a laser-processed bulk metallic glass: *Geunhee Yoo*¹; Tae Gyu Park¹; Jin Yeon Kim¹; Han Shin Choi²; Hwi Jun Kim²; Eun Soo Park¹; ¹Seoul National University; ²Korea Institute of Industrial Technology

Fabrication of Micro- and Nanoscale Metallic Glassy Tubes: *Jing Zhao*¹; Yao Yao Jiang¹; Kai Hu¹; Jun Yi¹; ¹Laboratory for Microstructures, Institute of Materials, Shanghai University.

Adjacent Indentation Investigation on Shear Bands Interaction of Metallic Glass via Molecular Dynamics Simulations: *Dan Zhao*¹; Hongwei Zhao¹; ¹Jilin University

EBSD Microstructure Mapping of Zr47.5Cu45.5Al5Co2 Bulk Metallic Glass Matrix Composite to Ascertain the Effect of Inoculation in Promoting Crystallinity: *Muhammad Rafique*¹; Milan Brandt¹; Mark Easton¹; ¹RMIT University

Characterization of Materials through High Resolution Imaging — Poster Session

Sponsored by: TMS: Advanced Characterization, Testing, and Simulation Committee

Program Organizers: Ross Harder, Argonne National Laboratory; Richard Sandberg, Los Alamos National Laboratory; Xianghui Xiao, Argonne National Laboratory; Brian Abbey, La Trobe University; Saryu Fensin, Los Alamos National Laboratory; Ana Diaz, Paul Scherrer Institut; Mathew Cherukara, Argonne National Laboratory

Tuesday PM
March 12, 2019

Room: Hall 3
Location: Henry B. Gonzalez
Convention Center

High-resolution multi-modal imaging capability at the Hard X-ray Nanoprobe beamline of NSLS-II: *Xiaojing Huang*¹; Hanfei Yan¹; Evgeny Nazaretski¹; Mingyuan Ge¹; Petr Ilinski¹; Yong Chu¹; ¹Brookhaven National Laboratory

Characterization of Minerals, Metals, and Materials — Poster Session

Sponsored by: 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; Yunus Kalay, Middle East Technical University; John Carpenter, Los Alamos National Laboratory; Jiann-Yang Hwang, Michigan Technological Univ; Sergio Monteiro, Military Institute of Engineering; Chenguang Bai, Chongqing Univ; Juan Escobedo-Diaz, University of New South Wales; Pasquale Russo Spena, Free University of Bozen-Bolzano; Ramasis Goswami, Naval Research Laboratory

Tuesday PM
March 12, 2019

Room: Hall 3
Location: Henry B. Gonzalez
Convention Center

Session Chair: Y. Eren Kalay, Middle East Technical University

Alpha alumina synthesis using gamma-alumina powders: *Antonio Munhoz*¹; Gustavo Galhardo¹; Fernando dos Santos Ortega²; Nelson Batista de Lima³; Dênisson Angelotti Moraes¹; Leila Figueiredo de Miranda⁴; Francisco Rolando Valenzuela-Diaz⁴; ¹U.P.Mackenzie; ²FEI; ³IPEN; ⁴USP

An investigation of mechanical and thermal properties of polypropylene reinforced with different clays: *Alex Monteiro*¹; Daili Barreira¹; Jaqueline Silva¹; Rene Oliveira¹; Francisco Valenzuela Diaz²; Esperidiana Moura¹; ¹Nuclear & Energy Research Institute; ²University of Sao Paulo

Analysis by Thermoelectric Potential of a Nitrided Steel: *Ariosto Medina*¹; Claudio Aguilar²; Luis Béjar¹; Héctor Carreón¹; Joaquín Oseguera³; ¹Universidad Michoacana de San Nicolás de Hidalgo; ²Universidad Técnica Federico Santa María; ³Instituto Tecnológico y de Estudios Superiores de Monterrey Campus Estado de México

Analysis of rheological behavior by the method squeeze flow in mortars incorporated with ornamental stone residue: *Gustavo Xavier*¹; Gabrielly Azevedo¹; Pamela Moreira¹; Leticia Ciribelli¹; Afonso Azevedo²; Jonas Alexandre¹; ¹UENF; ²Instituto Federal Fluminense

Analysis of Relationship Between Properties of Mechanically Alloyed Powders and Corresponding Process Parameters: *Jovana Ruzic*¹; Nikolay Stoimenov¹; Stanislav Gyoshev¹; Dimitar Karastoyanov¹; ¹IICT - Bulgarian Academy of Sciences

Analysis of the Life Extension of ASTM a-36 Steel Structures Using the Concepts of Fracture Mechanics.: *Kayan Carneiro*¹; *Victor Souza*¹; Niander Cerqueira¹; Lucas Costa¹; Amanda Lima¹; Afonso Azevedo¹; Daniel Gallo¹; ¹UNIRENTOR

Analysis of the Feasibility of the Use of Waste from the Foundry Process in Green Sands in the Manufacturing of Soil-Cement Blocks: Niander Cerqueira¹; *Victor Souza*¹; Guilherme Coutinho¹; Lucas Silva¹; ¹Centro Universitário Redentor

Analysis of the thermal behavior of buriti fiber: *Luana Demosthenes*¹; Sergio Monteiro¹; Lucio Nascimento¹; Michelle Oliveira¹; Fabio Filho¹; ¹Military Intitute Engineering

Automated Optical Microstructural Characterization of Thermal and Cold Spray Coatings: Satya Ganti¹; Elizabeth Jenkins¹; William Davis¹; *Veeraraghavan Sundar*¹; ¹UES Inc

Ceramic Properties: Clay Smectite Synthetic: Thamyres de Carvalho¹; Camila Maggi¹; Margarita Bobadilla¹; Edemarino Hidélbrando²; Maria Silva-Valenzuela¹; Roberto Neves²; *Francisco Valenzuela - Diaz*¹; ¹Polytechnic School of the University of São Paulo; ²Federal University of Pará,

Application of Gas Pycnometry for Measurement of Absolute Specific Mass, Open Porosity and Cellulose Content in Mallow Natural Fibers.: Lucio Nascimento¹; *Sérgio Monteiro*¹; Jheison dos Santos¹; Luana Demosthenes¹; Ulisses Oliveira¹; ¹Instituto Militar de Engenharia

Characterization Chemical and Instrumental of a Sulphosalt Lead Type Jamesonita: *M Reyes Perez*; Francisco Barrientos; Miguel Perez Labra; Julio Juarez Tapia; Elia Palacios Beas; Ivan Reyes Dominguez; Mizraim Flores Guerrero; Michell Teja Ruiz; Carlos Gutierrez Garcia

Characterization of a composite of High Impact Polystyrene, pseudo-bohemite and graphene oxide: *Antonio Munhoz*¹; Caroline Valadão Pacheco¹; Henrique Tadeu T. S. Melo²; Renato Meneghetti Peres¹; Leonardo Gondim de Andrade e Silva³; Leila Figueiredo de Miranda¹; Marcos Romero Filho¹; ¹U.P.Mackenzie; ²UNIGEL; ³IPEN

Characterization of printed circuit boards of obsolete (PCBs) aimed at the production of copper nanoparticles: Thamiris Martins¹; Karen Gomes²; Carlos Rosario¹; *Denise Espinosa*¹; Jorge Tenório¹; ¹University of São Paulo; ²Faculdades Oswaldo Cruz

Characterization of Fique Fibers Functional Groups by Infrared Spectroscopy: *Artur Campos Pereira*¹; Sergio Monteiro²; Michelle Oliveira²; Foluke de Assis²; ¹Unif Rio De Janeiro; ²Military Institute of Engineering

Characterization of antistatic packaging based on PET/rGO: *Leila Miranda*¹; Antonio Munhoz Junior¹; Terezinha Masson¹; Leonardo Andrade e Silva¹; Karl Friehe¹; ¹Universidade Presbiteriana Mackenzie

Characterization of Oxides from Al-Mg-Zn Alloys with Heat Treatment, with Scanning Electron Microscopy and Fluorescence Microscopy: Aline Hernández¹; Bernardo Campillo²; Sergio Serna³; Álvaro Torres⁴; *Natalia Loera*¹; ¹Facultad de Ingeniería, Universidad Anáhuac México; ²Facultad de Química, Universidad Nacional Autónoma de México; ³UAEM; ⁴CENIDET

Determination of Service Life of Red Ceramic Pieces Incorporated with Ornamental Stone Residue: *Gustavo Xavier*¹; Afonso Azevedo²; Jonas Alexandre¹; Markssuel Marvila¹; Euzébio Zanelato¹; Sergio Monteiro²; ¹UENF; ²Instituto Federal Fluminense; ³IME

Comparative Analysis of Dynamic Impact Tests Between the Charpy V - Notch Test and the Drop Tower Test: *Juan Escobedo-Díaz*¹; Chaitanya Gunturi¹; Md. Islam Ashraf¹; ¹University of New South Wales

Development of biocomposite materials from biodegradable polymer and bio-hydroxyapatite derived from eggshells for biomedical applications: Pedro Reis¹; Julyana Santana¹; Rene Oliveira¹; Vijaya Rangari¹; Felipe Lourenço¹; *Esperidiana Moura*¹; ¹Inst De Pesquisas Energéticas E Nucleares

Development of methodology for the characterization and incorporation of waste from the paper industry in cementitious materials: *Afonso Azevedo*¹; Jonas Alexandre²; Markssuel Marvila²; Euzébio Zanelato²; Beatryz Mendes³; Niander Cerqueira²; Sergio Monteiro⁴; Gustavo Xavier²; Leonardo Pedroti³; Victor Souza³; ¹Instituto Federal Fluminense; ²UENF; ³UFV; ⁴IME; ⁵Uniredentor

Differences in Properties of Pro-degradant added PP and Gamma Irradiated PP Under Environmental Aging: Rebeca Romano¹; Washington Oliani; *Vijaya Kumar*²; Duclerc Parra¹; Ademar Lugão¹; ¹Nuclear Energy Research Inst – IPEN/USP; ²Tuskegee University

Discussion on the measures of Intelligent Manufacturing in Steel Industry of China: *Dongdong Zhou*¹; Ke Xu¹; Peng Zhou¹; ¹University of Science and Technology Beijing

Effect of phosphate antioxidant on resisting to buildups formation of carbon sleeves in continuous annealing furnace for silicon steel production: *He Mingsheng*¹; Bowen Li²; Xuecheng Gong³; Jing Zhang³; Wangzhi Zhou¹; Jian Xu³; ¹R&D Center of Wuhan Iron & Steel Co., Ltd; ²Department of Materials Science and Engineering, Michigan Technological University; ³Silicon Steel Division of Wuhan Iron & Steel Co., Ltd.

Effect of the incorporation of iron ore tailings on the properties of clay bricks: Beatryz Mendes¹; Leonardo Pedroti¹; Rita de Cássia Alvarenga¹; Mauricio Paulo Fontes¹; Pedro Drumond¹; Anderson Pacheco¹; Márcia Lopes¹; *Afonso Azevedo*²; ¹Federal University of Viçosa; ²State University of Northern Rio de Janeiro

Effect Study of the Incorporation of the Green Lake Clay in the Polypropylene Homopolymer Properties: Jorge Sales¹; Angel Ortiz¹; Patricia Poveda¹; Francisco R. Valenzuela-Díaz²; *Leonardo Silva*¹; ¹Instituto de Pesquisas Energéticas e Nucleares - IPEN-CNEN/SP; ²Universidade de São Paulo, Escola Politécnica, Dep. de Eng. Metalúrgica e de Materiais

Electron Beam Effect on the Thermal and Mechanical Properties Analysis of DGEBA/EPDM Compound: Anderson Mesquita¹; Ian Cavalcante¹; *Leonardo Silva*¹; ¹Instituto De Pesquisas Energéticas E Nucleares - IPEN

Energy Absorption by Aluminum Foam After Ballistic Impact: *Fabio Garcia Filho*¹; Sergio Monteiro¹; Luana Demosthenes¹; Michelle Oliveira¹; ¹Military Institute of Engineering

Evaluation of technological properties of soil-cement blocks using experimental design of mixtures: *Afonso Azevedo*¹; Jonas Alexandre²; Markssuel Marvila²; Euzébio Zanelato²; Gustavo Xavier²; Niander Aguiar²; Victor Souza³; Thuanny Lima⁴; Sergio Monteiro⁴; ¹Instituto Federal Fluminense; ²UENF; ³Uniredentor; ⁴IME

Evaluation of the adhesion of mortar to substrates by vertical launching: Euzébio Zanelato¹; Jonas Alexandre¹; *Afonso Azevedo*¹; Markssuel Marvila¹; Sergio Monteiro¹; Gustavo Xavier¹; ¹UENF

Exploration of humic as the binder of Silicon-based anode for Lithium-ion batteries: *Shuzhen Yang*¹; Guihong Han¹; Yanfang Huang¹; Jiongtian Liu¹; ¹Zhengzhou University

High-resolution transmission electron microscopy of interfacial phases at twin boundaries in β titanium alloys: *Jian Sun*¹; ¹Shanghai Jiao Tong University

Impact Response of Bamboo *Guadua Angustifolia* Kunth: Julian Rua¹; Mario Buchely²; *Henry Colorado*¹; ¹Universidad De Antioquia; ²Missouri University of Science and Technology

Incorporation of EVA residue for production of lightweight concrete: Raiza Machado¹; Luiz Pereira¹; Euzébio Zanelato²; André Manhães¹; Markssuel Marvila¹; *Afonso Azevedo*¹; Jonas Alexandre²; Sergio Monteiro³; Lucio Petrucci¹; ¹UCAM; ²UENF; ³IME

Innovation of building materials: Ecological Bricks, Characterization of complementary inorganic raw materials: *Javier Flores-Badillo*¹; Adriana Rojas-León¹; Alma Román-Gutiérrez²; Juan Hernández-Ávila²; Eleazar Salinas-Rodríguez²; Christopher Contreras-López³; ¹Bio Tec de Hidalgo S. de R.L. de C.V.; ²Universidad Autónoma del Estado de Hidalgo; ³Universidad Nacional Autónoma de México

Investigation of Equipment Wear Issues in Biomass Pre-Processing and Pre-Treatment: *Jun Qu*¹; James Keiser¹; Vicki Thompson²; Erik Kuhn³; Ed Wolfrum³; ¹Oak Ridge National Laboratory; ²Idaho National Laboratory; ³National Renewable Energy Laboratory

Investigation on mechanical behaviors of polyamide 11 reinforced with halloysite nanotubes: *Danae Francisco*¹; Lucilene Paiva²; Wagner Aldeia³; Ademar Lugão³; Esperidiana Moura¹; ¹Nuclear & Energy Research Institute; ²Institute for Technological Research of State of São Paulo, IPT; ³Institute for Technological Research of State of São Paulo, IPT

Magnetic, Mossbauer and Structure Studies of Exchange Bias in Fe₃O₄-Gamma-Fe₂O₃ Core-Shell Nanoparticles of Fixed Core Diameter and Variable Shell Thicknesses: *Imaddin Al-Omari*¹; I. Obaidat²; C. Nayek²; K. Manna³; G. Bhattacharjee⁴; A. Gismelseed¹; ¹Sultan Qaboos University; ²United Arab Emirates University; ³Max-Planck-Institute for Chemical Physics of Solids; ⁴Saha Institute of Nuclear Physics

Manufacture and characterization of poly acrylonitrile modified with carbon nanofiber obtained by extrusion process: *Maria Evora*¹; Luiz Claudio Pardini²; Carla Lake³; Nilton Pereira Alves⁴; ¹Instituto de Estudos Avançados; ²Instituto Tecnológico de Aeronáutica/DCTA; ³Applied Sciences Inc.; ⁴Quimlab Científica Ltda

Measurement of SnO₂ nanoparticles coating on titanium oxide nanotube arrays using grazing incidence X-ray diffraction: *Tang Yunhui*¹; Bo Wang¹; Hongyi Li¹; Mingsheng He²; ¹Beijing Univ of Tech; ²R&D Center of WISCO

Microstructural and Mechanical Characterization of the Low Carbon Steel Nitrided at Different Condition: *Ariosto Medina*¹; Claudio Aguilar²; Luis Béjar¹; Jesús Valdes¹; Joaquín Oseguera³; ¹Universidad Michoacana de San Nicolás de Hidalgo; ²Universidad Técnica Federico Santa María; ³Instituto tecnológico y de Estudios Superiores de Monterrey Campus Estado de México

Microstructural characterisation of a high strength steel subjected to localised blast loading: *Simon Higgs*¹; Ali Ameri¹; Brodie McDonald²; Wayne Hutchinson¹; Huon Bornstein²; Juan Escobedo-Diaz¹; ¹University of New South Wales; ²DST-G

Mineralogical and morphological characterization of a steel slag: *Gustavo Lima*¹; Emerson Lopes¹; Leonardo Pedroti¹; Taciano Silva¹; ¹Federal Univ of Vicos

Mining Waste used as Ceramic Coating on Aluminum Alloy: *Maria Lucia Antunes*¹; Carime Souza¹; Renan Moraes¹; Elidiane Rangel¹; Nilson Cruz¹; Antonio Munhoz²; ¹Sao Paulo State University (UNESP); ²Mackenzie - Universidade Presbiteriana Mackenzie

A Study of the load stages by the displacement of mortars composed of ornamental stone residues by the method of squeeze flow: Pamela Moreira¹; Leticia Ciribelli¹; Gustavo Xavier¹; Jonas Alexandre¹; Gabrielly Azevedo¹; *Afonso Azevedo*²; Sergio Monteiro¹; Euzébio Zanelato¹; Markssuel Marvila¹; ¹UENF; ²Instituto Federal Fluminense

Mortars with pineapple fibers for use in structural reinforcement: Markssuel Marvila¹; Jonas Alexandre¹; *Afonso Azevedo*¹; Euzébio Zanelato¹; Sergio Monteiro²; Daiane Cecchin³; Lucas Amaral¹; ¹Universidade Estadual do Norte Fluminense Darcy Ribeiro; ²Instituto Militar de Engenharia; ³UFF

Multilayered Armor system with Guaruman Fiber Composite: *Raphael Reis*¹; Larissa Nunes¹; Fabio Filho¹; Sergio Monteiro¹; ¹IME

Obtainment and Characterization of Nanocellulose from Sugarcane Bagasse: Marcus Seixas¹; *Esperidiana Moura*²; Hélio Wiebeck¹; ¹University of Sao Paulo; ²IPEN

Performance of epoxy matrix reinforced with fique fibers in pullout tests: *Michelle Oliveira*¹; Artur Camposo¹; Fabio Garcia¹; Luana Demosthenes¹; Sergio Monteiro¹; ¹Militar Institute of Engineering

Physical property of molten Al₂O₃ and ZrO₂ measured by aerodynamic levitation technique: *Toshiki Kondo*¹; Hiroaki Muta¹; Ken Kurosaki¹; Yuji Ohishi¹; ¹Osaka Univ

Preparation and characterization of polypropylene nanocomposites reinforced with graphene oxide and reduced graphene oxide: *Carlos Soares*¹; Julyana Santana¹; Alex Monteiro¹; Rene Oliveira¹; Esperidiana Moura¹; ¹Nuclear & Energy Research Institute

Preparation and mechanical properties of PVA/Graphene oxide composite films: *Gustavo Farias*¹; Rene Oliveira¹; Julyana Santana¹; Esperidiana Moura¹; ¹Nuclear & Energy Research Institute

Production and characterization of polypropylene reinforced with piassava (*Attalea funifera* Martius) fiber and light green clay nanocomposites: *Sabrina Correia*¹; Pedro Cruz²; Tasson Rodrigues³; Alex Monteiro²; Francisco Valenzuela Díaz¹; Esperidiana Moura²; ¹University of Sao Paulo; ²Nuclear & Energy Research Institute; ³Butantan Institute

Properties of Residual Green Sand and the Possibility of Using it in the Production of Pressed Blocks: Victor Souza¹; *Niander Cerqueira*¹; Lucas Silva¹; Guilherme Coutinho¹; Amanda Lima¹; ¹Centro Universitário Redentor

Proposal of dosing of mortars using simplex network: Markssuel Marvila¹; Jonas Alexandre¹; *Afonso Azevedo*¹; Euzébio Zanelato¹; Sergio Monteiro²; Niander Cerqueira¹; ¹Universidade Estadual do Norte Fluminense Darcy Ribeiro; ²IME

Recycled gypsum particles incorporation in recycled expanded polystyrene by biodegradable solvent – preparation and characterization: *Suellen Bartolomei*¹; Esperidiana Moura²; Helio Wiebeck¹; ¹University of Sao Paulo; ²Nuclear & Energy Research Institute

Recycling of Textile Polyamide Residues: *Mariana Sartori*¹; Leonardo Silva¹; ¹Nuclear and Energy Research Institute

Simvastatin release with pseudoboehmite nanoparticles: *Antonio Munhoz*¹; Bruno Sarmento²; Eloi Lazarin Junior¹; Marcos Antonio Agueña Herrera Vicente¹; Mariana Oliva de Oliveira¹; Renato Meneghetti Peres¹; Roberto Rodrigues Ribeiro¹; Leila Figueiredo de Miranda¹; Maura Vincenza Rossi¹; ¹U.P.Mackenzie; ²Instituto Nacional de Engenharia Biomédica/ Instituto de Investigação e Inovação em Saúde (INEB/i3S), Universidade do Porto, e Professor Auxiliar no Instituto Universitário de Ciências da Saúde (IUCS)

Structural Analysis of Sintered Products of BaTiO₃ Doped with Sm³⁺: *J.P. Hernández-Lara*¹; Miguel Perez-Labra¹; C.C. Gutierrez-Hernández¹; F. R. Barrientos-Hernández¹; J. A. Romero-Serrano²; A. Hernández-Ramírez²; M. Reyes-Pérez¹; J. C. Juárez-Tapia¹; V. E. Reyes-Cruz¹; ¹UAEH Mexico; ²ESIQIE-IPN México

Structural concrete with addition of pseudoboehmite: *Antonio Munhoz*¹; Romualdo Emilio¹; Nelson Batista de Lima²; Renato Meneghetti Peres¹; Terezinha Jocelen Masson¹; Leila Figueiredo de Miranda¹; Maria Lúcia Pereira Antunes³; ¹U.P.Mackenzie; ²IPEN; ³UNESP - Campus Sorocaba

Study of the Electrical Properties of rGO Obtained by Different GO Reduction Methods: *Leila Miranda*¹; Paulo Victor Gomes¹; Fabio Jesus Almeida¹; Leonardo Andrade e Silva²; Antonio Munhoz Junior²; Terezinha Masson²; ¹Universidade Presbiteriana Mackenzie; ²Instituto de Pesquisas Energéticas e Nucleares

Study of the Influence of Organic Peroxide and Elastomeric Modifier in the Mechanical and Flow Properties of the Recycled Polypropylene: Patricia Poveda¹; *Leonardo Silva*¹; ¹University of Sao Paulo

Synthesis and Ferroelectric Properties of BaTiO₃-Based Ceramics Doped with La³⁺ by Solid State Route: *Barrientos Hernández Francisco Raúl*¹; Pérez Labra Miguel¹; Juárez Tapia Julio César¹; Reyes Pérez Martín¹; Hernández Lara Juan Pablo¹; Cardoso Legorreta Edgar¹; ¹Universidad Autónoma del Estado de Hidalgo

Synthesis and structural characterization of europium titania (Eu₂TiO₅): *Juan Pablo Hernandez Lara*¹; Miguel Perez Labra¹; Francisco Raúl Barrientos Hernández¹; Aurelio Hernández Ramírez²; José Antonio Romero Serrano²; Martin Reyes Peréz¹; Julio Cesar Juárez Tapia¹; A. M. Teja-Ruiz¹; ¹Aactym-Uaeh; ²ESIQIE-IPN

The comparison of mechanical properties on Ni-base superalloy casting alloys for A-USC power generation application: *Jaihyun Park*¹; ¹Rist

The Properties of the Soil in the Municipal Area of Campos Dos Goytacazes - RJ, Brazil, and the Possibility of Its Use in the Production on Pressed Blocks: *Niander Cerqueira*¹; Victor Souza²; Guilherme Coutinho²; Lucas Silva²; Afonso Azevedo¹; Daniel Gallo²; Euzébio Zanelato¹; ¹Uenf; ²UNIREDENTOR

The use of the irradiation process for the incorporation of silver nanoparticles in Central Venous catheter (CVC) of polyurethane coated with titanium oxide: *Leonardo Gondim De Andrade E Silva*¹; Patricia Freitas¹; ¹Instituto De Pesquisas Energéticas E Nucleares

Thermal Conductivity of Liquid Phase Al-Si Alloys: *Yifan Sun*¹; Hiroaki Muta¹; Ken Kurosaki¹; Yuji Ohishi¹; ¹Osaka University

Thermomechanical and Morphological Characterization of Hydrophilic Membranes Based on PVP Reinforced with Chitosan and Pseudoboehmite: *Leila Miranda*¹; Isabella Tereza Barbosa¹; Leonardo Andrade e Silva¹; Antonio Munhoz Junior¹; Terezinha Masson¹; ¹Universidade Presbiteriana Mackenzie

Thermophysical properties of molten Zr-O measured by electrostatic levitation: *Kouta Kurokawa*¹; Hiroaki Muta¹; Ken Kurosaki¹; Yuji Ohishi¹; ¹Osaka University

Waste Electrical and Electronic Equipment (WEEE) added to Concrete: *Maria Lucia Antunes*¹; Flavia Almeida¹; Paulo Oliveira²; Sandro Mancini¹; Antonio Munhoz³; Afonso Azevedo⁴; ¹Sao Paulo State University (UNESP); ²Uniso Universidade de Sorocaba; ³Mackenzie - Universidade Presbiteriana Mackenzie; ⁴IFF - Instituto Federal fluminense

Study On Powder and 3D Printing Properties of 316L Stainless Steel prepared by Vacuum Gas Atomization: *Likun Li*¹; ¹Wuhan Iron and Steel Research Inst

Comparative study of the use of rice husk ashes and graphite as fillers in polypropylene matrix composites: Alex Monteiro¹; Daili Barreira¹; Rene Oliveira¹; Suellen Bartolomei¹; *Esperidiana Moura*¹; ¹Nuclear & Energy Research Institute

Computational Approaches for Big Data, Artificial Intelligence and Uncertainty Quantification in Computational Materials Science — Poster Session

Sponsored by: TMS: Computational Materials Science and Engineering Committee

Program Organizers: Liang Qi, University of Michigan; Francesca Tavazza, National Institute of Standards and Technology; Christopher Woodward, Air Force Research Laboratory; Adrian Sabau, Oak Ridge National Laboratory; Houlong Zhuang, Arizona State University; Sugata Chowdhury, National Institute of Standards and Technology

Tuesday PM
March 12, 2019

Room: Hall 3
Location: Henry B. Gonzalez
Convention Center

Efficacy of a mathematical model in mimicking trabecular bone structures using deep learning techniques: Neda Shafiei¹; Joel Gomez¹; Edward Guo²; *Xiaodu Wang*¹; ¹UTSA; ²Columbia University

Material parameter estimation for phase-field model of binary alloy solidification using EnKF-based data assimilation: *Kazuki Takahashi*¹; Akinori Yamanaka¹; Kengo Sasaki²; ¹Tokyo University of Agriculture and Technology; ²Kozo Keikaku Engineering Inc.

near and far field information theory representative of shock waves: *James Kahelin*¹; ¹San Diego State University

Prediction of biaxial tensile deformation behavior of aluminum alloy using crystal plasticity finite element method and machine learning: *Kohta Koenuma*¹; Akinori Yamanaka¹; Toshihiko Kuwabara¹; ¹Tokyo University of Agriculture and Technology

Sequential Experiments Design for Acceleration the Developments of NiTi-based Shape Memory Alloys: *Sen Liu*¹; Behnam Amin-Ahmadi¹; Branden Kappes¹; Aaron Stebner¹; Xiaoli Zhang¹; ¹Colorado School of Mines

Thermocouple temperature measurement and thermal modelling of Zircaloy-4 during Electron Beam welding: *Lord Nayak*¹; ¹Indian Institute of Technology Kharagpur

Computational Materials Discovery and Design — Poster Session

Sponsored by: TMS: Computational Materials Science and Engineering Committee

Program Organizers: Oliver Johnson, Brigham Young University; Arunima Singh, Arizona State University; Jake Bair, Pacific Northwest National Lab; Christopher Weinberger, Colorado State University; Timofey Frolov, Lawrence Livermore National Laboratory; Ning Zhang, Colorado School of Mines; Fadi Abdeljawad, Clemson University; Richard Hennig, Univ of Florida; Mikhail Mendelev, Ames Laboratory; Avinash Dongare, University of Connecticut

Tuesday PM
March 12, 2019

Room: Hall 3
Location: Henry B. Gonzalez
Convention Center

A Systematic Approach Providing Guaranteed Estimation of Steel Products Performance Potentials: *Igor Tkachenko*¹; Kostyantyn Tkachenko¹; Victoria Miroshnichenko¹; ¹Priazovskiy State Technical University

Electric properties of isovalently substituted Bi₂O₂Se: a computational study: *Kerong Hu*¹; Jian Han¹; Ben Xu¹; ¹Tsinghua University

Computational Thermodynamics and Kinetics — Poster Session

Sponsored by: TMS: Computational Materials Science and Engineering Committee

Program Organizers: Fadi Abdeljawad, Clemson University; Hesam Askari, University of Rochester; Emine Gulsoy, Northwestern Univ; Joel Berry, University of Pennsylvania; Damien Tournet, IMDEA Materials; Mohsen Asle Zaeem, Colorado School of Mines; James Morris, Oak Ridge National Laboratory

Tuesday PM
March 12, 2019

Room: Hall 3
Location: Henry B. Gonzalez
Convention Center

A New Method for Calculation of Vapor-Liquid Equilibrium (VLE) Of Au-Cu Alloy System: *Lingxin Kong*¹; Jingbao Gao¹; Junjie Xu¹; Baoqiang Xu¹; Bin Yang¹; Yifu Li¹; ¹Kust

Ab Initio Study on the Oxidation Mechanism of Millerite: *Xiaolu Xiong*¹; Xionggang Lu¹; Guangshi Li¹; Hongwei Cheng¹; Qian Xu¹; Shenggang Li²; ¹Shanghai University; ²Key Laboratory of Low-Carbon Conversion Science and Engineering, Shanghai Advanced Research Institute, Chinese Academy of Sciences

Diffusion Kinetics of Vacancy in Hydrogen Environment: First-Principles and Molecular Dynamics Modeling and Simulation: *Jun-Ping Du*¹; W. T. Geng²; Kazuto Arakawa³; Shigenobu Ogata²; ¹Kyoto University; ²Osaka University; ³Shimane University

Effect of substituted atoms for stacking fault formation in LPSO system: *Shoya Kawano*¹; Satoshi Iikubo¹; ¹Kyushu Institute of Technology

Kinetic Model of Silica Dissolution in CaO-SiO₂-MgO-Al₂O₃ Slag System: *Haiwei An*¹; Jie Li¹; Aimin Yang¹; Weixing Liu¹; Can Tian¹; ¹North China University of Science and Technology

The effect of solute concentration on the η phase formation in Ni based superalloys: *You Rao*¹; Maryam Ghazisaeidi¹; ¹Ohio State University

Fracture Processes of Thin Films and Nanomaterials — Poster Session

Sponsored by: TMS Materials Processing and Manufacturing Division, TMS: Nanomechanical Materials Behavior Committee
Program Organizers: Daniel Kiener, University of Leoben; Megan Cordill, Erich Schmid Institute; Johannes Ast, Empa, Swiss Federal Laboratories for Materials Science and Technology; Brad Boyce, Sandia National Labs

Tuesday PM
March 12, 2019

Room: Hall 3
Location: Henry B. Gonzalez
Convention Center

Session Chairs: Daniel Kiener, Montanuniversität Leoben; Megan Cordill, Erich Schmid Institute of Materials Science

Cohesive and adhesive failure of Cu-Zr amorphous films on polyimide substrates: Effects of deformation-induced devitrification: *Kai Wu*¹; Jinyu Zhang¹; Gang Liu¹; Jun Sun¹; ¹Xi'an Jiaotong University

Dislocation-induced ratcheting failure in single crystalline face centered cubic thin films: *Nicole Aragon*¹; Ill Ryu¹; ¹University of Texas At Dallas

Factors controlling thin film adhesion of nanocrystalline NiW alloys: *Longchang Ni*¹; Ryan Pocratsky¹; Maarten de Boer¹; ¹Carnegie Mellon University

Planarity of Deformation and Representative Volume Elements of Heterogeneous Network Thin Films: Sarah Paluskiewicz¹; Christopher Muhlstein¹; ¹Georgia Institute of Tech

Tearing and Damage Evolution in Al Thin Films: Camilla Johnson¹; Syed Javaid¹; Wade Lanning¹; Christopher Muhlstein¹; ¹Georgia Institute of Tech

Zones of Active Plasticity: The Three Damage Zones in Ductile Tearing of Metallic Thin Films: Syed Javaid¹; Wade Lanning¹; Christopher Muhlstein¹; ¹Georgia Institute of Tech

Gamma (FCC)/Gamma-Prime (L12) Co-Based Superalloys III — Poster Session

Sponsored by: TMS: High Temperature Alloys Committee, TMS: Integrated Computational Materials Engineering Committee
Program Organizers: Michael Titus, Purdue University; David Dye, Imperial College; Eric Lass, National Institute of Standards and Technology; Katelun Wertz, Air Force Research Laboratory; Christopher Zenk, Ohio State University

Tuesday PM
March 12, 2019

Room: Hall 3
Location: Henry B. Gonzalez
Convention Center

Diffusion in FCC Co-rich Co-Cr-Ni-Ta Alloys: Kil-Won Moon¹; M. E. Williams¹; C. E. Campbell¹; ¹NIST

Effects of Cr and Al additions on the microstructure and mechanical properties of Co-Ti-W based alloys: Boryung Yoo¹; Hye Ji Im¹; Jae-Bok Seo²; Pyuck-Pa Choi¹; ¹KAIST; ²NINT

The effect of titanium on the tungsten-free cobalt-base superalloys: Semanti Mukhopadhyay¹; Prafull Pandey²; Surendra Makineni³; Krishanu Biswas⁴; Kamanio Chattopadhyay²; Dierk Raabe³; Baptiste Gault³; ¹The Ohio State University; ²Indian Institute of Science; ³Max-Planck-Institut für Eisenforschung GmbH; ⁴Indian Institute of Technology Kanpur

Green Materials Engineering: An EPD Symposium in Honor of Sergio Monteiro — Poster Session

Sponsored by: TMS: Materials Characterization Committee
Program Organizers: Shadia Ikhamyies, Al Isra University; Jian Li, Canmetmaterials; Carlos Mauricio Vieira, State University of the North Fluminense; Fabio Braga, Military Institute of Engineering

Tuesday PM
March 12, 2019

Room: Hall 3
Location: Henry B. Gonzalez
Convention Center

Artificial Stones from Marble Waste: Ruben Jesus Rodriguez¹; Fernanda Souza¹; Tcharllis Dimartini¹; Carlos E. Ribeiro²; ¹Universidade Estadual Do Norte Fluminense E; ²Instituto Federal do Espirito Santo

Technological Properties of Brick Waste-Based Geopolymer: Kátia Faria¹; Carlos Mauricio Fontes Vieira¹; Dylmar Dias¹; Marcos Yuri Silva Fagundes¹; Wesley Macario Ferreira¹; ¹Universidade Estadual Norte Fluminense Darcy Ribeiro

Charpy Impact Test of Polymeric Composites with Epoxy Resin Reinforced by Jute Fabric: José Machado¹; Juliana Carvalho¹; Anna Carolina Neves¹; Felipe Lopes¹; Sérgio Monteiro¹; Carlos Vieira¹; ¹State University of Northern of Rio de Janeiro, UENF

Evaluation of Feldspathic Rock Waste on the Production of Structural Ceramics with Greater Value Added: Lucas Amaral¹; Geovana Carla Delaqua¹; Micaela Nicolite¹; Carlos Mauricio Vieira¹; Sérgio Neves²; ¹State University of Northern Rio de Janeiro; ²Military Engineering Institute

Evaluation of mechanical, thermal, and hydrophobic properties in blends before and after the incorporation of organic compound and SiO₂: Julio Harada¹; Alana Souza¹; Daniel Rocha¹; Leonardo Silva²; Derval Rosa¹; ¹UFABC; ²IPEN

Use of Waste of Ornamental Stone in Ceramic Mass Incorporation in Brazil: Maria Angélica Kramer Sant'Ana Sant'Ana¹; Mônica Castoldi Borlini Gadioli¹; Michelle Pereira Babisk²; Elaine Carvalho²; Carlos Mauricio Vieira²; ¹Mineral Technology Center; ²State University of the Northern Rio de Janeiro

Evaluation of the mechanical characteristics of geopolymerized ceramic from granulated blast furnace slag: Kátia Faria¹; Carlos Mauricio Fontes Vieira¹; Wesley Macario Ferreira¹; Marcos Yuri Silva Fagundes¹; ¹Universidade Estadual Norte Fluminense Darcy Ribeiro

Flexural test of composite eco-friendly composites reinforced by piassava fiber: Juliana Carvalho¹; Juliana Faria¹; Felipe Lopes¹; Sérgio Monteiro¹; Carlos Vieira¹; ¹State University of Northern of Rio de Janeiro, UENF

Influence of Eletrofunded Alumina Residue on Red Ceramic Properties: Micaela Nicolite¹; Lucas Amaral¹; Geovana Carla Delaqua¹; Fernando Vernilli²; Carlos Mauricio Vieira¹; Sérgio Neves³; ¹State University of Northern Rio de Janeiro; ²University of Sao Paulo; ³Military Engineering Institute

Izod impact test in polyurethane matrix composites reinforced with fabric of cotton fiber: Carolina Ribeiro¹; Juliana Carvalho¹; Felipe Lopes¹; Sérgio Monteiro¹; Carlos Vieira¹; ¹UENF

Mechanical Resistance of Artificial Stone Composite Using Waste from Fluorescent Lamp Glass in Polymeric Matrix: Lucas Martins¹; Elaine Carvalho¹; Carlos Mauricio Vieira¹; Larissa Ribeiro¹; ¹Uenf

Performance of natural curaua non-woven fabric composites as stand-alone targets against standard 9 mm and 7.62 mm projectiles: Fabio Braga¹; Michelle Oliveira²; Fabio Garcia Filho²; Sergio Monteiro²; Édio Lima Jr.²; ¹Faculty of the National Service of Industrial Apprenticeship (SENAI); ²Military Institute of Engineering

Development of Silicate Glasses with Granite Waste: Michelle Babisk¹; Vinicius Gomes¹; Carlos Mauricio Vieira¹; Francisco Vidal¹; Monica Gadioli¹; Juraci Sampaio¹; ¹Universidade Estadual do Norte Fluminense Darcy Ribeiro

Reuse of quarry waste in artificial stone production with using vacuum, compression and vibration: Elaine Carvalho¹; Juan Peixoto Barroco Magalhães¹; Rubén Sánchez Rodríguez¹; Eduardo Carvalho¹; Sérgio Neves Monteiro²; Carlos Mauricio Vieira¹; ¹State University of the Northern Rio de Janeiro; ²IME-Military Engineering Institute

Reuse Of Quarry And Industrial Waste For The Production Of Artificial Ornamental Stones: Carlos Agrizzi¹; Carlos Mauricio Vieira¹; Elaine Carvalho¹; Mônica Gadioli²; ¹UENF; ²CETEM

Reuse of the iron ore residue through the production of coating: Elaine Carvalho¹; Larissa Ribeiro¹; Maria Luiza Menezes Gomes¹; Mônica Borlini¹; Carlos Mauricio Vieira¹; Sérgio Neves Monteiro²; ¹State University of the Northern Rio de Janeiro; ²IME-Military Engineering Institute

Study of the Technological Properties of Multiple Mortar Use with Efficient Addition of Rock Waste: Micaela Nicolite¹; Lucas Amaral¹; Geovana Carla Delaqua¹; Markssuel Marvila¹; Jonas Alexandre¹; Carlos Mauricio Vieira¹; Sérgio Neves²; ¹State University of Northern Rio de Janeiro; ²Military Engineering Institute

Soda-Lime Glass Waste Utilization for Red Ceramic Production: Pâmela Busch¹; Lucas Amaral¹; Geovana Carla Delaqua¹; Carlos Mauricio Vieira¹; Sérgio Neves²; ¹State University of Northern Rio de Janeiro; ²Military Engineering Institute

Study of the effect of incorporation of laminated flat glass' waste in a polymeric matrix: Maria Luiza Gomes¹; Juan Peixoto¹; Elaine Carvalho¹; Rubén Sánchez Rodríguez¹; Carlos Mauricio Vieira¹; ¹Universidade Estadual do Norte Fluminense Darcy Ribeiro

Study of the incorporation of waste from the paper industry in ceramic tiles: Afonso Azevedo¹; Beatryz Mendes²; Markssuel Marvila³; Jonas Alexandre³; Euzébio Zanelato³; Gustavo Xavier³; Niander Cerqueira³; Sergio Monteiro⁴; Thuanny Lima³; ¹Instituto Federal Fluminense; ²UFV; ³UENF; ⁴IME

High Entropy Alloys VII — Poster Session

Sponsored by: TMS: Alloy Phases Committee

Program Organizers: Xie Xie, FCA US LLC; Peter Liaw, University of Tennessee; Michael Gao, National Energy Technology Laboratory; E-Wen Huang, National Chiao Tung University; Gongyao Wang, Alcoa Technical Center; Srivatsan Tirumalai, The University of Akron

Tuesday PM
March 12, 2019

Room: Hall 3
Location: Henry B. Gonzalez
Convention Center

Effect of Stress Triaxiality and Strain Rate on the Failure Behavior of Cr-Mn-Fe-Co-Ni Alloys: JeongWon Yeh¹; Kook Noh Yoon¹; Hyun Seok Oh¹; Sang Jun Kim¹; Eun Soo Park¹; ¹Seoul National University

Fabrication and characterization of non-equiatom AlZnCuFeSi high entropy alloy by mechanical alloying: Ashutosh Sharma¹; Minseok Oh¹; Min Chul Oh¹; Byungmin Ahn¹; ¹Ajou University

First-Principles Prediction of AlCo and AlNi Phase Diagrams: Yang Huang¹; Michael Widom¹; ¹Carnegie Mellon University

Investigate the Microstructural Evolution and Mechanical-Properties Improvement of Two Refractory High-Entropy Alloy Systems: Xuesong Fan¹; Chanhoo Lee¹; Peter Liaw¹; ¹The University of Tennessee

Microstructural Evolution and Mechanical Properties of Quaternary AlCoCrNi High Entropy Alloy: Elyorjon Jumaev¹; Ki Buem Kim¹; Jin Kyu Lee²; Hyo Soo Lee³; ¹Sejong University; ²Kongju National University; ³Korea Institute of Industrial Technology

Production and Characterization of Reduced Graphene Oxide/FeNiCoCu High Entropy Alloy Nanocomposites: Serzat Safaltin¹; Burak Kucukelyas²; Sebahattin Gürmen¹; ¹Istanbul Technical University; ²Bursa Technical University

Si-content-dependent microstructures and mechanical properties of (AlCrTiZrNb)-Six-N high entropy films: Wei Li¹; Jingrui Niu¹; ¹University of Shanghai for Science and Technology

The Effects of Minor Alloying Elements on the He Bubble Formation Resistance of FeCoNiCr-based High-entropy Alloys: Da Chen¹; Yang Tong¹; Bin Han¹; Yilu Zhao¹; Jing-Jung Kai²; ¹City University of Hong Kong; ²City University of Hong Kong; National Tsing-Hua University

A thermodynamic modelling of spinodal decomposition solid-solution phases in the Al-Cu-Fe-Mn high-entropy alloy system: Hyeon-Seok Do¹; Jongun Moon¹; Hyoung Seop Kim¹; Byeong-Joo Lee¹; ¹Pohang Inst of Science & Tech (POSTECH)

Calphad modeling and microstructure stability of novel refractory high entropy alloys NbMoCrTiAl and TaMoCrTiAl: Franz Mueller¹; Bronislava Gorr¹; Hans-Jürgen Christ¹; Hans Chen²; Alexander Kauffmann²; Martin Heilmaier²; ¹Universität Siegen; ²Karlsruher Institut für Technologie (KIT)

Combinatorial Screening Approach in Developing non-Equiatom High Entropy Alloys: Azin Akbari¹; Artashes Ter-Isahakyan¹; T John Balk¹; ¹Univ of Kentucky

Effect of Al and Si additions on the microstructure evolution during thermomechanical treatments of the equimolar CoCrFeMnNi alloy: Dorian Hachel¹; Stéphane Godet¹; Stéphane Gorsse²; Pascal Jacques³; ¹Université Libre de Bruxelles; ²CNRS, Univ. Bordeaux, ICMCB; ³Université Catholique de Louvain

Effect of annealing heat treatment on microstructural evolution and tensile behavior of Al_{0.5}CoCrFeMnNi high-entropy alloy: Jeong Min Park¹; Jongun Moon¹; Jae Wung Bae¹; Jaimyun Jung¹; Sunghak Lee¹; Hyoung Seop Kim¹; ¹Pohang University of Science and Technology

Effect of composition on microstructure and deformation behavior of thin film AlCoCrFeNi-based high-entropy alloys: Seungjin Nam¹; Junyeon Hwang²; Jaebeom Lee³; Jiyoung Kim³; Moon Kim³; Hyunjoo Choi¹; ¹Kookmin Univ; ²Korea Institute of Science and Technology; ³The University of Texas at Dallas

First-principles methods of investigating elastic properties and stacking fault energies in refractory BCC high-entropy alloys: Joshua Strother¹; Alexandra Scheer¹; Chelsey Hargather¹; ¹New Mexico Institute of Mining & Technology

High-throughput experimental design of high-entropy alloys: Antoine Hilhorst¹; Pierre Bille¹; Audrey Favache¹; Pascal Jacques¹; ¹UCLouvain - iMMC

Hydrogen embrittlement and diffusion behavior of high entropy alloy (Co_{0.2}Cr_{0.2}Fe_{0.2}Mn_{0.2}Ni_{0.2}): Junghoon Lee¹; Cheolho Park¹; Namhyun Kang¹; Kyungmox Cho¹; Youngsang Na²; Hyoungseop Kim³; ¹Pusan National University; ²Korea Institute of Materials Science; ³Pohang University of Science and Technology

Implication of laser beam welding on the microstructure and corrosion behavior of Al_{0.5}CoCrFeNi high-entropy alloy: Sokkalingam R¹; Sivaprasad K¹; Muthupandi V¹; Duraiselvam Muthukannan¹; ¹National Institute of Technology, Tiruchirappalli

Investigation of Interdiffusion in Fe-Ni-Co-Cr-Mn System: Vivek Verma¹; Kaustubh Kulkarni¹; ¹Indian Institute Of Technology Kanpur

Microstructural Evolution of a Transformation Induced Plasticity High Entropy Alloy upon Friction Stir Processing: Michael Frank¹; Saurabh Nene¹; Subhasis Sinha¹; Kaimiao Liu¹; Rajiv Mishra¹; Kyu Cho¹; Brandon McWilliams¹; ¹University of North Texas

Molecular Dynamics Simulations on the Mechanical Behavior of AlCoCrCu_{0.5}FeNi High-entropy Alloy Nanopillars: Wei Li¹; Jing Tang¹; Qingyuan Wang¹; Haidong Fan¹; ¹Sichuan University

Role of alloying elements on the phase stability and soft magnetic properties of AlFeCoCrMn high entropy alloys: Chanwon Jung¹; Ku Kang¹; Amalraj Marshal²; Konda Pradeep³; Jae-Bok Seol⁴; Hyuck Mo Lee¹; Pyuck-Pa Choi¹; ¹Korea Advanced Institute of Science and Technology (KAIST); ²RWTH Aachen University; ³Indian Institute of Technology Madras; ⁴National Institute for Nanomaterials Technology (NINT) POSTECH

Study of Serrated Plastic Deformation of Equiatom CoCrFeMnNi at Cryogenic Temperatures: Aditya Srinivasan Tirumilai¹; Jan Sas²; Klaus-Peter Weiss²; Hans Chen¹; David Geissler³; Jens Freudenberger¹; Martin Heilmaier¹; Alexander Kauffmann¹; ¹Institute for Applied Materials, Karlsruhe Institute of Technology; ²Institute for Technical Physics, Karlsruhe Institute of Technology; ³Leibniz Institute for Solid State and Materials Research Dresden; ⁴Leibniz Institute for Solid State and Materials Research Dresden

Mechanical Behavior and Phase Evolution in the MnFeCoNiCu High Entropy Alloy System: Benjamin MacDonald¹; Zhiqiang Fu¹; Lakshmi Sravani Mantha²; Julia Ivanisenko²; Weiping Chen³; Yizhang Zhou¹; Christian Kübel²; Horst Hahn²; Enrique Lavernia¹; ¹Univ of California Irvine; ²Karlsruhe Institute of Technology; ³South China University of Technology

Orientation and carbon content dependence of twinning in single crystalline FeMnCoCrNi high-entropy alloys: Sezer Picak¹; Peyman Samimi²; Irina V. Kireeva³; Yuri I. Chumlyakov³; Ibrahim Karaman²; ¹Department of Mechanical Engineering, Texas A&M University; ²Department of Materials Science and Engineering, Texas A&M University; ³Tomsk State University, Siberian Physical Technical Institute

A comparative study of critical pitting temperature (CPT) of CoCrFeNi and CoCrFeNiMn high entropy alloys: Hamid Torbati-Sarrafi¹; Mitra Shabanisamghabady¹; Garrett J. Pataky¹; Paul Jablonski²; Amir Poursaei¹; ¹Clemson University; ²National Energy Technology Laboratory

Computational design of high strength high-entropy alloys: Won-Mi Choi¹; Yong Hee Jo¹; Sunghak Lee¹; Byeong-Joo Lee¹; ¹Pohang Institute of Science & Technology

Deformation-induced amorphization generates a novel serrated behavior in an FCC structured high-entropy alloy: *Kaisheng Ming*¹; Xiaofang Bi²; Jian Wang¹; ¹University of Nebraska-Lincoln; ²Beihang University

Effects of Ti and Al Additions on Irradiation Behavior of FeMnNiCr Based High Entropy Alloys: *Andrew Hoffman*¹; Haiming Wen¹; Li He²; Kumar Sridharan²; ¹Missouri University of Science & Technology; ²University of Wisconsin

Extreme Stereochemically-Driven Magnetic Disorder in Entropy-Stabilized Oxides: *Peter Meisenheimer*¹; Logan Williams¹; Emmanouil Kioupakis¹; John Heron¹; ¹Univ of Michigan

On the characterization of the exceptional fracture toughness of CrMnFeCoNi high entropy alloy: *Antoine Hilhorst*¹; Thomas Pardoën¹; Pascal Jacques¹; ¹UCLouvain - iMMC

On the transformation-induced plasticity in non-equiatomic FeCoNiCr medium-entropy alloys: *Jae Wung Bae*¹; Jaimyun Jung¹; Jeong Min Park¹; Jung Gi Kim¹; Ji Hyun Moon¹; Stefanus Harjo²; Hyoung Seop Kim¹; ¹Center for High Entropy Alloys, Pohang University of Science and Technology (POSTECH); ²Japan Proton Accelerator Research Complex

Phase-Field Modelling of Transformation Pathway in High-Entropy Alloys (HEAs): *Kamalnath Kadirvel*¹; Yunzhi Wang¹; Hamish Fraser¹; Taiwu Yu¹; Longsheng Feng¹; Jacob Jensen¹; ¹Ohio State University

Mechanical Behavior Related to Interface Physics III — Poster Session

Sponsored by: TMS Materials Processing and Manufacturing Division, TMS: Nanomechanical Materials Behavior Committee
Program Organizers: Jason Trelewicz, Stony Brook University; Nathan Mara, University of Minnesota; Erica Lilleodden, Helmholtz-Zentrum Geesthacht; Siddhartha Pathak, University of Nevada, Reno; Jordan Weaver, National Institute of Standards and Technology; Marc Legros, CEMES-CNRS

Tuesday PM
March 12, 2019

Room: Hall 3
Location: Henry B. Gonzalez
Convention Center

3D Crystal Plasticity Finite Element Modeling of Metallic Nanolayers: *Zara Molaeeinia*¹; David Bahr¹; ¹Purdue University

Application of small scale mechanical testing to link interface properties to macroscopic hysteresis behavior of SiC/SiC composites: *Joseph Kabel*¹; Darren Parkison¹; Christian Deck²; Yutai Katoh³; Peter Hosemann¹; ¹Univ of California Berkeley; ²General Atomics; ³ORNL

Atomic Scale Study of the Role of Interface Structure, Spacing and Orientation on the Shock Response and Spall Failure of Cu/Ag Multilayer Systems: *Cong Hu*¹; Jie Chen¹; Avinash Dongare¹; ¹University of Connecticut

Atomistic study of the graphene nanobubbles: *Petr Zhilyaev*¹; Evgeny Iakovlev¹; Iskander Akhatov¹; ¹Skolkovo institute for science and technology

Characterization of Microstructure Instability in Ultra-fine Grained Aluminum Films via in-situ TEM Deformation with Automated Crystal Orientation Mapping (ACOM): *Benjamin Shaffer*¹; E Izadi¹; Saul Opie¹; Vikram Bathala¹; Jagannathan Rajagopalan¹; Pedro Peralta¹; ¹Arizona State Univ

Creep of freestanding nanocrystalline NiW thin films using an innovative MEMs test platform: *Ryan Pocratsky*¹; Longchang Ni¹; Maarten de Boer¹; ¹Carnegie Mellon University

Deformation mechanisms of nanocrystalline Cu-Ta alloys: *Raj K. Koju*¹; Kiran Solanki²; Kris A. Darling³; Yuri Mishin¹; ¹George Mason University; ²Arizona State University; ³Army Research Laboratory

Effect of Imperfections on the Energetic and Mechanical Characteristics of Semi-coherent Interfaces: *Mohammad Dodaran*¹; Dorel Moldovan¹; Wenjin Meng¹; Shuai Shao¹; ¹Louisiana state university

Effect of Orientation, Interface Structure, and Interface Chemistry on the Mechanical Response of Pearlite: *Matthew Guzewski*¹; Shawn Coleman¹; Christopher Weinberger²; ¹Army Research Laboratory; ²Colorado State Univ

Engineering Metal-MAX Multilayered Nanocomposites: Hierarchical Microstructures for Tunable Strength and Toughness: *Siddhartha Pathak*¹; Garritt Tucker²; ¹University of Nevada Reno; ²Colorado School of Mines

Investigating the Local Fatigue Properties of Materials and Interfaces in Small Dimensions by Dynamic Micropillar Compression: *Benoit Merle*¹; ¹University Erlangen-Nürnberg (FAU)

Investigating the thermo-mechanical stability of grain boundaries in nanocrystalline alloys: *Ankit Gupta*¹; Gregory Thompson²; Garritt Tucker¹; ¹Colorado School of Mines; ²University of Alabama

Investigation of metal/ceramic interface toughness for design of novel material: *Maeva Cottura*¹; Mark Asta²; ¹UC Berkeley & Institut Jean Lamour; ²UC Berkeley

Magnetic flux trapping at grain boundaries in niobium: A first-principles study: *Pulkit Garg*¹; Lance Cooley²; Thomas Bieler³; Kiran Solanki¹; ¹Arizona State University; ²Florida State University; ³Michigan State University

Mechanical behavior of nanotwinned metals under micropillar compression: An in situ study: *Jin Li*¹; Tongjun Niu¹; Jie Ding¹; Jaehun Cho¹; Sichuang Xue¹; Zhe Fan¹; Yifan Zhang¹; Haiyan Wang¹; Xinghang Zhang¹; ¹Purdue Univ

Probing the Friction Behavior of BCC Metals: *Adam Hinkle*¹; John Curry¹; Andrew Kustas¹; Nicolas Argibay¹; Michael Chandross¹; ¹Sandia National Laboratory

Qualitative Analysis and Modelling of Deformation in Proton Irradiated Nanocrystalline Copper Tantalum Alloy: *Priyam Patki*¹; Yaqiao Wu²; Janelle Wharry¹; ¹Purdue University; ²Boise State University, Centre for Advanced Energy Studies

Quantitative modelling the yield strength of the non-equilibrium polycrystalline Ti alloys: *Guo-Hua Zhao*¹; Madeleine Bignon²; Pedro Eduardo Jose Rivera-Diaz-del-Castillo¹; ¹Lancaster University; ²Université de Nantes

Role of Nanocrystalline Interfaces on the Shock Response and Spall Failure of nanocrystalline nanocomposite Al-Si Systems at the Atomic Scales: *Sumit Suresh*¹; Avinash Dongare¹; ¹University Of Connecticut

Tensile deformation behavior and inelastic strain recovery in Cu/Co nanolaminates: *Rohit Berlia*¹; Jagannathan Rajagopalan¹; ¹Arizona State University

Texture evolution in accumulative rolled bonded Mg-Nb composites from polycrystal to single crystal layers: *Daniel Savage*¹; Irene Beyerlein²; Rodney McCabe³; John Carpenter³; Nathan Mara⁴; Sven Vogel³; Nan Li³; Marko Knezevic¹; ¹Univ of New Hampshire; ²University of California, Santa Barbara; ³Los Alamos National Laboratory; ⁴University of Minnesota, Minneapolis

The role of the electro-migration in radiation resistance of nanostructured ionic materials: *Adib Samin*¹; Edward Holby¹; David Andersson¹; Blas Uberuaga¹; ¹Los Alamos National Laboratory

Thermal stability of Metal-Polymer interfaces: *Barbara Putz*¹; Christoph Gammner¹; Megan Cordill¹; ¹Erich Schmid Institute for Materials Science

Tuning the mechanical behaviour of nanocrystalline austenitic steel by proton irradiation: *Markus Alfreider*¹; Peter Hosemann²; Daniel Kiener¹; ¹University of Leoben; ²University of California, Berkeley

Micro- and Nanomechanical Testing in Harsh Environments — Poster Session

Sponsored by: TMS Materials Processing and Manufacturing Division, TMS: Nanomechanical Materials Behavior Committee
Program Organizers: Verena Maier-Kiener, Montanuniversität Leoben; Sandra Korte-Kerzel, RWTH Aachen; Peter Hosemann, Univ of California; Afroz Barnoush, Ntnu; Jeffrey Wheeler, ETH Zurich; Dhriti Bhattacharyya, Australian Nuclear Science and Technology Organization

Tuesday PM
March 12, 2019

Room: Hall 3
Location: Henry B. Gonzalez
Convention Center

Nanotwinned Al-Fe solid solution alloys with high strength and enhanced thermal stability: *Qiang Li*¹; Sichuang Xue¹; Yifan Zhang¹; Jian Wang²; Haiyan Wang¹; Xinghang Zhang¹; ¹Purdue University; ²University of Nebraska Lincoln

Modeling and Simulation of Composite Materials — Poster Session

Sponsored by: TMS Structural Materials Division, TMS: Composite Materials Committee
Program Organizers: Rakesh Behera, New York University; Dinesh Pinisetty, CSU Maritime Academy; Dung Luong, Nyu

Tuesday PM
March 12, 2019

Room: Hall 3
Location: Henry B. Gonzalez
Convention Center

Multiscale modeling of graphene nanobubbles: *Evgeny Iakovlev*¹; Petr Zhilyaev¹; Iskander Akhatov¹; ¹Skolkovo Institute of Science and Technology

Nanoarchitected and Morphology-controlled Nanoporous Materials — Poster Session

Sponsored by: TMS Materials Processing and Manufacturing Division, TMS: Mechanical Behavior of Materials Committee
Program Organizers: Niaz Abdolrahim, University of Rochester; John Balk, Univ of Kentucky; Michael Demkowicz, Texas A&M Univ; Christoph Eberl, Fraunhofer IWM

Tuesday PM
March 12, 2019

Room: Hall 3
Location: Henry B. Gonzalez
Convention Center

Controllable metal nanostructures by thermoplastic drawing of metallic glasses: *Zhonglue Hu*¹; Golden Kumar¹; ¹Texas Tech Univ

High-performance hybrid electrode decorated by well-aligned nanoglass arrays for glucose sensing: *Rui Li*¹; Xiongjin Liu¹; Hui Wang¹; Yuan Wu¹; Zhaoping Lu¹; ¹University of Science and Technology Beijing

Mechanical Behavior of Inverse Opals: Mengqi Su¹; Lu An²; Gang Feng²; Di Zhang¹; ¹Valparaiso Univ; ²Villanova University

Numerical Investigation of Structure-Property Relationship in Porous Materials in Terms of Morphology and Topology: *Dongmyung Jung*¹; Yongwoo Kwon¹; ¹Hongik university

Synthesis of spherical strontium carbonate powders by hydrothermal method: *Xing Wu Zou*¹; Dongping Duan¹; Siming Chen¹; Shuxuan Wang¹; ¹Qinghai Institute of Salt Lakes, Chinese Academy of Sciences

Phase Transformations and Microstructural Evolution — Poster Session

Sponsored by: TMS: Phase Transformations Committee
Program Organizers: Sophie Primig, Univ of New South Wales; Deep Choudhuri, University of North Texas; Klaus-Dieter Liss, Guangdong Technion – Israel Institute of Technology; Megumi Kawasaki, Oregon State University; Matthew Steiner, University of Cincinnati; Yufeng Zheng, Ohio State University; Ashley Paz y Puente, University of Cincinnati; Juan Escobedo-Diaz, University of New South Wales; Dhriti Bhattacharyya, ANSTO; Rajarshi Banerjee, University of North Texas

Tuesday PM
March 12, 2019

Room: Hall 3
Location: Henry B. Gonzalez
Convention Center

Compositional Effects on Secondary Phases in Al Alloy Powders: *Kyle Fitzpatrick-Schmidt*¹; Victor Champagne²; Danielle Cote¹; ¹Worcester Polytechnic Institute; ²US Army Research Laboratory

Determination of Phase Transformations and Microstructure Evolution of Zr-based Alloys During Thermal Processing: *Clinique Brundidge*¹; John Seidensticker¹; Linda Rishel¹; Tyler Tenkku¹; ¹Naval Nuclear Laboratory

Development of an optimized castable nanostructured alloy: *Tim Graening*¹; Lizhen Tan²; Ying Yang²; Yutai Katoh²; ¹Karlsruhe Institute of Technology; ²Oak Ridge National Laboratory

Effect of Sm content and solidification rate on microstructure of SmFe alloy: *Kun Liu*¹; Yunli Feng¹; Chunyan Song¹; ¹North China University of Science and Technology

Eutectic Microstructures in Dilute Al-Ce and Al-Co Alloys: *Yu Sun*¹; Cain Hung¹; Rainer Hebert¹; Mark Aindow¹; ¹University Of Connecticut

Evolution of dendritic morphology under HPMO treatment: *Huicheng Li*¹; Yuxiang Liu¹; Qijie Zhai¹; ¹Shanghai University

Large scale phase-field crystal simulation of polycrystalline grain growth using GPU supercomputer: *Akinori Yamanaka*¹; ¹Tokyo University of Agriculture And Technology

Prediction of isothermal phase transformation kinetics using continuous cooling data: *Jeong Min Kim*¹; Jae-Hyeok Shim²; Kyung Jong Lee¹; ¹Hanyang University; ²Korea Institute of Science and Technology

Recovery softening of cryogenically deformed AlMg and AlMgSi alloys: *Belinda Gruber*¹; Florian Grabner²; Thomas Kremmer¹; Stefan Kirmstötter³; Florian Spieckermann¹; Robin Schäublin¹; Peter Uggowitzer⁴; Stefan Pogatscher¹; ¹Montanuniversitaet Leoben; ²Leichtmetallkompetenzzentrum Ranshofen GmbH; ³AMAG rolling GmbH; ⁴ETH Zürich

Strain induced orientation morphology and kinetics behaviors of nanoscale phase in Fe – Cr alloys: *Yongsheng Li*; Shujing Shi

Synthesis of intermetallic-based aluminum matrix nanocomposites through high-pressure torsion: *Jae-Kyung Han*¹; Dong-Hyun Lee²; Jae-il Jang³; Terence Langdon⁴; Megumi Kawasaki¹; ¹Oregon State University; ²Max-Planck-Institut für Eisenforschung GmbH; ³Hanyang University; ⁴University of Southampton

Synthesis, Microstructure and Mechanical Properties of Ti/Al Multi-Layered Composites with the Hierarchical Structure: *Xiong Wan*¹; Yanjin Xu²; Baoshuai Han²; Weizhao Sun¹; Tao Jing¹; ¹Tsinghua University; ²AVIC Manufacturing Technology Institute, Beijing

The effect of temperature on the suppression of twinning in a-axis textured magnesium and magnesium alloys: Roshan Plamthottam¹; *Steven Lavenstein*¹; Suhas Eswarappa Prameela¹; Tim Weihs¹; Jaafar El-Awady¹; ¹Johns Hopkins University

The Formation of Faceted Spirals during Directional Eutectic Solidification: *Saman Moniri*¹; Ashwin Shahani²; ¹University of Michigan, Department of Chemical Engineering; ²University of Michigan, Department of Materials Science and Engineering

Thermodynamic Properties of Si-B Alloys Determined by Solid State Heterogeneous Phase Equilibrium: *Muhammad Imam*¹; Ramana Reddy¹; ¹University of Alabama

Titanium Oxidation Under Low Partial Pressures of Oxygen: *Mayela Aldaz-Cervantes*¹; Paul Rottmann¹; N.S. Harsha Gunda¹; Anton Van der Ven¹; Carlos Levi¹; ¹University of California Santa Barbara

Transformation Kinetics in Zircaloy-4 Weldments: *Sarah Baker*¹; Andrew Moffat¹; Helen Taylor²; ¹Frazer-Nash Consultancy; ²Rolls-Royce plc

Twin-mediated FCC to B2 transformations in a fcc-based complex concentrated alloy: *Deep Choudhuri*¹; Rajarshi Banerjee¹; Rajiv Mishra¹; ¹Univ of North Texas

Twining in Micro and Nanoscale Pillars – Size effect in Cu–Ni–Al shape memory alloy: *Marek Vronka*¹; Miroslav Karlik²; Jozef Vesely³; Jan Manák¹; Oleg Heczko¹; ¹Institute of Physics of the Czech Academy of Sciences; ²Czech Technical University; ³Charles University

X-Ray Tomography Study of Wire Size Effect on Kirkendall Pore Evolution in Ti-coated Nickel Wires: *Arun Bhattacharjee*¹; Ajith Achuthankutty¹; Aaron Yost²; Dinc Erdeniz²; David Dunand²; Ashley Paz y Puente¹; ¹Univ of Cincinnati; ²Northwestern University

Microstructural Evolution in An Aluminum-Copper System Processed by High-Pressure Torsion: *Guangyuan Liang*¹; Jae-Kyung Han¹; Terence Langdon²; Megumi Kawasaki¹; ¹Oregon State University; ²University of Southampton

In-situ Observation of Melting and $\delta \leftrightarrow \gamma$ Phase Transformation in Duplex Stainless Steel: *Yang Liu*¹; Yanhui Sun¹; ¹University of Science and Technology Beijing

Fabrication and Characterization of (111)-Oriented and Nanotwinned Cu by Periodic Reverse Electrodeposition: *Kuan-Ju Chen*¹; ¹National Chiao Tung University

Predicting the Effect of Crystallography on the Performance of High Temperature Shape Memory Alloys Subjected to Viscoplastic Deformations: *Pawan Chaugule*¹; Jean-Briac Le Graverend¹; ¹Texas A&M University

Size Effects on Hysteresis in Electrochemically Deposited Thick Film NiMnSn Heusler Alloys: *Yijia Zhang*¹; Julia Billman¹; Patrick Shamberger¹; ¹Texas A&M University

Thermo-mechanical simulation of solid-state welding in Ti-17: *Samuel Kuhr*¹; Gopal Viswanathan¹; Thomas Broderick²; Hamish Fraser¹; ¹Ohio State University; ²GE Aviation

Influence of local lattice-level covalent character on diffusion and precipitation in a highly creep-resistant Mg-Nd-Zn alloy: *Deep Choudhuri*¹; S Srinivasan¹; M Gibson²; Y Zheng³; H Fraser³; R Banerjee¹; ¹Univ of North Texas; ²CSIRO; ³The Ohio State University

Phase Transformation Under Isostatic Pressure in HIP: *Magnus Ahlfors*¹; ¹Quintus Technologies Llc

Corner Instability in Single Crystalline Thin Film : A Phase Field Study: *Miral Verma*¹; Rajdip Mukherjee¹; ¹Materials Science & Engineering, Indian Institute of Technology Kanpur

Microstructural Evolution of a Transformation in Which There is an Exclusion Zone around Each Nucleus: *Paulo Rios*¹; Harison Ventura¹; André Alves¹; Wesley Assis¹; Elena Villa²; ¹Universidade Federal Fluminense; ²University of Milan

Phase and Site Preferences of Alloying Elements and Their Effects on the Microstructural Evolution of γ -Ni₃Al Precipitates: *Rasim Eris*¹; M. Vedat Akdeniz¹; Amdulla O. Mekhrabov¹; ¹Middle East Technical University

Mesoscale Modeling of Recrystallization and Grain Growth in Two-Phase Alloys: Mohammad Abdoelatef¹; Fergany Badry¹; *Karim Ahmed*¹; ¹Texas A&M University

Effect of Phosphorus on the Phase Stability of γ - γ' Ni-base Superalloy: *Linhai Li*¹; ¹Illinois Institute of Technology

Evaluation of Microstructural Instability at Interface of HIP Bonded Single Crystal and Polycrystalline Nickel Superalloys: *Benjamin Georgan*¹; Hamish Fraser¹; ¹The Ohio State University

Enhanced precipitation of dispersoids and age hardening precipitates in aluminium alloys by Cd addition: *Yanjun Li*¹; Feng Qian¹; Dongdong Zhao¹; Shenbao Jin²; Eva Mørtzell¹; Calin Marioara³; Sigmund Andersen³; Gang Sha²; ¹Norwegian University of Science and Technology; ²Nanjing University of Science and Technology; ³SINTEF Materials and Chemistry

Influence of elastic stresses on the homogeneous precipitation mechanisms in the Cu-Ag system: Manon Bonvalet¹; *Xavier Sauvage*²; Didier Blavette²; ¹KTH Royal Institute of Technology; ²CNRS - GPM - University Rouen Normandy

Effect of Cooling Rate of Pb-2.7Sb Alloys on Microstructural Parameters and Corrosion Resistance in Salt Water: *Quentin Boyadjian*¹; Pascal Paillard¹; ¹Institut des Matériaux Jean Rouxel (Nantes)

Microstructure and properties in sputtered beta Ta thin films: *Shefford Baker*¹; Elizabeth Ellis¹; Shangchen Han¹; Markus Chmielus²; ¹Cornell Univ; ²University of Pittsburgh

Study on Microstructure and Properties of Heat Affected Zone in Titanium Microalloyed Steel: Mujun Long¹; *Jingjun Zhao*¹; Qinzheng Wang¹; Junsheng Cao¹; Dengfu Chen¹; Huamei Duan¹; Shixin Wu¹; Tao Liu¹; ¹Chongqing Univ

Powder Processing of Bulk Nanostructured Materials — Poster Session

Sponsored by: TMS: Powder Materials Committee

Program Organizers: Zachary Cordero, Rice University; Deliang Zhang, Shanghai Jiao Tong Univ; Brady Butler, US Army Research Laboratory; Ma Qian, RMIT University (Royal Melbourne Institute of Technology)

Tuesday PM
March 12, 2019

Room: Hall 3
Location: Henry B. Gonzalez
Convention Center

Densification behavior and mechanism of an EP741NP superalloy by hot pressing: *Yuan Yuan*¹; Xiaoyun Feng¹; Lianxi Hu¹; ¹Harbin Institute of Technology

Effects of Si addition on microstructure and mechanical properties of the sintered Al-Cr-Si alloy by using gas-atomization and spark plasma sintering: *Hyeon-Taek Son*¹; Yong-Ho Kim¹; Hyo-Sang Yoo¹; ¹Korea Institute Of Industrial Technology

Fabrication and mechanical property of binder free WC and WC-Co hard materials for a cutting tool application by pulsed current activated sintering method: *Jeong Han Lee*¹; Hyun-Kuk Park¹; Jun-Ho Jang¹; Sung-Kil Hong²; Ik-Hyun Oh¹; ¹Korea Institute of Industrial Technology; ²Chonnam National University

Powder properties of High-entropy alloys powders fabricated by rapid solidification process: *Kwang Yong Jeong*¹; Soon Jik Hong¹; Chul Hee Lee¹; Su Sung Ahn¹; Hyeon Jeong You¹; ¹Kong Ju National University

Property evaluation and thermal conductivity of Cu-flake graphite material composite use of Electroless plating and Pulse Current Activated Sintering process: *Junho Jang*¹; Ik-Hyun Oh¹; Hyun-Kuk Park¹; Jeong-han Lee¹; Jae-won Lim²; ¹Korea Institute of Industrial Technology; ²Jeonbuk university

The Influence of Mechanical Activation on the Synthesis of Ca₂MgSi₂O₇: *Fariborz Tavangarian*¹; Caleb Zolko¹; ¹Pennsylvania State University, Harrisburg

Ultrafine Grained AZ61Mg/Ti Composite with High Mechanical Strength: *Lianxi Hu*¹; Huan Yu¹; Yu Sun¹; ¹Harbin Institute of Technology

REWAS 2019: Rethinking Production — Poster Session

Sponsored by: TMS Extraction and Processing Division, TMS Light Metals Division, TMS: Recycling and Environmental Technologies Committee

Program Organizers: John Howarter, Purdue University; Mingming Zhang, ArcelorMittal Global R&D; Gabrielle Gaustad, Rit; Elsa Olivetti, Massachusetts Institute of Tech

Tuesday PM
March 12, 2019

Room: Hall 3
Location: Henry B. Gonzalez
Convention Center

Session Chair: John Howarter, Purdue University

Influence of Metallic Impurities on Solvent Extraction of Cobalt and Nickel from a Laterite Waste Liquor: Paula Aliprandini¹; Mónica Jimenez Correa¹; Jorge Tenório¹; Denise Espinosa¹; ¹Univ of Sao Paulo

Iron Recovery from Nickel Slag by Aluminum Dross: Viscosity Evolution in Different Periods: Guangzong Zhang¹; Nan Wang¹; Min Chen¹; Ying Wang¹; Hui Li¹; ¹Northeastern University

Isolation of Cyanide-degrading Bacteria from Cassava-processing Effluent: Amzy Vallenias-Arévalo¹; Carlos Rosario¹; Marcela Baltazar¹; Denise Espinosa¹; Jorge Tenório¹; ¹University of Sao Paulo

Degradation of Ore Collector with Photo-Oxidation UV/H₂O₂ and Photo-Fenton: Isabela Alves¹; Marcela Baltazar¹; Denise Espinosa¹; Jorge Tenório¹; ¹Universidade de São Paulo

REWAS 2019: Secondary and Byproduct Sources of Materials, Minerals, and Metals — Poster Session

Sponsored by: TMS Extraction and Processing Division, TMS Light Metals Division, TMS: Recycling and Environmental Technologies Committee

Program Organizers: Gabrielle Gaustad, Rit; Camille Fleuriault, Gopher Resource; Neale Neelameggham, IND LLC; Elsa Olivetti, Massachusetts Institute of Tech

Tuesday PM
March 12, 2019

Room: Hall 3
Location: Henry B. Gonzalez
Convention Center

Concentration of a Synthetic Solution Containing Cobalt (II), Manganese (II), Magnesium (II) and Chromium (III) from Nickel Laterite Processing Using Ion Exchange Membrane Electrodialysis: Gustavo Feijoo¹; Tatiana Scarazzato¹; Jorge Tenório¹; Denise Espinosa¹; ¹University of São Paulo, Polytechnic School, Department of Chemical Engineering

Direct Transformation of E-waste to High Surface Area Quantum Dots (QDs) through Long-term Spontaneous Precipitation to Depolluting Waste Waters: Sayyed Rasoul Khayyam Nekouei¹; Farshid Pahlevani¹; Veena Sahajwalla¹; ¹University of New South Wales

Distribution and Chemical Species of Chromium in the EAF Dust from Stainless Steel Plant: Zhi Li¹; Guojun Ma¹; Xiang Zhang¹; ¹Wuhan University of Science and Technology

Effect of Contact Time on the Recovery of Metals from the Mining Effluent of Lateritic Nickel by Chelating Resin Dowex XUS43605: Isadora Perez¹; Jorge Alberto Tenório¹; Denise Espinosa¹; ¹Galo Antonio Carrillo Le Roux

Effect of Coal Ratio on Preparation of Si-Ti-Fe Alloy by Carbothermic Reduction with Coal Fly Ash: Kun Wang¹; Yan Liu¹; Song Qi¹; Jun Hao¹; Zhi-he Dou¹; Li-ping Niu¹; Zhang Tingan¹; ¹Northeastern Univ

Experimental Study on Phosphorus Vaporization for Converter Slag by SiC Reduction: Xue Yuekai¹; Shuhuan Wang¹; Dingguo Zhao¹; Chenxiao Li¹; ¹North China University of Science and Technology

Process of Removing Arsenic from Copper Smelted Acid: Sun Lifa¹; ¹kunming university of science and technology

Recovery of Cobalt and Lithium Values from Discarded Li-ion Batteries: Shubham Vishvakarma¹; Nikhil Dhawan¹; ¹IIT-Roorkee

Research on Mechanism of Residual Iron Oxides in Preparation of Tailings Glass Ceramics: Jing Li¹; Lian Ying Xu¹; Qi Wang¹; ¹University of Science & Technology Liaoning

Structural Polymer Foams Prepared from Paper Mill Sludge Cellulose Nanofibers and Poly Vinyl Alcohol by Crosslinking Using Directional Freezing: Cynthia Adu¹; Mark Jolly¹; ¹Cranfield University

Study of Precursor Preparation of Battery Grade Lithium Iron Phosphate: Li-li Zhang¹; Ting-an Zhang¹; Wei-guang Zhang¹; ¹Northeastern University

Study on Vacuum Pyrolysis Process of Cathode Sheets from Spent Lithium Ion Batteries: Weilun Li¹; ¹Central South University

Synthesis of CuNP's on A304 SS from E-wastes: Perla Trejo Bustillos¹; Pedro Ramirez Ortega¹; Mauricio Islas Hernández¹; Laura García Hernández¹; ¹Universidad Tecnológica De Tulancingo

Research on Thermogravimetric-differential Scanning Calorimetry of Spent Lithium Iron Phosphate Batteries Cathode Plate: Yafei Jie¹; ¹Central South University

Waste Tire Rubber Powders Based Composite Materials: Carlos Revelo¹; Mauricio Andres Correa¹; Claudio Aguilar²; Henry Colorado¹; ¹Universidad De Antioquia; ²Universidad Técnica Federico Santa María

Effect of Bentonite on the Stabilization and Mechanical Strength of Bricks Made of Peruvian Electric Arc Furnace Dusts: Mery Gómez-Marroquín¹; ¹Universidad Nacional de Ingeniería

Solar Cell Silicon — Poster Session

Sponsored by: TMS: Materials Characterization Committee

Program Organizers: Shadia Ikhmayies, Al Isra University; Neale Neelameggham, IND LLC; York Smith, University of Utah; Leili Tafaghodi, University of British Columbia

Tuesday PM
March 12, 2019

Room: Hall 3
Location: Henry B. Gonzalez
Convention Center

Effect of sodium salt addition in CaO-SiO₂ slag system on separation and purification of silicon kerf: Jijun Wu¹; Wenhui Ma¹; ¹Kunming University of Science & Technology

The separation of refined silicon by gas pressure filtration in solvent refining process: Tianyang Li¹; Lei Guo¹; Zhe Wang¹; Zhancheng Guo¹; ¹University of Science and Technology Beijing

Shape Control of Silver Particles Electrochemically Recovered from Crystalline Silicon Solar Cell by Changing Current Density: Jun-Kyu Lee¹; Jin-Seok Lee¹; Young-Soo Ahn¹; Gi-Hwan Kang¹; ¹Korea Institute of Energy Research

- A**
- A 85
- Aadli, A 151
- Aagesen, L 85, 119, 127, 158, 162, 183, 188
- Aalam, S 96
- Aarhaug, T 86, 108
- Aarnæs, T 82
- Ababtin, S 225
- Abbaschian, R 38, 115
- Abbasi, M 56, 231
- Abbas, S 147, 179
- Abbey, B. . . 135, 162, 186, 206, 207, 234
- Abbott, D 25
- Abbott, J 185
- Abbott, T 150
- Abboud, M 163
- Abdelaziz, A 231
- Abd El-Fattah, H 25
- AbdelGawad, M 144
- Abdeljawad, F . . . 34, 39, 58, 63, 70, 85, 90, 111, 112, 116, 137, 143, 153, 155, 164, 165, 170, 188, 193, 208, 212, 237
- Abdelkader, A 158
- Abdeyazdan, H 105
- Abdi, F 113
- abdoelatef, M 226, 242
- Abdolrahim, N . . . 119, 146, 171, 195, 213, 214, 241
- Abdulkareem, A 44
- Abdullah, M 33
- Abdul Razak, K 33
- Abdulsalam, M 48, 84
- Abdul Samad, M 222
- Abedrabbo, S 215
- Abernathy, D 58
- Abernathy, H 126
- Abe, Y 135
- Abke, T 224
- Abotar, E 177
- Abouelazayem, S 41
- Abouimrane, A 152
- Aboulkhair, N 180
- Abu Jadayil, W 178
- Abu-Lebdeh, T 218
- Abu-Odeh, A 191, 208
- Acar, H 134
- Acar, O 163
- Acar, P 43, 164, 208
- Acevedo, O 75
- Acharya, R 178
- Achenbach, J 189
- Achuthankutty, A 242
- Acierno, A 51
- Acosta-González, F 68
- Adachi, H 89
- Adachi, N 203
- Ada, H 53
- Adair, C 106, 137
- Adam, B 165
- Adams, D 66, 170, 182
- Adams, R 199
- Adegbuyi, O 217
- Adekola, F 44
- Adeleke, A 114
- Adeosun, S 164
- Adepu, K 167
- Adibi Sedeh, S 161, 183
- Adisa, S 64
- Adlakha, I 170
- Adnan, A 173
- Adomako, N 196, 217
- Adrien, J 124
- Adu, C 243
- Aerne, N 171
- Afify, O 231
- Afikuzzaman, M 169
- Afolalu, A 78, 176
- Agar, O 223
- Agarwal, A . . . 42, 77, 92, 172, 175, 220, 230
- Agarwal, G 52, 183
- Agarwal, S 110
- Agca, C 222
- Ager, J 72
- Aghamohammadi, H . . . 220, 223, 224
- Agnew, L 33
- Agnew, S. . . 40, 44, 74, 98, 124, 138, 170
- Agrawal, 94
- Agrawal, A 136, 161
- Agrawal, V 94, 158
- Agren, J 192
- Ågren, J 120
- Agrizzi, C 238
- Agüena Herrera Vicente, M 236
- Aguiar, N 235
- Aguilar, C 163, 234, 236, 243
- Aguilar-Perez, B 230
- Agyei, R 163
- Ahlfors, M 179, 242
- Ahli, N 80
- Ahluwalia, R 42
- Ahmad Fauzi, M 96
- Ahmadian, H 132
- Ahmadi, S 154
- Ahmadi, Z 25
- Ahmad Shah, L 140
- Ahmed Alzarooni, A 184
- Ahmed, E 210
- Ahmed, K 226, 242
- Ahmed, M 191, 210, 224
- Ahmed Rabbaa, S 134
- Ahmed, T 58, 115
- Ahn, B 219, 239
- Ahn, S 87, 242
- Ahn, Y 243
- Ahsan, F 201, 202
- Ahuja, R 58
- Aidhy, D 212
- Aifantis, E 61
- Aifantis, K 168
- Aigbodion, A 230
- Aigbodion, V 225
- Aindow, M 83, 95, 101, 143, 146, 214, 221, 241
- Aiping, X 216
- Aitkaliyeva, A . . 32, 41, 66, 93, 117, 145, 171, 194, 213, 226, 228
- Aitken, Z 115
- Aiyuan, M 208
- Aizawa, K 65
- Ajantiwalay, T 228
- Ajayan, P 199
- Ajayi, O 71, 165, 183
- Akaiwa, T 29, 77
- Akamatsu, S 116
- Akanda, S 112
- Akbari, A 211, 239
- Akdeniz, M 242
- Akdim, B 35, 38, 63, 186
- Akdogan, G 122, 137
- Akdogan, V 186
- Akhatov, I 240, 241
- Akhmetov, S 184
- Akhtar, S 82, 161, 162, 210
- Akinlabi, E. . . . 29, 53, 57, 92, 134, 158, 217, 233
- Akinlabi, S 53, 57, 92, 134, 158, 233
- Akinwande, D 100
- Akpan, E 164
- Aksoy, D 66
- Aksöz, S 53, 97
- Aksu, B 191
- Aktaa, J 41
- Akula, A 113
- Alabbad, B 172
- Alabi, A 44
- Alabort, E 86
- Alafara, B 121
- Alamdari, H 60, 160
- Alam, E 118
- Alameen, M 180
- Alam, M 39, 145
- Alam, S 44, 68, 96, 121, 228
- Alam, T 62, 108
- Alcantara, N 211
- Aldanondo, E 167

- Aldaz-Cervantes, M 242
 Aldeia, W 235
 Alemani, M 98
 Alex, A 223
 Alexander, S 31
 Alexandrakis, M 117
 Alexandreanu, B 113
 Alexandre, J 234, 235, 236, 238
 Alfaro-López, E 68
 Alfreider, M 167, 195, 210, 240
 Ali Anshari, M 224
 Alicandri, R 184
 Alidoost, J 139
 Alifirenko, E 176
 Ali, H 133, 198
 Alipour, M 220, 221, 227
 Aliprandini, P 243
 Alizadeh, R 50
 Al Jabri, N 60, 134
 Aljobory, H 225
 Alkan, M 68, 71, 191
 Allain, M 186
 Allain, S 130, 179
 Allaire, D 34, 84, 132, 208
 Allanore, A 24, 41, 65, 77, 92, 117, 144, 227
 Allard, L 146
 Allec, S 30
 Allen, A 102
 Allen, F 171
 Allen, J 158
 Allison, J 70, 75, 84, 98, 132, 143, 150
 Allison, P 44, 190, 194, 202
 Allu, P 219
 Alman, D 85
 AlMarzooqi, K 80
 Al Marzouqi, A 60
 Almeida Bezerra, W 114
 Almeida, F 236
 Almer, J 93, 124, 139, 186, 193, 200
 Almirall, N 64, 91, 171, 193, 194
 Alomari, A 145
 Al-Omari, I 235
 Alpay, P 154
 Al-qarni, L 215
 Alrehaili, H 155
 Alresheedi, H 25
 Alshehhi, S 135
 Alten, A 225
 Altenbuchner, C 26, 153
 Alvarenga, R 235
 Alvarez, J 227
 Alvear Flores, G 35
 Alvear, G 35, 60
 Alves, A 242
 Alves, I 243
 Amalraj, M 169
 Amani, Y 124
 Amaral, L 36, 236, 238
 Ambat, M 226
 Ameen, O 44
 Ameri, A 68, 187, 236
 Amerisiahoeei, M 223, 224, 229, 230
 Ameyama, K 37, 61, 89, 114, 141, 168, 225
 Amick, C 26
 Amin-ahmadi, B 87
 Aminahmadi, B 75, 155
 Amin-Ahmadi, B 26, 237
 Aminirastabi, H 111
 Amirkhiz, B 154
 Amla, T 124
 Amarin, A 163
 Amram, D 116, 121, 147, 172, 193
 Anand, A 96
 Anand, S 54
 Ananthanarayanan, D 90, 201
 Anawati, J 68, 96
 Anber, E 62, 211
 Andalib, P 156
 Andermann, L 133
 Anderoglu, O 41, 93, 228
 Andersen, D 60, 86
 Andersen, O 155
 Andersen, S 242
 Anderson, A 201
 Anderson, D 98, 203
 Anderson, I 26, 45, 101, 132, 147, 174, 181
 Anderson, P 231
 Anderson, R 153, 185
 Anderson, T 75
 Andersson, D 32, 56, 82, 110, 144, 162, 206, 222, 240
 Andersson, J 135
 Andersson, T 139, 189
 Ando, Y 158
 Andrade e Silva, L 235, 236
 Andrade, L 222
 Andrade, M 83
 Andreaco, A 25, 178
 Andrejka, F 157
 Andrew, J 59, 152
 Andrews, W 120
 Andzelm, J 232
 Anes, I 229
 Aneziris, C 161
 Angelotti Moraes, D 234
 Anglin, B 127
 Anglin, K 51
 An, H 237
 An, K 76, 138, 163, 168, 191, 231
 Ankit, K 94, 165
 An, L 241
 Anne, G 124
 Ansari, S 148
 Ansari, T 225
 Anthony, B 170
 Anthony, N 186, 207
 Anthony, R 225
 Antillon, E 35, 38, 63
 Antoniou, A 146, 213
 Antonov, S 35, 36, 80
 Antrekowitsch, J 69
 Antunes, M 236
 Anuar, A 101
 An, W 87, 138
 An, X 154
 Anyang, Z 216
 Aoued, S 130
 Apel, D 80
 Apelian, D 45, 97
 Aphale, A 49
 Apostolescu, S 33
 Appel, F 214
 Appleget, C 126, 210
 Appolaire, B 112
 Arabshahi, A 25
 Aragon, N 237
 Araiza, J 116
 Arakawa, K 237
 Arancibia, F 163
 Aranda, M 30
 Araujo, A 76, 104, 130, 156, 181, 203, 231
 Arava, L 152
 Arcari, A 188
 Archer, L 46
 Archuleta, C 196
 Ard, J 116, 117
 Arenas-Islas, D 230
 Arey, B 108
 Arfaei, B 98
 Argibay, N 89, 104, 169, 170, 240
 Arguilla, M 34
 Argyrakis, C 86, 165
 Ariza, P 52
 Arkhipov, A 80
 Armijo, K 92
 Armstrong, B 78
 Armstrong, C 26
 Armstrong, D 110, 139, 169, 210
 Arnadottir, L 223
 Árnadóttir, L 64, 223
 Arnberg, L 82, 185
 Arnold, C 49, 100
 Arola, D 55, 231
 Aronhime, N 156

- Arora, A 106, 140, 167, 168
 Arora, C 41
 Arowosola, A 122
 Arregui-Mena, J 162, 222
 Arretche, I 171
 Arroyave, R 29, 34, 39, 63, 84, 90,
 102, 105, 111, 112, 115, 120, 129, 132,
 133, 142, 164, 169, 171, 191, 202, 208
 Arróyave, R 112
 Arruti, E 167
 Arslan, C 216, 224, 225
 Arthur, N 217
 Arul Kumar, M 27, 50, 69, 75, 103,
 130, 146, 155, 170, 180, 231
 Arvikar, V 123
 Arya, A 124, 130
 Arzt, E 32
 Asadi, E 112
 Asadikiya, M 85
 Asatani, N 105
 Åsebø, O 219
 Asgarian, A 99
 Ashad, F 86
 Ashcroft, I 101, 204
 Ashkenazy, Y 93
 Åsholt, P 107
 Ashraful, M 235
 Asif, S 70, 175
 Askari, H 34, 58, 85, 112, 137, 154,
 165, 188, 208, 237
 Aslam, I 33
 Asle Zaeem, M 26, 30, 34, 40, 52,
 58, 64, 70, 75, 78, 85, 91, 102, 106, 112,
 118, 128, 129, 132, 137, 143, 153, 154,
 158, 165, 178, 179, 183, 188, 192, 193,
 196, 201, 208, 218, 219, 226, 233, 237
 Asrar, N 33
 Assis, W 242
 Asta, M 38, 39, 63, 70, 90, 109, 115,
 116, 143, 170, 192, 193, 205, 208, 212,
 240
 Ast, J 67, 139, 167, 189, 210, 237
 A. Szlufarska, I 82
 Atre, S 187
 Attah-Kyei, D 122
 Attari, V 29, 34, 105, 112, 133, 208
 Attwood, R 154
 Atwater, M 203
 Atwood, A 83
 Atwood, R 200, 218
 Auchterlonie, G 147
 Audubert, F 206
 Auguste, R 94
 Augustine, R 71
 Augustin, M 199
 Aumand, M 139
 Aune, R 82, 108, 162, 185, 210
 Averback, R 40, 64, 93, 188
 Avery, D 190, 194, 202
 Awd, M 128
 Awi, E 189
 Ayas, C 154
 Aybarc, U 97
 Aydin, O 228
 Aydogan, E 41, 66, 91, 93, 117, 145,
 171, 194, 213, 228
 Ayers, N 25
 Ayinla, K 44
 Aykol, M 164
 Ayodele, J 44
 Aytug, T 147, 172, 197, 215
 Ayyagari, A 142
 Azeem, M 70, 154
 Azennoud, B 60
 Azer, M 45
 Azevedo, A 88, 234, 235, 236, 238
 Azevedo, G 234, 236
 Azimi, G 44, 68, 96, 121, 159, 228
 Azizd, H 89
 Azizi, H 128
 Azzouz, F 189
- B**
- Baba, A 44, 68, 96, 121, 228
 Babaniaris, S 174
 Babbitt, C 97, 173
 Babisk, M 36, 238
 Babu, G 199
 Babu, S 26, 50, 75, 95, 102, 128, 129,
 153, 154, 178, 179, 201, 202, 218, 219
 Babuska, T 104
 Bachhav, M 125, 214
 Bachmaier, A 93, 172, 196
 Bachmann, F 56
 Backman, L 169
 Bacon, S 225
 Badaeva, E 57
 Badgley, P 130
 Badowski, M 161
 Badran, A 119
 Badr, H 73
 Badry, f 226, 242
 Bae, D 221, 227
 Bae, J 191, 239, 240
 Baek, S 232
 Bagherpour, I 230
 Bagherzadeh, S 225
 Bagot, P 155, 162
 Bagri, A 59, 189
 Bahadori, M 113
 Bahena, J 80
 Bahrami Babamir, B 154
 Bahr, D 52, 148, 214, 240
 bahrvand, b 229
 Bai, B 216
 Bai, C 32, 33, 56, 57, 83, 110, 136,
 163, 176, 186, 187, 207, 214, 222, 234
 Baid, H 113
 Bai, H 136
 Baik, S 54
 Bailey, G 131
 Bailey, N 127, 153
 Bai, Q 42, 116, 134
 Bair, J 34, 58, 85, 111, 137, 164, 237
 Bai, S 126
 Baiteche, M 160
 Bai, X 32, 56, 82, 93, 110, 125, 162,
 171, 206, 221, 222, 231
 Bai, Y 62
 Bajaj, R 66
 Bajkar, V 40
 Bajric, S 196
 Bakas, M 62
 Baker, A 73, 104
 Baker, B 117
 Baker, I 216
 Baker, L 207
 Baker, S 66, 101, 104, 110, 175, 242
 Bakhshinejad, A 201
 Bakhshi, S 198
 Bakhtiyarov, S 32
 Bakonyi, I 217
 Bak, S 207
 Balachandran, P 30, 52, 78, 85, 106,
 132, 158, 233
 Balachandran, S 75
 Balasoiu, D 134
 Balasubramanian, G 142
 Balasubramani, N 151
 Balaur, E 207
 Balaz, S 148
 Balbus, G 118
 Balch, D 74, 87
 Baldinozzi, G 32, 33, 206
 Baldo, P 74, 226
 Baldwin, J 40, 171, 195
 Baldwin, K 195
 Baldwin, M 213
 Bale, H 56, 119
 Baler, N 60
 Bales, B 88, 163
 Balkenhol, T 107
 Balk, J 119, 146, 171, 195, 214, 241
 Balk, T 106, 119, 195, 211, 214, 239
 Ballor, J 54
 Balooch, M 171, 194, 226
 Bals, A 65

- Baltazar, M. 220, 243
 Bamney, D 52
 Bandi, M. 120, 199
 Bandyopadhyay, R. 205
 Banerjee, A. 95, 219
 Banerjee, D 44, 231
 Banerjee, R. . . 35, 38, 44, 62, 68, 95, 104,
 108, 120, 146, 169, 171, 191, 192,
 196, 211, 214, 219, 226, 241, 242
 Banerjee, S 25, 100, 120, 223, 227
 Bang, J 43
 Bang, Y. 224
 Ban, H. 218, 222
 Banner, J. 177
 Bañobre, A 215
 Bansal, A 221
 Banthia, S. 78
 Bantounas, I. 36
 Banu, M 221
 Ban, Y. 221
 Bao, C. 207
 Bao, S 82, 113, 161, 162
 Bao, Y. 85, 97, 134
 Baran, B 65
 Barandiaran, J 181
 Barbati, A 155
 Barbatti, C 176
 Barber, R 69
 Barbosa, I. 236
 barbosa, V 163
 Barker, E. 168, 219
 Barkey, M. 104
 Barkia, B. 166
 Barkley, E. 68
 Barnard, H 118
 Barnes, M. 228
 Barnoush, A. . . 42, 67, 87, 94, 118, 138,
 241
 Baroutaji, A 220
 Barrado, F 130
 Barr, C . . . 90, 94, 118, 145, 170, 211, 212
 Barreira, D 234, 237
 Barreteau, C. 58
 Barreto, G. 36
 Barrett, C 30, 218
 Barrett, T 66, 143
 Barrientos, F 235
 Barrientos Hernández, F 236
 Barrientos-Hernández, F 236
 Barriobero Vila, P. 200
 Barros, K 229
 Bartel, F 32
 Bartelt, N 228
 Bartha, K 121
 Barthelat, F. 81, 109
 Barth, T 169
 Bartoli, T 28
 Bartolomei, S. 236, 237
 Barton, D 96
 Barton, N 208
 Barto, R 92
 Baskes, M. 70, 143, 144, 225
 Basso, S. 231
 Basu, B 65
 Basu, D. 129
 Basu, R 206
 Basu, S 25, 49, 73, 100, 126, 152,
 177, 199, 225, 230
 Bathala, V. 240
 Bathula, V 196
 Batista, E 34, 184
 Batra, R. 39
 Battaile, C. 114, 231
 Battezzati, L 62
 Battu, A 197, 215
 Baudin, T 226
 Bauer, E 30, 107
 Bauer, J. 116
 Baustert, E 127
 Bautista, E 101
 Bawane, K 82
 Baxter, C. 130, 196
 Bayansan, D 196
 Bayat, O 220, 223
 Baylac, V 101
 Bayless, T 147, 176
 Bayliss, C 24, 97
 Bayram, C 184
 Bazehhour, B 183
 Bazzi, K 191
 Beake, B 67
 Beal, R 59, 187
 Beamish, K. 140
 Beams, R. 85
 Bean, G. 102
 Beatty, D. 173
 Beausoleil, A 55
 Beausoleil, G 228
 Becher, J. 207
 Bechetti, D. 181
 Bechly, M. 144
 Bechtel, J 169
 Beckermann, C 46, 123
 Becker, P. 161
 Beck, J. 205
 Beck, M 106, 119
 Beckmann, T 35
 Bedard, B 95, 221
 Beddingfield, B 76
 Beddingfield, R 76, 104
 Beechem, T 197
 Beeler, B 144, 188
 Beeler, R. 80
 Beese, A 25, 73, 74, 101, 127, 153,
 177, 200, 208, 217
 Beets, N 143
 Begley, G 107
 Behera, 43
 Behera, A 96, 127
 Behera, P 87
 Behera, R 43, 94, 119, 145, 241
 Beh, M 33
 Behraves, S. 124, 194
 Behrens, B 106
 Behrou, R. 127
 Behzadinasab, M. 183, 209
 Bei, H 38, 62, 87, 90, 142, 191, 205
 Béjar, L 234, 236
 Belbachir, S 59
 Béliveau, Y. 184
 Bellemare, S. 202
 Bellon, P. 40, 64, 93, 188
 Bellus, J. 95
 Belova, I 58, 115, 169
 Belt, C. 24, 135, 166
 Belyakov, S. 51, 77, 182
 Benac, D. 166
 Ben-Artzy, A 218
 Ben Assayag, G 215
 Benedetti, A 110
 Benensky, K 228
 Benes, O 110, 162
 Benfer, S. 140
 Benhamida, N 207
 Bennett, J 51, 182
 Bennett, K 82
 Benoît, G 87
 Benson, G. 202
 Benson, I 208
 Benson, L 149
 Benson, M 226
 Benson Marshall, L 149
 Bentsman, J 41
 Benzerga, A 106, 124, 132, 170,
 194, 206
 Benzing, J. 179
 Benzo, P 215
 Beran, P 45
 Bera, S. 135
 Berche, A 53
 Berent, K 232
 Berger, J 126
 Berglund, I. 27
 Berglund, S. 89
 Bergmann, J. 190, 211, 224
 Bergman, R 185, 222
 Bergner, C 165
 Bergner, M. 56

Bergs, T	173	Bhave, C	183	Boesl, B	42, 92, 172, 175, 220, 230
Berkinbayeva, A	68, 228	Bhowmick, S	70, 110, 175, 208	Bogdan, D	179
Berlia, R	103, 195, 225, 240	Bhowmik, A	138	Bogdanoff, T	184
Berman, T	143, 150	Bhusal, P	143	Bo, H	221
Bermejo, R	180	Bicknell, J	86, 179	Bohinsky, A	92
Bermingham, M	46, 123	Bieler, T	27, 50, 75, 103, 130, 155, 180, 231, 240	Bohlen, J	91
Bernabé, Q	59	Biener, J	171	Bojarevics, V	97, 108, 150
Bernard, A	60	Biermann, H	76, 167, 181, 202	Bojjawar, G	124, 130
Berneder, J	159	Bignon, M	146, 164, 240	Bokas, G	208
Bernhard, C	105	Bi, K	111	Boldsaikhan, E	211
Bernier, J	139	Bilal, M	229	Bolfarini, C	223
Bernstein, J	208	Bilek, P	162	Bolinteanu, D	100, 155, 175
Berry, J	34, 58, 85, 112, 137, 165, 188, 208, 237	Bilewska, K	78	Boll, T	80, 196
Berthebaud, D	101	Bilgin, G	219	Bolouri, A	46
Bertherat, M	135	Bilheux, H	100	Boluki, S	112
Berto, F	74, 87, 113, 139, 166, 189, 209, 223	Bilheux, J	100	Bonacuse, P	106
Bertrand, E	146, 164	Bille, P	239	Bonafos, C	215
Bertsch, K	74, 87, 129, 178, 179	Billings, J	203	Bonar, M	203
Berwind, M	171	Billman, J	242	Bonne, L	189
Besmann, T	32, 116, 117	Bilodeau, J	108	Bonnett, J	126
Bessais, L	28, 50	Birbasar, O	186	Bonnivard, V	60
Bessa, M	132	Birbilis, N	174	Bono, M	93
Besson, J	189, 194	Bird, D	172, 173	Bonvalet, M	120, 242
Betancor, F	95	Bischoff, J	83	Boone, K	55, 134
Betzler, B	117	Bishop, J	153	Boon, H	102
Beura, V	189	Bishop, W	59	Bordeenithikasem, P	81, 82, 129
Beuth, J	45, 73, 127, 129, 201	Biswas, I	147	Bordoloi, D	109
Beyerlein, I	27, 37, 42, 50, 58, 61, 69, 75, 89, 93, 103, 111, 114, 118, 130, 132, 141, 146, 155, 158, 168, 170, 180, 213, 225, 231, 240	Biswas, K	238	Borgenstam, A	219
Beygi, R	140	Biswas, S	56, 127, 226	Borisov, E	101
Bezerra, W	141	Bi, X	240	Borisov, V	67
Bhadhon, K	104	Bjurenstedt, A	70	Borkar, T	29, 52, 78, 104, 106, 220
Bhagavatam, A	155	Blacker, C	140	Borlini, M	238
Bhakhri, V	213	Blackford, A	59	Bornstein, H	236
Bhaskar, P	28	Black, G	116	Borodin, V	65, 226
Bhattacharjee, A	242	Blamer, B	136	Borowski, L	38, 168
Bhattacharjee, G	235	Blanco, J	76, 232	Bortoluci Ormastroni, L	86
Bhattacharjee, P	62, 191	Blavette, D	193, 242	Boštjan, A	214
Bhattacharjee, T	62	Bleck, W	120	Botelho Junior, A	68, 229
Bhattacharya, A	64, 162, 206	Bleicher, K	79	Bottin-Rousseau, S	116
Bhattacharya, D	207	Blobaum, K	217	Bouchard, M	133
Bhattacharya, R	132	Blockstrand, F	229	Bouché, C	59, 60
Bhattacharya, S	26, 76, 223	Blokhin, E	137	Bouchemit, A	182
Bhattacharyya, D	40, 42, 44, 47, 64, 67, 68, 70, 91, 94, 95, 98, 118, 120, 124, 143, 146, 150, 171, 175, 193, 196, 213, 214, 226, 241	Blomqvist, A	58, 188	Boulet, P	53
Bhattacharyya, J	40, 74, 98, 124	Blumenthal, W	130	Boulware, P	75
Bhattacharyya, S	142	Bobadilla, M	57, 234	Bourell, D	25, 73, 101, 127, 153, 177, 200, 217
Bhattachrya, A	40	Bobbio, L	208	Bourgier, A	86
Bhatt, D	78, 106, 224, 225	Bobel, A	129	Boutchuen, A	25
Bhaumik, A	126	Bobrowski, P	192	Bouthillier, S	184
		Bobzin, K	173	Bouzat, M	130
		Bocchini, P	158	Bouzidi, W	28
		Bockbrader, J	224	Bowen, P	86
		Bocklund, B	206, 208	Bowers, C	197
		Boddeti, V	78	Bowers, R	184
		Bodude, M	217	Bowman, A	225
		Boehlert, C	54, 130, 225	Bowman, R	157

- Boyadjian, Q 242
 Boyce, B . . . 90, 139, 150, 167, 170, 171,
 189, 210, 212, 237
 Boylan, F 82, 83
 Boyle, C 30
 Brachmann, J 123
 Bracker, G 117, 151
 Bracq, G 35
 Bradford, A 106
 Brady, E 45
 Brady, M 84, 116, 204
 Braga, F 36, 61, 88, 114, 141, 238
 Braham, E 120
 Brahimi, S 87
 Brahme, A 141
 Branch Kelly, M 28
 Brand, M 102
 Brandt, M 155, 234
 Brandvik, T 86
 Brancio, P 114
 Braulio, M 133
 Braun, J 169
 Braun, P 57, 58
 Brechet, Y 37, 61, 89, 114, 141,
 168, 225
 Bréchet, Y 179
 Brechtel, J 89
 Breen, A 80, 108
 Bremier, S 162
 Brenner, D 38, 168, 169
 Brennhaugen, D 185
 Brewer, L . . . 96, 104, 106, 123, 223, 224
 Brewster, M 59
 Brice, D 52, 204
 Bridges, C 204
 Brif, Y 178
 Briggs, E 207
 Briggs, S 52, 93, 117, 118, 212
 Bright, J 173
 Brillantes, M 182
 Brinckmann, S 141, 210
 Bringa, E 144
 Brink, A 187
 Brinkman, K 25, 49, 73, 100, 126,
 152, 177, 199, 230
 Briot, N 195, 214
 Brismalein, D 60
 Brito, R 32
 Britsch, K 116
 Britton, B 213
 Britton, T 27, 32, 108
 Brochu, M 127
 Broderick, T 242
 Brodin, H 102
 Brody, H 143, 221
 Broek, S 184
 Bronkhorst, C 50, 130
 Brooks, G 151
 Brooks, L 122
 Brøtan, V 179, 219
 Brothers, M 209
 Brown, A 31, 207
 Brown, B 27, 73, 218
 Brown, D 26, 52, 118, 153, 194,
 200, 226
 Brown, F 215
 Brown, J 175
 Brown, K 55
 Brown-Shaklee, H 155
 Brown, T 129, 171
 Broz, P 107
 Brückner-Foit, A 209
 Brück, S 166
 Bruder, E 169
 Brueck, E 50
 Brundidge, C 241
 Brune, P 167
 Brunson, Z 154, 227
 Brust, A 156
 Buandra, A 86
 Buch, A 25
 Buchely, M 235
 Buchholz, A 82
 Buchinger, N 165
 Budavari, T 137
 Bud'ko, S 28, 157
 Budrow, C 103
 Buehler, M 111
 Buehrig-Polaczek, A 176
 Bugdayci, M 177
 Bugnion, L 54
 Buhrig-Polaczek, A 123
 Bührig-Polaczek, A 184
 Bulatov, V 90
 Bülbül, F 209
 Bulinger, A 184
 Bullens, A 101
 Buller, D 51
 Bundy, V 227
 Bunn, J 123, 231
 Burchell, T 65, 66, 162
 Burden, D 209
 Burford, D 190
 Burggraf, S 117
 Burja, J 214, 222
 Burke, E 74
 Burke, G 44, 80, 91
 Burke, M 64, 93, 137
 Burkhardt, C 202
 Burlatsky, S 25
 Burns, E 153
 Burns, J 50, 138, 166, 188
 Burrows, R 98
 Burr, P 91, 137
 Bursik, J 107
 Busch, P 238
 Bussiba, A 218
 Bustamante, M 173
 Bustillos, J 172
 Butler, B 69, 96, 121, 147, 155, 172,
 179, 196, 242
 Butler, T 35
 Bux, S 30
 Buzolits, A 229
 Buzunov, V 54
 B, V 94
 Byczynski, G 97, 221
 Byerly, K 76, 156
 Byler, D 56
 Byun, T 41, 68
- ## C
- Cabié, M 206
 Cabrera, J 61
 Cabriales, R 219
 Caden, A 69
 Cadenazzi, G 186, 207
 Cady, C 103, 117
 Caffarey, M 173
 Cai, B 70, 178
 Cai, H 99
 Cai, L 82, 83
 Caillard, D 75
 Caillat, T 30
 Cain, T 144
 Cairney, J 54, 80
 Cai, S 92
 Cai, W 66, 99, 101
 Cai, X 151
 Cai, Z 198, 209
 Cakmak, E 179
 Calderon, G 24, 56, 205
 Caldwell, A 77, 117, 227
 Calhoun, C 231
 Calin, M 135
 Çaliskan, E 134
 Callahan, P 36, 50, 103, 139
 Calta, N 129, 131, 201
 Cameron, B 181
 Camino, F 195
 Campanelli, L 223
 Campbell, A 41, 65, 66
 Campbell, C 36, 102, 112, 238
 Campbell, J 46
 Campillo, B 235
 Camposo, A 61, 88, 114, 141, 236
 Camposo Pereira, A 61, 141, 235

Cândido, V.....	88	Carvajal Nunez, U.....	56	Chancey, M.....	194
Canfield, N.....	126	Carvajal-Nunez, U.....	91	Chandran, K.....	96, 164, 189
Canfield, P.....	28, 67, 157	Carvalho, E.....	36, 141, 238	Chandrasekar, S.....	147, 204, 221
Can, H.....	97	Carvalho, J.....	61, 88, 238	Chandross, M.....	89, 170, 240
Cann, J.....	75	Carvalho, M.....	222	Chang, A.....	197
Cao, C.....	23, 177	Carvalho, T.....	57	Chang, B.....	53, 220
Cao, J.....	48, 73, 242	Carver, K.....	101	Chang, C.....	103, 172, 197, 211
Cao, L.....	125, 183, 226	Casari, D.....	46	Chang, E.....	109
Cao, P.....	40, 46, 144, 147, 175	Casem, D.....	121	Chang, H.....	81, 82
Cao, W.....	185	Casillas-Trujillo, L.....	32	Chang, J.....	24, 45, 48, 72, 100, 126, 152, 222, 230
Cao, X.....	46, 69, 201	Cassiano Nascimento, L.....	141	Chang, K.....	67, 120, 125, 188
Cao, Y.....	133, 208	Castano Londono, C.....	57	Chang, L.....	157
Capek, J.....	163	Castelnaud, O.....	124	Chang, S.....	73, 105, 156
Capenter, J.....	186	Castillo Lara, R.....	57	Chang, W.....	123, 219
Capolungo, L.....	41, 52, 64, 66, 90, 93, 116, 117, 142, 143, 145, 146, 155, 170, 171, 194, 213, 228	Castillo, T.....	88	Chang, Y.....	169
Capone, J.....	45	Castillo, V.....	164	Chan, H.....	37
Cappucci, S.....	226	Castin, N.....	64	Chan, K.....	41, 171
Caravaca, E.....	172, 173	Castro, C.....	31	Chan, M.....	85
Caravias, G.....	155	Catalina, A.....	97	Chan, S.....	118
Caraway, B.....	120	Catalini, D.....	91	Chao, G.....	114
Carazzone, J.....	203	Catarineu, N.....	52	Chao, P.....	169
Cardona Valencia, N.....	173	Catlett, M.....	163	Chaouki, H.....	80
Cardoso, E.....	136, 164	Catteau, S.....	193	Cha, P.....	233
Cardoso-Gil, R.....	163	Cavalcante, I.....	235	Chapman, M.....	105
Carey, N.....	137	Cawkwell, M.....	52	Chaput, K.....	35, 45, 128, 153, 178, 201, 218
Carlin, C.....	187	Cecchin, D.....	236	Charbal, A.....	150
Carl, M.....	199	Cecen, A.....	78	Charit, I.....	26, 59, 74, 101, 127, 145, 167, 196, 209, 218, 226
Carlson, K.....	161, 222	Ceder, G.....	39, 136	Charpagne, M.....	28, 78, 88, 163
Carlson, M.....	206	Ceguerra, A.....	54, 109	Chatain, D.....	93
Carneiro, K.....	234	Çelikin, M.....	77	Chatterjee, A.....	231
Caro, A.....	38	Celine, V.....	35, 212	Chatterjee, K.....	208
Caroca-Canales, N.....	163	Cerci, H.....	33	Chattopadhyay, K.....	24, 48, 60, 65, 72, 88, 99, 125, 151, 184, 217, 238
Caron, F.....	55	Ceriotti, M.....	39	Chattopadhyay, R.....	76
Carotti, F.....	65	Cernatescu, I.....	138	Chaudhary, A.....	168
Carpenter, J.....	25, 32, 33, 56, 57, 73, 83, 101, 102, 110, 118, 127, 136, 153, 163, 177, 186, 187, 200, 207, 217, 234, 240	Cerqueira, N.....	234, 235, 236, 238	Chaudhary, V.....	104
Carpenter, W.....	228	Cerreta, E.....	146	Chaudhry, A.....	144
Carrada, M.....	215	Ceschini, L.....	210	Chaugule, P.....	242
Carradero, C.....	218	Cestonaro, A.....	83	Chauhan, A.....	41, 110
Carrado, A.....	148, 173, 197, 215	Chadwick, A.....	132	Chauhan, M.....	227
Carreón, H.....	234	Chae, D.....	231	Chaunsali, P.....	69
Carr, J.....	157	Chae, J.....	104	Chaussende, D.....	77
Carrroll, J.....	73, 150, 187	Chae, Y.....	227	Chavan, N.....	52
Carrroll, M.....	90, 116, 142	Chaffe, R.....	208	Chavez, J.....	58
Carruthers, A.....	93	Chai, D.....	113, 221	Chavez, L.....	180, 205
Carson, R.....	208	Chai, W.....	133	Cha, W.....	186, 207
Carter, J.....	53, 79, 106, 228	Chai, Y.....	92, 133	Chawla, N.....	28, 124, 136, 163, 188, 195
Carter, N.....	159	Chakrabarti, D.....	231	Chechik, L.....	73
Carter, R.....	49, 74	Chakraborty, A.....	28, 180	Checketts, J.....	122
Carter, S.....	135	Chakraborty, S.....	143, 165	Cheepu, M.....	217, 224
Carter, W.....	155, 200	Chakravarty, H.....	54	Che Halin, D.....	33
Carton, J.....	220	Chalasanani, D.....	154, 227	Chelladurai, I.....	129
Caruso, M.....	130	Chamard, V.....	186		
		Champagne, V.....	42, 112, 143, 196, 221, 241		
		Champion, Y.....	67		
		Chan, A.....	161		

- Chelli, M 80
- Chen, A 208
- Chen, B. 153, 172, 201, 205, 211
- Chen, C ... 31, 43, 67, 69, 95, 105, 111,
120, 157, 183, 212
- Chen, D 41, 62, 227, 239, 242
- Chen, E. 213
- Chen, F. 26, 65, 125, 214
- Chen, G 99, 147, 168
- Cheng, C 147
- Cheng, F. 37, 57
- Cheng, G 151
- Cheng, H 125, 185, 197, 216, 237
- Cheng, J ... 26, 41, 47, 98, 99, 132, 176,
177, 195, 202
- Cheng, L. 48, 187
- Cheng, M 131
- Cheng, P. 43
- Cheng, R. 216, 221
- Cheng, S. 126
- Cheng, T. 98, 126, 164, 165
- Cheng, X 109, 224
- Cheng, Y. 124, 218
- Chengzhi, Y 45
- Chen, H 77, 104, 130, 132, 151,
191, 239
- Chen, J ... 23, 82, 98, 143, 148, 190, 195,
208, 230, 231, 240
- Chen, K ... 30, 33, 95, 104, 211, 216, 242
- Chen, L. ... 30, 36, 70, 111, 127, 128, 159,
179, 201, 217, 218
- Chen, M. 23, 67, 118, 216, 243
- Chennimalai Kumar, N 219
- Chen, P. 31, 51, 55, 66, 81, 134,
160, 184, 222
- Chen, R. 65, 227
- Chen, S. ... 30, 53, 79, 107, 120, 133, 158,
169, 185, 216, 228, 233, 241
- Chen, T. 113, 118, 125, 144
- Chen, W. 41, 62, 74, 80, 89, 95, 103,
113, 193, 200, 221, 226, 239
- Chen-Wiegart, Y 195, 214
- Chen, X ... 23, 30, 46, 47, 48, 71, 79, 99,
107, 114, 124, 151, 158, 160, 203, 229
- Chen, Y. 30, 43, 53, 76, 85, 92, 94,
97, 113, 126, 127, 138, 145, 146, 154,
159, 175, 177, 191, 193, 194, 195, 198,
200, 201, 210, 212, 218
- Chen, Z. ... 23, 41, 77, 83, 101, 136, 151,
152, 154, 156, 174, 218, 229
- Cheon, G 58
- Chernenko, V 51
- Cherolis, N. 166
- Cherukara, M 27, 135, 162, 186,
206, 207, 234
- Chesser, I 42, 90
- Chetri, S 75
- Che, W 217
- Chiang, C. 205
- Chiang, P. 131
- Chiba, A. 227
- Chibane, H. 74
- Chidambaram, D 65
- Chien, F. 37
- Chi, I. 30
- Chilakala, R 48
- Chin, E 208
- Ching, W 125
- Chintalapalle, R. ... 120, 148, 173, 197, 215
- Chintapenta, V 168, 224
- Chisholm, M 199
- Chiu, A. 159
- Chiu, C. 95
- Chiu, S 205
- Chiu, Y 157
- Chmelik, F 110, 175
- Chmelik, F 150
- Chmielus, M 27, 50, 51, 155, 180,
203, 232, 242
- ChoCholousek, M 166
- Choi, B 202
- Choi, D. 152
- Choi, H. 211, 234, 239
- Choi, I. 96
- Choi, J. ... 25, 34, 41, 49, 71, 73, 100, 126,
140, 152, 177, 199, 230
- Choi, M 69
- Choi, P 25, 88, 238, 239
- Choi, S 170, 220, 227
- Choi, W 76, 239
- Cho, J 119, 129, 137, 219, 227, 240
- Cho, K 30, 127, 138, 212, 239
- Chokshi, A. 124, 130
- Chong, X 30, 187
- Choo, H 52, 74, 81, 89, 109, 135,
153, 161, 168, 185, 205, 206,
211, 217, 227, 231, 233
- Chopard, F. 107
- Chorney, J 99, 176
- Chou, C 219
- Choudhary, A 136
- Choudhary, C 107
- Choudhary, K 56, 58, 187
- Choudhary, R. 28
- Choudhary, S. 205
- Choudhuri, D ... 44, 68, 95, 120, 146,
169, 171, 191, 196, 212, 214, 241, 242
- Choudhury, A 28, 165, 201
- Choudhury, S. 25, 78, 119, 226
- Choudhury, T 100
- Chou, H 169, 205, 219
- Chouhan, H 111
- Chou, J 159
- Chou, K 95, 149, 169, 174, 216
- Chou, M. 53
- Chou, P. 94
- Chourasiya, S. 217
- Chou, T 77
- Chou, Y 62, 89
- Chowdhury, S ... 84, 85, 111, 136, 164,
187, 208, 237
- Chow, T 215
- Chraska, T 172
- Chráska, T 121
- Christ, H ... 45, 83, 166, 191, 209, 239
- Christofidou, K 26, 86, 102
- Christ, V. 24
- Chrzan, D. 70, 72, 137, 209
- Chrzan, K. 79
- Chuang, A 52, 171
- Chuang, C 200
- Chuang, Y 31, 81
- Chubarov, M 100
- Chu, J 82
- Chu, K 59
- Chukmanova, M 228
- Chul-Hee, L 159
- Chulist, R. 232
- Chulliparambil, M. 205
- Chu, M 136
- Chumlyakov, Y 192, 239
- Chun, C 140
- Chung, D 60, 191
- Chung, Y ... 29, 51, 77, 105, 131, 157,
182, 204, 232
- Chun, H 67
- Chu, P. 169
- Church, B. 201
- Chu, Y. 195, 207, 234
- Ciacchi, L 160
- Çiftci, Y 174
- Cigdem, M. 97
- Cinoglu, I. 150
- Cipoletti, D 82
- Ciribelli, L 234, 236
- Ciston, J 212
- Claisse, A 32
- Clare, A 180
- Clark, B 33
- Clark, E. 106
- Clarke, A 24, 41, 48, 53, 59, 72,
74, 76, 99, 104, 123, 125, 127, 130, 151,
156, 165, 171, 181, 191, 203, 212, 217,
228, 231
- Clarke, H 120

Clarke, K	25, 40, 41, 64, 73, 76, 91, 101, 104, 127, 130, 143, 153, 156, 165, 171, 177, 181, 193, 200, 203, 212, 217, 226, 228, 231	Conti, M.	149	Crane, J.	180
Clark, M.	165	Contreras-López, C.	235	Crane, N.	180
Clark, S.	154, 200, 201, 218	Contreras, M.	229	Craparo, J.	55
Clausen, B	26, 52, 118, 153, 155, 194, 200, 223, 226	Cook, A	155	Crawford, A	152
Clauser, A.	64	Cooke, S.	153	Crawford, G.	173, 178, 185
Clavier, N.	206	Cook, J	66	Cresko, J.	144
Clayburn, Z	75	Cook, P.	25, 162, 231	Crimp, M.	130, 180
Clayton, K	57, 222	Cooley, L	240	Criner, A	32
Cleary, B.	26	Cooper, M	56, 144, 175	Cristyne da Cruz Demosthenes, L	141
Cleary, P.	25, 41	Cooper, R.	132	Crivits, T	36
Cleek, C	190	Cooper, V.	94	Croaker, P	123, 176
Clegg, W.	94, 103, 139, 213, 231	Copley, J.	191	Crock, W	148
Clemens, H	42, 45, 69, 118	Corbett, T.	218	Crocombette, J.	32, 40
Cliche, N	95	Corby, C.	54	Crooks, R.	28
Clos, D	108	Cordero, Z	27, 96, 116, 121, 147, 172, 180, 196, 202, 203, 225, 242	Croteau, J.	103, 121
Clouet, E.	212	Cordes, N.	136	Crudden, D	155
Clough, E	178	Cordill, M	35, 59, 139, 167, 172, 189, 197, 210, 237, 240	Cruzado, A.	106
Cobb, G	75	Cordonier, G	173	Cruz, N.	236
Coburn, D	136	Cordova, S	96	Cruz, P	236
Cochrane, R.	196	Cormier, J.	35, 59, 74, 86, 87, 112, 138, 165, 223	Csaki, S.	110
Cockcroft, S	97	Corni, S	160	Csaki, S.	175
Cockeram, B	171	Correa, D	185	Csáki, Š.	150
Cocks, A.	119	Correa, M.	243	Cubeddu, A	80, 221
Coe, H	217	Correia, S	236	Cubides, Y	209
Cojocaru-Mirédin, O	39	Corsi, J	73, 195, 199, 214	Cui, B	28, 29, 87, 113, 138, 166, 188, 209
Cola, G	156	Corte-Leon, P	76, 232	Cui, H	219, 230
Colbert, J	184	Cortie, M	212	Cui, J.	28, 157, 184, 204
Colby, M.	110	Coryell, J	76	Cui, S	204
Cole, K	232	Costa, L	234	Cui, W	151
Coleman, D	230	Costa, R	68	Cui, X	198, 209
Coleman, J.	117, 201	Costa, U.	141	Cui, Y	119, 143, 171, 227
Coleman, S.	120, 187, 240	Costa, W.	223	Cummins, S	25, 179
Cole, S.	232	Cote, D	112, 192, 196, 241	Cunha, J	133
Colle, J	110	Coté, P	55	Cunningham, K.	59
Collet, J.	130	Côté, P	80	Cunningham, N	202
Collins, B	117	Cotrim, M	207	Cunningham, R.	131, 200
Collins, D	27, 68, 103, 130, 138, 207, 209	Cotton, D	205	Curry, J.	104, 240
Collins, P	44	Cotts, E.	28, 182	Curtarolo, S	38, 90, 92, 168, 169
Colombo, G	60, 88	Cottura, M	112, 208, 240	Curtet, E.	93
Colombo, J.	161, 222	Couet, A.	41, 116, 129, 214, 226	Curtin, W.	35, 39
Colorado, H.	61, 163, 173, 235, 243	Coughlin, D	25, 28, 73, 101, 103, 127, 153, 171, 177, 194, 200, 217	Curtis, I	78
Colosimo, B.	127	Coulter, K.	173	Cusentino, M.	52
Combeau, H.	82	Couperthwaite, R	34	Cusset, R	189
Combe, N.	66, 93	Couperthwaite, S.	159	Cutolo, A	102
Compton, C.	75	Courrouau, J	166	Cuvilly, F	118, 127
Conde, A	50	Courtney, R	159	Cvahte, P	220
Conner, B	29, 154, 218	Coury, F	127, 191, 212	C.V, R	199
Connick, R.	40	Coutinho, G.	234, 236	Czabaj, M.	52
Connolley, T	150	Couvrat, M.	35	Czerwinski, F.	226
Constant, K	59	Couzinie, J	38	Czigány, Z	217
Contescu, C	65, 162	Cox, B.	94		
		Cramer, C.	101, 203		

D

D'Aberle, M	99
Dabney, T.	218

- Dacko, C. 111
 Da Costa Garcia Filho, F. . . 61, 114, 141
 Da Cruz Demosthenes, L. 114
 Dadfarnia, M. 87
 Daehn, G. 224
 Dagdelen, J. 136
 Dagel, D. 73, 104, 153
 Dahal, J. 95
 Dahar, M. 87
 Dahmen, U. 93
 Daigle, S. 169
 Dai, H. 90
 Dai, J. 43
 Daikoku, H. 72
 Dai, L. 176
 Dai, Y. 229
 Dai, Z. 221
 Daly, M. 55, 125, 180
 Daly, S. . . . 42, 128, 136, 139, 155, 156, 229
 Damodaran, V. 43
 Dampsey, R. 218
 Dang, J. 96
 Dang, K. 183
 Daniel, C. 106
 Daniel, G. 163
 Daniels, C. 40
 Daniewicz, S. . . . 74, 102, 128, 154, 178, 202, 218
 Daniil, M. 157
 Dankwah, J. 47, 177
 Danno, Y. 210
 Danoix, F. 52, 80, 130, 193
 Danoix, R. 52
 Danthi Shivaram, V. 215
 Dapous, R. 148
 Dardona, S. 147
 Dargusch, M. . . . 54, 123, 151, 175, 176
 Darling, K. . . . 37, 96, 196, 203, 223, 240
 Daroowalla, R. 215
 Darsell, J. 91, 96
 Darvish, S. 34
 Das, A. 154, 176, 185
 Dasari, S. 104, 192
 Dash, B. 96
 da Silva, A. 108
 da Silva, E. 223
 da Silva, L. 114
 Da Silva Marques, A. 182
 da Silva, P. 223
 Das, K. 29, 78, 104
 Das, S. 29, 60, 75, 78, 79, 173, 213
 Das, T. 87
 Datye, A. 37
 Daubarayte, D. 27, 180
 Davari, S. 171
 Davidovich, S. 25
 Davidson, R. 223, 227
 Davies, C. 194
 Davies, M. 118
 Davies, T. 214
 Davis, B. 122
 Davis, C. 98
 Davis, K. 133, 198
 Davis, M. 85
 Davis, R. 215
 Davis, W. 52, 234
 Davydov, A. 85
 Dawicke, D. 102, 166, 209
 Daw, M. 39
 Dawson, P. 103, 208
 Daye, W. 96
 De, A. 168
 De Andrade, V. 188
 Dean, L. 35
 de Assis, F. 141, 235
 de Boer, M. 42, 237, 240
 De Boer, M. 201
 De Bona, E. 110
 DeBow, L. 148
 Debreux, C. 193
 De Carlan, Y. 64, 226
 De Carlo, F. 188
 de Carvalho, T. 234
 Deckard, M. 131, 145
 Deck, C. 110, 240
 Decker, K. 92
 Decker, R. 161
 De Cooman, B. 76
 DeCost, B. 106, 136, 164, 187
 Dedecker, F. 60
 Dede, E. 124
 Deffo, A. 52
 de Formanoir, C. 102, 179
 De Formanoir, C. 104
 De Geuser, F. 53
 Degiampietro, M. 56, 134
 De Graef, M. . . . 50, 78, 106, 156, 186, 207
 Dehm, G. 34, 39, 75, 76, 139, 141, 189, 210
 Dehoff, R. 26, 27, 49, 75, 102, 129, 154, 155, 178, 179, 201, 217, 219
 DeHosson, J. 62
 Deibler, L. 186
 Deillon, L. 189
 Dein, E. 127
 Deitz, J. 32
 Delaney, G. 25
 Delaqua, G. 36, 238
 Delasbour, T. 211
 Delautre, J. 138
 Delhaise, A. . . . 28, 51, 77, 105, 131, 157, 182, 232
 Deljoo, B. 146
 Dellacorte, C. 87
 de Looze, G. 179
 Delooze, G. 218
 Delplanque, J. 201
 Del Rose, T. 112
 De Luca, A. 125
 Demchenko, P. 144
 Demetriou, M. 81, 109
 Demir, A. 127
 Demkowicz, M. 63, 119, 138, 146, 171, 181, 186, 195, 207, 212, 214, 241
 Demosthenes, L. 61, 88, 114, 141, 234, 235, 236
 de Moura, E. 207
 Deneys, A. 166
 Deng, H. 216
 Deng, L. 29, 113
 Deng, Y. 70, 207, 208
 Deng, Z. 48, 55
 Deniz, O. 189
 Dennett, C. 51, 197, 228
 Denning, W. 207
 Dennis, K. 157, 204
 Dennis, P. 31
 Densham, C. 213
 Deo, C. 188, 213
 Dépinoy, S. 130
 Depner, J. 176
 Depond, P. 73, 217
 DePond, P. 201
 Derby, B. 119, 171
 Dericioglu, A. 179, 219
 Derimow, N. 38, 115
 Derlet, P. 206
 Derman, M. 232
 Deronne, L. 57
 D'Errico, F. 64, 98, 148
 Desai, S. 58, 164
 De Sario, A. 187
 De Saro, R. 122
 DeSaro, R. 55
 Deschamps, A. 53, 68
 Desgranges, L. 206
 Deshpande, A. 27
 Desmeules, J. 56
 Detisch, M. 195
 Detlefs, C. 50, 162, 231
 Detor, A. 214
 Detroit, M. 35, 59, 86, 112, 138, 165, 169, 223
 Detsi, E. 73, 100, 195, 199, 214
 Detwiler, A. 207
 Detwiler, C. 55
 Devanathan, R. 116

Devaraj, A . . . 31, 40, 54, 64, 68, 80, 91, 108, 143, 147, 193, 226	Dippo, O. 38, 75, 168	Dore, C. 184
Deveraj, A 188	Dirras, G 37	Dorfling, C. 122
Devuri, V 226	Dirrenberger, J. 61, 168	Dorin, T 174
DeWitt, S 84	Di Silvio, D. 222	Dorreen, M 160
Dewulf, W 131	Dispinar, D. . . . 46, 69, 70, 97, 123, 220, 224, 225, 228	dos Santos, J. 141, 211, 227, 234
Dey, M 25	Ditscherlein, L. 161	dos Santos, V 207
Deyoreo, J. 55	Djambazov, G 97, 150	Dos Santos, V 36
Dharmaiah, P. 159	Dmowski, W 109, 205	Doty, D. 30
Dhawan, N. 121, 198, 243	Doane, B. 75	Dou, B 78
Dheeradhada, V 155, 179, 219	Dobara, K. 204	Doude, H 128
Dhiman, A 132, 163	Doberer, M. 159	Dougherty, E 112
Dholabhai, P 43, 193	Doblin, C 121	Douglas, J. 162
Diak, B 53	Dobra, G. 134	Dou, Z 243
Dial, L. 26, 27, 75, 155, 219	Dobron, P. 91, 110, 150, 163, 175	Dowdell, B 72, 170
DiAntonio, C. 155	Dodaran, M 66, 240	Downey, J. 23, 47, 71, 99, 125, 147, 151, 176, 177, 198, 216
Diao, H. 38, 62	Doerk, G. 197	Dow, W. 95
Diao, J. 47, 121	Doerner, R 213	Doyle, P 82
Dias, D 238	Dogan, C 184	Draelos, L. 179
Diaz, A 28, 135, 162, 186, 206, 207, 234	Dogan, N 29, 51, 77, 105, 131, 151, 157, 182, 204, 232	Draghici, C. 133
Díaz A., S 148	Dogan, O 77	Dragon-Louiset, M 189
Diaz, C 180	Dogan, Ö 112	Dreisinger, D 44
Di Carlo, E. 159	Dogdibegovic, E 25	Drelich, A. 114
Dickel, D 30, 143	Dogu, M. 179	Drelich, J 55, 61, 114
Dickens, P 101	Do, H 47, 239	Drouven, C 120
Dickerson, M. 47	Doiron, P 205	Drozdenko, D 65, 91, 163, 175
Dickinson, W. 72	Dokumaci, E 191	Drozd, V. 85
DiDomizio, R. 179	Doll, G 148	Drumond, P. 235
Dieguez Salgado, U. 105	Domagala-Dubiel, J 78	Dryepondt, S 75, 78, 178
Diepold, B 102	Domain, C 64	Drymiotis, F. 30
Dieringa, H 123, 229	Domnich, V 110	D'Souza, N. 138
Dieste, O. 110	Donaldson, O 121	D. Tucker, J. 223
Dietrich, B 161	Donchev, A 83	Duan, D 228, 241
Dieudonne, Y. 139	Donegan, S. 128, 153	Duan, H 41, 151, 242
Di Gabriele, F 166	Dong, A 150, 178	Duan, J 64
Di Gioacchino, F. 94, 103, 139, 231, 233	Dongare, A. . . . 34, 52, 58, 85, 111, 132, 137, 143, 164, 183, 190, 195, 221, 237, 240	Duan, W. 72
Dillon, R. 82, 206	Dong, C 37, 62, 115, 212	Duan, X 81, 221
Dillon, S 145, 199	Dong, F. 221	Duan, Y 126, 207
Dimartini, T. 238	Dong, H 26, 72, 221	Dubey, M. 215
Dimiduk, D 164	Dong, J. 78	Dubey, S. 40
Dimitris, L 130	Dong, P 24, 48, 72, 100, 126, 140, 152, 230	Dubke, J 205
Dinda, G. 155	Dong, Q 134	Dubois, A. 126
Dinda, S 217, 218	Dong, T 151	Dubois, C. 184
Ding, C. 216	Dong-won, S 159	Dubon, O. 59
Ding, H. 92	Dong, Y 71, 82	Du, C 139
Ding, J . . . 38, 89, 109, 115, 181, 194, 205, 212, 240	Dong, Z 44, 216	Duchosal, A 74
Dingreville, R. . . 66, 116, 118, 132, 158, 183, 188, 204, 213, 233	Doniger, W 41, 116	DuClos, J 98
Ding, W 99	Donik, C. 222	Ducu, C 133, 134
Ding, X. 187	Donmez, M 217	Du, D 178, 220
Ding, Y. 145, 146, 213	Donnadieu, P. 68	Dudala, S 89
Ding, Z. 191	Dontigny, J. 184	Dudarev, S 40, 91
Dionne, P. 217	Dorari, E. 158	Dudney, N 100
Dippenaar, R 44, 182		Duerig, T 155

- Du, J 31, 55, 81, 96, 109, 160, 164,
185, 222, 237
- Du, K 156
- Du Laing, G 148
- Dumbre, J 174
- Dunand, D 59, 60, 88, 103, 121, 125,
159, 196, 242
- Dunn, A 84
- Dunstan, M 27, 155, 179, 180, 203
- Duong, T 34, 112, 208
- Duoss, E 103
- Du, P 73
- Dupont, M 194
- Dupraz, M 170
- Dupuis, M 54, 80, 108, 134, 160,
184, 205, 221
- Durand Farfán, A 233
- Durmaz, A 113
- Durst, K 94, 169
- Du, S 29, 215
- Duscher, G 72
- Dusoe, K 67
- Düssel, R 54, 80, 205
- Du Toit, M 182
- Dutta, A 118
- Duty, C 26, 74, 101, 127, 218
- Du, W 151
- Duygun, I 123, 225
- Dvivedi, A 106
- Dwaraknath, S 111
- Dybalska, A 97, 117, 150
- Dye, D 36, 60, 88, 238
- Dymek, S 140
- Dzisah, P 147
- E**
- Earlam, M 121
- Earthman, J 196
- Eason, P 123
- Eastman, D 59, 137
- Easton, M 46, 64, 70, 97, 123, 149,
150, 175, 202, 229, 234
- Ebadat, V 147
- Ebel, T 65
- Eberl, C 113, 119, 146, 171, 195,
214, 241
- Ebert, W 185
- Ebner, A 45, 118
- Echevarria-Bonet, C 181
- Echeverria, A 167
- Echeverri, G 173
- Echlin, M 27, 50, 101, 103, 111, 118,
139, 178
- Ecker, L 144
- Eckert, J 135
- Eckert, S 41
- Edalati, K 87, 118
- Eden, T 147
- Edgar, C 236
- Edick, J 161
- Edin, E 58
- Edirisinghe, M 31, 184
- Edmondson, P 66, 108, 117, 162,
193, 194
- Edwards, D 42
- Edwards, L 86, 118
- Edwards, T 94, 103, 139, 213, 231
- Eff, M 140
- Eftink, B 117
- Egami, T 62, 109, 205
- Egan, A 112
- Eggeler, G 36, 89
- Eggeler, Y 35, 36, 90, 165
- Eggert, R 131
- Eggler, G 35
- Eghtesad, A 66
- Ehrhardt, F 215
- Ehrich, J 159
- EI-Awady, J 104
- Eidenberger-Schober, M 45
- Eiken, J 70
- Einarsrud, K 80, 108
- Eisaabadi B., G 140
- Eisenlohr, P 28, 130, 156, 180, 231
- Eisenmenger, C 30
- Eker, E 172
- Ekuma, C 215
- Elahinia, M 200
- Elam, J 48
- Elangeswaran, C 102
- El Atwani, O 188
- El-Atwani, O 51, 193, 226
- El-Awady, J 98, 132, 137, 139, 158,
166, 171, 183, 194, 204, 205, 233, 241
- El-Azab, A 40, 93, 110, 158, 205,
206, 222
- Elbakhshwan, M 116
- ElBakhshwan, M 41
- Elbert, D 137
- El Chamaa, S 194
- Elder, K 70, 131
- Eleti, R 62
- Elfstrom, I 179
- Elhebeary, M 47
- Eliseeva, O 129, 164
- El Kadiri, H 44
- El-Kadiri, H 124
- Elkady, M 224
- Elkholy, A 117
- Elliott, A 27, 101, 155, 180, 203
- Ellis, E 242
- Ellis, T 122, 199
- El Mahallawi, I 25, 73
- El-Mahallawi, I 210
- El Moghazi, S 217
- Elrefaie, F 73
- El-Sayed Seleman, M 224
- Elwany, A 102, 129, 145, 202
- El-Wardany, T 178
- Emam, S 60
- Embury, D 89
- Emdadi, A 183
- Emelianova, O 226
- Emigh, M 146
- Emilio, R 236
- Emirov, Y 220
- Endrino, J 67
- Engh, T 161
- Englisch, S 165
- Enoki, 145
- Enoki, M 145
- Enrique, R 192
- Enriquez, R 75
- Eo, D 129, 219
- Epler, M 60, 88
- Eranezhuth, B 175
- Erdeniz, D 125, 242
- Eren, E 137
- Ericksen, K 55
- Erickson, J 179
- Ericson, N 215
- Eriksen, U 161
- Erikson, W 175
- Eriksson, N 95
- Erinosho, M 134
- Eris, R 242
- Erlebacher, J 171
- Ermisyam, I 86
- Erturk, S 224, 225
- Ertürk, S 216
- Erwee, M 60, 122
- Erzi, E 46, 69, 70, 97, 123, 224,
225, 228
- Escano, L 127, 201, 218
- Escobar Claros, C 223
- Escobedo-Diaz, J 32, 33, 44, 56, 57, 68,
83, 95, 110, 120, 136, 146, 163,
171, 186, 187, 196, 207, 214, 234,
235, 236, 241
- Esene, C 230
- Esen, Z 179, 219
- Esfarjani, K 133
- Eshraghi, M 112, 127, 153, 158
- Esin, V 214
- Eskin, D 117, 123, 150, 176, 184, 220
- Esleben, K 45

Espalin, D.	180	Fan, Z	46, 70, 98, 121, 123, 175, 189, 227, 229, 240	Ferenc, J	232
Esper, F.	223	Farajian, A	85	Fergus, J	177
Espinosa, D	68, 220, 222, 223, 229, 235, 243	Farber, J	148	Fernandez-Caballero, A	142
Espinosa, H	32, 55, 125	Fardani, a	223	Fernandez, J	55
Espinoza, C	209	Faria, J	238	Fernandez, M.	92, 146
Espinoza-Nava, L	184	Faria, K.	238	Ferraro, M	100
Esposito, G.	56	Farias, G.	236	Ferreira, M.	29
Espy, M.	74	Farias Gonzalez, F.	227	Ferreira, W.	238
Essayan, G	227	Farkas, D	38, 119, 143	Ferreri, N	86, 179
Esser, B.	44	Farkoosh, A	181	Ferrier, N	106
Estournes, C.	53	Farnin, C	102	Ferry, R.	77
Estrada, D	26	Farren, J	181	Ferry, S	40, 51
Estrin, Y	192	Fatemi, A	74	Fezzaa, K	74, 127, 131, 135, 136, 150, 201, 218
Eswarappa Prameela, S.	92, 146, 171, 241	Fathi Sola, J	113	Field, D.	89, 156
Etesami, S.	112	Fathy, A	231	Felder, M.	185
Ettensohn, D	161	Fatoba, O	53, 92, 134	Field, K.	26, 117
Evangelista, J	107	Favache, A	239	Fields, K	194
Evans, C	156	Favier, V	124	Figueroa, A	144
Everhart, W	127, 201, 218	Favre, J	63	Filho, F	141, 234, 236
Evora, M.	235	Faye, D	25	Filiz, A	123
F		Fayomi, O.	220	Fincher, C.	49
Fabes, S.	167	Fazlollahi, F	48	Findley, K.	77
Fadavi Boostani, A	44	Fear, C	49	Finel, A.	112
Fafard, M	80, 160	Feather, W	156	Finet, L.	214
Fagerlie, J	162	Fecht, H	62, 117, 135, 151	Fiory, A.	215
Fager, M	179	Fedorov, M.	142	Firdaus, M	48
Faghaninia, A	84	Feichter, G	157	Firdosy, S	30, 129
Faghihnasiri, M.	213	Feigelson, B	96	Firrao, D.	187
Faghih, S.	124	Feijoo, G.	243	Fischer, L	229
Fagundes, M	238	Feikus, F.	176	Fisher, B	73
Fahrman, M.	86	Feinroth, H	92	Fite, J.	154
Faierson, E	102	Feldner, P	213	Fitterling, E	187
Faisal, A	98	Felfer, P.	36, 93, 155	Fitz-Gerald, J.	74
Falconer, C.	41, 116	Felicelli, S.	112, 158	Fitzpatrick, B.	117
Falkenberg, G	207	Fellah, M	220, 224	Fitzpatrick-Schmidt, K.	112, 241
Falk, M.	146	Fellinger, M	208	Flanagan, R	193
Fallah Mehrjardi, A.	35	Felser, C	53	Flanagan, T	221
Fam, Y	207	Felts, J.	131, 145	Flannigan, D	157
Fan, C.	146, 181, 194, 212, 214	Feng, B	63	Fleck, D	190
Fancher, C	104, 123, 231	Feng, F	177	Fleshman, C.	77
Fan, G.	208	Feng, G.	42, 241	Fleurial, J	30
Fang, C.	121	Feng, J.	187, 230	Fleuriault, C.	23, 47, 69, 71, 97, 99, 122, 125, 151, 173, 176, 177, 198, 216, 243
Fang, D.	92, 144	Feng, K.	217	Florando, J	208
Fang, Q.	169, 191	Feng, L	112, 207, 240	Flores-Badillo, J.	235
Fang, S	89	Feng, Q.	35, 36, 59, 80, 86, 88, 112, 138, 165, 223	Florescu, C.	134
Fang, Y	44	Feng, R.	115, 169, 191	Flores, F	196
fan, h.	177	Feng, X.	242	Flores, F	235
Fan, H.	170, 194, 239	Feng, y	241	Flores Guerrero, M	235
Fan, P	97	Feng, Y	224	Flores-Guerrero, M.	230
Fan, W	79, 184	Feng, Z	92, 168, 190, 211, 227	Flores, K.	63, 161, 192
Fan, X.	47, 151, 239	Fensin, S.	39, 63, 90, 115, 135, 142, 143, 162, 169, 170, 186, 193, 206, 207, 234	Flores, M	47
Fan, Y	69, 99, 126, 206	Ferblantier, G.	148, 173, 197, 215	Floro, J	123, 172

- Fockaert, L 185
 Foden, A 27, 32
 Fody, J 25
 Fohitung, E 162
 Foiles, S 39, 90, 170
 Fok, A 161
 Foley, D 69, 156, 211, 221
 Foltz, J 45
 Fono-Tamo, R 91, 160
 Fontes, M 235
 Fontes Vieira, C 36, 61, 114, 164
 Ford, K 153
 Forest, S 168
 Forien, J 200, 217
 Fornabaio, M 189
 Forrest, D 31
 Forsberg, K 68
 Forsgren, C 122
 Forsik, S 60, 88
 Fortier, M 184
 Fortin, E 163
 Fortin, S 133, 159, 220
 Foster, J 183
 Foster, Y 25
 Fota, K 83
 Foulk, J 158
 Fowle, W 156
 Fox, F 35, 89
 Fracchia, E 78
 Fraczkiewicz, A 63, 211
 Franchet, J 87, 165
 Francisco, D 235
 Francisco Raúl, B 236
 Francis, D 167
 Francis, Z 129
 Franco, V 50
 Franke, D 190
 Frankel, G 115
 Franke, P 188
 Frank, M 140, 168, 212, 239
 Fraser, H 44, 45, 50, 142, 163, 240, 242
 Fraser, K 108
 Fratto, E 131
 Frazer, D 171, 226
 Frazier, W 164
 Fred, L 155
 Freedy, K 100
 Freibert, F 226
 Freitas, P 236
 Freitas, R 39, 63
 French, M 192, 225
 Freudenberger, J 239
 Freyer, P 26, 41, 101, 193
 Freysoldt, C 31, 34
 Friedersdorf, F 33
 Friedrich, B 82
 Friehe, K 235
 Fries, S 88, 90
 Friis, J 98
 Fritzen, C 166
 Fritzs, R 135, 162
 Frolov, T 34, 39, 58, 63, 64, 85, 111, 137, 164, 170, 237
 Frömel, F 128
 Frostason, S 160
 Frost, G 131
 Frye, B 207
 Fu, A 191
 Fu, C 53, 58, 159
 Fuchs, G 26, 75, 102, 129, 154, 179, 219
 Fu, E 155, 195
 Fu, J 47, 73, 99, 151, 176, 177, 195
 Fujii, H 140, 168, 210, 224
 Fujimoto, M 211
 Fujioka, M 80
 Fujiwara, K 97
 Fukada, S 211
 Fullen, M 102
 Fullenwider, B 45
 Fuller, R 145
 Fullwood, D 66, 75, 85, 187
 Fultz, B 58, 169
 Fu, M 139
 Funken, F 176
 Fu, P 23
 Fu, Q 189
 Fürbeth, W 140
 Furrer, D 25
 Furst, B 226
 Furusawa, H 207
 Fu, S 191
 Fu, X 173
 Fu, Y 170
 Fu, Z 37, 62, 162, 239
 Fuzeng, R 59
- G**
- Gadioli, M 36, 238
 Gadiou, R 59
 Gaertner, H 86
 Gagne, J 55
 Gaharwar, A 222
 Gahlawat, S 133
 Gai, Z 191
 Galea, M 204
 Galeano-Osorio, D 57
 Galetz, M 45, 83
 Galhardo, G 234
 Galitskiy, S 52, 183
 Gallego, N 65
 Gallegos-Pérez, A 68
 Galles, D 101
 Gallmeyer, T 26, 75
 Gallo, D 234, 236
 Gammer, C 118, 205, 240
 Gancarz, T 232
 Ganchenkova, M 226
 Gandha, K 104
 Gandham, P 60
 Gandra, J 190
 Gandy, D 101
 Ganesha, G 52
 Gangireddy, S 191, 211
 Gan, J 144, 188
 Ganjeh, M 185
 Gan, M 47, 151
 Gan, T 117, 178
 Ganti, S 187, 234
 Gao, B 83
 Gao, F 123, 162
 Gao, G 187
 Gao, H 37, 61, 89, 114, 141, 160, 168, 177, 225
 Gao, J 51, 125, 204, 237
 Gao, K 33
 Gao, L 149, 184, 198
 Gao, M 37, 38, 39, 62, 63, 89, 90, 115, 116, 142, 168, 169, 191, 192, 211, 212, 239
 Gao, N 84
 Gao, R 49
 Gao, S 86
 Gao, W 100, 230
 Gao, X 69, 115
 Gao, Y 42, 62, 81, 109, 135, 144, 161, 168, 184, 185, 188, 191, 200, 205, 206, 223, 233
 Gaoyuan, O 204
 Garcés, G 163
 Garcia-Astain, C 181
 Garcia, F 61, 88, 114, 141, 236
 García, F 227
 Garcia Filho, F 114, 141, 235, 238
 Garcia-Hernandez, L 230
 García Hernández, L 243
 Garcia, J 106
 Garcia-Müller, P 42
 Garcia-Pastor, F 68, 226
 García Pastor, F 220
 García, R 119
 Garcia Taormina, A 119
 Gardner, J 88
 Garg, A 175
 Gargalis, L 101, 204
 Garg, P 170, 240
 Garlea, E 73, 74, 153, 217

Garmestani, H	158, 181, 221	Gerber, D	67	Giuliani, F	167, 213
Garner, F	41, 193	Gerberich, W	210	Giulian, R	64
Garner, S	55	Gerdes, K	126	Giwa, A	115
Garrison, L	118	Geringer, J	66	Glaessgen, E	74, 102, 187
Garrison-Terry, S	114	Gerlich, A	140	Glatzel, U	45
Garrity, K	85	Gerlt, A	32, 84	Glavinic, I	41
Garves, J	143	Germann, T	143, 193	Glazoff, M	59, 116
Gascoin, F	30, 53, 79, 101, 107, 133, 158, 233	Gernmayeh, A	77	Gleeson, B	74, 82, 90
Gaskey, B	171	Gervasio, V	126	Gleich, S	189
Gasper, P	126	Gesell, H	80, 221	Glover, C	29, 144
Gassmann, J	181	Gester, A	98, 211	Gluchowski, W	78
Gattu, V	185	Getto, E	101, 117	Gludovatz, B	109, 115, 189, 211
Gaudière, F	59	Geveci, A	177	Gnaupel-Herold, T	200
Gauffin, A	127	Ghamarian, I	31, 44, 80	Gobber, F	78
Gault, B	31, 36, 39, 53, 66, 88, 108, 138, 181, 238	Gharge, U	25	Gockel, J	102
Gaustad, G	45, 69, 97, 122, 148, 173, 243	Ghasemi, A	221, 224, 227, 230	Godard, P	28
Gautam, G	217	Ghassemali, E	184	Godec, M	214, 220, 222
Gauthier, D	160	Ghatnatti, S	54	Godet, S	104, 130, 179, 239
Gavoille, P	226	Ghayoor, M	103	Goeken, M	37
Gavras, S	194	Ghazisaedi, M	112	Goel, K	183, 209
Gaynor, A	178	Ghazisaedi, M	116, 120, 137, 193, 231, 237	Goetze, P	140
Gbenebor, O	164	Ghidossi, T	87	Goetz, R	138
G, D	191	Ghodrati, M	26, 43	Gofron, K	136
Gdoutos, E	153	Ghods, S	55	Goins, P	58, 106, 132, 164, 165
Geandier, G	130	Gholipour, J	201	Gökelma, M	82, 122
Ge, B	133	Ghorbanpour, S	86, 156, 170, 179, 202	Göken, M	36, 60, 102, 166, 167, 213
Gebarowski, W	86	Ghoreishi, S	132, 208	Goldberger, J	34
Geelhood, K	136	Ghosh, A	231	Goldsby, D	180, 203
Geerlings, H	26	Ghosh, G	142	Gole, M	152
Ge, F	82	Ghosh, M	96	Golovchanskiy, I	226
Gehring, D	95	Ghosh, S	59, 116, 128, 132, 189, 204, 208	Golumbskie, W	79, 221
Gehrmann, B	56	Gianesi Bastos Andrade, C	57	Gomaa, A	231
Geiser, B	31	Giannuzzi, L	101	Gombola, C	59
Geissler, D	239	Gianola, D	118	Gomes, A	163
Gele, Q	33	Gibbons, G	154	Gomes, C	92
Ge, M	136, 207, 214, 234	Gibbs, J	74, 90, 101	Gomes, K	235
Genanu, M	28	Gibbs, M	196	Gomes, M	36, 57, 238
Genc Unalan, M	163	Gibbs, P	74	Gomes, P	236
Geng, L	218	Gibson, J	67, 94, 189	Gomes, V	238
Geng, W	237	Gibson, M	180, 202, 242	Gomez, J	237
Genin, X	60	Giddings, A	127	Gómez-Marroquín, M	243
Gentils, A	65, 226	Gierlotka, S	109	Goncalves, D	145
Geohegan, D	72	Giesebrecht, J	150	Gondim De Andrade E Silva, L	236
Georgarakis, K	185	Gigax, J	91	Gong, B	56, 82
George, E	35, 89, 115, 143, 168, 189, 191, 192	Gihleengen, B	161, 162	Gong, C	31
Georges, E	95	Gild, J	38, 168, 169	Gong, J	26, 59, 87, 103
Georgin, B	45, 242	Gilles	56	Gong, M	156, 170
Gera, D	211	Gilles, R	45	Gong, P	181
Gerard, A	115	Gilmer, D	180	Gong, W	65
Gerard, C	195	Giofre, D	39	Gong, X	83, 235
Gérard, C	124, 130	Giorla, A	222	Gong, Y	76
Gerard Mofor, E	134	Giri, A	37, 172, 196, 204	Gonzales, M	84
		Gismelseed, A	235	Gonzalez-Garcia, Y	185
		Gita Novian Hermana	186	Gonzalez-Gutierrez, J	155
				Gonzalez, J	232
				Gonzalez-Legarreta, L	76

- Good, B 44
 Goodfellow, A 139
 Goodlet, B 36, 88, 163
 Goodwin, F 104
 Gopalakrishnan, R 217
 Gopalan, S 49, 126, 177
 Gorbachev, S 149
 Gorr, B 45, 83, 191, 239
 Gorshunova, M 161
 Gorsse, S 38, 239
 Gorti, S 128
 Gorzkowski, E 96
 Gosain, O 60
 Gosselin, L 80, 160
 Gostu, S 159
 Goswami, R 32, 33, 56, 57, 83, 110,
 134, 136, 163, 186, 187,
 188, 207, 234
 Gotawala, N 168
 Gottsfritz, G 202
 Goulas, C 129, 154
 Gould, B 129
 Gould, J 68, 140, 225
 Gouné, M 52, 80, 130
 Gourgues-Lorenzon, A 95
 Gourlay, C 28, 51, 77, 98, 105, 131,
 157, 182, 232
 Gouttebroze, S 98
 Govaere, A 165
 Go, Y 227
 Goyhenex, C 215
 Graber, J 188
 Grabner, F 241
 Grabowski, B 75, 142, 192
 Gradl, P 102
 Graefe, M 159
 Graening, T 241
 Gragg, D 194
 Graham, A 86
 Graham, J 143, 218
 Gramling, H 72
 Grande, T 86, 113, 134
 Grandfield, J 46, 70, 97, 123, 149,
 174, 175, 229
 Grandini, C 185
 Gräning, T 41
 Granroth, G 203
 Grant, G 91, 190, 210
 Grant, J 197
 Grant, L 180
 Grant, P 70
 Grätzel, M 190, 211, 224
 Grau, H 173
 Gravell, J 137
 Graves, A 215
 Gray, G 28, 101, 103, 150, 178
 Gray III, G 50, 75, 187
 Grayson, J 135
 Graziano, D 144
 Greaney, A 199, 230
 Greaney, P 206
 Greco, A 129
 Greenidge, G 171
 Greenquist, I 56
 Green, T 26
 Greer, J 115, 171
 Gregorcic, P 222
 Gregory, G 133
 Gregurek, D 23, 35, 47, 60, 71, 99,
 125, 151, 176, 177, 198, 216
 Greß, T 226
 Griebel, A 144
 Grierson, D 165
 Griffin, R 57
 Griffith, G 74
 Griffith, S 200
 Griffiths, S 103, 123
 Griffiths, W 46, 69, 97, 123, 150, 228
 Griggs, D 101
 Grigorian, C 118
 Grigoriev, V 54
 Groeber, M 128, 153, 219
 Grolimund, D 28, 200
 Groutso, T 160
 Grovenor, C 214
 Gruber, B 241
 Gruber, M 180
 Gruen, G 82
 Grundmeier, G 179
 Grunwaldt, J 207
 Grutzik, S 187
 Grytsiv, A 107
 G, S 94
 G., S 52
 G.S., A 201
 Guanghui, L 71, 96, 125
 Guan, J 175
 Guan, Q 212
 Guazzagaloppa, J 107
 Guban, D 46
 Gubicza, J 217
 Gu, C 70, 110
 Guda, T 222
 Gudipati, P 99
 Gudjonsdottir, M 23
 Gueguen, M 103
 Gueninchault, N 56
 Guenter, F 98
 Guérard, S 80, 108
 Guerra, F 46
 Guerth, M 107
 Guest, J 127, 178, 219
 Gu, F 83, 177, 187
 Gu, G 94, 111, 183
 Guiglionda, G 53
 Guillaumont, L 159
 Guillen, D 23, 48, 71, 101, 229
 Guiton, B 152
 Gui, X 220
 Gu, J 124, 233
 Gul, A 123
 Güler, E 134
 Gulizia, S 121
 Gulsoy, E 34, 58, 85, 106, 112, 137,
 165, 188, 208, 237
 Gultekinoglu, M 184
 Gülever, M 186
 Gümüs, B 179
 Gunasegaram, D 25, 179
 Gunda, N 242
 Gundersen, E 161
 Gündogmus, P 230
 Günes, H 68, 71
 Gunji, S 158
 Gunnarsson, C 31
 Gunnarsson, G 160
 Günther, J 202
 Gunturi, C 235
 Günyüz, M 186
 Gunzburger, M 183, 209
 Guo, D 224
 Guo, E 70, 83, 151, 225, 237
 Guo, F 28, 37, 51, 182
 Guo, H 23, 65, 80, 132, 145
 Guo, L 151, 177, 243
 Guo, M 105
 Guo, Q 70, 127, 201, 218, 233
 Guo, S 128, 145, 175, 176, 211
 Guo, W 65, 86, 108, 142, 193
 Guo, X 80, 99, 138, 141, 189, 198
 Guo, Y 44, 125, 127, 149, 191, 216
 Guo, Z 57, 125, 151, 177, 216, 243
 Guozhi, L 220
 Gupta, A 54, 134, 143, 205, 240
 Gupta, M 42
 Gupta, R 29, 33, 49, 52, 57, 78, 83,
 106, 111, 220, 223
 Gupta, S 25, 49, 73, 100, 126, 146,
 152, 156, 177, 180, 199, 230
 Gupta, V 27, 66, 155, 168, 219
 Guraya, T 101
 Gurmen, S 230
 Gürmen, S 239
 Gurnon, K 219
 Gursoy, O 225
 Gürsoy, Ö 46, 69, 70, 123, 224,
 225, 228
 Gurtaran, M 70

- Gussev, M. 41, 66, 93, 117
 Guss, G. 73, 131, 178, 201, 217
 Gussone, J. 200
 Gustafson, S. 50
 Gu, T. 119
 Guthrie, R. 186
 Gutiérrez García, C. 235
 Gutierrez-Hernández, C. 236
 Gutt, R. 80, 221
 Gu, W. 66, 119
 Gu, Y. 137, 166, 205
 Guyer, J. 128
 Gu, Z. 77, 131
 Guziewski, M. 120, 187, 240
 Guzman, R. 219
 Guzzo, C. 109
 Gwak, J. 25
 Gwalani, B. 62, 108, 169, 191, 192, 211
 Gylver, S. 108
 Gyoshev, S. 234
- H**
- Haase, C. 128
 Haataja, M. 112
 Habas, S. 71
 Haberl, B. 203
 Habermehl, M. 46
 Haber, R. 110, 180, 231
 Habib, S. 102
 Hachet, D. 239
 Hackett, B. 139
 Hackett, G. 126
 Hack, K. 46
 Hadad, G. 218
 Hadadzadeh, A. 91, 129, 154, 178
 Hadi, A. 107
 Hadian, F. 28, 182
 Hadidi, H. 127
 Hadi, M. 119
 Hadjiev, V. 175
 Hadjipanayis, G. 181
 Hagen, E. 113
 Haghshenas, M. 42
 Hague, R. 101, 180, 204
 Hahn, E. 143, 207
 Hahn, H. 239
 Haider, W. 148, 185, 218
 Haines, M. 202
 Hainsworth, S. 50
 Hakonsen, A. 55
 Håkonsen, A. 162
 Halbert, S. 227
 Hald, J. 80
 Hale, L. 187
 Hales, S. 206
- Haley, D. 196
 Haley, J. 64, 73, 153, 201
 Hall, A. 150
 Hall, D. 193
 Halliday, S. 128
 Hall, K. 25
 Halstenberg, P. 117
 Halstensen, M. 108
 Hamadi, S. 138
 Hama, T. 189
 Hamed, A. 158, 206
 Hamer, S. 56
 Hamerton, R. 75
 Hamilton, C. 140
 Hamilton, J. 159, 180
 Ham, J. 33
 Hammell, J. 178
 Hammond, V. 155, 203
 Hamm, W. 192
 Hamon, F. 87, 138, 165
 Hamouda, A. 224
 Hamoush, S. 218
 Hamuyuni, J. 122
 Han, B. 47, 83, 209, 220, 221, 239, 241
 Han, C. 26
 Handwerker, C. 148
 Han, E. 227
 Han, G. 57, 133, 136, 163, 199, 207, 208, 235
 Han, H. 211, 233
 Han, I. 136
 Han, J. 44, 53, 90, 140, 216, 237, 241, 242
 Han, K. 64, 137
 Hanke, S. 159
 Hanlon, T. 26, 155, 219
 Hannard, F. 109
 Han, Q. 168, 223, 225
 Han, R. 152
 Han, S. 242
 Hansen, D. 106
 Hansen, E. 222
 Hansen, I. 108
 Hansen, N. 37
 Hansen, S. 218
 Hans, M. 189
 Hanson, E. 58, 132
 Hansson, C. 35
 Hanumanthappa, S. 124
 Hanusova, P. 67
 Han, W. 141, 214
 Han, X. 48, 151, 199
 Han, Y. 231
 Han, Z. 72, 229
 Hao, J. 243
 Hao, N. 152
- Hapci Agaoglu, G. 225
 Haque, N. 23, 48, 71, 196, 229
 Harada, H. 97
 Harada, J. 238
 Haraldsson, L. 23
 Harcuba, P. 95, 214
 Harder, R. 27, 135, 162, 186, 206, 207, 234
 Harding, I. 181
 Hardin, T. 206
 Hardouin Duparc, O. 189
 Hardwick, N. 194
 Hardy, J. 108
 Hardy, M. 36, 86
 Hareland, C. 96
 Hargather, C. 63, 85, 239
 Hariharaputran, R. 128
 Harimkar, S. 29, 52, 78, 106, 128, 220
 Harjo, S. 65, 169, 240
 Harlow, D. 113
 Harlow, W. 62
 Harmer, M. 37
 Harper, W. 182
 Harp, J. 56, 82
 Harp, K. 86
 Harrigan, B. 155
 Harrington, T. 38, 75, 168, 169, 185, 226
 Harris, E. 218
 Harris, V. 156
 Harris, W. 56, 126
 Harris, Z. 50, 138, 166
 Harr, M. 139
 Harry, M. 106
 Harrysson, O. 180
 Hart, A. 101
 Harter, J. 199, 230
 Hart, G. 90
 Hart, J. 127
 Hartman, N. 192
 Hartwig, K. 69, 181, 194
 Harvey, C. 75, 146
 Hary, B. 226
 Hasan, M. 151
 Hasannaeimi, V. 109, 168, 185
 Haseeb, A. 43
 Hasegawa, A. 118
 Hashimoto, N. 193
 Hashimoto, T. 70
 Hasieber, M. 224
 Hassan, A. 125
 Hassanabadi, M. 82, 162
 Hassani-Gangaraj, M. 27, 175, 232
 Hassanipour, M. 114
 Hassan, M. 41, 135, 228, 230
 Hassan, S. 225

- Hass, D 52
Hattar, K 40, 41, 51, 52, 64, 66, 90,
93, 94, 110, 117, 118, 145, 170,
171, 194, 197, 212, 213, 228
Hattrick-Simpers, J 92, 136, 164
Haubrich, J 200
Haugen, T 161, 162
Haugland, I 108
Hautier, G 159
Haverkamp, R 31, 60
Hawkins, C 75
Hawk, J 35, 38, 77, 85, 98, 112, 116,
168, 169
Hayakawa, Y 64
Hayamizu, Y 31, 55, 134
Hayes, P 35, 60
Hayes, S 111
Hay, J 94
Hayne, M 98
Haynes, J 84, 146
Hazan, J 145
Hazel, B 139
Hazeli, K 154, 192
Hazell, P 68
He, B 34, 130
Hebert, D 74
Hebert, R 101, 154, 241
Hebrard, L 112
Hecht, U 117, 200
Heckman, N 90, 170, 212
Hector, K 81
Hector, L 53, 79, 129
Heczko, O 242
Hedström, P 68, 84, 130, 204, 231
He, F 78
Hegadekatte, V 98
Hegedüs, M 91
He, H 208
Hehr, A 26, 27
Heidarpour, A 220, 223, 224
Heigel, J 201, 217
Heilmaier, M 45, 59, 68, 191, 196, 239
Heinz, H 31, 55, 58, 81, 134, 148,
160, 184, 222, 231
Heisterkamp, P 83
He, J 53, 59, 89, 144, 225, 233
He, K 54, 193
He, L 56, 119, 125, 144, 162, 213,
226, 240
Hell, J 130
Hellman, O 58, 169
He, M 207, 229, 235
Hemery, S 28, 103
Hémery, S 158, 166
Hemker, K 59, 110, 121, 137, 139,
143, 178, 180, 219
Hénaff, G 87
Henderson, D 145
Henderson, H 27, 107, 155, 181, 204
Henderson, K 73, 136
Henderson, M 163
Hendry, M 129
Henein, H 217
Hennebel, T 148
Hennig, R 34, 39, 58, 85, 111, 137,
164, 180, 237
Henry, J 162
Henson, A 230
Heo, S 49, 195, 230
Heo, Y 218
He, Q 191
He, R 118
Herbert, E 33
Herbert, J 55
Herbig, M 108
Herderick, E 174
Heremans, J 34
Heresi, C 142
Herlach, D 117
Herling, D 156, 168
Herman, M 136
Hermann, R 133
Hermans, M 154
Hernandez, A 220
Hernández, A 229, 235
Hernandez Arriaga, H 49
Hernández-Ávila, J 235
Hernandez, E 58
Hernández Escobar, D 225
Hernandez, F 147
Hernandez Lara, J 236
Hernández-Lara, J 236
Hernandez, R 223
Hernández Ramírez, A 236
Hernández-Ramírez, A 236
Hernandez-Rivera, E 106, 132,
136, 165
Hernández-Rivera, E 204
Hernandez, S 92
Heron, J 240
Herrero, B 206
Herrington, J 170, 194
Herriott, C 127
He, S 76, 216
Heusler, L 107
Heuzé, J 95
He, W 198, 216
He, X 174, 177
He, Y 103, 105, 118, 197, 198, 212, 214
Hezil, N 220, 224
Hibbard, G 180
Hickel, T 39, 142, 187
Hickey, F 138
Hickman, H 166, 209
Hickman, J 30, 39
Hidelbrando, E 234
Hielscher, R 32
Higgins, W 215
Higgs, C 180
Higgs, S 236
Hightower, N 179
Hilairat, N 146
Hilck, A 59
Hild, F 139
Hild, R 173
Hilhorst, A 239, 240
Hill, B 107
Hill, M 200
Hillman, D 182
Hilmas, A 149, 174
Hilmas, G 167
Hilpert, B 104
Hiltmann, F 86
Hilty, F 94
Hinerman, A 30
Hinkle, A 90, 240
Hinojos, A 200
Hinterleitner, B 30
Hintsala, E 70, 94, 175, 210
Hirata, K 85
Hirayama, K 114
Hirmas, K 137
Hirsch, J 98, 124, 229
Hirst, C 40
Hitzler, L 154
Hizazi, F 67
Hizli, I 220, 225, 228
Hjertenæs, E 160
Hlava, J 41
Hoagland, R 195
Hoar, E 158, 221
Ho, C 92
Hochhalter, J 102, 166, 209
Hochrainer, T 110
Hocine, S 156, 200
Hocini, A 37
Hodge, A 35, 80, 119, 126, 210
Hodge, H 159
Hoe, A 131, 145
Hoelzer, D 66, 91, 196, 218
Hoepfel, H 37
Hofer, D 35
Hoffman, A 64, 108, 240
Hoff, S 55, 160, 222
Hofmann, D 81, 82, 129
Hofmann, F 162, 186, 213
Hofmann, M 45, 56
Hogan, J 207

Hoggard, G	222	Horita, Z	87	Huang, C	37
Hogg, B	36	Hornbuckle, B	37, 93, 96, 223	Huang, D	51
Hohenwarter, A	210	Hornbuckle, C	196	Huang, E	37, 38, 62, 63, 89, 115, 142, 168, 169, 191, 192, 205, 211, 212, 219, 239
Ho, I	201	Horstemeyer, M	81, 128, 143, 225	Huang, F	82
Hoisington, P	180	Hort, N	46, 70, 91, 97, 98, 123, 124, 144, 149, 150, 175, 194, 227, 229	Huang, H	78, 113
Hojjatzadeh, S	127, 201	Horvath, K	163	Huang, J	163
Hojna, A	166	Horváth, K	91, 194	Huang, K	51
Ho, K	63, 116	Horwath, J	204	Huang, L	64, 76, 118, 119
Holby, E	240	Hosemann, P	42, 67, 91, 94, 110, 118, 171, 194, 218, 223, 226, 240, 241	Huang, M	76, 104, 114, 130, 141, 156, 181, 203, 231
Holcombe, E	221	Hossaini-Zadeh, M	31	Huang, Q	44, 216
Holcomb, M	155	Hossain, S	197	Huang, S	90, 153, 157, 168, 201, 210, 211
Holesinger, T	172	Hosseini, A	231	Huang, T	37, 79, 175, 233
Holgate, C	90	Hosseini, M	55	Huang, W	85, 99, 219
Holladay, S	106	Hosseini, S	199, 206, 230	Huang, X	37, 106, 195, 207, 234
Hollang, L	168	Hosseinisrani, S	87	Huang, Y	57, 58, 81, 123, 124, 133, 136, 144, 148, 169, 176, 207, 235, 239
Holler, M	207	Hosseinpour, A	174	Huang, Z	70, 79, 98
Holmberg, K	139	Hotzer, J	164	Huasai, L	231
Holm, E	39, 42, 50, 56, 63, 84, 90, 111, 116, 137, 143, 164, 170, 193, 212, 220	Hou, D	86	Hu, B	49, 120
Holmefjord, E	184	Hou, G	113	Huber, T	73
Holmes, C	163	Hou, J	141, 212	Hübner, S	106
Holt, M	206	Hou, P	227, 231	Hu, C	63, 81, 82, 107, 240
Holt, N	160	Hou, X	191	Hudelson, S	180
Holý, V	95	Hou, Z	29	Hudon, P	127
Holzmond, O	202	Hovanski, Y	140, 144, 167, 190, 210, 211, 224	Hu, E	136
Holzner, C	56	Howard, J	161, 222	Huegel, D	26
Homer, E	39, 63, 64, 66, 85, 90, 116, 143, 170, 187, 193, 212	Howarter, J	23, 48, 71, 148, 149, 229, 243	Huegel, W	95
Homma, T	44	Howe, J	54	Hufschmidt, M	46
Honarmandi, P	208	Howes, J	122	Hughes, G	162
Honda, Y	156	Howland, W	66, 226	Hughes, S	122
Hong, J	47, 49, 140	Hoyer, K	129, 179	Hu, H	92, 227
Hong, K	179	Hoyt, J	39, 63, 90, 115, 142, 169	Huillet, C	107
Hong, L	71, 199	Hrabe, N	74, 102, 128, 154, 178, 179, 202, 218	Huin, D	68, 80
Hongming, L	216	Hreczka, M	76	Hui, X	62
Hong, Q	115	Hruszkewycz, S	186	Hu, J	74, 93, 142, 144, 191, 226
Hong, S	30, 53, 79, 107, 129, 133, 158, 196, 233, 242	Hsiao, A	29	Hu, K	33, 44, 216, 225, 234, 237
Hong, W	105, 157, 232	Hsiao, C	131	Hu, L	53, 231, 232, 242
Hong, Y	30, 34	Hsiao, H	186	Húlan, T	150
Honkimäki, V	154	Hsieh, A	232	Hu, M	53, 198
Hono, K	28	Hsieh, H	79	Hundley, J	103, 178
Hood, Z	215	Hsieh, K	38	Hung, C	154, 241
Hool, A	28, 50, 76, 104, 131, 156, 181, 204, 232	Hsing, C	159	Hung, H	157
Hooper, D	92	Hsueh, C	89	Hunter, A	58, 132, 170
Hooper, P	201	Hsu, F	97	Hunter, J	74, 221
Hoopes, J	152	Hsu, J	172	Hunting, L	180
Hooshmand, M	193	Hsu, K	27	Hunyadi Murph, S	152
Hopkins, P	123, 169, 197	Hsu, P	157	Huo, D	134
Hopper, M	92, 230	Hsu, T	201	Huo, K	38
Horan, C	73	Hsu, W	28, 43, 68	Hu, P	191
Horie, T	185	Hsu, Y	51, 95	Hupa, L	23, 144, 145
Horiike, T	51	Hu, A	147, 172, 197, 211, 215	Hu, R	54, 108
Horita, T	177	Huang, B	23, 71, 121	Hurchalla, G	55

- Hurh, P. 213
 Hurley, D 158
 Hurlimann, M 223
 Hurtado, I 167
 Hu, S 25, 149, 171, 177
 Husain, S 210
 Hussain, I 234
 Hu, T 176
 Hutahuruk, D 86
 Hutchinson, M 78
 Hutchinson, W 236
 Hutchison, M 29
 Hu, X 83, 151, 176, 216
 Hu, Y 58, 112
 Huyghe, P 130
 Huynh, T 127
 Hu, Z 221, 241
 Hwang, J 23, 24, 32, 33, 47, 56, 57, 71,
 83, 99, 110, 125, 136, 151, 161,
 163, 176, 177, 186, 187, 198, 205,
 207, 216, 234, 239
 Hwang, S 49
 Hyer, H 127, 178, 179, 202
 Hyers, R 117, 151, 166
 Hyland, M 205
- I**
- Iakovlev, E 240, 241
 Iams, A 128
 Ibrahim, A 44
 Ibrahim, I 96
 Ickes, T 52
 Idell, Y 217
 Idowu, A 230
 Idrees, M 152
 Ifijeh, H 230
 Ifijen, H 230
 Ihkuoria, E 230
 Iikubo, S 85, 237
 I-Ju, W 105
 Ikeda, M 54
 Ikeda, T 231
 Ikeda, Y 63
 Ikhmayies, S 32, 33, 36, 56, 57, 61,
 83, 88, 110, 114, 136, 141, 163, 174,
 186, 187, 197, 198, 207, 234, 238, 243
 Ikhuoria, E 230
 Ikuta, R 104
 Ilinski, P 234
 Iloeje, C 144
 Ilyas, M 29
 Imai, Y 158
 Imam, M 168, 224, 242
 Imasato, K 107, 233
 Im, H 88, 238
 Imhoff, S 74, 196
 Im, S 205
 Inal, K 141
 Indacochea, J 185
 Indeck, J 192
 Indurkar, P 204
 Inel, C 184
 Ingole, S 78, 106, 224, 225
 Inui, H 168
 Ionescu, M 213
 Ionita, A 136
 Iorio, L 71
 Iost, A 222
 Ipatov, M 76, 232
 Ipek, K 134, 224
 Iqbal, Z 173
 Irrinki, H 187
 Irving, D 38
 Irwin, L 40
 Isaacs, E 90
 Isac, M 186
 Isern, L 67
 Isgor, B 201, 223
 Isheim, D 80
 Ishii, A 232
 Ishikawa, K 80
 Ishmurzin, A 35
 Isiksacan, C 186
 Isiksaçan, C 186
 Islam, A 92
 Islas Hernández, M 243
 Ismail, S 92
 Issahaq, M 221
 Issa, I 139, 195
 Issa, M 96
 Issaoui, A 91, 226
 Ito, K 210
 Ivanisenko, J 239
 Ivanoff, T 73, 153, 186
 Ivanov, D 52, 183
 Ivanov, E 219
 Ivanov, I 126
 Iverson, J 90
 Iyer, A 107
 Izadi, E 225, 240
- J**
- Jaansalu, K 45, 68
 Jabed, A 148
 Jablonski, P 35, 169, 192, 239
 Jacke, H 83
 Jackman, J 175
 Jackson, B 30
 Jackson, W 90
 Jacobs, T 77, 196
 Jacques, P 239, 240
 Jacques, V 28, 189
 Jafari, H 213
 Jafari, T 146
 Jåfs, M 122
 Jagetia, A 192
 Jäggle, E 202
 Jahed, H 29, 91, 124, 194
 Jahn, M 144
 Jahr, H 185
 Jahrsengene, G 60
 Jain, A 49, 84, 133, 136, 164, 206
 Jain, E 101
 Jaing, W 132
 Jain, M 42
 Jakob, S 45
 Jalali, S 67
 Jamalian, M 89
 Jamal Wazir Eddin, J 134
 James, J 84
 Jamil, T 55
 Jamshidinia, M 103, 129
 Jamshidi, R 220, 223, 224
 Jana, S 108, 147
 Janecek, M 172
 Jang, C 47
 Jang, D 47, 70, 98, 124, 150, 175
 Jang, H 170
 Jang, J 26, 205, 241, 242
 Janicki, D 78
 Janish, M 117
 Jankowski, E 26
 Jankowski, J 53, 127
 Janoske, U 80, 221
 Janssen, J 187
 Jantzen, T 46
 Jaques, B 196
 Jared, B 73, 153, 217
 Jarrett, M 176
 Jarry, P 176
 Jassim, A 134, 184
 Javaheri, I 78, 137
 Javaid, A 226
 Javaid, F 94
 Javaid, S 25, 189, 209, 238
 Javidani, M 184
 Jawaharram, G 145
 Jayaganthan, R 41, 92, 227
 Jayaraman, T 187, 191
 Jayaram, V 67, 150
 J. Bhattacharyya, J 44
 Jean-Baptiste, F 73
 Jeelani, S 152
 Jeffries, J 217
 Jellison, G 222
 Jeltsch, R 134

Jena, S	29, 78	Jing, J	125	Joshi, V	40, 64, 91, 108, 144, 147, 170, 194, 226
Jenkins, E	234	Jing, T	72, 241	Joslin, C	75
Jenkins, S	209	Jin, H	158	Josse, C	70
Jennings, R	27	Jin, K	50, 142	Joubert, H	60
Jensen, B	157, 204	Jin, S	54, 80, 242	Joulain, K	157
Jensen, J	142, 240	Jin, X	76	Jourdan, T	64
Jensen, Ø	82	Jin, Y	29, 105	Jo, W	25
Jensen, W	172	Ji Whan, A	48	Jo, Y	117, 171, 239
Jeong, G	232	Ji, Y	128, 179	Joyce, J	131
Jeong, K	242	Ji, Z	47, 151	Joy, J	130
Jeong, W	98, 233	Jno-Baptiste, J	145	J. Pataky, G	239
Jeon, J	221	Joester, D	160	Juan, C	216
Jepson, M	102, 154	Johanns, K	136, 225	Juang, J	105, 157
Jepson, S	135	Johansen, I	161	Juan, P	118
Jerred, N	226	John, R	84, 113, 166	Juan Pablo, H	236
Jessner, P	52	Johnsen, S	108	Juarez-Islas, J	196
Jha, A	54, 205	Johnson, A	149	Juarez, J	182
Jha, S	166	Johnson, B	108	Juarez Tapia, J	235
Jia, B	216	Johnson, C	127, 238	Juárez Tapia, J	236
Jia, J	109	Johnson, F	28, 50, 76, 104, 131, 156, 181, 204, 232	Juárez-Tapia, J	236
Jiang, B	37, 115, 144, 156	Johnson, G	218	Jublot-Leclerc, S	65
Jiang, C	144, 188, 196	Johnson-Glauch, N	35	Judge, V	156
Jiang, G	83, 231	Johnson, J	24, 41, 56, 205	Juds, M	76
Jiang, H	55	Johnson, K	104, 153, 187	Jue, J	144
Jiang, J	51, 232	Johnson, L	102	Julio César, J	236
Jiang, K	133	Johnson, N	26	Jumaev, E	239
Jiang, L	138, 174	Johnson, O	30, 34, 58, 64, 85, 90, 106, 111, 137, 164, 187, 237	Juma, S	135
Jiang, M	211, 227	Johnson, S	227	Jund, P	30, 53, 79, 107, 133, 158, 233
Jiang, P	53, 159	Johnson, W	81, 109	Jung, C	25, 239
Jiang, R	131, 219	Johto, H	122	Jung, D	241
Jiang, S	73, 91, 153, 169, 201	Jo, J	29	Jung, E	222
jiang, t	44	Jokisaari, A	119, 162, 188, 226	Junge, T	39
Jiang, T	23, 33, 47, 71, 83, 96, 99, 121, 125, 151, 176, 177, 187, 198, 216	Jolly, B	73	Jung, I	23, 145
Jiang, W	48, 125, 151, 170, 183	Jolly, M	46, 69, 70, 97, 123, 135, 149, 175, 228, 229, 243	Jung, J	239, 240
Jiang, X	91, 184	Jo, M	211	Jung, S	224
Jiang, Y	157, 181, 198, 225, 231, 234	Jones, B	97	Jung, W	211
Jiang, Z	62, 136	Jones, D	146, 178	Jung, Y	72, 100, 202
jianliang, Z	216	Jones, G	128	Jun, J	84
Jianxun, F	216	Jones, J	197	Junmin, S	220
Jiao, K	23	Jones, N	102, 129, 201	Juwhari, H	207
Jiao, Q	98, 104	Jones, R	94, 231	J. Van Rooyen, I	162
Jiao, Z	193	Jong Ho, K	225		
Jia, R	199	Joo, G	221	K	
Jia, Y	225	Joo, M	221	Kaban, I	205
Jia, Z	53, 159	Joo, S	141, 192	Kabel, J	94, 240
Jie, L	216	Jordan, B	40, 64, 91, 144, 170, 190, 194, 226	Kabra, S	118
Jie, Q	142	Jordan, J	40, 144, 194, 202, 226	Kacher, J	27, 28, 47, 62, 66, 69, 70, 75, 98, 124, 150, 175
Jie, W	91, 98	Jo, S	227	Kadambi, S	165
Jie, Y	243	Joshi, A	92	Kadirvel, K	240
Ji, G	111, 154	Joshi, P	147, 172, 197, 215	Kadkhodaei, S	115
jilai, X	47	Joshi, S	124, 204	Kahelin, J	237
Jimenez Correa, M	243			Kai, J	37, 57, 239
Jimoh, A	44			Kainer, K	123, 124, 149
Jindal, V	164				
Jing, D	101				

- Kainuma, R 64, 137
 Kaira, C 188
 Kaiser, K 23
 Kai, W 37, 57
 Kajihara, M 95
 Kajiwara, K 182
 Kakefuda, Y 30
 Kalácska, S 67
 Kalay, I 33
 Kalay, Y 32, 33, 56, 57, 83, 110, 136,
 163, 186, 187, 207, 234
 Kalchev, Y 89
 Kale, C 144, 170, 183, 189, 223, 227
 Kalidindi, S 78, 84, 113, 164, 181
 Kalish, I 85
 Kalkan, H 123
 Kalkan, I 228
 Kamada, K 69, 198
 Kamado, S 227
 kamanio, C 60
 Kamath, R 52, 217
 Kamat, S 153
 Kamimuki, K 211
 Kamineni, P 227
 Kammenzind, B 85, 171
 Kammer, M 182
 Kammler, D 155
 Kanagaraj, S 109
 Kandalam, A 23
 Kan-Dapaah, K 109
 Kang, C 220
 Kang, E 81
 Kanger, C 127
 Kang, G 243
 Kang, H 57, 83, 96, 151, 225
 Kang, J 25, 96, 104, 170
 Kang, K 239
 Kang, M 129
 Kang, N 138, 140, 239
 Kang, S 81, 100, 227
 Kang, Y 29, 37
 Kantzos, C 52
 Kao, A 117, 178
 Kao, C 51, 157, 169
 Kaoumi, D 47, 91, 124
 Kapil, A 224
 Kaplan, Y 53, 97
 Kapoor, K 205
 Kappacher, J 42
 Kappes, B 26, 128, 208, 237
 Kapp, M 93
 Kapusta, B 226
 Kara, A 191
 Karaca, H 200
 Karadge, M 179
 Karagadde, S 201
 Karahan, B 152
 Karaman, I 34, 69, 84, 95, 102, 112,
 129, 130, 164, 170, 192, 202, 239
 Karamched, P 103
 Karamooz-Ravari, M 26
 Karastoyanov, D 234
 Karayagiz, K 102
 Kar, D 201
 Kardoulaki, E 56
 Kareer, A 50, 169
 Karge, L 45
 Karhausen, K 186
 Karimidehcheshmeh, F 111
 Kar, J 67, 218
 Karlík, M 242
 Karma, A 74, 115, 116, 208
 Karonen, J 122
 Karoutas, Z 26
 Karpov, D 162
 Kar, S 109
 Karthikeyan, J 220
 Kasinath, R 31, 55, 81, 109, 160,
 161, 185, 222
 Kasprick, G 145
 Kassa, S 82
 Kassen, A 181
 Kassner, M 178
 Kassoumeh, S 107
 Katamreddy, S 117
 Katinas, C 127, 179
 Katnagallu, S 31
 Kato, H 141
 Katoh, Y 66, 82, 118, 162, 206,
 240, 241
 Kato, K 199
 Kato, Y 182
 Katsurai, T 231
 Katsura, Y 158
 Katti, D 109, 160
 Katti, K 31, 55, 81, 109, 134, 160,
 184, 222
 Kattner, U 142
 Kattoura, M 138, 178
 Katzensteiner, A 172
 Kauffmann, A 59, 191, 239
 Kaufman, J 178
 Kaufman, M 53, 127, 163, 165, 191, 212
 Kaufmann, H 175
 Kaufmann, K 185
 Kaur, G 230
 Kautz, E 108
 Kavousi, S 153
 Kawagishi, K 97
 Kawai, M 222
 Kawakami, K 80
 Kawamoto, N 30
 Kawamura, Y 146, 175
 Kawanishi, S 51, 72, 77
 Kawano, S 85, 237
 Kawarasaki, T 182
 Kawasaki, M 44, 68, 95, 120, 146,
 171, 196, 214, 225, 241, 242
 Kawata, H 156
 Kayali, E 123
 Kayal, N 29
 Kaynak, M 69
 K.C, C 234
 Kecskes, L 35, 92, 104, 146, 171, 231
 Kedjar, B 93
 Kee, R 126
 Ke, H 193
 Kehl, K 227
 Keicher, D 89, 104
 Keil, T 169
 Keiser, D 144, 226
 Keiser, J 65, 235
 Keiser, Jr, D 95
 Keist, J 128
 Ke, J 85, 193
 Kekec, S 224
 Keles, O 79, 152
 Kelkar, R 178, 219
 Kelley, D 117, 227
 Kellogg, F 129
 Kelly, S 56, 126
 Kelly, T 31
 Kelton, R 113
 Kemp, R 40
 Kenel, C 200
 Kenesei, P 93, 124, 128, 139, 186, 200
 Kennedy, J 182
 Kennedy, M 35, 60
 Kenney-Benson, C 77
 Kent, D 54
 Kenzhaliyev, B 68, 228
 Keppens, V 51, 142
 Kernan, B 180
 Kernien, B 73
 Kernion, S 60, 88
 Kern, J 165
 Kesel, I 98
 Kesen, O 123
 Kesen, Ö 123
 Kesharwani, R 224
 Keshavarz, S 36
 Keskinilic, E 23, 47, 71, 99, 125,
 151, 176, 177, 198, 216
 Kesler, M 27, 28, 107, 155, 204
 Keßler, O 179
 Kevorkijan, V 56, 122, 134
 Keylin, V 76, 157
 Keys, E 114

Khademi, V	54	Kimura, K	158	Kobayashi, Y	80, 121, 163, 204
Khadivinassab, H	97	Kimura, Y	133	Kober, E	64
Khairallah, S	129, 131, 153, 201, 217	Kim, W	135, 221, 233	Kocaveli, A	228
Khajehvand, M	212	Kim, Y	29, 50, 69, 95, 107, 138, 144, 151, 164, 176, 219, 220, 221, 227, 242	Kocevski, V	32
Khalid, H	230	King, D	91, 137, 212	Koch, A	79
Khalifa, W	25	King, M	49	Koch, B	207
Khan, A	111	King, P	121	Koch, C	115
Khanal, R	25, 226	King, W	201	Kochhar, A	122
Khanbolouki, P	172	Kini, A	66	Koch, S	56
Khanikar, P	169	Kinser, E	59	Kocijan, A	222
Khan, M	210	Kintsu, K	146	Kockelmann, W	218
Khan, N	149	Kioupakis, E	240	Kodambaka, S	67
Khayyam Nekouei, S	243	Kirchain, R	173	Kodani, T	158
Khodabakhsh, S	219	Kirchheim, R	166	Koehler, M	153
Khodaei, N	97	Kirchlechner, C	75, 76, 139, 189, 210	Koenuma, K	237
Khomami, B	25, 171	Kirchner, J	57	Koepke, J	73, 153
Khosravi, E	211	Kireeva, I	239	Koerper, B	102
Khrustalev, A	176	Kirka, M	27, 75, 101, 163, 178, 179	Kohaneck, J	58
Kiani, M	66, 119	Kirk, M	74, 226	Köhler, T	211
Kiani, P	45, 73	Kirk, T	129, 164, 191	Kohnert, A	116, 194
Kieback, B	155	Kirnstötter, S	241	Kohtake, T	104
Kiener, D	42, 94, 118, 139, 167, 180, 189, 195, 210, 237, 240	Kirsten, T	209	Koike, K	171
Kienl, C	165	Kishen, A	161	Koike, M	185
Kierzewski, I	43	Kiss, L	108	Koishihara, N	31
Kikuchi, S	168	Kisslinger, K	195	Koizumi, Y	157, 227
Killough, S	197	Kistanov, A	34	Ko, J	124
Kilmametov, A	141	Kitahara, A	56	Koju, R	240
Kilymis, D	195	Kitamoto, S	190	Kokawa, H	190
Kim, B	26, 75, 102, 129, 154, 179, 219, 220	Kitamura, S	69	Kolano-Burian, A	76, 232
Kim, C	29, 67, 95, 137, 214	Kitchin, J	187	Kolano, R	76
Kim, D	25, 26, 38, 58, 69, 169, 196, 220	Kjellqvist, L	176	Kolednik, O	195
Kim, E	104	Kjos, O	108	Kolekar, Y	148
Kimes, K	51	Klaumuenzer, D	40	Kolluri, K	193
Kim, G	62	Klecka, M	178	Kolonits, T	217
Kim, H	24, 35, 37, 44, 47, 49, 61, 68, 89, 96, 99, 114, 117, 121, 129, 140, 141, 168, 191, 192, 202, 211, 225, 228, 230, 232, 234, 239, 240	Kleeberg, J	23	Komarasamy, M	168, 169, 179, 210
Kim, I	202	Kleinbaum, S	40	Komarov, S	150, 176
Kiminami, C	212	Klette, H	198	Komatsu, L	36, 88, 207
Kim, J	25, 32, 38, 49, 57, 61, 75, 82, 96, 104, 107, 119, 126, 140, 144, 167, 172, 196, 203, 217, 220, 221, 225, 227, 230, 233, 234, 239, 240, 241	Klier, E	121	Konda Gokuldoss, P	62
Kim, K	85, 120, 199, 221, 239	Klimenkov, M	40	Kondoh, K	172
Kim, M	138, 150, 157, 170, 220, 227, 239	Kliuchevskiy, B	225	Kondori, B	206
Kim, N	97	Kloenne, Z	45, 163	Kondo, T	236
Kimoto, Y	105	Klute, S	79	Kondusamy, A	49
Kim, S	37, 38, 47, 49, 50, 53, 87, 126, 172, 192, 220, 221, 230, 231, 232, 234, 239	Knabl, W	45, 69	Kong, B	147
Kim, T	69, 147, 157, 179, 195, 230	Knapek, M	110, 150, 175	Kong, C	125, 154
		Knapp, J	208	Kong, L	48, 237
		Knapp, C	73	Kong, Y	24, 48, 72, 100, 126, 147, 152, 215, 230
		Knapp, R	24	Konings, R	110
		Knezevic, M	27, 41, 42, 50, 66, 75, 86, 93, 103, 118, 130, 143, 155, 156, 170, 179, 180, 202, 203, 213, 231, 240	Konishi, H	157
		Knipling, K	31, 54, 62, 80, 108	Konishi, Y	149
		Knol, S	118	Konitzer, D	139
		Knowles, A	69, 212	Kontis, P	36, 108, 138
		Kobayashi, R	39	Kontsevoi, O	193
		Kobayashi, S	138	Kontsos, A	87, 113, 139, 166, 189, 209, 223

Kooi, S	232	Krivanec, C	44	Kundin, J	128
Koo, J	176	Krogstad, J	35, 57, 59, 71, 110, 116, 143, 146	Kundu, A	196
Kopyscianski, M	140	Krokhin, A	27, 180	Kundu, T	71, 85, 145, 230
Korey, M.	35, 59, 149	Kroll, Z.	101	Kunitomo, K	29
Korkmaz, K	68	Kropf, S	40	Kunnumakkara, A.	109
Korla, R	89, 207	Krotov, Y	177	Kuntz, J.	103
Körmann, F	39, 63, 192	Krüger, H.	46	Kuntzq, J.	104
Korolev, V	27, 180	Krumpak, T	134	Kuo, C.	38, 95
Korsmik, O	219	Krumwiede, D.	91	Kuo, T.	233
Korte-Kerzel, S	42, 67, 76, 94, 118, 189, 241	Kruska, K.	91	Kuo, Y.	43
Korzniikova, E	34	Kruth, J.	154	Kupresanin, A	208
Koshi, P	177	Kruzic, J	102, 109, 160	Kuriakose, S.	163
Kosinova, A	141	Krylyuk, S	85	Kurley, J	117
kosman, S.	222	Krywopusk, N	146, 231	Kurley, M	40
Kosmidou, M.	195	Kryzman, M.	111	Kurniawan, C.	187
Kostka, A	35, 89	K, S	239	Kuroda, K.	53
Kota, D.	185	Kuang, Z.	31	Kurokawa, K	236
Kotadia, H	154, 176, 203	Kubacka, D.	36, 90	Kurokawa, S.	62
Kotha, S	189	Kuball, M.	118, 167	Kuroki, Y	85
Kottman, M	101	Kübel, C	239	Kurosaki, K	236
Kotula, P.	70	Kubena, I	28, 104, 156	Kurosawa, S	69, 198
Kou, H	62, 143, 175, 212	Kube, S	37	Kurtz, R	64
Koul, S	133	Kubic, R	129	Kuruganti, T	197
Kou, M	23	Kubota, M	87	Kurz, G.	149
Kouraytem, N	127, 128, 200	Kubota, N.	80	Kurzydowski, K	38, 142
Kovarik, L.	108, 226	Ku, C.	205	Kushima, A	133
Kovnir, K	79	Kucharik, M.	160	Kusmierczyk, J.	232
Kowalczyk, M	232	Kucukelyas, B	239	Kusne, A.	136, 164
Ko, Y	43, 68, 232	Kudzal, A	129	Kušnir, J	150
Koyama, M.	85	Kuehl, B	178	Kustas, A	89, 104, 169, 187, 201, 240
Koyanagi, T	206	Kuettner, L.	136	Kustas, F.	173
Kozlik, J	172	Kuhn, E	235	Kutkin, Y	57
Kozlík, J	121	Kuhnke, O	35	Kutsal, M	162, 231
Kozłowski, G	204	Kuhnt, C.	86	Kuwabara, T.	237
Kozmel, T.	127, 156	Kuhr, S	50, 142, 242	Kvilekval, K	111
Kozulin, A	176	Kuila, S.	230	Kvithyld, A.	82, 122, 161
Kozyrev, A	149	Kukla, C	155	Kwak, T	218, 222
K. Paul, B	103	Kuksenko, V	213	Kwang Kim, S	140
Kraemer, L	67	Kulik, T	232	Kwang-yong, J	159
Kramer, M	28, 82, 129, 157, 181, 204, 205	Kulkarni, A	58, 99	Kwon, D	231
Krane, M	23, 117, 201	Kulkarni, K	239	Kwon, J.	26
Krasilov, M.	57	Kumagai, M	158	Kwon, O	231
Krastins, I.	117, 178	Kumar, A	32, 69, 180, 203, 210, 226	Kwon, P	180
Krause, T	71	Kumar, B	153	Kwon, S.	34
Krein, M.	92	Kumar, D	29, 52, 78, 106, 220, 230	Kwon, Y	241
Kreitman, M	217	Kumar, G	161, 241		
Krekora, U	81	Kumar, M.	75	L	
Kremmer, T	172, 241	Kumar, N	113, 145	Laanait, N.	186
Kreuzer, D	35	Kumar, P	28, 29, 67, 106, 157, 165	Labukas, J.	93
Krick, B	104	Kumar, R	230	Lacaze, J.	70
Kriebitzsch, S.	41	Kumar, S.	181	Lach, T	41, 68
Kriegel, S	148	Kumar, V	235	Lacroix, O	80
Krishnaja, D.	224	Kumpová, I	32	Ladani, L	52, 131, 132, 201, 202
Krishnamurthy, K	53	Kunca, B.	157	Ladicola, M	231
		Kunc, V	104	Lahiri, I.	230

Lahlouh, B	207	Lavigne, L	86	Le Graverend, J	59, 87, 112, 113, 139, 165, 166, 189, 209, 223, 242
Lahoda, E	82, 83	Lavogiez, C	166	Legris, A	64, 91
Lai, B	169	Lavoie, P	80	Legros, M	42, 66, 93, 118, 195, 211, 213, 240
Lai, M	95	Law, J	50	Lehmann, M	180
Laird, B	63	Lawrence, S	118	Lehnert, R	76, 181
Lai, Y	67, 176	Laws, K	185	Lei, B	111
Lake, C	235	Lazarin Junior, E	236	Leinenbach, C	25, 73, 101, 103, 123, 127, 129, 153, 177, 200, 217
Laliberte, F	93	Lazarus, B	88	Leineweber, A	95
Lamberson, L	211	Lazarus, N	43	Leino, A	38
Lambert, A	96	Lazpita, P	51	Leitner, A	42, 45, 69, 94, 118, 126, 180
Lamberti, V	218	Leader, A	173	Lei, Y	89, 126, 164, 174
Lambotte, G	41, 65, 92, 117, 144, 227	Leah, C	194	Lemson, G	137
Lamichhane, T	28, 157	Leake, S	186	Lenart, R	153
Lam, K	94	Leary, A	28, 50, 76, 104, 131, 156, 157, 181, 204, 232	Leng, B	173
Lan, C	159	LeBeau, S	161	Lenhart, J	232
Lance, N	68	Lebensohn, R	106, 124, 132, 143	Lenignon Kouame, O	28
Lang, A	62, 211	Lebernegg, P	118	Lenling, M	218
Langan, T	174	LeBlanc, S	102	Lenthe, W	50, 59, 101
Lang, C	25, 111	Lebon, G	150, 176	Lenz, E	199
Langdon, T	61, 241, 242	Le Bouar, Y	112	Lenz, M	36, 165
Langelier, B	178	Lechman, J	100	Leonard, H	83, 214
Langer, G	139	Lecomte, J	156	Leonard, K	93
Langille, M	53	Lecouturier, F	61	Leonhardt, T	68, 140
Langus, J	56	Lederer, Y	90	Le Pape, Y	222
Lanning, W	189, 209, 238	Ledermueller, C	68	Leramo, R	57
Lan, P	152, 217	Lee, A	50, 204, 232, 234	Leroy, R	74
Lan, X	125	Lee, B	147, 170, 171, 179, 232, 239	LeSar, R	143
Laplanche, G	89	Lee, C	25, 43, 62, 89, 239, 242	Leser, P	209
Lapouge, P	61	Lee, D	94, 229, 241	Leser, W	209
Laquidara, J	172	Leefflang, M	154, 185	Lesjak, I	56, 134
Lara-Curzio, E	73	Lee, G	82, 96, 117, 221, 227	L'Espérance, G	182
Laradji, M	112	Lee, H	25, 34, 61, 73, 85, 96, 232, 239	Lesquereux, S	135
Larios, F	175	Lee, I	64, 137	Le, T	73
Larosa, C	120	Lee, J	24, 37, 38, 41, 43, 49, 54, 65, 67, 71, 72, 83, 87, 92, 95, 96, 117, 120, 126, 144, 192, 193, 196, 224, 227, 229, 233, 239, 242, 243	Letzig, D	149
Larouche, A	184	Lee, K	87, 103, 178, 225, 231, 241	Leu, B	170
Larsen, B	211	Lee, M	50, 98, 129, 218, 232, 233, 234	Leung, C	154, 200, 201, 218
Larsen, J	166	Leem, J	152	Levi, C	36, 90, 207, 242
Larson, D	31	Lee, P	70, 75, 97, 151, 154, 200, 201, 218, 225	Levine, L	102, 128, 177, 178, 200, 201
Larson, N	59	Lee, S	61, 67, 84, 110, 116, 126, 137, 140, 143, 147, 164, 165, 169, 170, 179, 221, 224, 239	Levin, I	123
Larson, R	213	Lees, E	183	Levin, Z	69
Larsson, H	188	Lee, T	28, 29, 51, 77, 96, 105, 131, 157, 182, 224, 232	Levitas, B	177
Lasode, O	114	Lee, W	136, 152, 214	Levitas, V	204
Lass, E	25, 26, 36, 60, 73, 75, 88, 101, 102, 127, 129, 153, 154, 155, 177, 179, 200, 217, 219, 238	Lee, Y	43, 67, 75, 126, 144, 151, 176	Lew, A	101
Latypov, M	111, 158, 163	Lefebvre, W	31, 127, 146	Lewandowski, J	74, 87, 102, 109, 118, 128, 154, 178, 189, 202, 218
Laukkanen, A	139, 189	Lefevre, R	107	Lewis, A	149, 192
Launey, M	109	Leff, A	43, 156	Lewis, M	54
Laurent-Brocq, M	35	Le, G	200	Ley, N	172
Lauridsen, E	56	Legendre, A	180	Leyva, A	215
Lavakumar, A	76			Liang, B	132
Lavender, C	108, 147			Liang, C	92
Lavenstein, S	139, 171, 241			Liang, G	83, 242
Lavernia, E	37, 62, 73, 89, 153, 201, 239			Liang, J	23, 45, 153, 201, 216, 225

- Liang, L. 30, 72, 216
Liang, S. 43, 67, 95, 120, 158, 216
Liang, X. 96
Liang, Y. 59, 89, 113, 164
Liang, Z. 42, 114
Lian, J. 56, 82, 83, 183, 225
Lian, Y. 113
Liao, C. 158, 159
Liao, F. 99
Liao, T. 71
Liao, X. 54
Liao, Y. 222, 227
Liauw, P. 37, 38, 62, 63, 81, 89, 90, 109,
115, 135, 142, 161, 168, 169, 185, 191,
192, 205, 206, 211, 212, 223, 233, 239
Li, B. 30, 32, 33, 34, 56,
57, 66, 83, 104, 109, 110, 136, 149, 163,
186, 187, 199, 207, 210, 234, 235
Libera, O. 66
Li, C. 48, 105, 144, 169, 172, 200,
203, 216, 243
Lichtenstein, T. 117
Li, d. 151
Li, D. 43, 44, 67, 95, 108, 120, 185,
193, 216, 222
Lieberman, E. 143
Liebscher, C. 34, 39, 108
Liechti, K. 226
Lienert, T. 117
Lieve, M. 193
Lietaert, K. 154, 185
Liewald, M. 173
Lifa, S. 243
Li, G. 33, 71, 83, 125, 187, 198,
207, 216, 227, 237
Ligda, J. 179
Li, H. 23, 44, 76, 86, 113, 114, 168,
224, 225, 230, 235, 241, 243
Li, J. 32, 33, 36, 45, 46, 56, 57, 61,
62, 65, 69, 80, 83, 88, 95, 109, 110, 114,
115, 119, 129, 136, 141, 143, 144, 145,
146, 147, 151, 152, 161, 163, 169, 172,
174, 176, 178, 181, 184, 186, 187, 194,
203, 207, 212, 214, 218, 225, 231, 234,
237, 238, 240, 243
LI, J. 151
Li, K. 104, 181, 227
Li, L. 25, 26, 30, 34, 36, 53, 55, 58,
79, 88, 100, 107, 133, 152, 158, 161,
198, 209, 217, 222, 223, 233, 237, 242
Lilleodden, E. 42, 66, 93, 118, 195,
213, 240
Lill, J. 169
Lillo, T. 162
Li, M. 38, 63, 74, 93, 98, 100, 120,
144, 150, 192, 193, 206, 207, 226
Lima, A. 234, 236
Lima, G. 236
Lima JR, E. 141
Lima Jr., É. 141, 238
Lima, N. 234, 236
Lima, T. 235, 238
Lim, D. 218, 222
Lim, H. 107, 220, 231
Lim, J. 242
Lim, K. 195, 230
Limmaneevichitr, C. 159, 220
Limmer, K. 156, 192
Lim, R. 124, 130
Lim, T. 126
Lim, Y. 190, 211
Li, N. 40, 91, 184, 185, 193, 195, 200,
210, 213, 240
Lina, J. 221
Lin, C. 67, 99, 186, 205, 224
Lince Quintanilla, V. 219
Lincopan, N. 88
Lin, D. 29, 52, 62, 78, 106, 115, 212, 220
Lindberg, D. 23, 69, 122, 144, 145
Linderov, M. 76
Lindroos, M. 139, 189
Lindsay, S. 184, 205
Lindwall, G. 27, 219
Lin, G. 43
Linga, H. 86
Lin, J. 59, 89
Lin, L. 31, 48, 116, 119, 185, 205
Lin, M. 43, 44, 67, 95, 120
Linne, M. 42
Lin, P. 158
Lin, Q. 157
Lin, S. 43, 62, 67, 68, 95, 120
Lin, W. 152, 233
Lin, Y. 39, 120, 180, 205, 215
Lin, Z. 125
Lion, J. 106
Liotti, E. 70
Li, P. 31, 186
Li, Q. 38, 40, 42, 44, 45, 67, 83,
89, 91, 92, 121, 181, 188, 194, 198, 212,
222, 241
Li, R. 175, 197, 225, 241
LI, R. 145
Li, S. 65, 74, 112, 125, 144, 145, 159,
174, 214, 216, 237
LI, S. 99, 172
Liss, K. 26, 32, 44, 68, 95, 120, 146,
147, 171, 196, 214, 241
List, F. 27, 101, 129, 178
Li, T. 23, 27, 54, 71, 80, 115, 125, 144,
145, 155, 176, 184, 243
Litrel, J. 229
Littlewood, D. 153
Litvinov, D. 41
Litwin, P. 72
Litynska-Dobrzynska, L. 65
Litzelman, S. 174
Litz, R. 184
Liu, A. 131
Liu, B. 47, 83, 112, 169, 176, 191
Liu, C. 37, 43, 44, 50, 71, 72, 82, 120,
131, 150, 226
Liu, D. 47, 72, 118, 167, 216
Liu, F. 57, 107, 115, 121, 140, 154
Liu, G. 81, 114, 130, 151, 159, 167,
170, 210, 213, 222, 237
Liu, H. 56, 64, 115, 119, 140, 151,
157, 168, 176, 180
Liu, J. 23, 46, 55, 75, 126, 133, 148,
151, 152, 160, 198, 214, 216, 217,
221, 231, 235
Liu, K. 34, 46, 72, 107, 168, 172, 179,
210, 212, 224, 229, 239, 241
Liu, L. 120, 121, 198, 208, 216
Liu, M. 48, 71, 181, 186
Liu, N. 51, 172
Liu, P. 128
Liu, Q. 214
Liu, R. 26, 215
Liu, S. 23, 47, 83, 86, 92, 104, 131, 138,
154, 179, 202, 203, 208, 219, 222, 237
Liu, T. 63, 67, 106, 116, 123, 191, 242
Liu, V. 92
Liu, W. 79, 83, 99, 151, 155, 162,
228, 237
Liu, X. 32, 80, 90, 113, 116, 125,
126, 132, 141, 142, 144, 162, 177,
185, 188, 193, 195, 219, 221, 241
Liu, Y. 23, 43, 53, 71, 81, 113, 115, 124,
136, 155, 156, 159, 169, 191, 195,
215, 225, 230, 233, 241, 242, 243
Liu, Z. 28, 30, 35, 43, 51, 58, 62,
67, 72, 74, 75, 77, 85, 95, 105, 115, 120,
131, 142, 147, 157, 172, 182, 192, 198,
206, 208, 209, 214, 225, 232
Livescu, V. 50, 101, 130, 178, 187
Livingston, R. 92
Li, W. 76, 83, 88, 91, 161, 165, 172,
177, 201, 210, 233, 239, 243
Li, X. 23, 44, 81, 83, 114, 115, 127,
129, 141, 144, 152, 153, 154, 159, 167,
177, 190, 198, 200, 202, 212, 215, 225
LI, X. 23, 177
Li, Y. 28, 33, 43, 46, 51, 52, 65, 66,
77, 82, 86, 88, 91, 95, 98, 105, 114, 124,
131, 134, 135, 144, 150, 154, 157, 168,
176, 182, 185, 193, 194, 198, 214, 216,
219, 221, 227, 231, 232, 237, 241, 242

- Liyanage, D 182
 Li, Z 48, 62, 89, 105, 185, 191, 203,
 204, 221, 243
 Llorca, J 195
 Llorca, J 50
 Lloyd, J 158
 Lo, C 207
 Locsin, M 57
 Lodhi, J 218
 Loeffl, C 166
 Loehlein, M 211
 Loera, N 229, 235
 Löffler, J 81, 135
 Loganathan, A 172, 220
 Logan, R 59, 113
 Loger, R 226
 Logos, C 68, 187
 Lograsso, T 116, 131
 Loh, H 215
 Löhn, T 224
 Lohöfer, G 117
 Loisnard, D 124
 Lombardi, A 221
 London, I 131
 Longbottom, R 105
 Long, M 41, 242
 Long, S 208
 Long, Y 49
 Lontine, D 90
 Lookman, T 32, 116, 162
 Lo, P 233
 Lopes, D 32
 Lopes, E 236
 Lopes, F 36, 61, 88, 238
 Lopes, J 36
 Lopes, M 88, 235
 López-Botello, O 219
 Lopez, H 196
 López-Martínez, E 68
 Lopez, O 219
 López-Soria, J 68
 L. Oppedal, A 44
 Lordi, V 27
 Lorenz, U 88
 Lorch, A 45
 Lorreto, M 163
 Losego, M 48
 Losko, A 83
 Lossius, L 59, 60, 86, 108, 113, 223
 Loto, C 223
 Loto, R 57, 223
 Lou, J 24, 100
 Lourenço, F 235
 Lou, X 26, 74, 113
 Louzguine-Luzgin, D 185
 Love, C 49
 Lowe, T 31, 55, 81, 98, 134, 160,
 184, 222
 Lozano-Perez, S 64
 Luan, B 214
 Luan, H 231
 Lubin, M 86
 Lu, C 142, 157
 Lucadamo, G 66
 Lucero, A 49
 Lucey, T 212
 Lucon, E 179
 Ludwig, W 50, 103
 Luecke, W 231
 Luetzerath, A 55
 Lu, F 48, 208
 Lugao, A 207, 235
 Lugão, A 36, 136, 164, 207, 235
 Luhmann, K 172
 Lui, A 70
 Luidold, S 35, 60
 Lui, W 213
 Lu, J 114, 180
 Lujan Regalado, I 124
 Lu, K 37, 61, 82, 89, 93, 114, 141,
 168, 215, 225
 Luke, S 122
 Lu, L 89, 168
 Lu, M 47, 83
 Lumpkin, G 212
 Luneng, R 134
 Luo, A 45, 70, 150
 Luo, C 81, 216
 Luo, G 208
 Luo, H 89, 125
 Luo, J 38, 63, 71, 92, 96, 125, 166,
 168, 169
 Luo, L 76
 Luong, D 43, 94, 119, 145, 241
 Luong, S 231
 Luo, Q 67
 Luo, S 72, 91, 98
 Luo, T 229
 Luo, X 37, 121
 Luo, Y 120, 187, 207
 Luo, Z 141
 Lu, P 89, 115, 170
 Lu, Q 76, 216
 Lu, S 36, 155
 Luscher, D 158
 Luscher, W 136, 222
 Lu, T 219, 222
 Lu, W 89, 108, 158
 Lu, X 125, 216, 237
 Lu, Y 27, 29, 60, 63, 113, 126, 145, 157
 Lu, Z 91, 241
 Luz, F 61, 114, 141
 Luzzi, L 162
 Lv, D 112
 Lv, W 44, 47
 Lv, X 44, 149, 198, 216
 LV, X 216, 227
 Lv, Z 96
 Lwin, M 159
 Lymperakis, L 39
 Lyu, C 46
 Lyu, G 133
- ## M
- Ma, A 177
 Maalekian, M 77
 Maass, M 109
 Maass, R 81, 89, 109, 130, 135, 161,
 185, 205, 206, 233
 Maaza, M 230
 Ma, B 157, 181
 Ma, C 189
 MacDonald, B 37, 62, 239
 MacDonald, E 218
 MacDonald, N 224
 Machado, J 61, 238
 Machado, R 235
 Macha, J 138
 Mackay, R 97
 Mackey, P 173
 MacRae, A 60
 Macwilliams, B 212
 Macziewski, C 204
 Ma, D 74, 163, 205, 216
 Madanipour, H 29, 95
 Madavali, B 159
 Maddali, S 186
 Madden, N 110
 Madi, K 150
 Madison, J 59, 73, 153, 186, 217
 Madi, Y 194
 Madugundo, R 181
 Ma, E 37, 38, 45, 119, 161
 Maeda, T 29
 Maeder, X 67
 Maeno, H 51, 182
 Ma, G 243
 Magagnosc, D 110
 Magana, A 153
 Magazzeni, C 87, 103
 Maggi, C 234
 Maghsoudi-Ganjeh, M 31, 119
 Magné, D 35
 Magnússon, J 160
 Magnusson, T 41
 Maguregui, E 45
 Ma, H 118, 216

- Mahadevan, S 192
 Mahaffey, J 89
 Mahajanam, S 209
 Mahankali, K 152
 Mahapatra, M 49
 Mahata, A 70
 Mahieu, P 60
 Mahmoudi, M 102
 Mahmudi, R 77
 Mahmud, K 104
 Mahto, R 91
 Maier, B 218
 Maier, J 82
 Maier-Kiener, V 42, 45, 67, 69, 94,
 118, 195, 241
 Maier, P 144, 170
 Maier, S 107
 Mai, J 198
 Maijer, D 97
 Mai, L 199
 Maiocco, L 180
 Maire, E 124
 Maita, J 110
 Maitra, D 99
 Mai, W 132
 Ma, J 102, 159, 163, 212, 233
 Majkut, M 162
 Majumdar, B 114
 Ma, K 45
 Makaya, A 140
 Makeswaran, N 197, 215
 Makineni, S 36, 88, 138, 238
 Ma, L 51, 83, 128, 170, 182
 Malakpour Estalaki, S 213
 Malak, R 129, 164, 191
 Malan, W 137
 Malaplate, J 91
 Malard, B 53
 Malathi, M 114
 Malcioglu, A 184
 Malej, S 214
 Malfliet, A 36
 Malhotra, R 172
 Malik, I 81
 Malik, M 60
 Malitckii, E 226
 Malloy, J 92
 Maloy, S 41, 51, 91, 117, 118, 193,
 194, 213, 218
 Malyar, N 75, 76
 Mambakkam, V 184
 Mameka, N 93
 Mamoun, F 222
 Ma, N 148, 168
 Manák, J 242
 Mancini, S 236
 Mandal, D 107
 Mandrus, D 51
 Mangal, A 137
 Mangolini, L 230
 Mangualde, C 182
 Manhães, A 235
 Manimunda, P 110, 175
 Manjunath, B 111
 Mankame, N 81
 Manley, M 169
 Manna, K 235
 Mannava, S 138, 178
 Mannens, R 173
 Mann, J 147, 204
 Mannodi Kanakkithodi, A 85
 Mann, V 27, 54, 180
 Mansoor, B 144, 226
 Mansouri, E 64
 Mansouri, M 98
 Mantri, S 104, 219
 Manuel, M 137, 180, 192
 Manzoor, A 212
 Mao, C 120
 Mao, J 221
 Mao, K 193
 Mao, M 65
 Mao, R 221
 Mao, S 118, 156, 189, 212
 Mao, X 189
 Mao, Y 221
 Mao, Z 54, 193
 Ma, P 91
 Mara, N 41, 42, 66, 91, 93, 94, 118,
 168, 195, 210, 213, 228, 240
 Marandi, L 166
 Marcelot, C 37
 Marchant, G 102
 Marchini, L 136
 Marcin, J 157
 Marcio Toffoli, S 57
 Margem, F 163
 Maria, J 67, 169
 Mariani, R 226
 Marian, J 64
 Marijon, J 124
 Marin, E 38, 168
 Marioara, C 242
 Marion, T 173
 Mariscal Hernandez, C 226
 Mariyappan, A 180
 Markmann, J 93, 214
 Marques Rossy, A 75
 Marquis, E 31, 44, 64, 80, 91, 95,
 169, 171, 193
 Marshal, A 239
 Marshall, D 119
 Marsico, J 196
 Martens, R 194
 Marthi, S 215
 Martin, A 129, 201
 Martinavicius, A 52
 Martin-Cid, A 181
 Martin, D 40
 Martin-Dubreuil, A 184
 Martin, E 214
 Martineau, R 127
 Martinez, A 173
 Martinez, D 178
 Martinez, E 193
 Martinez, M 153
 Martínez-Pañeda, E 87
 Martinez, R 50, 130
 Martinez Saez, E 52, 91, 188
 Martin, G 179
 Martin, H 27, 29, 83, 103, 129, 148,
 155, 179, 202, 219
 Martin, J 103, 140, 175, 178
 Martin, L 49
 Martin, O 24
 Martin, P 85
 Martin, R 236
 Martin-Root, C 130
 Martins, G 122
 Martins, L 238
 Martins, T 235
 Marussi, S 154, 200, 201, 218
 Maruyama, B 92
 Marvel, C 37
 Marvila, M 235, 236, 238
 Marzoli, L 56
 Ma, S 98, 200
 Masaki, K 190
 Masengale, S 222
 Masina, B 217
 Maskaly, G 106
 Mason, C 194
 Mason, D 91
 Mason, J 137
 Mason, P 176
 Massey, C 66
 Massie, D 104
 Masson, P 148
 Masson, T 235, 236
 Mastandrea, J 72
 Masters, I 203
 Mastroarakos, I 214
 Ma, T 177, 198, 204
 Matar, A 127
 Mataveli Suave, L 86
 Mates, S 112
 Mathaudhu, S 91, 114, 156, 195
 Mather, P 23

Mathew Enloe, C.	76	Meier, C.	101
Mathew, J.	107	Meier, W.	67
Mathew, M.	113	Meijer, K.	105
Mathiesen, R.	46	Meilunas, M.	28
Mathiot, D.	215	Meiners, T.	34
Mathis, K.	65	Meisenheimer, P.	149, 174, 240
Máthis, K.	163, 175, 194	Mei, X.	216
Mathoho, I.	217	Meixiang, L.	121
Mathon, M.	64	Mei, Z.	188
Matijevic, I.	182	Mejias, A.	222
Matlack, K.	171	Mejri, M.	53
Matlik, J.	192	Meka, V.	187, 191
Matlock, D.	77	Mekhrabov, A.	242
Matoetoe, M.	230	Meletis, E.	33, 113
Matoy, K.	139	Meling, I.	122
Matson, D.	117	Mello, A.	86, 209
Matsubayashi, R.	225	Mellor, I.	149
Matsuda, H.	140	Mellor, M.	231
Matsui, I.	224	Melo, H.	235
Matsumura, S.	51, 150, 182	Melz, T.	74, 102
Matsunaga, S.	211	Menasche, D.	139, 143
Matsunobu, R.	43	Mendelev, M.	34, 58, 63, 85, 111, 116, 137, 164, 237
Matsushita, M.	140	Mendes, B.	235, 238
Matteis, P.	187	Mendis, C.	149, 194
Mattfeld, P.	173	Mendoza-Cruz, R.	162, 163
Matthews, G.	214	Mendoza, H.	75
Matthews, K.	156, 221	Meneghetti Peres, R.	235, 236
Matthews, M.	27, 73, 123, 129, 131, 153, 178, 201, 217	Menet, P.	55, 82, 135, 161, 186
Matthews, T.	32	Menezes Gomes, M.	238
Mattison, D.	225	Meng, F.	27, 82, 107, 129, 198, 205, 208, 233
Mattlin, K.	156	Menghani, J.	78, 106, 224, 225
Mattson, J.	117	Meng, L.	216
Maurel, V.	214	Meng, W.	66, 240
Maurice, C.	124	Meng, Y.	23, 187
Maurice, D.	38	Menze, R.	144
Mavroudis, A.	186	Meredig, B.	26, 103, 111, 113
Ma, W.	29, 174, 199, 243	Meredith, C.	102
Ma, X.	37, 104, 146, 151, 194	Meric de Bellefon, G.	74, 92, 178
Maxwell, A.	133	Meric De Bellefon, G.	179
Maxwell, T.	195	Merkel, M.	154
Ma, Y.	212, 230	Merle, B.	42, 139, 167, 213, 240
Mayes, R.	40, 117	Meschter, S.	182
Mayeur, J.	158	Mesgarnejad, A.	208
Mayo, M.	33, 57, 83, 111, 223	Meshram, S.	231
Mayrhofer, P.	167	Meskers, C.	148, 173
Ma, Z.	51	Meslin, E.	194
Mazaheri, Y.	224	Mesquita, A.	235
Maziasz, P.	116	Messer, P.	184
Maznev, A.	232	Messina, L.	64
McAlister, A.	117	Messina, S.	109
McAllister, D.	112	Messner, M.	92, 127, 158
Mcarthur, B.	165	Mesta, R.	96
Mccabe, R.	28	Mesterknecht, T.	65
McCabe, R.	27, 50, 66, 69, 75, 90, 103, 130, 146, 155, 156, 171,	Mehta, A.	37, 95, 111, 169, 178
		Meier, C.	180, 213, 231, 240
		Meier, W.	106
		Meijer, K.	27, 28, 73, 103, 104
		Meilunas, M.	180
		Meiners, T.	180
		Meisenheimer, P.	194
		Mei, X.	56, 83
		Meixiang, L.	166
		Mei, Z.	44
		Mejias, A.	181, 207
		Mejri, M.	106
		Meka, V.	32, 41, 92, 136, 145
		Mekhrabov, A.	104
		Meletis, E.	236
		Meling, I.	51, 131, 150, 182
		Mello, A.	190
		Mellor, I.	72, 100
		Mellor, M.	60
		Melo, H.	84, 113, 119, 192
		Melz, T.	74
		Menasche, D.	48
		Mendelev, M.	123, 176
		Mendes, B.	28, 204
		Mendis, C.	76, 156
		Mendoza-Cruz, R.	81
		Mendoza, H.	229
		Meneghetti Peres, R.	233
		Menet, P.	153
		Menezes Gomes, M.	27, 74, 123, 127, 129, 178, 196, 200, 217
		Meng, F.	55
		Menghani, J.	198
		Meng, L.	102
		Meng, W.	188
		Meng, Y.	32, 40, 73, 116, 117, 144, 222
		Menze, R.	26
		Meredig, B.	137
		Meredith, C.	148
		Meric de Bellefon, G.	127, 129, 170, 178, 202, 239
		Meric De Bellefon, G.	98
		Merkel, M.	164
		Merle, B.	53
		Meschter, S.	234, 236
		Mesgarnejad, A.	161
		Meshram, S.	214
		Meskers, C.	146
		Meslin, E.	79
		Mesquita, A.	175
		Messer, P.	153, 217
		Messina, L.	157, 181
		Messina, S.	26, 74, 101, 127, 144, 162, 218
		Messner, M.	119
		Mesta, R.	126
		Mesterknecht, T.	
		Metwali, A.	

- Mewes, C 232
Mewes, T 232
Meydanoglu, O 186
Meyer, A 58, 108
Meyerink, J 185
Meyers, M 32, 55, 191, 193
M'hamdi, M 179
M'Hamdi, M 82
Mhin, S 95
Mian, M 52
Mianroodi, J 138
Miao, H 208
Miao, J ... 112, 116, 120, 143, 192, 225
Miao, K 151
Miao, M 199
Miao, R 146
Miao, Y 26
Miar, S 222
Michaelis, M 55
Michael, J 89, 104, 114
Michael, N 148, 173, 197, 215
Michalowicz, A 28
Michelet, L 189
Michelic, S 105
Michel, V 124
Michi, R 62
Michler, J 42, 67, 94
Middleburgh, S 137, 212
Middlemas, S 121
Mier, R 28
Miguel, P 236
Mi, J 46, 123, 150
Mikami, Y 210
Mikhailov, I 180
Mikhalev, Y 160
Mikkilineni, A 197
Mikler, C 45
Mikula, J 42
Miles, M 211
Milhet, X 157
Militz, H 109
Miller, B 144, 226
Miller, C 28, 66, 102, 171, 194
Miller, E 50
Miller, J 71, 103, 128, 219
Miller, M 50, 103
Miller, R 68
Miller, V 72, 166, 170
Milligan, E 105
Milligan, W 112
Mills, L 88
Mills, M ... 44, 60, 101, 112, 116, 120,
143, 167, 192, 200, 225, 231
Mills, S 87
Minagawa, A 82
Minárik, P 175
Min, G 57
Ming, K 110, 191, 228, 240
Ming, L 54
Mingsheng, H 83, 235
Min, K 233
Minor, A 42, 70, 109, 154, 205
Miracle, D 35, 38, 62, 108, 185
Miranda, L 234, 235, 236
Mireles-Ramos, A 68
Mirjavadi, S 224
Mirkhalaf, M 81
Mirkoohi, E 158
Miroshnichenko, V 237
Mirzaeifar, R 26, 43
Mishin, Y 30, 39, 169, 187, 240
Mishra, A 27, 63
Mishra, B 122, 148
Mishra, D 52
Mishra, R 63, 140, 141, 167, 168,
169, 179, 190, 191, 192, 210,
211, 212, 224, 226, 239, 242
Misra, A 70, 75, 98, 114, 119, 143,
171, 195, 210, 213
Misra, R 104, 181, 227
Mistry, A 49
Mitas, B 172
Mitchell, j 153
Mitchell, J 73, 153
Mitchell, R 185
Mithieux, J 63
Mitra, A 29, 78
Mitra, R 78, 118, 231
Mittler, T 226
Miyajani, H 203
Miyazawa, T 118
Mi, Z 76
Mliki, N 28
Moatti, A 126
Mo, B 126
Modem, S 226
Modi, P 227
Moelans, N 95
Moeslang, A 226
Moffat, A 242
Moga, S 133, 134
Mohale, N 112
Mohamed, A 96
Mohamed Ariff, A 182
Mohamed Zne, T 222
Mohammadi, M. ... 128, 129, 154, 178
Mohammed, A 200
Mohammed Al Janabi, A 96
Mohammed, I 204
Mohan, J 126, 230
Mohanty, D 110
Mohanty, G 94
Mohapatra, S 104
Mohd Said, R 232
Mohd Salleh, M 51, 77, 182, 232
Mohd. Salleh, M 33
Mohri, T 85, 137
Mohr, M 62, 117
Möhwald, K 106
Mo, K 26
Molaeinia, Z 240
Moldovan, D 153, 240
Molina-Aldareguia, J 50, 180, 195
Molina-Aldaregu, J 42, 168
Mol, J 185
Molkeri, A 132
Mollaabbasi, R 60
Molla, M 109
Mollaoglu Altuner, H 186
Möller, B 74, 102
Møller, P 33, 156
Momayez, M 230
Momprou, F 37, 66, 93
Monaghan, B 105
Monamme, T 217
Moniri, S 241
Monroe, C 97
Montagne, A 222
Monteiro, A 234, 236, 237
Monteiro, S ... 32, 33, 56, 57, 61, 83, 88,
110, 114, 136, 141, 163, 186,
187, 207, 234, 235, 236, 238
Montelongo, S 222
Montenegro, J 149
Montgomery, C 102
Moody, M 155
Moon, G 96
Moon, J. ... 40, 191, 192, 229, 239, 240
Moon, K 238
Moon, M 224
Moon, S 76, 182
Moore, A 90
Moore, E 32
Moorehead, M 41, 129, 226
Moore, N 52
Moorthy, S 26
Moraes, R 236
Morales Espejo, J 148
Moreira, P 234, 236
More, K 142
Morel, P 207
Moreno, R 159
More, S 78, 224, 225
Morgan, D 43, 82, 115, 126, 193
Morgan, Z 29, 105
Moridi, A 127
Morin, D 74
Morisada, Y 140

- Morishita, K. 70, 182, 204
Mori, T. 30, 53, 79, 107, 133, 158, 233
Morita, K. 29, 137, 174
Moroz, M. 23, 144, 145
Morri, A. 210
Morris, J. 34, 38, 58, 85, 90, 112, 137, 146, 165, 188, 208, 237
Morrow, B. 75, 146
Morscheiser, J. 161
Morsi, K. 227
Mortensen, A. 189
Mortensen, D. 82
Mørtsell, E. 242
Moscovici, J. 28
Moser, A. 120
Moser, D. 153
Möslang, A. 41
Mostafaei, A. 203
Mostaghel, S. 35
Motallebzadeh, A. 163
Motylenko, M. 181
Mougin, K. 25, 173
Mound, B. 139
Mourad, H. 130
Moura, E. 88, 234, 235, 236, 237
Mousavi Anijdan, S. 231
Mousavi, S. 114
Moustafa, A. 202
Mouton, I. 31, 108, 181
Moxnes, B. 134
Moya, S. 222
Mrozek, R. 232
Mroz, M. 185, 222
Mrozowski, N. 87
Mruthunjayappa, R. 163
Mubarok, A. 29, 33, 52, 57, 78, 83, 106, 111, 220, 223
Muckley, E. 126
Mueller, F. 191, 239
Mueller, T. 63
Mugada, K. 167
Muhammad, W. 141
Mühlbauer, S. 56
Muhlstein, C. 139, 189, 209, 238
Mujahid, S. 44
Mukhanov, A. 80
Mukherjee, A. 119
Mukherjee, D. 25, 171
Mukherjee, K. 231
Mukherjee, P. 25, 49, 73, 100, 126, 152, 174, 177, 199, 230
Mukherjee, R. 208, 242
Mukherjee, S. 109, 142, 168, 185
Mukherji, D. 45
Mukhopadhyay, A. 52
Mukhopadhyay, J. 159
Mukhopadhyay, S. 238
Mulard, A. 103
Mulder, A. 54
Muller, D. 215
Müller, J. 36
Muller, S. 43
Müller, T. 93
Mullins, A. 133
Mullis, A. 196
Munhoz, A. 234, 235, 236
Munhoz Junior, A. 57, 235, 236
Muniandy, Y. 211
Munitz, A. 115
Munke, J. 56
Munoz, E. 34
Muñoz, J. 58
Mun, S. 225
Münstermann, S. 225
Munthali, K. 110
Muntifering, B. 52, 118
Murakami, H. 212
Murakami, R. 69
Murakami, Y. 140, 224
Muralidharan, G. 84, 102, 116
Muralidharan, K. 94, 230
Murashkin, M. 54
Murch, G. 58, 115, 169
Murdoch, H. 58, 93, 132, 165, 204
Murkute, P. 201, 223
Murphy, A. 25, 179
Murphy, B. 101
Murphy, C. 152
Murphy, M. 81
Murphy, N. 197
Murray, D. 125
Murray, S. 36, 88
Murr, L. 205
Murty, B. 233
Murty, K. 113, 145
Music, D. 189
Musiniski, W. 219
Musinski, B. 128
Musinski, W. 128, 139
Muskeri, S. 109, 168
Muta, H. 236
Muth, A. 113
Muthukannan, D. 239
Muthupandi, V. 217
Mu, W. 84, 204
Mu, Y. 66
Myers, J. 195
Myers, L. 133
Myers, M. 166
Mypati, O. 105
N
Nabavizadeh, S. 112
Nabeel, M. 151
Nadeem, A. 29
Nadig, P. 202
Nadot-Martin, C. 157
Nagai, T. 121, 163, 198
Nagao, A. 87
Nagao, S. 105
Nagaragan, A. 132
Nagaumi, H. 53, 79, 107, 133, 134, 159, 160, 184, 220, 221
Nageswara Rao, P. 224
Nag, S. 179
Nahar, L. 57
Naik, R. 31
Nai, M. 191, 219
Nair, A. 43, 185, 213
Nair, S. 124
Nait-ali, A. 158
Nait-Ali, A. 103
Na, J. 81, 109
Najmaei, S. 215
Nakai, Y. 168
Nakaki, M. 55
Nakamura, H. 159
Nakano, A. 51, 182, 204
Nakano, J. 29, 51, 77, 105, 131, 157, 182, 204, 232
Nakashima, K. 29
Nakata, T. 227
Nakatsukasa, G. 30
Nakayama, K. 185
Nakonechna, O. 80
Naleway, S. 31, 55, 81, 109, 160, 161, 185, 222
Nam, C. 24, 48, 72, 100, 126, 152, 204, 230
Nam, D. 138
Namola, K. 225
Nam, S. 24, 48, 72, 100, 126, 152, 211, 230, 239
Nanda, J. 100
Nandana, V. 80, 221
Nandwana, P. 27, 75, 155, 179, 180, 201
Nankivell, T. 187
Naouel, H. 222
Napolitano, R. 26
Naragani, D. 50, 128, 205
Narang, B. 134
Narang, P. 34
Narayanan, K. 41
Narayanan, P. 29
Narayanaswarmy, S. 94
Narayan, J. 126
Narayan, R. 134
Nardi, A. 221

- Narimatsu, T 31
 Narita, K 171
 Narra, S 45, 127
 Narushima, T 223
 Na, S 68
 Nascimento, L 61, 141, 234
 Nashed, Y 186
 Nashwan, Z 46
 Nasim, W 170
 Nastac, L 123, 150, 176
 Nastar, M 64
 Nastasi, M 29, 110, 113, 206
 Natarajan, A 34
 Nataraj, C 115
 Natesan, K 113, 193
 Nathaniel, J 40
 Nathan, N 117
 Nath, M 221
 Nath, S 205, 227
 Nautiyal, P 42, 77, 92, 172, 175, 230
 Nautnes, A 108
 Navale, S 212
 Navar, P 218
 Navarro, M 127
 Navrotsky, A 222
 Nawaz, K 101
 Na, Y 98, 139, 140, 239
 Nayak, J 134
 Nayak, L 237
 Nayak, S 86, 154
 Nayabsadeghi, S 133
 Nayek, C 235
 Nazaretski, E 136, 207, 234
 Nazé, L 214
 Nazri, S 77
 Ncapayi, V 230
 Ndefru, B 50
 Ndjom, B 60
 Nealley, H 77
 Nealley, W 51
 Necheporenko, I 80
 Necola, A 133
 Neding, B 130, 231
 Needleman, A 206
 Neelameggham, N. 23, 40, 44, 48, 64,
 68, 69, 71, 91, 96, 97, 121, 122,
 144, 170, 173, 174, 194, 197, 226,
 228, 229, 243
 Negre, C 52
 Nekså, P 108
 Nellist, P 35
 Nelson, A 56
 Nelson, G 100, 152, 199
 Nelson, I 161, 185, 222
 Nelson, K 27, 175, 232
 Nelson, T 140
 Nemati, M 224
 Nematollahi, M 200
 Nemeth, A 155
 Németh, A 86
 Nemir, D 205
 Nene, S 140, 168, 212, 239
 Neogi, A 213
 Nestler, B 164
 Nettleship, I 203
 Netto, N 123
 Neufeind, J 222
 Neugebauer, J. 39, 63, 112, 142, 187
 Neumeier, S 36, 60, 102
 Neveau, M 155
 Neverdal, S 108
 Neves, A 61, 238
 Neves Monteiro, S. 36, 61, 114, 141, 238
 Neves, R 234
 Neves, S 36, 238
 Newell, D 75
 Newell, R 95
 Newkirk, J 153
 Nezafati, M 201
 Nezaki, K 190
 Ng, D 60, 177
 Ngô, D 214
 Ngoepe, P 119
 Nguyen, C 103, 205
 Nguyen, H 144, 227
 Nguyen-Manh, D 38, 40, 142, 188, 193
 Nguyen, Q 191, 219
 Nguyen, T 158
 Nguyen, V 25, 179
 Ng, W 29
 Nicolas, A 86, 209
 Nicolite, M 238
 Nieh, M 146
 Nie, J 150, 194
 Nielsen, J 33, 156
 Niendorf, T 202
 Niessen, F 80
 Nie, Z 208
 Niezgodna, S 60, 111, 112, 143, 156, 164
 Ni, G 67
 Nihei, T 198
 Ni, J 26
 Nikitin, P 110
 Niklasson, A 52
 Nikolaev, P 92
 Nikolic, S 36
 Ni, L 237, 240
 Nimishakavi, K 83
 Nimmagadda, C 171
 Nimmala, S 199
 Ningileri, S 184
 Ning, K 82
 Nini, I 69
 Ni, S 154
 Nishikawa, H 43, 67, 95, 120
 Nishimura, T 29, 77, 131
 Niu, C 59, 116, 120, 137
 Niu, J 239
 Niu, L 243
 Niuman, S 99
 Niu, t. 113
 Niu, T 240
 Niverty, S 188
 Nizolek, T 32, 150, 180
 Nkiruka, N 217
 Nlebedim, C. 28, 104
 Nlebedim, I 28
 Nlededim, I 129
 Noakes, M 101
 Nobari, A 182
 Noble, D 100
 Noebe, R 87, 155, 157, 232
 Noell, P 45, 150
 Nofal, M 173
 Nogita, K 28, 51, 77, 105, 131, 150,
 157, 182, 232
 Noguchi, H 134
 Nohira, T 24
 Noh, S 105, 217
 Nolas, G 79
 Nommeots-Nomm, A. 127
 Nomoto, K 109
 Nomura, T 149
 Noonan, M 86
 Norfolk, M 26, 27
 Norkett, J 166
 Normand, A 31
 Novak, B 153
 Nowakowski, B 94
 Nowak, R 161
 N. Seidman, D. 159
 Nugent, K. 207
 Nuggehalli, R. 147, 148, 158, 172, 173,
 197, 215
 Nunes, L. 57, 61, 88, 236
 Nunez, L. 218
 Nwoke, U 198
 Nwokolo, A 156
 Nyberg, E. 98, 124, 149, 226, 229
 Nychka, J 106, 109, 161
 Nycz, A. 101
 Nyembwe, K. 29
 Nygren, K. 28, 50, 87
- O**
- Obaidat, I 235
 Obayemi, J 109

Obeidi, M.	220	Okada, I.	97	Ophus, C.	64, 70, 205
Oberdorfer, B.	69	Okayama, T.	231	Opie, S.	163, 240
Obert, S.	59	Okeniyi, E.	57, 158, 233	Opila, E.	169
Obiso, D.	23, 41	Okeniyi, J.	57, 158, 233	Oppelstrup, T.	64
Obregon, J.	185	Okerberg, B.	33, 57, 83, 111, 223	Oquab, D.	70
O'Brien, C.	39, 170	Okido, M.	53	Orabona, N.	117
O'Brien, D.	204	Okuda, H.	146	Ordonnez-Miranda, J.	157
Obstalecki, M.	139	Okuniewski, M.	144	Orhan, G.	225
Obuz, H.	68, 71	Olabi, A.	220	Orlando, R.	155
Ochoa, X.	59	Oladoye, A.	220	Orlov, A.	54
Ochonogor, F.	29	Olaitan, A.	223	Orlov, D.	40, 61, 64, 91, 144, 170, 194, 226
Öchsner, A.	154	Olaoluwa, D.	44	Orme, C.	104
O'Connell, J.	85	Olasinde, F.	44	Orozco, C.	197, 215
Odegard, G.	52	Olbinado, M.	154, 200, 201, 218	Orrego, S.	81
Odette, G.	64, 91, 145, 171, 193, 194, 212, 213	Olejník, J.	91	Ortega, F.	234
Odette, R.	118	Olevsky, E.	96	Ortega, L.	41, 92, 136, 145
Odo, U.	198	Olia, H.	41	Ortega, M.	117, 196
Odqvist, J.	84, 219	Oliani, W.	235	Ortiz, A.	235
Odusote, J.	114	Olier, P.	93	Ortiz, M.	52, 183
Oehring, M.	88	Oliva de Oliveira, M.	236	Osabumwenre, F.	164
Oelrich, R.	83	Oliveira, J.	223	Osada, T.	142
Oertel, C.	168, 191	Oliveira, M.	61, 88, 114, 141, 234, 235, 236, 238	Oseguera, J.	234, 236
Ofori Boakye, F.	229	Oliveira, P.	236	Osei-Agyemang, E.	142
Ofori-Opoku, N.	128, 188	Oliveira, R.	234, 235, 236, 237	Ose, S.	184
Oganov, A.	64	Oliveira, U.	141, 234	Osetskiy, Y.	142
Ogata, S.	237	Oliver, D.	55	Osetsky, Y.	38
Ogden, T.	185, 222	Oliver, W.	94, 136, 225	Óskarsdóttir, G.	160
Oguma, H.	97	Olivetti, E.	23, 45, 47, 69, 71, 97, 99, 122, 125, 148, 151, 173, 176, 177, 198, 216, 243	Osovski, S.	203
Oguzie, E.	207	Ollerton, W.	135	Ossa, E.	55
Ogwuegbu, M.	36	Olmsted, D.	90	Ostergaard, H.	102
O'Hara, D.	75	Olofsson, J.	70	Ostien, J.	158
Ohashi, Y.	69, 198	Olson, A.	52	O'Sullivan, C.	98
Ohba, M.	223	Olson, G.	26, 27, 44, 50, 59, 115, 192, 193, 208	Otis, R.	26, 153, 201, 206, 208
Oh, C.	104, 128, 157, 232	Olson, N.	57	O'Toole, P.	25, 179
Oh, H.	37, 82, 192, 211, 233, 239	Olsson, P.	40, 64, 91, 143, 193, 226	Ott, B.	122
Oh, I.	242	Olszewska, J.	63, 211	Ott, E.	25, 27, 178
Ohishi, Y.	236	Oluwafemi, S.	230	Otterbach, S.	172
Oh, J.	224	Olzsta, M.	91	Otto, R.	219
Oh, M.	219, 239	O, M.	95	Ott, R.	27, 28, 50, 82, 107, 129, 205
Ohnishi, T.	134	O'Malley, R.	65	Ouchi, T.	44, 68, 96, 97, 121, 228
Ohno, K.	29, 142	O'Masta, M.	178	Ouyang, F.	44, 95, 157
Ohnuma, I.	64, 137	Omdahl, N.	108	Ouyang, G.	157
Ohodnicki, P.	25, 28, 49, 50, 73, 76, 100, 104, 126, 131, 152, 156, 177, 181, 199, 204, 230, 232	Omorogbe, S.	230	Overby, D.	130
Oh, S.	232	Omotosho, O.	57	Overman, N.	91, 96
Ohtani, H.	85, 145	Omura, N.	224	Oviedo, M.	30
Oh, W.	229	Ondicho, I.	89	Oware Sarfo, K.	64, 223
O. Isgor, B.	223	Ondruska, J.	110	Owen, L.	56
Oitaben, D.	184	Ong, S.	34, 111	Owusu-Ansah, Y.	47
Ojeda, D.	49	Ono, H.	157	Owusu, K.	73
Ojewumi, M.	233	Onuegbu, G.	36	Owusu-Mensah, M.	65
Ojolo, S.	92	Onyedika, G.	36	Oyebade, B.	57
Okabe, T.	97, 185	Onyszczak, M.	28	Oyedele, A.	72
Okada, H.	211			Oyler, N.	56

- Özer, S 219
 Özkaya, F 106
 ÖZTÜRK, A. 230
 Ozturk, H. 186
- P**
- Pachauri, N 43
 Pacheco, A 235
 Packard, C 167
 Padilla, R 23, 47, 71, 99, 125, 151,
 176, 177, 198, 216
 Paek, M. 69, 145
 Paepcke, J. 59
 Pagan, D. . 28, 50, 101, 124, 130, 139, 200
 Paganelli, D 33
 Page, D 85
 Page, K 152
 Pahlevani, F 243
 Paik, J 30, 156
 Pai Kulyadi, E 231
 Paillard, P. 242
 Paiva, L. 235
 Pakanati, A. 82
 Pak, J. 69
 Pakulat, S 149
 Palacios Beas, E. 235
 Palasyuk, A 28
 Palasyuk, O 28
 Palchoudhury, S. 25
 Paliwal, M 45
 Palkovic, S 202
 Palkowski, H 148, 173, 197, 215
 Pallisco, D 104
 Palmer, B 189
 Palmer, T . . . 101, 128, 147, 199, 206, 230
 Palomares, A 195
 Pal, S 85, 91, 105, 118
 Pal, T. 217
 Pal, U 49, 126, 148
 Palukuri, N. 226
 Paluskiewicz, S 238
 Pamdya, S. 224
 Panat, R . . 28, 51, 77, 81, 105, 131, 147,
 152, 157, 173, 182, 232
 Pan, C. 157
 Panchal, V 173
 Panchhi, N 215
 Pande, C. 120
 Pandee, P 159, 220
 Pandey, A . . . 25, 47, 49, 70, 73, 98, 100,
 124, 126, 150, 152, 175, 177, 199, 230
 Pandey, K 54
 Pandey, P 60, 88, 238
 Pandey, T 157
 Pandolfelli, V 133
- Pan, F 95, 144, 198, 216, 227
 Pang, X. 29, 33
 Pang, Z. 198, 216
 Pan, J. 135, 159
 Panossian, Z. 223
 Panov, A. 149
 Pan, Q. 168
 Pantazopoulos, G 221
 Pantleon, K 33, 156
 Pantleon, W . . 27, 50, 75, 103, 130, 155,
 180, 231
 Pant, N 93
 Pant, P 52
 Pan, W 198, 216
 Panwisawas, C. 138
 Pan, Y 173, 198
 Panzner, T 68
 Papadopoulou, S 221
 Papaioannou, D. 162
 Papanikolaou, M. 46
 Paquette, M 56
 Paquit, V 179
 Parab, N 127, 131, 200, 201
 Paradiso, S 111
 Parajuli, P. 162, 163
 Parakh, A. 119
 Paramore, J. . 27, 121, 155, 179, 180, 203
 Paranthaman, M 28, 104, 147
 Paranthaman, P. 101
 Pardhasaradhi, S 52, 94
 Pardhi, Y 102
 Pardini, L. 235
 Pardoen, T 240
 Paredes Navia, S 30
 Parekh, M. 199
 Parish, C. 40, 73, 162, 206, 213
 Park, C 77, 104, 138, 143, 239
 Park, D 232
 Park, E . . 37, 38, 82, 135, 172, 192, 205,
 211, 225, 233, 234, 239
 Parker, A. 155
 Parker, D 157
 Park, G 144
 Park, H. 68, 132, 138, 211, 224, 242
 Parkin, C 41, 129, 226
 Parkison, D 240
 Park, J. . . 37, 48, 93, 124, 128, 139, 144,
 152, 186, 191, 193, 196, 200, 227,
 230, 231, 236, 239, 240
 Park, K 195, 230
 Park, M. 76, 225, 226
 Park, N 62, 89, 224
 Park, S. . 127, 129, 140, 167, 179, 202, 219
 Parks, D 158
 Park, T 205, 234
 Park, Y 95, 104, 140
- Parra, D 36, 88, 136, 207, 235
 Parrish, R. 32
 Parson, N 98
 Parthasarathy, T 35, 38, 63
 Parvinian, S 181, 221
 Pascall, A 103, 217
 Pascucci, F 56
 Pasebani, S. 26, 74, 101, 103, 127,
 201, 217, 218
 Pastore, G. 162
 Paswan, D 114
 Patakham, U 159
 Pataky, G 87, 113, 139, 166, 189,
 192, 209, 223
 Patala, S 52, 84, 137, 165
 Pate, A 81, 129
 Pate, C 156
 Patel, A 60
 Patel, D 102
 Patel, J. 117, 229
 Patel, M 202
 Patel, P 100, 202
 Patel, R 45
 Patel, S 159
 Patel, V 91, 210
 Pathak, S. 42, 66, 75, 93, 94, 118,
 195, 210, 213, 240
 Pati, A. 85
 Patil, R 119
 Patki, P 240
 Patra, P. 86
 Patridge, C. 199
 Pattanaik, A 133
 Patterson, B 73, 136
 Patterson, E 96
 Paubel, X 135
 Paudyal, D 28
 Paul-Boncour, V 50
 Paul, C 225
 Paul, F. 47
 Paulin, I 220, 222
 Paul, K 132
 Paulson, N 165, 208
 Pauly, V 165
 Paun, D. 134
 Pavanram, P. 185
 Pavel, M 101
 Pawlyta, M. 78
 Payam, B. 224
 Payton, E 32, 59, 60, 84, 156
 Payton, T 167
 Payzant, A 231
 Paz Soldan Palma, J. 30
 Paz y Puente, A . . . 44, 68, 95, 120, 146,
 171, 196, 214, 219, 241, 242
 Paz Y Puente, A. 44

- Pecassou, B. 215
- Pedroli, H. 60
- Pedroti, L. 235, 236
- Pegues, J. 74
- Pei, G. 44, 216, 227
- Peixoto Barroco Magalhães, J. 238
- Peixoto, J. 238
- Pekin, T. 70, 109, 205
- Pelletiers, T. 96
- Pelligra, C. 130
- Pena, V. 127
- Peng, H. 133, 159
- Peng, J. 33, 191, 216
- Peng, Q. 207
- Peng, W. 159, 207, 208
- Peng, X. 216
- Peng, Y. 40, 115
- Peng, Z. 23, 33, 47, 71, 83, 99, 125, 151, 176, 177, 186, 187, 198, 207, 216, 230
- Penny, R. 101
- Peralta, A. 153
- Peralta, P. 56, 163, 240
- Perea, D. 108
- Pereira, A. 114, 141
- Pereira Alves, N. 235
- Pereira, L. 235
- Perepezkó, J. 46
- Perez, C. 35, 60
- Perez, D. 52, 188
- Perez, E. 74, 125
- Pérez, G. 229
- Pérez-Herranz, V. 229
- Perez, I. 243
- Perez Labra, M. 235, 236
- Perez-Labra, M. 236
- Perez-Nunez, D. 41, 145
- Periane, S. 74
- Pericleous, K. 97, 117, 150, 176, 178
- Perisse Duarte Lopes, F. 61, 114, 164
- Perovic, D. 77, 182
- Perricone, G. 98
- Perrin, P. 59
- Perriot, R. 52
- Perron, A. 27
- Perry, C. 55, 231
- Perry, T. 190
- Persson, K. 34, 90, 111, 136
- Peter, L. 169
- Péter, L. 217
- Peter, N. 34, 202
- Petersen, S. 46
- Peterson, N. 40, 98
- Peterson, R. 161
- Peters, S. 133
- Petit, J. 124
- Petit, P. 95
- Petrakova, O. 149
- Petre, M. 133, 134
- Petretto, G. 159
- Petrie, C. 26
- Petrucci, L. 235
- Petrus, B. 41
- Pettersen, T. 162
- Petzold, L. 88
- Peuker, U. 161
- Pfefferkorn, F. 190
- Pfeifenberger, M. 210
- Pfetzling-Micklich, J. 35
- Pfitzenmeier, P. 45
- Pham, M. 103, 200
- Phan, N. 183, 209
- Phan, T. 177, 178, 200
- Pharr, G. 38, 42, 139
- Pharr, M. 49, 152
- Phatak, C. 30, 52, 78, 106, 132, 158, 233
- Phelan, D. 182
- Philippe, T. 120
- Philips, N. 202
- Phillion, A. 97, 151, 154
- Phillips, A. 215
- Phillips, N. 162
- Phillpot, S. 39
- Philpott, W. 102
- Phong, N. 124
- Phukan, H. 130
- Phulari, N. 224
- Picak, S. 192, 239
- Picard, D. 60, 160
- Piche, A. 221
- Pichler, C. 60
- Pickering, E. 102
- Pierce, C. 171
- Pilchak, A. 113, 139, 166, 189
- Pinegar, H. 122
- Piness, M. 209
- Pingin, V. 54
- Ping, S. 216
- Pinisetty, D. 43, 94, 119, 145, 241
- Pint, B. 65, 84, 116
- Pinz, M. 189
- Pippan, R. 42, 67, 93, 118, 172, 210
- Piro, M. 101, 117
- Pissarenko, A. 55
- Pistorius, C. 105
- Pistorius, P. 29, 51, 77, 105, 127, 131, 157, 182, 204, 232
- Pitts, S. 127
- Pizzagalli, L. 195
- P.Joshi, S. 42
- Plaisted, T. 31
- Plamthottam, R. 171, 241
- Plancher, E. 124
- Plapp, M. 116
- Playford, H. 56
- Pleteau, D. 156
- Plotkowski, A. 27, 128, 129, 153, 155, 178, 201, 218
- P., M. 106
- Pocratsky, R. 237, 240
- Podgurschi, V. 113
- Poerschke, D. 90
- Po, G. 67
- Pogatscher, S. 172, 241
- Pokharel, R. 32, 52, 118, 207
- Polak, C. 76
- Polak, J. 209
- Polar Rosas, A. 60, 88
- Polatidis, E. 28, 68
- Pole, M. 168
- Poleski, J. 92
- Poling, W. 129
- Pollock, T. 27, 28, 36, 49, 50, 59, 78, 88, 101, 103, 111, 118, 128, 139, 158, 163, 178
- Polonsky, A. 27, 28, 49, 50, 101, 111, 139, 178
- Polsky, Y. 101
- Pol, V. 199
- Polyakov, A. 160
- Polyakov, P. 160
- Polyakov, S. 27
- Polyanskii, A. 75
- Pomerantseva, E. 49
- Ponce, A. 162, 163
- Poncsak, S. 108
- Pontikes, Y. 69, 133
- Pontikis, V. 33
- Pontillon, Y. 206
- Poole, L. 225
- Poole, W. 98
- Poon, J. 107, 142
- Poorganji, B. 25, 27, 73, 101, 103, 127, 129, 153, 155, 177, 179, 200, 202, 217, 219
- Popa, M. 133
- Poplawsky, J. 95, 108, 142, 146, 193
- Popov, D. 77
- Popovich, A. 101
- Popovich, V. 101, 154
- Popovic, M. 25, 194, 223
- Portela, C. 171
- Poschmann, M. 70, 90
- Posen, S. 54, 193
- Potirniche, G. 59, 145, 167, 209
- Potyak, V. 225
- Poulin, C. 203
- Poulon-Quintin, A. 130
- Poulsen, H. 63, 162, 231

- Pouran, B 154, 185
 Pourboghraat, F 205
 Pournaderi, S 177
 Pourroy, G 148
 Poursaee, A 239
 Poursaman, S 160
 Poutrina, E 197
 Poveda, P 235, 236
 Powell, A 45, 148
 Powell, C 91
 Powers, M 149, 174
 Pownceby, M 48
 Prabakharan, R 66
 Prabhakar, 43
 Prabhakar, A 123
 Prabhakaran, R 42
 Prabhakar, P 43
 Prabhu, R 81
 Pradeep, K 239
 Pradhan, D 133
 Prado, U 36
 Prael, U 128
 Prakash, C 163
 Prakash, P 91
 Pramanik, C 55
 Prasad, A 70
 Prasad Murugan, S 104
 Prasad, S 70, 114
 Prasad, Y 227
 Prater, J 126
 Prater, T 27
 Preimesberger, J 100
 Preiß, E 167
 prentice, L 121
 Presbitero, G 32
 Presmanes, L 101
 Preston, T 198
 Previtali, B 127
 Priedeman, J 64
 Pries, J 129, 181
 Prima, F 179
 Primig, S 44, 68, 95, 120, 146,
 171, 196, 214, 241
 Prisbrey, M 222
 Prithivirajan, V 128
 Priyadarshan, G 27, 63
 Proano, C 225
 Pröbstle, M 102
 Proietti, A 70
 Pro, J 81, 109
 Prokhorenko, M 144
 Promakhov, V 219
 Prosa, T 31
 Proschel, A 214
 Proshkin, A 54
 Prost, T 26, 101, 147
 Proudhon, H 103, 124, 189
 Proud, W 55
 Provatas, N 63, 112, 128
 Proz, M 211
 Prucz, J 30
 Prusty, B 95
 Prytz, A 108
 Puchala, B 34, 84
 Puentes Rodriguez, B 204
 Pugliara, A 70
 Pulscher, D 218
 Puretzky, A 72
 Puri, S 47, 70, 98, 124, 150, 175
 Purja Pun, G 30, 39
 Pürstl, J 213
 Purushottam, R 124, 130
 Putz, B 240
 Pu, Z 176, 198
 Puzanov, I 160
 Pyczak, F 88
- Q**
- Qian, D 138
 Qian, F 242
 Qiang, F 175
 Qiang, J 38
 Qiang, Y 44, 68, 96, 121, 228
 Qiang, Z 47, 99
 Qiankun, Y 216
 Qian, M 46, 70, 96, 97, 121, 123, 147,
 149, 172, 175, 176, 196, 229, 242
 Qian, W 47
 Qian, X 58, 112, 187
 Qiao, J 208
 Qi, L 58, 69, 70, 84, 98, 111, 112,
 136, 164, 187, 208, 237
 Qin, B 174
 Qing, G 83, 99
 Qinghong, T 221
 Qin, M 99
 Qin, Q 72, 229
 Qi, S 243
 Qiu, C 220
 Qiu, D 202
 Qiu, G 56, 83, 219, 222
 Qiu, P 159
 Qiu, S 56, 99
 Qi, Y 46, 141, 192
 Quadir, Z 68, 187
 Qualls, A 65
 Qualls, L 117
 Quan, H 32, 55
 Quan, J 156
 Qu, D 131
 Quek, S 42, 94
- Que, Z 98
 Qu, H 161
 Quiambao, K 115
 Quick, T 47
 Quintana, M 213
 Quintana, O 179
 Qu, J 118, 235
 Qu, M 127, 201
 Qu, T 134
 Qu, X 99, 147
- R**
- Raabe, D 31, 36, 39, 53, 76, 88, 89,
 108, 138, 181, 194, 202, 238
 Rabba, S 60
 Rabby, M 140
 Rabin, O 197
 Rabkin, E 141
 Rack, A 154, 200, 201, 218
 Rack, P 191
 Rader, K 53, 79
 Radhakrishnan, B 128
 Radhakrishnan, M 41, 93, 228
 Radin, M 169
 Radousky, H 73
 Radue, M 52
 Rae, C 44, 86, 165
 Raeymaekers, B 222
 Rafaels, K 31
 Rafique, M 81, 109, 135, 155, 161,
 185, 205, 206, 233, 234
 Ragasa, E 39
 Rager, M 215
 Raghavan, N 27, 178
 Raghavan, R 94, 165
 Raghavendra, R 43
 Rahaman, M 84
 Rahbar, N 109
 Rahimi, R 214
 Rahman, A 52
 Rahmani, H 33
 Rahman, M 147, 173
 Rahman, Z 185
 Raiford, M 199
 Raiman, S 40, 65, 73, 82, 92, 116, 117
 Rai, N 109
 Rainforth, W 125, 181
 Raja, A 92
 Rajagopalan, J 47, 103, 111, 126,
 195, 225, 240
 Rajani, O 174
 Rajan, K 31, 111
 Rajaram, S 143
 Rajendran, H 112
 Rajendra, T 100

Rajgire, S	134, 205	Ravindra, N	147, 148, 172, 173,	Ren, W	191
Raji, M	44		197, 215	Ren, Y	48, 153, 199, 217, 219, 227, 231
Raj, R	109	Ravi, P	128	Ren, Z	99, 170, 191
Raju Natarajan, A	112	Ravi, V	30, 192	Repper, S	149
Rakesh, S	41, 202, 227	Ravula, V	181	Repukaiti, R	112
Rakotondramanana, L	108	Rawlings, M	59	Requena, G	200
Ralls, J	74	Rawn, C	40	Reshetnyak, O	144
Ramachandran, R	66	Rayapudi, V	198	Restrepo, D	55, 81, 109, 185, 222
Ramajayam, M	174	Ray, P	116	Rettenmayr, M	117
Ramakrishna, M	181	Raza, M	29	Reuter, M	23, 41, 173
Ramakrishnan, A	79, 155, 233	Razavi, S	74	Revelo, C	243
Ramana, C	147, 148, 173, 197, 215	Rdzawski, Z	78	Reyes-Cruz, V	236
Ramanujan, R	50, 104	Ready, J	147, 172, 197, 215	Reyes Domínguez, I	235
Ramazani, A	128, 213	Rebak, R	33, 57, 66, 74, 83, 87, 111,	Reyes, K	111
Ramesh, C	168		113, 138, 166, 188, 209, 223	Reyes Osorio, L	219
Ramesh, K	137	Record, M	53	Reyes Perez, M	235
Ramirez, A	225	Reddy, A	181	Reyes Pérez, M	236
Ramirez-Castro, J	230	Reddy, R	40, 97, 161, 216, 242	Reyes-Pérez, M	236
Ramirez, J	59, 145, 167, 209	Reddy, S	191	Reyes, R	182
Ramirez-Ledesma, A	196	Redman, J	166	Reyes Tirado, F	88
Ramirez Ortega, P	243	Redwing, J	100	Reynolds, L	36
Ramirez-Ortega, P	230	Reed, D	152	Reynolds, Q	60, 122
Ramli, M	232	Reed, E	58	Reynolds, T	167
Rammos, P	102	Reed, R	86, 155, 187	Reza Ansari Dezfoli, A	43
Ramprasad, R	39, 136	Reese, E	64	Rezaei Ardani, M	96
Ramstein, G	164	Reese, S	189	Rezaei, S	189
Ramulu, M	231	Reeve, S	58, 164	Reza-E-Rabby, M	96, 190
Ranade, P	153	Reeve, T	59	Rezan, S	96
Ranaiefar, M	202	Refat, M	210	R. Farkoosh, A	159
Ranaweera, C	160	Regele, J	147	Rhamdhani, A	151
Rangaraju, G	124	Regensburg, A	211	Rhamdhani, M	48, 105
Rangari, D	136	Reggente, M	148	Rhee, H	81
Rangari, V	36, 88, 152, 207, 235	Rehn, V	164	Rhein, R	36
Rangel, E	236	Reichardt, A	94	Rheker, F	135
Rankin, J	48	Reichardt, G	173	Rho, J	224
Rank, M	188	Reid, A	36	Riano, J	80
Rankouhi, B	178, 179	Reidy, R	199	Ribeiro, C	238
Rao, A	113, 209	Reilly, C	97	Ribeiro, E	25, 171
Rao, M	71, 83, 125, 187	Reinartz, M	117	Ribeiro, L	238
Rao, P	128, 230	Reisert, M	49	Ribis, J	65, 91, 226
Rao, R	92	Reis, P	235	Rice, K	127
Rao, S	35, 38, 63, 194	Reis, R	88, 236	Richard, D	80
Rao, Y	208, 237	Reiss, R	184	Richardson, I	154
Rappaz, M	135	Relue, W	179	Richmond, D	111
R. Arava, L	49, 152	Rembold, M	41	Richter, C	85
Rashidi, S	29, 49	Rempel, H	67	Richter, M	184
Rasmuson, Å	68	Renaudier, S	54	Ricker, R	177, 201
Rasmussen, P	47, 111, 126	Renault, P	28, 61	Ricketts, N	149, 174
Ratajczak, M	41	Ren, B	48, 227	Rickman, J	37
Rathi, A	187, 191	Rengifo, S	220	Ricote, S	126
Rathod, M	106	Renk, O	42, 118	Ridgeway, C	70
Ratvik, A	60, 86, 113, 134	Renner, C	180	Riedemann, T	132, 147
Raudsepp, M	159	Renn, M	147	Riestra, M	184
Raul, R	113	Renou, G	68	Rietema, C	41, 228
Raush, J	128	Ren, Q	159, 187	Rieth, M	41
Ravanur, R	217	Ren, S	96	Rijal, B	34, 180

- Rikos, A 221
 Ringer, S 31, 54, 80, 108, 109
 Ringeval, S 95
 Rinko, E 181
 Rios, O 27, 28, 50, 76, 103, 104,
 107, 129, 131, 155, 156, 179,
 181, 202, 204, 219, 232
 Rios, P 242
 Rise, A 64
 Rishel, L 188, 241
 Ritchie, R . . . 31, 32, 38, 55, 87, 109, 115,
 118, 119, 189, 191, 205, 211
 Ritzo, M 138
 Rivera, D 208
 Rivera-Diaz-del-Castillo, P . . 129, 146,
 164, 240
 Rivera, O 194
 Rivero, I 180
 Rizzardi, Q 89
 R, J 202
 Roach, A 155
 Roach, M 74
 Robach, O 124
 Robbins, J 153
 Roberts, A 196
 Roberts, J 54
 Robertson, C 66, 194
 Robertson, I 87
 Roberts, S . . . 64, 81, 100, 175, 210, 213,
 226
 Robinson, A 144
 Robinson, D 52
 Rocha, D 238
 Rocha, L 185
 Rock, C 180
 Rockstroh, M 149
 Rodarte, C 180
 Rod, E 77
 Rodelas, J 104, 186
 Rodgers, T 52, 153
 Rodney, D 214
 Rodrigues Ribeiro, R 236
 Rodrigues, T 236
 Rodriguez de Vecchis, P 203
 Rodriguez De Vecchis, P 203
 Rodriguez De Vecchis, R 203, 232
 Rodriguez, M 104
 Rodriguez, R 51, 238
 Roeb, M 46
 Roehling, J . . 74, 123, 127, 129, 178, 217
 Roehling, T 129, 153, 217
 Roesler, J 45
 Rogal, L 65, 192
 Rogers, M 156
 Rogers, N 66
 Rogers, R 106, 129
 Roger, T 108
 Rogl, G 107
 Rogl, P 107
 Roh, A 211
 Rohatgi, P 45, 201
 Rohrer, G 44, 64, 91
 Rojas-León, A 235
 Rojas, R 59
 Rokkam, S 87, 113, 132, 138, 158,
 166, 183, 188, 204, 209, 233
 Rolandi, M 31
 Rolando Valenzuela-Diaz, F 57
 Rolland, N 193
 Rollett, A . . . 45, 52, 93, 124, 127, 130,
 131, 143, 158, 200, 219, 220
 Romaka, V 107
 Román-Gutiérrez, A 235
 Romanjek, K 53
 Romano, R 235
 Romanov, V 116
 Romanowski, C 40
 Romansky, M 182
 Rombach, G 122
 Romero Filho, M 235
 Romero Serrano, J 236
 Romero-Serrano, J 236
 Romero, T 213
 Rommel, S 83, 214
 Romo-De-La-Cruz, C 30
 Rondinella, V 110, 162
 Rondinelli, J 111
 Ronevich, J 87
 Rongrong, W 216
 Roos, A 159
 Roosendaal, T 167
 Rooyen, I 162
 Rørvik, S 60, 86, 108
 Rosa, D 238
 Rosales-Franco, J 74
 Rosario, C 222, 235, 243
 Roscioli, G 156, 231
 Roscoe, C 133
 Rosefort, M 56
 Rose, G 127
 Rosei, F 134
 Rose, K 116
 Rosenbrock, C 64
 Rose, S 211
 Rosiwal, J 165
 Rösler, J 45, 56
 Rosseel, T 222
 Rossi, M 236
 Rossin, J 128
 Ross, K 190
 Rosso, M 78
 Rostamian, A 135
 Rost, C 38
 Roth, D 149
 Roth, R 173
 Rottmann, P 28, 170, 242
 Rouesne, E 93
 Rouffié, A 87, 165
 Rouleau, C 72, 215
 Rouse, Z 110, 175
 Rovinelli, A 127, 158
 Roy, A 98, 122, 132, 143
 Roy, G 217, 218
 Roy, I 113
 Roy, M 230
 Roy, S 199
 Røyset, A 108
 Rozman, K 77, 112, 169
 R, S 239
 Rua, J 61, 235
 Ruan, Q 147
 Rúa-Restrepo, J 173
 Rubenchik, A 129, 201
 Rubio, N 223
 Rudd, R 64
 Rudin, S 39
 Rudraraju, S 92
 Rueschhoff, L 47
 Rueß, H 189
 Ruggles, T 209
 Rulis, P 56
 Runkle, R 25
 Runnels, B 42, 90, 119, 120
 Rupert, T 118, 121, 170, 171, 212
 Rupp, R 33
 Russell, A 118
 Russell, R 74, 102, 166, 209
 Russo Spena, P . . 32, 33, 56, 57, 83, 110,
 136, 163, 186, 187, 207, 234
 Rutherford, B 190, 202
 Ruvalcaba, C 201
 Ruzic, J 234
 Ryabov, D 27, 180
 Ryou, H 96
 Ryu, C 82
 Ryu, I 137, 204, 205, 237
 Ryu, S 47
 Ryu, W 135, 172
- S**
- Saage, H 166
 Saal, J 27, 90, 103, 115, 116, 129,
 142, 155, 179, 202, 219
 Sabarou, H 58, 120
 Sabau, A 84, 101, 106, 111, 136,
 164, 187, 208, 237
 Saber, S 73

Saboo, A	59, 127	Salman, S	53	Sasaki, K.	237
Sachan, R	38, 126, 142, 199	Salmasi, A	188	Sas, J	239
Sachdev, A	129	Salonitis, K.	123	Sathanur, A	116
Sachs, E.	180	Saltonstall, C	197	Sathiaraj, G	191
Sadat, T.	28	Salwén, A	165	Sato, H	203
Sadayappan, K.	175	Samal, K.	86	Sato, K	203
Sadek, A	75	Samanta, S	115	Sato, R.	158
Sadler, B	166	Samantray, J.	96	Sato, Y.	140, 167, 190, 210, 211, 224
Saedi, S	200	Samei, J.	130, 203	Sauceda, D	111
Saenz, N	155, 179	Samiee, M.	185	Saud, N.	232
Saenz-Trevizo, A	210	Samimi, P.	44, 239	Sauerschnig, P	107, 233
Saevarsdottir, G.	23, 41	Samin, A.	33, 223, 240	Saunders, C	58
Safaltin, S	230, 239	Sampaio, J	238	Sauvage, X	35, 118, 242
Safari loaliyan, S	202	Sampath, S	52, 73	Sauzay, M.	87, 145, 158, 189
Safeen, M	186	Samuel, T	207	Savage, D	41, 93, 103, 156, 213, 240
Safriet, S	139	Sanborn, B	187	Sava, I	133, 134
Sagadin, C	60	Sanchez, D	200	Savino, N	156
Sagapuram, D	42, 89, 169, 181	Sánchez, D	229	Savva, A	143
Saghaian, E.	200	Sánchez Rodríguez, R.	36, 88, 238	S. Azar, A	179, 219
Sahajwalla, V	243	Sand, A.	91	Scagliusi, S	136, 164
Sahara, R	142, 223	Sandberg, R	135, 162, 186, 206, 207, 234	Scarazzato, T	223, 243
Sahasrabudhe, H	180	Sanders, A	164	Scarlat, R	41, 65
Sahlot, P	140, 167, 168	Sanders, P.	112, 174, 192, 196	Schaarschuch, R	168, 191
Sahoo, K.	107	Sandlöbes, S.	67, 76	Schablitzki, T.	85
Sahoo, M	134	Sandoval, D	106	Schaefer, M	110
Sahu, B	78, 118	Sa Neto, V	135	Schaeffer, B.	101
Sahu, S	91	Sangid, M.	42, 50, 86, 128, 135, 163, 192, 204, 205, 209	Schaffer, J.	92, 144
Sahu, T	60	Sangiovani, D.	67	Schaible, E	32
Saida, J	135	Sang, X	152	Schaper, M	129, 179
Saidi, W	82	San, J.	229	Schatte, J.	69
Saif, T	47	San Marchi, C	74, 87, 118	Schäublin, R.	241
Sai Karthik, P.	181	San Martin, D	129	Scheele, G.	55
Saito, H.	190	Sano, T	92, 136, 146, 171, 207	Scheer, A	63, 239
Saito, N.	29, 51, 77, 105, 131, 149, 157, 182, 204, 232	Santala, M	64	Scheller, P.	29, 41, 151, 187
Saito, T	107, 180	Santana, J	235, 236	Schellert, S	191
Saiz, D.	73, 153	Sant'Ana, M	238	Schell, N.	194, 232
Sakidja, R	56, 125	Santella, M	116	Scheu, C	39, 189
Salas, D.	112	Santhapuram, R.	43, 213	Schick, M.	79
Salawu, E	183	Santini, T	159	Schick-Witte, K.	190
Salazar, D	28, 51, 181	Santodonato, L.	38, 90, 115, 211	Schill, W.	58, 183
Saleh, C.	158	Santora, E.	159	Schipper, D	126
Saleh, M	81, 118, 147, 152, 213	Santos, G	223	Schippel, V.	166
Saleh, T.	91, 213	Santos, V	88	Schmalbach, K.	210
Sales, A.	174	Santra, S	214	Schmid-Fetzer, R.	46, 194
Sales, B	104	Sarac, B.	135	Schmidl, J.	35, 60
Sales, J.	235	Sarfo, K.	223	Schmidt, E	166
Salgado de Assis, F	61	Sarikaya, M	55	Schmidt, K	208
Salifu, A	109	Sarkar, C.	224	Schmidt, R	100
Salimi, N.	223	Sarkar, R.	47, 126, 145	Schmidel, A	167
Salinas-Rodríguez, E.	235	Sarkar, T.	217	Schneider, A.	58, 80
Salkir, M.	228	Sarker, P.	38, 168, 169	Schneider, J	25, 73, 101, 102, 127, 140, 153, 177, 189, 200, 217
Salleh, M	28, 51, 77, 105, 131, 157, 182, 232	Sarmento, B	236	Schneider, M	61, 193
Salloom, R	58	Saroj, S	224	Schneipp, H	81
Salloum-Abou-Jaoude, G.	176	Sartori, M.	236	Schniepp, H	72, 81, 88, 131
				Schoell, E	55

- Schoeller, H 182
 Schoell, R 124
 Schoenfeld, W 198
 Schoenung, J 45, 73, 89, 153, 201
 Schöler, S 106
 Schrandt, M 147
 Schreiber, D 94
 Schrijvers, D 131
 Schroer, C 207
 Schroers, J 37
 Schropp, A 207
 Schroth, J 190
 Schubert, H 104
 Schubert, R 103
 Schuh, C 27, 103, 116, 121, 147, 175, 193, 206, 232
 Schulenburg, F 35
 Schuler, J 171, 212
 Schuler, T 64
 Schulz, E 95
 Schulze, R 131
 Schumacher, A 73
 Schumacher, K 176
 Schumacher, P 46, 69, 174
 Schuman, C 156
 Schunert, S 119, 188
 Schurmann, D 41
 Schuster, B 110
 Schwalbach, E 128, 153, 219
 Schwalbe, C 231
 Schwarz, M 41, 166
 Schwen, D 56, 119, 127, 144, 162, 188, 226
 Schwiedrzik, J 67, 195
 Sciammarella, F 218
 Scime, L 73
 Scipioni Bertoli, U 153
 Scott, B 185
 Scott, E 197
 Scott, M 72
 Scotto D'Antuono, D 62
 Scotto, P 33
 Scully, J 29, 115, 138, 144, 188
 Scurria, M 74, 102
 Sealy, M 127
 Sebeck, K 156
 Sediako, D 53, 160, 221
 Seebergh, J 57
 Seetala, N 145
 Seetharaman, S 24, 48
 Seever, S 56
 Segawa, M 104
 Segurado, J 106
 Sehan, D 178
 Seid, A 231
 Seidensticker, J 241
 Seidman, D 31, 54, 60, 80, 103, 108, 121, 125, 181, 193, 196
 Seifeddine, S 70, 184
 Seifert, H 120, 188, 227
 Seifi, M 74, 102, 128, 154, 178, 202, 218
 Seif, M 106, 119
 Sei, N 70
 Seisoglu, A 134
 Seita, M 73, 101, 186
 Seixas, M 236
 Seker, E 146
 Sekhar, J 106, 201
 Seki, T 134
 Sellers, D 120
 Semiatin, L 25, 73, 101, 127, 153, 177, 200, 217
 Semiatin, S 60, 138
 Senabulya, N 136
 Senanayake, N 106
 Senanu, S 113
 Sen, F 98
 Sen, I 166
 Senkov, O 35, 38, 62, 63, 108
 Seno, R 133, 159
 Senor, D 108, 222
 Seoane, A 222
 Seo, H 218, 222
 Seol, J 68, 94, 196, 238, 239
 Seo, S 195, 230
 Seo, W 95
 Sepehrband, P 35, 59, 131, 212
 Serna, S 235
 Sernicola, G 167
 Serra, A 42
 Serrano-Sánchez, F 53
 Sert, E 154
 Sesar, N 47
 Šetina Batic, B 214
 Setyawan, W 64
 Severs, K 165
 Seymour, L 126
 Sezer, R 216, 225
 Shaaban, M 111
 Shabani, M 192, 213
 Shabanisamghabady, M 239
 Shaber, N 59, 145, 167, 209
 Shabib, I 148
 Shade, P 47, 50, 59, 128, 139, 219
 Shafei, A 81
 Shafer, C 180
 Shaffer, B 56, 163, 240
 Shaffer, D 166
 Shafiei, M 221
 Shafiei, N 237
 Shafirovich, E 45, 96
 Sha, G 31, 54, 80, 108, 242
 Shahani, A 136, 241
 Shaha, S 29, 91, 124, 194
 Shahba, A 132
 Shah, K 148
 Shahrezaei, S 114
 Shaik, S 71
 Shakhrai, S 160
 Shakiba, A 221, 227
 Shalchi Amirkhiz, B 129, 178
 Shamberger, P 120, 131, 145, 171, 242
 Sham, K 74, 153, 217
 Shamsaei, N 74, 102, 128, 145, 154, 178, 202, 218
 Shamsujjoha, M 74
 Sham, T 92, 127, 158
 Shan, A 211
 Shanbhag, S 183, 209
 Shang, S 62, 85, 115, 206, 208
 Shang, T 83
 Shang, Z 181, 194
 Shankar, A 78
 Shanthraj, P 28, 138
 Shan, Z 71, 118, 119
 Shao, L 121
 Shao, S 66, 240
 Shapiro, A 26, 153, 201
 Sharifi, S 227
 Sharits, A 47
 Sharma, A 172, 219, 239
 Sharma, M 157
 Sharon, J 178
 Sharypov, N 160
 Shassere, B 95
 Shaughnessy, K 66
 Shayesteh Moghaddam, N 200
 Shazly, M 25
 Shear, T 136
 Shehu, M 113
 Sheikh, M 29
 Shen, G 77
 Sheng, H 45
 Sheng, Y 37
 Shenoy, R 113
 Shen, P 47, 99, 176, 177
 Shen, X 79
 Shen, Y 32, 56, 64, 123, 125, 130, 180
 Shepard, J 179
 Sheppard, T 207
 Sheridan, J 26
 Sheridan, L 102
 Sherman, Q 85
 Shetty, P 57, 143, 146
 She, X 177
 Shi, A 177
 Shibata, A 226
 Shibata, H 77, 105, 204

Shibazaki, Y	135	Sigli, C	142	Siqueira, G	223
Shie, K	105, 157	Signor, L	87, 124, 130, 157	Siqueira, L	88
Shield, J	25, 128, 181	Sigworth, G	46	Sirott, E.	72
Shifler, D	89	Sijabat, S.	86	Sisson, R.	45, 58
Shih, M.	231	Sikan, F.	33	Sittiho, A	59
Shih, S.	219	Sikora, B.	27	Sivlin, D	152
Shih, Y	31, 81	Silaen, A.	177	Skare, M.	198
Shi, J	153	Sillekens, W	64, 98, 124, 229	Skerjanc, W	162
Shi, L.	109	Siller, M	69	Skledar, L	134
Shimasaki, S.	82	Silling, S.	183	Skolrood, L.	215
Shim, J	241	Sills, R.	228	Skorvanek, I.	157
Shin, D	32, 84, 90, 116, 142, 146, 165, 196	Silva, J.	234	Skrotzki, W	168, 191
Shingledecker, J.	112	Silva, L	114, 141, 223, 234, 235, 236, 238	Skrypnyk, V	225
Shin, H.	48	Silva, T	236	Slazhniev, M.	221
Shin, J.	204, 220, 221	Silva-Valenzuela, M	57, 234	Sliwka, M.	218
Shin, K	150	Silverstein, R	207	Slocik, J.	31
Shin, M.	26	Simeone, D.	33	Slocum, A.	206
Shin, S.	152, 224	Simeonidis, G	221	Slone, C	60, 112, 143, 192, 225
Shin, Y	127, 153, 179, 202	Simetsberger, F	159	Slotwinski, J	154
Shi, P.	191	Sim, G.	47, 98	Slyvestre, A	131
Shi, Q	95, 143, 168	Sim, H.	221	Smadzadeh, M.	23
Shi, R	129, 142, 153, 217	Simhachalam, K	225	Small, K	75
Shiratori, S.	81	Simic-Glavaski, B	25	Smeltzer, J	37
Shi, S.	48, 151, 206, 208, 225, 241	Simizu, S.	76, 156	Smet, V.	146
Shishido, T.	233	Simo, A.	230	Smid, M	28, 68, 156
Shittu, J.	142	Simonelli, M	180	Smilauerova, J	214
Shi, X	65, 159	Simpson, M	117	Šmilauerová, J	95
Shi, Y	30, 81, 93, 109, 133, 135, 161, 185, 191, 205, 206, 233	Simsek, E	129	Smith, A.	220, 226
Shi, Z.	83, 113, 149	Sims, H.	87	Smith, B	161
Shoji, Y.	69	Simsiriwong, J	145, 154	Smith, C.	71, 226
Shomali, A	174	Sims, J.	153	Smith, G.	52
Shornikov, S.	216, 227	Sims, Z	27, 107, 155	Smith, H.	58
Short, M.	40, 51, 65, 92, 116, 144, 197, 206, 228	Simunovic, S	101	Smith, J.	77, 172, 199
Shower, P	146, 165	Sinclair, C.	63, 112	Smith, K.	30, 143, 178
Shrivastava, A	168	Sinclair, K.	166	Smith, L	175
Shtefanyuk, Y.	54	Sinclair, L	154, 200, 201, 218	Smith, N.	82
Shu, D.	178	Sinfield, M	181	Smith, R.	60, 66, 85, 132, 188, 226, 228
Shukla, S.	168, 224	Singamneni, S	101	Smith, T	44, 74, 106
Shuleshova, O	117	Singaravelu, A	163	Smith, W	178
Shunmugasamy, V.	226	Singh, A	34, 58, 85, 111, 137, 164, 168, 237	Smith, Y	122, 174, 197, 243
Shu, S	193	Singha, U	52	Smudde, C	74
Shutthanandan, V	199, 215, 226	Singh, C	119, 180	Smyth, C.	133
Shu, Y.	101, 144	Singh, D	53, 165, 217	Snead, L	188
Shyam, A	47, 146, 165	Singh, G	41	Sneddon, K	166
Sibernagel, C	101	Singh, J.	99, 170, 227, 231	Snene, R.	226
Sicaud, B.	145, 158	Singh, K	31	Snow, B.	30
Sichone, K	149	Singh, M.	60, 65	Snugovsky, L	182
Sickafus, K	32	Singh, P	41, 42, 49, 120	Snugovsky, P	182
Siddel, D.	180	Singh, R	29, 106, 226	Snyder, G	107, 233
Siddique, S.	128	Singh, S.	50, 69, 106, 195	Soares, C.	236
Siegel, D	199	Sinha, S.	168, 210, 212, 239	Soares de Faria, J.	114
Siegel, M.	185, 222	Sinnott, M	25, 41	Sobani, M.	81
Sierros, K	147, 172, 173, 197, 215	Sinnott, S	39	Sobczak, N.	161
		Sinogeikin, S	77	Sobieraj, D	38, 188
				Soboyejo, W.	109
				Sobrinho, L	36

- Sofinowski, K. 104
 Sofronis, P 87
 Soghrati, S 132
 Sohn, I 157
 Sohn, Y. 95, 127, 169, 178, 179,
 200, 202
 Soisson, F. 58, 194
 So, K 40, 51, 144, 172
 Sokalski, V 207
 Sokolov, A 156
 Sokolov, M 228
 Solanki, K. 170, 183, 189, 223, 227, 240
 Sola-Rabada, A 55
 Solemani, A 83
 Soler, M 130
 Soler, R. 139, 189
 Solheim, A 160
 Solis, C 56
 Solis, E 196
 Soltanattar, S 74
 Somaiah, N 28
 Soman, R 56
 Somerday, B. 87, 138
 Somers, M 80
 Somidin, F 51, 182
 Sommer, A 155
 Sommer, M 155
 Sommerseth, C 86
 Sonawane, D 29
 Sonbolestan, S 140
 Soncini, R. 80
 Sondhi, S 201
 Song, B. 23, 187, 198, 209, 221
 Song, C. 241
 Songca, S 224, 230
 Song, D. 37, 196
 Song, G. 67, 89, 110, 150, 223
 Song, H. 62, 63, 75, 115, 116
 Song, J. 87, 144, 150, 224
 Song, L 75, 134
 Songli, L 68
 Song, M 25, 113, 154, 181, 194
 Song, R. 77
 Song, T 213
 Song, W 120
 Song, X. 30, 126
 Son, H. 220, 221, 233, 242
 Sonia, F. 52
 Soni, V 62, 108, 192, 226
 Son, K. 178
 Sonn, C. 222
 Son, Y. 179
 Soon-Jik, H 159
 Soplin, M 220
 Sorensen, C 190
 Sorescu, D 126
 Sorhuus, A 184
 Sorkhi, L. 178
 Sorour, M. 73
 Sosa, J 142
 Sotelo, L 127
 Soto-Medina, S 137, 180
 Souлами, A 144
 Soulié, A. 32
 Sourmail, T 193
 Sousa, B 196
 Southam, G 159
 Souther, M 163
 Souza, A 223, 238
 Souza, C 236
 Souza, F 238
 Souza Oliveira, M 114
 Souza, V 163, 234, 235, 236
 Soyly, E. 122
 Spadaccini, C. 73, 103
 Spaepen, F 135
 Spannagel, F. 83
 Spanring, A 35, 60
 Sparkman, D 128
 Sparks, G 89
 Spathis, D. 186
 Spear, A 52, 87, 113, 127, 128, 139,
 166, 189, 200, 209, 223
 Spearot, D 30, 52, 64, 66, 78, 106,
 132, 158, 183, 213, 233
 Speck, J. 54
 Speer, J 156
 Speller, S. 214
 Spencer, B. 132
 Spencer, P. 134
 Spiecker, E 35, 36, 90, 165
 Spieckermann, F 241
 Spierings, A 129
 Spies, K. 144
 Spinelli, I 179, 214
 Spinelli, J 182
 Spolenak, R 118, 192
 Spooner, S 48, 105
 Sprecher, B. 131
 Sprengle, V. 152
 Sprouster, D 144
 Sprowes, W 95
 Sravani Mantha, L 239
 Srba, O 66
 Sreeramagiri, P 155
 Sridharan, K. 40, 41, 42, 65, 92, 116,
 118, 129, 165, 218, 226, 240
 Sridharan, N 26
 Srinivasan, A 227
 Srinivasan, B 105
 Srinivasan, S. 169, 223, 242
 Srinivasan Tirunilai, A 239
 Srirangam, P 91, 105, 107, 217, 218
 Srivastava, A 34, 132, 179, 203, 219,
 232
 Srivastava, D 41, 52
 Srivastava, I 100
 Srivastava, K 194
 Srivastava, S. 78, 137
 Srivatsan, T 191
 Srivilliputhur, S 30, 52, 58, 78, 106,
 132, 158, 233
 Srolovitz, D 90, 205
 Stach, E. 199
 Staicu, D. 110, 162
 Stâl, J. 122
 Stanciu, L 148
 Stanek, C 56
 Stanescu, C. 134
 Stanger, L 154, 201, 218
 Stanica, C. 134
 Stanic, D. 79
 Stan, M 165, 208
 Stannard, T 188
 Stan, T 70, 131, 212
 Star, K. 30
 Stark, A. 45, 194
 Starkey, K. 205
 Staroselsky, A. 178
 Starovoytov, O 211
 Stauffer, D 70, 94, 175
 Stavrou, E. 73
 Stebner, A. 26, 75, 87, 95, 154, 155,
 208, 227, 237
 Steckley, T 117
 Steen, I 162
 Steen, K 107
 Steenkamp, J 60
 Stefani, F. 41
 Steiner, M. 44, 68, 95, 120, 146, 171,
 189, 196, 214, 241
 Steinlechner, S. 69
 Stelter, M 23, 41
 Stemper, L 172
 Sten, S. 188
 Stephenson, L 31, 108
 Stephens, R. 59, 145, 167, 209
 Stern, K. 136, 145
 Stevens, E. 51, 203, 232
 Stevenson, J 126
 Stewart, C. 36
 Stewart, J 116
 Still, E 94
 Stinespring, C 215
 Stinville, J. 36, 50, 103, 139, 158
 St John, D. 70, 151
 StJohn, D 70, 123, 176, 202
 St-Laurent, S 182

- St Lawrence, S 145, 213
 Stockman, T 73
 Stodolna, J 124
 Stoffers, A 39
 Stöger-Pollach, M 30
 Stoica, A 74, 138, 205
 Stoica, M 135
 Stoimenov, N 234
 Stokes, A 127
 Stokes, J 220
 Stone, H 56, 86, 102
 Stone, T 143
 Stopka, K 84
 Story, M 157
 Story, W 96, 106
 Stoudt, M 25, 73, 101, 102, 112, 127,
 128, 153, 177, 178, 200, 217
 Stoughton, T 47
 St-Pierre, R 55
 Strachan, A 58, 164
 Strahin, B 148
 Strantz, M 200
 Stráský, J 121, 172
 Straß, B 140
 Straub, T 113
 Straumal, B 141
 Strauss, M 122
 Straznicky, I 182
 Stroh, J 160, 221
 Stromer, J 132
 Stromme, E 107
 Strømsvåg, Å 162
 Strother, J 63, 239
 Strub, F 78
 Strunz, P 45
 Stubna, I 110
 Stückler, M 196
 Studnitzky, T 155
 Stump, B 129, 153, 201
 Styles, M 121
 Subramaniam, A 43
 Subramanian, P 27
 Subramani, V 57
 Subroto, T 150
 Sudbrack, C 25, 26, 73, 75, 101,
 102, 127, 129, 153, 154, 177,
 179, 200, 217, 219
 Suess, D 104
 Suetake, A 105
 Sufiiarov, V 101
 Sugahara, T 105, 172
 Sukanuma, K 105, 172
 Sugar, J 52, 74, 87
 Sugimoto, M 49
 Su, H 54, 107
 Suh, J 211
 Suhuddin, U 211, 227
 Suib, S 146
 Su, J 89, 140
 Sukenaga, S 105
 Sukla, L 133
 Sullivan, E 123
 Sulzer, S 86, 155
 Su, M 241
 Suman, S 225
 Summers, W 90
 Summe, T 24
 Sumpter, B 72
 Sunada, E 226
 Sunaoshi, T 54
 Sun, B 178
 Sun, C 125, 144, 193
 Sun, D 58
 Sundaram, K 29
 Sundararaghavan, V 78, 132, 137,
 143, 208
 Sundararajan, G 181
 Sundar, V 187, 234
 Sunday, C 129
 Sundman, B 142
 Sun, E 80
 Sun, F 105, 107
 Sung, H 87
 Sung, S 220, 221
 Sung, Z 54
 Sun, H 71, 72, 96, 125, 131, 136, 216
 Sun, J 56, 167, 210, 212, 235, 237
 Sun, K 184
 Sun, L 189, 197, 217, 225
 Sun, M 99, 177
 Sun, Q 168, 223
 Sun, R 115
 Sun, T 70, 74, 127, 129, 131, 135,
 136, 200, 201, 218
 Sun, W 72, 159, 241
 Sun, X 52, 208, 219
 Sun, y 242
 Sun, Y 48, 53, 63, 70, 78, 82,
 101, 105, 116, 131, 140, 151, 154,
 156, 231, 232, 236, 241, 242
 Sun, Z 23, 48, 49, 71, 175, 208,
 223, 229
 Suo, G 56, 99
 Supancic, P 180
 Su, Q 110, 114, 206, 227, 228
 Su, R 212
 Surendralal, S 112
 Suresh, K 179, 227
 Suresh, S 143, 183, 240
 Suri, P 40, 157
 Surkova, T 68, 228
 Su, S 57, 208
 Susan, D 104, 187
 Suss, A 149
 Šustar, T 56
 Su, T 51, 98
 Sutcliffe, C 217
 Suter, R 56, 64, 130, 143, 180
 Sutrisna, S 69
 Sutter, P 100
 Suwanpreecha, C 159, 220
 Suwas, S 124, 130, 172
 Su, Y 33, 91, 210
 Su, Z 47, 83
 Suzuki, A 35, 59, 86, 112, 138, 165, 223
 Suzuki, D 116
 Suzuki, R 161
 Svec, P 157
 Svensson, A 60, 86, 199
 Švrčula, P 66
 Swamidás, S 163
 Swamy, S 79
 Swanepoel, S 60
 Swanson, O 115
 Sweatman, K 29, 77, 131
 Sweet, L 147
 Swei, O 173
 Sweitzer, D 167
 Swenson, M 64
 Swiler, L 73, 84, 153
 Syed Asif, S 110, 175
 Sylvester, K 111
 Sypek, J 67
 Syvertsen, F 162
 Syvertsen, M 161, 162
 Szalay, A 137
 Szczepaniak, A 108
 Szlufarska, I 82, 208
- ## T
- Tabachnikova, E 192
 Tabereaux, A 205
 Tabor, C 147
 Tabuchi, Y 152
 Tafaghodi, L 23, 174, 197, 243
 Taggart-Scarff, J 129
 Taha, D 132
 Taheri Andani, M 26, 75
 Taheri, M 40, 62, 75, 104, 156, 194,
 211, 212, 221
 Tailhades, P 101
 Tait, D 122
 Tai, Y 157
 Tajdary, P 124
 Tajuelo-Rodriguez, E 222
 Takahashi, J 80
 Takahashi, K 82, 237

- Takamatsu, Y 198
Takeda, K 156
Takeuchi, A 114, 182
Takeuchi, E 157
Takeuchi, I 164
Talapatra, A 112
Taleff, E 33, 45, 53, 68, 79
Tallman, A 84
Tamerler, C 29, 31, 51, 55, 77, 81, 105, 109, 131, 134, 157, 160, 182, 184, 204, 222, 231, 232
Taminger, K 74
Tamirisakandala, S 87
Tam, J 96
Tammam-Williams, S 201, 218
Tamraparni, A 145
Tamuly, S 169
Tan, A 112
Tanaka, C 160
Tanaka, T 76, 156, 233
Tancret, F 146, 164
Tan, E 53, 97, 179
Taneike, M 97
Tang, B 62, 115, 143, 212
Tang, G 177
Tang, H 47, 83, 151, 152, 175, 187, 207, 217
Tang, J 115, 170, 212, 239
Tang, M 199
Tang, P 29, 156, 163
Tangparajoen, C 208
Tang, Q 96
Tang, S 229
Tangstad, M 41
Tang, W 157, 181
Tang, X 233
Tang, Y 86
Tang, Z 207
Tan, I 182
Tan, L 118, 162, 241
Tan, M 120
Tanvar, H 121
Tan, W 127, 128, 153, 178, 200, 201, 218
Tan, Y 125
Tao, F 71
Tao, W 80
Tari, V 127, 130, 132, 158
Tarleton, E 50, 91, 103, 119, 213
Tarusna, M 231
Tasan, C 27, 37, 50, 62, 75, 76, 103, 104, 114, 119, 127, 130, 155, 156, 180, 181, 203, 231
Tasche, L 179
Tashiro, M 105
Taskinen, P 137
Tasyurek, K 177
Tatman, E 102
Tatman, J 41
Taub, A 149, 221
Tavangarian, F 225, 242
Tavazza, F 30, 56, 58, 84, 85, 111, 136, 164, 187, 208, 237
Tavener, J 64
Taylor, C 33, 52, 223
Taylor, H 72, 242
Taylor, M 59, 145, 160, 167, 209
Taylor, P 121
Taylor, S 203
Tayon, W 28
Taysom, B 190
Tay, T 42
Tebbal, S 113
Tehovnik, F 214
Tehrani, M 172
Teixeira, G 36
Teja-Ruiz, A 236
Teja Ruiz, M 235
Tello, K 163
Temel, S 123
Teng, C 170
Teng, F 80, 171
Tenkamp, J 79, 128
Tenkku, T 241
Tenório, J 68, 222, 223, 229, 235, 243
Tenuta, E 101
Terdik, J 135
Ter-Isahakyan, A 211, 239
Terrani, K 66, 82
Terrassa, K 45
Terrell, J 102, 140
Terynková, A 121
Tesch, C 165
Teshfahunegn, Y 41
Teshfaye, F 23, 45, 122, 144, 145
Tessier, J 80, 108, 160, 205
Tessmer, J 186
Tewksbury, G 165
Teyseyre, S 125
Tezer, F 46
Tezuka, S 134
Thacker, B 192
Thadhani, N 195
Thangavel, N 152
Thapliyal, S 210, 224
Tharp, R 210
Theisen, E 76
Thenepalli, T 48
Theofilatos, A 200
Thevuthasan, S 199
Thiaudiere, D 64
Thiel, J 59
Thierry, A 124, 166
Thilly, L 28, 61, 93, 124, 130, 139
Thimont, Y 53, 101
Thoma, D 74, 92, 129, 178, 179
Thomä, M 140
Thomas, B 41
Thomas, J 34, 144, 169
Thomas, M 163
Thomas, V 31, 55, 81, 109, 160, 161, 185, 222
Thome, P 35
Thompson, A 52, 166
Thompson, F 173
Thompson, G 31, 54, 80, 96, 108, 137, 143, 232, 240
Thompson, M 27, 90, 107
Thompson, V 235
Thompson, Y 155
Thomson, R 102
Thorat, O 91
Thorne, R 86
Thornton, K 58, 84, 120, 132, 192
Thuss, R 73
Tian, C 237
Tian, L 58
Tian, M 62
Tian, N 72
Tian, Q 83
Tian, S 71
Tian, W 83
Tian, W 187
Tian, X 170, 177
Tian, Y 51, 99, 130
Tian, Z 176
Tiarks, J 132, 147
Tien-Chien, J 91, 160
Tie, Z 152, 217
Tikare, V 153
Tiley, J 169
Timelli, G 56
Timucin, D 201
Tindall, E 82
Tingan, Z 133, 159, 220, 243
Tingaud, D 37
Tin, S 35, 59, 80, 86, 112, 138, 165, 172, 201, 223
Tirumalai, S 37, 38, 62, 63, 89, 115, 142, 168, 169, 191, 192, 211, 212, 239
Tiryakioglu, M 46, 69, 70, 97, 123, 228
Tisch, B 173
Tischler, J 155
Tissot, O 194
Titus, M 35, 36, 59, 60, 86, 88, 112, 138, 165, 211, 223, 238
Tiwari, A 41
Tiwari, V 54
Tjahyono, N 205

Tjayadi, L	113	Trauth, D	173	Tung, M	180
Tkachenko, I	237	Trautt, Z	187	Turchi, P	27
Tkachenko, K	237	Traylor, C	99	Turcotte, T	80
Tleoubaev, A	33	Traynor, B	69	Turgut, Z	204
Tlotleng, M	202	Tredway, W	178	Türkoglu, B	191
To, A	75	Trejo Bustillos, P	243	Turner, J	127, 128
Tobelmann, B	149, 174	Trelewicz, J	42, 61, 66, 93, 118, 143, 195, 213, 240	Turner, T	139
Toda, H	114	Trembacki, B	100, 153	Tu, Z	96
Todaka, Y	203	Tremblay, Y	86	Tveito, K	82
Todd, I	73, 178, 200, 201, 218	Trenikhina, Y	54, 193	Twomey, B	220
Todd, R	130	Tressou, B	157	Twum Donkor, B	178
Todoroki, H	204	Trevino, R	45	Tyburska-püschel, B	118
Todorova, M	112, 142	Trinkle, D	30, 49, 64, 112, 115, 208	Tyler, K	35
Togagae, E	222	Tripathi, A	186	Tymiak Carlson, N	85
Toher, C	38, 90, 168, 169	Trivedi, R	46	Tyson, G	159
Toinin, J	60	Troparevsky, M	90	Tzanakis, I	123, 150, 176
Toji, Y	76	Trost, A	136	Tzelepis, D	156
Tolnai, D	194	Trujillo, C	103, 178		
Toloczko, M	42	Trumble, K	52, 147, 204, 221	U	
Tomar, V	56, 98, 110, 132, 148, 163, 173, 197, 199, 215	Trybula, M	116	Uberuaga, B	119, 188, 193, 240
Tome, C	64, 146, 155	Tsai, P	205, 219	Uchic, M	47, 59, 128, 186
Tomé, C	156, 170	Tsaknopoulos, D	196	Udayakumar, S	96
Tomich, J	178	Tschöpe, K	160	Ueda, K	223
Tomiyori, Y	182	Tschopp, M	165	Ueda, S	69, 137
Tomko, J	123	Tseng, J	219	Uesugi, K	114, 182
Tonelli, L	210	Tseng, K	193, 219	Uggowitz, P	172, 241
Tong, Y	62, 239	Tsesmelis, K	159	Ugurluer, D	191
Tong, Z	130	Tse, Y	180	Uhl, D	37
Tonks, M	56, 94, 132, 158, 162, 183, 204, 233	Tshitoyan, V	136	Uhm, S	224
Tonneslan, S	155	Tsiros, J	186	Ullah, S	30
Tonry, C	97, 150	Tsolekile, N	230	Ullberg, R	39
Toparli, C	206	Tsou, N	219	Ulrich, A	45
Topkaya, Y	177	Tsuchida, N	76	Ulubayram, K	184
Topping, T	114	Tsuchiya, K	38	Uludag, M	70
Toppler, I	156	Tsuda, K	158	Ulus, A	134
Torabi, K	140	Tsuji, N	61, 62, 76, 225, 226	Ulvestad, A	27
Torbati-Sarraf, H	239	Tsukihashi, F	24	Umale, T	130
Torbati Sarraf, S	77	Tsuzaki, K	85	Umeda, J	172
Torrence, C	222	Tszeng, C	87, 131	Underwood, O	186
Torres, Á	235	Tu, A	156, 170	Ungarish, Z	226
Torresani, E	96	Tucker, B	161	Ungár, T	98
Torres Arango, M	172, 197	Tucker, D	140, 228	Unger, J	178
Torres, E	213	Tucker, G	30, 52, 64, 78, 106, 132, 143, 158, 233, 240	Unocic, K	71, 75
Torrez, M	150	Tucker, J	40, 64, 80, 85, 91, 117, 143, 166, 171, 193, 223, 226	Unocic, R	38, 90
Toscano, D	194	Tucker, M	56	Unruh, T	26
Toschi, S	210	Tu, K	157	Upadhyay, P	140, 167, 168, 190, 210, 211, 224
Tournoud, Z	68	Tulasigeri, S	128	Upadhyay, V	205
Tourret, D	34, 58, 74, 85, 112, 137, 165, 188, 208, 237	Tulyani, S	83, 214	Urban, A	121
Towle, C	72	Tummala, H	155	Urbas, A	197
Towsey, N	55	Tuncer, N	27, 155, 180, 203	Ushioda, K	140
Tranell, G	82, 122	Tundal, U	162	Utada, S	138
Trang, S	41	Tung, C	81	Uvegi, H	69
Tran, X	150, 182	Tung, H	222	Uzunoglu, A	197

V

- Vachhani, S 70
 Vackel, A 52, 89
 Vahidi, E 131
 Vakhromov, R 27, 180
 Valadão Pacheco, C 235
 Valavala, P 175
 Valdes, J 236
 Valdevit, L 195
 Valdez, J 150
 Valentino, G 143
 Valentí, R 67
 Valenzuela - Diaz, F 234
 Valenzuela-Diaz, F 234, 235
 Valenzuela Díaz, F 234, 236
 Valenzuela, F 57
 Valgardsson, G 23
 Valiev, R 54
 Valka, J 215
 Vallenás-Arévalo, A 243
 Valle, V 139
 Valtierra, S 97
 Van Acker, K 131
 van Bloomen Waaders, B 153
 Van Brutzel, L 158, 189
 van Buuren, T 201
 Van Camp, M 35, 60, 148, 173
 Van der Ven, A 112, 242
 Van Der Ven, A 34, 169
 Van De Walle, A 115
 Vaney, J 233
 van Grootel, A 45
 Van Hooreweder, B 102
 Van Humbeeck, J 154
 VanOosten, S 55, 134
 Van Petegem, S 28, 104, 124, 200
 van Rooyen, I 26, 144
 Van Rooyen, I 26, 35, 74, 101, 127, 162, 218
 Van Swygenhoven, H 28, 68, 104, 156, 170, 200
 Van Uffelen, P 162
 Vardar, Ö 123
 Varela, K 85
 Vargas Uscategui, A 121
 Vasa, N 202
 Vasoya, M 206
 Vass, S 161
 Vasudevan, V 138, 178
 Vatne, H 24
 Vaudreuil, S 74
 Vaughan, J 133, 159
 Vaughn, M 178, 219
 Vaugoude, A 64, 226
 Vazdirvanidis, A 221
 Vazquez, F 178
 Vázquez-Gómez, O 68
 Vecchiato, F 201
 Vecchio, K 38, 75, 90, 168, 169, 185, 226
 Vega, D 117
 Veith, G 215
 Velay, M 81
 Velazquez Carrillo, O 220
 Velisa, G 142
 Velisavljevic, N 42, 77
 Vemaganti, K 106
 Vence, P 222
 Venkataraman, A 42
 Venkateswarlu, D 224
 Venkatraman, K 150
 Ventura, H 242
 Verezhak, M 28
 Vergara-Hernández, H 68
 Verma, A 100
 Vermaak, N 150
 Verma, D 42
 Verma, G 205
 Verma, M 242
 Verma, N 93
 Verma, R 92, 227
 Verma, V 239
 Vernilli, F 238
 Veselý, J 242
 Vetrano, J 149
 Veysset, D 27, 175, 232
 Viard, A 168
 Vicharapu, B 168
 Vidal, F 238
 Vidal, J 40, 65, 92, 116
 Vieira, C 36, 57, 61, 88, 114, 141, 238
 Vieten, J 46
 Vignal, V 25
 Vijayan, S 95, 214
 Vilalpando, O 30
 Vilalta-Clemente, A 207
 Vilapanur, R 30
 Villa, E 242
 Villalpando, O 30
 Villa, M 80
 Villars, P 137
 Villechaise, P 28, 87, 103, 138, 165, 166
 Vincent, L 139
 Vinciguerra, J 219
 Vinod Murkute, P 223
 Vinod, S 175
 Vinogradov, A 76
 Virieux, F 59, 60
 Virtanen, S 60, 165
 Vishnu, K 58
 Vishvakarma, S 243
 Viswanathan, G 45, 138, 142, 163, 242
 Viswanathan, V 144, 152
 Vitek, V 39
 Vivek, A 224
 Vivekanandan, V 158
 Vivés, S 104
 Vizoso, D 188
 Vladimirov, P 226
 Vlassak, J 47
 Vleugels, J 154
 V, M 239
 Vode, F 214
 Voelker, B 139
 Vogel, S 66, 83, 179, 196, 213, 226, 240
 Vogli, E 111
 Vogrin, J 159
 Vo, H 94, 171
 Vohra, Y 161
 Voigt, C 161
 Voigt, P 36
 Voisin, T 103, 200, 217
 Volchenko, E 185, 222
 Völker, B 189
 Volkert, C 42, 109, 189
 Volkov, V 55
 Volk, W 226
 Volpe, J 70
 Volz, N 36, 60
 Vo, N 103, 121, 196
 Vonna, L 59
 Voorhees, P 63, 70, 85, 120, 131
 Vopálenský, M 32
 Vorontsov, V 36
 Vorozhtsov, A 110, 176
 Voter, A 52, 188
 Voznesenskii, A 57
 Vrancken, B 178
 Vreeling, A 118
 Vrestal, J 107
 Vronka, M 242
 Vroomen, U 123, 184
 Vucic, S 59
 Vullum-Bruer, F 199
 Vullum, P 108, 199
 Vurpillot, F 31
 Vyas, A 225
 Vyatskikh, A 171
- ## W
- Wachs, D 228
 Wada, T 140, 141
 Waddell, M 135
 Waddell, S 55
 Wadsö, L 144
 Wadsworth, A 232

Wadsworth, P 185, 222
 Wager, R. 74, 102
 Wagger, D. 97
 Wagh, S. 106
 Wagih, M 193
 Wagner, C. 60
 Wagner, G 98, 140, 211
 Wagoner, R. 66
 Wagstaff, S 41, 65, 82, 92, 117,
 144, 227
 Waguespack, L. 33
 Walawalkar, M. 96
 Walbridge, S. 140
 Walbrühl, M. 27
 Walderhaug, M 60
 Walker, J. 227
 Walker, K 135
 Walker, M. 57, 92
 Wallace, G 99, 147, 176
 Wallace, T. 25
 Wall, M. 199
 Walsh, T 160
 Walters, J 165
 Walter, T. 207
 Walther, F. 79, 128
 Wan, D. 138
 Wang, B 101, 117, 154, 191, 194,
 227, 235
 Wang, C 23, 24, 43, 44, 48, 63,
 67, 71, 72, 79, 81, 89, 95, 99, 116, 120,
 125, 151, 186, 206, 212, 216, 217, 219,
 229, 233
 Wang, D 44, 123, 168, 184
 Wang, E 41
 Wang, F 29, 65, 74, 113, 123, 151, 203
 Wang, G 34, 37, 38, 47, 62, 63, 74,
 81, 89, 109, 115, 123, 135, 142, 151,
 161, 168, 169, 176, 185, 191, 192, 202,
 205, 206, 211, 212, 233, 239
 Wang, H 33, 48, 62, 65, 72, 86, 98,
 101, 110, 119, 149, 156, 170, 187, 189,
 190, 194, 201, 205, 206, 212, 214, 215,
 216, 226, 227, 240, 231, 241
 Wang, J. 23, 42, 48, 55, 62, 72, 76,
 79, 80, 83, 93, 99, 110, 113, 114, 115,
 118, 120, 131, 134, 136, 143, 145, 155,
 156, 157, 161, 170, 175, 177, 181, 184,
 189, 191, 198, 210, 212, 213, 216, 219,
 222, 228, 230, 231, 240, 241
 Wang, K 52, 72, 213, 220, 221, 243
 Wang, L 33, 40, 63, 71, 88, 113, 130,
 142, 187, 188, 193
 Wang, M. 75, 85, 113, 130, 152,
 200, 211
 Wang, N 23, 63, 124, 161, 216, 243
 Wang, P 95
 Wang, Q 37, 46, 65, 71, 80, 81, 84,
 115, 144, 145, 151, 191, 206, 212,
 216, 239, 242, 243
 Wang, R 49, 75, 147, 217
 Wang, S. 47, 58, 67, 73, 81, 87, 90,
 100, 108, 114, 155, 156, 180,
 213, 216, 231, 241, 243
 Wang, T 23, 43, 48, 60, 71, 83, 88,
 140, 151, 176, 224, 225, 226, 229
 Wang, W. 29, 51, 58, 62, 72, 77,
 105, 109, 115, 131, 143, 144, 151,
 157, 182, 204, 207, 212, 221, 232
 Wang, X 31, 69, 71, 79, 89, 98, 110,
 119, 134, 142, 160, 161, 185,
 225, 227, 237
 Wang, Y 23, 25, 30, 34, 37, 40,
 41, 43, 47, 51, 62, 66, 84, 93, 96, 98,
 99, 108, 112, 117, 128, 133, 139, 142,
 143, 146, 149, 153, 157, 161, 168, 176,
 177, 182, 185, 193, 194, 200, 201, 205,
 207, 210, 216, 217, 220, 221, 225, 228,
 230, 232, 240, 243
 Wang, Z 29, 73, 74, 76, 80, 83, 89,
 113, 118, 128, 130, 134, 148, 151, 157,
 160, 177, 195, 205, 216, 231, 243
 Wan, H. 229
 Wanjara, P 201
 Wan, X 104, 174, 241
 Wan, Y 184, 230
 Ward, A 27, 96
 Ward, C 149, 192
 Ward, L. 111
 Ward, T. 147
 Ware, L 116
 Warnett, J. 48
 Warren, C. 190
 Warren, J 92, 149
 Warren, K. 159
 Warren, L 159
 Waschkies, T 176
 Was, G 113
 Wasule, S 203
 Watanabe, S 114
 Watring, D 128
 Watson, K. 122
 Watson, T. 83, 214
 Watts, J. 167
 Weaver, D. 60
 Weaver, J. 42, 66, 75, 91, 93, 94, 118,
 195, 213, 217, 240
 Webber, F. 92
 Webb, P 225
 Webb, W. 149
 Weber, A. 116
 Weber, G. 59, 189
 Weber, W 38, 110, 142, 199
 Webler, B 24, 29, 48, 51, 72, 77, 84,
 99, 105, 125, 129, 131, 151, 157,
 182, 204, 217, 232
 Weerasooriya, T 31
 Wegener, K. 129
 Wehrs, J 94
 Wei, B 72, 187
 Wei, C. 88, 159
 Wei, D. 170
 Weidner, A. 76, 167, 181, 202
 Wei, H. 195
 Weihe, S 166
 Weihs, T 92, 104, 143, 146, 154, 171,
 231, 241
 Wei, J 191, 219
 Wei, K. 174
 Wei, L 125
 Weiler, J 124
 Weinans, H 154, 185
 Weinberger, C 34, 58, 85, 98, 111,
 120, 137, 164, 237, 240
 Wei, P 159
 Wei, Q. 134
 Wei, S 37, 62, 160
 Weiser, M. 60, 165
 Weiss, D 27, 107, 174
 Weissitsch, L 196
 Weiss, K 239
 Weissmüller, J 214
 Wei, T 213
 Weitz, D 135
 Wei, X. 48
 Wei, Y 136
 Welborn, S 214
 Welch, B. 184
 Welch, C. 136
 Welch, P 136
 Welk, B. 45, 50, 142
 Weller, E. 55
 Wells, D 74, 102
 Wells, G 103
 Wells, M. 91
 Wells, P. 91, 171, 193, 194
 Wen, D 211
 Wendorf, J 50, 139
 Wen, G 29
 Wen, I. 157
 Weng, W. 79, 160
 Weng, Y 53
 Wen, H 31, 54, 64, 80, 108, 145, 240
 Wen, J. 65
 Wen, L 48, 151
 Wenman, M 91, 137, 194, 201
 Wenning, J 27
 Wen, Q 91, 92, 210
 Wen, X 184

- Wen, Y 98, 126, 164, 165
Werner, E 154
Wernicki, E 77
Wertz, K 36, 60, 88, 238
Werzner, E 161
Wessman, A 26, 75, 155
Weston, L 136
Whalen, S 91, 96, 140, 190
Wharry, J 40, 41, 64, 66, 91, 93, 101,
117, 143, 145, 171, 193, 194,
213, 226, 228, 240
Wheeler, J 42, 67, 94, 118, 192, 241
Wheeler, K 25, 201
Wheeler, R 47, 70, 98, 124, 150, 172,
175
Whetten, S 89, 104
Whip, B 102
Whiston, J 105
Whitaker, P 217
White, C 112
White, E 26, 75, 101, 132, 147, 181
White, J 32, 71, 83
White, K 133, 139, 175
Whiteman, D 133
White, R 179
Whitfield, D 184
Whiting, T 91, 137
Whitis, D 75
Whitman, N 206
Whitmire, K 126
Whitney, M 91
Whitt, H 101, 167
Whittington, W 44
W. Hovig, E 179
Wick, C 66
Wicke, M 209
Wicker, R 180
Widom, M 38, 63, 239
Wiebeck, H 223, 236
Wiebe, K 180
Wieck, D 135
Wiegart, L 197
Wiese, G 194
Wieser, C 95
Wiezorek, J 123, 196
Wilcox, J 28
Wilcoxon, R 182
Wilde, G 142
Wiles, N 110, 175
Wiliams, W 144
Wilkerson, J 158, 183, 205
Wilkinson, A 27, 50, 86, 87, 103, 130,
156, 169, 207, 210
Wilkinson, D 130, 141, 203
Willard, M 157
Willems, J 217
Williams, A 55
Williams, B 57, 91, 194
Williams, C 174, 189, 203, 222, 227
Williams, D 218
Williams, E 173
Williams, J 124, 136, 163
Williams, L 240
Williams, M 48, 238
Williams, T 123
Williams, W 209
Willmott, J 154, 201, 218
Willson, P 90
Willumeit Romer, R 65, 91
Wilson, A 86
Wilson, P 53, 191
Wilson, R 179, 218
Wilson, T 32, 83
Windl, W 34
Winter, I 137, 209
Winther, G 158, 205
Wirth, B 40
Wirth, J 165
Wirth, L 85
Wisner, B 113
Wiss, T 32, 56, 82, 110, 162, 206, 222
Witkin, D 102
Witt, P 41
Wittstock, A 207
Wodom, M 169
Wohlberg, B 186
Wolfer, A 201
Wolfe, T 217
Wolff, M 65
Wolf, G 161
Wolfrum, E 235
Wollgramm, P 36
Wollmershauser, J 96
Wolter, B 140
Wolverton, C 34, 90
Wondrak, T 41
Wong, B 30
Wong, D 30, 205
Wong, G 151
Won, J 231
Woodcock, T 181
Wood, J 81
Wood, M 52, 233
Wood, S 185
Wood, T 174, 223
Woodward, C 35, 38, 63, 84, 85, 111,
112, 136, 164, 169, 186, 187, 208, 237
Woo, J 167
Worthington, M 104
Worth, R 162
Wright, J 33, 162
Wright, K 162
Wright, W 82
Wrobel, J 38, 40, 142, 188
Wu, A 26, 28, 43, 51, 77, 79, 105, 131,
157, 182, 232, 233
Wu, B 197
Wu, C 96, 131, 134
Wu, D 65, 185, 222
Wu, E 99
Wu, G 37
WU, G 151
Wu, H 30, 53, 65, 79, 92, 107, 118, 133,
158, 163, 233
Wu, J 51, 144, 147, 174, 211, 216, 227,
243
Wu, K 237
Wulfinghoff, S 189
Wu, M 77
Wu, N 173
Wunderlich, R 62, 117, 151
Wu, P 67, 189
Wu, R 92
Wurmshuber, M 195
Wurster, S 196
Wu, S 23, 41, 227, 242
WU, S 216
Wu, X 37, 54, 61, 89, 99, 114, 138, 141,
168, 225
Wu, Y 38, 43, 47, 51, 56, 96, 99, 105,
208, 212, 240, 241
Wu, Z 45, 55, 127, 227
Wykoff, R 154
Wyller, G 198
Wynblatt, P 93
Wynn, J 33
Wyrobek, T 110, 175

X

- Xavier, G 234, 235, 236, 238
Xia, J 208
Xiang, J 44, 216
Xiang, L 157
Xiang, N 198
Xiang, S 110, 207, 231
Xiang, Y 205
Xian, J 51, 182
Xiaobing, Y 221
Xiaodong, Y 54
Xiao, H 32, 151
Xiaohui, F 57
Xiao, J 184
Xiao, K 72
Xiao, L 91
Xiao, W 97
Xiao, X 70, 74, 93, 117, 131, 135, 136,
153, 162, 163, 186, 188, 206, 217, 234

- Yessimova, D 68
 Yettella, V 132
 Ye, X 51
 Ye, Y 52
 Yi, J 109, 225, 234
 Yi, J 82
 Yi, L 89, 185
 Yildirim, C 162, 231
 Yildirim, K 123
 Yilkiran, D 106
 Yilmaz, A 185
 Yilmaz, E 216
 Yilmazer, H 225
 Yilmaz, H 192
 Yin, D 93, 204
 Yin, G 23
 Yin, H 29
 Yin, S 55, 72
 Yin, Y 65
 Yin, Z 109, 136
 Yi, P 146
 Yi, S 133
 Yi Wang, W 143
 Yi, X 160
 Yoder, S 179, 217
 Yokokawa, T 97
 Yokota, K 227
 Yokota, Y 69, 198
 Yokoyama, Y 109, 185, 205
 Yoo, B 88, 238
 Yoo, G 205, 225, 234
 Yoo, H 220, 221, 242
 Yoo, J 152
 Yoo, M 224
 Yoon, C 221
 Yoon, K 37, 38, 192, 239
 Yoon, Y 220
 Yoo, S 95
 Yoo, Y 28, 66, 75, 117
 Yoreo, J 148
 York, W 52
 Yoshida, S 62
 Yoshikawa, A 69, 198
 Yoshikawa, T 51, 72, 77
 Yoshino, M 69, 198
 Yoshiya, M 70
 Yost, A 242
 You, B 144, 227
 You, H 242
 Young, D 116, 211
 Young, G 85, 92
 Young, J 161
 Young, M 172, 199
 Young, Z 218
 Youn, J 107, 151, 176
 You, S 124
 Yousefiani, A 196
 Yousub, L 178
 You, Y 176
 You, Z 149
 Yuan, H 71, 136
 Yuan, J 131
 Yuan, L 70, 90, 128, 153, 178, 201, 218
 Yuan, M 111
 Yuan, T 175
 Yuan, X 216
 Yuan, Y 43, 67, 95, 120, 144, 227, 232, 242
 Yuan, Z 217
 Yu, B 89, 104, 141, 181
 Yubuta, K 107
 Yu, C 125, 133
 Yucel, O 23, 47, 71, 99, 125, 151, 176, 177, 198, 216
 Yücel, O 177
 Yucheng, L 45
 Yuchuan, Y 51
 Yu, D 43, 76, 191
 Yudho, I 86
 Yue, H 221
 Yuekai, X 243
 Yue, S 87
 Yue, W 99
 Yu, H 41, 119, 125, 132, 137, 162, 164, 190, 242
 Yu, J 83, 96, 125, 174, 226
 Yuksel, C 97
 Yu, L 44, 64, 80, 91, 152, 171
 Yu, M 65, 86
 Yunhui, T 235
 Yun, J 25
 Yunqing, T 33
 Yu, Q 38, 62, 72, 115, 189, 221, 229
 Yurchyshyn, I 225
 Yu, S 41, 86
 Yushkova, O 160
 Yu, T 240
 Yu, W 149
 Yu, X 137, 152, 217
 Yu, Y 147, 197, 215
 Yu, Z 214
- Z**
 Zackiewicz, P 76, 232
 Zade, V 120, 197
 Zadpoor, A 154, 185
 Zaem, M 26, 192, 201, 226
 Zafalon, A 36, 88, 207
 Zafiris, G 111
 Zafred, P 66, 226
 Zagabathuni, A 109
 Zagar, G 189
 Zaheri, A 55
 Zahiri, S 121
 Zaldivar, R 102
 Zaleski, E 139
 Založnik, M 82
 Zambrano, P 219
 Zambrano Robledo, P 219
 Zamora Hernández, Y 233
 Zanelato, E 235, 236, 238
 Zapolsky, H 80
 Zarezadeh Mehrizi, M 140
 Zarkadoula, E 38, 110
 Zaug, J 73
 Zaunschirm, S 66
 Zavadnyak, A 160
 Zavalsa, G 223
 Zavattieri, P 32, 55, 81
 Zayachuk, Y 110, 207
 Zdora, M 162
 Zebarjadi, M 133, 172
 Zecevic, M 106, 143
 Zechner, J 139, 167
 Zedel, H 162
 Zehetbauer, M 107
 Zehnder, C 67
 Zelenka, F 107
 Zendegani, A 39
 Zeng, C 71, 128
 Zeng, G 51
 Zeng, J 148
 Zeng, Q 109
 Zeng, X 31, 119, 185, 205
 Zeng, Y 225
 Zeng, Z 177
 Zenk, C 36, 60, 88, 238
 Zenyuk, I 136
 Zepeda-Alarcon, E 26
 Zevalkink, A 159
 Zhai, H 110
 Zhai, Q 123, 151, 241
 Zhai, Z 41
 Zhanal, P 214
 Zháanal, P 66
 Zhang, B 221
 Zhang, C 29, 42, 104, 113, 115, 130, 172, 175, 185, 220, 226
 Zhang, D 23, 39, 47, 96, 99, 117, 121, 136, 147, 172, 176, 177, 196, 208, 241, 242
 Zhang, F 23, 62, 63, 82, 102, 115, 116, 151, 177, 185
 Zhang, G 149, 216, 230, 243
 Zhang, H 33, 44, 54, 80, 95, 99, 101, 102, 105, 134, 145, 157, 172, 176, 184, 198, 221

- Zhang, J 23, 40, 63, 65, 68, 83, 92,
111, 116, 117, 136, 138, 151, 152, 167,
173, 200, 210, 216, 217, 218, 226, 230,
235, 237
- Zhang, K. 157
- Zhang, L. 23, 36, 37, 41, 48, 51, 59,
71, 111, 120, 125, 151, 176, 182, 187,
198, 208, 211, 212, 216, 229, 243
- Zhang, M 32, 33, 46, 56, 57, 83, 110,
115, 136, 148, 163, 186, 187, 198, 207,
234, 243
- Zhang, N 30, 34, 58, 85, 111,
118, 137, 164, 196, 237
- Zhang, P. 144, 151
- Zhang, Q 26, 59
- Zhang, R. 70, 71, 96, 130
- Zhang, S 33, 48, 56, 68, 99, 130,
151, 211, 223, 233
- Zhang, T. 168, 206, 216, 243
- Zhang, W 23, 71, 111, 115, 120, 167,
230, 243
- Zhang, X. 26, 41, 42, 66, 89, 93, 100,
101, 102, 119, 136, 146, 151, 154, 164,
170, 176, 181, 185, 189, 193, 194, 195,
204, 208, 212, 214, 225, 230, 237, 240,
241, 243
- Zhang, Y. 32, 38, 42,
47, 54, 56, 62, 63, 67, 71, 72, 80, 81, 82,
83, 93, 99, 100, 106, 108, 110, 115, 119,
123, 125, 127, 133, 134, 142, 143, 144,
151, 152, 155, 162, 163, 176, 183, 188,
193, 198, 199, 200, 206, 208, 212, 217,
221, 222, 223, 226, 240, 241, 242
- Zhang, Z. 29, 41, 51, 73, 77, 105,
131, 136, 157, 159,
182, 203, 204, 216, 228, 232
- Zhan, J 49, 230
- Zhao, 145
- Zhao, B. 23, 47, 71, 99, 125, 151, 176,
177, 198, 216
- Zhao, C. 70, 127, 131, 195, 200, 201,
214, 218
- Zhao, D. 98, 130, 234, 242, 243
- Zhao, F. 32
- Zhao, G. 58, 112, 240
- Zhao, H 53, 107, 234
- Zhao, J 59, 88, 151, 167, 225, 229,
234, 242
- Zhao, L. 47, 208
- Zhao, P. 145, 161, 205
- Zhao, Q. 226
- Zhao, S 62, 99, 142, 152, 191
- Zhao, T. 23
- Zhao, X. 33, 53, 152, 198, 217
- Zhao, Y. 64, 75, 124, 175, 191, 203,
208, 239
- Zhao, Z. 80, 180, 198
- Zheng, B. 73, 89, 153, 201
- Zheng, C. 91, 188
- Zheng, F. 125
- Zheng, G 161
- Zhengjian, L. 216
- Zheng, L. 33, 187
- Zheng, M 109
- Zheng, T. 191
- Zheng, W 138
- Zhengwei, Y. 216
- Zheng, X. 177, 179, 203, 208
- Zheng, Y. 44, 68, 95, 120, 146, 171,
185, 196, 214, 241, 242
- Zhen, J 78
- Zhen, Z. 42
- Zherdev, A 54
- Zhilyaev, A 61
- Zhilyaev, P 240, 241
- Zhiyun, J. 57
- Zhong, G 220
- Zhong, H 151
- Zhong, J 59
- Zhong, L. 118
- Zhong, M. 105
- Zhong, Q 71, 121, 198
- Zhongwu, Z. 216
- Zhong, X 64
- Zhong, Y 23, 34, 43, 58, 67, 71, 85,
95, 120, 191, 216
- Zhou, C 23, 72, 125, 168, 177,
190, 210
- Zhou, D 76, 216, 221, 235
- Zhou, G 214, 226
- Zhou, H 23, 41, 168
- Zhou, J 154, 185, 229
- Zhou, K 187
- Zhou, L. 95, 127, 157, 169, 178, 179,
181, 200, 202, 203, 204, 205
- Zhou, N 60, 88
- Zhou, P. 23, 216, 235
- Zhou, Q 65, 132
- Zhou, R. 152
- Zhou, S. 43
- Zhou, T. 65, 130
- Zhou, W. 40, 83, 147, 172, 197, 215,
216, 235
- Zhou, X 25, 56, 58, 99, 141, 151, 228
- Zhou, Y. 31, 37, 53, 62, 72, 151,
153, 239
- Zhou, Z. 206, 216
- Zhuang, H 84, 85, 111, 136, 164, 187,
208, 237
- Zhu, C. 75, 103, 134, 226
- Zhu, D 159
- Zhu, E. 58, 81
- Zhu, G 130
- Zhu, H 54, 82
- Zhu, J 168
- Zhu, K. 76
- Zhukov, A. 76, 219, 232
- Zhukova, V 76, 232
- Zhukov, I 110, 176
- Zhu, L 137, 151, 180, 225, 231
- Zhu, M 23, 24, 48, 56, 71, 72, 205
- Zhu, N 224
- Zhu, Q 64, 75
- Zhu, R. 23, 56, 99, 149
- Zhuravlev, E. 179
- Zhu, S 115, 229
- Zhu, T. 30, 37, 53, 62, 79, 107, 133,
158, 159, 200, 233
- Zhu, X. 114
- Zhu, Y. 37, 55, 61, 89, 114, 141,
168, 194, 225
- Zhu, Z. 33, 49, 69, 191, 219
- Ziatdinov, M 219
- Zieba, P 116
- Ziegler, D. 60, 80, 160, 205
- Ziemian, C. 82
- Zienert, T. 161
- Zietsman, J. 122, 137
- Zikry, M. 204
- Zimina, M 66
- Zimmerman, D. 25
- Zimmermann, M 209
- Zinck, J. 131, 173
- Zinkle, S. 40, 64, 66, 82, 91, 108, 169,
188, 193, 206
- Zin, N 198
- Zinn, M 190
- Ziolo, R. 222
- Zok, F 207
- Zolko, C 225, 242
- Zong, H 187
- Zoraga, M. 46, 224
- Zou, C. 62, 143, 212, 220
- Zou, G 160
- Zou, L. 214
- Zou, M 204
- Zou, P. 72
- Zou, T. 191
- Zou, X. 228, 241

Zou, Y.....27, 89, 135, 144, 201
Zou, Z.....98
Zovko Brodarac, Z79
Zubair, M44
Zunger, A115
Zuo, H23, 230
Zuo, Y.....132
Zurob, H.....65, 89, 141
Zu, X.....32
Žužek, B.....220
Zweiacker, K123, 200

THE WORLD COMES HERE
TMS 2019
148th Annual Meeting & Exhibition

www.tms.org/TMS2019