TECHNICAL PROGRAM

TMS2013

142nd Annual Meeting & Exhibition

March 3-7, 2013 • Henry B. Gonzalez Convention Center
San Antonio, Texas, USA

Technical Program

Symposium Name / Session Name	Date	Time	Room Name	Page
2013 Aluminum Keynote: Impurities in the Aluminum Supply Chain				
2013 Aluminum Keynote Session	MON	AM	Lila Cockrell Theatre	74
2013 and Beyond: Flexible Electronics				
Flexible Bioelectronics in the Central and Peripheral Nervous Systems	MON	AM	006A	74
Semiconductor Advances in Flexible Electronics Systems	MON	PM	006A	95
2013 Functional Nanomaterials: Synthesis, Properties and Applications				
Nanomaterials for Energy Technologies	MON	AM	201	75
Carbon Nanomaterials	MON	PM	201	96
Nanomaterials General I: Electronic, Photonic, and Bio-Nano Interfaces	TUE	AM	201	122
Low-Dimensional Nanomaterials I	TUE	PM	201	150
Nanomaterials General II	WED	AM	201	177
Low-Dimensional Nanomaterials II	WED	PM	201	203
Structural Nanomaterials I	THU	AM	201	229
Structural Nanomaterials II	THU	PM	201	250
2013 Materials Innovation Plenary: Innovation in Materials & Manufacturing				
2013 Materials Innovation Plenary Session	WED	PM	Lila Cockrell Theatre	204
4th International Symposium on High-Temperature Metallurgical Processing				
High Efficiency New Metallurgical Technology	MON	AM	008B	75
Fundamental Research of Metallurgical Process	MON	PM	008B	97
Alloy and Materials Preparation I	TUE	AM	008B	122
Alloy and Materials Preparation II	TUE	PM	008B	150
Roasting, Reduction and Smelting	WED	AM	008B	177
Simulation and Modeling	WED	PM	008B	204
Treatment of Solid Slag/Wastes and Complex Ores	THU	AM	008B	230
Sintering and Pelletization	THU	AM	008A	229
Microwave Heating, Energy and Environment	THU	PM	008B	251
Acta Materialia Materials and Society Award Special Symposium: "Global R&D Trends – Implications for Material Sciences"				
Global R&D Trends -- Implications for Material Sciences	TUE	PM	Lila Cockrell Theatre	151
Advanced Materials and Reservoir Engineering for Extreme Oil & Gas Environments				
Nanocrystalline Metals I	MON	AM	Lone Star Salon A	76
Nanocrystalline Metals II	MON	PM	Lone Star Salon A	98
Corrosion and Hydrogen Damage	TUE	AM	Lone Star Salon A	123
Novel Alloys and Coatings	TUE	PM	Lone Star Salon A	151
Advance Materials & Innovative Solutions for Oil and Gas I	WED	AM	Lone Star Salon A	178
Materials Challanges in Hostile Environments	WED	PM	Lone Star Salon A	205
Advance Materials & Innovative Solutions for Oil and Gas II	THU	AM	Lone Star Salon A	231
Advanced Materials for Power Electronics, Power Conditioning, and Power Conversion				
Advanced Materials for High Power, High Temperature, and High Frequency Power Electronics	TUE	PM	007A	152
Wide Bandgap Semiconductor Material Growth and Characterization	WED	AM	007A	178
Wide Bandgap Semiconductor Device Processing and Characterization	WED	PM	007A	205
Magnetic Materials for High Frequency Power Electronics	THU	AM	007A	231
Capacitor and Packaging Materials for Advanced Power Electronics	THU	PM	007A	251

	Date	Time	Room Name	Page
Advances in Surface Engineering: Alloyed and Composite Coatings II				
Functional Coatings I	MON	AM	Bowie B	76
Functional Coatings II	MON	PM	Bowie B	97
Thermal and Cold Sprayed Coatings	TUE	AM	Bowie B	123
Laser Processing and Hard Coatings	TUE	PM	Bowie B	152
High Temperature, Wear- and Corrosion-Resistant Coatings	WED	AM	Bowie B	179
Engineered Coatings	WED	PM	Bowie B	206
Alloys and Compounds for Thermoelectric and Solar Cell Applications				
Thermoelectric I	MON	AM	007C	77
Thermoelectric II	MON	PM	007C	98
Thermoelectric III	TUE	AM	007C	124
Solar Cells	TUE	PM	007C	153
Alumina and Bauxite				
Digestion	MON	PM	212B	98
Clarification	TUE	AM	212B	125
Red Mud	TUE	PM	212B	153
Precipitation and Calcination	WED	AM	212B	179
Impurities	WED	PM	212B	206
Low Grade Alumina Sources	THU	AM	212B	232
Aluminum Alloys: Fabrication, Characterization and Applications				
Development and Application	MON	PM	213A	99
Corrosion Resistance Performance	TUE	AM	213A	125
Casting and Solidification	TUE	PM	213A	154
Thermal Mechanical Processing	WED	AM	213A	180
Solutioning and Aging	WED	PM	213A	206
Emerging Technology	THU	AM	213A	232
Aluminum Processing				
Aluminum Processing I	WED	AM	210A	180
Aluminum Processing II	WED	PM	210A	207
ICME in Aluminum Processing	THU	AM	210A	233
Aluminum Reduction Technology				
Fundamentals: Modelling	MON	PM	Grand Ballroom C2	100
Cell Design and Performance	MON	PM	Grand Ballroom C1	99
Potline Operation I: Smelter Operations	TUE	AM	Grand Ballroom C1	126
Fundamentals: Chemistry	TUE	AM	Grand Ballroom C2	126
Environment I	TUE	PM	Grand Ballroom C1	155
Cell Operations and Process Control	TUE	PM	Grand Ballroom C2	154
Potline Operation II: Equipment	WED	AM	Grand Ballroom C1	181
Environment II: PFCs	WED	PM	Grand Ballroom C1	207
Battery Recycling				
Battery Recycling	WED	PM	006A	208

	Date	Time	Room Name	Page
Biological Materials Science Symposium				
Mechanical Behavior of Biological Materials I: Bone and Teeth	MON	AM	214C	77
Mechanical Behavior of Biological Materials II: Natural Materials	MON	PM	214C	100
Ultrafine Grain Materials/Biointerface	TUE	AM	214C	127
Bioinspired Material Science and Processing	TUE	PM	214C	155
Innovative Thin Films and Coating for Biological Interactions (Joint session with Biological, Electrical and Functional Thin Films and Coating Symposium)	WED	AM	214C	181
Hierarchical Composites and Biological Materials (Joint session with Hybrid and Hierarchically Structured Composites)	WED	PM	215	208
Nanoscale Systems and Surfaces for Biological Interactions	WED	PM	214C	209
Molecular Biomimetics and Bioenabled Materials and Systems	THU	AM	214C	233
Molecular, Cellular and Tissue Engineering	THU	AM	215	234
Biomedical Materials Implants and Devices	THU	PM	214C	252
Bulk Metallic Glasses X				
Alloy Development and Application I	MON	AM	Lone Star Salon D	78
Alloy Development and Application II	MON	PM	Lone Star Salon D	101
Structures and Mechanical Properties I	TUE	AM	Lone Star Salon D	127
Structures and Modeling	TUE	PM	Bowie A	156
Structures and Mechanical Properties II	TUE	PM	Lone Star Salon D	156
Mechanical and Other Properties	WED	AM	Bowie A	182
Fatigue and Corrosion	WED	AM	Lone Star Salon D	182
Simulation and Modeling	WED	PM	Lone Star Salon D	209
Structures and Mechanical Properties III	WED	PM	Bowie A	210
Structures and Mechanical Properties IV	THU	AM	Bowie A	234
Cast Shop for Aluminum Production				
Aluminum Cast Shop I	MON	PM	210A	101
Aluminum Cast Shop II	TUE	AM	210A	128
Aluminum Cast Shop III	TUE	PM	210A	157
Aluminum Cast Shop IV	WED	PM	212A	211
Characterization of Materials through High Resolution Coherent Imaging				
X-ray Based Techniques I	MON	AM	206B	79
X-ray Based Techniques II	MON	PM	206B	102
Electron Based Techniques	TUE	AM	206B	128
Characterization of Minerals, Metals and Materials 2013				
Characterization of Ferrous Metals I	MON	AM	206A	79
Characterization of Ferrous Metals II	MON	PM	206A	102
Characterization of Nonferrous Metal and Alloys	TUE	AM	206A	129
Characterization Technologies	TUE	PM	206B	158
Characterization of Inorganic Materials	TUE	PM	206A	157
Green Materials	WED	AM	206A	184
Characterization for Environmental Applications	WED	AM	206B	183
Characterization of Advanced Materials	WED	PM	206B	211
Characterization of High Performance Alloys	WED	PM	206A	212
Characterization of Minerals	THU	AM	206A	235

	Date	Time	Room Name	Page
Characterization of Soft Materials	THU	AM	206B	236
Surface, Joint, and Processing of Metals	THU	PM	206B	253
Characterization for Extraction Applications	THU	PM	206A	252
Characterization of Nuclear Reactor Materials and Components with Neutron and Synchrotron Radiation				
Characterization of Nuclear Reactor Materials and Components with Neutron and Synchrotron Radiation	WED	AM	202B	184
Computational Discovery of Novel Materials				
Novel Methods for Materials Discovery	MON	AM	207B	80
Electrochemical Energy Storage and Conversion	MON	PM	207B	103
Interfaces and Microstructure	WED	AM	207A	185
Computational Thermodynamics and Kinetics				
First-principles Thermodynamics	MON	AM	207A	80
First-principles and Multi-scale	MON	PM	207A	103
Molecular Dynamics Simulations I	TUE	AM	207A	129
Molecular Dynamics Simulations II	TUE	PM	207A	158
Phase Field Simulations	WED	PM	207A	212
Phase Diagrams	THU	AM	207A	236
Steels and Oxides	THU	PM	207A	254
Cost Affordable Titanium IV				
Overview and Low Cost Processing	MON	AM	217C	81
Low Cost: Additive Manufacturing and Metal Injection molding	MON	PM	217C	104
Low Cost Processing: Plasma, Microwave, Laser, Melting and Casting	TUE	AM	217C	130
Low Cost Processing: Fundamentals	TUE	PM	217C	159
The Production and Processing of Titanium Powder	WED	AM	217C	185
Low Cost Powder Processing and Characterization	WED	PM	217C	213
Processing: Property Relationship	THU	AM	217C	237
Deformation, Damage, and Fracture of Light Metals and Alloys				
Session I	MON	PM	210B	104
Session II	TUE	AM	210B	129
Session III	TUE	PM	210B	159
Session IV	WED	AM	210B	186
Session V	WED	PM	210B	213
Session VI	THU	AM	210B	237
Session VII	THU	PM	210B	254
Electrode Technology for Aluminium Production				
Anode Raw Materials	MON	PM	213B	105
Paste Plant Operations	TUE	AM	213B	131
Bake Furnace Design and Operation	TUE	PM	213B	160
Anode Quality and Performance	WED	AM	213B	186
Cathode Materials and Wear	WED	AM	Grand Ballroom C2	187
Inert Anodes, Cell Materials and Alternative Processes	WED	PM	213B	214
CBF Environmental & Anode Electrical Connections	WED	PM	Grand Ballroom C2	214

	Date	Time	Room Name	Page
Energy Technologies and Carbon Dioxide Management				
Alternative Green Processes	TUE	AM	006C	131
Waste Heat Recovery and Furnace Technology	TUE	PM	006C	161
Energy Education	WED	AM	006C	187
Carbon Footprint Analysis	WED	PM	006C	215
Fatigue and Fracture of Thin Films and Nanomaterials				
Fatigue of Thin Films and Nanomaterials	MON	AM	Bowie C	81
Fracture of Thin Films and Nanomaterials	MON	PM	Bowie C	105
High Temperature and Electrical Properties	TUE	AM	Bowie C	132
Advanced Indentation-based Techniques	TUE	PM	Bowie C	161
Micromechancial Testing for Nanomaterial Failure	WED	AM	Bowie C	188
Deformation and Strengthening Mechanisms of Nanomaterials	WED	PM	Bowie C	215
Fatigue in Materials: Microstructure-Driven Modeling and In-Situ Fatigue Characterization				
Characterization and Modeling of Fatigue	TUE	AM	207B	132
Microstructure -- Property -- Fatigue Deformation & Damage Relationships	TUE	PM	207B	162
Fatigue Property Enhancement and Life Prediction	WED	AM	207B	188
Fatigue in Advanced Materials & Environmental Effects	WED	PM	207B	216
Advanced and Emerging Technologies in Fatigue Experimentation and Simulation	THU	AM	207B	238
Friction Stir Welding and Processing VII				
Friction Stir Welding and Processing: Modeling and Controls	MON	PM	Grand Ballroom C3	106
Friction Stir Welding: High Temperature Materials I	TUE	AM	Grand Ballroom C3	133
Friction Stir Welding: High Temperature Materials II	TUE	PM	Grand Ballroom C3	162
Friction Stir Welding: Light Materials I	WED	AM	Grand Ballroom C3	189
Friction Stir Welding: Light Materials II	WED	PM	Grand Ballroom C3	216
Friction Stir Processing	THU	AM	Grand Ballroom C3	238
Frontiers in Solidification Science				
Industrial Aspects of Solidification	MON	PM	Lone Star Salon F	106
Macroscale Phenomena	TUE	AM	Lone Star Salon F	133
In-situ Observations and X-ray Imaging	TUE	PM	Lone Star Salon F	163
Microstructure Formation I: Experimental	WED	AM	Lone Star Salon F	190
Microstructure Formation II: Simulation	WED	PM	Lone Star Salon F	217
Atomistic Aspects and Nucleation	THU	AM	Lone Star Salon F	239
High Temperature Electrochemistry				
High Temperature Electrochemistry Plenary Session	MON	AM	006D	82
High Temperature Metals and Materials	MON	PM	006D	107
Energy Storage Devices and Electrochemical Synthesis	TUE	AM	006D	134
Nuclear Materials	TUE	PM	006D	163
Electrochemistry and Materials Properties	WED	AM	006D	190
Hume-Rothery Award Symposium: Electronic Structure Theory of Stability and Bonding in Alloys				
Electronic Structure	MON	AM	205	82
Alloy Theory I	MON	PM	205	107
Materials Genome Approaches I (Joint Session with Computational Discovery of Novel Materials)	TUE	AM	205	134
Materials Genome Approaches II	TUE	PM	205	164

	Date	Time	Room Name	Page
Alloy Theory II (Joint Session with Computational Thermodynamics and Kinetics)	WED	AM	205	191
Semiconductor Alloys	WED	PM	205	217
Magnetic Materials	THU	AM	205	240
Hybrid and Hierarchical Composite Materials				
Processing	MON	AM	215	83
Multifunctionality	MON	PM	215	107
Metal Matrix Composites	TUE	AM	215	134
Modeling and Design	TUE	PM	215	164
Characterization and Structure-Property Relationships	WED	AM	215	191
Integrated Computational Modeling of Materials for Nuclear Energy				
Fuel Modeling I: Lower Scale Modeling	MON	AM	202B	83
Fuel Modeling II: Multiscale Modeling	MON	PM	202B	108
Structural Materials Modeling	TUE	AM	202B	135
Future Directions	TUE	PM	202B	165
Magnesium Technology 2013				
Magnesium Technology 2013 Plenary	MON	AM	214A	84
Primary Production and Casting	MON	PM	214A	108
Mechanical Properties	TUE	AM	214A	135
Corrosion	TUE	PM	214A	165
Texture and Wrought Materials I	WED	AM	214A	192
Wrought Materials II	WED	PM	214A	218
Grain Refinement, Twinning, and Composites	THU	AM	214A	240
Phase Formation	THU	PM	214A	255
Magnesium-Based Biodegradable Implants Symposium				
Performance Assessment and Evaluation	WED	AM	214D	191
Alloy Development	WED	PM	214D	218
Advanced Materials and Processing	THU	AM	214D	240
Coatings and Surface Modification	THU	PM	214D	255
Magnetic Materials for Energy Applications -III				
Status and Challenges	MON	AM	217D	84
Rare Earth-free Permanent Magnets I	MON	PM	217D	109
Rare Earth-free Permanent Magnets II	TUE	AM	217D	136
MagnetoCaloric and Magnetostrictive Materials	TUE	PM	217D	165
Novel Materials and Phenomenon	WED	AM	217D	192
Rare Earth Magnets	WED	PM	217D	219
Materials and Fuels for the Current and Advanced Nuclear Reactors II				
Modeling	MON	AM	202A	84
Irradiation Studies	MON	PM	202A	109
Fuels I	TUE	AM	202A	137
Fuels II	TUE	PM	202A	166
Structural Materials I	WED	AM	202A	192
Structural Materials II	WED	PM	202A	219
Structural Materials III	THU	AM	202A	241

	Date	Time	Room Name	Page
Materials in Clean Power Systems VIII: Durability of Materials				
Materials for Fuel Cells and CSP Applications	MON	AM	007A	85
Alloy Development for Clean and Efficient Energy Technologies	MON	PM	007A	110
Corrosion, Coating Protection and Lifetime Prediction	TUE	AM	007A	137
Materials Processing Fundamentals				
Process Metallurgy of Steel	MON	PM	008A	110
Physical Metallurgy of Metals	TUE	AM	008A	138
Metallurgy of Non-Ferrous Metals	TUE	PM	008A	166
Process Metallurgy of Non-Ferrous Metals	WED	AM	008A	193
Recirculation of Materials and Environments	WED	PM	008A	220
Materials Research Applied to National Needs (MARANN) in Honor of Professor Morris E. Fine				
Materials Research Applied to National Needs (MARANN) I	MON	AM	006A	85
Materials Research Applied to National Needs (MARANN) II	MON	PM	006A	111
Materials Science in Reduced Gravity				
Structure and Kinetics	MON	AM	Lone Star Salon E	86
Facilities and Metallic Glasses	MON	PM	Lone Star Salon E	111
Modeling and Properties	TUE	AM	Lone Star Salon E	138
Materials Science of Nuclear Waste Management				
Materials Science of Nuclear Waste Management I	WED	PM	202B	220
Materials Science of Nuclear WasteManagement II	THU	AM	202B	241
Mesoscale Computational Materials Science of Energy Materials				
Battery Materials and Electrochemical Processes I	MON	AM	218	86
Phase Field Modeling and Microstructural Evolutions	MON	PM	218	112
Battery Materials and Electrochemical Processes II	TUE	AM	218	139
Irradiation and Defects	TUE	PM	218	167
Structural Materials Modeling	WED	AM	218	194
Microstructural Processes in Irradiated Materials				
Ferritic/Martensitic Steels I	MON	AM	203A	87
Ferritic/Martensitic Steels II	MON	PM	203A	112
Advanced ODS Alloys	TUE	AM	203A	139
Ferritic & RPV Steels	TUE	PM	203A	167
Austenitic & Duplex Stainless Steels	WED	AM	203A	194
Fusion Materials	WED	PM	203A	221
Nuclear Fuels & Zr-alloy Claddings	THU	AM	203A	242
Novel Systems & Ceramics	THU	PM	203A	256
Modeling and Experimental Validation of Multiscale Mechanical Behavior from Atomic Scale to Macro Scale				
Failure and Fracture	MON	AM	211	87
Multiscale Deformation Mechanisms	MON	PM	211	113
Size Effects	TUE	AM	211	140
Interfaces at Low Length Scales	TUE	PM	211	168
Defects at the Atomic Scale	WED	AM	211	195
Multiscale Behavior at Extreme Conditions	WED	PM	216	221

	Date	Time	Room Name	Page
Polycrystalline Multiscale Plasticity	WED	PM	211	222
Dislocation Dynamics	THU	AM	212A	243
Mechanics at Multiscales	THU	AM	211	243
Multiscale Behavior: Strength and Segregation	THU	PM	211	256
Modeling of Multi-Scale Phenomena in Materials Processing - III				
Microstructure Evolution I	MON	AM	216	88
Microstructure Evolution II	MON	PM	216	113
Heat Treatment	TUE	AM	216	140
Microstructure Effects	TUE	PM	216	169
Fluid Dynamics and Solidification	WED	AM	216	196
Nanostructured Materials for Lithium Ion Batteries and for Supercapacitors				
Nanostructured Materials for Lithium Ion Batteries and for Supercapacitors Session I	MON	AM	007B	88
Nanostructured Materials for Lithium Ion Batteries and for Supercapacitors Session II	MON	PM	007B	114
Nanostructured Materials for Lithium Ion Batteries and for Supercapacitors Session III	TUE	AM	007B	141
Nanostructured Materials for Lithium Ion Batteries and for Supercapacitors Session IV	TUE	PM	007B	169
Nanostructured Materials for Lithium Ion Batteries and for Supercapacitors Session V	WED	AM	007B	196
Nanostructured Materials for Lithium Ion Batteries and for Supercapacitors Session VI	WED	PM	007B	222
Nanostructured Materials for Lithium Ion Batteries and for Supercapacitors Session VII	THU	AM	007B	244
Neutron and X-ray Studies of Advanced Materials VI: Centennial and Beyond				
Diffraction: 100 Years and Beyond	MON	AM	209	89
In Honor of Prof. T.R. Welberry: "What Can We Learn from Diffuse Scattering?"	MON	PM	209	114
Diffraction Across the Time and Length Scale	TUE	AM	209	141
In Honor of Prof. T. Ungar: "Advanced Line Profile Analysis"	TUE	PM	209	170
Mesoscale Studies	WED	AM	209	197
Diffraction Studies of Phase Transtions	WED	PM	209	223
Strains and Dislocations	THU	AM	209	244
Ni-Co 2013				
Ni-Co 2013 Plenary	MON	AM	007D	89
Ni Laterite Hydrometallurgy	MON	PM	007D	115
Electrometallurgy	TUE	AM	007D	142
Pyrometallurgy - Solid-State Processing	TUE	PM	007D	170
Ores and Processing	WED	AM	007D	197
Pyrometallurgy - Smelting	WED	PM	007D	224
Applications & Recycling	THU	AM	007D	245
Ni and Co Hydrometallurgy	THU	PM	007D	257
Novel Synthesis and Consolidation of Powder Materials				
Activated Sintering, Spark Plasma Sintering and High Voltage Electric Discharge Consolidation	MON	AM	Lone Star Salon C	90
Thermal Spray and Cold Spray Processing	MON	PM	Lone Star Salon C	115
Novel Synthesis, Processing and Consolidation of Powder Materials	TUE	AM	Lone Star Salon C	142
Nanostructured or Nanocrystalline Materials	TUE	PM	Lone Star Salon C	171
Additive Manufacturing and Novel Consolidation of Powder Materials	WED	AM	Lone Star Salon C	198
Metal Injection Moulding and Advanced Powder Processing	WED	PM	Lone Star Salon C	224
Porous Structure Fabrication and Thermomechanical Processing	THU	AM	Lone Star Salon C	246

	Date	Time	Room Name	Page
Pb-free Solders and Emerging Interconnect and Packaging Technologies				
Solidification	MON	AM	217B	90
3D Interconnect and Novel Packaging Approaches	MON	PM	217B	116
Mechanical Behavior I	TUE	AM	217B	143
Mechanical Behavior II	TUE	PM	217B	171
Sn Whiskering I	WED	AM	217B	198
Sn Whiskering and Electromigration	WED	PM	217B	225
Interfacial Reactions	THU	AM	217B	246
Phase Stability, Phase Transformations, and Reactive Phase Formation in Electronic Materials XII				
Solder-related Reliability Issues	MON	AM	203B	91
Phase Equilibria and Transformations of the Pb-free Solders and Energy Materials	MON	PM	203B	116
Interfacial Reactions of the Pb-free Solder Joints	TUE	AM	203B	144
General Issues in Microelectronics	TUE	PM	203B	172
Phase Transformation and Microstructural Evolution				
MPMD Distinguished Scientist/Engineer Award Symposium for J.E. Morral	MON	AM	204B	91
General Phase Transformations - Non-Ferrous: Part I	MON	PM	204B	117
General Phase Transformations - Non-Ferrous: Part II	TUE	AM	204B	144
Non-conventional Phase Transformation Paths: Part I	TUE	AM	204A	145
General Phase Transformations - Non-Ferrous: Part III	TUE	PM	204B	172
Non-conventional Phase Transformation Paths: Part II	TUE	PM	204A	173
Non-conventional Phase Transformation Paths: Part III	WED	AM	204A	199
General Phase Transformations: Materials	WED	AM	204B	199
Non-conventional Phase Transformation Paths: Part IV	WED	PM	204A	225
Scale and Subsurface Phase Transformations during High-Temperature Oxidation	WED	PM	204B	226
General Phase Transformations - Fe Based Alloys: Part I	THU	AM	204A	247
Phase Field, Phase Field Crystal, Diffusive Molecular Dynamics and Related Models: Part I	THU	AM	204B	247
Phase Field, Phase Field Crystal, Diffusive Molecular Dynamics and Related Models: Part II	THU	PM	204B	258
General Phase Transformations - Fe Based Alloys: Part II	THU	PM	204A	257
Physical and Mechanical Metallurgy of Shape Memory Alloys				
In-situ Microstructural Characterization	MON	AM	Lone Star Salon B	92
Novel and NiTi-based Shape Memory Alloys	MON	PM	Lone Star Salon B	117
NiTi (Hf,Zr) Shape Memory Alloys	TUE	AM	Lone Star Salon B	145
High Temperature Shape Memory Alloys	TUE	PM	Lone Star Salon B	174
Magnetic and Fe-based Shape Memory Alloys	WED	AM	Lone Star Salon B	200
Multiscale Modeling and Applications	WED	PM	Lone Star Salon B	226
Processing, Powder Metallurgy	THU	AM	Lone Star Salon B	248
Production, Refining and Recycling of Rare Earth Metals				
Production, Refining and Recycling of Rare Earth Metals	MON	PM	006B	118
Recent Developments in Biological, Electronic, and Functional Thin Films and Coatings				
Biological, Electronic, and Functional Thin Films and Coatings I	MON	AM	214D	92
Biological, Electronic, and Functional Thin Films and Coatings II	MON	PM	214D	119
Biological, Electronic, and Functional Thin Films and Coatings III	TUE	AM	214D	146
Biological, Electronic, and Functional Thin Films and Coatings IV	TUE	PM	214D	174

	Date	Time	Room Name	Page
Recent Developments in the Processing, Characterization, Properties, Performance and Applications of Metal Matrix Composites				
Innovative and Nano-composite Materials	MON	AM	Bowie A	93
Processing, Microstructure and Mechanical Properties I	MON	PM	Bowie A	119
Processing, Microstructure and Mechanical Properties II	TUE	AM	Bowie A	147
Refractory Metals 2013				
Refractory Metal-based Materials I	MON	AM	Mission A	93
Refractory Metal-based Materials II	MON	PM	Mission A	120
Refractory Metal-based Materials III	TUE	AM	Mission A	147
REWAS 2013: Enabling Materials Resource Sustainability				
Plenary Session: Realizing Sustainability	MON	PM	Lila Cockrell Theatre	120
Enabling Sustainability through Recycling & End-of-Pipe Solutions I	TUE	AM	006B	148
Enabling Sustainability through Metal Production	TUE	AM	006A	147
Enabling Sustainability through Process Design, Modeling & Simulation	TUE	PM	006A	175
Enabling Sustainability through Life Cycle Management, LCA and Industrial Ecology	TUE	PM	006B	175
Enabling Sustainability through the Physics of Metals & Materials Processing	WED	AM	006B	201
Enabling Sustainability through Systems Modelling and Design, Life Cycle Management, LCA and Industrial Ecology	WED	AM	006A	200
Enabling Sustainability through Education and Consumer Awareness	WED	PM	006B	227
Enabling Sustainability through Systems Modelling and Design	THU	AM	006A	249
Enabling Sustainability through Recycling & End-of-Pipe Solutions II	THU	AM	006B	248
Solar Cell Silicon				
Silicon Production and Refining	WED	AM	007C	201
Slag-based Refining of Silicon and Solar Cell Advances	WED	PM	007C	227
Symposium on High Entropy Alloys				
Alloy Development and Applications	WED	AM	203B	202
Modeling and Other	WED	PM	203B	228
Structures and Mechanical Properties	THU	AM	203B	249
Other Properties	THU	PM	203B	258
Synergies of Computational and Experimental Materials Science II				
Materials for Energy and Electronic Applications	MON	AM	217A	94
Integrated Computational Materials Engineering	MON	PM	217A	121
Processing and Phase Transformations	TUE	AM	217A	149
Mechanical Behavior: Plasticity	TUE	PM	217A	176
Mechanical Behavior: Fatigue and Failure	WED	AM	217A	202
Three-Dimensional Materials Science VII				
Novel Techniques in Three-Dimensional Materials Science	MON	AM	212A	94
Novel Material Systems in Three-Dimensional Materials Science	MON	PM	212A	121
Characterization of Three-Dimensional Structures: Experimental & Simulated	TUE	AM	212A	149
From 3D-4: New Data Representation Paradigms and Advanced Characterization in Four Dimensions	TUE	PM	212A	176
Specialty Session on Three-Dimensional Tools	WED	AM	212A	202

	Date	Time	Room Name	Page
Ultrasonic Welding II				
Ultrasonic Welding: Design Principles and Light Metal Joints	WED	PM	006D	228
Ultrasonic Welding: Metallic and Non-metallic Hybrid Joints	THU	AM	006D	250
Posters				
2013 Young Leader Meet the Candidate Poster Session				
2013 Young Leader "Meet the Candidate" Poster Session	SUN	PM	213 A&B	259
Symposium Poster Sessions				
2013 Functional Nanomaterials: Synthesis, Properties and Applications	MON	PM	Park View Lobby	259
4th International Symposium on High-Temperature Metallurgical Processing	MON	PM	Park View Lobby	261
Aluminum Alloys: Fabrication, Characterization and Applications	MON	OM	Park View Lobby	261
Biological Materials Science	MON	PM	Park View Lobby	262
Deformation, Damage, and Fracture of Light Metals and Alloys	WED	PM	Park View Lobby	263
Fatigue and Fracture of Thin Films and Nanomaterials	MON	PM	Park View Lobby	263
Magnesium Technology 2013	MON	PM	Park View Lobby	263
Materials Processing Fundamentals	MON	PM	Park View Lobby	265
Microstructural Processes of Irradiated Materials: Recent Advances in Nuclear Materials	MON	PM	Park View Lobby	266
Modeling and Experimental Validation of Multiscale Mechanical Behavior from Atomic Scale to Macro Scale	MON	PM	Park View Lobby	267
Nanostructured Materials for Lithium Ion Batteries and for Supercapacitors	MON	PM	Park View Lobby	268
Neutron and X-Ray Studies of Advanced Materials VI: Centennial and Beyond	MON	PM	Park View Lobby	268
Pb-free Solders and Emerging Interconnect and Packaging Technologies	MON	PM	Park View Lobby	268
Recent Developments in the Processing, Characterization, Properties, Performance and Applications of Metal Matrix Composites	MON	PM	Park View Lobby	269
General Poster Session				
General Poster Session	MON	PM	Park View Lobby	269
Student Poster Contests				
Biological Materials Science Student Poster Session	MON	PM	Park View Lobby	272
EMPMD 2013 Technical Division Student Poster Contest	MON	PM	Park View Lobby	273
EPD 2013 Technical Division Student Poster Contest	MON	PM	Park View Lobby	274
LMD 2013 Technical Division Student Poster Contest	MON	PM	Park View Lobby	274
MPMD 2013 Technical Division Student Poster Contest	MON	PM	Park View Lobby	275
SMD 2013 Technical Division Student Poster Contest	MON	PM	Park View Lobby	276
Young Professional Poster Contests				
EMPMD 2013 Technical Division Young Professional Poster Contest	MON	PM	Park View Lobby	276
EPD 2013 Technical Division Young Professional Poster Contest	MON	PM	Park View Lobby	276
LMD 2013 Technical Division Young Professional Poster Contest	MON	PM	Park View Lobby	277
MPMD 2013 Technical Division Young Professional Poster Contest	MON	PM	Park View Lobby	277
SMD 2013 Technical Division Young Professional Poster Contest	MON	PM	Park View Lobby	277

Upcoming TMS Conferences

Visit *www.tms.org* for an Up-to-Date Listing of Conferences

TMS ICME
MANUFACTURING
DESIGN
MATERIAL

2nd World Congress on Integrated Computational Materials Engineering
July 7-11, 2013
Salt Lake Marriott Downtown
at City Creek • Salt Lake City, Utah

PRICM 8

THE 8TH PACIFIC RIM INTERNATIONAL CONFERENCE ON ADVANCED MATERIALS AND PROCESSING

August 4-9, 2013
Hilton Waikoloa Village
Waikoloa, Hawaii USA

LMPC 2013

Liquid Metal Processing & Casting Conference 2013

September 22 – 25, 2013

AT&T Executive Education and Conference Center at the University of Texas • Austin, Texas

MS&T'13

october 27-31, 2013

Palais des congrès de Montréal

Montréal, Québec, Canada

The leading forum addressing structure, properties, processing and performance across the materials community.

Linking Science and Technology for Global Solutions

TMS2014

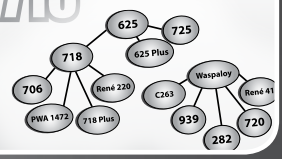
143rd Annual Meeting & Exhibition

February 16-20, 2014 • San Diego Convention Center
San Diego, California, USA

8TH INTERNATIONAL SYMPOSIUM ON ALLOY 718 & DERIVATIVES

SUPERALLOY 718 and Derivatives

September 28 - October 1, 2014
Marriott Pittsburgh City Center
Pittsburgh, Pennsylvania, USA



2013 Aluminum Keynote: Impurities in the Aluminum Supply Chain: 2013 Aluminum Keynote Session

Sponsored by: TMS Light Metals Division
Program Organizers: Les Edwards, Rain CII Carbon; Barry Sadler, Net Carbon Consulting Pty Ltd

Monday AM
March 4, 2013

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

Session Chair: Les Edwards, Rain CII Carbon

8:30 AM Introductory Comments

8:35 AM
Raw Material Impurities and the Challenge Ahead: *Stephen Lindsay*[1]; [1]Alcoa, Inc.

9:00 AM
Impacts of Impurities Introduced into the Aluminium Reduction Cell: *James Metson*[1]; David Wong[1]; Jenny Hung[1]; Mark Taylor[1]; [1]University of Auckland

9:25 AM
Changes in Global Refining and Its Impact on Anode Quality Petroleum Coke: *Karl Bartholomew*; ICIS Consulting

9:50 AM
Impact of Higher Vanadium Levels on Smelter Operations: Chuck Coney[1]; Lew Crabtree[1]; John Gavin[1]; Wes Marcrum[1]; *Andrea Weber*[1]; Les Edwards[2]; [1]RTA Sebree; [2]Rain CII Carbon

10:15 AM Break

10:35 AM
Impact on Smelter Operations of Operating High Purity Reduction Cells: *Stewart Hamilton*[1]; [1]New Zealand Aluminium Smelters Ltd

11:00 AM
Management of Impurities in Cast House with Particular Reference to Ni and V: *Muhammad Rhamdhani*[1]; John Grandfield[2]; Abdul Khaliq[1]; Geoffrey Brooks[1]; [1]Swinburne University of Technology; [2]Grandfield Technology Pty Ltd

11:25 AM
An Initial Assessment of the Effects of Increased Ni and V Content in AA6063 and A356 Alloys: Lisa Sweet[1]; *John Grandfield*[2]; Cameron Davidson[3]; Jason Mitchell[3]; Aiden Beer[3]; Suming Zhu[3]; Xiaobo Chen[3]; Mark Easton[3]; [1]CAST ; [2]Grandfield Technology Pty Ltd; [3]CAST

11:50 AM Panel Discussion

This will be a question-and-answer style panel discussion with the keynote speakers.

2013 and Beyond: Flexible Electronics: Flexible Bioelectronics in the Central and Peripheral Nervous Systems

Sponsored by: TMS Electronic, Magnetic, and Photonic Materials Division, TMS: Biomaterials Committee, TMS: Nanomaterials Committee
Program Organizer: Walter Voit, UT Dallas

Monday AM
March 4, 2013

Room: 204A
Location: Henry B. Gonzalez Convention Center

Session Chair: To Be Announced

8:30 AM Introductory Comments by Walter Voit, UT Dallas

8:35 AM Invited
Low-Temperature Materials for a Neuromorphic Architecture: *Eric Vogel*[1]; [1]Georgia Institute of Technology

9:05 AM Question and Answer Period

9:15 AM
Shape Memory Polymer Substrates for Softening, 3D Neural Interfaces: *Taylor Ware*[1]; Dustin Simon[1]; Walter Voit[1]; [1]The University of Texas at Dallas

9:45 AM Question and Answer Period

9:55 AM Break

10:15 AM Use of Compliant Materials in the Fabrication of a Flexible Utah Neural Interface Electrode Array: *Brian Baker*[1]; Rohit Sharma[2]; Prashant Tathireddy[2]; Loren Rieth[2]; Florian Solzbacher[2]; [1]Utah Nanofab; [2]University of Utah

10:45 AM Question and Answer Period

10:55 AM
Graphene Coated with Titanium Nitride as Electrode Materials for Neural Interfaces: *David Arreaga-Salas*[1]; Walter Voit[1]; [1]UT Dallas

11:15 AM Question and Answer Period

11:25 AM
Brain Matched Magnetic Susceptibility in Metallic Alloys for Use during MR Imaging: *Charles Fisher*[1]; Garrett Astary[1]; Rachel Stewart[1]; Marcus Peprah[1]; Tom Mareci[1]; Mark Meisel[1]; Paul Carney[1]; Malisa Sarntinoranont[1]; Michele Manuel[1]; [1]University of Florida

11:45 AM Question and Answer Period

11:55 AM
Electrochemical Properties of Neural Interfaces on Smart, Softening Substrates: *Ryan Marcotte*[1]; Dustin Simon[1]; Taylor Ware[1]; David Arreaga-Salas[1]; Walter Voit[1]; [1]University of Texas at Dallas

12:15 PM Question and Answer Period

12:25 PM Concluding Comments

2013 Functional Nanomaterials: Synthesis, Properties and Applications: Nanomaterials for Energy Technologies

*Sponsored by:*TMS Electronic, Magnetic, and Photonic Materials Division, TMS: Nanomaterials Committee
Program Organizers: Seong Jin Koh, University of Texas at Arlington; Nitin Chopra, University of Alabama; Jiyoung Kim, University of Texas at Dallas; Yuanbing Mao, University of Texas-Pan American; Ashwin Ramasubramaniam, University of Massachusetts; Gregory Thompson, University of Alabama

Monday AM
March 4, 2013

Room: 201
Location: Henry B. Gonzalez Convention Center

Funding support provided by: Qualcomm, Inc.

Session Chairs: Seong Jin Koh, University of Texas at Arlington; Seung Kang, Qualcomm, Inc

8:30 AM Introductory Comments

8:40 AM Invited
Nanostructured Energy Materials for Advanced Technical Applications: *Sungho Jin*[1]; [1]UC San Diego

9:15 AM Invited
Molecularly-Sculpted Nanomaterials and Interfaces for Energy and Electronics: *Ganpati Ramanath*[1]; [1]Rensselaer Polytechnic Institute

9:50 AM
Improved Performance of Bulk-Heterojunction Organic Solar Cells with the Use of Antireflective Zinc Oxide Nanorod Arrays on Seedless Substrates: *Hyung Woo Choi*[1]; Kyu-Sung Lee[2]; T. Alford[1]; [1]Arizona State University; [2]Electronics and Telecommunications Research Institute (ETRI)

10:10 AM Break

10:25 AM Invited
Energy Harvesting and Cooling with Flexible and Light-Weight Organic Nanocomposites: *Choongho Yu*[1]; [1]Texas A&M University

11:00 AM Invited
Next Generation Polymer Nanocomposite Electrolytes for Lithium Ion Batteries: *Haleh Ardebili*[1]; [1]University of Houston

11:35 AM
In-Situ Stress Study of Vanadium Oxide Thin Films as Li-Ion Storage Electrodes: *Dawei Liu*[1]; Aaron Kessman[2]; Jay Sheth[3]; Brian Sheldon[3]; [1]Alfred University; [2]Brown University; [3]Brown University

11:55 AM
Atomic -Scale Characterization of Nb-Doped SrTiO¬3 Nanostructures for Energy Harvesting and Applications: *Riad Alzghier*[1]; Jeremiah Abiade[1]; [1]Department of Mechanical & Industrial Engineering, University of Illinois at Chicago

12:15 PM
Metal Oxide Nanofibers Produced by a ForceSpinning Method for Battery Electrodes: *Edna Garcia*[1]; Yuanbing Mao[1]; [1]University of Texas-Pan American

4th International Symposium on High-Temperature Metallurgical Processing: High Efficiency New Metallurgical Technology

*Sponsored by:*TMS Extraction and Processing Division, TMS: Energy Committee, TMS: Materials Characterization Committee, TMS: Pyrometallurgy Committee
Program Organizers: Tao Jiang, Central South University; Jiann-Yang Hwang, Michigan Technological University; Phillip Mackey, Consultant; Onuralp Yücel, ITU; Guifeng Zhou, Wuhan Iron and Steel

Monday AM
March 4, 2013

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

Session Chairs: Tao Jiang, Central South University; Lawrence F. McHugh, Orchard Material Technology

8:30 AM Introductory Comments

8:35 AM
A New Copper Smelting Technology – Bottom Blown Oxygen Furnace Developed at Dongying Fangyuan Nonferrous Metals: *Baojun Zhao*[1]; Zhixiang Cui[2]; Zhi Wang[2]; [1]The University of Queensland; [2]Dongying Fangyuan Nonferrous Metals Co., Ltd

8:55 AM
A Novel Vacuum Aluminothermic Reduction Lithium Process: *Di Yuezhong*[1]; Wang Zhihui[1]; Tao Shaohu[1]; Feng Naixiang[1]; [1]Northeastern University

9:15 AM
Study on Double-Layered Pellet Roasting of Sulfur & Arsenic-Bearing Gold Concentrate: Jiang Tao[1]; Li Xi-Shan[1]; Ge Jie[1]; Cui Li-na[1]; Li Qian[1]; *Yang Yong-bin*[1]; [1]Central South University

9:35 AM
Electrochemical Preparation of Tungsten. Tungsten Carbide and Cemented Carbide: Diem-Hang Tran-Nguyen[1]; Daniel Jewell[1]; *Derek Fray*[1]; [1]University of Cambridge

9:50 AM
Preparation of MoO_3 from Ammonium Tetramolybdate in Microwave Fields: *Li Jian*[1]; [1]Kun Ming University of Science and Technology

10:10 AM Break

10:20 AM
Looping Sulfide Oxidation Process for Anode Copper Production: Leonid Shekhter[1]; Corby Anderson[2]; *Daniel Gribbin*[1]; Esra Cankaya-Yalcin[1]; Joseph Lessard[1]; Lawrence McHugh[1]; [1]Orchard Material Technology; [2]Kroll Institute for Extractive Metallurgy

10:40 AM
Direct Redaction of TI-V Magnetite Via ITmk3 Technology: *Nikolay Panishev*[1]; Boris Dubrovsky[1]; Anatoly Starikov[1]; Eugene Redin[1]; Edward Knyazev[1]; [1]Magnitogorsk Iron & Steel Works

11:00 AM
Research and Industrial Applications of Oxygen-rich Side-blow Bath Smelting Technology: *Lin Chen*[1]; Wanda Bin[1]; Tianzu Yang[1]; Weifeng Liu[1]; Shu Bin[1]; [1]Central South University

11:20 AM
New Innovative Gas Purging System for Stationary and Tilting Copper Anode Furnaces: *Klaus Gamweger*[1]; [1]RHI AG

11:35 AM
Thermal Plasma Torches for Metallurgical Applications: Lakshminarayana Rao[1]; Pierre Carabin[1]; *Gillian Holcroft*[2]; [1]PyroGenesis Canada Inc.; [2]PyroGenesis Canada Inc.

11:50 AM
Research on Removal of Potassium and Sodium by Pre-reduction Sintering: *Li Qian*[1]; Jing Zhao[1]; Jiang Tao[1]; Yang Yong-bin[1]; Li Guang-hui[1]; Chen Xu-ling[1]; [1]Central South University

12:05 PM
Reactive Foils Using Ni/Al Multilayers with Sputtering Followed by Pressurizing: *SeoungWoo Kuk*[1]; Jin Yu[1]; [1]KAIST

12:20 PM
NOx Reduction by Sintering Flue Gas Circulation for Iron Ores: *Guanghui Li*[1]; Chen Liu[1]; Tao Jiang[1]; Yuanbo Zhang[1]; Zhengwei Yu[1]; Chongzhong Ouyang[1]; [1]Central South University

Advanced Materials and Reservoir Engineering for Extreme Oil & Gas Environments: Nanocrystalline Metals I

Sponsored by: TMS Materials Processing and Manufacturing Division, TMS Structural Materials Division, TMS Electronic, Magnetic, and Photonic Materials Division, TMS: Nanomaterials Committee
Program Organizers: Indranil Roy, Schlumberger; Brajendra Mishra, Colorado School of Mines; Manuel Marya, Schlumberger Technology Corporation; Kuo-Chiang Chen, Schlumberger; Partha Ganguly, Schlumberger; Richard Lewis, Schlumberger; Suveen Mathaudhu, U.S. Army Research Office; Nitin Chopra, The University of Alabama; Xinghang Zhang, Texas A&M University; Greg Kusinski, Chevron; John Meng, BP America Inc.; Jefferson Rodrigues, Petrobras; Justin Cheney, Scoperta

Monday AM
March 4, 2013
Room: Lone Star Salon A
Location: Grand Hyatt

Session Chairs: Partha Ganguly, Schlumberger; Kuo-Chiang Chen, Schlumberger

8:30 AM AMREE Oil and Gas I - Introductory Comments and talk by Greg Kusinski, Director Deepstar, Chevron

8:55 AM Keynote
Advanced Materials and Processes for Extreme Environments: *Enrique Lavernia*[1]; [1]University of California, Davis

9:25 AM Invited
Achieving Ultra-High Strength and High Ductility in Cu-Cr-Zr Alloy by Combination of Ultrafine-Grain Formation and Static/Dynamic Precipitation: *Gencaga Purcek*[1]; Onur Saray[1]; Harun Yanar[1]; Ibrahim Karaman; Hans Maier[2]; [1]Karadeniz Technical University; [2]University of Paderborn

9:45 AM Invited
Grain Size Effect on Densities of Dislocations with Edge Components in Nanocrystalline Body-Centered Cubic Mo: *Yuntian Zhu*[1]; Guangming Cheng[1]; Paul Millet[2]; [1]North Carolina State University; [2]Idaho National Lab

10:05 AM Break

10:20 AM
Nanocrystalline and Nanotwinned Metals under Extreme Environment: *Xinghang Zhang*[1]; Y. Chen[1]; D. Bufford[1]; C. Sun[1]; Y. Liu[1]; K.Y. Yu[1]; H. Wang[1]; [1]Texas A&M University

10:40 AM Keynote
Nanoengineered Surfaces & Coatings for Efficiency Enhancements in Oil & Gas Industry: *Kripa Varanasi*[1]; [1]MIT

11:10 AM Invited
Plastic Deformation of Metal Surfaces: *Niels Hansen*[1]; Xiaodan Zhang[1]; Xiaoxu Huang[1]; [1]Technical University of Denmark

11:30 AM Invited
SPD-Processed Bulk Nanostructured Materials for Extreme Environments: *Ruslan Valiev*[1]; Maxim Murashkin[1]; Nariman Enikeev[1]; Julia Ivanisenko[2]; Horst Hahn[2]; [1]Ufa State Aviation Technical University; [2]KIT Institute of Nanotechnology

11:50 AM
Corrosion of Bulk Nanocrystalline Materials in Hostile Environments: *Indranil Roy*[1]; Manuel Marya[1]; Troy Topping[2]; Rashmi Bhavsar[1]; Kuo-Chiang Chen[1]; Enrique Lavernia[2]; [1]Schlumberger; [2]University of California, Davis

12:10 PM
Thermally Stabilized Ultrahigh-Strength Nanocrystalline Alloys for Extreme Environments: *Kristopher Darling*[1]; Heidi Maupin[1]; Laszlo Kecskes[1]; Suveen Mathaudhu[2]; [1]U.S. Army Research Laboratory; [2]U.S. Army Research Office

12:30 PM
Study of Deformation Mechanism of Nanocrystalline 304L Stainless Steel: *C. Sun*[1]; D. C. Foley[1]; K. Hartwig[1]; S. A. Maloy[2]; H. Wang[1]; X. Zhang[1]; [1]Texas A&M University; [2]Los Alamos National Laboratory

Advances in Surface Engineering: Alloyed and Composite Coatings II: Functional Coatings I

Sponsored by: TMS Materials Processing and Manufacturing Division, TMS: Surface Engineering Committee
Program Organizers: Srinivasa Bakshi, Indian Institute of Technology Madras; Graham McCartney, University of Nottingham; Arvind Agarwal, Florida International University; Sandip Harimkar, Oklahoma State University

Monday AM
March 4, 2013
Room: Bowie B
Location: Grand Hyatt

Funding support provided by: Bulk Nanostructured Materials Programs, Office of Naval Research

Session Chair: To Be Announced

8:30 AM Introductory Comments

8:35 AM Invited
Multifunctional Nanocomposite Thin Films: *Efstathios Meletis*[1]; [1]University of Texas at Arlington

8:55 AM Invited
Nanocomposite Coatings to Eliminate Bridging Oxidation on Boiling Water Reactor Safety Relief Valves: *Kent Coulter*[1]; Craig Engel[1]; Ronghua Wei[1]; [1]Southwest Research Institute

9:15 AM Invited
Role of CeO_2 Addition on Catalytic Conversion of Plasma Sprayed Al_2O_3 Coatings: Neelima Mahato[1]; S Ariharan[1]; *Kantesh Balani*[1]; [1]Indian Institute of Technology Kanpur

9:35 AM
The Role of Cu-Sn Coating on the Adhesion between Steel and SBR Based Rubber: Atanu Banerjee[1]; Monojit Dutta[1]; Anil Bhowmick[2]; *Tapas Laha*[3]; [1]Tata Steel; [2]Indian Institute of Technology Patna; [3]Indian Institute of Technology Kharagpur

9:50 AM Break

10:05 AM
Oxidation-Resistant Cu-Cr Coatings for High-Temperature Applications: *Kuang-Tsan Chiang*[1]; [1]Southwest Research Institute

10:20 AM
Microstructural Effects on Work Function of OsRu Coatings Used for Dispenser Cathodes: *Phillip Swartzentruber*[1]; Michael Effgen[2]; Scott Roberts[2]; John Balk[1]; [1]University of Kentucky; [2]Semicon Associates

10:35 AM
Effect of Ag Thickness on Electrical and Optical Properties of TiO_2/Ag/TiO_2 Multilayers asTransparent Composite Electrodes (TCEs) on Flexible Substrates: Aritra Dhar[1]; *Terry Alford*[1]; [1]Arizona State University

10:50 AM
Through-the-thickness Measurement of Residual Stress in Functionally Graded WC-Co: *Leila Tahvilian*[1]; Z. Zak Fang[1]; [1]University of Utah

11:05 AM
Effect of Thermal Cycling and Sliding on the Structure of Cu-Nb Nanolaminates: *David Economy*[1]; Emilio Jimenez[2]; Bobak Ranjbaran[3]; Bradley Schultz[1]; Marian Kennedy[1]; [1]Clemson University; [2]James Madison University; [3]Washington State University

11:20 AM
Virtually Arc Free High Power Pulsed Magnetron Sputtering Based on Oscillatory Voltage Wave Forms for Insulating Film Depositions: *Jianliang Lin*[1]; William Sproul[1]; Bo Wang[1]; Isaac Dahan[2]; [1]Colorado School of Mines; [2]Nuclear Research Center-NEGEV

Alloys and Compounds for Thermoelectric and Solar Cell Applications: Thermoelectric I

*Sponsored by:*TMS Electronic, Magnetic, and Photonic Materials Division, TMS: Alloy Phases Committee, TMS: Energy Conversion and Storage Committee
Program Organizers: Sinn-wen Chen, National Tsing Hua University; Yoshisato Kimura, Tokyo Institute of Technology; Chih-Huang Lai, National Tsing-Hua University; CW Nan, Tsinghua University; G. Jeffrey Snyder, California Institute of Technology; Hubert Scherrer, Ecole des Mines

Monday AM
March 4, 2013
Room: 007C
Location: Henry B. Gonzalez Convention Center

Session Chairs: Sinn-wen Chen, National Tsing Hua University; G. Snyder, California Institute of Technology

8:30 AM Introductory Comments

8:35 AM Invited
Atomic Scale Investigations of Interfaces in Telluride-Based Thermoelectric Materials: *Douglas Medlin*[1]; [1]Sandia National Laboratories

9:00 AM Invited
Carrier Pocket Engineering to Improve Thermoelectric Transport: *G. Jeffrey Snyder*[1]; [1]California Institute of Technology

9:25 AM
Size Control and Alignment of the Microstructure in the Bi_2Te_3-In_2Te_3 System: *Nicholas Heinz*[1]; Teruyuki Ikeda[1]; G. Jeffrey Snyder[1]; [1]California Institute of Technology

9:45 AM
Synthesis and Stability of Nanocrystalline Tellurides: *Samuel Humphry-Baker*[1]; Christopher Schuh[1]; [1]Massachusetts Institute of Technology

10:05 AM Break

10:20 AM Invited
Bond Networks, Conduction Channels, and More: Diamond-like Compounds as a Novel Thermoelectric Materials: *Wenqing Zhang*[1]; [1]Shanghai Institute of Ceramics

10:45 AM
Interdiffusion Experiments in the Thermoelectric Mg_2Si/Mg_2Sn Ternary System: *Stephane Gorsse*[1]; Solange Vives[1]; Philippe Bellanger[1]; [1]ICMCB-CNRS

11:05 AM
Ternary Eutectic Growth of Nanostructured Thermoelectric Ag-Pb-Te Materials: *Hsin-Jay Wu*[1]; Wei-jian Foo[2]; Sinn-wen Chen[1]; G Snyder[3]; [1]National Tsing Hua University; [2]Engineering Science Programme, National University of Singapore; [3]Materials Science, California Institute of Technology

11:25 AM
The Properties of High Performance p-Type GeTe Based Materials for Thermoelectric Generators: *ChiaChan Hsu*[1]; Hsiu-Ying Chung[2]; Jenn-Dong Hwang[3]; Tsai-Kun Huang[4]; Jing-Yi Huang[4]; Huey-Lin Hsieh[4]; [1] Industrial Technology Research Institute; [2]Feng Chia University; [3]Industrial Technology Research Institute; [4]China Steel Corporation

11:45 AM
Thermoelectric Properties of Pb1+xTe Prepared by High Pressure Method: *Taichao Su*[1]; [1] Institute of Materials Science and Engineering, Henan Polytechnic University

Biological Materials Science Symposium: Mechanical Behavior of Biological Materials I: Bone and Teeth

*Sponsored by:*TMS Electronic, Magnetic, and Photonic Materials Division, TMS Structural Materials Division, TMS: Biomaterials Committee
Program Organizers: Candan Tamerler, University of Washington; Molly Gentleman, Texas A & M University; Po-Yu Chen, National Tsing Hua University; Kajal Mallick, University of Warwick; Rajendra Kumar Kasinath, Unversity of Montana; Paul G. Allison, US Army Corp of Engineers

Monday AM
March 4, 2013
Room: 214C
Location: Henry B. Gonzalez Convention Center

Funding support provided by: Biomaterials Program, National Science Foundation

Session Chairs: Candan Tamerler, University of Washington; Molly Gentleman, Stony Brook

8:30 AM Introductory Comments

8:35 AM Keynote
Multi-scale Study of Deformation and Fracture in Bone at Physiological Strain Rates: Elizabeth Zimmermann[1]; Bernd Gludovatz[2]; Eric Schaible[2]; Hrishikesh Bale[1]; *Robert Ritchie*[1]; [1]University of California Berkeley; [2]Lawrence Berkeley National Laboratory

9:15 AM
Osteocytes and Cementocytes: Their Role in Structure and Mechanical Properties of Bone and Teeth: *Hanson Fong*[1]; Yunfeng (Bruce) Li[1]; Hai Zhang[1]; [1]University of Washington

9:35 AM
Micromechanical Fatigue Testing of Bovine Cortical Bone: *Kelly Kranjc*[1]; Katharine Flores[2]; [1]Ohio State University; [2]Washington University

9:50 AM
Initial Anisotropy in Demineralized Bovine Cortical Bone in Compressive Cyclic Loading-unloading: *Ekaterina Novitskaya*[1]; Steve Lee[1]; Vlado Lubarda[1]; Joanna McKittrick[1]; [1]UC San Diego

10:05 AM Break

10:25 AM Invited
In Situ Behavior of Mineral vs. Bulk Properties of Bone: *Xiaodu Wang*[1]; [1]The University of Texas at San Antonio

10:55 AM
Surface Energy and Bone Growth: *Molly Gentleman*[1]; Eileen Gentleman[2]; [1]Stony Brook University; [2]King's College London

11:15 AM
Evaluating the Durability of Adhesive Bonds to Dentin and Enamel: A Mechanistic Approach: Mustafa Mutluay[1]; Mobin Yahyazadehfar[2]; Heonjune Ryou[2]; Hessam Majd[2]; Dominic Do[2]; *Dwayne Arola*[2]; [1]University of Turku; [2]University of Maryland Baltimore County

11:35 AM
Importance of Microstructure on the Crack Growth Resistance of Dentin: *Juliana Ivancik*[1]; Dwayne Arola[1]; [1]University of Maryland Baltimore County

11:55 AM Invited
Microengineering Biopolymer Scaffolds: Tools to Enhance Tissue Regeneration: *George Pins*[1]; [1]Worcester Polytechnic Institute

12:15 PM
Why Human Dentin Behaves Like a Rubber: *Peter Panfilov*[1]; Dmitry Zaytsev[1]; Olga Antonova[2]; Victoria Alpatova[3]; Larissa Kiselnikova[3]; [1]Ural Federal University; [2]Institute of Metalphysics; [3]Moscow State Medical Stomatologic University

Bulk Metallic Glasses X: Alloy Development and Application I

Sponsored by: TMS Structural Materials Division, TMS/ASM: Mechanical Behavior of Materials Committee
Program Organizers: Peter Liaw, The University of Tennessee; Hahn Choo, The University of Tennessee; Yanfei Gao, The University of Tennessee; Gongyao Wang, University of Tennessee

Monday AM
March 4, 2013

Room: Lone Star Salon D
Location: Grand Hyatt

Funding support provided by: Materials Processing and Manufacturing Division, National Science Foundation

Session Chairs: William Johnson, California Institute of Technology; Peter Liaw, The University of Tennessee

8:30 AM Keynote
Development and Processing of Multicomponent Bulk Metallic Glasses: *William Johnson*[1]; Marios Demetriou[1]; [1]California Institute of Technology

9:00 AM
Fabrication Of Bulk Metallic Glass Composites With High Magnesium Content: *Olga Biletska*[1]; Kevin Laws[1]; Mark Gibson[2]; Michael Ferry[1]; [1]University of NSW; [2]CSIRO Process Science and Engineering

9:15 AM Invited
Micro Factory Concept for Metallic Glasses: *Y. Yokoyama*[1]; [1]Institute for Materials Research

9:35 AM
Al-Based Metallic Glass Incorporated Novel Ag Electrode for Si Solar Cell: *Jin Man Park*[1]; Suk Jun Kim[1]; Sang Soo Jee[1]; Se Yun Kim[1]; Keum Hwan Park[1]; Won Tae Kim[2]; Do Hyang Kim[3]; Jurgen Eckert[4]; Eun-Sung Lee[1]; [1]Electronic Materials Lab, Samsung Advanced Institute of Technology (SAIT); [2]IT Division, Cheongju University; [3]Center for Noncrystalline Materials, Department of Materials Science and Engineering, Yonsei University; [4]Institute for Complex Materials, IFW Dresden

9:50 AM Invited
Design and Development of Bulk Metallic Glasses for Enabling Applications: *Atakan Peker*[1]; [1]Washington State University

10:10 AM Break

10:25 AM Invited
Development of Bio-Inspired Magnetoelastic Sentinels Based on Amorphous Metallic Glasses: Suiqiong Li[1]; Shin Horikawa[1]; Yating Chai[1]; Mi-kyung Park[1]; Kanchana Weerakoon[1]; *Bryan Chin*[1]; [1]Auburn University

10:45 AM
A Laser-Assisted Combinatorial Approach for Designing Metallic Glass Alloys: *Peter Tsai*[1]; Katharine Flores[1]; [1]Washington University in St. Louis

11:00 AM Invited
Aerospace and Spacecraft Applications for Bulk Metallic Glasses and Matrix Composites: *Douglas Hofmann*[1]; [1]NASA JPL/Caltech

11:20 AM
Fabrication, Mechanical Properties and Corrosion Behavior of $Ti_{75}Zr_{10}Si_{15}$-Based Alloys for Implant Applications: *Somayeh Abdi*[1]; Steffen Oswald[1]; Anna Hynowska[2]; Mariana Calin[1]; Ludwig Schultz[1]; Jürgen Eckert[1]; Maria Dolors Baró[2]; Jordi Sort[2]; Annett Gebert[1]; [1]IFW institute; [2]Universitat Autònoma de Barcelona

11:35 AM Invited
Phase Selection in Systems Driven Far from Equilibrium: *Matthew Kramer*[1]; R. Ott[1]; E. Park[1]; F. Zhang[1]; C. Wang[1]; K. Ho[1]; [1]Iowa State University

11:55 AM
Metallic Glass Based NanoScale Composites: New Approach for Developing Usable Ductility: *Alla Sergueeva*[1]; Brian Meacham[1]; Sheng Cheng[1]; Daniel Branagan[1]; [1]The NanoSteel Company

12:10 PM
Design and Formation Mechanism of Crystalline/Amorphous Composite Powder in Liquid Immiscible Alloy Systems: Yan Yu[1]; Rongpei Shi[1]; Cuiping Wang[1]; *Xingjun Liu*[1]; Ryosuke Kainuma[2]; Kiyohito Ishida[2]; [1]Xiamen University; [2]Tohoku University

12:25 PM
Fabrication of Mg-Cu-Zn-Y-Zr Amorphous Matrix Composites: You Junhua[1]; *Wang Houchun*[1]; [1]Shenyang University of Technology

Characterization of Materials through High Resolution Coherent Imaging: X-ray Based Techniques I

*Sponsored by:*TMS Structural Materials Division, TMS: Advanced Characterization, Testing, and Simulation Committee
Program Organizers: John Carpenter, Los Alamos National Laboratory; Ross Harder, Argonne National Laboratory; Richard Sandberg, Los Alamos National Laboratory

Monday AM
March 4, 2013

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

Session Chairs: Richard Sandberg, Los Alamos National Laboratory; Ross Harder, Argonne National Laboratory

8:30 AM Keynote
Coherent Diffraction Imaging of Materials by Using an X-ray Free Electron Laser: *Jianwei (John) Miao*[1]; [1]University of California, Los Angeles

9:00 AM Invited
Coherent Diffraction Imaging of Strain on the Nanoscale: *Ross Harder*[1]; [1]Argonne National Laboratory

9:20 AM
Study of Charge-Ordering in Manganites via Serial Femtosecond Crystallography: *Kenneth Beyerlein*[1]; [1]DESY

9:40 AM Invited
Advanced Reconstruction Algorithms for Ptychography: *Pierre Thibault*[1]; [1]Technical University of Munich

10:00 AM Break

10:20 AM Keynote
XFEL Materials Imaging at the LCLS CXI Endstation: *Garth Williams*[1]; [1]SLAC National Accelerator Lab

10:50 AM Invited
Nanoscale X-Ray Imaging: *Oleg Shpyrko*[1]; [1]University of California, San Diego

11:10 AM
Ptychographic Tomography: A Quantitative Tool for Nanoscale 3D Microscopy: *Ana Diaz*[1]; Pavel Trtik[2]; Manuel Guizar-Sicairos[1]; Andreas Menzel[1]; Oliver Bunk[1]; [1]Paul Scherrer Institute; [2]EMPA

11:30 AM
Diffractive Imaging at Large Fresnel Number and the Challenge of Dynamic Mesoscale Imaging of Materials: *Cris Barnes*[1]; John Barber[1]; Richard Sandberg[1]; Richard Sheffield[1]; [1]Los Alamos National Laboratory

Characterization of Minerals, Metals and Materials 2013: Characterization of Ferrous Metals I

*Sponsored by:*TMS Extraction and Processing Division, TMS: Materials Characterization Committee
Program Organizers: Jiann-Yang Hwang, Michigan Technological University; Chen-Guang Bai, Chongqing University; John Carpenter, DOE LANL; Shadia Ikhmayies, Al Isra University; Bowen Li, Michigan Technological University; Mingming Zhang, ArcelorMittal Global R&D; Sergio Monteiro, State University of North Rio de Janeiro; Zhiwei Peng, Michigan Technological University

Monday AM
March 4, 2013

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

Session Chairs: Jiann Yang Hwang, Michigan Technological University; Jian Li, CANMET

9:00 AM Joint Lecture
Attendees are encouraged to attend the Extraction and Processing Division Distinguished Lecturer Presentation in Room 006D at 9:00 AM.

Towards Sustainable Metal Production by Molten Oxide Electrolysis: Antoine Allanore[1] on behalf of Donald Sadoway[1]; [1]Massachusetts Institute of Technology

9:30 AM
Application of Thermoelectric Power Technique to Study the Static Strain Ageing of Heavily Cold Drawn Steel: *Aude Lamontagne*[1]; Xavier Kleber[1]; Véronique Massardier[1]; Daniele Mari[2]; [1]INSA de Lyon, MATEIS - UMR CNRS 5510; [2]Ecole Polytechnique Fédérale de Lausanne, Institute of Condensed Matter Physics

9:50 AM
Analysis of the Welded 100-Meter Heavy Rails for Passenger Dedicated Lines Being Broken during the Straightening Process: *Ren Chao*[1]; [1]Wuhan University of Science and Technology

10:10 AM
Effect of Continuous Cooling Rate on Microstructural Transformation of 60Si$_2$CrVAT Spring Steel: *Biao Zhou*[1]; Yi-Long Liang[2]; Qun Luo[1]; Jie-Yu Zhang[1]; Qian Li[1]; Kuo-Chih Chou[1]; [1]Shanghai University; [2]Guizhou University

10:30 AM
An Investigation on Texture-Property Correlation in CRNO Steels: *Santosh Sahoo*[1]; Dibyaranjan Prusty[1]; Hitaindra Pradhan[1]; Vijay Hiwarkar[2]; [1]National Institute of Technology Rourkela; [2]Crompton Greaves Limited

10:50 AM
Effect of Centrifugal And Gravity Casting Technique over Metallographic and Mechanical Properties of Spheroidal Graphite Iron: *Desai Gowda H S*[1]; Mukunda Pudukottah[1]; Mervin Herbert[2]; [1]Nitte Meenakshi Institute of Technology; [2]National Institute of Technology Karnataka

11:10 AM
Crystallographic Research on the Morphology of AlN and MnS Complex Precipitation in Steel: *Feifei Sun*[1]; [1]Shanghai University

Computational Discovery of Novel Materials: Novel Methods for Materials Discovery

Sponsored by: TMS Electronic, Magnetic, and Photonic Materials Division, TMS Materials Processing and Manufacturing Division, TMS: Integrated Computational Materials Engineering Committee
Program Organizers: Richard Hennig, Cornell University; Dallas Trinkle, University of Illinois at Urbana-Champaign

Monday AM
March 4, 2013

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

Session Chair: Dallas Trinkle, University of Illinois at Urbana-Champaign

8:30 AM Invited
High-Throughput Diffusion Modeling for Materials Data and Discovery: *Dane Morgan*[1]; Tam Mayeshiba[1]; Tom Angsten[1]; [1]University of Wisconsin - Madison

9:05 AM
Combination of Computational Thermodynamics, Gaussian Processes and Genetic Algorithms for Superalloy Design: *Franck Tancret*[1]; [1]Université de Nantes

9:25 AM Invited
Sparse Bayesian Cluster Expansions: *Jesper Kristensen*[1]; Meenakshi Sundaram[1]; Ilias Bilionis[1]; Nicholas Zabaras[1]; [1]Materials Process Design and Control Laboratory

10:00 AM Break

10:15 AM
Design of Multifunctional Material Architectures Using Topology Optimization: *James Guest*[1]; Seunghyun Ha[1]; Reza Lotfi[1]; [1]Johns Hopkins University

10:35 AM Invited
First-Principles Guided Nano-to-Microscale Design of Material Interfaces: *Santanu Chaudhuri*[1]; Jie Xiao[1]; Shahryar Fotovati[1]; Hyunwook Kwak[1]; [1]Washington State University

11:10 AM
Hybrid Genetic Algorithm and Mesh Adaptive Direct Search Algorithm Approach for the Thermodynamic Assessment of Multi-component Alloys: *Sean Gibbons*[1]; Raymundo Arroyave[1]; ShengYen Li[1]; [1]Texas A&M University

11:30 AM
Symmerty in Material Property Relationships: A Tool for the Discovery of New Alloys: *Isaac Toda-Caraballo*[1]; Enrique Galindo-Nava[1]; Pedro Rivera-Diaz-del-Castillo[1]; [1]University of Cambridge

11:50 AM
Strenth/Elongation Optimisation in Materials: A Case for Accelerated Metallurgy Research: Isaac Toda-Caraballo[1]; Enrique Galindo-Nava[1]; *Pedro Rivera-Diaz-del-Castillo*[1]; [1]University of Cambridge

Computational Thermodynamics and Kinetics: First-principles Thermodynamics

Sponsored by: TMS Electronic, Magnetic, and Photonic Materials Division, TMS Materials Processing and Manufacturing Division, TMS: Alloy Phases Committee, TMS: Chemistry and Physics of Materials Committee, TMS/ASM: Computational Materials Science and Engineering Committee, TMS: Integrated Computational Materials Engineering Committee, TMS/ASM: Phase Transformations Committee, TMS: Process Technology and Modeling Committee
Program Organizers: Jörg Neugebauer, Max-Planck-Institut für Eisenforschung GmbH; Carelyn Campbell, NIST; Dongwon Shin, Oakridge National Lab; Zi Kui Liu, Penn State; Michael Demkowicz, Massachusetts Institute of Technology; Raymundo Arroyave, Texas A & M University; Shenyang Hu, Pacific Northwest National Laboratory

Monday AM
March 4, 2013

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

Session Chairs: Dongwong Shin, Oak Ridge National Laboratory; Tetsuo Mohri, Hokkaido University

8:30 AM Invited
First-Principles Calculation of Spinodal Ordering for Fe-Based Alloys: *Tetsuo Mohri*[1]; [1]Hokkaido University

8:55 AM Invited
First-Principles Thermodynamics of Paramagnetic Gamma Iron: *Fritz Körmann*[1]; Blazej Grabowski[1]; Tilmann Hickel[1]; Jörg Neugebauer[1]; [1]Max-Planck-Institut für Eisenforschung

9:20 AM
Phonon Stiffening Due to Hybridization of Electronic States in Au-Fe Alloys: *Jorge Munoz*[1]; Matthew Lucas[2]; Brent Fultz[1]; [1]California Institute of Technology; [2]Air Force Research Laboratory

9:35 AM
Atomic Configurations of $PbTiO_3$ Investigated by Ab-Initio Molecular Dynamic Simulations: Huazhi Fang[1]; Yi Wang[1]; Shun Li Shang[1]; *Zi-Kui Liu*[1]; [1]The Pennsylvania State University

9:50 AM Break

10:10 AM Invited
Topologically Close-Packed Phases in Transition-Metal Alloys - Assessing an Empirical Structure Map with High-throughput Ab-Initio Calculations: *Thomas Hammerschmidt*[1]; Bernhard Seiser[2]; Arthur Bialon[1]; David Pettifor[2]; Ralf Drautz[1]; [1]ICAMS, Ruhr-University Bochum; [2]MML, University of Oxford

10:35 AM
Ab Initio Calculations of the U-Zr System: *Wei Xie*[1]; Wei Xiong[1]; Chao Shen[1]; Chris Marianetti[2]; Austin Chang[1]; Dane Morgan[1]; [1]University of Wisconsin-Madison; [2]Columbia University

10:50 AM
Interface Structure and Segregation for $MoSi_2$-$NbSi_2$ Alloys: A First Principles Study: *Koretaka Yuge*[1]; Yuichiro Koizumi[2]; Koji Hagihara[3]; Takayoshi Nakano[4]; Kyosuke Kishida[1]; Haruyuki Inui[1]; [1]Department of Materials Science and Engineering, Kyoto University; [2] Institute for Materials Research, Tohoku University; [3]Department of Adaptive Machine Systems, Graduate School of Engineering, Osaka University; [4]Division of Materials & Manufacturing Science, Graduate School of Engineering, Osaka University

11:05 AM
Thermodynamics of Precipitate Nanolayers in Th-Doped and Ce-Doped Ir: *James Morris*[1]; Frank Averill[1]; [1]Oak Ridge National Laboratory

11:20 AM
Ab Initio Molecular Dynamics Simulation Study on the Carbothermal Reduction of Alumina under Vacuum: *Xiumin Chen*[1]; Bin Yang[1]; Heng Xiong[1]; Ping Long[1]; Baoqiang Xu[1]; Dachun Liu[1]; [1]Kunming University of Science and Technology

11:35 AM
Effects of Phonon Kinematics and Phonon Anharmonicity on the Thermodynamics of Rutile TiO_2 and SnO_2: *Tian Lan*[1]; Chen Li[1]; Brent Fultz[1]; [1]California Institute of Tech

Cost Affordable Titanium IV: Overview and Low Cost Processing

Sponsored by: TMS Structural Materials Division, TMS: Titanium Committee
Program Organizers: M. Ashraf Imam, Naval Research Lab; Sam Froes, University of Idaho (Retired); Ramana Reddy, The University of Alabama

Monday AM
March 4, 2013

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

Session Chairs: M. Ashraf Imam, Naval Research Laboratory; Ramana Reddy, The University of Alabama

8:30 AM Keynote
Cost Effective Developments for Fabrication of Titanium Components: *F. H. (Sam) Froes*[1]; M. Ashraf Imam[2]; Ramana Reddy[3]; [1]University of Idaho; [2]Naval Research Lab; [3]The University of Alabama

9:10 AM Invited
There is Low Cost Titanium Componentry Today: *James Withers*[1]; V. Shapovalov[1]; R. Storm[1]; R. O. Loutfy[1]; [1]MER Corporation

9:30 AM Invited
The Impact of Porosity on the Microstructural Kinetics of the Electro-Deoxidation of Titanium Dioxide in Molten Calcium Chloride: Duncan Alexander[1]; *Carsten Schwandt*[2]; Derek Fray[2]; [1]Interdisciplinary Centre for Electron Microscopy, École Polytechnique Fédérale de Lausanne; [2]Department of Materials Science and Metallurgy, University of Cambridge

9:50 AM Break

10:10 AM Invited
Application of the FFC Cambridge Process for the Production of Titanium Alloys: *Rohit Bhagat*[1]; Kartik Rao[2]; David Dye[3]; Gregory Gibbons[1]; Richard Dashwood[1]; [1]Warwick University; [2]Metalysis Ltd; [3]Imperial College London

10:30 AM Invited
Development of a Continuous Process to Produce Ti via Metallothermic Reduction of $TiCl_4$ in Molten Salt: *David van Vuuren*[1]; Salomon Oosthuizen[1]; Jaco Swanepoel[1]; [1]CSIR

10:50 AM Invited
The Metalysis Process: From Patents to Production: *Kartik Rao*[1]; Steve Holloway[1]; Ian Mellor[1]; James Deane[1]; Lucy Grainger[1]; Guppy Dhariwal[1]; [1]Metalysis

11:10 AM
Behavior of Intermediate $CaTiO_3$ in Reduction Process of TiO_2 by Calcium Vapor: Jingang Jia[1]; *Baoqiang Xu*[1]; Bin Yang[1]; Heng Xiong[1]; Dachun Liu[1]; Dongsheng Wang[1]; [1]Kunming University of Science and Technology

11:30 AM
The TiRO™ Process for the Continuous Direct Production of Titanium Powder: *Christian Doblin*[1]; [1]CSIRO

11:50 AM
Factors Affecting The Yield of Ti-Al Alloy in the TiPro Process: *Kenneth Sichone*[1]; Deliang Zhang[1]; Stella Raynova[1]; [1]The University of Waikato

Fatigue and Fracture of Thin Films and Nanomaterials: Fatigue of Thin Films and Nanomaterials

Sponsored by: TMS Materials Processing and Manufacturing Division, TMS Structural Materials Division, TMS/ASM: Mechanical Behavior of Materials Committee, TMS: Nanomechanical Materials Behavior Committee
Program Organizers: Megan Cordill, Erich Schmid Institute of Materials Science; Daniel Kiener, Montanuniversitaet Leoben; Xinghang Zhang, Texas A &M University ; Daniel Gianola, University of Pennsylvania ; Corinne Packard, Colorado School of Mines

Monday AM
March 4, 2013

Room: Bowie C
Location: Grand Hyatt

Funding support provided by: Hysitron, Inc. and Nanomechanics, Inc.

Session Chairs: Daniel Gianola, University of Pennsylvania; Benoit Merle, University Erlangen-Nürnberg

8:30 AM Invited
Deformation in Several Nanotwinned Metals: Tim Furnish[1]; Leonardo Velasco[1]; Carla Shute[2]; Yifeng Liao[2]; Andrea Hodge[1]; *Julia Weertman*[2]; [1]USC; [2]Northwestern University

9:00 AM
The Evolution of Nanocrystalline Grain Boundary Networks under Thermomechanical Cycling: David Bober[1]; *Timothy Rupert*[1]; [1]University of California, Irvine

9:20 AM
Fatigue Testing of Gold Thin Films with the Bulge Test: *Benoit Merle*[1]; Mathias Goken[1]; [1]University Erlangen-Nürnberg ,Department of Materials Science and Engineering, Institute I

9:40 AM
Fatigue Behavior of a Nanocrystalline Austenitic Steel: *Oliver Renk*[1]; Reinhard Pippan[1]; [1]Erich Schmid Institute of Materials Science

10:00 AM Break

10:20 AM Invited
Plasticity, Fracture and Fatigue of Ultra Thin Metallic Films on Polyimide Substrates: *Patric Gruber*[1]; [1]KIT Institute for Applied Materials

10:50 AM
Fatigue Behavior of Nanoscale Au Films on a Flexible Substrate: *Guang-Ping Zhang*[1]; Xiao-Fei Zhu[2]; Xue-Mei Luo[2]; Bin Zhang[3]; [1]Institute of Metal Research, Chinese Academy of Sciences, China; [2]Institute of Metal Research, Chinese Academy of Sciences; [3]Key Laboratory for Anisotropy and Texture of Materials of Ministry of Education, Northeastern University, China

11:10 AM
Design and Fabrication of Fatigue Damage Free Metal Electrode with 2D Nanohole Arrays: Byoung-Joon Kim[1]; Young-Chang Joo[1]; *In-suk Choi*[2]; [1]Seoul National University; [2]Korea Institute of Science and Technology

11:30 AM
Influence of Nanoscale Atomic-Layered-Deposited Coatings on the Fatigue Properties of Si and Ni Films: Eva Baumert[1]; Thomas Straub[2]; Chris Eberl[2]; *Olivier Pierron*[1]; [1]Georgia Institute of Technology; [2]Karlsruhe Institute of Technology

High Temperature Electrochemistry: High Temperature Electrochemistry Plenary Session

*Sponsored by:*TMS Extraction and Processing Division, TMS: Pyrometallurgy Committee
Program Organizers: Prabhat Tripathy, Idaho National Laboratory; Guy Fredrickson, Idaho National Lab

Monday AM
March 4, 2013

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

Session Chairs: Jerome Downey, Montana Tech of The University of Montana; Boyd Davis, Kingston Process Metallurgy

8:30 AM
Electrochemical Applications of Molten Salts: *Derek Fray*[1]; [1]University of Cambridge

9:00 AM
Towards Sustainable Metal Production by Molten Oxide Electrolysis: Antoine Allanore[1]; *Donald Sadoway*[1]; [1]Massachusetts Institute of Technology

9:30 AM Break

9:50 AM
Electrolytic Production of Metals from Oxides Dissolved in Molten Salts: *Uday Pal*[1]; [1]Boston University

10:20 AM
Sensor Technology for Real Time Monitoring of Molten Salt Electrolytes During Nuclear Fuel Electrorefining: *Michael Simpson*[1]; Guy Fredrickson[1]; Brenda Serrano-Rodriguez[1]; Natalie Gese[1]; Marat Khafizov[1]; Supathorn Phongikaroon[2]; Kerry Allahar[3]; [1]Idaho National Laboratory; [2]University of Idaho; [3]Boise State University

10:50 AM
Thermochemical Consideration of Pyrochemical Treatment of Spent Nitride Fuels: *Hirokazu Hayashi*[1]; Takumi Satoh[1]; Hiroki Shibata[1]; Masaki Kurata[1]; Takashi Iwai[1]; Yasuo Arai[1]; [1]Japan Atomic Energy Agency

11:20 AM
Various Cathodic Processes during Electro-Reduction of Solid Oxides in High Temperature Molten Salt: *Dihua Wang*[1]; Wei Xiao[1]; [1]Wuhan University

11:50 AM
How High Temperature Electrochemical Cell Experiments Led to Industrial Trials for Using Waste ZnO for Desulfurising Hot Metal: *Ramachandran Kumar*[1]; [1]University of Cambridge

12:20 PM
The Molten Salt Electrolytic Winning of Oxygen and Metal from Lunar Regolith: *Carsten Schwandt*[1]; James Hamilton[2]; Derek Fray[1]; Ian Crawford[3]; [1]Department of Materials Science and Metallurgy, University of Cambridge; [2]Green Metals Ltd; [3]Department of Earth and Planetary Sciences, Birkbeck College, University of London

Hume-Rothery Award Symposium: Electronic Structure Theory of Stability and Bonding in Alloys: Electronic Structure

*Sponsored by:*TMS Electronic, Magnetic, and Photonic Materials Division, TMS: Alloy Phases Committee
Program Organizer: Chris Wolverton, Northwestern University

Monday AM
March 4, 2013

Room: 205
Location: Henry B. Gonzalez Convention Center

Session Chairs: Chris Wolverton, Northwestern University; Mark Asta, University California Berkeley

8:30 AM Introductory Comments

8:40 AM Keynote
2013 William Hume-Rothery Award Winner: First Principles Alloy Theory - A Retrospective: *Alex Zunger*[1]; [1]University of Colorado

9:25 AM Invited
A Family of Nonempirical Density Functionals for the Exchange-Correlation Energy: *John Perdew*[1]; [1]Tulane University

9:55 AM Break

10:15 AM Invited
Computational Nano-Materials Design for Spinodal Nanotechnology as a New Class of Bottom-up Nanotechnology: Design vs. Experimental Realization: *Hiroshi Katayama-Yoshida*[1]; [1]Osaka University

10:45 AM Invited
Development of Reduced Tight-Binding and Bond-Order Potential Models for Si-N Nanocomposite Coatings: *David Pettifor*[1]; Jan Gehrmann[1]; Martin Reese[2]; Matous Mrovec[2]; Christian Elsaesser[2]; Bernd Meyer[3]; Aleksey Kolmogorov[1]; Ralf Drautz[1]; [1]University of Oxford; [2]Fraunhofer-Institut; [3]Friedrich-Alexander University of Erlangen-Nurnberg

11:15 AM Invited
Perspectives on Phonons and Electron-Phonon Scattering in High-Temperature Superconductors: *Barry Klein*[1]; [1]UC Davis

Hybrid and Hierarchical Composite Materials: Processing

Sponsored by: TMS Structural Materials Division, TMS/ASM: Composite Materials Committee
Program Organizers: Tomoko Sano, US Army Research Laboratory; Charles Randow, US Army Research Laboratory; Chang Soo Kim, University of Wisconsin -Milwaukee

Monday AM
March 4, 2013

Room: 215
Location: Henry B. Gonzalez Convention Center

Session Chair: Chang Soo Kim, University of Wisconsin - Milwaukee

8:30 AM
Hierarchical Composites from Simple Building Blocks: Computation, Theory and Experiment: *Markus Buehler*[1]; Leon Dimas[1]; [1]Massachusetts Institute of Technology

9:00 AM
Effects of Processing Conditions During Freeze Casting of Alumina Composites: *Octavio Cervantes*[1]; Hilary Bowen[2]; Alexander Gash[1]; John Molitoris[1]; Luke Brewer[3]; Joseph Hooper[3]; [1]LLNL; [2]United States Air Force Academy; [3]Naval Postgraduate School / Center for Materials Research

9:20 AM
Enabling Nanoparticle Networking in Semi-Crystalline Polymer Matrices: *Meisha Shofner*[1]; Jasmeet Kaur[1]; Ji Hoon Lee[1]; [1]Georgia Institute of Technology

9:40 AM
Bonding and Mechanical Testing of 3D Woven Lattice Material: *Yong Zhang*[1]; Seunghyun Ha[1]; Jamie Guest[1]; Keith Sharp[2]; Richard Fonda[3]; Andy Geltmacher[3]; Timothy Weihs[1]; Kevin Hemker[1]; [1]Johns Hopkins University; [2]3TEX, Inc; [3]Naval Research Laboratory

10:00 AM Break

10:15 AM
Effect of Graphene NanoPlatelets on Consolidation and Mechanical Properties of Spark Plasma Sintered Tantalum Carbide: *Andy Nieto*[1]; Debrupa Lahiri[1]; Arvind Agarwal[1]; [1]Florida International University

10:35 AM
Fiber Reinforced Chemical Bonded Phosphate Ceramics Matrix Composites: *Henry A. Colorado*[1]; Clem Hiel[2]; Jenn-Ming Yang[1]; [1]University of California, Los Angeles; [2]Composite Support and Solutions Inc

10:55 AM
High Performance Multi-Walled Carbon Nanotubes Reinforced Epoxy Nanocomposites: *Hongbo Gu*[1]; Yudong Huang[2]; Suying Wei[1]; Zhanhu Guo[1]; [1]Lamar University; [2]Harbin Institute of Technology

11:15 AM
Mechanical Properties and Dispersion Characteristics of Aluminum Composites Reinforced with Carbon Nanotubes of Different Diameters: Prathap Chandran[1]; Shyam Kumar[1]; Niraj Chawake[1]; Karthiselva N[1]; Niraj Nayan[2]; SVS Narayana Murty[2]; *Srinivasa Bakshi*[1]; [1]Indian Institute of Technology Madras; [2]Vikram Sarabhai Space Center

Integrated Computational Modeling of Materials for Nuclear Energy: Fuel Modeling I: Lower Scale Modeling

Sponsored by: TMS Materials Processing and Manufacturing Division, TMS Structural Materials Division, TMS/ASM: Computational Materials Science and Engineering Committee, TMS/ASM: Nuclear Materials Committee
Program Organizers: Remi Dingreville, Sandia National Laboratories; Koenraad Janssens, Paul Scherrer Institute; Timothy Bartel, Sandia National Laboratories

Monday AM
March 4, 2013

Room: 202B
Location: Henry B. Gonzalez Convention Center

Session Chair: To Be Announced

8:30 AM Invited
Latest Improvements for the Treatment of Strong Correlations and Dispersive Bonds in First-Principles Studies of Actinide-Based Nuclear Materials: Emerson Vathonne[1]; *Michel Freyss*[1]; Marjorie Bertolus[1]; Bernard Amadon[2]; [1]CEA, DEN; [2]CEA, DAM

9:00 AM
Computational Study of Energetics and Defect-Ordering Tendencies for Y and La in UO_2: *Jonathan Solomon*[1]; Vitaly Alexandrov[2]; Tatiana Shvareva[2]; Babak Sadigh[3]; Alexandra Navrotsky[2]; Mark Asta[1]; [1]University of California, Berkeley; [2]University of California, Davis; [3]Lawrence Livermore National Laboratory

9:20 AM
Fission Gas Bubble Nucleation in Bulk and at Grain-Boundaries of UO2: *Xiang-Yang Liu*[1]; David Andersson[1]; Blas Uberuaga[1]; [1]Los Alamos National Lab

9:40 AM Invited
Mechanism of Irradiation-Induced Point-Defect Cluster Formation in Metal Oxides by Molecular Dynamics Simulation: *Dieter Wolf*[1]; Dilpuneet Aidhy[2]; Simon Phillpot[3]; [1]Argonne National Laboratory; [2]IBM India Research Laboratory ; [3]University of Florida

10:10 AM Break

10:30 AM
Atomistic Studies of Defect Cluster Migration Mechanisms in UO_2: *Xian-Ming Bai*[1]; Jianguo Yu[1]; Anter El-Azab[2]; Todd Allen[3]; [1]Idaho National Laboratory; [2]Purdue University; [3]University of Wisconsin - Madison

10:50 AM
Atomic Level Investigation of Defect Evolution in Irradiated Thoria (ThO_2): *Rakesh Behera*[1]; Dilpuneet Aidhy[2]; Chaitanya Deo[1]; [1]Georgia Institute of Technology; [2]IBM

11:10 AM
Molecular Dynamics Study of Voids and Bubbles in BCC Uranium: *Benjamin Beeler*[1]; Chaitanya Deo[1]; Michael Baskes[2]; Maria Okuniewski[3]; [1]Georgia Institute of Technology; [2]University of California, San Diego; [3]Idaho National Laboratory

Magnesium Technology 2013: Plenary

Sponsored by: TMS Light Metals Division, TMS: Magnesium Committee
Program Organizers: Norbert Hort, Helmholtz-Zentrum Geesthacht; Suveen Mathaudu, US Army Research Office; Neale Neelameggham, IND LLC; Martyn Alderman, Magnesium Elektron

Monday AM
March 4, 2013
Room: 214A
Location: Henry B. Gonzalez Convention Center

Session Chairs: Norbert Hort, Helmholtz-Zentrum Geesthacht; Martyn Alderman, Magnesium Elektron North America; Suveen Mathaudhu, U.S. Army Research Office; Neale Neelameggham, IND LLC

8:30 AM Introductory Comments

8:40 AM
From Elektron to Bio Implants – Magnesium Alloys in the 21st Century: *Karl Kainer*[1]; [1]Helmholtz-Zentrum Geesthacht

9:10 AM Invited
A Brief History of the Development of Grain Refinement Technology for Cast Magnesium Alloys: *David StJohn*[1]; Peng Cao[2]; Ma Qian[1]; Mark Easton[3]; [1]The University of Queensland; [2]University of Auckland; [3]CAST CRC, Monash University

9:40 AM
The USAMP Magnesium Front End Research and Development Project – Results of the Magnesium "Demonstration" Structure: Alan Luo; J. Quinn; Ravi Verma; Yar-Ming Wang; David Wagner; *Joy Forsmark*[1]; X. Su; J. Zindel; Mei Li; S. Logan; S. Bilkhu; Robert C. McCune; [1]Ford Motor Company

10:10 AM Break

10:30 AM
The Use of AC-DC-AC Methods in Assessing Corrosion Resistance Performance of Coating Systems for Magnesium Alloys: *Robert C. McCune*[1]; Vinod Upadhyay[2]; Yar-Ming Wang[3]; Dante Battocchi[2]; [1]Robert C McCune & Associates LLC; [2]NDSU Center for Surface Protection; [3]General Motors Research Laboratory (retired)

11:00 AM
Thermodynamics of Phase Formation in Mg-La-Ce-Nd Alloys: *Rainer Schmid-Fetzer*[1]; Joachim Groebner[1]; Artem Kozlov[1]; Milan Hampl[1]; Mark Easton[2]; Suming Zhu[2]; Mark Gibson[3]; Jian-Feng Nie[2]; [1]Clausthal University of Technology; [2]Monash University; [3]CSIRO Process Science & Engineering

11:30 AM
Non-Flammable Magnesium Alloys with High Strength: *Yoshihito Kawamura*[1]; Tsuyoshi Ito[1]; [1]Kumamoto University

Magnetic Materials for Energy Applications -III: Status and Challenges

Sponsored by: TMS Electronic, Magnetic, and Photonic Materials Division, TMS: Energy Committee, TMS: Energy Conversion and Storage Committee, TMS: Magnetic Materials Committee
Program Organizers: Sivaraman Guruswamy, University of Utah; Thomas Woodcock, IFW Dresden; Yongmei Jin, Michigan Technological University; Raju Ramanujan, Nanyang Technological University; Frank Johnson, GE Global Research; Oliver Gutfleisch, Technische Universität Darmstadt

Monday AM
March 4, 2013
Room: 217D
Location: Henry B. Gonzalez Convention Center

Session Chairs: Robert Shull, National Institute of Standards and Technology; Victorino Franco, Universidad de Sevilla; Sivaraman Guruswamy, University of Utah

8:30 AM Introductory Comments

8:35 AM Keynote
Current Status and Future Prospects of Magnetocaloric Materials: *Karl Gschneidner*[1]; Yaroslav Mudryk[2]; Vitalij Pecharsky[1]; [1]Iowa State University; [2]Ames Laboratory (USDOE)

9:15 AM Invited
The Search for Enhanced Magnetic Materials: Steve Constantinides[1]; [1]Arnold Magnetic Technologies

9:50 AM Break

10:10 AM Invited
Bonded Permanent Magnets – An Overview: *Viswanathan Panchanathan*[1]; Mitchell Spencer[1]; [1]Polaris Rare Earth Materials LLC

10:45 AM Invited
Challenges of Magnetic Material Development for Vehicle Electrification: *Matthew Willard*[1]; [1]U.S. Naval Research Laboratory

11:20 AM Invited
Anisotropic Curie Temperature Materials: *Harsh Chopra*[1]; Jason Armstrong[2]; Susan Hua[2]; [1]State University of New York at Buffalo; [2]University at Buffalo, The State University of New York

Materials and Fuels for the Current and Advanced Nuclear Reactors II: Modeling

Sponsored by: TMS Structural Materials Division, TMS/ASM: Corrosion and Environmental Effects Committee, TMS/ASM: Nuclear Materials Committee
Program Organizers: Ramprashad Prabhakaran, Idaho National Laboratory; Dennis Keiser, Idaho National Laboratory; Raul Rebak, GE Global Research

Monday AM
March 4, 2013
Room: 202A
Location: Henry B. Gonzalez Convention Center

Session Chairs: Brian Wirth, University of Tennessee ; Ramprashad Prabhakaran, Idaho National Laboratory

8:30 AM
A Rate-Theory Approach to Irradiation Damage Modeling with Random Cascades in Space and Time: *Jesse Carter*[1]; Richard Smith[1]; William Howland[1]; [1]Bettis Atomic Power Laboratory

8:50 AM
Computational Studies of Oxygen Transport along Grain Boundaries during Zirconium Corrosion: *Xian-Ming Bai*[1]; [1]Idaho National Laboratory

9:10 AM
Computational Modeling of Metallic Nuclear Fuel Casting Processes – A Separate Effects Study: *Justin Crapps*[1]; Jack Galloway[1]; Dave Decroix[1]; David Korzekwa[1]; Rob Aikin[1]; Cetin Unal[1]; Randall Fielding[2]; Rory Kennedy[2]; [1]Los Alamos National Laboratory; [2]Idaho National Laboratory

9:30 AM
Structure and Properties of the Y_2O_3/Fe Interface from First Principles Calculations: *Samrat Choudhury*[1]; Christopher Stanek[1]; Blas Uberuaga[1]; [1]Los Alamos National Laboratory

9:50 AM Break

10:10 AM
Defect and Diffusion in $UO_{2\pm x}$ by Quantum Mechanics and Statistical Thermodynamic Approaches: *Zhi-Gang Mei*[1]; Marius Stan[1]; Petrica Cristea[2]; David Andersson[3]; [1]Argonne National Laboratory; [2]University of Bucharest; [3]Los Alamos National Laboratory

10:30 AM
Interface Affected Cascading In Nuclear Materials and Role of Fractal Dimensions: You sung Han[1]; *Vikas Tomar*[1]; [1]Purdue University

10:50 AM
Effects of Surface Strain on Oxygen Adsorption on Zr (0001) Surface: *Xing Wang*[1]; Izabela Szlufarska[1]; [1]University of Wisconsin-Madison

11:10 AM
Modelling of Dynamic Recrystallization Process Considering Orientation Effects in 316LN Stainless Steel: *Xie Ganlin*[1]; Wang Xitao[1]; Wang Genqi[2]; [1]University of Science and Technology Beijing; [2]Yantai Taihai Manoir Nuclear Equipment Co. Ltd

Materials in Clean Power Systems VIII: Durability of Materials : Materials for Fuel Cells and CSP Applications

*Sponsored by:*TMS Structural Materials Division, TMS/ASM: Corrosion and Environmental Effects Committee
Program Organizers: Sebastien Dryepondt, ORNL; Kinga Unocic, ORNL; Jeffrey Fergus, Auburn University; Xingbo Liu, West Virginia University

Monday AM
March 4, 2013
Room: 007A
Location: Henry B. Gonzalez Convention Center

Session Chairs: Sebastien Dryepondt, Oak Ridge National Laboratory; Jeffrey Fergus, Auburn University

8:30 AM Invited
An Overview of the Mechanical Behavior of Solid Oxide Fuel Cell Substrates: *Amit Shyam*[1]; Dana McClurg[2]; Amit Pandey[2]; Rosa Trejo[2]; Rick Lowden[2]; Andres Marquez[2]; Edgar Lara-Curzio[2]; Richard Goettler[3]; [1]ORNL; [2]Oak Ridge National Laboratory; [3]LG Fuel Cells

9:00 AM Invited
Advanced Conductive Coating Performance under Long-term SOFC Operating Conditions: *Jung Pyung Choi*[1]; Jeffry Stevenson[1]; Ryan Scott[1]; Matt Chou[1]; Gordon Xia[1]; [1]Pacific Northwest National Laboratory

9:30 AM
ALCHEMI Studies of Cation Site Occupancies in Doped Manganese Cobaltite Spinels: *Louis Gambino*[1]; Neal Magdefrau[2]; Yingjia Liu[3]; Jeffrey Fergus[3]; Ellen Sun[2]; Mark Aindow[1]; [1]University of Connecticut; [2]United Technologies Research Center; [3]Auburn University

9:50 AM
The Effect of Constituent, Interfacial Properties and Morphology on the Dielectric Response of MIEC Membranes: *Kyle Brinkman*[1]; Kenneth Reifsnider[2]; Fazle Rabbi[2]; [1]Savannah River National Laboratory (SRNL); [2]University of South Carolina

10:10 AM Break

10:20 AM Invited
Comparison of Binary and Calcium Nitrate Thernary Systems for Solar Power Concentration: Saltt Stability and Materials Performance: *Francisco Pérez Trujillo*[1]; Angel Fernandez Diaz-Carralero[1]; Isabel Lasanta[1]; [1]Universidad Complutense de Madrid

10:50 AM Invited
Impact of Heat Transfer Media on Materials for Concentrated Solar Power: *Dane Wilson*[1]; [1]ORNL

11:20 AM
Corrosion Fatigue Studies of High Nickel Tubular Samples Containing Molten Salt: *james Keiser*[1]; Sebastien Dryepondt[2]; Donald Erdman[2]; Charles Hawkins[2]; [1]Oak Ridge National Laboratory; [2]ORNL

Materials Research Applied to National Needs (MARANN) in Honor of Professor Morris E. Fine: Materials Research Applied to National Needs (MARANN) I

*Sponsored by:*TMS Structural Materials Division, TMS: Chemistry and Physics of Materials Committee
Program Organizers: Peter Liaw, Univ of Tennessee; Gongyao Wang, University of Tennessee; Semyon Vaynman, Northwestern University; Yip Wah Chung, Northwestern University

Monday AM
March 4, 2013
Room: 006A
Location: Henry B. Gonzalez Convention Center

Session Chairs: Yip-Wah Chung, Northwestern University; Peter Liaw, The University of Tennessee

8:30 AM Introductory Comments

8:35 AM Invited
Lightweight Materials for the Automotive Industry - Materials Research Applied to National Energy Agenda: *Alan Taub*[1]; [1]University of Michigan

9:15 AM Invited
Development of a New Bridge Steel: From Atoms to Implementation: *Julia Weertman*[1]; [1]Northwestern University

9:55 AM Break

10:15 AM Invited
Computational Materials Design: From Genome to Flight: *Greg Olson*[1]; [1]Northwestern University

10:55 AM Invited
Fracture of Crystalline Silicon Nanopillars during Electrochemical Lithium Insertion: *William Nix*[1]; Soek Woo Lee[1]; Matt McDowell[1]; Lucas Berla[1]; Ill Ryu[1]; Yi Cui[1]; [1]Stanford University

11:35 AM Invited
Modeling and Simulation as a Tool to Advance Discovery in Materials Science: Clark Cooper[1]; [1]National Science Foundation

Materials Science in Reduced Gravity: Structure and Kinetics

Sponsored by: TMS Materials Processing and Manufacturing Division, TMS: Solidification Committee
Program Organizers: Douglas Matson, Tufts University; Robert Hyers, University of Massachusetts Amherst; Hani Henein, University of Alberta

Monday AM
March 4, 2013
Room: Lone Star Salon E
Location: Grand Hyatt

Session Chair: Douglas Matson, Tufts University

8:30 AM Introductory Comments

8:40 AM Invited
Bias Fields: The Cause of Dendritic Branching: *Martin Glicksman*[1]; [1]Florida Institute of Technology

9:10 AM Invited
Integrated Shrinkage and Shape Distortion Analysis of Liquid-Phase Sintering Affected by Gravity: *Eugene Olevsky*[1]; José Alvarado-Contreras[1]; Randall German[1]; [1]San Diego State University

9:40 AM
Non-Equilibrium Solidification, Modeling for Microstructure Engineering of Industrial Alloys (NEQUISOL): *Dieter Herlach*[1]; Jan Gegner[1]; Charles-André Gandin[2]; Damien Tourret[2]; Hani Henein[3]; Asuncion Garcia-Escorial[4]; Gerd-Ulrich Grün[5]; Marc Schneider[6]; [1]Deutsches Zentrum für Luft- und Raumfahrt; [2]ARMINES-CEMEF; [3]University of Alberta; [4]CENIM-CSIC; [5]HYDRO Aluminium Rolled Products GmbH; [6]MAGMA Gießereitechnologie

10:00 AM
Phase Selection in Undercooled FeCo Alloys: *Douglas Matson*[1]; [1]Tufts University

10:20 AM Break

10:40 AM Invited
Effect of Microgravity on Solidification Processes in Fe-Based Undercooled Melts: *Wolfgang Loser*[1]; Thomas Volkmann[2]; ; Douglas Matson[3]; [1]IFW Dresden; [2]DLR Cologne; [3]Tufts University

11:10 AM Invited
Phase Selection in Undercooled Nd-Fe-B Alloy Melts: *Thomas Volkmann*[1]; Wolfgang Loser[2]; Jianrong Gao[3]; Jorn Strohmenger[1]; Sven Reutzel[1]; [1]German Aerospace Center DLR; [2]IFW Dresden; [3]Northeastern University

11:40 AM
Measurement of Dendrite Growth Velocity as a Function of Undercooling on $Al_{68.5}Ni_{31.5}$ Alloy in Reduced Gravity: *Stefan Klein*[1]; Dieter Herlach[1]; Matthias Kolbe[1]; [1]German Aerospace Center (DLR)

12:00 PM
Effects of Static Magnetic Fields on Dendritic Growth Kinetics in Undercooled Metallic Melts: *Jianrong Gao*[1]; Yingjie Zhang[1]; Chao Yang[1]; [1]Northeastern University

12:20 PM Concluding Comments

Mesoscale Computational Materials Science of Energy Materials: Battery Materials and Electrochemical Processes I

Sponsored by: TMS Materials Processing and Manufacturing Division, TMS/ASM: Computational Materials Science and Engineering Committee
Program Organizers: Pascal Bellon, University of Illinois; Alfredo Caro, LANL; Long Qing Chen, Penn State University; Anter El-Azab, Florida State University; Ming Tang, Lawrence Livermore National Laboratory

Monday AM
March 4, 2013
Room: 218
Location: Henry B. Gonzalez Convention Center

Session Chairs: Yue Qi, General Motors R&D Center; Ming Tang, Lawrence Livermore National Laboratory

8:30 AM Invited
Electrochemical and Mechanical Reliability of Three Dimensionally Reconstructed Electrode Microstructures: *R. Edwin Garcia*[1]; [1]Purdue University

9:00 AM Invited
Electrochemical Shock of Lithium Battery Materials: William Woodford[1]; Yet-Ming Chiang[1]; *W. Craig Carter*[1]; [1]Massachusetts Institute of Technology

9:30 AM
Nonlinear Phase-Field Model of Interface Evolution Resulted from Electrode Reactions: Linyun Liang[1]; *Long Qing Chen*[1]; Yue Qi[2]; Stephen Harris[2]; [1]Penn State University; [2]General Motors Corporation

9:50 AM Break

10:10 AM
Mesoscale Modeling of Electrochemical Crystal Growth and the Interfacial Double Layer: *Michael Welland*[1]; John Guyer[2]; Dieter Wolf[1]; [1]Argonne National Laboratory; [2]National Institute of Standards and Technology

10:30 AM Invited
Morphological Evolution of Lithium Iron Phosphate Cathodes: Bernardo Orvananos[1]; Hui-Chia Yu[1]; *Katsuyo Thornton*[2]; [1]Department of Materials Science & Engineering, University of Michigan; [2]Department of Materials Science & Engineering, University of Michigan

11:00 AM Invited
Mesoscale Modeling of the Morphology and the Mechanical Properties of Proton Exchange Membranes: *Yue Qi*[1]; Yeh-Hung Lai[1]; [1]General Motors R&D

11:30 AM
Phase Field Simulation on the Concurrent Plastic Deformation, Phase Transformation, and Mass Diffusion in Silicon Anode for Lithium Ion Batteries: *Yonghao An*[1]; Hanqing Jiang[2]; Ming Tang[3]; [1]Arizona State University, Lawrence Livermore National Laboratory; [2]Arisona State University; [3]Lawrence Livermore National Laboratroy

11:50 AM
Effect of Anisotropic Charge Transport, Elasticity and Particle Geometry on the Phase Transformation Morphology and Kinetics in Olivine Cathode Particles: *Ming Tang*[1]; [1]Lawrence Livermore National Laboratory

Microstructural Processes in Irradiated Materials: Ferritic/Martensitic Steels I

Sponsored by: TMS Structural Materials Division, TMS/ASM: Nuclear Materials Committee
Program Organizers: Thak Sang Byun, Oak Ridge National Laboratory; Dane Morgan, University of Wisconsin-Madison; Yasuyoshi Nagai, Tohoku University; Zhijie Jiao, University of Michigan-Ann Arbor; Christine Guéneau, CEA-Saclay

Monday AM
March 4, 2013

Room: 203A
Location: Henry B. Gonzalez Convention Center

Session Chairs: Masatake Yamaguchi, Japan Atomic Energy Agency; Gary Was, University of Michigan

8:30 AM Introductory Comments

8:40 AM Invited
Microstructures of F-M Alloys at Very High Doses: *Gary Was*[1]; Zhijie Jiao[1]; Elizabeth Beckett[1]; Kai Sun[1]; Janelle Wharry[1]; [1]University of Michigan

9:10 AM
The Mechanism of Radiation-Induced Segregation in Ferritic-Martensitic Alloys: *Janelle Wharry*[1]; Gary Was[1]; [1]University of Michigan

9:30 AM
Intra- and Inter-Granular Cr and Impurities Behaviour on the Nanostructural Evolution of Fe-Cr Model Alloys under Neutron Irradiation: Comparison with Ion Irradiation: *Philippe Pareige*[1]; Cristelle PAREIGE[1]; Viacheslav Kuksenko[1]; [1]Rouen University

9:50 AM
Miscibility Gap and Short-Range Ordering in Non-Irradiated and He-Ion Irradiated Fe-Cr15 Alloy: *Stanislaw Dubiel*[1]; Jan Zukrowski[1]; [1]AGH University

10:10 AM Break

10:30 AM
In-Situ Observation of Dislocation Loop Formation and Growth in Electron-Irradiated Pure Iron and Fe-8Cr Alloys: *Naoyuki Hashimoto*[1]; Bumsu Park[1]; Seiji Sakuraya[1]; Somei Ohnuki[1]; [1]Hokkaido University

10:40 AM Invited
First-Principles Study on the Intergranular Decohesion in Iron by Solute Segregation: Temper and Hydrogen-Induced Embrittlement: *Masatake Yamaguchi*[1]; Jun Kameda[2]; [1]Japan Atomic Energy Agency; [2]Tohoku University

11:10 AM
Point Defect Cluster Interactions with Grain Boundaries in Nanocrystalline Fe and Fe-Cr: *Greg Vetterick*[1]; Chris Barr[1]; John Baldwin[2]; Pete Baldo[3]; Mark Kirk[3]; Amit Misra[2]; Mitra Taheri[1]; [1]Drexel University; [2]Los Alamos National Laboratory; [3]Argonne National Laboratory

11:30 AM
Irradiated Microstructure of 9 and 12 Cr Model Alloys: Yuedong Wu[1]; Zhijie Jiao[2]; *Yong Yang*[1]; [1]University of Florida; [2]University of Michigan

11:50 AM
Microstructural Evolution and Fracture Toughness Recovery by Thermal Annealing in HT9 Steel Irradiated to High Doses: Osman Anderoglu[1]; Stuart Maloy[2]; Thak Sang Byun[3]; Bulent Sencer[4]; [1]Los Alamos National Laboratory; [2]LANL; [3]Oak Ridge National Laboratory; [4]Idaho National Laboratory

12:10 PM
Irradiation-Induced Formation of Clusters with C15 Laves Phase Structure in Bcc Iron: Mihai-Cosmin Marinica[1]; *Francois Willaime*[1]; Jean-Paul Crocombette[1]; [1]CEA, Service de Recherches de Metallurgie Physique

Modeling and Experimental Validation of Multiscale Mechanical Behavior from Atomic Scale to Macro Scale: Failure and Fracture

Sponsored by: TMS Materials Processing and Manufacturing Division, TMS Structural Materials Division, TMS: Integrated Computational Materials Engineering Committee, TMS/ASM: Mechanical Behavior of Materials Committee, TMS: Nanomechanical Materials Behavior Committee, TMS: Process Technology and Modeling Committee, TMS: Shaping and Forming Committee
Program Organizers: Nathan Mara, Los Alamos National Laboratory; Jian Wang, Los Alamos National Laboratory; Brad Boyce, Sandia National Laboratories; Jennifer Carter, Case Western Reserve University; Anthony Rollett, Carnegie Mellon University; Jonathan Zimmerman, Sandia National Laboratories

Monday AM
March 4, 2013

Room: 211
Location: Henry B. Gonzalez Convention Center

Session Chairs: Michael Demkowicz, MIT; Thomas Bieler, Michigan State University

8:30 AM Invited
Atomistic Modeling of Deformation Mechanisms and Crack Initiation at Grain Boundaries: *Diana Farkas*[1]; Laura Smith[1]; [1]Virginia Tech

9:00 AM
Characterization of Heterogeneous Deformation and Slip System Activation Along Grain Boundaries in Pure Tantalum: *Thomas Bieler*[1]; Scott Sutton[1]; Martin Crimp[1]; Brad Boyce[2]; [1]Michigan State University; [2]Sandia National Laboratories

9:20 AM
High-Resolution Image Correlation, EBSD-Based Characterization and Simulation of Crack Tip and Grain Boundary Deformation in Al-Cu Alloys: *Vipul Gupta*[1]; Jacob Hochhalter[2]; Erik Saether[2]; Scott Willard[3]; Ashley Spear[4]; Terryl Wallace[2]; Stephen Smith[2]; Edward Glaessgen[2]; [1]National Institute of Aerospace; [2]NASA Langley Research Center; [3]Science & Technology Corp.; [4]Cornell University

9:40 AM Invited
Combined Experimental and Computational Study of the Evolution of Local Slip Activity during Heterogeneous Deformation of Polycrystalline Ta, Ti, and Ti Alloys: *Thomas Bieler*[1]; Chen Zhang[1]; Hongmei Li[1]; Yang Su[1]; Scott Sutton[1]; Philip Eisenlohr[2]; Claudio Zambaldi[2]; Martin Crimp[1]; Carl Boehlert[1]; Brad Boyce[3]; [1]Michigan State University; [2]Max-Planck-Institut für Eisenforschung; [3]Sandia National Laboratories

10:10 AM Break

10:20 AM
Influence of Grain Boundary Properties on Spall Strength: *Saryu Fensin*[1]; Steve Valone[1]; Ellen Cerreta[1]; George Gray[1]; [1]Los Alamos National Laboratory

10:40 AM Invited
Healing of Nanocracks by Disclinations: *Michael Demkowicz*[1]; Guoqiang Xu[1]; [1]Massachusetts Institute of Technology

11:10 AM
In-Situ TEM Study of Interfacial Faceting of Cu-Nb Nano-Lamellae during Indentation: *Shijian Zheng*[1]; Jian Wang[1]; John Carpenter[1]; Robert Dickerson[1]; Irene Beyerlein[1]; Nathan Mara[1]; [1]Los Alamos National Laboratory

11:30 AM Invited
Exploring the Evolution and Deformation of Twinned Nanocrystalline Metals with Microscale Kinematic Metrics and Molecular Dynamics Simulations: *Garritt Tucker*[1]; Stephen Foiles[1]; Henry Padilla[1]; Brad Boyce[1]; [1]Sandia National Laboratories

12:00 PM
Quantifying the Relationship between Strain Mode, Anisotropy, and Surface Morphology in Deformed Aluminum Sheet: *Mark Stoudt*[1]; Joseph Hubbard[1]; Lyle Levine[1]; [1]National Institute of Standards and Technology

Modeling of Multi-Scale Phenomena in Materials Processing - III: Microstructure Evolution I

*Sponsored by:*TMS Materials Processing and Manufacturing Division, TMS/ASM: Computational Materials Science and Engineering Committee, TMS: Process Technology and Modeling Committee, TMS: Integrated Computational Materials Engineering Committee
Program Organizers: Adrian Sabau, Oak Ridge National Laboratory; Anthony Rollett, Carnegie Mellon University; Laurentiu Nastac, The University of Alabama; Jonathan Madison, Sandia National Laboratories; Mei Li, Ford Motor Company

Monday AM
March 4, 2013
Room: 216
Location: Henry B. Gonzalez Convention Center

Session Chairs: Laurentiu Nastac, University of Alabama - Tuscaloosa; Andrew Mullis, University of Leeds

8:30 AM Introductory Comments

8:35 AM Invited
Application of a Modified Cellular Automaton Model to Simulating Solidification-Related Phenomena in Steels: *Sebastian Michelic*[1]; Christian Bernhard[2]; [1]Montanuniversitaet Leoben / INTECO Special Melting Technologies; [2]Montanuniversitaet Leoben

9:20 AM
Numerical Simulation of Solute Diffusion –Controlled Dendritic Growth with Cellular Automaton Method: *Sen Luo*[1]; Miao-yong Zhu[1]; [1]Northeastern University

9:45 AM Break

10:15 AM Invited
Multi-Scale Modelling Using 3-Dimensional Adaptive Meshing with an Implicit, Multigrid Solver: A Crystallization Example: *Andrew Mullis*[1]; Christopher Goodyer[1]; Peter Bollada[1]; Peter Jimack[1]; [1]University of Leeds

11:00 AM
A Multi Scale Method for Predicting Microstructure Changes from an External Magnetic Field: Andrew Kao[1]; *Koulis Pericleous*[1]; [1]University of Greenwich

Nanostructured Materials for Lithium Ion Batteries and for Supercapacitors: Nanostructured Materials for Lithium Ion Batteries and for Supercapacitors Session I

*Sponsored by:*TMS Electronic, Magnetic, and Photonic Materials Division, TMS: Energy Conversion and Storage Committee
Program Organizer: David Mitlin, University of Alberta and NINT NRC

Monday AM
March 4, 2013
Room: 007B
Location: Henry B. Gonzalez Convention Center

Session Chairs: David Mitlin , University of Alberta and NINT NRC; Reza Shahbazian-Yassar, Michigan Technological University; Peter Kalisvaart , University of Alberta and NINT NRC; Zhi Li, University of Alberta and NINT NRC

8:30 AM Invited
Silicon Anode Materials for All-Solid-State Lithium-ion Microbatteries: *Peter Notten*[1]; [1]Eindhoven University

8:50 AM Invited
3D Nanostructured Bicontinuous Electrodes: Path to Ultra-High Power and Energy Density Batteries: *Paul Braun*[1]; [1]University of Illinois at Urbana-Champaign

9:10 AM Invited
Engineering Electrochemically Active Nano-Scale Silicon Based Hetero-Structures: *Prashant Kumta*[1]; [1]University of Pittsburgh

9:30 AM Invited
Silicon Nanowire Core Aluminum Shell Coaxial Nanocomposites for Lithium Ion Battery Anodes Grown with and without a TiN Interlayer: Elmira Memarzadeh[1]; *Peter Kalisvaart*[2]; Alireza Kohandehghan[1]; Beniamin Zahiri[1]; Christopher Holt[1]; David Mitlin[1]; [1]University of Alberta; [2]University of Alberta

9:50 AM Invited
Using in Situ Thin Film Stress Measurements to Understand Fundamental Lithiation Mechanisms in Battery Electrode Materials: *Brian Sheldon*[1]; Anton Tokranov[1]; Amartya Mukhopadhyay[1]; Sumit Soni[1]; Peng Lu[2]; Xingcheng Xiao[2]; Yue Qi[2]; Dawei Liu[1]; Hamed Haft-Baradaran[1]; Huajian Gao[1]; [1]Brown University; [2]General Motors

10:10 AM Break

10:30 AM Invited
Characterization of Battery Cycling by In-Situ Microscopy: *Shen Dillon*[1]; [1]University of Illinois at Urbana-Champaign

10:50 AM Invited
In-Situ Studies of Nanoscale Transport and Alloying Phenomena: *Jeffrey Urban*[1]; [1]LBNL

11:10 AM Invited
Electrochemical Lithiation of Silicon Clathrate Materials: Rahul Raghavan[1]; Nicholas Wagner[1]; Ran Zhao[1]; Wuwei Liang[2]; Kwai Chan[2]; *Candace Chan*[1]; [1]Arizona State University; [2]Southwest Research Institute

11:30 AM Invited
Li-Ion Nanobattery: Lessons from In-Situ Electron Microscopy: *Reza Shahbazian-Yassar*[1]; [1]Michigan Technological University

11:50 AM Invited
Carbon-Sulfur Nanocomposite Cathode Materials for Lithium-Sulfur Batteries: *Yuegang Zhang*[1]; [1]Lawrence Berkeley National Laboratory

12:10 PM Invited
Spatially Resolved Porous Electrode Theory for Rechargeable Lithium-Ion Battery Electrodes: *R. Edwin Garcia*[1]; [1]Purdue University

Neutron and X-ray Studies of Advanced Materials VI: Centennial and Beyond: Diffraction: 100 Years and Beyond

*Sponsored by:*TMS Structural Materials Division, TMS/ASM: Mechanical Behavior of Materials Committee
Program Organizers: Rozaliya Barabash, Oak Ridge National Laboratory; Xun-Li Wang, City University of Hong Kong; Jaimie Tiley, US Air Force Research Laboratory; Gernot Kostorz, ETH Zurich; Brent Fultz, California Institute of Technology; Peter Liaw, University of Tennessee

Monday AM
March 4, 2013

Room: 209
Location: Henry B. Gonzalez Convention Center

Session Chairs: Gernot Kostorz, ETH; Wolfgang Pantleon, Risoe National Laboratory and DTU

8:30 AM Introductory Comments

8:35 AM Keynote
Materials Science Enabled by the Advanced Photon Source Upgrade: *Gregory Stephenson*[1]; [1]Argonne National Laboratory

9:00 AM Invited
One Hundred Years (Almost) of Diffuse X-Ray Scattering: *Richard Welberry*[1]; [1]Research School of Chemistry

9:20 AM Invited
Neutron and X-Ray Scattering Studies of Solid Sorbents for Carbon Capture: *Andrew Allen*[1]; Laura Espinal[1]; Winnie Wong-Ng[1]; Martin Green[1]; [1]NIST

9:40 AM Invited
X-ray and Neutron Studies of Fluids in Confinement: *Oskar Paris*[1]; [1]Montanuniversitaet Leoben

10:00 AM Break

10:10 AM Invited
A Detecting Strain Distributions in Nanoelectronics Using X-Ray Diffraction: *Conal Murray*[1]; [1]IBM T.J. Watson Research Center

10:30 AM Invited
Novel Approach to Generate Magnetic Fields Using Vortices in High-T_c Superconductors for X-Ray Scattering Studies with Unrestricted Optical Access: *Zahirul Islam*[1]; R. Das[1]; J. Ruff[1]; R. Weinstein[2]; R. Sawh[2]; P. Canfield[3]; J.-W. Kim[1]; J. Lang[1]; [1]Advanced Photon Source, Argonne National Laboratory; [2]Texas Center for Superconductivity, University of Houston; [3]Ames Laboratory, Iowa State University

10:50 AM Keynote
Recrystallization Characterized by Synchrotron X-Rays: *Dorte Jensen*[1]; [1]DTU

11:10 AM
In-Situ Mesoscale Study of Twin Boundary Motion in NiMnGa Alloys under External Fields: *Rozaliya Barabash*[1]; Christoph Kirchlechner[2]; Odile Robach[3]; Ruqing Xu[4]; Martin Kunz[5]; Nobumichi Tamura[5]; Oleg Barabash[6]; Alexei Sozinov[7]; [1]Oak Ridge National Laboratory; [2]University of Leoben; [3]ESRF; [4]APS; [5]ALS; [6]University of Tennessee; [7]AdaptaMat

11:25 AM Invited
A New Methodology for Determining Residual Stress Distributions Using Finite Elements and Synchrotron X-Ray Diffraction: *Matthew Miller*[1]; Paul Dawson[1]; [1]Cornell University

11:45 AM Invited
Mechanics of Nanostructures Probed In-Situ by Coherent X-Ray Diffraction during Mechanical Loading with a Dedicated AFM: *Olivier Thomas*[1]; Thomas Cornelius[1]; Stéphane Labat[1]; Marie-Ingrid Richard[1]; Francesca Mastropietro[1]; Marc Gailhanou[1]; Jean-Marc Roussel[1]; Guillaume Beutier[2]; Marc Verdier[2]; Bruno Gilles[2]; Guillaume Parry[2]; Marc de Boissieu[2]; Frederic Livet[2]; Vincent Jacques[3]; Gerardina Carbone[3]; Tobias Schülli[3]; [1]Aix-Marseille Université; [2]Grenoble-INP; [3]ESRF

12:05 PM Invited
Opportunities for Studies of Complex Materials Using High-Energy X-Rays: *Jonathan Almer*[1]; Peter Kenesei[1]; John Okasinski[1]; [1]Argonne National Laboratory

Ni-Co 2013: Plenary

*Sponsored by:*The Minerals, Metals and Materials Society, Metallurgical Society of the Canadian Institute of Mining Metallurgy and Petroleum, Chinese Society for Metals, GDMB Society for Mining, Metallurgy, Resource and Environmental Technology, Society for Mining Metallurgy and Exploration, Mining and Materials Processing Institute of Japan, Associacao Brasileira de Metalurgia, Materiais e Mineracao, Southern African Institute of Mining and Metallurgy (SAIMM), Minerals Engineering International Online, Cobalt Development Institute, Societe Francaise de Metallurgie et de Materiaux, TMS Extraction and Processing Division, TMS: Hydrometallurgy and Electrometallurgy Committee, TMS: Pyrometallurgy Committee
Program Organizer: Thomas Battle, Midrex Technologies

Monday AM
March 4, 2013

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

Session Chair: Thomas Battle, Midrex Technologies

9:00 AM Joint Lecture
Attendees are encouraged to attend the Extraction and Processing Division Distinguished Lecturer Presentation in Room 006D at 9:00 AM.

Towards Sustainable Metal Production by Molten Oxide Electrolysis: Antoine Allanore[1] on behalf of Donald Sadoway[1]; [1]Massachusetts Institute of Technology

10:00 AM
Laterites - Still a Frontier of Nickel Process Development: *Alan Taylor*[1]; [1]ALTA Metallurgical Services

10:30 AM
Nickel and Stainless Steels: 100 Years of Working Together: *Gary Coates*[1]; [1]Nickel Institute

11:00 AM
Cobalt - The Technology Enabler: *David Weight*[1]; [1]Cobalt Development Institute

11:30 AM
The Recycling of Cobalt from Alloy Scrap, Spent Batteries or Catalysts and Metallurgical Residues- An Overview: *Joe Ferron*[1]; [1]Other

Novel Synthesis and Consolidation of Powder Materials : Activated Sintering, Spark Plasma Sintering and High Voltage Electric Discharge Consolidation

*Sponsored by:*TMS Materials Processing and Manufacturing Division, TMS: Powder Materials Committee
Program Organizers: Ma Qian, The University of Queensland; Iver Anderson, The Ames Laboratory

Monday AM
March 4, 2013

Room: Lone Star Salon C
Location: Grand Hyatt

Session Chairs: Ma Qian, The University of Queensland ; Katsuyoshi Kondoh, Osaka University

8:30 AM
Activated Sintering for the Manufacture of Bi-Layered AgC Electrical Contacts: *Daudi Waryoba*[1]; Jeffery Johnson[2]; Craig Stringer[1]; [1]Penn State University, DuBois; [2]Contact Technologies, Inc.

8:50 AM
Fabrication of High Performance Commercial Titanium Alloys by Spark Plasma Sintering: *Ya-Feng Yang*[1]; K Kondoh[2]; Ma Qian[1]; [1]University of Queensland; [2]Osaka University

9:10 AM Invited
Inter-Particle Contact Phenomena in Spark-Plasma Sintering (SPS) and High Voltage Electric Discharge Consolidation (HVEDC): *Eugene Olevsky*[1]; Elena Aleksandrova[2]; Andrey Kuzmov[2]; Evgeny Grigoryev[2]; [1]San Diego State University; [2]Moscow Engineering Physics University

9:40 AM
Spark Plasma Sintering of Metal-Carbon Nanocomposites: *Thomas Hutsch*[1]; Thomas Schubert[1]; Thomas Weißgärber[1]; Bernd Kieback[1]; [1]Fraunhofer IFAM Dresden

10:00 AM Break

10:20 AM Invited
Thermo-Mechanical Properties of ZrO_2/Ti Functionally Graded Materials Fabricated by Spark Plasma Sintering: *Hideaki Tsukamoto*[1]; Yoshiki Komiya[1]; Hisashi Sato[1]; Yoshimi Watanabe[1]; [1]Nagoya Institute of Technology

10:50 AM
A Comparative Study of Lead-Free (Na,K.Li) $(Ta.Nb)O_3$ Ferroelectric Ceramics Fabricated by Pressureless and Spark Plasma Sintering: *Seema Sharma*[1]; Kim Vanmeensel[2]; Jef Vleugels[2]; [1]Magadh University; [2]K U Leuven

11:10 AM
Influence of Spark Plasm Sintering on the Mechanical Behavior of Micro and Nano AA2124 Powders: Ahmed Sayed[1]; Yassmine Ibrahim[1]; *Hanadi Salem*[1]; Mats Johnsson[2]; [1]American University in Cairo; [2]Stokholm University

11:30 AM
High Voltage Electric Discharge Consolidation of Tantalum Powders: *Evgeny Grigoryev*[1]; Eugene Olevsky[1]; Vera Demenyuk[1]; Maria Yurlova[1]; [1]MEPHI

11:50 AM
Effect of Alloying Elements and Pulsed Electric Current Sintering Parameters on Nano-Dispersion Formation in Nanostructured Ferritic Steels: *Somayeh Pasebani*[1]; Indrajit Charit[1]; Kerry Allahar[2]; James Cole[3]; Darryl Butt[2]; [1]University of Idaho; [2]Boise State University; [3]Idaho National Laboratory

Pb-free Solders and Emerging Interconnect and Packaging Technologies: Solidification

*Sponsored by:*TMS Electronic, Magnetic, and Photonic Materials Division, TMS: Electronic Packaging and Interconnection Materials Committee
Program Organizers: Nikhilesh Chawla, Arizona State University; Srinivas Chada, Whirlpool; Darrel Frear, Freescale Semiconductor; John Elmer, LLNL; Tae-Kyu Lee, Cisco Systems; Yan Li, Intel; Laura Turbini, Research In Motion; Kwang-Lung Lin, National Cheng Kung University; Sohoon Yoo, Korea Institute of Industrial Technology

Monday AM
March 4, 2013

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

Session Chair: To Be Announced

8:30 AM
Liquidus Projection and Solidification of Sn-rich Sn-In-Ag-Zn Alloys: *Sinn-wen Chen*[1]; Jui-shen Chang[1]; Chia-Ming Hsu[1]; Wan-ting Chiu[1]; Che-wei Hsu[1]; Ru-bo Chang[1]; [1]National Tsing Hua University

8:50 AM
In-Situ Observation of Solidification in Micro-Alloyed Sn-0.7Cu Solder Alloys: *Guang Zeng*[1]; Stuart McDonald[1]; Jonathan Read[1]; Christopher Gourlay[2]; Hideyuki Yasuda[3]; Kazuhiro Nogita[1]; [1]The University of Queensland; [2]Imperial College London; [3]Osaka University

9:10 AM
Modified Hypereutectic Sn-Cu Pb-Free Solder for High Temperature Applications: *Keith Sweatman*[1]; Motanori Miyaoka[1]; Takatoshi Nishimura[1]; Xuan Quy Tran[2]; Stuart McDonald[2]; Kazuhiro Nogita[2]; [1]Nihon Superior Co., Ltd.; [2]University of Queensland

9:30 AM
Solidification of Sn-0.7Cu-0.05Ni Solder: *Christopher Gourlay*[1]; Sergey Belyakov[1]; Guang Zeng[2]; Hideyuki Yasuda[3]; Kazuhiro Nogita[2]; [1]Imperial College London; [2]University of Queensland; [3]Osaka University

9:50 AM Break

10:10 AM
New Bi-Containing No or Low Ag Solder Alloys with Reduced Melting Temperatures: *Polina Snugovsky*[1]; Simin Bagheri[2]; Eva Kosiba[2]; Zohreh Bagheri[2]; Marianne Romansky[2]; Doug Perovic[3]; Leonid Snugovsky[3]; [1]Celestica ; [2]Celestica; [3]University of Toronto

10:30 AM
The Redistribution of Ag_3Sn Phase of Pb-Free Solder in a Temperature Gradient: *Yu-Ping Su*[1]; Fan-Yi Ouyang[1]; [1]National Tsing Hua university

10:50 AM
Microstructure Investigation of Mixed Solder Joints with Eutectic SnPb and Sn-3.0Ag-0.5Cu Solders: *Won Sik Hong*[1]; Chulmin Oh[1]; [1]Korea Electronics Technology Institutue(KETI)

11:10 AM
Conductive Anodic Filament Formation Studies in Fine-Pitch through-Vias in Thin Organic Package Substrates: *Koushik Ramachandran*[1]; Fuhan Liu[1]; Raj Pulugurtha[1]; Venky Sundaram[1]; Rao Tummala[1]; [1]Georgia Institute of Technology

Phase Stability, Phase Transformations, and Reactive Phase Formation in Electronic Materials XII: Solder-related Reliability Issues

*Sponsored by:*TMS Electronic, Magnetic, and Photonic Materials Division, TMS: Alloy Phases Committee
Program Organizers: Chao-hong Wang, National Chung Cheng University; Chih-Ming Chen, National Chung Hsing University; Jae-Ho Lee, Hongik University; Ikuo Ohnuma, Tohoku University; Clemens Schmetterer, TU Bergakademie Freiberg; Yee-Wen Yen, National Taiwan University of Science and Technology; Shien-Ping Feng, The University of Hong Kong; Shih-Kang Lin, National Cheng Kung University

Monday AM
March 4, 2013
Room: 203B
Location: Henry B. Gonzalez Convention Center

Session Chairs: Chao-Hong Wang, National Chung Cheng University; Yee-Wen Yen, National Taiwan University of Science & Technology

8:30 AM Invited
Study of the Microstructural Evolution of the Sn-9 wt.% Zn/Cu Joints: *Chih-Ming Chen*[1]; [1]National Chung Hsing University

8:50 AM
Comparison of Cu Pad Consumption between Sn Solder and $Sn_{3.5}Ag$: *Chia-yu Chen*[1]; [1]National Central University

9:05 AM
Electromigration Failure Mechanism in Package Solders: *Liangshan Chen*[1]; Huili Xu[1]; Patricia Rodriguez[1]; Choongun Kim[1]; [1]MSE at UT Arlington

9:20 AM
Supersaturation and Phase Stability of Pb-Sn Alloys under Current Stressing: *Chao-kuei Yeh*[1]; Shih-kang Lin[1]; [1]National Cheng Kung University

9:35 AM
Grain Rotation Induced by Thermomigration in the Pb-Free Solders: *Wei-Neng Hsu*[1]; Fan-Yi Ouyang[1]; [1]National Tsing Hua University

9:50 AM
Interfacial Reactions between Pb-Free Solders and Alloy 42 Substrates: *Yee-Wen Yen*[1]; Yi-Pin Wu[1]; Yu-Ping Hsieh[1]; Ruo-Syun Syu[1]; [1]National Taiwan University of Science & Technology

10:05 AM Break

10:20 AM Invited
Effects of Levelers in Pulse Current Electroplaing on SiP Copper Via Filling: Ki-Tae Kim[1]; Myung-Won Jung[1]; *Jae-Ho Lee*[1]; [1]Hongik University

10:40 AM
Electromigration Induced Interface Reaction in Au-Wire/Al Film Diffusion Couple: *Patricia Rodriguez*[1]; Liangshan Chen[1]; Choong-Un Kim[1]; [1]University of Texas at Arlington

10:55 AM
Microstructural Evolution of Cu Wedge Bonding on the Al Metallization under a High Current Density: *Zong-Han Yang*[1]; Fan-Yi Ouyang[1]; [1]Department of Engineering and System Science, National Tsing Hua University

11:10 AM
Investigation of Sn Whisker Growth in Electroplated Sn and Sn-Ag as a Function of Plating Variables and Aging Conditions: *Jaewon Chang*[1]; Sung Kang[2]; Jaeho Lee[3]; Keun-Soo Kim[4]; Hyuck Mo Lee[1]; [1]KAIST; [2]IBM T.J. Watson Research Center; [3]Hongik University; [4]Hoseo University

11:25 AM
Electromigration in SAC305/Bismuth Telluride Thermoelectric System: *Po-Yin Chien*[1]; Albert T. Wu[2]; [1]National Central University ; [2]National Central University

11:40 AM
Sn Grain Orientation Effect on the Formation of Highly Serrated Cathode Interface in Solder Joints under Electromigration: *Ting-Li Yang*[1]; Ting-Chia Huang[1]; Jia-Hong Ke[1]; C. Robert Kao[1]; [1]National Taiwan University

11:55 AM
Correlation between Microstructure Evolution and Mechanical Strength in Sn-3.0Ag-0.5Cu/ENEPIG Solder Joint: *Chien-Fu Tseng*[1]; Jenq-Gong Duh[1]; [1]National Tsing Hua University, Hsinchu, Taiwan

Phase Transformation and Microstructural Evolution: MPMD Distinguished Scientist/ Engineer Award Symposium for J.E. Morral

*Sponsored by:*TMS Materials Processing and Manufacturing Division, TMS: Chemistry and Physics of Materials Committee, TMS/ASM: Computational Materials Science and Engineering Committee, TMS: Integrated Computational Materials Engineering Committee, TMS/ASM: Phase Transformations Committee, TMS: Process Technology and Modeling Committee, ASM: Alloy Phase Diagrams Committee
Program Organizers: Amy Clarke, Los Alamos National Laboratory; Sudarsanam Suresh Babu, Ohio State University; Rajarshi Banerjee, University of North Texas; John Morral, Ohio State University; Brian Gleeson, University of Pittsburgh; Carelyn Campbell, National Institute of Standards & Technology; Yongho Sohn, University of Central Florida; Yunzhi Wang, Ohio State University

Monday AM
March 4, 2013
Room: 204B
Location: Henry B. Gonzalez Convention Center

Session Chairs: Carelyn Campbell, NIST; Yongho Sohn, University of Central Florida

8:30 AM Invited
Simulation of Surface Treating Processes: Models and Database Needs: *Richard Sisson*[1]; Mei Yang[1]; Yingying Wei[1]; Danielle Belsito[1]; Lei Zhang[1]; [1]Worcester Polytechnic Institute, Center for Heat Treating Excellence

9:00 AM Invited
Experimental Observations and Analyses from Diffusion Studies for U-Mo Nuclear Fuel Alloys: *Yongho Sohn*[1]; Ke Huang[1]; Emmanuel Perez[2]; Ashley Ewh[1]; Dennis Keiser[2]; [1]University of Central Florida; [2]Idaho National Laboratory

9:30 AM
Interdiffusion Microstructure Maps in Multi-Component and Multi-Phase Dual-Alloy Systems: *Xiaoqin Ke*[1]; John Morral[1]; Yunzhi Wang[1]; [1]The Ohio State Univeristy

9:50 AM Break

10:10 AM Invited
Role of Multicomponent Diffusion in Microstructure Evolution during Additive Manufacturing of Structural Alloys: *Sudarsanam Babu*[1]; [1]The Ohio State University

10:40 AM Invited
File and Data Repositories for CALPHAD and Beyond: *Ursula Kattner*[1]; Carelyn Campbell[1]; Laura Bartolo[2]; Alden Dima[1]; [1]National Institute of Standards and Technology; [2]Kent State University

11:10 AM Invited
Reference Self Diffusion Mobility Data for CALPHAD and Beyond: *Carelyn Campbell*[1]; [1]National Institute of Standards and Technology

11:40 AM Invited
Derived Uncertainties and the Evaluation of Multicomponent Interdiffusion Data: *Jeffrey LaCombe*[1]; Alonso Jaques[2]; [1]University of Nevada, Reno; [2]Universidad Técnica Federico Santa María

12:10 PM
The RMS Error of 3-Component Diffusivities Measured from One Diffusion Couple: *John Morral*[1]; [1]The Ohio State University

Physical and Mechanical Metallurgy of Shape Memory Alloys: In-situ Microstructural Characterization

Sponsored by: TMS/ASM: Phase Transformations Committee
Program Organizers: Haluk Karaca, University of Kentucky; Ibrahim Karaman, Texas A&M University; Othmane Benafan, NASA Glenn Research Center; Ryosuke Kainuma, Tohoku University; Hans Jurgen Maier, University of Paderborn

Monday AM
March 4, 2013
Room: Lone Star Salon B
Location: Grand Hyatt

Session Chairs: Petr Sittner, Institute of Physics, Academy of Sciences of the Czech Republic; Minoru Nishida, Kyushu University

8:30 AM
Formation Process of Self-Accommodation Morphology of B19' Martensite in Ti-Ni Alloys: *Minoru Nishida*[1]; Yohei Soejima[1]; Shinsaku Shibuta[1]; Shunichi Motomura[1]; Mastoshi Mitsuhara[1]; Tomonari Inamura[2]; [1]Kyushu University; [2]Tokyo Institute of Technology

9:00 AM
In Situ Neutron and Synchrotron X-Ray Diffraction Studies of NiTi-Based High Temperature Shape Memory Alloys: *Othmane Benafan*[1]; Ronald Noebe[1]; Santo Padula[1]; Glen Bigelow[1]; Darrell Gaydosh[2]; Anita Garg[3]; Raj Vaidyanathan[4]; Bjørn Clausen[5]; Norbert Schell[6]; [1]NASA Glenn Research Center; [2]Ohio Aerospace Institute; [3]University of Toledo; [4]University of Central Florida; [5]Los Alamos National Laboratory ; [6]GKSS Research Center Geesthacht

9:20 AM
Deformation Mechanics of Shape-Memory NiTi Martensite: *Aaron Stebner*[1]; [1]Caltech

9:40 AM
Asymmetry and Control Mode Effects in Polycrystalline NiTi: *Douglas Nicholson*[1]; Othmane Benafan[2]; Santo Padula[2]; Ron Noebe[2]; Raj Vaidyanathan[1]; [1]University of Central Florida; [2]NASA Glenn Research Center

10:00 AM Break

10:20 AM
Heat Treatment, Shape Setting and Actuation Instability of NiTi: *Petr Sittner*[1]; Jan Pilch[1]; Ludek Heller[1]; Pavel Sedmák[1]; Carolina Curfs[1]; [1]Institute of Physics ASCR

10:50 AM
In Situ Scanning Electron Microscopy Studies of Superelastic Cu-Zn-Al Microwires: *Stian Ueland*[1]; Christopher Schuh[1]; [1]Massachusetts Institute of Technology

11:10 AM
In Situ, Elevated Temperature Micro-Compression of NiTiPd: *Jeffrey Wheeler*[1]; Rejin Raghavan[1]; Mark Weaver[2]; Greg Thompson[2]; Johann Michler[1]; [1]EMPA; [2]The University of Alabama

11:30 AM
Twinning during Shape Memory and Post-Shape Memory Deformation in U-14at.%Nb: *Robert Field*[1]; Amy Clarke[1]; Rodney McCabe[1]; Donald Brown[1]; Bjorn Clausen[1]; Catherine Tupper[2]; John Swadener[3]; Carl Cady[1]; Dan Thoma[1]; [1]Los Alamos National Laboratory; [2]Northwestern University; [3]Aston University

11:50 AM
Full Field Mapping of Microstructural Strain Accommodation during Superelastic Deformation in Nickel Titanium: *Michael Kimiecik*[1]; J. Jones[1]; Samantha Daly[1]; [1]University of Michigan

12:10 PM
***I*n Situ Macroscopic Investigation on Lüders-Like Bands Evolution during Cycle Loading with Different Strain Rates in NiTi Alloys**: *Hongfei Du*[1]; Pan Zeng[1]; Liping Lei[1]; Gang Fang[1]; [1]Tsinghua University

Recent Developments in Biological, Electronic, and Functional Thin Films and Coatings: Biological, Electronic, and Functional Thin Films and Coatings I

Sponsored by: TMS Electronic, Magnetic, and Photonic Materials Division, TMS: Thin Films and Interfaces Committee
Program Organizers: R. Narayan, UNC/NCSU Joint Department of Biomedical Engineering; Choong-Un Kim, University of Texas at Arlington; Jian Luo, Clemson University; Nancy Michael, University of Texas at Arlington; Nuggehalli Ravindra, New Jersey Institute of Technology; Adele Carradò, IPCMS

Monday AM
March 4, 2013
Room: 214D
Location: Henry B. Gonzalez Convention Center

Session Chair: Diego Mantovani, Laval University

8:30 AM Invited
Graphene: The Thinnest Known Coating for Corrosion Protection: *RK Singh Raman*[1]; [1]Monash University

9:10 AM Invited
Coating Effect on the Physico-Chemical Properties of Nanometric Iron Oxide: *Geneviève Pourroy*[1]; Julien Jouhannaud[1]; Antonio Garofalo[1]; Delphine Felder-Flesch[1]; Franklin Tellier[1]; Patrick Poulet[1]; Jerome Steibel[1]; [1]CNRS University of Strasbourg-IPCMS

9:30 AM
Corrosion Resistance of Cerium-Based Conversion Coated Ti-6Al-4V Alloy: *Surender Maddela*[1]; Matt Ruder[1]; Matthew O'Keefe[1]; [1]Missouri University of Science and Technology

9:50 AM
CVD of Protective Mullite Coatings on Single Crystal Silicon Substrates: JiaPeng Xu[1]; *Daniel Erickson*[1]; Sudesna Roy[1]; Vinod Sarin[1]; [1]Boston University

10:10 AM Break

10:30 AM
Characterization of High Temperature Mechanical Properties of Two Unique Experimental Coatings: *Amit Pandey*[1]; Kevin Hemker[2]; Vladimir Tolpygoc[3]; [1]ORNL; [2]The Johns Hopkins University; [3]Honeywell

10:50 AM
Structural, Optical and Electronic Properties of CdSxSe1-x: *Yan Liu*[1]; Dongguo Chen[1]; Nuggehalli Ravindra[1]; [1]New Jersey Institute of Technology

11:10 AM
Eclipse Active and Passive Solar Control Coatings: *Hulya Demiryont*[1]; Kenneth Shannon[1]; Matthew Bratcher[2]; [1]Eclipse Energy Systems, Inc.; [2]US. Army

11:30 AM
Effect of Chemical Structure Change on Thermo-Mechanical Instability of Porous Low-k Thin Films: *Yoonki Sa*[1]; Todd Ryan[2]; Sean King[3]; Choong-Un Kim[1]; [1]University of Texas at Arlington; [2]Globalfoundries; [3]Intel Co.

11:50 AM
Fabrication and Characterization of Chitin-Carbon Nanotube Composites: *Sujeily Soto*[1]; Deborah Marty[1]; O. Marcelo Suarez[1]; [1]University of Puerto Rico

12:10 PM
Separation and Conductivity Measurements of Living Cells Using Microfluidics: *Faiza Javed*[1]; Naila Javed[1]; Arshad Bhatti[2]; [1]MS Student; [2]Supervisor

Recent Developments in the Processing, Characterization, Properties, Performance and Applications of Metal Matrix Composites: Innovative and Nano-composite Materials

Sponsored by: TMS Structural Materials Division, TMS/ASM: Composite Materials Committee
Program Organizers: Martin Pech-Canul, Centro de Investigacion y de Estudios Avanzados del Instituto Politecnico Nacional; Zariff Chaudhury, Materion Coporation; Golam Newaz, Wayne State University

Monday AM
March 4, 2013
Room: Bowie A
Location: Grand Hyatt

Session Chairs: Zariff Chaudhury, Materion Corporation; Martin Pech-Canul, CINVESTAV IPN SALTILLO

8:30 AM
Three Dimensional (3D) Microstructure Visualization and Modeling of Deformation in Metal Matrix Composites by In Situ X-ray Synchrotron Tomography: Jason Williams[1]; Jonathan Silva[1]; *Nikhilesh Chawla*[1]; Francesco De Carlo[2]; Xianghui Xiao[2]; [1]Arizona State University; [2]Advanced Photon Source, Argonne National Laboratory

8:50 AM
Characterization of Nanoparticle Reinforced Mg–Based Composites Processed by Electromagnetic Acoustic Transduction: *Hunter Henderson*[1]; Zachary Bryan[1]; Orlando Rios[2]; Alexander Melin[2]; Gerard Ludtka[2]; Gail Ludtka[2]; Michele Manuel[1]; [1]University of Florida; [2]Oak Ridge National Laboratory

9:10 AM
In-Situ Formed Al-TiB_2 Metal Matrix Composites as a Feed Stock for Semi-Solid Metal Processing: *Vijay Nimbalkar*[1]; [1]NMRL

9:30 AM
Influence of Substrate Bias on Structure and Properties of TiZrN Prepared by Sputtering System: Yu-Wei Lin[1]; Fong-Zhi Chen[1]; Jia-Hong Huang[2]; Ge-Ping Yu[2]; [1]National Applied Research Laboratories; [2]National Tsing Hua University

9:50 AM
Development, Processing and Applications for Bulk Metallic Glass Matrix Composites: *Douglas Hofmann*[1]; [1]NASA JPL/Caltech

10:10 AM
A Disintegrable Metal Matrix Composite: *Zhiyue Xu*[1]; [1]Baker Hughes

10:30 AM
Application of External Fields to Technology of Metal-Matrix Composite Materials: Nadendla Hari Babu[1]; Zhongyun Fan[1]; *Dmitry Eskin*[1]; [1]Brunel University

10:50 AM
Microstructure and Mechanical Properties of Bulk Ultrafine Structured Al-5vol.%Al_2O_3 and Cu-5vol.%Al_2O_3 Nanocomposite Produced by a Combination of High Energy Mechanical Milling and Powder Consolidation: *Deliang Zhang*[1]; Amro Gazawi[1]; Dengshan Zhou[1]; Charlie Kong[2]; Paul Munroe[2]; [1]The University of Waikato; [2]University of New South Wales, Australia

11:10 AM
Determination of Nanostructural Evolution during Wear of Multi-functional Adaptive Composites Coatings: *Hamidreza Mohseni*[1]; Jon-Erik Mogonye[1]; Sundeep Gopagoni[1]; Junyeon Hwang[1]; Peter Collins[1]; Jaimie Tiley[2]; Rajarshi Banerjee[1]; Thomas Scharf[1]; [1]University of North Texas; [2]Air Force Research Laboratory

11:30 AM
In-Situ Formation of Novel Al-AlN Composites by Gas-Melt Reaction: *Je In Lee*[1]; Eun Soo Park[1]; [1]Seoul National University

11:50 AM
Thermal Property Characterization for a Steel Fibre Reinforced Aluminum Metal Matrix Composite (AlMMC): *Scott Kenningley*[1]; Simon Barnes[2]; Philip Withers[2]; [1]Federal Mogul ; [2]University of Manchester

Refractory Metals 2013: Refractory Metal-based Materials I

Sponsored by: TMS Structural Materials Division, TMS: Refractory Metals Committee
Program Organizers: David Honecker, Climax Molybdenum; Omer Dogan, DOE National Energy Technology Laboratory

Monday AM
March 4, 2013
Room: Mission A
Location: Grand Hyatt

Session Chairs: David Honecker, Climax Molybdenum Technology Center; James Ciulik, Element Materials Technology

8:30 AM Introductory Comments

8:35 AM
Response of Two Nb-Cr-Mo-Si-B Alloys to Static Oxidation: *Kathryn Thomas*[1]; Shailendra Varma[1]; [1]The University of Texas at El Paso

8:55 AM Question and Answer Period

9:00 AM
How Can One Improve the Oxidation Resistance of Nb Silicide Based Alloys?: *Panayiotis Tsakiropoulos*[1]; [1]The University of Sheffield

9:20 AM Question and Answer Period

9:25 AM
Molybdenum Composites of Mo_2B, T_2, and Silica: *William Daloz*[1]; Peter Marshall[1]; Joe Cochran[1]; [1]GA Tech

9:45 AM Question and Answer Period

9:50 AM
The Creep Behavior of Molybdenum and Other Commercial-Purity Refractory Metals: *James Ciulik*[1]; [1]Element Materials Technology

10:10 AM Question and Answer Period

10:15 AM Break

10:35 AM
Microstructural Observations of Texture Gradient Effects on Dynamic Abnormal Grain Growth in Mo: *Philip Noell*[1]; Nicholas Pedrazas[1]; Daniel Worthington[1]; Thomas Buchheit[2]; Elizabeth Holm[2]; Eric Taleff[1]; [1]University of Texas at Austin, Dept of Mechanical Engrg; [2]Sandia National Laboratory, New Mexico

10:55 AM Question and Answer Period

11:00 AM
Enhancement of Tantalum Carbide Oxidation Resistance in a High Temperature Plasma Flow by Additon of Graphene NanoPlatelets: *Andy Nieto*[1]; Debrupa Lahiri[1]; Cheng Zhang[1]; Arvind Agarwal[1]; [1]Florida International University

11:20 AM Question and Answer Period

11:25 AM
Microstructure Development in Seamless Nb Tube: *Shreyas Balachandran*[1]; Roston Elwell[2]; Di Kang[3]; Thomas Bieler[3]; Karl Hartwig[1]; [1]Texas A&M University; [2]Shearform Inc; [3]Michigan State University

11:45 AM Question and Answer Period

11:50 AM Concluding Comments

Synergies of Computational and Experimental Materials Science II: Materials for Energy and Electronic Applications

*Sponsored by:*TMS Materials Processing and Manufacturing Division, TMS/ASM: Computational Materials Science and Engineering Committee, TMS: Integrated Computational Materials Engineering Committee
Program Organizers: Katsuyo Thornton, University of Michigan; Thomas Buchheit, Sandia National Laboratories; Anthony Rollett, Carnegie Mellon University; David Rowenhorst, Naval Research Lab

Monday AM
March 4, 2013
Room: 217A
Location: Henry B. Gonzalez Convention Center

Session Chairs: Katsuyo Thornton, University of Michigan; Scott Barnett, Northwestern University

8:30 AM Introductory Comments

8:35 AM Invited
Three-Dimensional Measurements and Simulations of Electrode Microstructure: Correlation with Electrochemical Performance and Degradationn: *Scott Barnett*[1]; Scott Cronin[1]; Kyle Yakal-Kremski[1]; David Kennouche[1]; [1]Northwestern University

9:05 AM Invited
3D Analysis and Modeling of Solid Oxide Fuel Cell Cathodes: *Ellen Ivers-Tiffée*[1]; [1]KIT

9:35 AM
FIB/SEM Reconstruction and 3D Simulations of SOFC Electrodes: *Jochen Joos*[1]; Thomas Carraro[2]; Moses Ender[1]; André Weber[1]; Ellen Ivers-Tiffée[1]; [1]Karlsruhe Institute of Technology (KIT); [2]University of Heidelberg

9:55 AM
Investigation of Interactions between Lithium Iron Phosphate Nanoparticles Using 6Li and 7Li Isotopes: *Bernardo Orvananos*[1]; Hui-Chia Yu[1]; Hao Liu[2]; Rahul Malik[3]; Gerbrand Ceder[3]; Clare Grey[2]; Katsuyo Thornton[1]; [1]University of Michigan; [2]University of Cambridge; [3]Massachusetts Institute of Technology

10:15 AM Break

10:30 AM Invited
Addressing the Materials Genome Initiative through the AFLOWLIB.ORG Consortium: Thermoelectric Properties of Sintered Compounds with High-Throughput Ab-Initio Calculations: *Stefano Curtarolo*[1]; [1]Duke University

11:00 AM Invited
The Composition and Growth of Nanowires: Kevin Yoon[1]; Andrew Gamalski[2]; Justin Connell[1]; R. Sharma[3]; C. Ducati[2]; Lincoln Lauhon[1]; Stefan Hofman[2]; *Peter Voorhees*[1]; [1]Northwestern University; [2]Cambridge University; [3]National Institute for Standards and Technology

11:30 AM
Role of Oxygen Vacancies on Wettability and Evaporation Rate of Water on ZnO Surfaces: Han Hu[1]; *Ying Sun*[1]; [1]Drexel University

11:50 AM
Experimental Measurement of Coupled Thermo Mechanics in Silicon with an Account of Length Scale, Stresses, and Quantum Scale Thermodynamics: Ming Gan[1]; *Vikas Tomar*[1]; [1]Purdue University

12:10 PM
Influence of Tb^{3+} Concentration on Luminescence Properties of Gd_2O_2S:Tb Nanophosphor: *Fei Wang*[1]; [1]Kunming University of Science and Technology

Three-Dimensional Materials Science VII: Novel Techniques in Three-Dimensional Materials Science

*Sponsored by:*TMS Structural Materials Division, TMS: Advanced Characterization, Testing, and Simulation Committee
Program Organizers: Jonathan Madison, Sandia National Laboratories; Nikhilesh Chawla, Arizona State University; Michael Groeber, Air Force Research Laboratory

Monday AM
March 4, 2013
Room: 212A
Location: Henry B. Gonzalez Convention Center

Session Chairs: Jonathan Madison, Sandia National Laboratories; Christopher Szczepanski, AFRL, Wright Patterson AFB

8:30 AM Invited
An Automated 3D Serial Sectioning System for Characterizing Microstructural Features in Large Volumes (> 1 mm^3) Using Multi-Modal Data Streams: *Megna Shah*[1]; Michael Uchic[2]; Michael Groeber[2]; Patrick Callahan[3]; David Rowenhorst[4]; Adam Shiveley[1]; Jonathan Spowart[2]; [1]UES/Air Force Research Laboratory; [2]Air Force Research Laboratory; [3]Carnegie Mellon University/Air Force Research Laboratory; [4]Naval Research Lab

9:00 AM Invited
Acquisition of 3-D Datasets Via Tri-Beam Tomography: *Tresa Pollock*[1]; McLean Echlin[1]; Alessandro Mottura[1]; [1]University of California Santa Barbara

9:30 AM
Combined FIB Lift Out – EBSD Specimen Preparation for Atom Probe Tomography – Application to Steels: *Frederic Danoix*[1]; Fabien Cuvilly[1]; Grant Thomas[2]; Jacques Lacaze[3]; Dominique Mangelinck[4]; John Speer[2]; [1]CNRS - Université de Rouen; [2]Colorado School of Mines; [3]CIRIMAT ENCIACET Toulouse; [4]IM2NP CNRS

9:50 AM Break

10:05 AM
Fatigue Crack Closure and Corrosion Fatigue in Al 7075 Alloy Using In Situ X-Ray Synchrotron Tomography: *Sudhanshu Singh*[1]; Jason Williams[1]; Xianghui Xiao[2]; Francesco De Carlo[2]; Nikhilesh Chawla[1]; [1]Arizona State University; [2]Advanced Photon Source, Argonne National Laboratory

10:25 AM
Measurement of Materials Performance during In-Situ Experiments Using X-ray Tomography: *Brian Patterson*[1]; Kevin Henderson[1]; Zach Smith[1]; Duan Zhang[1]; Paul Giguere[1]; [1]Los Alamos National Laboratory

10:45 AM
Optimizing Tilt-Series Data Acquisition in Dislocation Tomography Observations: Methods and Applications: *Satoshi Hata*[1]; Ryutaro Akiyoshi[1]; Makoto Shimizu[1]; Masatoshi Mitsuhara[1]; Ken-ichi Ikeda[1]; Hideharu Nakashima[1]; [1]Kyushu University

11:05 AM
3D Orientation Contrast Microscopy Characterization of Thermo-Mechanical Fatigue Crack Morphology in Compacted Graphite Iron: Sepideh Ghodrat[1]; *Hadi Pirgazi*[2]; Leo Kestens[2]; [1]Delft University of Technology (TUDelft); [2]Ghent University

11:25 AM
In-Situ Monitoring of Dynamic Phenomena during Solidification: *Amy Clarke*[1]; Paul Gibbs[1]; Seth Imhoff[1]; Jason Cooley[1]; Brian Patterson[1]; Wah-Keat Lee[2]; Kamel Fezzaa[3]; Christopher Morris[1]; Frank Merrill[1]; Brian Hollander[1]; Kester Clarke[1]; Robert Field[1]; David Teter[1]; Dan Thoma[1]; [1]Los Alamos National Laboratory; [2]Brookhaven National Laboratory; [3]Argonne National Laboratory

11:45 AM
3D Orientation Imaging with Transmission Electron Microscopy: *Søren Schmidt*[1]; Haihua Liu[2]; Andy Godfrey[3]; Henning Poulsen[1]; Xiaoxu Huang[1]; [1]Technical University of Denmark; [2]Caltech; [3]Tsinghua University

12:05 PM
3D Mapping of Amorphization Zone in Boron Carbide Using Raman Spectroscopy: *Ghatu Subhash*[1]; Dipankar Ghosh[1]; Jutin Blabber[2]; [1]University of Florida; [2]Georgia Institute of Technology

2013 and Beyond: Flexible Electronics: Semiconductor Advances in Flexible Electronics Systems

Sponsored by: TMS Electronic, Magnetic, and Photonic Materials Division, TMS: Biomaterials Committee, TMS: Nanomaterials Committee
Program Organizer: Walter Voit, UT Dallas

Monday PM
March 4, 2013
Room: 204A
Location: Henry B. Gonzalez Convention Center

Session Chair: To Be Announced

2:00 PM
Flexible Organic Transistors on Shape Memory Polymer Substrates for Conformable Biointegrated Interfaces: *Jonathan Reeder*[1]; Taylor Ware[1]; Dustin Simon[1]; Naoji Matsuhisa[2]; Tsuyoshi Sekitani[2]; Takao Someya[2]; Walter Voit[1]; [1]University of Texas at Dallas; [2]University of Tokyo

2:20 PM Question and Answer Period

2:30 PM
Flexible, Large-Area Sensor Circuits Fabricated by Additive Printing: *Tse Nga Ng*[1]; David Schwartz[1]; Gregory Whiting[1]; Robert Street[1]; Janos Veres[1]; [1]Palo Alto Research Center

2:50 PM Question and Answer Period

3:00 PM
Flexible Organic Thin Film Transistors for Neural Interfaces: *Adrian Avendano*[1]; Taylor Ware[1]; Dustin Simon[1]; David Arreaga-Salas[1]; Walter Voit[1]; [1]University of Texas at Dallas

3:20 PM Question and Answer Period

3:30 PM Break

3:45 PM
High-Performance Flexible Organic Photovoltaic Cells with Amorphous ZITO Electrode: *Nanjia Zhou*[1]; D. Bruce Buchholz[1]; Tobin Marks[1]; Robert Chang[1]; [1]Northwestern University

4:05 PM Question and Answer Period

4:15 PM
Growth Time Performance Dependence of Vertically Aligned Carbon Nanotube Supercapacitors Grown on Aluminum Substrates: JJ Nguyen[1]; Jud Ready[1]; *Radu Reit*[2]; [1]Georgia Institute of Technology; [2]UT Dallas

4:35 PM Question and Answer Period

4:45 PM Break

5:00 PM
Electrochemical Gating and Oxide Field-effect Transistors: Switching Speed and Device Stability Issues: Subho Dasgupta[1]; Ganna Stoesser[1]; Babak Nasr[1]; Robert Kruk[1]; *Horst Hahn*[1]; [1]Karlsruhe Institute of Technology

5:20 PM Question and Answer Period

5:30 PM
Fabricating High-Strain Capacity Conductors on Shape Memory Polymers in Metastable States to Accommodate Large Shape Changes in Flexible Electronic Devices: *Abhishek Raj*[1]; Wenzhe Cao[1]; Sigurd Wagner[2]; Walter Voit[1]; [1]UT Dallas; [2]Princeton University

5:50 PM Question and Answer Period

2013 Functional Nanomaterials: Synthesis, Properties and Applications: Carbon Nanomaterials

Sponsored by: TMS Electronic, Magnetic, and Photonic Materials Division, TMS: Nanomaterials Committee
Program Organizers: Seong Jin Koh, University of Texas at Arlington; Nitin Chopra, University of Alabama; Jiyoung Kim, University of Texas at Dallas; Yuanbing Mao, University of Texas-Pan American; Ashwin Ramasubramaniam, University of Massachusetts; Gregory Thompson, University of Alabama

Monday PM
March 4, 2013
Room: 201
Location: Henry B. Gonzalez Convention Center

Funding support provided by: Qualcomm, Inc.

Session Chairs: Jiyoung Kim, University of Texas; Ashwin Ramasubramaniam, University of Massachusetts Amherst

2:00 PM Invited
Graphene-Based and Graphene-Derived Materials: Rod Ruoff[1]; *Ariel Ismach*[1]; [1]The University of Texas at Austin

2:35 PM Invited
Not a Molecule, Not a Polymer, Not a Substrate: The Many Faces of Graphene as Chemical Platform: *Vincenzo Palermo*[1]; [1]CNR - National Research Council of Italy

3:10 PM
Seeded Growth of Single Crystal Bilayer Graphene Arrays: *Wei Wu*[1]; Sirui Xing[1]; Shin-Shem Pei[1]; [1]University of Houston

3:30 PM Break

3:50 PM
High Performance of Transparent and Flexible Graphene Field-Effect Transistors on Plastic Substrates: *Sangchul Lee*[1]; Srikar Janhyala[2]; David Iyore[2]; Saungeun Park[2]; Byoung Hun Lee[1]; Jiyoung Kim[2]; [1]Gwangju Institute of Science & Technology; [2]The University of Texas at Dallas

4:10 PM
Reduced Graphene Sheets Decorated with ZnO Flowers by Hydrothermal Process: *Hem Pant*[1]; Chan Park[1]; Han Kim[1]; Cheol Kim[1]; [1]Chonbuk National University, South Korea

4:30 PM
Rectangular Graphene Domains Grown at Low-Temperature from Toluene on Electropolished Copper Foils: *Bin Zhang*[1]; Rodney Ruoff[2]; [1]Key Laboratory for Anisotropy and Texture of Materials of Ministry of Education, Northeastern University, China; [2]Department of Mechanical Engineering and the Materials Science and Engineering Program, The University of Texas at Austin, USA

4:50 PM
Oxidation Kinetics of Gold Nanoparticles for Growth of Graphene Shells: *Nitin Chopra*[1]; Junchi Wu[1]; Wenwu Shi[1]; [1]The University of Alabama

4th International Symposium on High-Temperature Metallurgical Processing: Fundamental Research of Metallurgical Process

Sponsored by: TMS Extraction and Processing Division, TMS: Energy Committee, TMS: Materials Characterization Committee, TMS: Pyrometallurgy Committee
Program Organizers: Tao Jiang, Central South University; Jiann-Yang Hwang, Michigan Technological University; Phillip Mackey, Consultant; Onuralp Yücel, ITU; Guifeng Zhou, Wuhan Iron and Steel

Monday PM
March 4, 2013
Room: 008B
Location: Henry B. Gonzalez Convention Center

Session Chair: Bing Xie, Chongqing University

2:00 PM Introductory Comments

2:25 PM Keynote
Reaction Mechanisms and Product Morphologies on Gaseous Reduction of Metal Compounds -- Extractive Metallurgy Meets Materials Science: *Peter Hayes*[1]; [1]University of Queensland

2:40 PM
Research on the Slag Phase Type of Vanadium-Titanium Magnetite in PreReduction/Electric Furnace Smelting Processing: Yufeng Guo[1]; Minjun Tang[1]; Tao Jiang[1]; Guanzhou Qiu[1]; Jianfeng Zhou[1]; Linjiang Qing[1]; *Xiaolei Song*[1]; [1]Center South University

2:55 PM
On Dependence of High Temperature Rheological Behaviour of Blast Furnace Slag on Its Network Structure: *Swatantra Prakash*[1]; [1]National Metallurgical Laboratory

3:10 PM
Density of CaO-5%MgO-Al_2O_3-SiO_2 Slag with Low Silica: Jianchao Li[1]; *Tao Zeng*[1]; Jifang Xu[2]; Chang Jie[1]; Jieyu Zhang[1]; Kuochih Chou[1]; [1]Shanghai University; [2]Soochow University

3:25 PM
Study on the Magnetic Roasting Kinetic of Oolitic Hematite: Yufeng Guo[1]; Linjiang Qing[1]; *Tao Jiang*[1]; Lin Yang[1]; Shuishi Liu[1]; MingJun Tan[1]; Xiaolei Song[1]; Jiangfeng Zhou[1]; [1]Central South University in China

3:40 PM Break

3:50 PM
Basic Research on External Desulfurization of Hot Iron by Dolomite: *Ren Xiaodong*[1]; Zhang Ting'an[1]; Liu Yan[1]; Dou Zhihe[1]; Lv Guozhi[1]; [1]Northeastern University

4:05 PM
Experimental Investigations of Dynamic Strain Ageing in Austenitic Stainless Steel 316: *Syed Hussaini*[1]; Gupta AK[1]; Singh SK[2]; [1]BITS-Pilani-Hyderabad Campus; [2]GRIET

4:15 PM
Iron-Carbon Nuggets Coalescence: Influence of Slag's LiquidusTemperatures: *Alberto Eloy Nogueira*[1]; Adolfo Zambrano[2]; Cyro Takano[1]; Marcelo Mourão[1]; [1]Universidade de São Paulo; [2]Pontificia Universidad Catolica del Peru

4:30 PM
Effect of Mixed Charge of Ore and Lump Coal on The Softening-Melting Property of Burden: Guo Hongwei[1]; *Yang Guangqing*[1]; Zhang Jianliang[1]; Shao Jiugang[1]; Fu Yuandi[1]; Wang Dan[1]; [1]University of Science and Technology Beijing

4:45 PM
The Thermal Balance in the Melted Material Zone of the Electrical Furnace in Drenas: *Ahmet Haxhiaj*[1]; Bajram Haxhiaj[1]; [1]University of Prishtina

5:00 PM
Effects of Oxygen Content And Roasting Temperature on the Sintering Mineralization Properties of Different Iron Ores: Xiaoming Mao[1]; Zhixiong You[1]; *Yuanbo Zhang*[1]; Zhenyu Fan[1]; Tao Jiang[1]; [1]Central South University

5:15 PM
Analysis on Wear Mechanism of Refractories Used in Hot Air Pipeline for Large Scal Blast Furnaces: *Guotao Xu*[1]; [1]Wuhan Iron and Steel Group Company

5:30 PM
Research on Velocity Field of Liquid Steel in RH: *Minren Xu*[1]; Qingcai Liu[2]; Jian Yang[2]; Dongran Ma[2]; [1]Chongqing University; [2]Chongqing University

Advanced Materials and Reservoir Engineering for Extreme Oil & Gas Environments: Nanocrystalline Metals II

*Sponsored by:*TMS Materials Processing and Manufacturing Division, TMS Structural Materials Division, TMS Electronic, Magnetic, and Photonic Materials Division, TMS: Nanomaterials Committee
Program Organizers: Indranil Roy, Schlumberger; Brajendra Mishra, Colorado School of Mines; Manuel Marya, Schlumberger Technology Corporation; Kuo-Chiang Chen, Schlumberger; Partha Ganguly, Schlumberger; Richard Lewis, Schlumberger; Suveen Mathaudhu, U.S. Army Research Office; Nitin Chopra, The University of Alabama; Xinghang Zhang, Texas A&M University; Greg Kusinski, Chevron; John Meng, BP America Inc.; Jefferson Rodrigues, Petrobras; Justin Cheney, Scoperta

Monday PM
March 4, 2013
Room: Lone Star Salon A
Location: Grand Hyatt

Session Chairs: Xinghang Zhang, Texas A&M University; Suveen Mathaudhu, U.S. Army Research Office

2:00 PM Introductory Comments Kuo-Chiang Chen - Mechanical and Materials Technology Manager, Schlumberger

2:05 PM Keynote
Asphaltene Nano-science for Reservoir Characterization: *Oliver Mullins*[1]; [1]Reservoir Characterization Group

2:35 PM Keynote
Nanotechnology and Future Directions in Petrobras Brazil: *Gabriel Sotomayor*[1]; [1]Petrobras

3:05 PM Invited
Enhancing Mechanical & Functional Properties Of Bulk Nanostructured Materials: *Michael Zehetbauer*[1]; [1]University of Vienna

3:25 PM
Thermal Stability of Carbon Nanostructures: *Nitin Chopra*[1]; Wenwu Shi[1]; Yuan Li[1]; [1]The University of Alabama

3:45 PM Break

4:00 PM Invited
Austenitic Steels Strengthened by Nano-Twinned Austenitic Grains: *K. Lu*[1]; [1]Shenyang National Laboratory for Materials Science, Institute of Metal research, Chinese Academy of Sciences

4:30 PM
A Study of the Characteristics of Passive Film on UFG $Al_5 0_{83}$ by Synchrotron Radiation: *Varshni Singh*[1]; Indranil Roy; Manuel Marya; Xinghang Zhang; Enrique Lavernia; [1]TMS

4:50 PM
Enhanced Fatigue Property of a Martensitic Steel with a Gradient Nano-Grained Surface Layer: H.W. Huang[1]; *Z.B. Wang*[1]; X.P. Yong[2]; K. Lu[1]; [1]Institute of Metal Research, Chinese Academy of Sciences; [2]Shenyang Blower Works Group Co. Ltd.

5:10 PM
Property Enhancement of Oilfield Alloys through Ultrasonic Treatment: *Virendra Singh*[1]; Indranil Roy[1]; Manuel Marya[1]; [1]Schlumberger

5:30 PM
Strengthening Mechanisms of Highly Textured Cu/Ni Multilayers with Extremely Fine Nanotwins: *Yue Liu*[1]; Haiyan Wang[1]; Xinghang Zhang[1]; [1]Texas A&M University

5:45 PM Day 1 Wrap Up: Oliver Mullins, Science Advisor, RCG, Schlumberger

Advances in Surface Engineering: Alloyed and Composite Coatings II: Functional Coatings II

*Sponsored by:*TMS Materials Processing and Manufacturing Division, TMS: Surface Engineering Committee
Program Organizers: Srinivasa Bakshi, Indian Institute of Technology Madras; Graham McCartney, University of Nottingham; Arvind Agarwal, Florida International University; Sandip Harimkar, Oklahoma State University

Monday PM
March 4, 2013
Room: Bowie B
Location: Grand Hyatt

Funding support provided by: Bulk Nanostructured Materials Programs, Office of Naval Research

Session Chair: To Be Announced

2:00 PM Invited
Recent Advanced in Surface Engineering for Friction and Wear Control: *Ali Erdemir*[1]; [1]Argonne National Laboratory

2:20 PM Invited
Transparent Composite Electrodes for Future Flexible Photovoltaic Applications: *Terry Alford*[1]; [1]Arizona State University

2:40 PM Invited
High Temperature Oxidation Behavior of Sputtered Nanostructured Coatings: *Jayaganthan R*[1]; Atikur Rahman[1]; Ramesh Chandra[1]; [1]IIT Roorkee

3:00 PM
Gold Sputtering on Titanium: *Yoshitaka Shibuya*[1]; Atsushi Kodama[1]; Norio Yuki[1]; Kazuhiko Fukamachi[1]; [1]JX Nippon Mining &Metals Corporation

3:15 PM
Microstructural Property Relationships in CrNiN Thin Film Coatings: P.C. Wo[1]; Zonghan Xie[1]; *Paul Munroe*[1]; [1]Materials Science and Engineering

3:30 PM Break

3:45 PM
Nanocrystalline Porous Coatings: *Guglya Aleksey*[1]; [1]NSC Kharkov Institute of Physics and Technology

4:00 PM
Grain Boundary Diffusion Process in Nd-Fe-B Magnets by Dipping and EPD: Marko Soderžnik[1]; Paul McGuiness[1]; Kristina Žužek-Rožman[1]; Zoran Samardžija[1]; *Spomenka Kobe*[1]; [1]Jožef Stefan Institute

4:15 PM
Effect of Electroplating Parameters on Internal Stress in Ni-MoS_2 Composite Plating: *Ebru Saraloglu Guler*[1]; Ishak Karakaya[1]; Erkan Konca[2]; [1]Middle East Technical University; [2]Atilim University

4:30 PM
The Preparation of Alloy Coating with Special Properties: *Li Naijun*; Li Meimei; Science Collge of Shenyang University

4:45 PM
A Novel Porous Hydroxyapatite Scaffold Coated with Nanostructured Forsterite for Bone Tissue Engineering: *Adel Sheikhhosseini*[1]; [1]IUT

Alloys and Compounds for Thermoelectric and Solar Cell Applications: Thermoelectric II

Sponsored by: TMS Electronic, Magnetic, and Photonic Materials Division, TMS: Alloy Phases Committee, TMS: Energy Conversion and Storage Committee
Program Organizers: Sinn-wen Chen, National Tsing Hua University; Yoshisato Kimura, Tokyo Institute of Technology; Chih-Huang Lai, National Tsing-Hua University; CW Nan, Tsinghua University; G. Jeffrey Snyder, California Institute of Technology; Hubert Scherrer, Ecole des Mines

Monday PM
March 4, 2013
Room: 007C
Location: Henry B. Gonzalez Convention Center

Session Chairs: Ce-Wen Nan, Tsinghua University; Yoshisato Kimura, Tokyo Institute of Technology

2:00 PM Invited
Thermoelectric Properties of Environmental Friendly Thermoelectric Materials: Zintl Compounds: *Yoshiki Takagiwa*[1]; Alex Zevalkink[2]; Koichi Kitahara[1]; Kaoru Kimura[1]; Jeffrey Snyder[2]; [1]The University of Tokyo; [2]California Institute of Technology

2:25 PM
Improving Thermoelectric Properties of Bulk $Mg_2(Si,Sn)$ Solid Solutions by Incorporating Nanostructures: *Abdullah Tazebay*[1]; Choongho Yu[1]; [1]Texas A&M University

2:45 PM
Defects and the Control of Carrier Concentration in Zintl Thermoelectric Phases: *Gregory Pomrehn*[1]; G. Jeffery Synder[1]; Axel van de Walle[2]; [1]California Institute of Technology; [2]Brown University

3:05 PM
Microstructure Formation Based on Phase Separation Between Half-Heusler ZrNiSn and Heusler $Zr(Ni,Co)_2Sn$: *Kentaro Yoshioka*[1]; Yaw Wang Chai[1]; Yoshisato Kimura[1]; [1]Tokyo Institute of Technology

3:25 PM
The Evolution of Nanoprecipitate Microstructure in Half-Heusler TiNiSn Alloys: *Yaw Wang Chai*[1]; Yoshisato Kimura[1]; [1]Tokyo Institute of Technology

3:45 PM Break

4:00 PM Invited
High Performace Oxides-Based Thermoelectric Ceramics for Energy Conversion: *Yuanhua Lin*[1]; JInle Lan[1]; Ce-Wen Nan[1]; [1]Tsinghua University

4:25 PM
Phase Stability of Half Heusler Titanium Nickel Material: *Jean Claude Tedenac*[1]; Philippe Jund[1]; Catherine Colinet[1]; [1]University of Montpellier

4:45 PM
$Mg_2(Si,Sn)$ by Design: Nanoprecipitation, Nanostructure Stability and Thermoelectric Properties: *Philippe Bellanger*[1]; Stéphane Gorsse[1]; Claude Delmas[1]; Christelle Navone[2]; [1]CNRS, Université de Bordeaux, ICMCB; [2]CEA-LITEN

5:05 PM
Interplay Between Mismatch Strain, Buckling, and Topological Defects in Graphene-Boron Nitride Superlattice: Continuum and Atomistic Descriptions: *Dinkar Nandwana*[1]; Elif Ertekin[1]; [1]University of Illinois at Urbana Champaign

Alumina and Bauxite: Digestion

Sponsored by: TMS Light Metals Division, TMS: Aluminum Committee
Program Organizer: Pat Clement, Alcoa

Monday PM
March 4, 2013
Room: 212B
Location: Henry B. Gonzalez Convention Center

Session Chair: Chris Phillips, Alcoa Point Comfort Operations

2:00 PM Introductory Comments

2:10 PM
Implementation of Logic Control by DCS to Measure the Caustic Concentration in Spent Liquor: *Ayana Oliveira*[1]; Aécio Carvalho[1]; Bruno Urakawa[1]; Antonio Santos[1]; Milton Maciel[1]; [1]Hydro Alunorte

2:30 PM
Study of Influences on the Alumina/Caustic (A/C) Ratio and Discharge Digestion (DBO) Caustic of Through Design of Experiments (DOE) Statistic Tool: Bruno Urakawa[1]; Américo Borges[1]; Arthur Monteiro[1]; *Ayana Oliveira*[1]; Joel Miranda[1]; Dauton Silva[1]; [1]Hydro Alunorte

2:50 PM
Particle Size Distribution Model for Leaching Kinetics of Alumina: Li Bao[1]; *Ting-an Zhang*[2]; Weimin Long[1]; Anh V Nguyen[3]; Guozhi Lv[2]; Jia Ma[1]; Yan Liu[2]; [1]State Key Laboratory of Advanced Brazing Filler Metals and Technology, Zhengzhou Research Institute of Mechanical Engineering; [2]School of Materials and Metallurgy, Northeastern University; [3]University of Queensland

3:10 PM
Fractal Kinetic Model for Digesting Alumina: Li Bao[1]; *Ting-an Zhang*[2]; Anh V Nguyen[3]; Weimin Long[1]; Jia Ma[1]; Zhihe Dou[2]; Guozhi Lv[2]; [1]State Key Laboratory of Advanced Brazing Filler Metals and Technology, Zhengzhou Research Institute of Mechanical Engineering; [2]School of Materials and Metallurgy, Northeastern University; [3]University of Queensland

3:30 PM
MAX HT® Bayer Sodalite Scale Inhibiter: A Green Solution To Energy Consumption: *Morris Lewellyn*[1]; Alan Rothenberg[1]; Calvin Franz[1]; Frank Ballentine[1]; Frank Kula[1]; Luis Soliz[1]; Qi Dai[1]; Scott Moffatt[1]; [1]Cytec Industries Inc

3:50 PM Concluding Comments

Aluminum Alloys: Fabrication, Characterization and Applications: Development and Application

Sponsored by: TMS Light Metals Division, TMS: Aluminum Processing Committee
Program Organizers: Zhengdong Long, Kaiser Aluminum; Subodh Das, Phinix LLC; Tongguang Zhai, University of Kentucky; William Golumbfskie, Naval Surface Warfare Center

Monday PM
March 4, 2013

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

Session Chair: Zhengdong Long, Kaiser Aluminum

2:00 PM
Hemming of Aluminum Alloy Sheets by Electromagnetic Forming: *Jianhui Shang*[1]; Steve Hatkevich[1]; Larry Wilkerson[1]; [1]American Trim LLC

2:20 PM
Mechanical Properties of Al-Zn-Mg-Cu Alloys Processed with High-pressure Torsion: *Shigeru Kuramoto*[1]; Ichiro Aoi[1]; Tadahiko Furuta[1]; [1]Toyota Central R&D Labs., Inc.

2:40 PM
High-Performance Be-Al Casting Alloys: *Charles Pokross*[1]; Gary Schuster[1]; [1]Materion

3:00 PM
Effect of Solute Additions on the Thermal Stability of Grain Size in Aluminum Alloys: *Andrew Baker*[1]; Stephen Kampe[1]; [1]Michigan Tech

3:20 PM Break

3:40 PM
Phase Diagram Determination in Aluminum Rich Al-Sc-Zr Alloys and Interdiffusion Coefficients of Scandium and Zirconium in Aluminum: Kyle Deane[1]; *Marcel Kerkove*[1]; Paul Sanders[1]; Douglas Swenson[1]; Thomas Wood[1]; [1]Michigan Technological University

4:00 PM
The Effect of Temperature on Compressive Strength of Al-Si-Cu-Mg Cast Alloy with Zr, V and Ti Additions: *Sugrib Shaha*[1]; Wojciech Kasprzak[2]; Frank Czerwinski[2]; Daolun Chen[1]; [1]Ryerson University; [2]CanmetMATERIALS, Natural Recourses Canada

4:20 PM
The Influence of Sc Additions on the Microstructure and Mechanical Properties of an Ultrafine Grained Al-Mg Alloy: *Tammy Harrell*[1]; Troy Topping[1]; Tao Hu[1]; Julie Schoenung[1]; Enrique Lavernia[1]; [1]University of California, Davis

4:40 PM
Multi-Axial Deformation Behavior of Al6061 Subjected to Fire Damage: *Dayakar Penumadu*[1]; Akawat Siriruk[1]; Stephen Puplampu[1]; Brian Lattimer[2]; Patrick Summers[2]; [1]University of Tennessee; [2]Virginia Tech

5:00 PM
Structure Optimization of Al-Si-Type Alloys for Thermal and Mechanical High Loaded Components: Marcel Rosefort[1]; *Andreas Kleine*[1]; Ansgar Pithan[2]; Christiane Matthies[1]; Hubert Koch[1]; [1]TRIMET ALUMINIUM AG; [2]Martinrea Honsel Germany GmbH

5:20 PM
Development of High Strength Aluminium Alloys at BALCO: *Narasimharaghavan Puliyur Krishnaswamy*[1]; Mousumi Kar[1]; Sachin Prasad[1]; [1]Bharat Aluminium Co. Ltd., (A Unit of Vedanta Resources Plc.,), BALCO Nagar, Korba

Aluminum Reduction Technology: Cell Design and Performance

Sponsored by: TMS Light Metals Division, TMS: Aluminum Committee
Program Organizer: Mark Cooksey, CSIRO

Monday PM
March 4, 2013

Room: Grand Ballroom C1
Location: Henry B. Gonzalez Convention Center

Session Chair: Songqing Gu, Chinalco

2:00 PM Introductory Comments

2:05 PM
In Depth Analysis of Energy-Saving and Current Efficiency Improvement of Aluminum Reduction Cells: Jianfei Zhou[1]; *Marc Dupuis*[2]; Feiya Yan[1]; Shaoyong Ruan[1]; [1]Guiyang Aluminum Magnesium Design and Research Institute; [2]GéniSim Inc

2:30 PM
Rio Tinto Alcan AP4X Low Energy Cell Development: Pascal Thibeault[1]; *Alexandre Blais*[1]; Sébastien Becasse[1]; Patrice Coté[1]; Laurent Fiot[1]; François Laflamme[2]; [1]RioTinto Alcan; [2]Aluminerie Alouette Inc.

2:55 PM
Energy Reduction Technology for Aluminum Electrolysis: Choice of the Cell Voltage: *Feng Naixiang*[1]; Peng Jianping[1]; Wang Yaowu[1]; [1]Northeastern University

3:20 PM
Advancements of Dubal High Amperage Reduction Cell Technologies: *Michel Reverdy*[1]; Abdalla Zarouni[1]; Jean-Luc Faudou[1]; Qassim Galadari[1]; Ali Al Zarouni[1]; Sergey Akhmetov[1]; Kamel Al Aswad[1]; Maryam Al-Jallaf[1]; Walid Al Sayed[2]; Vinko Potocnik[1]; [1]DUBAL; [2]Emirates Aluminium Company (EMAL)

3:45 PM Break

3:55 PM
Development of Low-Voltage Energy-Saving Aluminum Reduction Technology: Li Jie[1]; Lv Xiaojun[1]; *Zhang Hongliang*[2]; Liu Yexiang[1]; [1]School of Metallurgical Science and Engineering, Central South University; [2]School of Metallurgical Science and Engineering, Central South University,

4:20 PM
D18+: Potline Modernisation at DUBAL: *Sergey Akhmetov*[1]; Daniel Whitfield[1]; Maryam Al-Jallaf[1]; Ali Al Zarouni[1]; Alexander Arkhipov[1]; Amer Al Redhwan[1]; Wael Abou Sidou[1]; [1]Dubai Aluminium

4:45 PM
Industry Test of Perforation Anode In Aluminium Electrolysis Technology: *Yingfu Tian*[1]; Hesong Li[2]; Longhe Wei[2]; Xi Cao[2]; Jianguo Yin[3]; [1]Chongqing Tiantai Aluminum Industry Co., Ltd; [2]Central South University; [3]Chongqing University of Science and Technology

5:10 PM
The First Results of the Industrial Application of the EcoSoderberg Technology at the Krasnoyarsk Aluminium Smelter: *Victor Buzunov*[1]; Victor Mann[2]; Evgeniy Chichuk[1]; Vladimir Frizorger[1]; Andrey Pinaev[1]; Evgeniy Nikitin[3]; [1]RUSAL ETC; [2]UC RUSAL; [3]RUSAL - Krasnoyarsk

Aluminum Reduction Technology: Fundamentals: Modelling

Sponsored by: TMS Light Metals Division, TMS: Aluminum Committee
Program Organizer: Mark Cooksey, CSIRO

Monday PM
March 4, 2013

Room: Grand Ballroom C2
Location: Henry B. Gonzalez Convention Center

Session Chair: Christian Droste, Hydro Aluminium

2:00 PM Introductory Comments

2:05 PM
Unsteady MHD Modelling Applied to Cell Stability: *Renaudier Steeve*[1]; Bardet Benoit[1]; Steiner Gilles[2]; Pedcenko Alex[3]; Rappaz Jacques[4]; Molokov Sergeï[3]; Masserey Alexandre[2]; [1]Rio Tinto Alcan; [2]Ycoor Systems SA; [3]Coventry University; [4]EPFL

2:30 PM
Impact of Magnetohydrodynamic and Bubbles Driving Forces on the Alumina Concentration in the Bath of an Hall-Héroult Cell: *René von Kaenel*[1]; [1]KAN-NAK SA

2:55 PM
Investigation of Electrolytic Bubble Behaviour in Aluminium Smelting Cell: Morshed Alam[1]; Yos Morsi[1]; William Yang[2]; Krishna Mohanarangam[2]; *Geoffrey Brooks*[1]; John Chen[3]; [1]Swinburne University of Technology; [2]CSIRO; [3]University of Auckland

3:20 PM
Mathematical Model Validation of Aluminium Electrolysis Cells at DUBAL: Abdalla Zarouni[1]; *Lalit Mishra*[1]; Marwan Bastaki[1]; Amal Al Jasmi[1]; Alexander Arkhipov[1]; Vinko Potocnik[2]; [1]DUBAL; [2]Consultant

3:45 PM Break

3:55 PM
Production Application Study on Magneto-Hydro-Dynamic Stability of a Large Prebaked Anode Aluminum Reduction Cell: Shaoyong Ruan[1]; Feiya Yan[1]; *Marc Dupuis*[2]; Valdis Bojarevics[3]; Jianfei Zhou[1]; [1]Guiyang Aluminum Magnesium Design and Research Institute; [2]GéniSim Inc; [3]School of Computing and Mathematics, Greenwich University

4:20 PM
MHD of Aluminium Cells with the Effect of Channels and Cathode Perturbation Elements: *Valdis Bojarevics*[1]; [1]University of Greenwich

4:45 PM
Magnetohydrodynamic Model Coupling Multiphase Flow in Aluminum Reduction Cell with Innovative Cathode Protrusion: *Qiang Wang*[1]; Baokuan Li[1]; Fang Wang[1]; Naixiang Feng[1]; [1]Northeastern University of China

5:10 PM
Optimization of the Cathode Collector Bar with a Copper Insert Using Finite Element Method: *Mathieu Gagnon*[1]; Patrice Goulet[1]; Richard Beeler[2]; Donald Ziegler[3]; Mario Fafard[1]; [1]Université Laval; [2]Alcoa Technical Center; [3]Alcoa Canada

5:35 PM
Energy Savings in Aluminum Electrolysis Cells: Effect of the Cathode Design: Mathieu Blais[1]; *Martin Désilets*[1]; Marcel Lacroix[1]; [1]Sherbrooke University

Biological Materials Science Symposium: Mechanical Behavior of Biological Materials II: Natural Materials

Sponsored by: TMS Electronic, Magnetic, and Photonic Materials Division, TMS Structural Materials Division, TMS: Biomaterials Committee
Program Organizers: Candan Tamerler, University of Washington; Molly Gentleman, Texas A & M University; Po-Yu Chen, National Tsing Hua University; Kajal Mallick, University of Warwick; Rajendra Kumar Kasinath, Unversity of Montana; Paul G. Allison, US Army Corp of Engineers

Monday PM
March 4, 2013

Room: 214C
Location: Henry B. Gonzalez Convention Center

Funding support provided by: Biomaterials Program, National Science Foundation

Session Chairs: John Nychka, University of Alberta; Po-Yu Chen, National Tsing Hua University

2:00 PM Invited
Phase Transitions in $CaCO_3$ Biominerals Mapped with 20-nm Resolution: *P.U.P.A. Gilbert*[1]; [1]University of Wisconsin

2:30 PM
Structure and Fracture Resistance of Armored Fish Scales: *Wen Yang*[1]; Bernd Gludovatz[2]; Elizabeth Zimmermann[2]; Robert Ritchie[3]; Marc Meyers[1]; [1]Univerisity of California, San Diego; [2]Lawrence Berkeley National Laboratory; [3]University of California, Berkeley

2:50 PM
On the Structural and Mechanical Design of Cuttlebone: Yao-Tien Ku[1]; Yi-Hsin Lee[1]; Chuan-Chin Chiao[1]; *Po-Yu Chen*[1]; [1]National Tsing Hua University

3:10 PM
Microstructure and Mechanical Behaviour of Megalops Atlanticus Scales: *Santiago Gil*[1]; Alex Ossa[1]; [1]Eafit University

3:30 PM
On the Changes in Mechanical Behavior of Fish Scales by Polar Solvents: Guihua Li[1]; *Mobin Yahyazadehfar*[2]; Adriana Garrano[3]; Alex Ossa[4]; Dwayne Arola[2]; [1]Anhui University; [2]University of Maryland Baltimore County; [3]University of Catania; [4]Eafit University

3:50 PM Break

4:00 PM Invited
Toughness Amplification in Natural Composites: *Francois Barthelat*[1]; Reza Rabiei[1]; Ahmad Khayer Dastjerdi[1]; [1]McGill University

4:30 PM
Cavitation Induced Structural and Neuronal Damage in Brain Tissue: *Ghatu Subhash*[1]; Malisa Sarntinoranant[1]; Michael King[1]; Yu Hong[1]; [1]University of Florida

4:50 PM
Unusual Deformation Mechanisms in the Prehensile Tails of Seahorses and Pipefish: *Michael Porter*[1]; Ana Bertha Castro-Cesena[1]; Ekaterina Novitskaya[1]; Zherrina Manilay[1]; Marc Meyers[1]; Joanna McKittrick[1]; [1]University of California San Diego

5:05 PM
Investigation of Material Property Variation in Red-Eared Slider Turtle Shell Bone Using Microindentation and Nanoindentation: Nicole Diamantides[1]; Aylin Dincer[1]; C. Tristan Stayton[1]; *Donna Ebenstein*[1]; [1]Bucknell University

5:25 PM
'Mesolayers': A Contribution to Toughness in Abalone Nacre?: *Maria Lopez*[1]; Pedro Meza-Martinez[1]; Marc Meyers[1]; [1]UCSD

5:40 PM
Structural Characterization and Mechanical Performance of Durophagous Fish: A Comparative Study: *Hao-Jen Fang*[1]; Yu-Chen Chan[1]; Tzu-Chin Tseng[2]; Jyh-Wei Lee[2]; Jeng-Gong Duh[1]; Po-Yu Chen[1]; [1]National Tsing Hua University; [2]Ming Chi University of Technology

6:00 PM
The Effect of Tungsten Exposure on the Structure-Property Relationships of Herbivorous Gastropod (Snail) Shells and Rat Femurs: *R.R. McCullough*[1]; P. G. Allison[2]; J.M. Seiter[3]; J.H. Lindsay[3]; B.A. Williams[3]; D.R. Johnson[3]; A.J. Kennedy[3]; [1]University of Alabama; [2]US Army Engineer Research & Development Center ; [3]US Army Engineer Research & Development Center

6:15 PM Invited
Property - Processing Relationships of Natural Reinforcing Fibers: Nicole Robertson[1]; *John Nychka*[1]; John Wolodko[2]; [1]University of Alberta; [2]Alberta Innovates Technology Futures

Bulk Metallic Glasses X: Alloy Development and Application II

Sponsored by: TMS Structural Materials Division, TMS/ASM: Mechanical Behavior of Materials Committee
Program Organizers: Peter Liaw, The University of Tennessee; Hahn Choo, The University of Tennessee; Yanfei Gao, The University of Tennessee; Gongyao Wang, The University of Tennessee

Monday PM
March 4, 2013

Room: Lone Star Salon D
Location: Grand Hyatt

Funding support provided by: Materials Processing and Manufacturing Division, National Science Foundation

Session Chairs: C. T. Liu, Hong Kong Polytechnic University; Ke-Fu Yao, Tsinghua University

2:00 PM Keynote
Phase Selection in Multi-Component Alloys with Equiatomic and Close-to-Equiatomic Compositions: Sheng Guo[1]; *C. T. Liu*[1]; Qiang Hu[2]; [1]City University of Hong Kong; [2]Nortwestern Polytecnic University

2:30 PM
Replication of Surface Detail in Bulk Metallic Glass Casting: *Sven Bossuyt*[1]; Erno Soinila[1]; Tuomas Pihlajamäki[1]; Hannu Hänninen[1]; [1]Aalto University

2:45 PM Invited
Metallic Glass Nanowire by Gas Atomization: *Koji Nakayama*[1]; Yoshihiko Yokoyama[1]; Takeshi Wada[1]; Na Chen[1]; [1]Tohoku University

3:05 PM
Development of Work Hardenable Ti-based Bulk Metallic Glass Matrix Composites: *Wook Ha Ryu*[1]; Hye Jeong Chang[2]; Wan Chuck Woo[3]; Eun Soo Park[1]; [1]Seoul National University; [2]Korea Institute of Science and Technology; [3]Korea Atomic Energy Research Institute

3:20 PM Invited
Structure, Fragility and Glass Formation: *Ken Kelton*[1]; James Bendert[1]; Anup Gangopadhyay[1]; Mark Johnson[1]; Nicholas Mauro[1]; Adam Vogt[1]; [1]Washington University

3:40 PM
Development of Zr-Based Bulk Metallic Glass Composites with In-Situ Formed ZrN Secondary Phases: *Je In Lee*[1]; Eun Soo Park[1]; [1]Seoul National University

3:55 PM Break

4:10 PM
Identifying Bulk Metallic Glass Compositions Through Combinatorial Strategies: *Jan Schroers*[1]; Shiyan Ding[1]; Yanhui Liu[1]; Yanglin Li[1]; [1]Yale University

4:30 PM Invited
Research on the Glass-Forming Ability of Low Density Ti-Based Bulk Metallic Glasses: *Ke-Fu Yao*[1]; Pan Gong[1]; [1]Tsinghua University

4:50 PM
Thermodynamic Basis for Glass Formation in Cu-Zr Rich Ternary Systems and Their Synthesis by Mechanical Alloying: *S. Vincent*[1]; Jatin Bhatt[1]; B. S. Murty[2]; [1]Visvesvaraya National Institute of Technology, Nagpur; [2]Indian Institute of Technology Madras

5:05 PM
In-Situ and Ex-Situ Composites of Zr-Based Bulk Metallic Glass: *Dongchun Qiao*[1]; Atakan Peker[1]; [1]Washington State University

5:20 PM Invited
Interfacial Free Energy and Local Order of Metallic Liquids from Elements to Alloys: *Geun Woo Lee*[1]; Dong-Hee Kang[1]; Byeongchan Lee[1]; Sangho Jeon[1]; Soo Heyong Lee[1]; [1]Korea Research Institute of Standards and Science

5:40 PM
Study on the Glass-Forming Ability of Binary Cu-Zr Bulk Metallic Glasses: *Dong-Hee Kang*[1]; Sangho Jeon[2]; Soo Heyong Lee[1]; Hyun Hwi Lee[3]; Geun Woo Lee[1]; [1]Korea Research Institute of Standards and Science; [2]University of Science and Technology; [3]Pohang Accelerator Laboratory

5:55 PM
Synthesis of Porous Bulk Metallic Glass Composite Fabricated by Spark Plasma Sintering Method Depending on the Type of Dissolution Phase: *Bo-Kyeong Guem*[1]; Song Yi Kim[1]; Do Hyang Kim[2]; Bum Sung Kim[1]; Min Ha Lee[1]; [1]Korea Institute of Industrial Technology, Yonsei university; [2]Yonsei University

Cast Shop for Aluminum Production: Aluminum Cast Shop I

Sponsored by: TMS Light Metals Division, TMS: Aluminum Committee
Program Organizer: Gyan Jha, Tri-Arrows Aluminum

Monday PM
March 4, 2013

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

Session Chair: Gyan Jha, Tri-Arrows Aluminum

2:00 PM Introductory Comments

2:10 PM
Very High Purity Ingot – An Endangered Species?: *Stephen Lindsay*[1]; [1]Alcoa, Inc.

2:30 PM
Innovations and Trends in the Modern Smelter Casthouse: *Mike Unitt*[1]; Graham Guest[1]; Fabienne Virieux[2]; [1]Solios Thermal; [2]Fives Solios

2:50 PM
Degassing Processing and Its Effect on Aluminum Metal Quality: *Eulogio Velasco*[1]; Enrique Resendiz[1]; Alejandra Rodriguez[1]; [1]NEMAK

3:10 PM
Permanent Magnet Stirred Round-Top Melting Furnace: *Shridas Ningileri*[1]; Randall Bowers[2]; Xiaoxuan Li[2]; Gyan Jha[3]; [1]University of Kentucky; [2]Secat, Inc.; [3]Tri-Arrows Aluminum

3:30 PM Break

3:50 PM
Energy Control in Primary Aluminium Casthouse Furnaces: *Inge Johansen*[1]; Svenn Ivar Strømhaug[2]; [1]Hydro Aluminium, Research & Technology Development; [2]Hydro Aluminium, R&D, Casthouse Support

4:10 PM
Metal Contamination Associated with Dross Processing: *Ray Peterson*[1]; [1]Aleris International Inc

4:30 PM
Modeling of Molten Metal Flow through a Baffled Closed Loop Furnace: *Randall Bowers*[1]; Shridas Ningileri[2]; Xiaoxuan Li[1]; [1]Secat, Inc.; [2]University of Kentucky

Characterization of Materials through High Resolution Coherent Imaging: X-ray Based Techniques II

Sponsored by: TMS Structural Materials Division, TMS: Advanced Characterization, Testing, and Simulation Committee
Program Organizers: John Carpenter, Los Alamos National Laboratory; Ross Harder, Argonne National Laboratory; Richard Sandberg, Los Alamos National Laboratory

Monday PM
March 4, 2013
Room: 206B
Location: Henry B. Gonzalez Convention Center

Session Chairs: Ross Harder, Argonne National Laboratory; Richard Sandberg, Los Alamos National Laboratory

2:00 PM Keynote
Quantitative Characterisation of the Strain Fields Associated with Individual Dislocations: *Brian Abbey*[1]; Harry Quiney[2]; Ruben Dilanian[2]; Andrew Peele[3]; [1]La Trobe University; [2]The University of Melbourne; [3]The Australian Synchrotron

2:30 PM Invited
Core-Shell Strain Structure of Zeolite Microcrystals: Wonsuk Cha[1]; Sanghoon Song[1]; Nak Cheon Jeong[1]; Hyun-jun Park[1]; Tung Cao Thanh Pham[1]; Ross Harder[1]; Gang Xiong[1]; Ian McNulty[1]; Kyung Byung Yoon[1]; Ian Robinson[1]; *Hyunjung Kim*[1]; [1]Sogang University

2:50 PM Invited
Ptychographic Reconstructions Using Shared Data Sets: Martin Dierolf[1]; Pierre Thibault[2]; *Irene Zanette*[3]; Bjoern Enders[3]; Andreas Menzel[4]; Oliver Bunk[4]; Franz Pfeiffer[1]; [1]Technische Universitaet Muenchen & Paul Scherrer Institute & Ecole Polytechnique Federale de Lausanne; [2]Technische Universitaet Muenchen & Paul Scherrer Institute; [3]Technische Universitaet Muenchen; [4]Paul Scherrer Institute

3:10 PM Invited
Nanometer Scale Materials Studies with Tabletop Soft X-Ray Coherent Imaging: *Richard Sandberg*[1]; [1]Los Alamos National Laboratory

3:30 PM Break

3:50 PM Keynote
Opportunities for X-Ray Coherence in the Dynamics of Complex Oxide Materials: *Paul Evans*[1]; [1]University of Wisconsin

4:20 PM Invited
Applications of X-Ray Bragg Projections Ptychography: *Stephan Hruszkewycz*[1]; Martin Holt[1]; Conal Murray[2]; Dongjin Kim[1]; Matthew Highland[1]; Chad Folkman[1]; Seungbum Hong[1]; Paul Fuoss[1]; [1]Argonne National Laboratory; [2]IBM T.J. Watson Research Center

4:40 PM
Elemental Imaging Using Micro, Confocal and Doubly Curved Crystal-Based X-Ray Fluorescence Instrumentation for Materials Characterization: *George Havrilla*[1]; [1]Los Alamos National Laboratory

Characterization of Minerals, Metals and Materials 2013: Characterization of Ferrous Metals II

Sponsored by: TMS Extraction and Processing Division, TMS: Materials Characterization Committee
Program Organizers: Jiann-Yang Hwang, Michigan Technological University; Chen-Guang Bai, Chongqing University; John Carpenter, DOE LANL; Shadia Ikhmayies, Al Isra University; Bowen Li, Michigan Technological University; Mingming Zhang, ArcelorMittal Global R&D; Sergio Monteiro, State University of North Rio de Janeiro; Zhiwei Peng, Michigan Technological University

Monday PM
March 4, 2013
Room: 206A
Location: Henry B. Gonzalez Convention Center

Session Chairs: Donato Firrao, Politecnico di Torino ; Anchao Ren, Wuhan University of Science and Technology

2:00 PM
High-Cycle Fatigue Behavior of Three Ferrite Stainless Steels at 800°C: *Tianlong Liu*[1]; Lijia Chen[1]; Hongyun Bi[2]; Xin Che[1]; [1]Shenyang University of Technology; [2]Baoshan Iron & Steel Co., Ltd.

2:20 PM
Inclusions Removal by Gas Bubbles in Steel Continuous Casting Tundish: *Ming-Mei Zhu*[1]; Fei Xiong[1]; Guang-Hua Wen[1]; Sheng-Jian Cao[1]; Jian Li[1]; [1]Chongqing University

2:40 PM
Precipitation of CuSx Inclusions in Steel during Rapid Solidification: *Zhao Dan*[1]; [1]Shanghai University

3:00 PM
Strength and Ductility of Ultrafine Grained 304SS Prepared by Accumulative Rolling and Annealing: W.Y. Xue[1]; *Yongfeng Shen*[1]; D.F. Liu[1]; Z.Y. Liu[1]; Y.D. Wang[1]; [1]Northeastern University

3:20 PM
Thermo-Mechanical Behavior of the Cast Iron Connector in the "Anode Block – Steel Stub" Assembly after Casting and during Operation of the Hall-Héroult Process: Rimma Zhelateleva[1]; Dmitry Lukovnikov[1]; [1]University Research Centre on Aluminium (CURAL) - University of Québec at Chicoutimi

3:40 PM
Thermographic Characterization of Tensile Behavior in Railway Bogie Materials: *Jeongguk Kim*[1]; Sung Cheol Yoon[1]; [1]Korea Railroad Research Institute

Computational Discovery of Novel Materials: Electrochemical Energy Storage and Conversion

*Sponsored by:*TMS Electronic, Magnetic, and Photonic Materials Division, TMS Materials Processing and Manufacturing Division, TMS: Integrated Computational Materials Engineering Committee
Program Organizers: Richard Hennig, Cornell University; Dallas Trinkle, University of Illinois at Urbana-Champaign

Monday PM
March 4, 2013

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

Session Chair: Richard Hennig, Cornell University

2:00 PM Invited
Design and Discovery of Novel Energy Materials: *Stephan Lany*[1]; [1]NREL

2:35 PM Invited
Extending the Concept of Semiconductor Defect Chemistry to Electrochemistry: *Mira Todorova*[1]; Joerg Neugebauer[1]; [1]Max-Planck-Institut fuer Eisenforschung GmbH

3:10 PM Invited
Ab Initio Scanning of Chemical Trends for H Solubility, Diffusivity and Interaction with Defects in Metals: *Roman Nazarov*[1]; Ugur Aydin[1]; Tilmann Hickel[1]; Jörg Neugebauer[1]; [1]Max-Planck-Institut für Eisenforschung

3:45 PM Break

4:00 PM
Computational Design of Nanosegreagted Catalysts: *Guofeng Wang*[1]; Zhiyao Duan[1]; [1]Univeristy of Pittsburgh

4:20 PM
Computational Design of Novel Photocatalysts through Surface Disorder Engineering: Kulbir Ghuman[1]; *Chandra Veer Singh*[1]; [1]University of Toronto

4:40 PM Invited
Simulation of Electrochemical Processes: Application to Novel Battery Material Design: Hui-Chia Yu[1]; Chen Ling[1]; Jishnu Bhattacharya[1]; Anton Van der Ven[1]; *Katsuyo Thornton*[1]; [1]Department of Materials Science & Engineering, University of Michigan, Ann Arbor

5:15 PM
First-Principles Studies of Lithiation, Delithiation and Pulverization Processes in Si Anodes in Li-Ion Batteries: *Kwai Chan*[1]; Wuwei Liang[1]; Candace Chan[2]; [1]Southwest Research Institute; [2]Arizona State University

5:35 PM
First Principles Studies of Fullerene-Like Silicon Clathrates as Anode Materials in Li-ion Batteries: *Kwai Chan*[1]; Wuwei Liang[1]; Candace Chan[2]; [1]Southwest Research Institute; [2]Arizona State University

Computational Thermodynamics and Kinetics: First-principles and Multi-scale

*Sponsored by:*TMS Electronic, Magnetic, and Photonic Materials Division, TMS Materials Processing and Manufacturing Division, TMS: Alloy Phases Committee, TMS: Chemistry and Physics of Materials Committee, TMS/ASM: Computational Materials Science and Engineering Committee, TMS: Integrated Computational Materials Engineering Committee, TMS/ASM: Phase Transformations Committee, TMS: Process Technology and Modeling Committee
Program Organizers: Jörg Neugebauer, Max-Planck-Institut für Eisenforschung GmbH; Carelyn Campbell, NIST; Dongwon Shin, Oakridge National Lab; Zi Kui Liu, Penn State; Michael Demkowicz, Massachusetts Institute of Technology; Raymundo Arroyave, Texas A & M University; Shenyang Hu, Pacific Northwest National Laboratory

Monday PM
March 4, 2013

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

Session Chairs: Micheal Short, MIT; Carelyn Campbell, NIST

2:00 PM Invited
Substitutional Solid-State Diffusion in Ni Alloys from First Principles: *Anton Van der Ven*[1]; [1]University of Michigan

2:25 PM
Diffusion in L12 Structures: A Comparison of Ni_3Al, Ni_3Ga and Ni_3Ge: Priya Gopal[1]; *Srinivasan Srivilliputhur*[1]; [1]University of North Texas, Denton

2:40 PM
Non-Dilute Defect Calculations in Thermoelectric Zintl Phases: *Gregory Pomrehn*[1]; G. Jeffery Synder[1]; Axel van de Walle[2]; [1]California Institute of Technology; [2]Brown University

2:55 PM
Pseudomorphic Growth in Mg/Nb Multi-layered Thin Films: *Anchalee Junkaew*[1]; Byoungsoo Ham[1]; Xinghang Zhang[1]; Raymundo Arroyave[1]; [1]Texas A&M University

3:10 PM
First-Principles Investigation of Mechanical Properties of Dilute Si in BCC-Fe: *Ying Chen*[1]; Arkapol Saengdeejing[1]; Ken Suzuki[1]; Hideo Miura[1]; Tetsuo Mohri[2]; [1]Tohoku University; [2]Hokkaido University

3:25 PM
New Bond-Order Potentials for Study of Crystal Defects in BCC Transition Metals: *Vaclav Vitek*[1]; Yi-Shen Lin[1]; Matous Mrovec[2]; [1]University of Pennsylvania; [2]Fraunhofer Institute for Mechanics of Materials

3:40 PM Break

4:00 PM Invited
Coupling Effects Between Multiphysical Phenomena, Thermodynamics, and Length Scales in 3D Modeling of PWR CRUD Deposits: *Michael Short*[1]; David Andersson[2]; Theodore Besmann[3]; Chris Stanek[2]; Dennis Hussey[4]; Brian Kendrick[2]; Sidney Yip[1]; [1]MIT; [2]Los Alamos National Laboratory; [3]Oak Ridge National Laboratory; [4]Electric Power Research Institute

4:25 PM Invited
Phase Field Modeling of Diffusion-Controlled Deformation Processes: Cheng Feng[1]; Ning Zhou[1]; Hallee Deutchman[1]; Mike Mills[1]; *Yunzhi Wang*[1]; [1]Ohio State University

4:50 PM
AKMC Simulations of Complex Phase Interfaces in Molybdenum: *Ari Harjunmaa*[1]; Jutta Rogal[1]; Ralf Drautz[1]; [1]Ruhr University Bochum

5:05 PM
An Atomistic Perspective on Dynamic Solute-Interface Interactions: *Tegar Wicaksono*[1]; Chad Sinclair[1]; Matthias Militzer[1]; [1]UBC

Cost Affordable Titanium IV: Low Cost: Additive Manufacturing and Metal Injection Molding

*Sponsored by:*TMS Structural Materials Division, TMS: Titanium Committee
Program Organizers: M. Ashraf Imam, Naval Research Lab; Sam Froes, University of Idaho (Retired); Ramana Reddy , The University of Alabama

Monday PM
March 4, 2013
Room: 217C
Location: Henry B. Gonzalez Convention Center

Session Chairs: F.H. (Sam) Froes, University of Idaho; Sami El-Soudani, The Boeing Company

2:00 PM Invited
Powder Metallurgy and Additive Manufacturing of Titanium Powders: *William Peter*[1]; Thomas Muth[1]; Ryan Dehoff[1]; Steve Nunn[1]; Yukinori Yamamoto[1]; Wei Chen[1]; Adrian Sabau[1]; Alan Liby[1]; Craig Blue[1]; [1]Oak Ridge National Laboratory

2:20 PM
Microstructure, Mechanical Properties, and Failure Mechanisms in Parts Made by Additive Manufacturing: *Yuwei Zhai*[1]; Diana Lados[1]; [1]WPI

2:40 PM
Microstructural Analysis of Ti-6Al-4V Components Made by Electron Beam Additive Manufacturing: *Rashadd Coleman*[1]; Kevin Chou[1]; Viola Acoff[1]; [1]The University of Alabama

3:00 PM
Links between Melt Pool Geometry and Microstructure in Electron Beam Additive Manufacturing: Joy Gockel[1]; *Jack Beuth*[1]; Nathan Klingbeil[2]; Karen Taminger[3]; [1]Carnegie Mellon University; [2]Wright State University; [3]NASA Langley Research Center

3:20 PM
Low Cost Titanium Powder Development for Additive Manufacturing in an Electron Beam Melting System: *Francisco Medina*[1]; Sara Gaytan[1]; Edwin Martinez[1]; Larry Murr[1]; Ryan Wicker[1]; [1]University of Texas at El Paso

3:40 PM Break

4:20 PM
The Effect of Laser Metal Deposition Operating Parameters on the Microstructure of Ti-5Al-5Mo-5V-3Cr: *Dacian Tomus*[1]; Guillaume Leclerc[1]; Colleen Bettles[1]; Tom Jarvis[1]; Junfa Mei[1]; Xinhua Wu[1]; [1]Monash University

4:00 PM
Rheological Properties of Feedstock Composed of Titanium Alloy Powder and Polyethylene Glycol Based Binder System for Metal Injection Moulding: *Gnanavinthan Thavanayagam*[1]; Deliang Zhang[1]; Kim Pickering[1]; [1]The University of Waikato

4:40 PM
Microstructure and Texture Development in Ti-5Al-5Mo-5V-3Cr Alloy during Cold Rolling and Annealing: *Alireza Ghaderi*[1]; Peter Hodgson[1]; Matthew Barnett[1]; [1]Deakin University

Deformation, Damage, and Fracture of Light Metals and Alloys: Deformation, Damage, and Fracture of Light Metals and Alloys Session I

*Sponsored by:*TMS Light Metals Division, TMS/ASM: Mechanical Behavior of Materials Committee
Program Organizers: Ke An, Oak Ridge National Laboratory; Qizhen Li, University of Nevada, Reno

Monday PM
March 4, 2013
Room: 210B
Location: Henry B. Gonzalez Convention Center

Session Chair: Carl Boehlert, Michigan State University

2:00 PM
Atomic Level Observations of Fatigue Structures in Lamellar Ti-45Al-8Nb-0.2C (TNB-V2): *Fritz Appel*[1]; Ali El-Chaikh[2]; Hans-Jürgen Christ[2]; [1]Helmholtz Zentrum Geesthacht; [2]Universität Siegen

2:20 PM
Mechanical Properties and Dislocation Structure Evolution in Ti_6Al_7Nb Alloy Processed by High Pressure Torsion: *Miloš Janecek*[1]; Jakub Cížek[1]; Josef Stráský[1]; Kristína Václavová[1]; Irina Semenova[2]; [1]Charles University; [2]USATU

2:40 PM
Microstructural Characterization and Mechanical Properties of Boron Modified Ti-6Al-4V Alloy in Different Environments: *Gaurav Singh*[1]; Upadrasta Ramamurty[1]; [1]Indian Institute of Science Bangalore

2:55 PM
Quasi-static Tension and Dynamic Compression Properties of As-Cast Ti-6Al-4V Alloy by Trace Boron Addition: *Yang YU*[1]; Songxiao HUI[1]; Wenjun YE[1]; Xiaoyun SONG[1]; Rui LIU[1]; Yanyan Fu[1]; [1]General Research Institute for Nonferrous Metals, Beijing, China

3:10 PM
Plastic Behaviour of Ti-6Al-4V from RT to 600°C: *Martin Surand*[1]; Bernard Viguier[2]; Emilie Herny[1]; [1]MICROTURBO; [2]Institut Carnot CIRIMAT, INP-ENSIACET, Université de Toulouse

3:25 PM
Microstructure and Crystallographic Texture Evolution during Hot Deformation of Ti-6Al-2Sn-4Zr-6Mo Titanium Alloy: Abdlaziz Elarbi[1]; [1]University of Sheffield

3:40 PM Break

3:50 PM
Atomistic Simulation of Deformation Mechanisms of Nanostructured Titanium: *G.P. Zheng*[1]; [1]Hong Kong Polytechnic University

4:10 PM
The Influence of Heating Rate on Phase Transformations in Ti-6.8Mo-4.5Fe-1.5Al: *Herbert Boeckels*[1]; Henry Rack[1]; [1]Clemson University

4:25 PM
Characterization and Bayesian Neural Network Modeling of Microstructure-Tensile Properties Correlations in Beta-Processed Ti-5111 Alloy: *Vikas Dixit*[1]; Brian Welk[1]; S.H. Mills[1]; P. Collins[2]; Hamish Fraser[1]; [1]The Ohio State University; [2]University of North Texas

4:40 PM
Solidification Behaviour and Microstructure Characteristics during Double Directional Solidification Technique of Ti-46Al-5Nb Alloy: *Liwei Zhang*[1]; X.F. Ding[1]; J.P. Lin[1]; [1]University of Science & Technology Beijing(USTB)

4:55 PM
Effect of Post-Weld Heat Treatment on Microstructure and Mechanical Properties of Laser Beam Welded TiAl-Based Alloy: *Jie Liu*[1]; Volker Ventzke[1]; Peter Staron[1]; Norbert Schell[1]; Nikolai Kashaev[1]; Norbert Huber[1]; [1]Helmholtz-Zentrum Geesthacht, Germany

5:10 PM
Design and Microstructural Characterization of High Performance β-Metastable Titanium Alloys Presenting Simultaneous TRIP and TWIP Effects: *Matthieu Marteleur*[1]; Pascal Jacques[1]; Frédéric Prima[2]; [1]Université Catholique de Louvain; [2]Ecole Nationale Supérieure de Chimie de Paris

Electrode Technology for Aluminium Production: Anode Raw Materials

*Sponsored by:*TMS Light Metals Division, TMS: Aluminum Committee
Program Organizers: Les Edwards, Rain CII Carbon; Hans Darmstadt, Rio Tinto Alcan; Sunil Bhajun, Qatalum; Juraj Chmelar, Hydro; Matvey Golubev, Rusal; Pretesh Patel, Light Metals Research Centre; Elaine Sum, Rio Tinto Alcan; Marc Gagnon, Aluminerie Alouette

Monday PM
March 4, 2013

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

Session Chair: Hans Darmstadt, Rio Tinto Alcan

2:00 PM Introductory Comments

2:05 PM
Review of Different Techniques to Study the Interaction Between Coke and Pitch in Anode Manufacturing: *Duygu Kocaefe*[1]; Arunima Sarkar[1]; Shipan Das[1]; Salah Amrani[1]; Dipankar Bhattacharyay[1]; Dilip Sarkar[1]; Yasar Kocaefe[1]; Brigitte Morais[2]; Marc Gagnon[2]; [1]University of Quebec at Chicoutimi; [2]Aluminerie Alouette inc.

2:30 PM
Observations on the Coke Air Reactivity Test: Les Edwards[1]; Jim Marino[1]; *Keith Neyrey*[1]; [1]Rain CII Carbon

2:55 PM
Impurity Removal from Petroleum Coke: Alexandre Gagnon[1]; *Hans Darmstadt*[1]; Nigel Backhouse[1]; Esme Ryan[2]; Laurence Dyer[3]; David Dixon[3]; [1]Rio Tinto Alcan; [2]Rio Tinto Technology & Innovation; [3]University of British Columbia,

3:20 PM
Calcined Coke Round Robin 19 and the Precision of Bulk Density Tests: *Marvin Lubin*[1]; Les Edwards[1]; Lorentz Petter Lossius[2]; [1]Rain CII Carbon; [2]Hydro Aluminium

3:45 PM Break

3:55 PM
A Method for the Rapid Characterisation of Petroleum Coke Microstructure Using Polarised Light Microscopy: *Andris Innus*[1]; Alain Jomphe[1]; Hans Darmstadt[1]; [1]Rio Tinto Alcan

4:20 PM
Improvements of Vibrated Bulk Density Analysis at VM-CBA and Petrocoque S.A: *Jean Pardo*[1]; Edinaldo da Silva[2]; [1]Votorantim Metals - CBA; [2]Votorantim Metais - CBA

4:45 PM
Influence of GPC Properties on the CPC Quality: *Jingli Zhao*[1]; Qingcai Zhao[1]; Qingbo Zhao[1]; Lei Yu[1]; Pusheng Yu[1]; [1]Jinan Aohai Carbon Products Corporation Ltd.

5:10 PM
Quality of Calcined Petroleum Coke and It's Influence on Aluminium Smelting: *José Subero*[1]; [1]CVG Venalum

Fatigue and Fracture of Thin Films and Nanomaterials: Fracture of Thin Films and Nanomaterials

*Sponsored by:*TMS Materials Processing and Manufacturing Division, TMS Structural Materials Division, TMS/ASM: Mechanical Behavior of Materials Committee, TMS: Nanomechanical Materials Behavior Committee
Program Organizers: Megan Cordill, Erich Schmid Institute of Materials Science; Daniel Kiener, Montanuniversitaet Leoben; Xinghang Zhang, Texas A &M University ; Daniel Gianola, University of Pennsylvania ; Corinne Packard, Colorado School of Mines

Monday PM
March 4, 2013

Room: Bowie C
Location: Grand Hyatt

Funding support provided by: Hysitron, Inc., and Nanomechanics, Inc.

Session Chairs: Corinne Packard, Colorado School of Mines; Neville Moody, Sandia National Laboratories

2:00 PM Invited
Brittleness Criteria as Affected by Size and Constraint: William Gerberich[1]; Eric Hintsala[1]; Douglas Stauffer[2]; [1]University of Minnesota; [2]Hysitron, Inc

2:30 PM
Experiments Investigating Strength Size Effects in Polysilicon and the Existence of a Threshold Strength: Mohamed Saleh[1]; *Jack Beuth*[1]; Maarten de Boer[1]; [1]Carnegie Mellon University

2:50 PM
Experimental Determination of the Fracture Toughness Via Scratch Tests: *Nicholas Randall*[1]; Bo Zhou[1]; Gregory Favaro[1]; [1]CSM Instruments

3:10 PM
Fracture Characteristics of Severely Plastically Deformed Metals: *Anton Hohenwarter*[1]; [1]Department of Materials Physics, Montanuniversität Leoben, Austria

3:30 PM Break

3:50 PM Invited
Probing Materials' Properties and Reliability at the Micron- and Nanoscale and the Need for Novel Experiments: *Chris Eberl*[1]; [1]KIT

4:20 PM
Size and Rate Dependent Plastic Localization in Thin Metallic Films: *Thomas Pardoen*[1]; Michael Coulombier[1]; Hosni Idrissi[1]; Nick Schryvers[2]; Frédéric Mompiou[3]; Marc Legros[3]; Jean-Pierre Raskin[1]; [1]UCL; [2]University of Antwerp; [3]CNRS & U. Toulouse

4:40 PM
Mechanical Behavior and Fracture Properties in Scandium Deuteride Films and Pillars: *Neville Moody*[1]; Eric Hintsala[2]; Clare Teresi[2]; David Adams[1]; Daniel Kammler[1]; E. David Reedy[1]; Nancy Yang[1]; Marian Kennedy[3]; William Gerberich[2]; [1]Sandia National Laboratories; [2]University of Minnesota; [3]Clemson University

5:00 PM
Fracture Toughness of SPD-Deformed Nanostructured Rail Steels and Its Implications on the In-Service Behaviour: *Christoph Kammerhofer*[1]; Anton Hohenwarter[1]; Stephan Scheriau[2]; Reinhard Pippan[1]; [1]Erich Schmid Institute of Materials Science - Austrian Academy of Sciences; [2]voestalpine Schienen GmbH

5:20 PM
Atomistic Deformation and Fracture Mechanisms in Gradient Nano-Grained Metals: *Ting Zhu*[1]; Zhi Zeng[1]; [1]Georgia Institute of Technology

Friction Stir Welding and Processing VII: Friction Stir Welding and Processing: Modeling and Controls

Sponsored by: TMS Materials Processing and Manufacturing Division, TMS: Shaping and Forming Committee
Program Organizers: Rajiv Mishra, University of North Texas; Murray Mahoney, Retired from Rockwell Scientific; Yutaka Sato, Tohoku University; Yuri Hovanski, Pacific Northwest National Laboratory; Ravi Verma, General Motors

Monday PM
March 4, 2013
Room: Grand Ballroom C3
Location: Henry B. Gonzalez Convention Center

Session Chairs: Murray Mahoney, Retired from Rockwell Scientific; Terry McNelley, Naval Postgraduate School; Michael Miles, BYU

2:00 PM Keynote
Three-Dimensional Visualization of Metallic Flow and Control of FSW Joint Properties Using New FSP Technique: *Hidetoshi Fujii*[1]; Yoshiaki Morisada[1]; Takuya Imaizumi[1]; [1]Osaka University

2:25 PM Invited
System Parameter Identification for Friction Stir Processing: *Carl Sorensen*[1]; Dustin Marshall[1]; [1]Brigham Young University

2:45 PM Invited
Advances in Temperature Control of FSP: *Kenneth Ross*[1]; Carl Sorensen[2]; [1]Manufacturing Technology, Inc.; [2]Brigham Young University

3:05 PM Invited
Analysis of Tool Feedback Forces and Material Flow during Friction Stir Welding: *Enkhsaikhan Boldsaikhan*[1]; Michael McCoy[1]; [1]Wichita State University

3:25 PM
Paradigm Shift in Control of the Spindle Axis: *Kenneth Ross*[1]; Carl Sorensen[2]; [1]Manufacturing Technology, Inc; [2]Brigham Young University

3:45 PM Break

3:55 PM
A Coupled Thermal/Material Flow Model of Friction Stir Welding Applied to Sc-Modified Aluminum Alloys: *Carter Hamilton*[1]; Mateusz Kopyscianski[2]; Stanislaw Dymek[2]; Oleg Senkov[3]; [1]Miami University; [2]AGH University Of Science And Technology; [3]UES, Inc

4:15 PM Invited
Finite Element Modeling of High Speed Friction Stir Spot Welding: *Michael Miles*[1]; Utsab Karki[1]; Yuri Hovanski[2]; [1]BYU; [2]Pacific Northwest National Lab

4:35 PM Invited
Microstructure Refinement and Homogenization of Non-deforming Constituent Distributions During FSW/P: *Terry McNelley*[1]; Sarath Menon[1]; Jeffrey Woertz[1]; [1]Naval Postgraduate School

4:55 PM
Defect Identification in FSWs Using Data Analysis Techniques: *Haley Doude*[1]; Judy Schneider[1]; [1]Mississippi State University

5:10 PM
Modeling the Effects of Tool Geometries on the Temperature Distributions and Material Flow of Friction Stirred AA 7039 Welds: *Manas Mahapatra*[1]; D Venkateswarlu[1]; H.K. Mohanty[1]; S. P. Harsh[1]; N.R. Mandal[1]; [1]Indian Institute of Technology Roorkee

5:30 PM
Application of Acoustic Emission Technique to Monitor FSW Process to Produce Defect Free Welds: *B M Rajaprakash*[1]; Suresha C N[1]; Sarala Upadhya[1]; [1]University Visvesvaraya College of Engineering

5:50 PM
Finite Element Evaluation of Residual Stresses Developed in Friction Stir Welded Tube-Tubesheet Joint: *Fadi Al-Badour*[1]; Nesar Merah[1]; Abdelrahman Shuaib[1]; Abdelaziz Bazoune[1]; [1]King Fahd University of Petroleum and Minerals

Frontiers in Solidification Science: Industrial Aspects of Solidification

Sponsored by: TMS Materials Processing and Manufacturing Division, TMS: Solidification Committee
Program Organizers: Andre Phillion, University of British Columbia; Silvere Akamatsu, Institut des Nanosciences de Paris; Christoph Beckermann, The University of Iowa; Michel Rappaz, Ecole Polytechnique Federale de Lausanne

Monday PM
March 4, 2013
Room: Lone Star Salon F
Location: Grand Hyatt

Funding support provided by: Materials Processing and Manufacturing Division, National Science Foundation

Session Chairs: Andre Phillion, University of British Columbia; Steven Cockcroft, University of British Columbia

2:00 PM Invited
Advances in Investment Cast Aerospace Components: *Boyd Mueller*[1]; [1]Alcoa Power and Propulsion

2:30 PM Invited
Constellium Point of View on Solidification Issues Relevant to the Industry of Aluminium Alloys Processing: *Philippe Jarry*[1]; [1]Constellium

3:00 PM
Numerical and Experimental Studies of the Grain Morphological Transitions and Macrosegregation in the Sedimentation Cone of an Industrial Steel Ingot: *Leriche Nicolas*[1]; Kumar Arvind[2]; Combeau Herve[1]; Zaloznik Miha[1]; Demurger Joelle[3]; Wendenbaum Jean[3]; Gandin Charles-André[4]; [1]Institut Jean Lamour; [2]Indian Institute of Technology Kanpur; [3]Ascométal; [4]MINES ParisTech, CEMEF UMR CNRS 7635

3:20 PM
Texture Control During Laser Deposition of FCC Alloys: *Guru Dinda*[1]; Jyoti Mazumder[2]; Douglas Grant[1]; Robert Ruokolainen[1]; Ashish Dasgupta[1]; [1]Focus: HOPE; [2]University of Michigan

3:40 PM Break

3:55 PM Invited
Commercial Production of Thin-Strip by Twin-Roll Strip Casting - CASTRIP® Process: *Rama Mahapatra*[1]; Hisahiko Fukase[2]; Mark Schlichting[3]; Neal Ross[4]; Peter Woodberry[1]; Walter Blejde[1]; [1]Castrip LLC; [2]IHI MetalTech Co; [3]Nucor Steel; [4]Nucor Castrip Arkansas LLC

4:25 PM
Microstructure Modification by Nanoparticles during Solidification of Aluminum Alloys: Yi Sun[1]; Hongseok Choi[1]; Hiromi Konishi[1]; Xiaochun Li[1]; [1]University of Wisconsin Madison

4:45 PM
Crystallization of Intermetallic Phases Fe-Zn during Hot-Dip Galvanizing Process: *Dariusz Kopycinski*[1]; [1]AGH University of Science and Technology

High Temperature Electrochemistry: High Temperature Metals and Materials

*Sponsored by:*TMS Extraction and Processing Division, TMS: Pyrometallurgy Committee
Program Organizers: Prabhat Tripathy, Idaho National Laboratory; Guy Fredrickson, Idaho National Laboratory

Monday PM
March 4, 2013
Room: 006D
Location: Henry B. Gonzalez Convention Center

Session Chairs: Derek Fray, University of Cambridge; Vasant Kumar, University of Cambridge

2:00 PM
Reduction of TiO_2 or $TiCl_x$ into Liquid Bi in Molten Salts: *Yuya Kado*[1]; Sho Maruyama[1]; Akihiro Kishimoto[1]; Tetsuya Uda[1]; [1]Kyoto University

2:30 PM
Cathodic Behavior of Silicon (IV) in BaF_2-CaF_2 –SiO_2 Melts: Yuejiao Hu[1]; *Shuqiang Jiao*[1]; Xin Wang[1]; Jiusan Xiao[1]; Hongmin Zhu[1]; [1]University of Science and Technology Beijing

3:00 PM
Cyclic Voltammetry Investigation of Titanium Dioxide Reduction in Molten Oxide Electrolytes: *Chanaka De Alwis*[1]; Donald Sadoway[2]; [1]UTRS Inc.,; [2]Massachusetts Institute of Technology

3:30 PM Break

3:50 PM
Electrorefining of Titanium from Bi-Ti Alloys in a NaCl-KCl Molten Salt: *Akihiro Kishimoto*[1]; Yuya Kado[1]; Shuhei Arisawa[1]; Tetsuya Uda[1]; [1]Kyoto University

4:20 PM
High Temperature Corrosion and Electrochemical Behavior of Weld Overlay Alloy 625 in Molten Salt Mixture of $PbSO^4$-Pb_3O^4-PbC_{12}-ZnO-CdO: *E. Mohammadi Zahrani*[1]; A. Alfantazi[1]; [1]The University of British Columbia

4:50 PM
Fundamental Study on Anodic Dissolution Behavior of Platinum Group Metals: *Katsuhiro Nose*[1]; Toru Okabe[1]; [1]The Institute of Industrial Science, the University of Tokyo

Hume-Rothery Award Symposium: Electronic Structure Theory of Stability and Bonding in Alloys: Alloy Theory I

*Sponsored by:*TMS Electronic, Magnetic, and Photonic Materials Division, TMS: Alloy Phases Committee
Program Organizer: Chris Wolverton, Northwestern University

Monday PM
March 4, 2013
Room: 205
Location: Henry B. Gonzalez Convention Center

Session Chairs: Barry Klein, University California Davis; Ralf Drautz, University of Oxford

2:00 PM Invited
Extending the Lattice Stability Framework in Ab Initio Alloy Thermodynamics: *Axel van de Walle*[1]; [1]Brown University

2:30 PM Invited
FIrst Principles Modeling of Planar Defects in Solid Solutions by the Special Quasirandom Structure Approach: Maarten de Jong[1]; David Olmsted; Axel van de Walle[2]; *Mark Asta*[1]; [1]University of California, Berkeley; [2]Brown University

3:00 PM Invited
Diffuse Interfaces, Gradient Energy and Their Kinetic and Thermodynamic Consequences: *Alan Ardell*[1]; [1]University of California

3:30 PM Break

3:50 PM Invited
Anharmonic Phonons and Thermodynamics: *Brent Fultz*[1]; Chen Li[1]; Tian Lan[1]; [1]California Institute of Technology

4:20 PM Invited
First Principles Phase Diagram Calculations for Octahedral Interstitial Ordering of Oxygen and Vacancies in hcp Ti, Zr, and Hf: *Benjamin Burton*[1]; Axel van de Walle[2]; [1]NIST; [2]Brown University

Hybrid and Hierarchical Composite Materials: Multifunctionality

*Sponsored by:*TMS Structural Materials Division, TMS/ASM: Composite Materials Committee
Program Organizers: Tomoko Sano, US Army Research Laboratory; Charles Randow, US Army Research Laboratory; Chang Soo Kim, University of Wisconsin -Milwaukee

Monday PM
March 4, 2013
Room: 215
Location: Henry B. Gonzalez Convention Center

Session Chair: Meisha Shofner, Georgia Institute of Technology

2:00 PM
Rate Dependent Mechanical Response of Epoxy Polymers: *Joseph Lenhart*[1]; Daniel Knorr[1]; Jan Andzelm[1]; Adam Richardson[1]; Mark Hindenlang[1]; [1]US Army Research Laboratory

2:30 PM
Sulfonated Poly(Fluorene Ether Ketone) (SPFEK)/a-Zirconium Phosphate (ZrP) Nanocomposite Membranes for Fuel Cell Applications: *Fuchuan Ding*[1]; Hang Hu[1]; Matthew F. Milner[1]; Min Xiao[2]; Yuezhong Meng[2]; Luyi Sun[2]; [1]Texas State University–San Marcos; [2]Sun Yat-sen University

2:50 PM
Manufacture of RF Absorptive Composites by Direct-Write: *Garth Wilks*[1]; Gerard Simon[1]; Thomas Ekiert[1]; Gyaneshwar Tandon[1]; Zongwu Bai[1]; Max Alexander[1]; Ryan Justice[1]; [1]Air Force Research Laboratory

3:10 PM
New Insight into Multi-Functional, Hierarchical Poly(Urethane Urea) Elastomers: From Molecules-by-Design to Multiscale Modeling: *Alex Hsieh*[1]; Tanya Chantawansri[1]; [1]Army Research Laboratory

3:30 PM Break

3:45 PM
Multifunctional Architectured Materials for Electromagnetic Absorption: Pierre Bollen[1]; Nicolas Quievy[1]; Isabelle Huynen[1]; Christian Bailly[1]; Christophe Detrembleur[2]; Jean-Michel Thomassin[2]; *Thomas Pardoen*[1]; [1]UCL; [2]ULg

4:05 PM
High Thermal-Conductive Aluminum/Diamond Composites for Electronic Packaging: *Xitao Wang*[1]; Yang Zhang[1]; Jianhua Wu[1]; Hailong Zhang[1]; [1]University of Science and Technology Beijing

4:25 PM
Hierarchical Architected Metal-Elastomer Composites for Multifunctional Applications: *Lorenzo Valdevit*[1]; [1]University of California, Irvine

4:45 PM
Extrinsic Toughening of Shape Memory Alloy Embedded Composites: *Fatmata Barrie*[1]; Michele Manuel[1]; [1]University of Florida

5:05 PM
Morphology and Phase Evaluation in Shape Memory Alloy (SMA) – MAX Phase Interpenetrating Composites: Liangfa Hu[1]; *Ankush Kothalkar*[1]; Miladin Radovic[1]; Ibrahim Karaman[1]; [1]Texas A&M University

Integrated Computational Modeling of Materials for Nuclear Energy: Fuel Modeling II: Multiscale Modeling

*Sponsored by:*TMS Materials Processing and Manufacturing Division, TMS Structural Materials Division, TMS/ASM: Computational Materials Science and Engineering Committee, TMS/ASM: Nuclear Materials Committee
Program Organizers: Remi Dingreville, Sandia National Laboratories; Koenraad Janssens, Paul Scherrer Institute; Timothy Bartel, Sandia National Laboratories

Monday PM
March 4, 2013
Room: 202B
Location: Henry B. Gonzalez Convention Center

Session Chair: To Be Announced

2:00 PM Invited
Heterogeneity Effects on the Thermal Conductivity of UO2+x: *Marius Stan*[1]; Bogdan Mihaila[2]; Di Yun[1]; Zhi-Gang Mei[1]; Petrica Cristea[3]; [1]Argonne National Laboratory; [2]Los Alamos National Laboratory; [3]University of Bucharest

2:30 PM Invited
Mesoscale Model of Bubble/Grain Boundary Interaction in Irradiated Materials: *Michael Tonks*[1]; Liangzhe Zhang[1]; Paul Millett[1]; Bulent Biner[1]; Yongfeng Zhang[1]; [1]Idaho National Laboratory

3:00 PM
Multi-Physics Mechanical Response of Fuel Pin Swelling: *Timothy J. Bartel*[1]; Remi Dingreville[1]; Josh Robbins[1]; [1]Sandia National Laboratories

3:20 PM Invited
Development of the Mechanistic Fuel Performance and Safety Code SFPR Using the Multi-Scale Approach: *Mikhail Veshchunov*[1]; A. Boldyrev[1]; V.D. Ozrin[1]; V. Shestak[1]; V. Tarasov[1]; G. Norman[1]; A. Kuksin[1]; V. Pisarev[1]; D. Smirnova[1]; V. Stegailov[1]; S. Starikov[1]; A. Yanilkin[1]; [1]Nuclear Safety Institute (IBRAE) of Russian Academy of Sciences

3:40 PM Break

4:00 PM Invited
Continuum Theory of Defects and Materials Response to Irradiation: *Anter El-Azab*[1]; [1]Purdue University

4:30 PM
Phonon Thermal Transport in UO_2 Crystals with Defects: *Ryan Deskins*[1]; Anter El-Azab[1]; [1]Purdue University

4:50 PM Invited
Multiscale Computer Simulation of Fission Gas Release in Oxide Fuels: *Paul Millett*[1]; Michael Tonks[1]; David Andersson[2]; Yongfeng Zhang[1]; Bulent Biner[1]; [1]Idaho National Laboratory; [2]Los Alamos National Laboratory

5:20 PM
Multi-Scale Modeling of Intergranular Fracture in UO_2: *Yongfeng Zhang*[1]; Paul Millett[1]; Michael Tonks[1]; Bulent Biner[1]; [1]Idaho National Laboratory

Magnesium Technology 2013: Primary Production and Casting

*Sponsored by:*TMS Light Metals Division, TMS: Magnesium Committee
Program Organizers: Norbert Hort, Helmholtz-Zentrum Geesthacht; Suveen Mathaudu, US Army Research Office; Neale Neelameggham, IND LLC; Martyn Alderman, Magnesium Elektron

Monday PM
March 4, 2013
Room: 214A
Location: Henry B. Gonzalez Convention Center

Session Chairs: Neale Neelameggham, Ind LLC; Adam Powell, Metal Oxygen Separation Technologies

2:00 PM
Doing Projects in a Foreign Language – Communications Management, Issues and Strategies: *Deling Xian*[1]; [1]Hatch

2:20 PM
Evolution of the Magnetherm Magnesium Reduction Process: *James Sever*[1]; Marlyn Ballain[2]; [1]Alpha / Omega Engineering; [2]Ballain Consulting, Inc

2:40 PM
Impact of Site Elevation on Mg Smelter Design: *Phillip Baker*[1]; [1]Hatch Ltd.

3:00 PM
Purification of Highly Contaminated Magnesium Melt: *Byoung-Gi Moon*[1]; Do-Youn Kim[2]; Bong-Sun You[1]; Ki-Ho Koh[3]; [1]Korea Institute of Materials Science; [2]University of Science and Technology; [3]Inje University

3:20 PM
Research on New Type Materials Preparation for Magnesium Production by Silicothermic Process: *Wen Ming*[1]; Zhang Ting'an[1]; Dou Zhihe[1]; Zhang Rui[1]; Ren Xiaodong[1]; Zhou Lian[2]; [1]Northeastern University; [2]Northwest Insititute For Non-ferrous Metal Reasearch

3:40 PM Break

4:00 PM
Selective Laser Melting of Magnesium and Magnesium Alloys: *Matthias Gieseke*[1]; Christian Noelke[1]; Stefan Kaierle[1]; Volker Wesling[1]; Heinz Haferkamp[1]; [1]Laser Zentrum Hannover e.V.

4:20 PM
Computational Multi-Scale Modeling of the Microstructure and Segregation of Cast Mg Alloys at Low Superheat: *Laurentiu Nastac*[1]; Nagy El-Kaddah[1]; [1]University of Alabama

4:40 PM
Effect of Casting Defects Distribution on the Beginning of Tensile Fracture in Semi-Solid Injected Magnesium AZ91D Alloy: *Yuichiro Murakami*[1]; Kenji Miwa[2]; Naoyuki Kanetake[3]; Shuji Tada[1]; [1]Advanced Industrial Science and Technology; [2]Aichi Science and Technology Foundation; [3]Nagoya University

5:00 PM
Effect of Inoculation Method of Refiner on the Grain Refinement of AZ91 Alloy: *Jun Ho Bae*[1]; Young Min Kim[1]; Chang Dong Yim[1]; Ha-Sik Kim[1]; Bong Sun You[1]; [1]Korea Institute of Materials Science

Magnetic Materials for Energy Applications -III: Rare Earth-free Permanent Magnets I

*Sponsored by:*TMS Electronic, Magnetic, and Photonic Materials Division, TMS: Energy Committee, TMS: Energy Conversion and Storage Committee, TMS: Magnetic Materials Committee
Program Organizers: Sivaraman Guruswamy, University of Utah; Thomas Woodcock, IFW Dresden; Yongmei Jin, Michigan Technological University; Raju Ramanujan, Nanyang Technological University; Frank Johnson, GE Global Research; Oliver Gutfleisch, Technische Universität Darmstadt

Monday PM
March 4, 2013
Room: 217D
Location: Henry B. Gonzalez Convention Center

Session Chairs: Yongmei Jin, Michigan Tech; Thomas. Woodcock, IFW Dresden

2:00 PM Invited
Rare-Earth Free Permanent Magnets: *Yang-Ki Hong*[1]; [1]University of Alabama

2:30 PM Invited
New Materials and Novel Anisotropies for Rare-Earth-Free Permanent Magnets: *Laura Lewis*[1]; [1]Northeastern University

3:00 PM Invited
Advances in Rare-earth Free Permanent Magnets: David Sellmyer[1]; B Balamurugan; W. Zhang; R. Skomski; [1]University of Nebraska

3:30 PM
Thermal Stabilization of Magnetic Hardness in Exchange-Biased Nanostructures for Advanced Permanent Magnets: *Joshua Marion*[1]; Felix Jimenez-Villacorta[1]; Laura Lewis[1]; [1]Northeastern University

3:50 PM Break

4:05 PM Invited
Novel High Energy Permanent Magnet without Critical Elements: *R McCallum*[1]; [1]Ames Laboratory

4:35 PM Invited
Non-Rare Earth Permanent Magnets: Nanocrystalline Mn-Al-C: *Jeff Shield*[1]; Michael Lucis[1]; Timothy Prost[1]; Ralph Skomski[1]; [1]University of Nebraska

5:05 PM
Tetrataenite (FeNi)- A Potential Candidate For a Rare-Earth -Free Permanent Magnet.: *Arif Mubarok*[1]; Nina Bordeaux[2]; Joseph Goldstein[1]; Laura Lewis[2]; [1]University of Massachusetts; [2]Northeastern University

Materials and Fuels for the Current and Advanced Nuclear Reactors II: Irradiation Studies

*Sponsored by:*TMS Structural Materials Division, TMS/ASM: Corrosion and Environmental Effects Committee, TMS/ASM: Nuclear Materials Committee
Program Organizers: Ramprashad Prabhakaran, Idaho National Laboratory; Dennis Keiser, Idaho National Laboratory; Raul Rebak, GE Global Research

Monday PM
March 4, 2013
Room: 202A
Location: Henry B. Gonzalez Convention Center

Session Chair: Raul Rebak, GE Global Research

2:00 PM Invited
Development of Radiation Tolerant Cladding Materials for Fast Spectrum Reactors: *Stuart Maloy*[1]; Osman Anderoglu[1]; Tarik Saleh[1]; Mychailo Toloczko[2]; James Cole[3]; Jian Gan[3]; Dave Hoelzer[4]; Thak-Sang Byun[4]; G. Robert Odette[5]; [1]Los Alamos National Laboratory; [2]PNNL; [3]INL; [4]ORNL; [5]UCSB

2:40 PM
GENESIS : An Open Platform for the Study and Nano Analysis (Atom Probe, SEM Cross Beam Station and MET (In Situ Straining, Temperature, Tomography) of Irradiation Effects in Radioactive Materials for Nuclear Application: *Philippe Pareige*[1]; [1]Rouen University

3:00 PM
Irradiation Studies on Friction Stir Welded ODS Alloys: *Ramprashad Prabhakaran*[1]; Jatu Burns[2]; James Cole[1]; Yaqiao Wu[2]; B Miller[1]; Indrajit Charit[3]; Rajiv Mishra[4]; K. Murty[5]; [1]Idaho National Laboratory; [2]CAES; [3]University of Idaho; [4]University of North Texas; [5]North Carolina State University

3:20 PM
Understanding of the Microstructural Evolution of Austenitic Model Alloy and 316 Steel under Ion Irradiation by Coupling of TEM and APT Investigations - Part I: TEM: Alexandre Volgin[1]; *Brigitte Decamps*[2]; Aurélie Gentils[2]; Franck Fortuna[2]; Bertrand Radiguet[3]; Philippe Pareige[3]; Cédric Pokor[4]; Abderrahim Al-Mazzouzi[4]; [1]EDF R&D; [2]CNRS/IN2P3; [3]GPM; [4]EDF R&D

3:40 PM Break

4:00 PM
Understanding of the Microstructural Evolution of Austenitic Model Alloy and 316 Steel under Ion Irradiation by Coupling of TEM and APT Investigations – Part II: APT Results: Alexandre Volgin[1]; *Bertrand Radiguet*[2]; Philippe Pareige[2]; Brigitte Décamps[3]; Aurélie Gentil[3]; Frank Fortuna[3]; Cedric Pokor[1]; [1]EDF R&D - MMC; [2]GPM UMR CNRS 6634 - Université et INSA de Rouen; [3]CSNSM - CNRS IN2P3 - Université Paris Sud

4:20 PM
Point Defect Cluster Interactions with Grain Boundaries in Nanocrystalline Iron: *Greg Vetterick*[1]; Chris Barr[1]; John Baldwin[2]; Pete Baldo[3]; Mark Kirk[3]; Amit Misra[2]; Mitra Taheri[1]; [1]Drexel University; [2]Los Alamos National Laboratory; [3]Argonne National Laboratory

4:40 PM
Synergetic Effect of Ni and Cu in French Reactor Pressure Vessel Steels: Hefei Huang[1]; *Bertrand Radiguet*[1]; Patrick Todeschini[2]; François Clémendot[3]; Philippe Pareige[1]; [1]GPM UMR CNRS 6634 - Université et INSA de Rouen; [2]EDF R&D - MMC; [3]EDF Production and Ingineering - CEIDRE/DLAB

5:00 PM
Studies on the Ion Bombardment and LBE Corrosion Resistance Properties of Polycrystalline SiC: *Jianrong Sun*[1]; Peng Song[1]; Tielong Shen[1]; Zhiguang Wang[1]; [1]Institute of Modern Physics, Chinese Academy of Sciences

Materials in Clean Power Systems VIII: Durability of Materials : Alloy Development for Clean and Efficient Energy Technologies

*Sponsored by:*TMS Structural Materials Division, TMS/ASM: Corrosion and Environmental Effects Committee
Program Organizers: Sebastien Dryepondt, ORNL; Kinga Unocic, ORNL; Jeffrey Fergus, Auburn University; Xingbo Liu, West Virginia University

Monday PM
March 4, 2013
Room: 007A
Location: Henry B. Gonzalez Convention Center

Session Chairs: Jeffrey Hawk, U.S. Department of Energy, National Energy Technology Laboratory; Amit Shyam, Oak Ridge National Laboratory

2:00 PM Invited
Reduced Temperature Range for the Heat to Fuel Energy Conversion by Using Ceria Nanoparticles: *Siu-wai Chan*[1]; Bin Wang[1]; William Robson[1]; Jacob Keith[1]; Prashant Mukhopadhyay[1]; Apisak Meesrisom[1]; Joan Raitano[1]; Hong-Ying Liang[1]; [1]Columbia University

2:30 PM
Improved Processing Efficiency and Microstructure Control of ODS Ferritic Alloys: *Joel Rieken*[1]; Iver Anderson[1]; Matthew Kramer[1]; Sebastien Dryepondt[2]; David Hoelzer[2]; [1]Ames Laboratory; [2]Oak Ridge National Laboratory

2:50 PM Invited
Advanced Heat Resistant Austenitic Stainless Steel and Composite Tube Materials for High Efficient and Clean Energy Technology: *Guocai Chai*[1]; [1]Sandvik Materials Technology

3:20 PM Break

3:40 PM Invited
Recent Developments in Creep-Resistant, Alumina-Forming Austenitic Stainless Steels: Yukinori Yamamoto[1]; *Govindarajan Muralidharan*[1]; Michael Brady[1]; [1]Oak Ridge National Laboratory

4:10 PM
Homogenizing Castings to Improve the Mechanical Properties of Traditionally Wrought Ni-Based Superalloys for A-USC Steam Turbines: *Paul Jablonski*[1]; Jeffrey Hawk[1]; Daniel Purdy[2]; Phillip Maziasz[3]; [1]US Department of Energy; [2]GE Energy; [3]Oak Ridge National Laboratory

Materials Processing Fundamentals: Process Metallurgy of Steel

*Sponsored by:*TMS Extraction and Processing Division, TMS: Process Technology and Modeling Committee
Program Organizers: Lifeng Zhang, University of Science and Technology Beijing; Antoine Allanore, Massachusetts Institute of Technology; Cong Wang, Saint-Gobain High Performance Materials; James Yurko, Materion Brush Beryllium and Composites; Justin Crapps, ExxonMobil

Monday PM
March 4, 2013
Room: 008A
Location: Henry B. Gonzalez Convention Center

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

2:00 PM
Evolution of Inclusions in Ti-Bearing Ultra-Low Carbon Steel during RH Refining Process: Wen Yang[1]; *Lifeng Zhang*[1]; Xinhua Wang[1]; [1]University of Science and Technology Beijing

2:20 PM
Mass Action Concentration Model of CaO-MgO-FeO-Al_2O_3-SiO_2 Slag Systems and Its Application to the Formation Mechanism of $MgO{\cdot}Al_2O_3$ Spinel Type Inclusion in Casing Steel: *Haiyan Tang*[1]; Jingshe Li[1]; Chuanbo Ji[1]; [1]University of Science and Technology Beijing

2:40 PM
Effect of Casting Conditions Regarding to Macro-Segregation and Macro-Cleanliness of Fe-Mn-C-Al Steel Grades: *Petrico von Schweinichen*[1]; Dieter Senk[1]; Hubert Weerts[1]; [1]RWTH Aachen University

3:00 PM
Theory Analysis of Steel Cleanliness Control during Electroslag Remelting: *Cheng-bin Shi*[1]; Xi-chun Chen[2]; Yi-wa Luo[1]; Han-jie Guo[1]; [1]University of Science and Technology Beijing; [2]Central Iron and Steel Research Institute

3:20 PM
Formation and Drop of Metal Droplets in Slag Bath of Electroslag Remelting Processes: *Baokuan Li*[1]; Ruinan LI[1]; Bo WANG[1]; [1]Northeastern University

3:40 PM
Study on Flow-Reaction Desulfurization of RH by Physical Experiment: *Hongbo Yang*[1]; Jingshe Li[1]; Zengfu Gao[1]; Fangfang Song[1]; Wanliang Yang[1]; [1]USTB

4:00 PM Break

4:10 PM
Modeling of Transient Fluid Flow, Solidification Processes and Bubble Transport in Continuous Casting Mold: *Zhongqiu Liu*[1]; Baokuan Li[1]; Maofa Jiang[1]; [1]Northeastern University, China

4:30 PM
Numerical Analysis of Coupled Fluid Flow, Heat Transfer and Solidification in Ultra-thick Slab Continuous Casting Mold: *Xin Xie*[1]; Dengfu Chen[1]; Mujun Long[1]; Leilei Zhang[1]; Jialong Shen[1]; Youguang Ma[1]; [1]Chongqing University

4:50 PM
Numerical Simulations of Inclusion Behavior in a Gas-Stirred Ladle with a CFD-PBM Coupled Modle: *Wentao Lou*[1]; Miaoyong Zhu[1]; [1]Northeastern University

5:10 PM
Considering Heat Advection in Thin Wall Casting: *Charles Monroe*[1]; [1]University of Alabama at Birmingham

5:30 PM
Effect of Free Surface Variation on Intermixed Amount in Continuous Casting Tundish Steelmaking Tundish: *Pradeep Jha*[1]; Md. Irfanul Siddiqui[1]; [1]IIT Roorkee

5:50 PM
Measurement and Observation of the Filling Process of Steel Castings: *Jinwu Kang*[1]; Haimin Long[1]; [1]Tsinghua University

Materials Research Applied to National Needs (MARANN) in Honor of Professor Morris E. Fine: Materials Research Applied to National Needs (MARANN) II

*Sponsored by:*TMS Structural Materials Division, TMS: Chemistry and Physics of Materials Committee
Program Organizers: Peter Liaw, University of Tennessee; Gongyao Wang, University of Tennessee; Semyon Vaynman, Northwestern University; Yip Wah Chung, Northwestern University

Monday PM
March 4, 2013
Room: 006A
Location: Henry B. Gonzalez Convention Center

Session Chair: Semyon Vaynman, Northwestern University

2:00 PM
Precipitation-Strengthened Ferritic Steels with Increased Strength and Ductility: *Semyon Vaynman*[1]; Monica Kapoor[1]; Gautam Ghosh[1]; Dieter Isheim[1]; Yip-Wah Chung[1]; Morris Fine[1]; [1]Northwestern University

2:30 PM
Steel Research Applied to National Needs - A Company Perspective: *Shrikant Bhat*[1]; Richard Sussman[1]; [1]ArcelorMittal

3:00 PM
Investigation on Ferritic Superalloys with Improved Creep Resistance by Computational Design and Experimental Validation: *Peter Liaw*[1]; Mark Asta[2]; David Dunand[3]; Morris Fine[3]; Gautam Ghosh[3]; Chain Liu[4]; Hong Ding[2]; Shenyan Huang[1]; Michael Michael Rawlings[3]; Zhiqian Sun[1]; Gian Song[1]; Zhenke Teng[1]; Gongyao Wang[1]; Christian Liebscher[2]; [1]University of Tennessee; [2]University of California, Berkeley; [3]Northwestern University; [4]City University of Hong Kong

3:30 PM Break

3:50 PM
Synchrotron Radiation Mapping of the Indented Fe-added Nickel Aluminide Alloys: *Tian-Yu Lin*[1]; E-Wen Huang[1]; Morris Fine[2]; Peter Liaw[3]; [1]National Central University; [2]Northwestern University; [3]University of Tennessee

Materials Science in Reduced Gravity: Facilities and Metallic Glasses

*Sponsored by:*TMS Materials Processing and Manufacturing Division, TMS: Solidification Committee
Program Organizers: Douglas Matson, Tufts University; Robert Hyers, University of Massachusetts Amherst; Hani Henein, University of Alberta

Monday PM
March 4, 2013
Room: Lone Star Salon E
Location: Grand Hyatt

Session Chair: Hani Henein, University of Alberta - Edmonton

2:00 PM Introductory Comments

2:10 PM Invited
DIXI - A Radiography Facility for Materials Science Investigations Onboard ISS: *Stefan Klein*[1]; Florian Kargl[1]; Andreas Meyer[1]; Christian Stenzel[2]; [1]DLR; [2]Astrium GmbH

2:40 PM
MASER12-XRMON-GF: A Sounding Rocket Experiment Devoted to the X-Ray Radiographic Observation of Directional Solidification: Guillaume Reinhart[1]; Henri Nguyen-Thi[1]; *Georges Salloum Abou Jaoudé*[1]; Ragnvald Mathiesen[2]; Gerhard Zimmermann[3]; Ylva Houltz[4]; Daniela Voss[5]; [1]IM2NP - Aix-Marseille Univ; [2]NTNU; [3]ACCESS e.V.; [4]Swedish Space Corporation; [5]ESA

3:00 PM
Drop-Tube Processing of Ni-Si Alloys: *Andrew Mullis*[1]; Leigang Cao[1]; Robert Cochrane[1]; [1]University of Leeds

3:20 PM
Electromagnetic Levitation Onboard the ISS: The EML Payload: *Achim Seidel*[1]; Wolfgang Soellner[1]; Christian Stenzel[1]; [1]Astrium

3:40 PM
Electrostatic Levittaion Furnace for ISS: *Keiji Murakami*[1]; [1]JAXA

4:00 PM Break

4:20 PM Invited
Microgravity Research on Bulk Metallic Glasses and Composites: *Douglas Hofmann*[1]; [1]NASA JPL/Caltech

4:50 PM Invited
Electrostatic Levitation Studies of Cu-Zr Liquids: *Ken Kelton*[1]; James Bendert[1]; Matthew Blodgett[1]; Anup Gangopadhyay[1]; Nicholas Mauro[1]; [1]Washington University

5:20 PM
Growth Kinetics of Cu-Zr: *Jan Gegner*[1]; Raphael Kobold[1]; Fan Yang[1]; Dirk Holland-Moritz[1]; Olga Shuleshova[1]; Dieter Herlach[1]; [1]DLR

5:40 PM
Fabrication and Optical Properties of Glass and Crystalline Rare-Earth Aluminates by Containerless Levitation Process: *Malahalli Vijaya Kumar*[1]; Takehiko Ishikawa[1]; Junpei Okada[1]; Yuki Watanabe[2]; Kazuhiko Kuribayashi[3]; [1]Japan Aerospace Exploration Agency; [2]Advanced Engineering Service; [3]Shibaura Institute of Technology

Mesoscale Computational Materials Science of Energy Materials: Phase Field Modeling and Microstructural Evolutions

Sponsored by: TMS Materials Processing and Manufacturing Division, TMS/ASM: Computational Materials Science and Engineering Committee
Program Organizers: Pascal Bellon, University of Illinois; Alfredo Caro, LANL; Long Qing Chen, Penn State University; Anter El-Azab, Florida State University; Ming Tang, Lawrence Livermore National Laboratory

Monday PM
March 4, 2013
Room: 218
Location: Henry B. Gonzalez Convention Center

Session Chairs: Pascal Bellon, University of Illinois at Urbana-Champaign; Ken Elder, Oakland University

2:00 PM Invited
Multiscale Modeling of Multiferroics Using Phase Field Crystal Modeling and Complex Amplitude Expansions: *Ken Elder*[1]; [1]Oakland University

2:30 PM Invited
Simulation in 3D of Microstructure-Resolved Thermal Stress Leading to Whisker Formation: Benjamin Anglin[1]; John Blendell[2]; W.H. (Aska) Chen[2]; Pylin Sarobol[2]; Carol Handwerker[2]; *Anthony Rollett*[1]; [1]Carnegie Mellon University; [2]Purdue University

3:00 PM
Adaptive Atomistic-Phase-Field Dislocation Dynamics Model: *Lei Cao*[1]; Hojin Kim[1]; Alejandro Strachan[1]; Marisol Koslowski[1]; [1]Purdue University

3:20 PM
Discrete Dislocation Simulations of Taper Effects in Micropillar Compression: *Babak Kondori*[1]; Amine Benzerga[1]; [1]Texas A&M University

3:40 PM Break

3:50 PM
A Nucleation Algorithm in the Coupled Conserved/Non-conserved Phase Field Model: *Andrea Jokisaari*[1]; Katsuyo Thornton[1]; [1]University of Michigan

4:10 PM Invited
Phase-Field-Crystal Modeling of Nanocrystalline Pattern Evolution: *Alain Karma*[1]; Ari Adland[1]; [1]Northeastern University

4:40 PM
Modeling and Characterization of 3D Photovoltaics: *Jon Guyer*[1]; Daniel Josell[1]; [1]NIST

5:00 PM
Diffuse Interface Field Approach (DIFA) to Modeling and Simulation of Capillarity-Related Self-Organization Phenomena in Colloidal Systems: *Tian-Le Cheng*[1]; Yu Wang[1]; [1]Michigan Technological University

5:20 PM
Prediction of Contact Mechanics for Microsystems by a Multiscale Model with Uncertainties Quantification: *Hojin Kim*[1]; Alejandro Strachan[1]; [1]Purdue University

5:40 PM
Phase-Field Simulations of Orientation-Dependent GaN Growth By Selective Area Epitaxy: *Larry Aagesen*[1]; Michael Coltrin[2]; Jung Han[3]; Katsuyo Thornton[1]; [1]University of Michigan; [2]Sandia National Laboratories; [3]Yale University

Microstructural Processes in Irradiated Materials: Ferritic/Martensitic Steels II

Sponsored by: TMS Structural Materials Division, TMS/ASM: Nuclear Materials Committee
Program Organizers: Thak Sang Byun, Oak Ridge National Laboratory; Dane Morgan, University of Wisconsin-Madison; Yasuyoshi Nagai, Tohoku University; Zhijie Jiao, University of Michigan-Ann Arbor; Christine Guéneau, CEA-Saclay

Monday PM
March 4, 2013
Room: 203A
Location: Henry B. Gonzalez Convention Center

Session Chairs: Arthur Motta, Penn State University; Brian Wirth, University of Tennessee

2:00 PM Invited
Multiscale Modeling of Defect Cluster Evolution in Irradiated Structural Materials: *Brian Wirth*[1]; Donghua Xu[1]; Aaron Kohnert[2]; [1]University of Tennessee; [2]University of California, Berkeley

2:30 PM
Modelling Helium Bubble Nucleation in Alpha-Iron for Thermal Desorption Experiments: A Cluster Dynamics Approach: Thomas Jourdan[1]; Jean-Paul Crocombette[1]; Sandra Moll[1]; Hélène Lefaix[1]; [1]CEA

2:50 PM
Multi-Scale Modeling of Hydrogen and Helium Bubbles in BCC Iron: *Erin Hayward*[1]; Chaitanya Deo[2]; Chu Chun Fu[1]; [1]CEA-Saclay; [2]Georgia Institute of Technology

3:10 PM
Influence of Hydrogen and Point Defects in BCC Iron: An Ab Initio Study: M. Bhatia[1]; *Kiran Solanki*[1]; M. Tschopp[2]; [1]Arizona State University; [2]Mississippi State University

3:30 PM Break

3:40 PM Invited
Radiation Damage Using In Situ Charged Particle Irradiation: *Arthur Motta*[1]; [1]Penn State University

4:10 PM
On the Effects of Helium-DPA Interactions on Microstructural Evolution in Tempered Martensitic Steels: A Summary of In-Situ He Injection Results and a Model Based Analysis: *Takuya Yamamoto*[1]; Yuan Wu[1]; G. Robert Odette[1]; Richard Kurtz[2]; Danny Edwards[2]; Bo Yao[2]; [1]University of California Santa Barbara; [2]Pacific Northwest National Laboratory

4:30 PM
Role of Helium and Beam Rastering on Swelling Behavior in Ion Irradiated HT9 Steel: *Elizabeth Beckett*[1]; Gary Was[1]; Zhijie Jiao[1]; Kai Sun[1]; [1]University of Michigan

4:50 PM
Atomistic Modeling of He Embrittlement at Various Grain Boundaries of α-Fe: *Tomoaki Suzudo*[1]; Masatake Yamaguchi[1]; Tomohito Tsuru[1]; [1]Japan Atomic Energy Agency

5:10 PM
Atomic Scale Understanding of Defect Sink Property of Grain Boundaries in Fe: *Di Chen*[1]; Jing Wang[1]; Tianyi Chen[1]; Lin Shao[1]; [1]Texas A&M University

Modeling and Experimental Validation of Multiscale Mechanical Behavior from Atomic Scale to Macro Scale: Multiscale Deformation Mechanisms

*Sponsored by:*TMS Materials Processing and Manufacturing Division, TMS Structural Materials Division, TMS: Integrated Computational Materials Engineering Committee, TMS/ASM: Mechanical Behavior of Materials Committee, TMS: Nanomechanical Materials Behavior Committee, TMS: Process Technology and Modeling Committee, TMS: Shaping and Forming Committee

Program Organizers: Nathan Mara, Los Alamos National Laboratory; Jian Wang, Los Alamos National Laboratory; Brad Boyce, Sandia National Laboratories; Jennifer Carter, Case Western Reserve University; Anthony Rollett, Carnegie Mellon University; Jonathan Zimmerman, Sandia National Laboratories

Monday PM
March 4, 2013

Room: 211
Location: Henry B. Gonzalez Convention Center

Session Chairs: Julia Greer, California Institute of Technology; Scott Mao, University of Pittsburgh

2:00 PM Invited
Fabrication and Deformation in Nanocrystalline and Bi-Crystalline Nano Structures: *Julia Greer*[1]; X Gu[1]; Peri Landau[1]; Qiang Guo[1]; [1]California Institute of Technology

2:30 PM
EBSD and TEM Studies to Inform and Guide the Mechanistic Modelling of Deformation in P22 Steel: *Dhriti Bhattacharyya*[1]; Pranesh Dayal[1]; Michael Drew[1]; Warwick Payten[1]; Ken Snowden[1]; Robert Harrison[1]; Lyndon Edwards[1]; [1]Australian Nuclear Science and Technology Organization

2:50 PM
Deformation Behavior in Nano-Polycrystalline Zirconium: Margarita Ruda[1]; *Carlos Ruestes*[2]; Graciela Bertolino[3]; Diana Farkas[4]; Eduardo Bringa; [1]CAB-CNEA; [2]Universidad Nacional de Cuyo; [3]CONICET; [4]Virginia Tech

3:10 PM Invited
Multiscale Modeling of Nanostructured Shape Memory Alloys by Molecular Dynamics, Monte Carlo and Phase Field Methods: *Ting Zhu*[1]; Yuan Zhong[1]; [1]Georgia Institute of Technology

3:40 PM
Analysis of Pole Mechanisms for (10-12) Twin Nucleation in Mg: *Maryam Ghazisaeidi*[1]; W. A. Curtin[1]; [1]Brown University

4:00 PM Break

4:10 PM Invited
Plasticity in Small Volume: Stochastic Not Deterministic: *Hussien Zbib*[1]; Shaui Shao[1]; Samantha Lawrence[1]; David Bahr[1]; [1]Washignton State University

4:40 PM
Size-Related Dislocation Plasticity and Deformation Twinning Behavior in Mg: *Qian Yu*[1]; Liang Qi[2]; Ju Li[2]; Raj Mishra[3]; Andrew Minor[1]; [1]UC Berkeley; [2]MIT; [3]GM

5:00 PM Invited
Partial Dislocation Controlled Plasticity in Nanometer-Sized Au Single Crystal: *Scott Mao*[1]; He Zheng[1]; Christopher Weinberger[2]; Jianyu Huang[2]; Li Zhong[1]; [1]Department of Mechanical Engineering and Materials Science, University of Pittsburgh; [2]Sandia National Laboratories

5:30 PM
Strengthening Mechanisms, Nanoscale Precipitation, and Twin Morphology in a High-Strength Bulk Nanostructured Cu-Zn-Al Alloy: *Haiming Wen*[1]; Troy Topping[1]; Dieter Isheim[2]; David Seidman[2]; Enrique Lavernia[1]; [1]University of California, Davis; [2]Northwestern University

Modeling of Multi-Scale Phenomena in Materials Processing - III: Microstructure Evolution II

*Sponsored by:*TMS Materials Processing and Manufacturing Division, TMS/ASM: Computational Materials Science and Engineering Committee, TMS: Process Technology and Modeling Committee, TMS: Integrated Computational Materials Engineering Committee

Program Organizers: Adrian Sabau, Oak Ridge National Laboratory; Anthony Rollett, Carnegie Mellon University; Laurentiu Nastac, The University of Alabama; Jonathan Madison, Sandia National Laboratories; Mei Li, Ford Motor Company

Monday PM
March 4, 2013

Room: 216
Location: Henry B. Gonzalez Convention Center

Session Chairs: Mei Li, Ford Motor Company; Sergio Felicelli, Mississippi State University

2:00 PM Introductory Comments

2:05 PM Invited
Computational Multi-Phase Modeling of Cast Energetic Materials: *Ruslan Mudryy*[1]; Laurentiu Nastac[2]; [1]US ARMY; [2]The University of Alabama

2:50 PM
Flow Characteristics in Molten Metal Processing Using Ultrasonic Stirring Technology: *Laurentiu Nastac*[1]; Shian Jia[1]; Xiaoda Liu[1]; [1]The University of Alabama

3:15 PM
Large Scale Parallel Lattice Boltzmann Model of Dendritic Growth: *Bohumir Jelinek*[1]; Mohsen Eshraghi[1]; Sergio Felicelli[1]; [1]Mississippi State University

3:40 PM Break

4:10 PM
Thin Wall Ductile Iron Castings Modeling by Cellular Automaton: Daniel Gurgul[1]; *Andriy Burbelko*[1]; Marcin Górny[1]; Wojcieh Kapturkiewicz[1]; [1]AGH University of Science and Technology

4:55 PM
Coupled Flow-Thermal-Microstructural Modeling of the Scanning Laser Epitaxy Process: *Ranadip Acharya*[1]; Justin Gambone[1]; Rohan Bansal[1]; Paul Cilino[1]; Suman Das[1]; [1]Georgia Institute of Technology

5:20 PM
Modeling of Effective Thermal Conductivities of Cu-Ni Alloy Series as a Function of Temperature in the Liquid Region: *Shahid Mehmood*[1]; [1]Quaid-e-Azam University Islamabad

Nanostructured Materials for Lithium Ion Batteries and for Supercapacitors: Nanostructured Materials for Lithium Ion Batteries and for Supercapacitors Session II

Sponsored by: TMS Electronic, Magnetic, and Photonic Materials Division, TMS: Energy Conversion and Storage Committee
Program Organizer: David Mitlin, University of Alberta and NINT NRC

Monday PM
March 4, 2013

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

Session Chairs: Reza Shahbazian-Yassar, Michigan Technological University; David Mitlin , University of Alberta and NINT NRC; Zhi Li, University of Alberta and NINT NRC; Peter Kalisvaart, University of Alberta and NINT NRC

2:00 PM Invited
Graphene-Based and Graphene-Derived Materials for Supercapacitors and Li Ion Batteries: Rodney Ruoff[1]; *TaeYoung Kim*[1]; [1]The University of Texas at Austin

2:20 PM Invited
Graphene Based Anodes for Li-ion Batteries: *Nikhil Koratkar*[1]; [1]Rensselaer Polytechnic Institute

2:40 PM Invited
Graphene Oxide Supercapacitors: Computer Simulation Study: *Hyung Kim*[1]; [1]Carnegie Mellon University

3:00 PM Invited
Asymmetrical Supercapacitor Based on Graphene-Nickel Cobaltite Nanocomposite and Activated Carbon Electrodes with Commercial Level Mass Loading: *Huanlei Wang*[1]; Chris Holt[1]; Zhi Li[1]; Xuehai Tan[1]; Babak Shalchi Amirkhiz[1]; Zhanwei Xu[1]; Brian C. Olsen[1]; Tyler Stephenson[1]; David Mitlin[1]; [1]University of Alberta and NINT NRC

3:20 PM Invited
Graphene-Based Nano-Composites for Electrochemical Energy Storage: *Jie Lian*[1]; Xiang Sun[1]; Ming Xie[2]; Steven George[2]; [1]Rensselaer Polytechnic Institute; [2]University of Colorado at Boulder

3:40 PM Break

4:00 PM Invited
Controlled Synthesis and Functionalization of Carbon Nanomaterials for Energy Storage: *Liming Dai*[1]; [1]Case Western Reserve University

4:20 PM Invited
Electrolytes and Electrodes for High-energy Secondary Batteries: *Lynden Archer*[1]; [1]Cornell University

4:40 PM Invited
Composite Electrodes for Electrochemical Supercapacitors: *Igor Zhitomirsky*[1]; [1]McMaster University

5:00 PM Invited
Effect of Concentration-Dependent Ductility on Fracture Behavior in Li-alloy Electrode Materials: Yifan Gao[1]; *Min Zhou*[1]; [1]Georgia Institute of Technology

5:20 PM Invited
Designing Nanostructured Hybrid Materials for Energy Storage Technologies: *Guihua Yu*[1]; [1]The University of Texas at Austin

5:40 PM Invited
Synthesis of High Voltage Spinel $LiNi_{0.5}Mn_{1.5}O_4$ Nano-Powders by the Polyol Process for Lithium Ion Batteries: *Kyler Carroll*[1]; Hyungman Cho[1]; Hyojung Yoon[1]; Shirley Meng[1]; [1]University of California, San Diego

6:00 PM Invited
Charge Storage in New Electrode and Electrolyte Materials: Surprises and Opportunities: *Rui Qiao*[1]; Jingsong Huang[2]; Vincent Meunier[3]; Bobby Sumpter[2]; [1]Clemson University; [2]Oak Ridge National Laboratory; [3]Rensselaer Polytechnic Institute

6:20 PM Invited
Enabling High Energy Density Redox Chemistries and 3D Electrode Architectures for Lithium Batteries: *Jagjit Nanda*[1]; [1]Oak Ridge National Laboratory

6:40 PM Invited
Core-Shell Type Nanowires for Electrodes of Flexible Electrochemical Cells: *Jung-Kun Lee*[1]; Bo Ding[1]; Junhong Noh[2]; [1]University of Pittsburgh; [2]Korea Research Institute of Chemical Technology

Neutron and X-ray Studies of Advanced Materials VI: Centennial and Beyond: In Honor of Prof. T.R. Welberry: "What Can We Learn from Diffuse Scattering?"

Sponsored by: TMS Structural Materials Division, TMS/ASM: Mechanical Behavior of Materials Committee
Program Organizers: Rozaliya Barabash, Oak Ridge National Laboratory; Xun-Li Wang, City University of Hong Kong; Jaimie Tiley, US Air Force Research Laboratory; Gernot Kostorz, ETH Zurich; Brent Fultz, California Institute of Technology; Peter Liaw, University of Tennessee

Monday PM
March 4, 2013

Room: 209
Location: Henry B. Gonzalez Convention Center

Session Chairs: Thomas Proffen, SNS, Oak Ridge National Laboratory; Darren Goossens, Australian National University

2:00 PM Introductory Comments

2:05 PM Invited
Unlocking the 'True' Structure of Complex Materials Using Total Scattering: *Thomas Proffen*[1]; [1]Oak Ridge National Laboratory

2:25 PM Invited
Diffuse Scattering Studies Supported by Ab-Initio Calculations: *Matthias Gutmann*[1]; [1]Rutherford Appleton Laboratory

2:45 PM Invited
Investigating Disorder as a Matter of Routine?: *Thomas Weber*[1]; [1]ETH Zurich

3:05 PM Invited
Local Structure and Dynamics of Quantum Paraelectric Perovskites: *Marek Pasciak*[1]; Richard Welberry[2]; Jiri Hlinka[1]; [1]Academy of Sciences of the Czech Republic; [2]Australian National University

3:25 PM Invited
Modulated Structures, Functional Materials and the TEM: from Relaxor Ferroelectrics to Nano Chessboards: *Ray Withers*[1]; [1]The Australian National University

3:45 PM Break

3:55 PM Invited
Combined Diffraction and Computational Modelling Studies of Structural Disorder in Energy Storage Materials: *Bill David*[1]; [1]ISIS Neutron Source

4:15 PM Invited
Distinguishing Types of Disorder in Diffuse Scattering: A Numerical Study: *Darren Goossens*[1]; T Welberry[1]; [1]Australian National University

4:35 PM Invited
Inter-Slab Interactions and Disorder in Gd5Si4-xBix: *Branton Campbell*[1]; Volodymyr Svitlyk[2]; Yurij Mozharivskyj[2]; [1]Brigham Young University; [2]McMaster University

4:55 PM Invited
Structural Analysis of Complex Materials: *Takeshi Egami*[1]; [1]University of Tennessee

5:15 PM Invited
X-Ray Scattering from Amorphous Solids: *Zbigniew Stachurski*[1]; [1]Australian National University

5:35 PM Invited
Beyond the Structure: Investigating Properties in Molecular Materials: *Lynne Thomas*[1]; [1]University of Bath

5:55 PM Invited
Pair Distribution Function Measurements of Functional Materials: *Peter Chupas*[1]; [1]Argonne National Laboratory

Ni-Co 2013: Ni Laterite Hydrometallurgy

*Sponsored by:*The Minerals, Metals and Materials Society, Metallurgical Society of the Canadian Institute of Mining Metallurgy and Petroleum, Chinese Society for Metals, GDMB Society for Mining, Metallurgy, Resource and Environmental Technology, Society for Mining Metallurgy and Exploration, Mining and Materials Processing Institute of Japan, Associacao Brasileira de Metalurgia, Materiais e Mineracao, Southern African Institute of Mining and Metallurgy (SAIMM), Minerals Engineering International Online, Cobalt Development Institute, Societe Francaise de Metallurgie et de Materiaux, TMS Extraction and Processing Division, TMS: Hydrometallurgy and Electrometallurgy Committee, TMS: Pyrometallurgy Committee
Program Organizer: Thomas Battle, Midrex Technologies

Monday PM
March 4, 2013

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

Session Chairs: Shafiq Alam, Memorial University of Newfoundland; Corby Anderson, Colorado School of MInes

2:00 PM
Acid Leaching of Nickel Laterites with Jarosite Precipitation: *David White*[1]; James Gillaspie[2]; [1]Snowden Mining Industry Consultants; [2]Freeport-McMoRan Copper & Gold Inc.

2:25 PM
Extraction of Nickel, Cobalt and Iron from Laterite Ores by Mixed Chloride Leach Process: *V.I. Lakshmanan*[1]; Ram Sridhar[1]; Jonathan Chen[1]; Robert DeLaat[1]; M.A. Halim[1]; Raja Roy[1]; [1]Process Research Ortech Inc.

2:50 PM
Pilot Plant Study on the Nitric Acid Pressure Leaching Technology for Limonitic Laterite Ores: Baozhong Ma[1]; *Chengyan Wang*[1]; Weijiao Yang[1]; Bo Yang[1]; Fei Yin[1]; Yongqiang Chen[1]; Yongqiang Yang[1]; [1]Beijing General Research Institute of Mining and Metallurgy

3:15 PM
Reductive Leaching of Limonitic Lateries Using Ferrous Sulphate: *Mariela Zuniga*[1]; Edouard Asselin[1]; [1]University of British Columbia

3:40 PM Break

4:00 PM
Sulfuric Acid Leaching Characteristics of Ni-Doped Goethite: *Guanghui Li*[1]; Wen Cai[1]; Mingjun Rao[1]; Qian Zhi[1]; Tao Jiang[1]; [1]School of Minerals Processing and Bioengineering, Central South University

4:20 PM
Characteristics of Nickel Laterite Crushed Ore Agglomerates: Adirek Janwong[1]; Nikhil Dhawan[1]; Thien Vethsodsakda[1]; *Michael Moats*[2]; [1]University of Utah; [2]Missouri University of Science and Technology

4:40 PM
Update and Outlook of Hydrometallurgical Process for Nickel Laterite Ore: *Yoshitomo Ozaki*[1]; [1]Sumitomo Metal Mining Co., Ltd.

5:00 PM
Recovery of High Purity Metals Using Molecular Recognition Technology: Neil Izatt[1]; Ronald Bruening[1]; *Steven Izatt*; [1]IBC Advanced Technologies, Inc.

Novel Synthesis and Consolidation of Powder Materials : Thermal Spray and Cold Spray Processing

*Sponsored by:*TMS Materials Processing and Manufacturing Division, TMS: Powder Materials Committee
Program Organizers: Ma Qian, The University of Queensland; Iver Anderson, The Ames Laboratory

Monday PM
March 4, 2013

Room: Lone Star Salon C
Location: Grand Hyatt

Session Chairs: Iver Anderson, The Ames Laboratory; Mingxing Zhang, The University of Queensland

2:00 PM Keynote
Thermal Spray as a Consolidation Process to Form Advanced Materials: Future Horizons: *Christopher Berndt*[1]; Mitchell Sesso[2]; Andrew Ming[2]; [1]Swinburne University of Technology ; [2]Swinburne University of Technology

2:40 PM
Cold Spray Processing of Bulk Nanocrystalline Aluminum AA5083: Enrique Barrera[1]; *Andres Rodela*[1]; David Chan[1]; George Kim[2]; Enrique Lavernia[3]; Victor Champagne[4]; [1]Rice University; [2]Perpetual Technologies; [3]University of California, Davis; [4]Army Research Laboratory

3:00 PM
Cold Spray Synthesis Of Nanodiamond-Reinforced Aluminum Composites: *Luke Brewer*[1]; Brian Sneed[1]; Filipe Peerally[1]; Dong Jin Woo[1]; Joseph Hooper[1]; Sebastian Osswald[1]; [1]Naval Postgraduate School

3:20 PM Break

3:40 PM Invited
Development of a Novel Direct Manufacturing Technology Via Cold Spray Route: *Stefan Gulizia*[1]; Mahnaz Jahedi[2]; Saden Zahiri[2]; Andrew Urban[2]; Darren Fraser[2]; Tang Caixian[2]; [1]CSIRO Materials Science & Engineering/Future Manufacturing Flagship; [2]CSIRO Materials Science & Engineering

4:10 PM
Synthesis of Nickel-Encapsulated Particles for High-Strain-Rate Deposition in Cold-Spray: Maryam Neshastehriz; *Ivi Smid*[1]; Al Segall[1]; Lisa Stark[1]; Tim Eden[1]; [1]Penn State

4:30 PM
Hot Deformation Behavior of Spray Formed FGH4095 Superalloy during Compression at Elevated Temperature: *Xu Yi*[1]; [1]Southwest Jiaotong University

4:50 PM Invited
Development of Novel Packed Powder Diffusion Coating Techniques for Light Alloys: *Mingxing Zhang*[1]; Shoumou Miao[1]; [1]The University of Queensland

Pb-free Solders and Emerging Interconnect and Packaging Technologies: 3D Interconnect and Novel Packaging Approaches

*Sponsored by:*TMS Electronic, Magnetic, and Photonic Materials Division, TMS: Electronic Packaging and Interconnection Materials Committee
Program Organizers: Nikhilesh Chawla, Arizona State University; Srinivas Chada, Whirlpool; Darrel Frear, Freescale Semiconductor; John Elmer, LLNL; Tae-Kyu Lee, Cisco Systems; Yan Li, Intel; Laura Turbini, Research In Motion; Kwang-Lung Lin, National Cheng Kung University; Sohoon Yoo, Korea Institute of Industrial Technology

Monday PM
March 4, 2013
Room: 217B
Location: Henry B. Gonzalez Convention Center

Session Chair: To Be Announced

2:00 PM
Au and Pd Embrittlement in Space-Confined Soldering Reactions for 3D IC Applications: *Yu-Jen Chen*[1]; C. Robert Kao[1]; [1]National Taiwan University

2:20 PM
Comparison and Optimization of Mechanical Stresses in Cu Through-Silicon Via (TSV) as Revealed by Synchrotron X-ray Microdiffraction for 3-D Integration: *Arief Budiman*[1]; H. Shin[2]; K. Byun[3]; K. Hummler[4]; Tian Tian[5]; Y. Joo[2]; Larry Smith[4]; N. Tamura[6]; [1]Los Alamos National Laboratory (LANL); [2]Seoul National University (SNU); [3]SK Hynix Inc.; [4]SEMATECH; [5]UCLA; [6]Advanced Light Source (ALS)

2:40 PM
Cu-Sn Intermetallics and Voids Formation: Is Cu-Sn an Option for 3D Interconnect?: *George Vakanas*[1]; Wenqi Zhang[2]; Kenneth Rebibis[2]; Eric Beyne[2]; Fay Hua[3]; Kabirkumar Mirpuri[3]; Paul Zimmerman[3]; [1]IMEC/INTEL; [2]IMEC; [3]Intel Corp

3:00 PM
Fabrication of nNearly Void-Free Cu3Sn Microbumps for 3D IC Packaging: *Wei-Lan Chiu*[1]; Chih Chen[1]; [1]NCTU

3:20 PM Break

3:40 PM Invited
Fluxless Bonding of Silicon to Aluminum Using Tin and Silver-Indium System: *Chin Lee*[1]; Shou-Jen Hsu[1]; Yuanyun Wu[1]; [1]University of California, Irvine

4:00 PM
Low-Temperature Bonding Technique Using Cu Nanoparticles: *Toshitaka Ishizaki*[1]; Ryota Watanabe[1]; Toshikazu Satoh[1]; Kunio Akedo[1]; [1]Toyota Central R&D Laboratories Inc.

4:20 PM
Interfacial Reaction of TSV Filled Sn Alloy and Cu Pillar Bump: *Young-Ki Ko*[1]; Myong-Suk Kang[2]; Hiroyuki Kokawa[3]; Yutaka Sato[3]; Chang-Woo Lee[1]; Sehoon Yoo[1]; [1]KITECH/Micro-Joining Center; [2]University of Science and Technology; [3]Tohoku University

4:40 PM
Undercooling of Pb-Free Alloys: Solder Size and Configuration System Effect: *Fiqiri Hodaj*[1]; [1]Grenoble Institute of Technology

Phase Stability, Phase Transformations, and Reactive Phase Formation in Electronic Materials XII: Phase Equilibria and Transformations of the Pb-free Solders and Energy Materials

*Sponsored by:*TMS Electronic, Magnetic, and Photonic Materials Division, TMS: Alloy Phases Committee
Program Organizers: Chao-hong Wang, National Chung Cheng University; Chih-Ming Chen, National Chung Hsing University; Jae-Ho Lee, Hongik University; Ikuo Ohnuma, Tohoku University; Clemens Schmetterer, TU Bergakademie Freiberg; Yee-Wen Yen, National Taiwan University of Science and Technology; Shien-Ping Feng, The University of Hong Kong; Shih-Kang Lin, National Cheng Kung University

Monday PM
March 4, 2013
Room: 203B
Location: Henry B. Gonzalez Convention Center

Session Chairs: Clemens Schmetterer, Forschungszentrum Juelich GmbH; Ikuo Ohnuma, Tohoku University

2:00 PM Invited
Characteristics of Beta/Alpha Transformations in High Purity Tin: *Kazuhiro Nogita*[1]; Christopher Gourlay[2]; Stuart McDonald[1]; Shoichi Suenaga[3]; Jonathan Read[1]; Guang Zeng[1]; Qinfen Gu[4]; [1]The University of Queensland; [2]Imperial College, London; [3]Nihon Superior Co, Ltd.; [4]Australian Synchrotron

2:20 PM Invited
Experimental Thermodynamics of Ni-Sn-Zn as a New HT LF-Solder System: *Hans Flandorfer*[1]; Divakar Rajamohan[1]; Siegfried Fürtauer[1]; Herbert Ipser[1]; [1]University of Vienna

2:40 PM
Effect of Zn, Au and In on the Phase Stability and Thermal Expansion of Cu_6Sn_5 Intermetallics: *Guang Zeng*[1]; Stuart McDonald[1]; Qinfen Gu[2]; Kazuhiro Nogita[1]; [1]The University of Queensland; [2]The Australian Synchrotron

2:55 PM
Metastable Intermetallics in Sn-Ni Couples: *Sergey Belyakov*[1]; C. Gourlay[1]; [1]Imperial College London

3:10 PM
Experimental Study and Thermodynamic Assessment of Ternary Cu-Pd-Sn Phase Relations Focused on the Sn-Rich Region: *Md. Arifur Rahman*[1]; Cheng-En Ho[1]; Wojciech Gierlotka[1]; [1]Yuan Ze University

3:25 PM
Thermodynamic Modeling of the Ternary Ag-Sb-Te System: *Wojciech Gierlotka*[1]; Md. Arifur Rachman[1]; [1]YuanZe University

3:40 PM Break

3:55 PM Invited
Experimental and Theoretical Study of the In-Ni-Sn System: *Clemens Schmetterer*[1]; Divakar Rajamohan[2]; Ales Kroupa[3]; Adela Zemanova[3]; Herbert Ipser[2]; Hans Flandorfer[2]; [1]Forchungszentrum Juelich; [2]University of Vienna; [3]Academy of Sciences of the Czech Republic

4:15 PM Invited
Calorimetric Investigation of the Lithium–Manganese–Oxygen Cathode Material System for Lithium Ion Batteries: *Damian Cupid*[1]; Alexandra Reif[1]; Hans Seifert[1]; [1]Karlsruhe Institute of Technology

4:35 PM
New Phase in Stoichiometric Cu6Sn5 and Effect of Ni Addition on Phase Stabilization in Wide Temperature Range: *Yueqin Wu*[1]; John Barry[2]; Tomokazu Yamamoto[3]; Qinfen Gu[4]; Han Huang[1]; Syo Matsumura[3]; Kazuhiro Nogita[1]; [1]The University of Queensland; [2]Queensland University of Technology; [3]Kyushu University; [4]The Australian Synchrotron

4:50 PM
Superhydrophobic Coating of Chemical Functionalized Nickel Hydroxide Nanostructures on Transparent Conductive Substrates: *Shien Ping Feng*[1]; Ya-Huei Chang[1]; [1]The University of Hong Kong

5:05 PM
Phase Relations and Thermodynamic Data in the System Cu-Li-Sn and the Binary Constituent Systems: *Siegfried Fürtauer*[1]; Andriy Yakymovych[1]; Erdenebat Tserenjav[2]; Hans Flandorfer[1]; [1]University of Vienna; [2]University of Mongolia

5:20 PM
Thermoelectric Performance of Spark-Plasma-Sintering Bi_2Te_3 System: *Ting-Chun Chen*[1]; Albert Wu[1]; [1]National Central University

Phase Transformation and Microstructural Evolution: General Phase Transformations - Non-Ferrous: Part I

*Sponsored by:*TMS Materials Processing and Manufacturing Division, TMS: Chemistry and Physics of Materials Committee, TMS/ASM: Computational Materials Science and Engineering Committee, TMS: Integrated Computational Materials Engineering Committee, TMS/ASM: Phase Transformations Committee, TMS: Process Technology and Modeling Committee, ASM: Alloy Phase Diagrams Committee
Program Organizers: Amy Clarke, Los Alamos National Laboratory; Sudarsanam Suresh Babu, Ohio State Univ; Rajarshi Banerjee, Univ of North Texas; John Morral, Ohio State University; Brian Gleeson, University of Pittsburgh; Carelyn Campbell, National Institute of Standards & Tech; Yongho Sohn, University of Central Florida; Yunzhi Wang, Ohio State University

Monday PM
March 4, 2013
Room: 204B
Location: Henry B. Gonzalez Convention Center

Session Chairs: Srinivasan Srivilliputhur, University of North Texas; Peter Collins, University of North Texas

2:00 PM Invited
Phase Transformations and Microstructure Evolution in Two-Phase Titanium Alloys: Taewook Heo[1]; Yanzhou Ji[1]; Donald Shih[2]; *Long Qing Chen*[1]; [1]Pennsylvania State University; [2]Boeing Company

2:30 PM Invited
The Formation Mechanism of Precipitate Plates and the Role of Micro-Alloying Elements in Magnesium and Aluminum Alloys: *Jian-Feng Nie*[1]; [1]Monash University

3:00 PM
Alpha Nucleation Mediated by Boride Precipitates in Titanium Alloys: *Peeyush Nandwana*[1]; Niraj Gupta[1]; Priya Gopal[1]; Soumya Nag[1]; Jaimie Tiley[2]; Srivilliputhur Srinivasan[1]; Rajarshi Banerjee[1]; [1]UNT; [2]Air Force Research Laboratory

3:20 PM
Compositionally Dependent Displacive Transformation from Beta to Omega Phase in Titanium Alloys: *Soumya Nag*[1]; Robert Williams[2]; Arun Devaraj[3]; Niraj Gupta[1]; Jaimie Tiley[4]; Srinivasan Srivilliputhur[1]; Hamish Fraser[2]; Rajarshi Banerjee[1]; [1]University of North Texas; [2]Ohio State University; [3]Pacific Northwest National Laboratory; [4]Air Force Research Laboratory

3:40 PM Break

4:00 PM
Crystallographic and Energetic Prediction for Variant Selection of Grain Boundary Alpha in Titanium Alloys: *Rongpei Shi*[1]; Vikas Dixit[1]; Ning Zhou[2]; Hamish Fraser[1]; Yunzhi Wang[1]; [1]The Ohio State University; [2]GE Global Research Center

4:20 PM
Grain-Boundary Parameters Controlled Evolution of Allotriomorphic Alpha in Beta-Processed Titanium Alloys: *Vikas Dixit*[1]; Rongpei Shi[1]; G.B. Viswanathan[2]; Yunzhi Wang[1]; W.A.T. Clark[1]; Hamish Fraser[1]; [1]The Ohio State University; [2]Air Force Research Laboratory

4:40 PM
Influence of Heat Treatment on Microstructure and Tensile Properties of Massively Transformed High-Ta TiAl Alloys: *Zhijin Cai*[1]; Huimin Lu[1]; Chenguang Tian[1]; [1]Beihang University

5:00 PM
Microstructural Evolutions of the Earliest and Intermediate Stages of the Equiaxed Alpha Particles in $\alpha+\beta$ Processed Titanium Alloys: *Iman Ghamarian*[1]; Brian Welk[2]; P. Collins[1]; [1]University of North Texas; [2]The Ohio State University

5:20 PM
Formation of Transformation Texture in Supertransus Heat Treated Ti-6Al-2Sn-4Zr-6Mo: *Gordon Sargent*[1]; Adam Pilchak[2]; Christopher Szczepanski[2]; Kacey Kinsel[3]; Lee Semiatin[2]; [1]Consultant; [2]Air Force Research Laboratory; [3]Wright State University

Physical and Mechanical Metallurgy of Shape Memory Alloys: Novel and NiTi-based Shape Memory Alloys

*Sponsored by:*TMS/ASM: Phase Transformations Committee
Program Organizers: Haluk Karaca, University of Kentucky; Ibrahim Karaman, Texas A&M University; Othmane Benafan, NASA Glenn Research Center; Ryosuke Kainuma, Tohoku University; Hans Jurgen Maier, University of Paderborn

Monday PM
March 4, 2013
Room: Lone Star Salon B
Location: Grand Hyatt

Session Chairs: Haluk Karaca, University of Kentucky; Hideki Hosoda, Tokyo Institute of Technology

2:00 PM
Phase Constitution, Mechanical and Shape Memory Properties of (Pt,Co)Ti Alloys: *Hideki Hosoda*[1]; Satoshi Tsutsumi[1]; Masaki Tahara[1]; Tomonari Inamura[1]; Yoko Yamabe-Mitarai[2]; [1]Tokyo Institute of Technology; [2]National Institute of Materials Science

2:20 PM
Mechanical and Material Characterization of Ternary Nitinol Alloys: *Chandan Pulletikurthi*[1]; Puneet Gill[1]; Norman Munroe[1]; Amit Datye[2]; [1]Florida International University; [2]The University of Tennessee

2:40 PM
Effect of Heat Treatment on Deformation Behavior of Ti-Au-Cr-Zr Shape Memory Alloys: *Yuri Shinohara*[1]; Masaki Tahara[1]; Tomonari Inamura[1]; Hideki Hosoda[1]; Shuichi Miyazaki[2]; [1]Tokyo Institute of Technology; [2]University of Tsukuba

3:00 PM
Martensitic Transformation in Co-Cr-Al-Si System: *Kenji Hirata*[1]; Xiao Xu[1]; Makoto Nagasako[1]; Toshihiro Omori[1]; Ryosuke Kainuma[1]; [1]Tohoku University

3:20 PM
Effect of Oxygen Addition on Microstructure and Shape Memory Behavior of Ti-Nb Alloy: *Masaki Tahara*[1]; Tomonari Inamura[1]; Hee Young Kim[2]; Hideki Hosoda[1]; Shuichi Miyazaki[2]; [1]Tokyo Institute of Technology; [2]University of Tsukuba

3:40 PM
Elastic Deformation in Fe-31.2Pd (at.%) Alloy Exhibiting Lattice Softening: *Fei Xiao*[1]; Takashi Fukuda[1]; Tomoyuki Kakeshita[1]; [1]Osaka University

4:00 PM Break

4:20 PM
Effects of Heat Treatments and Applied Stress on the Shape Memory Behavior of Highly Ni-Rich NiTi Alloys: *Irfan Kaya*[1]; Hirobumi Tobe[1]; Haluk Karaca[1]; Makoto Nagasako[2]; Ryosuke Kainuma[2]; [1]University of Kentucky; [2]Tohoku University

4:40 PM
Effect of Precipitates on Cyclic Actuation Response of $Ni_{50.7}Ti_{49.3}$ Shape Memory Alloys: *Ceylan Hayrettin*[1]; Ibrahim Karaman[1]; Ebubekir Dogan[1]; James Mabe[2]; David Rodin[1]; [1]Texas A&M University; [2]Boeing Phantom Works

5:00 PM
Fatigue Analysis of Laser-Treated Nitinol Wires: *Janet Gbur*[1]; Hossein Lavvafi[1]; Melissa Young[2]; John J Lewandowski[1]; [1]Case Western Reserve University; [2]Cleveland Clinic

5:20 PM
Effect of Cold Working Rate on Shape Memory Characteristics of Ti-50.4 at.% Ni Alloy with Time Gradient Annealing: *Won Ki Ko*[1]; Chang Suk Bae[1]; Jae Il Kim[1]; [1]Donga-A University

5:40 PM
Mechanical Properties of NiTi42.5Cu7.5 (wt.%) Shape Memory Alloy during Aging Heat Treatment: *Emad Omrani*[1]; Ali Shokuhfar[2]; [1]University of Wisconsin - Milwaukee; [2]K.N. Toosi University of Technology

Production, Refining and Recycling of Rare Earth Metals: Production, Refining and Recycling of Rare Earth Metals

Sponsored by: TMS Electronic, Magnetic, and Photonic Materials Division, TMS Extraction and Processing Division, TMS Materials Processing and Manufacturing Division, TMS: Magnetic Materials Committee, TMS: Process Technology and Modeling Committee
Program Organizers: Lifeng Zhang, University of Science and Technology Beijing; Oliver Gutfleisch, IFW Dresden; Jeffrey S. Spangenberger, Argonne National Laboratory

Monday PM
March 4, 2013
Room: 006B
Location: Henry B. Gonzalez Convention Center

Session Chairs: Lifeng Zhang, University of Science and Technology Beijing; Jeffrey S. Spangenberger, Argonne National Laboratory

2:00 PM
Enrichment of Rare Earth Elements from Neodymium Magnet by Liquid Phase Separation in Nd_2O_3-B_2O_3 System: *Hidehiro Sekimoto*[1]; Takahiro Kubo[1]; Katsunori Yamaguchi[1]; [1]Iwate University

2:20 PM
Intrinsic Magnetic Properties of Alloys Synthesized from Recycled Rare Earth Metals: *Ryan Ott*[1]; Larry Jones[2]; Kevin Dennis[2]; R. McCallum[2]; [1]Ames Laboratory (USDOE); [2]Ames Laboratory (USDOE)

2:40 PM
Rare Earth Extraction by Molten Oxide Electrolysis: *Guillaume Lambotte*[1]; Tessa Green[1]; Rachel DeLucas[1]; Yen Yeh[1]; Donald Sadoway[1]; Antoine Allanore[1]; [1]Massachusetts Institute of Technology

3:00 PM
Recycling of Different Sintered Magnet Grades by Hydrogen Processing Yielding Anisotropic Resin Bonded Magnets: *Konrad Güth*[1]; Thomas George Woodcock[1]; Oliver Gutfleisch[2]; [1]IFW Dresden; [2]Technical University of Darmstadt

3:20 PM
Thermodynamic Modeling of Nd Extraction from FeNdB Magnet: Marie-Aline Van Ende[1]; *In-Ho Jung*[1]; [1]McGill University

3:40 PM
The Ternary System Thermodynamics of Phase Diagram Analysis of Cerium Rare Earth Oxides in Supercritical Water: *Hongxu Li*[1]; chao Li[1]; Chuanqi Jiao[1]; Yu Chen[1]; [1]University of Science and Technology

4:00 PM
Removing Aluminum from Chlorinated Rare Earth Solution by Hydrolysis: *Shufang Ding*[1]; Wei Chen[2]; Cuicui Ji[2]; Zhiqiang Shan[3]; Fukun Yan[3]; [1]Heilongjiang Institute of Science and Technology; [2]Heilongjiang Institute of Science and Technology; [3]Heilongjiang Institute of Science and Technology

4:20 PM
Synthesis of a New Asymmetric Dialkylphophinic Acid and Its Extraction and Separation Performance for Rare Earth Metals in HNO3 Solutions: *Shengming Xu*[1]; Junlian Wang; Linyan Li; Gang Xu; [1]Tsinghua University

Recent Developments in Biological, Electronic, and Functional Thin Films and Coatings: Biological, Electronic, and Functional Thin Films and Coatings II

*Sponsored by:*TMS Electronic, Magnetic, and Photonic Materials Division, TMS: Thin Films and Interfaces Committee
Program Organizers: R. Narayan, UNC/NCSU Joint Department of Biomedical Engineering; Choong-Un Kim, University of Texas at Arlington; Jian Luo, Clemson University; Nancy Michael, University of Texas at Arlington; Nuggehalli Ravindra, New Jersey Institute of Technology; Adele Carradò, IPCMS

Monday PM
March 4, 2013

Room: 214D
Location: Henry B. Gonzalez Convention Center

Session Chair: Choong-un Kim, UT Arlington

2:00 PM
Advanced Plasma-Based Nanocoatings for the Innovation in Cardiovascular Devices: *Diego Mantovani*[1]; [1]Laval University

2:40 PM Invited
Using Nanoscale Building Blocks to Make Electronic and Photonic Devices: *Federico Rosei*[1]; [1]INRS

3:20 PM
Improved Mobility and Transmittance of Room Temperature Deposited a-IGZO Films with Low Temperature Post-Fabrication Anneals: *Terry Alford*[1]; Mandar Gadre[2]; Rajitha Vemuri[1]; [1]Arizona State University; [2]Soladigm Inc.

3:40 PM Break

4:00 PM
Growth and Characterization of $Lu_2O_3:Eu^{3+}$ Thin Film on Single Crystal Yttria-Doped Zirconia Substrates: *Sudesna Roy*[1]; Stephen Topping[1]; Vinod Sarin[1]; [1]Boston University

4:20 PM
Optical Emission of Doped Sol-Gel Films Deposited on Silicon: *Sufian Abedrabbo*[1]; Bashar Lahlouh; Hassan Juwhari; Oktay Gokce; Anthony Fiory; Nuggehalli Ravindra; [1]University of Jordan

4:40 PM
Production and Characterization of Cerium-Based Conversion Coatings on Galvanized Steel and Aluminum Alloys: *Carlos Castano*[1]; Surender Maddela[1]; Matthew O'Keefe[1]; [1]Missouri University of Science and Technology

5:00 PM
Solution-Based Method to Fabricate Diamond-Like Carbon Nanocomposite Coatings: *Vasiliki Poenitzsch*[1]; Carol Ellis-Terrell[1]; Ronghua Wei[1]; Kent Coulter[1]; [1]Southwest Research Institute

5:20 PM
Impacts of Accelerated Aging on the Mechanical Properties of Cu-Nb Nanolaminates: *Marian Kennedy*[1]; Bradley Schultz[1]; David Economy[1]; [1]Clemson University

Recent Developments in the Processing, Characterization, Properties, Performance and Applications of Metal Matrix Composites: Processing, Microstructure and Mechanical Properties I

*Sponsored by:*TMS Structural Materials Division, TMS/ASM: Composite Materials Committee
Program Organizers: Martin Pech-Canul, Centro de Investigacion y de Estudios Avanzados del Instituto Politecnico Nacional; Zariff Chaudhury, Materion Coporation; Golam Newaz, Wayne State University

Monday PM
March 4, 2013

Room: Bowie A
Location: Grand Hyatt

Session Chairs: Zariff Chaudhury, Materion Corporation; Martin Pech-Canul, CINVESTAV IPN SALTILLO

2:00 PM
Mechanical Property and Abrasive Wear Characteristics of In-Situ Synthesized Al+12Si/10TiC Composites: *Manas Mahapatra*[1]; Belete Yigezu[1]; P. K. Jha[1]; [1]Indian Institute of Technology Roorkee

2:20 PM
Columnar-to-Equiaxed Transition in Metal Matrix Composites: Alicia Ares[1]; *Carlos Schvezov*[1]; [1]CONICET/FCEQyN-UNaM

2:40 PM
Creep Resistant Submicron-Structured Composite with Fe-Al Matrix and Al_2O_3 Particles: Jiri Svoboda[1]; *Bohuslav Masek*[2]; Hana Jirkova[2]; Andrea Ronesova[2]; Stepan Jenicek[2]; [1]Academy of Sciences of the Czech Republic, v. v. i. ; [2]University of West Bohemia in Pilsen, Research Centre of Forming Technology

3:00 PM
Deformation and Stucture-Property Correlation of ECAP AA2024 Aluminium Alloy and Influence of Fly-Ash Composites: Ajit Bhandakkar[1]; Akshaya Behera[1]; R C Prasad[1]; *Shankar Sastry*[2]; [1]IIT, Bombay; [2]Washinton University at St.Louis

3:20 PM
Low Cycle Fatigue Behaviour of Hot Pressed Austenitic Steel/MG-PSZ Composite Materials: *Horst Biermann*[1]; Alexander Glage[1]; Christian Weiegelt[1]; Jan Räthel[2]; Anja Weidner[1]; [1]TU Bergakademie Freiberg; [2]Fraunhofer Institute for Ceramic Technologies

3:40 PM
Microstructure and Wear Resistance Investigation of Ti/TiC Composite Coated on CP-Ti by TIG Cladding and Using Cored-Wire Electrode: *Bahram Vaghefinazari*[1]; Amirhossein Kokabi[1]; [1]Sharif University of Technology

4:00 PM
Smart, Multifunctional Metal-Matrix Composites For Repair and Damage Mitigation: *Charles Fisher*[1]; Michele Manuel[1]; [1]University of Florida

4:20 PM
Spark Plasma Sintering of Nickel-CNT Composites: *Tushar Borkar*[1]; Junyeon Hwang[2]; Jaimie Tiley[3]; Soon-Hyung Hong[4]; Rajarshi Banerjee[1]; [1]University of North Texas; [2]Korea Institute of Science and Technology; [3]Air Force Research Laboratory; [4]Korea Advanced Institute of Science and Technology

4:40 PM
Ultrasonic Fatigue of AMC225xe and AMC xfine225: Matthias Wolf[1]; *Guntram Wagner*[1]; Dietmar Eifler[1]; [1]University of Kaiserslautern

5:00 PM
Synthesis of Ti/TiC Composites by Mechanical Milling Followed by Spark Plasma Sintering of Ti-CNT Mixtures: Vasanthakumar K[1]; Karthiselva S[1]; Niraj Chawake[1]; Prathap Chandran[1]; *Srinivasa Bakshi*[1]; [1]Indian Institute of Technology Madras

Refractory Metals 2013: Refractory Metal-based Materials II

*Sponsored by:*TMS Structural Materials Division, TMS: Refractory Metals Committee
Program Organizers: David Honecker, Climax Molybdenum; Omer Dogan, DOE National Energy Technology Laboratory

Monday PM
March 4, 2013
Room: Mission A
Location: Grand Hyatt

Session Chairs: Omer Dogan, National Energy Technology Laboratory; S Varma, University of Texas at El Paso

2:00 PM
Are Mo, Ta and W Alloying Additions Beneficial for Nb Silicide Based Alloys?: *Panayiotis Tsakiropoulos*[1]; [1]University of Sheffield

2:20 PM Question and Answer Period

2:25 PM
Effect of Re on the Oxidation Behavior of Nb Alloys: *Ruth Dasary*[1]; Shailendra Varma[1]; [1]The University of Texas at El Paso

2:45 PM Question and Answer Period

2:50 PM
Interfacial Strength and Bonding between High Temperature Mo-Si-B Alloys and Silica-Based Oxidation Resistant Coatings: *Oleg Kontsevoi*[1]; Arthur Freeman[1]; [1]Northwestern University

3:10 PM Question and Answer Period

3:15 PM Break

3:35 PM
Effects of Si Doping on the Mechanical Behavior of Iridium Alloys: D. Catoor[1]; C. A. Carmichael[1]; S. Lawson[2]; E. K. Ohriner[1]; *E. P. George*[1]; [1]Oak Ridge National Laboratory; [2]University of Tennessee

3:55 PM Question and Answer Period

4:00 PM
Development of Nb-1%Zr-0.1%C Alloy as Structural Components for High Temperature Reactor Application: Raghvendra Tewari[1]; Vishwanadh Bithula[1]; Gautam Dey[1]; N. Saibaba[2]; *Sanjay Jha*[2]; [1]Bhabha Atomic Resrach Centre; [2]Nuclear Fuel Complex

4:20 PM Question and Answer Period

4:30 PM
Characterizing Slip System Behavior in High Purity Nb for Accelerator Cavities: *Di Kang*[1]; Derek Baars[1]; Thomas Bieler[1]; Chris Compton[1]; [1]Michigan State University

4:50 PM Concluding Comments

REWAS 2013: Enabling Materials Resource Sustainability: Plenary Session: Realizing Sustainability

Sponsored by: Chinese Society for Metals, The Mining and Materials Processing Institute of Japan (MMIJ), TMS Extraction and Processing Division, TMS: Recycling and Environmental Technologies Committee
Program Organizers: Christina Meskers, Umicore Precious Metals Refining; Anne Kvithyld, SINTEF; Markus Reuter, Outotec Oyj; Randolph Kirchain, Massachusetts Institute of Technology; Mark Schlesinger, Missouri University of Science and Technology; Gregory Krumdick, Argonne National Laboratory; Cong Wang, Saint-Gobain High Performance Materials; Gabrielle Gaustad, Rochester Institute of Technology; Diana A. Lados, Worcester Polytechnic Institute; Brajendra Mishra, Colorado School of Mines; Jeffrey S. Spangenberger, Argonne National Laboratory

Monday PM
March 4, 2013
Room: Lila Cockrell Theatre
Location: Henry B. Gonzalez Convention Center

Funding support provided by: Xstrata; SINTEF; Outotec; Umicore, and CR3, the Center for Resource Recovery and Recycling

Session Chair: Christina Meskers, Umicore Precious Metals Refining; Anne Kvithyld, SINTEF

2:00 PM Introductory Comments

2:10 PM Invited
Sustainable Transportation Challenges and Opportunities: *Lewis Fulton*[1]; [1]University of California, Davis

2:40 PM Invited
Saint-Gobain's Approach Towards Materials Development for Sustainability in Habitat: *Todd DiNoia*[1]; [1]Saint-Gobain High Performance Materials Research and Development Center

3:10 PM Invited
iNEMI Environmental Thrust; History, Challenges, & Opportunities: *Bill Bader*[1]; [1]iNEMI

3:40 PM Break

4:00 PM Invited
Advanced Technology and the Scope of Large-scale Sustainability: *Julio Friedmann*[1]; [1]Lawrence Livermore National Laboratory

4:30 PM Invited
Global Trends in Water Treatment Technology & Sustainability: *William Bonkoski*[1]; [1]GE Water & Process Technologies

5:00 PM Invited
Value-in-Use and Beyond—Creating More Value from Scrap: *Helga Vanthournout*[1]; [1]McKinsey and Ellen McArthur Foundation

Synergies of Computational and Experimental Materials Science II: Integrated Computational Materials Engineering

*Sponsored by:*TMS Materials Processing and Manufacturing Division, TMS/ASM: Computational Materials Science and Engineering Committee, TMS: Integrated Computational Materials Engineering Committee
Program Organizers: Katsuyo Thornton, University of Michigan; Thomas Buchheit, Sandia National Laboratories; Anthony Rollett, Carnegie Mellon University; David Rowenhorst, Naval Research Lab

Monday PM
March 4, 2013
Room: 217A
Location: Henry B. Gonzalez Convention Center

Session Chairs: Peter Collins, University of North Texas; Peter Lee, The University of Manchester

2:00 PM Introductory Comments

2:05 PM Invited
Developing a Materials Innovation Infrastructure: How Do We Bridge Simulation, Characterization, Experiment and Design?: *Stephen Niezgoda*[1]; [1]Los Alamos National Laboratory

2:35 PM Invited
MIDAS-A Tool to Connect Experiments and Models: *Meijie Tang*[1]; Jeff Florando[1]; Nathan Barton[1]; Kevin Durrenberger[1]; Peter Norquist[1]; [1]LLNL

3:05 PM Invited
In Situ Fast Synchrotron Tomography to Inform and Validate Microstructural Models: *Peter D. Lee*[1]; Lang Yuan[1]; Chedtha Puncreobutr[2]; [1]The University of Manchester; [2]Imperial College London

3:35 PM Break

3:50 PM Invited
Model-Based Regularized Inverse Methods for Developing Microstructure Models from Large Image Datasets: *Jeff Simmons*[1]; Charles Bouman[2]; Singanallur Venkatakrishnan[2]; Lawrence Drummy[3]; Craig Przybyla[1]; Marc De Graef[4]; [1]AFRL; [2]Purdue University; [3]UES, Inc.; [4]Carnegie Mellon

4:20 PM
Using Forward Modeling to Close the Gap between 3D Experiments and Microstructure Models: *Patrick Callahan*[1]; Marc De Graef[1]; [1]Carnegie Mellon University

4:40 PM
Role of Microstructure on Residual Stress Relaxation of a Shot-Peened Nickel-Base Superalloy: *Micheal Burba*[1]; Michael Caton[2]; Dennis Buchanan[1]; Reji John[2]; [1]University of Dayton; [2]Air Force Research Laboratory (AFRL,RXC)

5:00 PM
Experimental Validation of Models Used in Automotive Sheet Metal Deformation: *Adam Creuziger*[1]; Mark Iadicola[1]; Thomas Gnaeupel-Herold[1]; Andrew Reid[1]; [1]National Institute of Standards and Technology

5:20 PM
Thermodynamic and Kinetic Model-Based Processing of Low Density Al Alloys: *Danielle Belsito*[1]; Baillie McNally[1]; Victor Champagne[2]; Richard Sisson[1]; [1]Worcester Polytechnic Institute; [2]Army Research Laboratory

Three-Dimensional Materials Science VII: Novel Material Systems in Three-Dimensional Materials Science

*Sponsored by:*TMS Structural Materials Division, TMS: Advanced Characterization, Testing, and Simulation Committee
Program Organizers: Jonathan Madison, Sandia National Laboratories; Nikhilesh Chawla, Arizona State University; Michael Groeber, Air Force Research Laboratory

Monday PM
March 4, 2013
Room: 212A
Location: Henry B. Gonzalez Convention Center

Session Chairs: Nik Chawla, Arizona State University; Francesco De Carlo, Argonne National Laboratory

2:00 PM Invited
Three-Dimensional Tomographic Characterization of Advanced Ceramic Textile Composites under In Situ Loading at Ultrahigh Temperatures: Hrishikesh Bale[1]; A. Haboub[2]; Alastair MacDowell[2]; J. Nasiatka[2]; Brian Cox[3]; David Marshall[3]; *Robert Ritchie*[1]; [1]University of California Berkeley; [2]Lawrence Berkeley National Laboratory; [3]Teledyne Science Center

2:30 PM
Grain Boundary Misorientation and Solute Segregation in Radiation-Tolerant Nanostructured Ferritic Alloys: *Lan Yao*[1]; Michael Miller[1]; Kathy Powers[1]; [1]ORNL

2:50 PM
Neutron and X-Ray Tomography of Aluminum Alloys Subjected to Fire Damage: Stephen Puplampu[1]; *Dayakar Penumadu*[1]; Felix Kim[1]; Justin Baba[2]; [1]University of Tennessee; [2]Oak Ridge National Laboratory

3:10 PM Invited
The Use of 3D Microstructural Volumes in the Integrated Experimental Approach to the Prediction of Fatigue Behavior in an a + ß Titanium Alloy: *Christopher Szczepanski*[1]; Sushant Jha[2]; Paul Shade[1]; Megna Shah[3]; Michael Uchic[1]; Michael Groeber[1]; James Larsen[1]; [1]US Air Force Research Laboratory; [2]UTC/AFRL; [3]UES

3:40 PM Break

3:55 PM
Determining the Variance and Distribution of Quantified Microstructure in a+ß Processed Ti-6Al-4V by Meso-Scale 3D Serial Sectioning.: *Meg Noble*[1]; Daniel Huber[1]; John Sosa[1]; Vikas Dixit[1]; Hamish Fraser[1]; [1]The Ohio State University

4:15 PM
3D Microstructural Characterization of In-Situ TiC Reinforced Ni Composites: *Junyeon Hwang*[1]; Sundeep Gopagoni[2]; Darius Simmons[3]; Kristopher Mahdak[3]; Soumya Nag[3]; Jaimie Tiley[4]; Rajarshi Banerjee[3]; [1]Korea Institute of Science and Technology; [2]Johns Manville; [3]University of North Texas; [4]Air Force Research Laboratory

4:35 PM Break

4:50 PM Invited
On Quantification of Fibrous Material: *Ming Lei*[1]; Shawn Zhang[1]; Laurent Bernard[1]; Patrick Barthelemy[1]; [1]Visualization Sciences Group

5:20 PM
X-Ray Microtomographic Characterisation of Deformation and Failure in Cellular Materials under Quasi-static and Dynamic Compression: *Peifeng Li*[1]; [1]Nanyang Technological University

5:40 PM
X-Ray Fluorescence Analysis of a Dirty Discrete White Spot in a Nickel 718 Alloy: *Trevor Watt*[1]; Eric Taleff[1]; [1]The University of Texas at Austin

2013 Functional Nanomaterials: Synthesis, Properties and Applications: Nanomaterials General I: Electronic, Photonic, and Bio-Nano Interfaces

Sponsored by: TMS Electronic, Magnetic, and Photonic Materials Division, TMS: Nanomaterials Committee
Program Organizers: Seong Jin Koh, University of Texas at Arlington; Nitin Chopra, University of Alabama; Jiyoung Kim, University of Texas at Dallas; Yuanbing Mao, University of Texas-Pan American; Ashwin Ramasubramaniam, University of Massachusetts; Gregory Thompson, University of Alabama

Tuesday AM
March 5, 2013
Room: 201
Location: Henry B. Gonzalez Convention Center

Funding support provided by: Qualcomm, Inc.

Session Chairs: Gregory Thompson, University of Alabama; Ashwin Ramasubramaniam, University of Massachusetts Amherst

8:30 AM Invited
Transfer Printed Semiconductor Nanomembrane Photonics: *Weidong Zhou*[1]; Zhenqiang Ma[2]; Hongun Yang[3]; [1]University of Texas at Arlington; [2]University of Wisconsin-Madison; [3]Semerane, Inc.

9:05 AM Invited
Tunable Nanostructures and Printed Electronics: *Horst Hahn*[1]; [1]Karlsruhe Institute of Technology

9:40 AM
Fabrication of Surface Channel Waveguides on a Thin Film of Rare Earth Doped Silicon: *Matthew Murray*[1]; Gin Jose[1]; Billy Richards[1]; Animesh Jha[1]; [1]The University of Leeds

10:00 AM Break

10:15 AM
Characteristic Study for Nano-Scaled 2DEG Properties of AlGaN/GaN: *JaeWoo Suh*[1]; Feyza Berber[1]; Harlan Harris[1]; [1]Texas A&M University

10:35 AM Invited
Chemical Functionalization of Hydrogen-terminated Silicon Surfaces for Energy and Sensing Applications: Oliver Seitz; Weina Peng; Peter Thissen; Louise Caillard; William De Benedetti; Hue Nguyen; Yuri Gartstein; Anton Malko; *Yves Chabal*[1]; [1]Univ of Texas at Dallas

11:10 AM Invited
Biological Properties of Zinc Oxide-Coated Anodized Aluminum Oxide: S. Skoog[1]; M. Bayati[2]; P. Petrochenko[1]; S. Stafslien[3]; J. Daniels[3]; N. Cilz[3]; D. Comstock[4]; J. Elam[4]; *R. Narayan*[1]; [1]UNC/NCSU Joint Department of Biomedical Engineering; [2]North Carolina State University Department of Materials Science and Engineering; [3]North Dakota State University; [4]Argonne National Laboratory

11:45 AM
Quantitation of Circulating Tumor Cells Using Nanowire Substrate-Based Laser Scanning Cytometry: *Sang-Kwon Lee*[1]; Rong Fan[2]; [1]Chonbuk National University; [2]Yale University

12:05 PM
Synthesis and Characterization of Magnetic Silica Nanoparticles for His-tagged Proteins Capture and Separation: Mahdi Kamali[1]; Mehdi Ghaffari Sharaf[2]; *Seyed Mostafa Amoozadeh*[3]; Hamidreza Javadi[4]; Hamid Kooshki[1]; Jamal Rashidiani[1]; Amir Homayoun Keihan[2]; Manizheh Ramezani[5]; [1]BMSU Nano Biotechnology Research Center; [2]Ibb Institute, University of Tehran; [3]Sharif University of Technology; [4]National Institute of Genetic Engineering and Biotechnology (NIGEB); [5]University of Tehran

4th International Symposium on High-Temperature Metallurgical Processing: Alloy and Materials Preparation I

Sponsored by: TMS Extraction and Processing Division, TMS: Energy Committee, TMS: Materials Characterization Committee, TMS: Pyrometallurgy Committee
Program Organizers: Tao Jiang, Central South University; Jiann-Yang Hwang, Michigan Technological University; Phillip Mackey, Consultant; Onuralp Yücel, ITU; Guifeng Zhou, Wuhan Iron and Steel

Tuesday AM
March 5, 2013
Room: 008B
Location: Henry B. Gonzalez Convention Center

Session Chairs: Onuralp YÜCEL, Istanbul Technical University; Jilai Xue, Unversity of Science and Technology Beijing

8:30 AM
The Effect of Aluminum Addition to the ESR Process Slag on IN718 Superalloy Characteristics: *Adel Sheikhhosseini*[1]; [1]IUT

8:50 AM
Effects of Crystallization of Mould Fluxes on Property of Liquid Slag Film and Its Impact on Peritectic Steel Slab Continuous Casting: *Xiao Long*[1]; Shengping He[1]; Lilong Zhu[1]; Ting Wu[1]; Qian Wang[1]; [1]Chongqing University

9:05 AM
A Study on Production of Fe-Co-V Alloys by Self Propagating High Temperature Synthesis: *Murat Alkan*[1]; Ozlem Altinordu[1]; Seref Sönmez[1]; Bora Derin[1]; Onuralp Yücel[1]; Vladimir Sanin[2]; Vladimir Yukhvid[2]; [1]Istanbul Technical University; [2]Institute of Structural Macrokinetics and Materials Science

9:20 AM
Hot Ductility of Nb-V-Containing Microalloyed Steel during Solidification: Yanhui Sun[1]; *Yanan Zeng*[1]; Kaike Cai[1]; [1]University of Science and Technology, Beijing

9:40 AM
Co-Cr-Mo Alloys Production by Self Propagating High Temperature Synthesis: *Ozlem Okur*[1]; Murat Alkan[1]; Onuralp Yücel[1]; [1]Istanbul Technical University

10:00 AM Break

10:20 AM
High-Temperature Oxidation and Corrosion Behaviors of NiFe Alloy for Inert Anode Materials in Aluminum Electrolysis: *Jilai Xue*[1]; Luxing Feng[1]; MengDong Gu[1]; [1]Unversity of Science and Technology Beijing

10:30 AM
Production of Molybdenum Containing Iron Based Alloys via Metallothermic Processes: *Dilek Kirgöz*[1]; Murat Alkan[1]; Onuralp Yücel[1]; [1]Istanbul Technical University

10:50 AM
Production of Boron Containing Iron-Based Alloys by Metallothermic Processes: *Cem Colakoglu*[1]; Murat Alkan[1]; Onuralp Yücel[1]; [1]Istanbul Technical University

11:05 AM
Electrical Resistance of TiB2-C/C Function Gradient Material for Aluminum Reduction Cathodes: *Jun Zhu*[1]; Jilai Xue[1]; [1]Unversity of Science and Technology Beijing

11:25 AM
Experimental Study of Phosphorus Distribution Between Slag and Metal During Duplex Dephosphorus Converter Processing: Xin Qiu[1]; *Bing Xie*[1]; Lu Jiang[1]; Xie Zhang[1]; Jiang Diao[1]; Hong-Yi Li[1]; [1]Chongqing University

11:40 AM
Effect of Steel Composition on the Scale Layer Composition in Continuous Casting: *Cuihuan Huang*[1]; [1]Northeastern University

11:55 AM
Hot Workability of M42 Tool Steel Additionally Alloyed with Co and Mo: Milan Tercelj[1]; *Goran Kugler*[1]; Matevz Fazarinc[1]; Iztok Peruš[1]; [1]University of Ljubljana

12:15 PM
Synthesis by Hydrogen Reduction and Characterization of FeNi Alloys: Orfelinda Avalo[1]; *Eduardo Brocchi*[2]; Francisco Moura[2]; Rogerio Siqueira[2]; [1]PUC-Peru; [2]PUC-Rio

Advanced Materials and Reservoir Engineering for Extreme Oil & Gas Environments: Corrosion and Hydrogen Damage

*Sponsored by:*TMS Materials Processing and Manufacturing Division, TMS Structural Materials Division, TMS Electronic, Magnetic, and Photonic Materials Division, TMS: Nanomaterials Committee
Program Organizers: Indranil Roy, Schlumberger; Brajendra Mishra, Colorado School of Mines; Manuel Marya, Schlumberger Technology Corporation; Kuo-Chiang Chen, Schlumberger; Partha Ganguly, Schlumberger; Richard Lewis, Schlumberger; Suveen Mathaudhu, U.S. Army Research Office; Nitin Chopra, The University of Alabama; Xinghang Zhang, Texas A&M University; Greg Kusinski, Chevron; John Meng, BP America Inc.; Jefferson Rodrigues, Petrobras; Justin Cheney, Scoperta

Tuesday AM
March 5, 2013
Room: Lone Star Salon A
Location: Grand Hyatt

Session Chairs: Indranil Roy, Schlumberger; Virendra Singh, Schlumberger

8:30 AM Introductory Comments by Andre Anderko, CMD, OLI

8:40 AM Keynote
Corrosion of Mild Steel in Extreme Oil and Gas Environments: *Srdjan Nesic*[1]; [1]Ohio University

9:10 AM Invited
Modeling Localized Corrosion in Complex Oil and Gas Environments: *Andre Anderko*[1]; [1]OLI Systems Inc.

9:30 AM Invited
Evaluating Corrosion Mechanisms through Atomistic Modeling: *Christopher Taylor*[1]; [1]Los Alamos National Laboratory

9:50 AM Invited
On the Connection Between Grain Boundary Structure and Intergranular Fracture in Ni: *Michael Demkowicz*[1]; G. Xu; [1]Massachusetts Institute of Technology

10:10 AM Break

10:25 AM Keynote
Fracture Prognosis for Materials Operating in Extreme Hydrogen Environments: *Petros Sofronis*[1]; M. Martin[1]; M. Dadfarnia[1]; P. Somerday[2]; I. Robertson[1]; [1]University of Illinois; [2]Sandia National Laboratories

10:55 AM Invited
Surface Science Investigations for Corrosion Research: *Roland Schulze*[1]; [1]Los Alamos National Laboratory

11:15 AM
Extreme Sampling Tool for High Temperature, Pressure and Highly Corrosive Downhole Environments: *Sebastien Ives*[1]; Danny Killen[1]; Indranil Roy[1]; Stephane Hiron[1]; [1]Schlumberger

11:35 AM Invited
Modeling the Mechanical Response of Metallic Materials at the Nano-scale: *Diana Farkas*[1]; [1]Virginia Tech

11:55 AM
Oil Swellable Elastomer in Sour Environment: *Xiaohong Ren*[1]; Indranil Roy; Travis Hohenberger; [1]Schumberger Rosharon Campus

12:15 PM
Mitigation of Scale Formation using Liquid Impregnated Surfaces: *Srinivas Prasad Bengaluru Subramanyam*[1]; Gisele Azimi[1]; J.David Smith[1]; Kripa Varanasi[1]; [1]Massachusetts Institute of Technology

Advances in Surface Engineering: Alloyed and Composite Coatings II: Thermal and Cold Sprayed Coatings

*Sponsored by:*TMS Materials Processing and Manufacturing Division, TMS: Surface Engineering Committee
Program Organizers: Srinivasa Bakshi, Indian Institute of Technology Madras; Graham McCartney, University of Nottingham; Arvind Agarwal, Florida International University; Sandip Harimkar, Oklahoma State University

Tuesday AM
March 5, 2013
Room: Bowie B
Location: Grand Hyatt

Funding support provided by: Bulk Nanostructured Materials Programs, Office of Naval Research

Session Chair: To Be Announced

8:30 AM Invited
Multilayer Thermal Barrier Coatings: Interplay Among Coating Design, Processing and Properties: *Sanjay Sampath*[1]; Gopal Dwivedi[1]; Vaishak Vishwanathan[1]; Yikai Chen[1]; [1]Stony Brook University

8:50 AM Invited
Failure Mechanisms of EB-PVD TBCs with Pt-Modified NiAl Bondcoats and CMSX-4: *Yongho Sohn*[1]; Le Zhou[1]; [1]University of Central Florida

9:10 AM Invited
Hybrid Powder-Based and Solution Precursor Plasma Spraying of Composite Coatings: *Shrikant Joshi*[1]; G Sivakumar[1]; [1]International Advanced research Centre for Powder Metallurgy & New Materials (ARCI)

9:30 AM
High Temperature Oxidation and Corrosion Behavior of Electroplated Ni-Al-Cr Bond Coating on TiAl: *Kai Tan*[1]; Viola Acoff[1]; [1]The University of Alabama

9:45 AM
Mechanical Properties of Stabilised Zirconia Nanocrystalline EB-PVD Coating Evaluated by Micro and Nano Indentation: *Meysam Keshavarz*[1]; Mohd Hasbullah bin Hj.Idris[1]; [1]UTM,Universiti Teknologi Malaysia

10:00 AM Break

10:15 AM Invited
Bonding Mechanism of Cold Spray Coating on Magnesium Alloys: *Mingxing Zhang*[1]; Qiang Wang[1]; [1]The University of Queensland

10:35 AM
State of the Art and Commercial Applications of Downstream Injection Cold Spray Technology for Production of Composite Coatings: *Julio Villafuerte*[1]; [1]Centerline Windsor Ltd

10:50 AM
Cold Sprayed Aluminum Based Glassy Coatings for Improved Corrosion and Wear Resistance: *Arvind Agarwal*[1]; Debrupa Lahiri[1]; Puneet Gill[1]; Cheng Zhang[1]; Sergio Scudino[2]; J Karthikeyan[3]; Norman Munroe[1]; [1]Florida International University; [2]IFW Dresden; [3]ASB Industries

11:05 AM
Nano-Scratch Behavior of Cold Sprayed Al-bulk Metallic Glassy Coating: *Suresh Babu Pitchuka*[1]; Debrupa Lahiri[2]; Sundararajan G[1]; Arvind Agarwal[2]; [1]International Advanced Research Centre for Powder Metallurgy and New Materials (ARCI); [2]Nanomechanics and Nanotribology Laboratory

11:20 AM
Comparative Analysis of the Microstructural, Wear, and Corrosion Properties of Laser Assisted Cold Sprayed Titanium Coatings with Laser Cladded Coatings: *Eyitayo Olakanmi*[1]; Monnamme Tlotleng[1]; Christopher Meacock[2]; Esther Akinlabi[1]; Mukul Shukla[1]; Charl Smal[2]; Herman Burger[2]; Sisa Pityana[2]; Mulalo Doyoyo[1]; Peter Olubambi[3]; [1]University of Johannesburg; [2]Council for Scientific and Industrial Research; [3]Tshwane University of Technology

11:35 AM
Effect of Component Ratio on the Microstructural, Wear, and Bio-Corrosion Characteristics of Laser Assisted Cold Sprayed Titanium/Hydroxyapatite (Ti-HAP) Composite: *Monnamme Tlotleng*[1]; Eyitayo Olakanmi[1]; Christopher Meacock[2]; Mukul Shukla[1]; Esther Akinlabi[1]; Sisa Pityana[2]; Mulalo Doyoyo[1]; [1]University of Johannesburg; [2]Council for Scientific and Industrial Research

Alloys and Compounds for Thermoelectric and Solar Cell Applications: Thermoelectric III

Sponsored by: TMS Electronic, Magnetic, and Photonic Materials Division, TMS: Alloy Phases Committee, TMS: Energy Conversion and Storage Committee

Program Organizers: Sinn-wen Chen, National Tsing Hua University; Yoshisato Kimura, Tokyo Institute of Technology; Chih-Huang Lai, National Tsing-Hua University; CW Nan, Tsinghua University; G. Jeffrey Snyder, California Institute of Technology; Hubert Scherrer, Ecole des Mines

Tuesday AM
March 5, 2013

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

Session Chairs: Hubert Scherrer, Ecole des Mines; Hsin-jay Wu, National Tsing Hua University

8:30 AM Invited
Multiphase, Multistructure, and Multifunctionality of Interface Engineered Oxide Heterostructures for Energy Conversion and Harvest: *Chonglin Chen*[1]; [1]University of Texas at San Antonio

8:55 AM Invited
Performance Enhanced Nanostructured Thermoelectric Materials and Their Applications: *Zhifeng Ren*[1]; [1]Boston College

9:20 AM
Thermoelectric Properties of Nanostructured Bulk Silicon: *Shinsuke Yamanaka*[1]; Yuji Ohishi[1]; Hiroaki Muta[1]; Yoshinobu Miyazaki[1]; Yusuf Aikebaier[1]; Ken Kurosaki[1]; Noriyuki Uchida[2]; Tetsuya Tada[2]; [1]Osaka University; [2]National Institute of Advanced Industrial Science and Technology

9:40 AM
Thermoelectric Properties of β-$FeSi_2$ Based Alloys Fabricated by Reactive Sintering Process Using Iron Oxide Powder: *Koichiro Takeno*[1]; Yaw Wang Chai[1]; Yoshisato Kimura[1]; [1]Tokyo Institute of Technology

10:00 AM Break

10:15 AM Invited
Path to Predictive Computations of Thermoelectric Effects: Thermal and Electronic Transport.: *Boris Kozinsky*[1]; [1]Bosch Research

10:40 AM
Energy-Dependent Relaxation Time Functions and Electronic Transport: *Md. Hossain*[1]; [1]California Institute of Technology

11:00 AM
Thermomechanical Processing of Fe_2VAl-Based Compounds for Thermoelectric Applications: *Camille van der Rest*[1]; David-Henry Makuanga[1]; Valentin Marchal-Marchant[1]; Aude Simar[1]; Pascal Jacques[1]; [1]Université Catholique de Louvain

11:20 AM
Liquidus Projection of the Ternary Thermoelectric Co-Sb-Ga System: *Yuan-Chun Chien*[1]; Sinn-wen Chen[1]; Jui-shen Chang[1]; G. Jeffrey Snyder[2]; [1]National Tsing Hua University; [2]Materials Science, California Institute of Technology

Alumina and Bauxite: Clarification

Sponsored by: TMS Light Metals Division, TMS: Aluminum Committee
Program Organizer: Pat Clement, Alcoa

Tuesday AM
March 5, 2013

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

Session Chair: Paul Shroyer, National Filter Media

8:30 AM Introductory Comments

8:40 AM
Sodalite Solids Formation at the Surface of Iron Oxide and Its Impact on Flocculation: *Alexander Senaputra*[1]; Phillip Fawell[2]; Franca Jones[3]; Peter Smith[2]; [1]Nanochemistry Research Institute, Curtin University,Perth; [2]CSIRO Process Science and Engineering; [3]Nanochemistry Research Institute, Curtin University

9:00 AM
Improvement on the Operation Management System of Vertical Pressure Filters: Lucélia Moares[1]; *Tatiani Santos*[1]; Aline Sampaio[1]; Humberto Lima[1]; Juarez Borges[1]; Joel Miranda[1]; Alípio Júnior[1]; Milton Maciel[1]; [1]Hydro Alunorte

9:20 AM
Using a Multivariate Statistical in the Identification of Alumina Loss in Red Mud: *Américo Borges*[1]; Alipio Junior[1]; Humberto Lima[1]; Joaquim Ribeiro[1]; Ricardo Podversek[1]; Joel Miranda[1]; Ayana Oliveira[1]; [1]Hydro Alunorte

9:40 AM Break

9:55 AM
Bevill and the Aluminum Industry: *Anthony Schoedel*[1]; [1]Alcoa, Inc.

10:15 AM
New Development Model for Bauxite Deposits - Dedicated Compact Refinery: *Peter-Hans ter Weer*[1]; [1]TWS Services and Advice

10:35 AM Concluding Comments

Aluminum Alloys: Fabrication, Characterization and Applications: Corrosion Resistance Performance

Sponsored by: TMS Light Metals Division, TMS: Aluminum Processing Committee
Program Organizers: Zhengdong Long, Kaiser Aluminum; Subodh Das, Phinix LLC; Tongguang Zhai, University of Kentucky; William Golumbfskie, Naval Surface Warfare Center

Tuesday AM
March 5, 2013

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

Session Chair: William Golumbfskie, Naval Surface Warfare Center, Carderock Division

8:30 AM
Aluminum Sensitization and the Navy: *William Golumbfskie*[1]; [1]Naval Surface Warfare Center, Carderock Division

8:50 AM
Understanding the Influence of Stress on Sensitization in 5xxx Alloys: William Golumbfskie[1]; *Jennifer Gaies*[1]; Mitra Taheri[2]; [1]Naval Surface Warfare Center, Carderock Division; [2]Drexel University

9:10 AM
Effect of Grain Refinement on Sensitization of Al-Mg Alloys: *Ramasis Goswami*[1]; Khershed Cooper[1]; Peter Pao[1]; [1]Naval Research Laboratory

9:30 AM
A Comparative Investigation of UFG and CG AA 2139 Microstuctures and Mechanical Behavior Prepared by Cryomilling and Conventional Routes: *Troy Topping*[1]; Brandon Saller[1]; Tao Hu[1]; Hanry Yang[1]; Julie Schoenung[1]; Enrique Lavernia[1]; [1]University of California, Davis

9:50 AM Break

10:10 AM
Strength and Failure of Ultrafine Grain and Bimodal Al-Mg Alloy at High Temperatures: *Andrew Magee*[1]; Leila Ladani[1]; [1]The University of Alabama

10:30 AM
Influence of Length Scale on the Precipitation Behavior of Ultrafine Grained Al-Zn-Mg alloy: *Tao Hu*[1]; Kaka Ma[1]; Troy Topping[1]; Julie Schoenung[1]; Enrique Lavernia[1]; [1]University of California, Davis

10:50 AM
Investigation of Phase Formation and Microstructural Evolution in a Cryomilled Al-5at% Fe Alloy: *Brandon Saller*[1]; Tao Hu[1]; Troy Topping[1]; Enrique Lavernia[1]; Julie Schoenung[1]; [1]UC Davis

11:10 AM
Methodologies for Minimizing Corrosion in Aluminum Alloys: *Harovel Wheat*[1]; [1]Univ of Texas at Austin

11:30 AM
Corrosion Fatigue Crack Growth and Stress-Corrosion Cracking in Sensitized Al 5083: *Peter Pao*[1]; Ramasis Goswami[1]; Robert Bayles[1]; Ronald Holtz[1]; [1]Naval Research Laboratory

11:50 AM
Process Development of AA3103 Aluminum Alloy for Automotive Thins: *Marcelo Paes*[1]; Augusto Coelho[1]; Roberto Netto[1]; Fernando Aguiar[1]; [1]Votorantim Metais - CBA

12:10 PM
Microhardness, Corrosion Behaviour and Microstructures of Directionally Solidified Al-Cu Alloys: Alicia Ares[1]; Carlos Rodriguez[1]; Claudia Mendez[2]; *Carlos Schvezov*[1]; Mario Rosenberger[1]; [1]CONICET/FCEQyN-UNaM; [2]FCEQyN-UNaM

12:30 PM
Effect of Mg Contents on Fluidity of Al-xMg Alloys: *Nam-Seok Kim*[1]; Young-Ok Yoon[1]; Gil-Yong Yeom[1]; Hyun Kyu Lim[1]; Shae K. Kim[1]; [1]Korea Institute of Industrial Technology

Aluminum Reduction Technology: Fundamentals: Chemistry

Sponsored by: TMS Light Metals Division, TMS: Aluminum Committee
Program Organizer: Mark Cooksey, CSIRO

Tuesday AM
March 5, 2013

Room: Grand Ballroom C2
Location: Henry B. Gonzalez Convention Center

Session Chair: Arne Ratvik, NTNU

8:30 AM Introductory Comments

8:35 AM
Composition and Thermal Analysis of Crust Formed from Industrial Anode Cover: Qinsong Zhang[1]; Mark Taylor[2]; John Chen[2]; David Cotton[2]; Tania Groutzo[2]; Xiaodong Yang[1]; *Pretesh Patel*[2]; [1]Shenyang Aluminium & Magnesium Engineering & Research Institute Co. Ltd; [2]The University of Auckland

9:00 AM
Liquidus Temperatures of Na_3AlF_6 -AlF_3-CaF_2-KF-LiF-Al_2O_3 Melts: *Di Yuezhong*[1]; Peng Jianping[1]; Bai Yunbin[1]; Feng Naixiang[1]; [1]Northeastern University

9:25 AM
The Effect of Calcium Fluoride on Alumina Solubility in Low Temperature Cryolite Melts: *Pavel Tingaev*[1]; Alexey Apisarov[1]; Alexander Dedyukhin[1]; Alexander Redkin[1]; Yurii Zaikov[1]; [1]Institute of High Temperature Electrochemistry of the Ural Branch of the Russian Academy of Sciences

9:50 AM
Conductivity of KF-NaF-AlF_3 System Low-temperature Electrolyte: *Jianhong Yang*[1]; Wangxing Li[1]; Hengwei Yan[1]; Dan Liu[1]; [1]Zhengzhou Research Institute of CHALCO

10:15 AM Break

10:25 AM
Numerical Analysis of Ionic Mass Transfer in the Electrolytic Bath of an Aluminium Reduction Cell: *Mohsen Ariana*[1]; Martin Désilets[1]; Pierre Proulx[1]; [1]Université de Sherbrooke

10:50 AM
Liquidus Temperature of Electrolytes for Aluminum Reduction Cells: Dong Shi[1]; *Bingliang Gao*[1]; Zhaowen Wang[1]; Zhongning Shi[1]; Xianwei Hu[1]; [1]Northeasten University

11:15 AM
Effect of $LiAlO_2$ and KF on Physicochemical Properties for Industrial Aluminum Electrolyte: Lv Xiaojun[1]; Chen Shiyue[1]; Lai Yanqing[1]; Tian Zhongliang[1]; Li Jie[1]; *Zhang Hongliang*[1]; [1]School of Metallurgical Science and Engineering, Central South University

Aluminum Reduction Technology: Potline Operation I: Smelter Operations

Sponsored by: TMS Light Metals Division, TMS: Aluminum Committee
Program Organizer: Mark Cooksey, CSIRO

Tuesday AM
March 5, 2013

Room: Grand Ballroom C1
Location: Henry B. Gonzalez Convention Center

Session Chair: Michel Reverdy, DUBAL

8:30 AM Introductory Comments

8:35 AM
Low Power Operation at Aluminium Dunkerque Smelter: *Jean-Michel Peyneau*[1]; Laurent Fiot[1]; Stéphane Mermet-Guyenet[1]; Olivier Rebouillat[1]; [1]Rio Tinto Alcan

9:00 AM
Maximizing Creeping Value through Rigorous Methodology: Bénédicte Champel[1]; Nicolas Monnet[1]; *Yann El Ghaoui*; [1]Rio Tinto Alcan

9:25 AM
The Quick Shut Down and Restarting of 291 kA Pre Baked Potline at JSC "RUSAL Sayanogorsk" from May to August 2011: *Victor Buzunov*[1]; Andrey Soldatov[1]; Victor Mann[2]; Vasiliy Borisov[1]; Alexander Pavin[1]; Sergey Zatepyakin[1]; Evgeniy Scherbakov[3]; Andrey Gouzenkov[4]; [1]RUSAL "Engeneering and Technological Center"; [2]UC RUSAL; [3]RUSAL Sayanogorsk; [4]RUSAL RUS-Engeneering

9:50 AM
Production Growth and Future Challenges in Aluminium Bahrain (Alba): *Abdulla Ahmed*[1]; [1]Aluminium Bahrain (Alba)

10:15 AM Break

10:25 AM
High Frequency Power Modulation - TRIMET Smelters Provide Primary Control Power for Stabilizing the Frequency in the Electricity Grid: *Andreas Luetzerath*[1]; [1]TRIMET ALUMINIUM AG

10:50 AM
Autonomous Vehicle and Smelter Technologies: *Ashley Tews*[1]; Paulo Borges[1]; [1]CSIRO

11:15 AM
Preventive Maintenance of Transport Vehicles: Is It Improving Production Stability of a Smelter?: *Maarten Meijer*[1]; [1]Hencon

Biological Materials Science Symposium: Ultrafine Grain Materials/Biointerface

*Sponsored by:*TMS Electronic, Magnetic, and Photonic Materials Division, TMS Structural Materials Division, TMS: Biomaterials Committee
Program Organizers: Candan Tamerler, University of Washington; Molly Gentleman, Texas A & M University; Po-Yu Chen, National Tsing Hua University; Kajal Mallick, University of Warwick; Rajendra Kumar Kasinath, Unversity of Montana; Paul G. Allison, US Army Corp of Engineers

Tuesday AM
March 5, 2013
Room: 214C
Location: Henry B. Gonzalez Convention Center

Funding support provided by: Biomaterials Program, National Science Foundation

Session Chairs: Terry Lowe, Los Alamos National Lab; Candan Tamerler, University of Washington

8:30 AM Invited
Nanoparticles, Nanotubes, and Other Nanomaterials: Controlling Cellular Functions to Increase Tissue Growth: *Thomas Webster*[1]; [1]Brown University

9:00 AM Invited
Development of Mechanical Biocompatibility of Low-Modulus Beta-Type Titanium Alloy by Introducing Ultrafine-Grain Structure Through High-Pressure Torsion: *Mitsuo Niinomi*[1]; Masaaki Nakai[1]; Junko Hieda[1]; Ken Cho[1]; Hakan Yelmazer[1]; Yoshikazu Todaka[2]; [1]Tohoku University; [2]Toyohashi University of Technology

9:30 AM Invited
Uncovering the Multiscale Structural Origin of Nacre's Exceptional Mechanical Performance: *Xiaodong Li*[1]; [1]University of South Carolina

10:00 AM Break

10:15 AM Invited
Ultrafine Grained Titanium for Dental Applications: Mechanical Properties and Performance: *Marc Meyers*[1]; Carlos Elias[2]; Ruslan Valiev[3]; Sergio Neves Monteiro[2]; Felipe Perisse[2]; [1]UCSD; [2]IME; [3]UFA

10:45 AM
Non-Toxic SPD Processed Ti Alloys for Orthopaedics: *Ajit Panigrahi*[1]; Thomas Waitz[1]; Erhard Schafler[1]; Matthias Bönisch[2]; Mariana Calin[2]; Jürgen Eckert[2]; Annett Gebert[2]; Werner Skrotzki[3]; Michael Zehetbauer[1]; [1]Physics of Nanostructured Materials, University of Vienna, 1090, Vienna, Austria; [2]Institut für Komplexe Materialien, IFW Dresden; [3]Institut für Strukturphysik, TU Dresden

11:00 AM Invited
Surface Modification of Nanostructured Titanium for Biomedical Application: *Irina Semenova*[1]; Ruslan Valiev[1]; Gulnaz Salimgareeva[1]; Alexander Polyakov[1]; Terry Lowe[2]; [1]Ufa State Aviation Technical University; [2]Manhattan Scientifics

11:25 AM Invited
Surface Chemistry of Titanium Dental Implants: *Roland Schulze*[1]; Terry Lowe[2]; [1]Los Alamos National Laboratory; [2]New Mexico Tech

11:50 AM Invited
Natural Armor: Interdisciplinary Convergence Among Engineering, Architecture and Evolutionary Biology: *Christine Ortiz*[1]; [1]Massachusetts Institute of Technology

12:15 PM Invited
Strategies for Improving the Performance of Dental Restorative Composites: *Jamie Kruzic*[1]; Dmitriy Khvostenko[1]; Jack Ferracane[2]; John Mitchell[2]; [1]Oregon State University; [2]Oregon Health & Science University

Bulk Metallic Glasses X: Structures and Mechanical Properties I

*Sponsored by:*TMS Structural Materials Division, TMS/ASM: Mechanical Behavior of Materials Committee
Program Organizers: Peter Liaw, The University of Tennessee; Hahn Choo, The University of Tennessee; Yanfei Gao, The University of Tennessee; Gongyao Wang, University of Tennessee

Tuesday AM
March 5, 2013
Room: Lone Star Salon D
Location: Grand Hyatt

Funding support provided by: Materials Processing and Manufacturing Division, National Science Foundation

Session Chairs: Takeshi Egami, The University of Tennessee; Christopher Schuh, MIT

8:30 AM Keynote
Mechanical Behavior of Metallic Liquids and Glasses: *Takeshi Egami*[1]; [1]University of Tennessee

9:00 AM
Time-Dependent Structural Change in BMG Induced by Creep: *Yang Tong*[1]; W. Dmowski[1]; C. P. Chuang[1]; J. Almer[2]; J. Bednarcik[3]; T. Egami[1]; [1]The University of Tennesee-Knoxville; [2]Argonne National Laboratory; [3]DESY, Hasylab

9:15 AM Invited
Atomic Structure and Mechanical Deformation in BMG: *Wojciech Dmowski*[1]; Yang Tong[1]; Chin-Pi Chuang[1]; Takeshi Egami[1]; [1]University of Tennessee

9:35 AM
In-Situ Observation of Transformation-induced Plasticity in Bulk Metallic Glassy Composite: *Yuan Wu*[1]; Dong Ma[2]; A. D. Stoica[2]; X. L. Wang[3]; Z. P. Lu[1]; [1]State Key Lab for Advanced Metals and Materials, USTB; [2]Neutron Scattering Science Division, Oak Ridge National Laboratory; [3]City University of Hong Kong

9:50 AM Invited
Effect of Surface Modifications on Shear Banding and Plasticity in Metallic Glasses: *Taigang Nieh*[1]; [1]University of Tennessee

10:10 AM Break

10:25 AM Invited
Interplay Between Metallic Glass Deformation and Free Volume Evolution: A Study Based on Shear Transformation Zone Dynamics Simulations: Lin Li[1]; *Christopher Schuh*[1]; [1]MIT

10:45 AM
$Al_{77}Ni_{14.4}Y_{4.8}Zr_{3.8}$+5%$B_4C$ Bulk Metallic Glass Composites Processed Via Gas Atomization and Spark Plasma Sintering: *Baolong Zheng*[1]; Troy Topping[1]; Yizhang Zhou[1]; Somesh Mukherjee[2]; Enrique Lavernia[1]; [1]University of California, Davis; [2]Aspen Systems, Inc.

11:00 AM Invited
Elastic Properties of Metallic Glasses: *Mo Li*[1]; Hao Wang[1]; [1]Georgia Institute of Technology

11:20 AM
Deformation Behavior of Structural Amorphous Metals (SAM) under Compression: Shima Haghighat[1]; Andrea Hodge[1]; *James Kelly*[2]; Olivia Graeve[2]; [1]USC; [2]Alfred University

11:35 AM Invited
Deformation and Structural Evolution in Shear Band-sized Metallic Glass with In-Situ TEM: *Scott Mao*[1]; Junhang Luo[1]; Jianyu Huang[2]; Li Zhong[1]; [1]Department of Mechanical Engineering and Materials Science, University of Pittsburgh; [2]Center for Integrated Nanotechnologies, Sandia National Laboratories

11:55 AM
Devitrification Kinetics and Phase Selection Mechanisms in Cu-Zr Metallic Glasses: *Ilkay Kalay*[1]; Yunus Kalay[2]; Matthew Kramer[3]; Ralph Napolitano[4]; [1]Cankaya University; [2]METU; [3]Ames Laboratory US DOE; [4]Iowa State University

12:10 PM Invited
Stick-Slip Shear Banding in Metallic Glasses and Its Description Via an Effective Temperature Model: *Jörg Löffler*[1]; [1]ETH Zurich

12:30 PM
Do Grain Boundaries Behave Like a Layer of Amorphous Material?: *Rainer Birringer*[1]; Christian Braun[1]; Manuel Grewer[1]; [1]Universität des Saarlandes

Cast Shop for Aluminum Production: Aluminum Cast Shop II

Sponsored by: TMS Light Metals Division, TMS: Aluminum Committee
Program Organizer: Gyan Jha, Tri-Arrows Aluminum

Tuesday AM
March 5, 2013
Room: 210A
Location: Henry B. Gonzalez Convention Center

Session Chair: Shridas Ningileri, SECAT Inc.

8:30 AM
Ultrasonic Degassing and Processing of Aluminum: *Victor Rundquist*[1]; Kiran Manchiraju[1]; [1]Southwire Company

8:50 AM
Kinetics of Ultrasonic Degassing of Aluminum Alloys: *Noe Alba-Baena*[1]; Dmitry Eskin[1]; [1]Brunel University

9:10 AM
Removal of Inclusions in Molten Aluminum by Flux Injection under Counter-Gravity: *Jianmin Zeng*[1]; Hong Gu[1]; [1]Guangxi University

9:30 AM
Advanced Compact Filter: (ACF) An Efficient and Flexible Filtration Process: *Francis Breton*[1]; Peter Waite[1]; Patrice Robichaud[1]; [1]Rio Tinto Alcan

9:50 AM
Electromagnetic Priming of Ceramic Foam Filters (CFF) for Liquid Aluminium Filtration: *Robert Fritzsch*[1]; Mark Kennedy[2]; Shahid Akhtar[3]; Jon Bakken[1]; Ragnhild Aune[1]; [1]Norwegian University of Science and Technology; [2]Norwegian University of Science and Technology; [3]Hydro Aluminium

10:10 AM Break

10:30 AM
Plant Scale Investigation of Liquid Aluminum Filtration by Al_2O_3 and SiC Ceramic Foam Filters: *Sarina Bao*[1]; Martin Syvertsen[1]; Arne Nordmark[1]; Anne Kvithyld[1]; Thorvald Engh[2]; Merete Tangstad[2]; [1]SINTEF; [2]NTNU

10:50 AM
Casting Practices Influencing Inclusion Distributions in Billets: Ghadir Razaz[1]; *Torbjörn Carlberg*[1]; [1]Mid Sweden University

11:10 AM
Oxidation of Commercial Purity Aluminium Melts: An Experimental Study: *Stephen Bonner*[1]; John Taylor[1]; Ji-Yong Yao[1]; M. Akbar Rhamdhani[2]; [1]CAST CRC, The University of Queensland; [2]HTP Group, Swinburne University of Technology

11:30 AM
Modeling of Mold Filling and Porosity for RSI: *Xiaoxuan Li*[1]; Randall Bowers[1]; Shridas Ningileri[2]; Gyan Jha[3]; [1]Secat, Inc.; [2]University of Kentucky; [3]Tri-Arrows Aluminum

Characterization of Materials through High Resolution Coherent Imaging: Electron Based Techniques

Sponsored by: TMS Structural Materials Division, TMS: Advanced Characterization, Testing, and Simulation Committee
Program Organizers: John Carpenter, Los Alamos National Laboratory; Ross Harder, Argonne National Laboratory; Richard Sandberg, Los Alamos National Laboratory

Tuesday AM
March 5, 2013
Room: 206B
Location: Henry B. Gonzalez Convention Center

Session Chairs: John Carpenter, Los Alamos National Laboratory; Ross Harder, Argonne National Laboratory

8:30 AM Keynote
Electron Ptychography: The Future of High-Resolution Transmission Imaging?: *John Rodenburg*[1]; [1]University of Sheffield

9:00 AM
On the Precipitation of d Phase in Ni-Base Superalloy 718Plus: *Olivier Messe*[1]; Jonathan Barnard[1]; Edward Pickering[1]; Cathie Rae[1]; Svjetlana Stekovic[2]; [1]University of Cambridge; [2]Rolls-Royce PLC

9:20 AM
Automated Phase and Orientation Mapping in the TEM: *Amith Darbal*[1]; [1]NanoMEGAS USA

9:40 AM
Electron Wave Tomography for 3D Atomic Structure Determination: *Dirk Van Dyck*[1]; Ciney Tang[1]; Amy Wang[1]; Sandra Van Aert[1]; Fu-Rong Chen[2]; [1]University of ANtwerp; [2]National Tsing-Hua University

10:00 AM Break

10:20 AM Keynote
Imaging Atoms in Nanostructures Using Coherent Electrons: *Jian Min Zuo*[1]; Sungjin Kang[2]; Ke Ran[1]; [1]University of Illinois; [2]Seoul National University

10:50 AM
Local to Macroscopic Symmetry for Piezoelectric (1-x)Pb($Mg_{1/3}Nb_{2/3}$) O_3-x$PbTiO_3$ Single Crystal in the Morphotropic Phase Boundary Region at x = 0.31: *Kyouhyun Kim*[1]; David Payne[1]; Jian-Min Zuo[1]; [1]University of Illinois

11:10 AM
Bi-Metal Interface Characterization at the Nanoscale: *Subhasis Sinha*[1]; Anthony Rollett[1]; John Carpenter[2]; Nathan Mara[2]; Irene Beyerlein[2]; [1]Carnegie Mellon University; [2]Los Alamos National Laboratory

11:30 AM
Data Mining the Exit Wave of a Crystal Using the Channelling Theory: *Amy Wang*[1]; Fu-Rong Chen[2]; Sandra Van Aert[1]; Dirk Van Dyck[1]; [1]University of ANtwerp; [2]National Tsing-Hua University

Characterization of Minerals, Metals and Materials 2013: Characterization of Nonferrous Metal and Alloys

Sponsored by: TMS Extraction and Processing Division, TMS: Materials Characterization Committee
Program Organizers: Jiann-Yang Hwang, Michigan Technological University; Chen-Guang Bai, Chongqing University; John Carpenter, DOE LANL; Shadia Ikhmayies, Al Isra University; Bowen Li, Michigan Technological University; Mingming Zhang, ArcelorMittal Global R&D; Sergio Monteiro, State University of North Rio de Janeiro; Zhiwei Peng, Michigan Technological University

Tuesday AM
March 5, 2013

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

Session Chairs: Ting-An Zhang, Northeastern University; Zhiwei Peng, Michigan Technological University

8:30 AM
Effect of Ti Addition on The Amount Of Residual Al and Mechanical Properties of B_4C-Al by Vacuum Infiltration: *Wang Chao*[1]; Xue Xiangxin[1]; Cao Xiaozhou[1]; Cheng Gongjin[1]; [1]Northeastern University

8:50 AM
Characterization of AA5754 Alloy for Identification of Barlat's YLD2000-2d Yield Criterion: *Olivier Dion-Martin*[1]; Mario Fafard[2]; Ahmed Rahem[3]; Guillaume d'Amours[3]; [1]Dynamic-Concept; [2]Aluminium Research Center – REGAL; [3]Aluminium Technology Centre, National Research Council Canada

9:10 AM
Characterization of Cu-Zn-Al with Different Morphology: *Lee Siegfried*[1]; [1]UNR

9:30 AM
Enhanced Mechanical Properties and Formability of Cross-Roll-Rolled Ni-10Cr Alloy: *Kuk Hyun Song*[1]; Won Yong Kim[1]; [1]Korea Institute of Industrial Technology

9:50 AM
Prediction of Effective Thermal Conductivities of Alloy Series as a Function of Temperature in the Liquid Region: *Shahid Mehmood*[1]; [1]QAU Islamabad

10:10 AM
Respond of Microstructure Modification on Deformation Behaviour of ECAP Processed Aluminium Alloy AA7075: *Jozef Zrnik*[1]; Martin Fujda[2]; Peter Slama[1]; Libor Kraus[1]; [1]Comtes FHT, Inc.; [2]Technical University of Kosice

10:30 AM
Thermal Stability of Copper Foils with and without Nanotwins: *Yifu Zhao*[1]; Timothy Furnish[1]; Michael Kassner[1]; Andrea Hodge[1]; [1]University of Southern California

10:50 AM
Change in Electrical Resistivity of Pure Ti by ARB: *Masato Ueda*[1]; Kei Ota[1]; Masahiko Ikeda[1]; Daisuke Terada[2]; Nobuhiro Tsuji[2]; [1]Kansai University; [2]Kyoto University

11:10 AM
Comparison of Mechanical Vibration on Solidification Structure between Pure Copper and Aluminum: *Yanbing Zong*[1]; Rongsheng LI[1]; Chen Wang[1]; Yan Gou[1]; [1]State Key Laboratory of Advanced Metallurgy, University of Science and Technology Beijing

Computational Thermodynamics and Kinetics: Molecular Dynamics Simulations I

Sponsored by: TMS Electronic, Magnetic, and Photonic Materials Division, TMS Materials Processing and Manufacturing Division, TMS: Alloy Phases Committee, TMS: Chemistry and Physics of Materials Committee, TMS/ASM: Computational Materials Science and Engineering Committee, TMS: Integrated Computational Materials Engineering Committee, TMS/ASM: Phase Transformations Committee, TMS: Process Technology and Modeling Committee
Program Organizers: Jörg Neugebauer, Max-Planck-Institut für Eisenforschung GmbH; Carelyn Campbell, NIST; Dongwon Shin, Oakridge National Lab; Zi Kui Liu, Penn State; Michael Demkowicz, Massachusetts Institute of Technology; Raymundo Arroyave, Texas A & M University; Shenyang Hu, Pacific Northwest National Laboratory

Tuesday AM
March 5, 2013

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

Session Chairs: Adri van Duin, Penn State; Michael Demkowicz, MIT

8:30 AM Invited
Multiscale Modeling of Nanoscale Precipitate Stability in Irradiated Materials: *Brian Wirth*[1]; Alicia Certain[2]; Donghua Xu[1]; Karl Hammond[1]; [1]University of Tennessee; [2]Pacific Northwest National Laboratory

8:55 AM
Molecular Dynamics Study of Nucleation during Crystallization: *Ramanarayan Hariharaputran*[1]; David Wu[1]; [1]Institute of High Performance Computing

9:10 AM
Interface Microstructure Evolution of Heterogeneous Systems under Vacancy Supersaturation: *Enrique Martinez Saez*[1]; Alfredo Caro[1]; [1]LANL

9:25 AM
First Order Structural Transformations in Symmetrical Tilt S5 Grain Boundaries in Cu and Ag Studied by Atomistic Simulations: *Timofey Frolov*[1]; David Olmsted; Mark Asta[1]; Yuri Mishin[2]; [1]University of California Berkeley; [2]George Mason University

9:40 AM
Mobility of Partially Faceted Shrinking Grains: *David Olmsted*[1]; Mark Asta[2]; Tamara Radetic[3]; Colin Ophus[4]; Uhlrich Dahmen[4]; [1]University of California, Berkeley; [2]Lawrence Berkeley National Laboratory; University of California, Berkeley; [3]University of Belgrade; Lawrence Berkeley National Laboratory; [4]Lawrence Berkeley National Laboratory

9:55 AM Break

10:20 AM Invited
Thermodynamics of Metallic Nanoalloys: Towards an Understanding of Nanophase Diagrams by Computer Simulations: *Karsten Albe*[1]; [1]TU Darmstadt

10:45 AM
Molecular Dynamics Simulation of Grain Boundary Migration: Chuang Deng[1]; *Mikhail Mendelev*[2]; Christopher Schuh[3]; David Srolovitz[4]; [1]Department of Mechanical & Manufacturing Eng.; [2]Ames Laboratory; [3]Massachusetts Institute of Technology; [4]Institute of High Performance Computing

11:00 AM
Molecular Dynamics Simulations of Grain Boundary Free Energy and Mobility in the BCC FE-20CR System: *Isaac Toda-Caraballo*[1]; Carlos Capdevila[2]; Paul Bristowe[1]; [1]University of Cambridge; [2]CENIM-CSIC

11:15 AM
A Comprehensive Investigation of Low Angle Grain Boundary Mobility in Pure Al Using Molecular Dynamics Simulations: *Md. Jahidur Rahman*[1]; Hatem S. Zurob[2]; Jeffrey Hoyt[1]; [1]Department of Materials Science and Engineering, McMaster University; [2]Department of Materials Science and Engineering, McMaster UniversitY

Cost Affordable Titanium IV: Low Cost Processing: Plasma, Microwave, Laser, Melting and Casting

Sponsored by: TMS Structural Materials Division, TMS: Titanium Committee
Program Organizers: M. Ashraf Imam, Naval Research Laboratory; Sam Froes, University of Idaho (Retired); Ramana Reddy, The University of Alabama

Tuesday AM
March 5, 2013
Room: 217C
Location: Henry B. Gonzalez Convention Center

Session Chairs: James Withers, MER Corporation; Laurentiu Nastac, The University of Alabama

8:30 AM Invited
Plasma-Spheroidization and Consolidation of Low-Cost Titanium Powders: Deepak Kapoor[1]; *Rajendra Sadangi*[1]; Chris Haines[1]; Darold Martin[1]; Kendall Mills[1]; [1]US Army, ARDEC

8:50 AM Invited
Selective Laser Melting Technology - Challenges and Opportunities: *Milan Brandt*[1]; Shoujin Sun[1]; Martin Leary[1]; Joe Elambasseril[1]; Qianchu Liu[2]; [1]RMIT University; [2]DSTO

9:10 AM
Isothermal Forging of Microwave Sintered Ti-6Al-4V: *Xiaolin Wu*[1]; Wei Xu[1]; Ya Feng Yang[2]; Shudong Luo[2]; Ma Qian[2]; Kenong Xia[1]; [1]The University of Melbourne; [2]The University of Queensland

9:30 AM
Consolidation of Blended Titanium/Magnesium Powders by Microwave Processing: *M. Ashraf Imam*[1]; Arne Fliflet[1]; Ralph Bruce[1]; Peter Pao[1]; Jerry Feng[1]; [1]Naval Research Laboratory

9:50 AM Break

10:10 AM Invited
Titanium Based Composite Coatings Deposited by High Velocity Oxygen Fuel (HVOF) and Plasma Spraying Methods: *Asma Salman*[1]; Brian Gabbitas[1]; Deliang Zhang[1]; [1]The University of Waikato

10:30 AM Invited
Advancing Titanium by Continuous Casting: *Kuang-O (Oscar) Yu*[1]; [1]RTI International Metals, Inc.

10:50 AM Invited
Mechanical Properties of Single-Melt Pam Processed Ti-6Al-4V Forgings: *Mustafa Guclu*[1]; [1]Army

11:10 AM
Experimental and Numerical Investigation of the Effect Of Pulse Shaping on the Microstructure of Direct Laser Fabricated Ti-6Al-4V Alloy: *Yuanfei Han*[1]; Colleen Bettles[1]; Tom Jarvis[1]; Xinhua Wu[1]; [1]ARC Centre of Excellence for Design in Light Metals, Monash University

11:30 AM
Evolution of Texture in Ti-6Al-4V Fabricated by Selective Laser Melting: *Marco Simonelli*[1]; Yau Yau Tse[1]; Chris Tuck[2]; [1]Loughborough University; [2]The University of Nottingham

Deformation, Damage, and Fracture of Light Metals and Alloys: Deformation, Damage, and Fracture of Light Metals and Alloys Session II

Sponsored by: TMS Light Metals Division, TMS/ASM: Mechanical Behavior of Materials Committee
Program Organizers: Ke An, Oak Ridge National Laboratory; Qizhen Li, University of Nevada, Reno

Tuesday AM
March 5, 2013
Room: 210B
Location: Henry B. Gonzalez Convention Center

Session Chair: Hahn Choo, University of Tennessee

8:30 AM Invited
Effects of Deformation History on Low-Cycle Fatigue Behavior of a Wrought AZ31B Magnesium Alloy Using Real-Time In-Situ Neutron-Diffraction Measurements: Wei Wu[1]; Ke An[2]; James Antonaglia[3]; Matthew Wraith[3]; Karin Dahmen[3]; *Peter Liaw*[1]; [1]The University of Tennessee; [2]Oak Ridge National Laboratory; [3]University of Illinois

9:00 AM Invited
Modeling the Statistics of Slip-Avalanches in Slowly Sheared Light Metals and Alloys: *Karin Dahmen*[1]; James Antonaglia[2]; Wei Wu[3]; Ke An[4]; Matthew Wraith[1]; Jonathan Uhl[5]; Peter Liaw[3]; [1]University of Illinois at Urbana Champaign; [2]Univeristy of Illinois at Urbana Champaign; [3]University of Tennessee at Knoxville; [4]Oak Ridge National Laboratory; [5]Private

9:30 AM
In-Situ Diffraction Studies on Thermo-Mechanical Processes: *Klaus-Dieter Liss*[1]; Kun Yan[2]; Lisa Thoennessen[2]; Saurabh Kabra[1]; Rian Dippenaar[3]; [1]Australian Nuclear Science and Technology Organisation; [2]Australian Nuclear Science and Technology Organisation and University of Wollongong; [3]University of Wollongong

9:50 AM
In-Situ Neutron Diffraction and Acoustic Emission Investigation of Twinning Activity In Magnesium: *Jan Capek*[1]; Kristián Máthis[1]; Premysl Beran[2]; Petr Lukáš[2]; [1]Charles University in Prague; [2]Nuclear Physics Institute of the ASCR

10:10 AM Break

10:20 AM Invited
In-Situ Analysis of the Deformation Mechanisms in Mg Alloys between 50-250°C: *Carl Boehlert*[1]; Zhe Chen[1]; Ajith Chakkedath[1]; Maria Teresa Perez Prado[2]; Javier Llorca[2]; Ivan Gutiérrez-Urrutia[3]; Sangborg Yi[4]; Dietmar Letzig[4]; Jan Bohlen[4]; [1]Michigan State University; [2]IMDEA; [3]Max Planck Institute for Iron Research; [4]MagIC

10:50 AM
Mechanical Behavior of Porous Magnesium/Alumina Composites: *Qizhen Li*[1]; Henry Cay[1]; [1]University of Nevada, Reno

11:10 AM
Dynamic Damage Evolution and Fracture in Mg, Al, and Ti: *George Gray*[1]; Ellen Cerreta[1]; [1]Los Alamos National Laboratory

11:30 AM
Anelastic and Plastic Properties of Magnesium Alloys Based Composites: *Zuzanka Trojanova*[1]; Kristian Mathis[1]; Pavel Lukac[1]; [1]Charles University

Electrode Technology for Aluminium Production: Paste Plant Operations

*Sponsored by:*TMS Light Metals Division, TMS: Aluminum Committee
Program Organizers: Les Edwards, Rain CII Carbon; Hans Darmstadt, Rio Tinto Alcan; Sunil Bhajun, Qatalum; Juraj Chmelar, Hydro; Matvey Golubev, Rusal; Pretesh Patel, Light Metals Research Centre; Elaine Sum, Rio Tinto Alcan; Marc Gagnon, Aluminerie Alouette

Tuesday AM
March 5, 2013
Room: 213B
Location: Henry B. Gonzalez Convention Center

Session Chair: Sunil Bhajun, Qatalum

8:30 AM Introductory Comments

8:35 AM
A Green Anode Plant Performance Analysis Tool Fully Embedded In The Plant Control System: *Xavier Genin*[1]; Pasquale Calo[1]; Fabienne Virieux[2]; [1]Solios Carbone; [2]Fives Solios

9:00 AM
Measures To Prevent Baked Anode Density Drop When Using High Porosity Cokes: *Vinicius Piffer*[1]; Chin Woo[2]; Fabiana Niceas[1]; Leonardo Paulino[1]; Jeronimo Araujo[1]; Rafael Bacelar[1]; [1]Alumar; [2]Alcoa

9:25 AM
New Green Anode Plant at EMAL – Start-Up and Operation in the First 2 Years: *Manfred Beilstein*[1]; Raja Akhtar[2]; Rudolf Gemein[2]; [1]Outotec GmbH; [2]EMAL-Emirates Aluminium

9:50 AM
Improving Baked Anode Density and Air Permeability Through Process Optimization and Coke Blending: *Bienvenu Ndjom*[1]; Muhammad Shafiq Malik[1]; Amer Al Marzouqi[1]; Tapan Kumar Sahu[1]; Saleh Ahmed Rabba[1]; [1]Dubai Aluminium

10:15 AM Break

10:25 AM
Development of an Analytical Dynamic Model of a Vibro-Compactor Used in Carbon Anode Production: *Fatma Rebaïne*[1]; Mohamed Bouazara[1]; Daniel Marceau[1]; Duygu Kocaefe[1]; Brigitte Morais[2]; [1]University of Quebec at Chicoutimi; [2]Aluminerie Alouette Inc.

10:50 AM
Driving Cost Reduction and Carbon Plant Productivity Improvement Through Theory of Constraints and Planned Maintenance Capability: *Keith Sinclair*[1]; Barry Sadler[2]; [1]Sinclair Associates, Inc.; [2]Net Carbon Consulting

11:15 AM
Optimum Vibration Time for Green Anode Production: Shoulei Gao[1]; Huanxue Wang[1]; Chongai Bao[1]; Shoujun Zhang[1]; Joe Woo[1]; *Euel Cutshall*[2]; [1]Sunstone Development; [2]EC Consulting

11:40 AM
Comparison of Mixing Process Methods in Prebaked Anode Production: *Sun Yi*[1]; Guan Huai[1]; Zhou Shanhong[1]; Liu Chaodong[1]; Xu Haifei[1]; [1]Shenyang Aluminium and Magnesium Engineering and Research Institute Co. Ltd

Energy Technologies and Carbon Dioxide Management: Alternative Green Processes

*Sponsored by:*TMS Extraction and Processing Division, TMS Light Metals Division, TMS: Energy Committee, TMS: Education Committee
Program Organizers: Soobhankar Pati, MOxST Inc.; Animesh Jha, University of Leeds; Jaroslaw Drelich, Michigan Technological University; Neale Neelameggham, Ind LLC; Cong Wang, Saint-Gobain High Performance Materials; Leon Prentice, CSIRO

Tuesday AM
March 5, 2013
Room: 006C
Location: Henry B. Gonzalez Convention Center

Session Chairs: Animesh Jha, University of Leeds; Soobhankar Pati, MOxST

8:30 AM Introductory Comments

8:35 AM
Thermodynamic Properties of Novel Low Melting Point $LiNO_3$-$NaNO_3$-KNO_3 Ternary Molten Salts for Parabolic Trough Solar Power Generation: *Tao Wang*[1]; Ramana Reddy[1]; [1]The University of Alabama

8:55 AM
A Thermochemical Study of the W/WO_3 System: A Solar to Fuel Converter for Syngas Production: *Jarrod Milshtein*[1]; Soumendra Basu[1]; Srikanth Gopalan[1]; Uday Pal[1]; [1]Boston University

9:15 AM
Technical Viability of Biocoke from Mixtures Coal-Wood Charcoal for Use in Ironmaking: *Marcelo Mourao*[1]; Cesar Narita[1]; Marcio Tanaka[1]; Cyro Takano[1]; [1]University of Sao Paulo

9:35 AM Break

9:55 AM
Supercritical CO_2-Corrosion of Steels in CCS Environment: *Anja Pfennig*[1]; Sabrina Schulz[1]; Axel Kranzmann[2]; [1]HTW Berlin; [2]BAM Federal Institute of Materials Research and Testing

10:15 AM
An Experimental Investigation of a Flue Gas Recirculation System for Aluminum Melting Furnaces: *James Wiswall*[1]; Mark Kruzynski[1]; Srinivas Garimella[1]; [1]ALCOA

10:35 AM
Designing Novel CRIMSON Running System through Numerical Simulation Method for the Purpose of Reducing the Energy Content of Aluminium Investment Casting: *Binxu Zeng*[1]; Mark Jolly[1]; Xiaojun Dai[1]; [1]Cranfield University

10:55 AM
Infrared Radiation Properties of CuO-ZnO-Based Sintered Material Prepared for Energy-Saving Coating: Chao Lian[1]; Wei Wei[1]; *Hao Bai*[1]; HongXu Li[1]; [1]University of Science and Technology Beijing

11:15 AM
Preparation of Modified Semi-Coke from Semi-Coke: Process Optimization: *Xin Wang*[1]; [1]Key Laboratory of Unconventional Metallurgy, Kunming University of Science and Technology

Fatigue and Fracture of Thin Films and Nanomaterials: High Temperature and Electrical Properties

Sponsored by: TMS Materials Processing and Manufacturing Division, TMS Structural Materials Division, TMS/ASM: Mechanical Behavior of Materials Committee, TMS: Nanomechanical Materials Behavior Committee
Program Organizers: Megan Cordill, Erich Schmid Institute of Materials Science; Daniel Kiener, Montanuniversitaet Leoben; Xinghang Zhang, Texas A &M University ; Daniel Gianola, University of Pennsylvania ; Corinne Packard, Colorado School of Mines

Tuesday AM
March 5, 2013
Room: Bowie C
Location: Grand Hyatt

Funding support provided by: Hysitron, Inc., and Nanomechanics, Inc.

Session Chairs: Corinne Packard, Colorado School of Mines; Jeffery Wheeler, EMPA - Materials Science & Technology

8:30 AM Invited
Time- and Temperature-Dependent Deformation Behavior of Ultrafine-Grained Metals Investigated by Novel Nanoindentation Methods: *Verena Maier*[1]; Mathias Göken; Karsten Durst[1]; [1]University Erlangen-Nürnberg

9:00 AM
The Failure Mechanism of Recrystallization-Assisted Cracking of Solder Interconnections: *Toni Mattila*[1]; [1]Aalto University

9:20 AM
Deformation Mechanisms of Ultra-Fine-Grained Aluminium using Elevated Temperature, Strain Rate Jump Indentation: *Jeffrey Wheeler*[1]; Verena Maier[2]; Karsten Durst[2]; Matthias Goeken[2]; Johann Michler[1]; [1]EMPA; [2]Friedrich-Alexander University of Erlangen-Nuremberg

9:40 AM
Size and Environmental Effects on Fracture of Wear-Resistant Oxide Coatings: *Samantha Lawrence*[1]; David Adams[2]; Hussein Zbib[1]; David Bahr[1]; Neville Moody[2]; [1]Washington State University; [2]Sandia National Laboratories

10:00 AM Break

10:20 AM Invited
Lithium-Ion Batteries: When Mechanics Meets Chemistry: *Joost Vlassak*[1]; [1]Harvard University

10:50 AM
Mechanical Behavior of Nanoporous Silicon Subjected to Extensive Deformation: *Xu Jiang*[1]; Eita Tochigi[2]; Andrew Minor[3]; T. John Balk[1]; [1]University of Kentucky; [2]Lawrence Berkeley National Laboratory; [3]University of California, Berkeley

11:10 AM
In Situ Resistance Measurements of Cyclically Stressed Copper Lines on Polyimide: *Oleksandr Glushko*[1]; Megan Cordill[1]; [1]University of Leoben

11:30 AM
Assessing the Electrical and Mechanical Performance of Wear-Tested Au-ZnO Films: *Rachel Schoeppner*[1]; Helena Jin[2]; Somuri Prasad[2]; Ron Goeke[2]; Neville Moody[2]; David Bahr[1]; [1]Washington State University; [2]Sandia National Laboratories

Fatigue in Materials: Microstructure-Driven Modeling and In-Situ Fatigue Characterization: Characterization and Modeling of Fatigue

Sponsored by: TMS Structural Materials Division, TMS/ASM: Mechanical Behavior of Materials Committee
Program Organizers: Michael Sangid, Purdue University; Tongguang Zhai, University of Kentucky; Antonios Kontsos, Drexel University

Tuesday AM
March 5, 2013
Room: 207B
Location: Henry B. Gonzalez Convention Center

Session Chair: Michael Sangid, Purdue University

8:30 AM Introductory Comments

8:35 AM Keynote
ICME Activities at GE: *James Laflen*[1]; [1]GE

9:10 AM Invited
Application of High Energy Diffraction Microscopy to Fatigue Crack Initiation in a Ni-Based Superalloy: Harris Tucker[1]; Reeju Pokharel[2]; Jonathan Lind[2]; Robert Suter[2]; Clayton Stein[2]; Joseph Tucker[2]; *Anthony Rollett*[2]; S.F. (Frankie) Li[3]; [1]University Michigan; [2]Carnegie Mellon University; [3]Lawrence Livermore Natl Laboratory

9:35 AM Invited
Synchrotron Imaging Characterization and Numerical Simulation of Short Fatigue Crack Propagation in Polycrystals: *Yoann Guilhem*[1]; Wolfgang Ludwig[1]; Henry Proudhon[2]; Jia Li[2]; [1]INSA Lyon UMR 5510 CNRS; [2]MINES ParisTech UMR 7633 CNRS

10:00 AM Break

10:20 AM Invited
In-Situ Measurements and Simulations of Grain Boundary Slip Localization in AlCu: *Jacob Hochhalter*[1]; Vipul Gupta[2]; Vesselin Yamakov[2]; Ashley Spear[3]; Stephen Smith[1]; Edward Glaessgen[1]; [1]NASA LaRC; [2]National Institute of Aerospace; [3]Cornell University

10:45 AM Invited
Novel Techniques for Analyzing Fatigue Crack Microstructures: *I. Robertson*[1]; D. Gross[1]; M. Martin[1]; K. Nygren[1]; [1]University of Illinois Urbana-Champaign

11:10 AM Invited
Grain Boundaries and Twin Boundaries: Stronger or Weaker?: *Zhefeng Zhang*[1]; Zhenjun Zhang[1]; Linlin Li[1]; Peng Zhang[1]; [1]Institute of Metal Research

11:30 AM Invited
Nonlinearity and Acoustic Harmonic Generation from Fatigue-Generated Dislocation Substructures: *Sean Agnew*[1]; J. Cantrell[2]; T. Apple[1]; C. Mayer[1]; C. Amaro[1]; W. Yost[2]; J. Howe[1]; [1]University of Virginia; [2]NASA

11:55 AM Invited
Intra-Granular Stress Distributions in Fatigued Metals: Jun Jiang[1]; Ben Britton[1]; *Angus Wilkinson*[1]; [1]University of Oxford

12:20 PM Concluding Comments

Friction Stir Welding and Processing VII: Friction Stir Welding: High Temperature Materials I

Sponsored by: TMS Materials Processing and Manufacturing Division, TMS: Shaping and Forming Committee
Program Organizers: Rajiv Mishra, University of North Texas; Murray Mahoney, Retired from Rockwell Scientific; Yutaka Sato, Tohoku University; Yuri Hovanski, Pacific Northwest National Laboratory; Ravi Verma, General Motors

Tuesday AM
March 5, 2013
Room: Grand Ballroom C3
Location: Henry B. Gonzalez Convention Center

Session Chairs: Yutaka Sato, Tohoku University; Glenn Grant, Pacific Northwest National Laboratory; Jonathan Martin, TWI Technology Centre (Yorkshire)

8:30 AM Invited
Understanding the Mechanisms that Affect Microstructural Evolution in Friction Stir Welding: *Tracy Nelson*[1]; Carl Sorensen[1]; [1]Brigham Young University

8:50 AM Invited
Comparison between Friction Stir and Submerged Arc Welding applied to Joining DH36 and E36 Shipbuilding Steel: Stephen Cater[1]; *Jonathan Martin*[1]; Alexander Galloway[2]; Norman McPherson[3]; [1]TWI; [2]University of Strathclyde ; [3]BAE Systems Surface Fleet

9:10 AM
Friction Stir Welding of Pipeline Steels: Murray Mahoney[1]; *Samuel Sanderson*[2]; Zhili Feng[3]; Russell Steel[4]; Scott Packer[5]; Dale Fleck[2]; [1]Retired from Rockwell Scientific; [2]Megastir Technologies; [3]Oak Ridge National Laboratories; [4]MegaStir Technologies; [5]Advanced Metal Products

9:30 AM
Microstructure and Properties of Friction Stir Processed HY80 Steel: Garth Young[1]; William Stewart[2]; Murray Mahoney[3]; Russell Steel[4]; Jon Babb[4]; Sarath Menon[5]; *Terry McNelley*[5]; [1]NAVFAC ESC; [2]US Navy; [3]Consultant; [4]MegaStir Technologies; [5]Naval Postgraduate School

9:50 AM
Microstructure and Mechanical Properties of Friction Stir Welds of 590MPa Grade Dual Phase Steel Sheets: *Sang-Hyuk Kim*[1]; Kwang-Jin Lee[1]; Kee-Do Woo[2]; [1]Korea Institute of Industrial Technology; [2]Chonbuk National University

10:10 AM Break

10:20 AM
Mechanical Properties and Microstructure Characterization of Multilayered Multipass Friction Stir Weld in Steel: *Yong Chae Lim*[1]; Samuel Sanderson[2]; Murray Mahoney[3]; Dongxiao Qiao[1]; Yanli Wang[1]; Wei Zhang[1]; Zhili Feng[1]; [1]Oak Ridge National Laboratory; [2]MegaStir Technologies; [3]Advanced Metal Products

10:40 AM
Welding Processes and Mechanical Behaviors of Friction Stir Spot Welded Joints of Dissimilar Ferrous Alloys: *Md. Abu Mowazzem Hossain*[1]; Md. Tariqul Hasan[1]; Sung-Tae Hong[1]; Michael Miles[2]; Hoon-Hwe Cho[3]; Heung Nam Han[3]; [1]University of Ulsan; [2]Brigham Young University; [3]Seoul National University

10:55 AM Invited
Effect of Welding Parameters on Microstructure and Mechanical Properties of Friction Stir Welded 11Cr-Ferritic/Martensitic Steel: *Yutaka Sato*[1]; Hiroyuki Kokawa[1]; Yasuhide Yano[2]; Yoshihiro Sekio[2]; [1]Tohoku University; [2]Japan Atomic Energy Agency

11:15 AM
The Friction-Stir-Welding of Carbon Steels Using a Co-Based Alloy Tool: *Itto Sugimoto*[1]; Akihiro Sato[1]; Seung Hwan Park[1]; Satoshi Hirano[1]; Shinya Imano[1]; Yutaka Sato[2]; Hiroyuki Kokawa[2]; Toshihiro Omori[2]; Kiyohito Ishida[2]; [1]Hitachi Research Laboratory; [2]Tohoku University

11:35 AM
Establishing W-Based Friction Stir Welding Tool Life for Thick Section Steel Applications: *Michael Eff*[1]; Sudarsanam Babu[2]; Brian Thompson[1]; Todd Leonhardt[3]; [1]EWI; [2]The Ohio State University; [3]Rhenium Alloys, Inc.

11:55 AM
Effects of Advancing and Retreating Side Alteration during Power and Temperature Controlled FSW of Copper Canisters: *Lars Cederqvist*[1]; Matts Björck[1]; Olof Garpinger[2]; [1]Swedish Nuclear Fuel and Waste Management Company (SKB); [2]Lund University

12:15 PM
Influence of Heat Input on Friction Stir Welding for the ODS Steel MA956: *Luke Brewer*[1]; Sarath Menon[1]; Bradford Baker[1]; Terry McNelley[1]; Bassem El-Dasher[2]; Sharon Torres[2]; Joseph Farmer[2]; Murray Mahoney[3]; Samuel Sanderson[4]; [1]Naval Postgraduate School; [2]Lawrence Livermore National Laboratory; [3]Rockwell Scientific (retired); [4]MegaStir Technologies

Frontiers in Solidification Science: Macroscale Phenomena

Sponsored by: TMS Materials Processing and Manufacturing Division, TMS: Solidification Committee
Program Organizers: Andre Phillion, University of British Columbia; Silvere Akamatsu, Institut des Nanosciences de Paris; Christoph Beckermann, The University of Iowa; Michel Rappaz, Ecole Polytechnique Federale de Lausanne

Tuesday AM
March 5, 2013
Room: Lone Star Salon F
Location: Grand Hyatt

Funding support provided by: Materials Processing and Manufacturing Division, National Science Foundation

Session Chairs: Michel Rappaz, EPFL; Mark Jolly, Cranfield University

8:30 AM Invited
Development of an Inverse Thermal Model of the Low-Pressure Die-Cast (LPDC) A356 Aluminum Alloy Wheels: Jianglan Duan[1]; Steve Cockcroft[1]; *Daan Maijer*[1]; Andre Phillion[1]; Carl Reilly[1]; [1]The University of British Columbia

9:00 AM Invited
The Solute Partition and Segregations of Multi-Component Alloys in Solidification Process: *Wanqi Jie*[1]; Guangyu Yang[1]; Xiaoyan Sun[1]; [1]Northwestern Polytechnical University

9:30 AM
Microscopic Modelling of Freckle Formation during Directional Solidification and Its Verification Via In Situ X-Ray Observation: *Lang Yuan*[1]; Natalia Shevchenko[2]; Sven Eckert[2]; Shyamprasad Karagadde[1]; Peter Lee[1]; [1]The University of Manchester; [2]Helmholtz-Zentrum Dresden-Rossendorf

9:50 AM Break

10:05 AM Invited
Thermomechanics and Residual Stresses in Aluminum Direct Chill Casting: *Jean-Marie Drezet*[1]; Alexander Evans[2]; Pierre Celle[3]; [1]Ecole Polytechnique Federale Lausanne; [2]Institut Laue Langevin Grenoble; [3]Constellium CRV Voreppe

10:35 AM
Application of Granular Modeling to Fusion Welding of Al Alloys: *Hamid Reza Zareie Rajani*[1]; Andre Phillion[1]; [1]University of British Columbia

10:55 AM
A Model for the Flow in the Mushy Region during Solidification in an Electromagnetically-Stirred Melt: *Gregory Poole*[1]; Nagy El-Kaddah[1]; [1]The University of Alabama

11:15 AM
Nanoparticles Controlled Solidification of Hypermonotectic Alloys: *Lianyi Chen*[1]; Jiaquan Xu[1]; Hongseok Choi[1]; Xiaochun Li[1]; [1]University of Wisconsin Madison

High Temperature Electrochemistry: Energy Storage Devices and Electrochemical Synthesis

*Sponsored by:*TMS Extraction and Processing Division, TMS: Pyrometallurgy Committee
Program Organizers: Prabhat Tripathy, Idaho National Laboratory; Guy Fredrickson, Idaho National Laboratory

Tuesday AM
March 5, 2013
Room: 006D
Location: Henry B. Gonzalez Convention Center

Session Chairs: Donald Sadoway, Massachusetts Institute of Technology; Uday Pal, Boston University

8:30 AM
Ca-Based Liquid Metal Battery for Grid Scale Energy Storage: Ca-Mg||Bi: *Takanari Ouchi*[1]; Hojong Kim[1]; Xiaohui Ning[1]; Donald Sadoway[1]; [1]MIT

9:00 AM
Electrochemical Synthesis of AB5-type RE-Ni Based Alloys Via FFC Cambridge Process: *Qian Xu*[1]; Xue Kang[1]; Ximei Yang[1]; Shuang Li[1]; Song Qiushi[1]; [1]Northeastern University

9:30 AM
Electrochemical Preparation of Ti_2AlC in Molten Chloride Bath: *Amr Abdelkader*[1]; [1]University of Manchester

10:00 AM Break

10:20 AM
Electrochemical Formation of Rare Earth-Nickel Alloys in NaCl-KCl Molten Salt: *Kouji Yasuda*[1]; Seitaro Kobayashi[1]; Katsuya Kondo[1]; Toshiyuki Nohira[1]; Rika Hagiwara[1]; [1]Kyoto University

10:50 AM
Electrochemical Behavior of Calcium-Lead Alloys in Molten Salt Electrolytes: *Xiaohui Ning*[1]; Takanari Ouchi[1]; Hojong Kim[1]; Donald Sadoway[1]; [1]MIT

11:20 AM
Using Cyclic Voltammetry to Study Electrochemical Behavior of Hf4+in NaCl-KCl-K_2HfF_6 molten salt: Chen Song[1]; Ye Zhanggen[1]; Cai Zhenping[1]; Wang Lijun[1]; [1]General Research Institute for Non-ferrous Metals

Hume-Rothery Award Symposium: Electronic Structure Theory of Stability and Bonding in Alloys: Materials Genome Approaches I (Joint Session with Computational Discovery of Novel Materials)

*Sponsored by:*TMS Electronic, Magnetic, and Photonic Materials Division, TMS: Alloy Phases Committee
Program Organizer: Chris Wolverton, Northwestern University

Tuesday AM
March 5, 2013
Room: 205
Location: Henry B. Gonzalez Convention Center

Session Chairs: Axel van de Walle, Brown University; Stefano Curtarolo, Duke University

8:30 AM Invited
Crystal Structure Prediction with the Minima Hopping Method: *Stefan Goedecker*[1]; [1]UNI Basel

9:00 AM Invited
Prediction and Design of Materials from Crystal Structures to Nanocrystal Morphology and Assembly: *Richard Hennig*[1]; [1]Cornell University

9:30 AM Invited
Dissolving the Periodic Table in Zirconia: Data-Mining for Chemical Descriptors: Bryce Meredig[1]; *Chris Wolverton*[1]; [1]Northwestern University

10:00 AM Break

10:20 AM Invited
Finding the Alloy Genome: *Gus Hart*[1]; Lance Nelson[1]; Fei Zhou[2]; Vidvuds Ozolins[2]; [1]Brigham Young University; [2]University of California, Los Angeles

10:50 AM Invited
Compressively Sensed Ab Initio Hamiltonians: Fei Zhou[1]; *Vidvuds Ozolins*[1]; Lance Nelson[2]; Gus Hart[2]; [1]University of California, Los Angeles; [2]Brigham Young University

11:20 AM Invited
Design of Functional Semiconductors with Multi-Target Properties: *Stephan Lany*[1]; [1]NREL

Hybrid and Hierarchical Composite Materials: Metal Matrix Composites

*Sponsored by:*TMS Structural Materials Division, TMS/ASM: Composite Materials Committee
Program Organizers: Tomoko Sano, US Army Research Laboratory; Charles Randow, US Army Research Laboratory; Chang Soo Kim, University of Wisconsin -Milwaukee

Tuesday AM
March 5, 2013
Room: 215
Location: Henry B. Gonzalez Convention Center

Session Chairs: Tomoko Sano, U.S. Army Research Laboratory; Brian Justusson, University of Michigan

8:30 AM
Diffusion Database for the Development of Magnesium Alloys and Their Hierarchical Composites: *Yongho Sohn*[1]; Dongho Shin[1]; Catherine Kammerer[1]; Sarah Brennan[1]; Katrina Bermudez[1]; Joseph Hamilton[1]; [1]University of Central Florida

9:00 AM
On the Strength of Particle-Based Metal-Matrix Nano Composites (MMNCs): *Chang-Soo Kim*[1]; J.B. Ferguson[1]; Benjamin Schultz[1]; Pradeep Rohatgi[1]; [1]University of Wisconsin-Milwaukee

9:20 AM
Effect of Contact Damage on Metal-baded Low-Density Hybrid Structures: *Tania Vodenitcharova*[1]; Mark Hoffman[1]; Kaveh Kabir[1]; Alan Xu[1]; Neil Lazo[1]; [1]University of New South Wales

9:40 AM
Multi-Scale Modeling of Ceramic Fabric Reinforced Aluminum Matrix Composites: *Brandon McWilliams*[1]; Charles Mansfield[2]; Chian Yen[1]; [1]US Army Research Laboratory; [2]University of Central Florida

10:00 AM Break

10:15 AM
Processing of Hybrid Structures Consisting of Al-Based Metal Matrix Composites (MMCs) with Metallic Reinforcement of Steel or Titanium: *Michael Aghajanian*[1]; Eric Klier[2]; Kevin Doherty[2]; Brian Givens[1]; Matthew Watkins[1]; Allyn McCormick[1]; Prashant Karandikar[1]; [1]M Cubed Technologies, Inc.; [2]US Army Research Laboratory

10:35 AM
Dynamic Properties of Selective Laser Melted Titanium Microlattice Structures: *Peifeng Li*[1]; Nik Petrinic[2]; Clive Siviour[2]; [1]Nanyang Technological University; [2]Oxford University

10:55 AM
Ferroelectric Ceramic-Reinforced Metal Matrix Composites: *Yongmei Jin*[1]; Stephen Kampe[1]; [1]Michigan Technological University

11:15 AM
Diffusion Bonding of Commercially Pure Titanium Using Cu-Zn Interlayer: *Yasser Ahmed*[1]; Bakr Rabeeh[1]; [1]German University in Cairo

Integrated Computational Modeling of Materials for Nuclear Energy: Structural Materials Modeling

Sponsored by: TMS Materials Processing and Manufacturing Division, TMS Structural Materials Division, TMS/ASM: Computational Materials Science and Engineering Committee, TMS/ASM: Nuclear Materials Committee
Program Organizers: Remi Dingreville, Sandia National Laboratories; Koenraad Janssens, Paul Scherrer Institute; Timothy Bartel, Sandia National Laboratories

Tuesday AM
March 5, 2013
Room: 202B
Location: Henry B. Gonzalez Convention Center

Session Chair: To Be Announced

8:30 AM
Role of Solute Additions on Long Range Order in Ni-Cr Alloys: *Julie Tucker*[1]; Leland Barnard[2]; Dane Morgan[2]; George Young[1]; [1]Knolls Atomic Power Laboratory; [2]University of Wisconsin-Madison

8:50 AM
Influence of Grain Boundary Structure on Segregation of Cr/He Atoms in Fe: *Mark Tschopp*[1]; Fei Gao[2]; Kiran Solanki[3]; Xin Sun[2]; [1]Mississippi State University; [2]PNNL; [3]Arizona State University

9:10 AM
Perservability of Boundary Defect Sink Property under Extreme Radiation in a Iron: *Di Chen*[1]; Jing Wang[1]; Lin Shao[1]; [1]Texas A&M University

9:30 AM Invited
A Multiscale Metal/Hydride Mechanical Model for Used-Fuel Zircaloy Cladding under Long-Term Storage and Transport: *Glen Hansen*[1]; Jakob Ostien[1]; Remi Dingreville[1]; Qiushi Chen[1]; [1]Sandia National Laboratories

10:00 AM Break

10:10 AM
A Multiscale Analysis of Dislocation Climb: *Alankar Alankar*[1]; Alfredo Caro[1]; Ricardo Lebensohn[1]; [1]Los Alamos National Laboratory

10:30 AM
Modeling Hydrogen Re-Distribution in Zircaloy under a Temperature Gradient: *Olivier Courty*[1]; Ian Davis[1]; Arthur Motta[1]; Kostadin Ivanov[1]; Maria Avramova[1]; [1]Pennsylvania State University

10:50 AM Invited
Evolutionary Constitutive Model of Cyclic Deformation Response Based on Multi-Scale Interactions of Dislocations: *Minh-Son Pham*[1]; Koenraad G. F. Janssens[2]; Edoardo Mazza[3]; Stuart. Holdsworth[1]; [1]Swiss Federal Laboratories for Materials Science and Technology, Empa; [2]Paul Scherrer Institut; [3]Swiss Federal Institute of Technology Zurich (ETHZ)

11:20 AM
A Study on Thermal Aging Effect on the Microstructure of 316 and CF3M Cast Stainless Steels by Integrating Computational Thermodynamics and Precipitation Modeling: *Ying Yang*[1]; Jeremy Busby[1]; [1]Oak Ridge National Lab

11:40 AM
Cluster Dynamics Modeling of Defect Aggregation in Ferritic/Martensitic Iron Chrome: *Aaron Kohnert*[1]; Brian Wirth[1]; Nathan Capps[1]; Djamel Kaoumi[2]; Cem Topbasi[3]; [1]University of Tennessee; [2]University of South Carolina; [3]Pennsylvania State University

Magnesium Technology 2013: Mechanical Properties

Sponsored by: TMS Light Metals Division, TMS: Magnesium Committee
Program Organizers: Norbert Hort, Helmholtz-Zentrum Geesthacht; Suveen Mathaudu, US Army Research Office; Neale Neelameggham, IND LLC; Martyn Alderman, Magnesium Elektron

Tuesday AM
March 5, 2013
Room: 214A
Location: Henry B. Gonzalez Convention Center

Session Chairs: Alan Luo, General Motors Global Research and Development; Menahem Bamberger, Technion

8:30 AM
Compressive Creep Properties Exhibited by Wrought High Temperature Magnesium Alloys in Axial and Transverse Orientation – A Neutron Diffraction Study: *Dimitry Sediako*[1]; Lukas Bichler[2]; Mitchel VanHanegem[2]; Scott Shook[3]; [1]National Research Council Canada ; [2]University of British Columbia - Okanagan; [3]TH Magnesium Inc.

8:50 AM
Creep Behaviour of Mg Binary Solid Solutions: *Saeideh Abaspour*[1]; Carlos Caceres[1]; [1]School of Engineering The University of Queensland

9:10 AM
Influence of Yttrium on Creep Behavior in Nano-Crystalline Magnesium Using Molecular Dynamics Simulation: *Mehul Bhatia*[1]; Kiran Solanki[1]; [1]Arizona State University

9:30 AM
Aging Behavior and Microstructural Evolution in Mg-0.2Zn-3Nd-0.5Zr Alloy: *Amirreza Sanaty Zadeh*[1]; Shawn Xia[1]; Alan Luo[2]; Joseph Jakes[3]; Donald Stone[1]; [1]UW-Madison; [2]General Motors Global Research and Development Center; [3]USDA Forest Product

9:50 AM
Microstructure and Mechanical Properties of Die Cast Magnesium-Aluminum-Tin Alloys: *Alan Luo*[1]; Penghuai Fu[2]; Xiaoqin Zeng[2]; Liming Peng[2]; Bin Hu[3]; Anil Sachdev[1]; [1]General Motors Global Research and Development; [2]Shanghai Jiao Tong University; [3]General Motors China Science Lab

10:10 AM Break

10:30 AM
Evaluation of Mg for Local Energy Absorption: Matthew Pawlicki[1]; *Paul Krajewski*[1]; Mark Voss[1]; Louis Hector[1]; [1]General Motors

10:50 AM
Study on Microstructure and Mechanical Property of Squeeze Casting AZ91D Magnesium Alloy: Yanda Li[1]; *Zhiqiang Han*[1]; Alan Luo[2]; Anil Sachdev[2]; Baicheng Liu[1]; [1]Tsinghua University; [2]General Motors Global Research and Development Center

11:10 AM
Mapping the Mechanical Properties of Alloyed Magnesium (AZ 61): *Jennifer Hay*[1]; Phillip Agee[1]; [1]Agilent Technologies

11:30 AM
Damage Developed during High Temperature Deformation of Magnesium Alloys: A Continuous 3D Characterisation by X-Ray Micro Tomography: Pierre Lhuissier[1]; Luc Salvo[1]; Elodie Boller[2]; *Jean-Jacques Blandin*[1]; [1]Université de Grenoble / CNRS; [2]European Synchrotron Radiation Facility (ESRF)

11:50 AM
FE Modelling of Tensile and Impact Behaviours of Squeeze Cast Magnesium Alloy AM60: *Sante DiCecco*[1]; William Altenhof[1]; Henry Hu[1]; [1]University of Windsor

12:10 PM
High Temperature Deformation of Magnesium Alloy TX32-0.4Al-0.8Si: *Chalasani Dharmendra*[1]; K.P. Rao[1]; Norbert Hort[2]; Karl Kainer[2]; [1]City University of Hong Kong; [2]Helmoltz-Zentrum Geesthacht

12:30 PM
Effect of the Extrusion Conditions on the Microstructure and Mechanical Properties of Indirect Extruded Mg-Zn-Y Alloy with LPSO Phase: *Jonghyun Kim*[1]; Yoshihito Kawamura[1]; [1]Kumamoto University

Magnetic Materials for Energy Applications -III: Rare Earth-free Permanent Magnets II

Sponsored by: TMS Electronic, Magnetic, and Photonic Materials Division, TMS: Energy Committee, TMS: Energy Conversion and Storage Committee, TMS: Magnetic Materials Committee
Program Organizers: Sivaraman Guruswamy, University of Utah; Thomas Woodcock, IFW Dresden; Yongmei Jin, Michigan Technological University; Raju Ramanujan, Nanyang Technological University; Frank Johnson, GE Global Research; Oliver Gutfleisch, Technische Universität Darmstadt

Tuesday AM
March 5, 2013
Room: 217D
Location: Henry B. Gonzalez Convention Center

Session Chairs: Raju Ramanujan , Nanyang Technological Univ; Frank Johnson, GE Global Research

8:30 AM Invited
Investigation of Gas Atomization and Consolidation Processing of Pre-alloyed Alnico Powder for Near-Net Shape Non-Rare Earth Magnets: *Iver Anderson*[1]; Haley Dillon[2]; R. McCallum[1]; Kevin Dennis[1]; Lin Zhou[1]; Andrij Palazyk[1]; Matthew Kramer[1]; Steve Constantinides[3]; [1]Ames Laboratory; [2]Iowa State University; [3]Arnold Magnetic Technologies Corporation

9:00 AM Invited
High Coercivity Carbide Nanoparticles: A New Route to Permanent Magnet: *Vincent Harris*[1]; [1]University of Utah

9:30 AM Invited
Prospects for Improving Alnico Alloys: *Matthew Kramer*[1]; Q. Xing[1]; M. Miller[2]; L. Zhou[1]; H. Dillon[1]; R. McCallum[1]; I. Anderson[1]; S. Constantinides[3]; [1]Ames Laboratory; [2]Oak Ridge National Laboratory; [3]Arnold Magnetic Technologies Corp.

10:00 AM Break

10:15 AM Invited
Microstructural Characterization of Alnico Alloys: *Lin Zhou*[1]; Qingfeng Xing[1]; H. Dillon[1]; R. McCallum[1]; I. Anderson[1]; M. Kramer[1]; D. Smith[2]; M. McCartney[2]; S. Constantinides[3]; [1]Ames Lab; [2]Arizona State University; [3]Arnold Magnetic Technologies Corp

10:45 AM
MnAlC Permanent Magnets with Transition Metal Additives: *Michael Lucis*[1]; Ralph Skomski[1]; Parashu Kharel[2]; Priyanka Manchanda[2]; Jeffrey Shield[1]; [1]University of Nebraska-Lincoln; [2]IIT Mandi

11:05 AM
Towards Rare-Earth Free Permanent Magnets: $L1_0$ Ferrous Alloys: Nina Bordeaux[1]; *Ana María Montes*[1]; Bradley West[1]; Katayun Barmak[2]; Laura Lewis[1]; [1]Northeastern University; [2]Columbia University

Materials and Fuels for the Current and Advanced Nuclear Reactors II: Fuels I

*Sponsored by:*TMS Structural Materials Division, TMS/ASM: Corrosion and Environmental Effects Committee, TMS/ASM: Nuclear Materials Committee
Program Organizers: Ramprashad Prabhakaran, Idaho National Laboratory; Dennis Keiser, Idaho National Laboratory; Raul Rebak, GE Global Research

Tuesday AM
March 5, 2013

Room: 202A
Location: Henry B. Gonzalez Convention Center

Session Chair: Brian Cockeram, Bechtel Marine Propulsion Corp

8:30 AM Invited
Microstructural Assessment of U-Rich U-Zr Alloys for Advanced Nuclear Fuels: *Joseph McKeown*[1]; Sandeep Irukuvarghula[2]; Sangjoon Ahn[2]; Mark Wall[1]; Luke Hsiung[1]; Sean McDeavitt[2]; Patrice Turchi[1]; [1]Lawrence Livermore National Laboratory; [2]Texas A&M University

8:50 AM
Characterization of U-10Zr-2Ce-5In and U-10Zr-2Ce-5Sb Alloys: *Yeon Soo Kim*[1]; Tom Wiencek[1]; Gerard Hofman[1]; Ed O'Hare[1]; Jeff Fortner[1]; [1]Argonne National Laboratory

9:10 AM
Experimental Observation on Redistribution of Composition and Microstructure in U-10wt.%Zr Alloy after Anneals Under Temperature Gradient: *William Sprowes*[1]; Maria Okuniewski[2]; Yongho Sohn[1]; [1]University of Central Florida; [2]Idaho National Laboratory

9:30 AM
Interdiffusion and Reaction Between U-Zr and Fe-Cr-Ni Alloys: *Youngjoo Park*[1]; Ke Huang[1]; Bulent Sencer[2]; J. Rory Kennedy[2]; Kevin Coffey[1]; Yongho Sohn[1]; [1]University of Central Florida; [2]Idaho National Laboratory

9:50 AM
Mechanical Properties and Microstructural Characteristics of Fresh U-Mo Fuels: *Ramprashad Prabhakaran*[1]; Barry Rabin[1]; Randy Lloyd[1]; Dennis Keiser[1]; Dan Wachs[1]; Indrajit Charit[2]; [1]Idaho National Laboratory; [2]University of Idaho

10:10 AM Break

10:30 AM
Homogenization of Low Enriched Uranium-10 wt. pct Molybdenum Alloy Monolithic Fuel Foils: Amy Clarke[1]; *Kester Clarke*[1]; David Alexander[1]; Pallas Papin[1]; Tim Tucker[1]; Joel Montalvo[1]; Carl Necker[1]; Robert Aikin[1]; Rodney McCabe[1]; Robert Forsyth[1]; Robert Field[1]; David Dombrowski[1]; [1]Los Alamos National Laboratory

10:50 AM
Barrier Coatings for U-Mo Microspheres Created Via Low Temperature Fluidized Bed Chemical Vapor Deposition: *Marie Arrieta*[1]; Alifya Faizulla[1]; Delia Perez-Nunez[1]; Sean McDeavitt[1]; [1]Texas A&M University

11:10 AM
Fabrication of Enhanced Thermal Conductivity UO2-SiC Composites Using Spark Plasma Sintering: *Ghatu Subhash*[1]; Sunghwan Yeo[1]; James Tulenko[1]; Ronals Baney[1]; Ge LiHao[1]; [1]University of Florida

11:30 AM
Establishment of a Rotating Electrode System for Production of Uranium Alloy Microspheres: Chad Thompson[1]; Carissa Humrickhouse-Helmreich[1]; Rob Corbin[2]; *Sean McDeavitt*[1]; [1]Texas A&M University; [2]TerraPower

11:50 AM
Method for Calculating the Apparent Thermal Conductivity of Packed Beds: *Carissa Humrickhouse-Helmreich*[1]; Rob Corbin[2]; Sean McDeavitt[1]; [1]Texas A&M University; [2]TerraPower

Materials in Clean Power Systems VIII: Durability of Materials : Corrosion, Coating Protection and Lifetime Prediction

*Sponsored by:*TMS Structural Materials Division, TMS/ASM: Corrosion and Environmental Effects Committee
Program Organizers: Sebastien Dryepondt, ORNL; Kinga Unocic, ORNL; Jeffrey Fergus, Auburn University; Xingbo Liu, West Virginia University

Tuesday AM
March 5, 2013

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

Session Chairs: Sebastien Dryepondt, Oak Ridge National Laboratory; Kinga Unocic, ORNL

8:30 AM Invited
Corrosion of Membrane Materials for Hydrogen Separation from Coal-Derived Syngas: *Omer Dogan*[1]; Benjamin Nielsen[2]; [1]DOE National Energy Technology Laboratory; [2]URS Corporation

9:00 AM
The Effect of High Vanadium Content in Coal-Petcoke Mixtures on the Stability of Solids in Gasification Slags: *Jinichiro Nakano*[1]; Xueyan Song[2]; Kyei-Sing Kwong[1]; James Bennett[1]; [1]NETL; [2]West Virginia University

9:20 AM Invited
Coatings for Improved High Temperature Durability: *Vilupanur Ravi*[1]; Kevin Smith[1]; Abolian Shaghik[1]; Tom Krenek[1]; Stephanie Salas[1]; Armen Kutyan[1]; [1]California State Polytechnic University, Pomona

9:50 AM Break

10:10 AM Invited
An Alternative Low-Cost Process for Deposition of MCrAlY Bond Coats for Advanced Syngas/Hydrogen Turbine Applications: Ying Zhang[1]; Brian Bates[2]; Jason Witman[2]; Joseph Simpson[2]; [1]ORNL; [2]Tennessee Technological University

10:40 AM
Sensitivity of Thermal Barrier Coating Degradation to Variations of the Chemical Composition of Molten Deposits: *Timothy Montalbano*[1]; Joe Horwath[1]; Matthew Sullivan[1]; Daniel Mumm[1]; [1]University of California, Irvine

11:00 AM Invited
Creep Life Modeling for High Temperature Processes: *Jeffrey Hawk*[1]; Paul Jablonski[1]; [1]U.S. Department of Energy, National Energy Technology Laboratory

11:30 AM
Mechanistic-Based Lifetime Predictions for High Temperature Alloys and Coatings: *Bruce Pint*[1]; Sebastien Dryepondt[1]; Ying Zhang[2]; [1]Oak Ridge National Laboratory; [2]Tennessee Technological Univ.

11:50 AM
A Slag Management System for Gasification Operations: *Kyei-Sing Kwong*[1]; James Bennett[1]; Jinichiro Nakano[2]; [1]NETL, US DOE; [2]URS Corp

Materials Processing Fundamentals: Physical Metallurgy of Metals

Sponsored by: TMS Extraction and Processing Division, TMS: Process Technology and Modeling Committee
Program Organizers: Lifeng Zhang, University of Science and Technology Beijing; Antoine Allanore, Massachusetts Institute of Technology; Cong Wang, Saint-Gobain High Performance Materials; James Yurko, Materion Brush Beryllium and Composites; Justin Crapps, ExxonMobil

Tuesday AM
March 5, 2013
Room: 008A
Location: Henry B. Gonzalez Convention Center

Session Chair: Cong Wang, Saint-Gobain R&D ISA

8:30 AM
Non-Proportional Biaxial Strain Path Effects of Cold-Formed Sheet Steel: *David Collins*[1]; Richard Todd[1]; Angus Wilkinson[1]; [1]University of Oxford

8:50 AM
Aluminum-Added TWIP Steels: Design, Processing and Properties: Markus Bambach[1]; Alireza Saeed-Akbari[1]; Wolfgang Bleck[1]; Alexander Schwedt[1]; Silvia Richter[1]; Onur Güvenc[1]; Dieter Senk[1]; *Petrico von Schweinichen*[1]; [1]RWTH Aachen University

9:10 AM
Inverse Fracture Occurring during Drop Weight Tear Test (DWTT) and Stain Hardening Obtained from Dynamic Compressive Test in Linepipe Steels: *Minju Kang*[1]; Hyunmin Kim[1]; Sang Yong Shin[1]; Nack J Kim[2]; Sunghak Lee[1]; [1]POSTECH; [2]Graduate Institute of Ferrous Technology

9:30 AM
On the Effectiveness of the Shot Peening Process in Nickel Based Superalloy for High Temperature Applications: *Olivier Messe*[1]; Svjetlana Stekovic[2]; Mark Hardy[2]; Cathie Rae[1]; [1]University of Cambridge; [2]Rolls-Royce Plc

9:50 AM
Influence of Load Paths and Bake Hardening Conditions on the Mechanical Properties of Dual Phase Steel: *Mehdi Asadi*[1]; Heinz Palkowski[2]; [1]Benteler Automotive; [2]TU Clausthal

10:10 AM Break

10:20 AM
Numerical Simulations and Experimental Investigation of the Tensile Shear Test Behavior of Laser Welding of Zero-gap Lap-Joint Galvanized High-Strength DP980 Steels: *Junjie Ma*[1]; Fanrong Kong[1]; Radovan Kovacevic[1]; [1]RCAM

10:40 AM
The Effect of Phosphorus and Sulfur on the Crack Susceptibility of Continuous Casting Steel: *Weiling Wang*[1]; Sen Luo[1]; Zhaozhen Cai[1]; Miaoyong Zhu[1]; [1]Northeastern University

11:00 AM
Mathematical Modeling of Heat Transfer and Thermal Behaviour of Tool Steel H13 in Molten Aluminum Alloy A380: *Tina Ding*[1]; Jun Feng Su[1]; Henry Hu[1]; Xueyuan Nie[1]; Ronald Barron[1]; [1]University of Windsor

11:20 AM
Optimization Investigation on the Soft Reduction Parameters of Medium Carbon Microalloy Steel: Chao Xiao[1]; Jiongming Zhang[1]; Yanzhao Luo[1]; Lian Wu[1]; Shunxi Wang[1]; [1]University of Science and Technology Beijing

11:40 AM
Effect of Microstructure Evolution on Hot Cracks of HSLA Steel during Hot Charge Process: Jiang Li[1]; Qian Wang[1]; Yongjian Lu[1]; Banglun Wang[1]; Shaoda Zhang[1]; [1]Chongqing University

12:00 PM
A New Method for Ultrasonic Treatment on the Melt of Steel: *Gand Nie*[1]; Jinwu Kang[1]; Yisen Hu[1]; [1]Tsinghua University

12:20 PM
Characterisation of Oxide Scale of Stainless Steel and Its Effect on Interfacial Behaviour in Hot Rolling: *Dongbin Wei*[1]; Zhengyi Jiang[1]; [1]University of Wollongong

Materials Science in Reduced Gravity: Modeling and Properties

Sponsored by: TMS Materials Processing and Manufacturing Division, TMS: Solidification Committee
Program Organizers: Douglas Matson, Tufts University; Robert Hyers, University of Massachusetts Amherst; Hani Henein, University of Alberta

Tuesday AM
March 5, 2013
Room: Lone Star Salon E
Location: Grand Hyatt

Session Chairs: Valdis Bojarevics, University of Greenwich; Richard Grugel, NASA MSFC

8:30 AM Introductory Comments

8:40 AM
Bubble Induced Disruption of a Planar Solid-Liquid Interface during Controlled Directional Solidification in a Microgravity Environment: *Richard Grugel*[1]; Lucien Brush[2]; Amrutur Anilkumar[3]; [1]Marshall Space Flight Center; [2]University of Washington; [3]Vanderbilt University

9:00 AM
Surface Oscillation of Levitated Liquid Droplets under Microgravity: *Masahito Watanabe*[1]; Akitoshi Mizuno[1]; Shumpei Ozawa[2]; Taketoshi Hibiya[3]; [1]Gakushuin University; [2]Chiba Institute of Technology; [3]Keio University

9:20 AM Break

9:30 AM Invited
Containerless Processing on ISS: Experiment Preparation for EML: *Stephan Schneider*[1]; Angelika Diefenbach[2]; Rainer Willnecker[2]; [1]DLR / Institut für Materialphysik im Weltraum; [2]DLR / Microgravity User Support Center

10:00 AM
Copper Sphere Dynamics in the MSL-EML Coil System: *Valdis Bojarevics*[1]; Alan Roy[1]; Koulis Pericleous[1]; Georg Lohoefer[2]; Achim Seidel[3]; [1]University of Greenwich; [2]German Aerospace Center (DLR); [3]Astrium Space Transportation

10:20 AM
Investigations on the Falling of Droplets in an Instrumented Drop Tube-Impulse System: Pooya Delshad Khatibi[1]; *Hani Henein*[1]; [1]University of Alberta

10:40 AM
Computational Analysis on the Validation and Application of Modulated Electromagnetic Induction Calorimetry: *Xiao Ye*[1]; Robert Hyers[1]; [1]University of Massachusetts, Amherst

11:00 AM
Turbulent Transition in Electromagnetically Levitated Liquid Metal Droplets: Jie Zhao[1]; Christina Rizer[1]; Doug Matson[2]; Stefan Klein[3]; Stephan Schneider[3]; Robert Hyers[1]; [1]University of Massachusetts; [2]Tufts University; [3]DLR--Cologne

11:20 AM Concluding Comments

Mesoscale Computational Materials Science of Energy Materials: Battery Materials and Electrochemical Processes II

*Sponsored by:*TMS Materials Processing and Manufacturing Division, TMS/ASM: Computational Materials Science and Engineering Committee
Program Organizers: Pascal Bellon, University of Illinois; Alfredo Caro, LANL; Long Qing Chen, Penn State University; Anter El-Azab, Florida State University; Ming Tang, Lawrence Livermore National Laboratory

Tuesday AM
March 5, 2013
Room: 218
Location: Henry B. Gonzalez Convention Center

Session Chairs: Fei Zhou, Department of Materials Science and Engineering; Long-Qing Chen, Penn State University

8:30 AM Invited
Electrochemical Properties of RuO_2-Based Supercapacitors from First-Principles Calculations: *Fei Zhou*[1]; Yongduo Liu[1]; Vidvuds Ozolins[1]; Mark Asta[2]; [1]UCLA; [2]UC Berkeley

9:00 AM Invited
Understanding Solid Oxide Fuel Cell Cathodes from the Molecular Scale: *Dane Morgan*[1]; Yueh-Lin Lee[2]; Yang Shao-Horn[2]; [1]UW Madison; [2]Massachusetts Institute of Technology

9:30 AM
Phase Field and Electrochemistry: Recent Progress: *Nega Alemayehu*[1]; Ulrich Preiss[1]; Ingo Steinbach[1]; [1]ICAMS

9:50 AM Break

10:10 AM
Computational Modeling of Electrochemical Charge/Discharge Behavior of Electrodes in Li-Ion Cells: *K. S. Ravi Chandran*[1]; Madhu Jagannathan[1]; [1]University of Utah

10:30 AM Invited
Experiments to Aid Modeling of Lithium Ion Batteries: *Shen Dillon*[1]; [1]University of Illinois Urbana-Champaign

11:00 AM Invited
Mechanics of Lithiation in Silicon: *Sulin Zhang*[1]; Hui Yang[1]; Adri van Duin[1]; [1]The Pennsylvania State University

11:30 AM
Phase Field Simulations on the Precipitation Kinetics of γ' in Ni-base Superalloy Haynes 282: *Youhai Wen*[1]; [1]National Energy Technology Laboratory

11:50 AM
Computational Modeling of Grain Growth in Ceramics: *Karim Ahmed*[1]; Anter El-Azab[1]; Tony Schulte[2]; Spencer Morris[2]; Clarissa Yablinsky[2]; Todd Allen[2]; [1]Purdue University; [2]University of Wisconsin

Microstructural Processes in Irradiated Materials: Advanced ODS Alloys

*Sponsored by:*TMS Structural Materials Division, TMS/ASM: Nuclear Materials Committee
Program Organizers: Thak Sang Byun, Oak Ridge National Laboratory; Dane Morgan, University of Wisconsin-Madison; Yasuyoshi Nagai, Tohoku University; Zhijie Jiao, University of Michigan-Ann Arbor; Christine Guéneau, CEA-Saclay

Tuesday AM
March 5, 2013
Room: 203A
Location: Henry B. Gonzalez Convention Center

Session Chairs: Michael Miller, Oak Ridge National Laboratory; Robert Odette, UC Santa Barbara

8:30 AM Invited
Recent Progress in the Development Irradiation Tolerant Nanostructured Ferritic Alloys (NFA): *G. Odette*[1]; Takuya Yamamoto[1]; Yuan Wu[1]; Bo Yao[2]; Rick Kurtz[2]; Danny Edwards[2]; David Hoelzer[3]; Stuart Maloy[4]; Peter Hosemann[5]; James Cisten[6]; Kiyohiro Yabuuchi[7]; Akihiko Kimura[7]; Peter Wells[1]; [1]UC Santa Barbara; [2]Pacific Northwest National Laboratory; [3]Oak Ridge National Laboratory; [4]Los Alamos National Laboratory; [5]UC Berkeley; [6]Lawrence Berkeley National Laboratory; [7]Kyoto University

9:00 AM
Microstructure and Swelling Response of MA957 ODS Steel under High Dose Neutron Irradiation: *Alicia Certain*[1]; Mychailo Toloczko[1]; Matthew Olszta[1]; Daniel Schreiber[1]; [1]Pacific Northwest National Laboratory

9:20 AM
Tensile Properties of MA957 Neutron Irradiated to 43-103 DPA at Temperatures Ranging from 385-750°C: *Mychailo Toloczko*[1]; Alicia Certain[1]; Stuart Maloy[2]; [1]Battelle/PNNL; [2]LANL

9:40 AM
Atom Probe Tomography Investigation of the Evolution of the Microstructure of Ion Irradiated ODS Ferritic Steels: *Bertrand Radiguet*[1]; Constantinos Hatzoglou[1]; Laurent Chaffron[2]; Yves Serruys[3]; Fabrice Legendre[3]; Philippe Pareige[1]; [1]GPM UMR CNRS 6634 - Université et INSA de Rouen; [2]SRMA - CEA; [3]SRMP - CEA

10:00 AM Break

10:20 AM
Towards Understanding Atom Probe Artifacts: Measuring and Modeling the Effects of Trajectory Aberrations and Variable Field Evaporation Potentials: *Nicholas Cunningham*[1]; Peter Wells[1]; Brian Geiser[2]; G. Robert Odette[1]; [1]UC Santa Barbara; [2]Cameca

10:30 AM
Comparison of the Microstructures of High Dose Ion Irradiated and As-Mechanically Alloyed 14YWT: *Michael Miller*[1]; Lan Yao[1]; Yanwen Zhang[1]; [1]Oak Ridge National Laboratory

10:50 AM
Solute Segregation to Grain Boundaries in a 14YWT Nanostructured Ferritic Alloy: *Lan Yao*[1]; Michael Miller[1]; [1]ORNL

11:10 AM
Effect of Cryogenic Milling on the Properties of Fe-14Cr ODS Powder: *Jeoung Han Kim*[1]; Thak Sang Byun[2]; Seong Woong Kim[1]; Chan Hee Park[1]; Jong Taek Yeom[1]; [1]Korea Institute of Materials Science; [2]Oak Ridge National Laboratory

11:30 AM
TEM Studies of Nano-Oxides, Bubbles, Dislocations and Grain Boundaries Associations in Dual Ion Irradiated Nanostructured Ferric Alloys: *Yuan Wu*[1]; Takuya Yamamoto[1]; Nicholas Cunningham[1]; Robert Odette[1]; Sosuke Kondo[2]; Akihiko Kimura[2]; [1]UCSB; [2]Kyoto University

11:50 AM
Nanocavity Formation and Hardness Changes by Dual-Beam-Implanted Oxide-Dispersed-Strengthened FeCrAl Alloy: *Asta Richter*[1]; Chun-Liang Chen[2]; Reinhard Koegler[3]; Wolfgang Anwand[3]; [1]Technical University of Applied Sciences Wildau; [2]I-Shou University; [3]HZDR

12:10 PM
Effects of Post-Extrusion Thermo-Mechanical Treatment on Characteristics of 9Cr Nanostructured Ferritic Alloy: *Ji-Hyun Yoon*[1]; Yongbok Lee[1]; Suk-Hoon Kang[1]; Thak Sang Byun[2]; David Hoelzer[2]; [1]Korea Atomic Energy Research Institute; [2]Oak Ridge National Laboratory

Modeling and Experimental Validation of Multiscale Mechanical Behavior from Atomic Scale to Macro Scale: Size Effects

Sponsored by: TMS Materials Processing and Manufacturing Division, TMS Structural Materials Division, TMS: Integrated Computational Materials Engineering Committee, TMS/ASM: Mechanical Behavior of Materials Committee, TMS: Nanomechanical Materials Behavior Committee, TMS: Process Technology and Modeling Committee, TMS: Shaping and Forming Committee
Program Organizers: Nathan Mara, Los Alamos National Laboratory; Jian Wang, Los Alamos National Laboratory; Brad Boyce, Sandia National Laboratories; Jennifer Carter, Case Western Reserve University; Anthony Rollett, Carnegie Mellon University; Jonathan Zimmerman, Sandia National Laboratories

Tuesday AM
March 5, 2013
Room: 211
Location: Henry B. Gonzalez Convention Center

Session Chairs: Andrew Minor, University of California, Berkeley; Ibrahim Karaman, Texas A&M University

8:30 AM Invited
An Explanation of the Power-Exponent in the Size Effect on Strength in Micro-Crystals: *Alfonso Ngan*[1]; Rui Gu[1]; [1]University of Hong Kong

9:00 AM
Size Effect on the Mechanical Properties of Amorphous Alloys: *G.P. Zheng*[1]; H.Y. Zhang[1]; [1]Hong Kong Polytechnic University

9:20 AM Invited
Probing the Origin and Evolution of Strength and Ductility in Small Volumes with In Situ TEM Nanomechanical Testing: *Andrew Minor*[1]; [1]UC Berkeley & LBL

9:50 AM
Length Scale Effects on Experimental Investigations of Nano-Scale Metallic Multilayer Systems: *Rachel Schoeppner*[1]; Niaz Abdolrahim[1]; Hussein Zbib[1]; David Bahr[1]; [1]Washington State University

10:10 AM Break

10:20 AM Invited
Size Dependent Actuation Mechanisms of Ferromagnetic Shape Memory Alloys in Sub-micron/Nano Size Scale: Nevin Ozdemir[1]; *Ibrahim Karaman*[1]; Nathan Mara[2]; [1]Texas A&M University; [2]Los Alamos National Laboratory

10:50 AM
In Situ TEM Compression Testing of Natural Quartz Nanopillars for Paleo-Piezometry: *Eita Tochigi*[1]; Eloisa Zepeda[2]; Hans-Rudolf Wenk[2]; Andrew Minor[1]; [1]Lawrence Berkeley National Laboratory; [2]University of California, Berkeley

11:10 AM
Surface Induced Deformation and Spontaneous Contraction of Nanoporous Gold: Xing-Long Ye[1]; *Hai-Jun Jin*[1]; [1]Institute of Metal Research, Chinese Academy of Sciences

11:30 AM
Effect of Zero-Point Vibrations on the Peierls Stress of Dislocations: Laurent Proville[1]; *David Rodney*[2]; Mihai-Cosmin Marinica[1]; [1]Commissariat à l'Energie Atomique; [2]INP Grenoble

11:50 AM
In Situ Transmission Electron Microscopy Studies of Size- Dependent Plasticity in Ceramic Materials: *Sara Kiani*[1]; Suneel Kodambaka[1]; A. M. Minor[1]; Jenn-Ming Yang[1]; [1]UCLA

Modeling of Multi-Scale Phenomena in Materials Processing - III: Heat Treatment

Sponsored by: TMS Materials Processing and Manufacturing Division, TMS/ASM: Computational Materials Science and Engineering Committee, TMS: Process Technology and Modeling Committee, TMS: Integrated Computational Materials Engineering Committee
Program Organizers: Adrian Sabau, Oak Ridge National Laboratory; Anthony Rollett, Carnegie Mellon University; Laurentiu Nastac, The University of Alabama; Jonathan Madison, Sandia National Laboratories; Mei Li, Ford Motor Company

Tuesday AM
March 5, 2013
Room: 216
Location: Henry B. Gonzalez Convention Center

Session Chairs: Jonathan Madison, Sandia National Laboratories; Jean-Marie Drezet, Ecole Polytechnique Fédérale de Lausanne

8:30 AM Introductory Comments

8:35 AM Invited
Internal Stress Generation During Quenching of Thick Heat Treatable Aluminium Alloys: *Jean-Marie Drezet*[1]; Nicolas Chobaut[1]; Patrick Schloth[1]; Helena Van Swygenhoven[2]; [1]Ecole Polytechnique Federale Lausanne; [2]Paul Sherrer Institut, Switzerland

9:20 AM
Multiscale Modeling of Microstructure Evolution during Thermo-Mechanical Processing: *Ravi Shankar*[1]; Wei-Tsu Wu[1]; Alexandar Bandar[1]; Masoud Anahid[1]; Sivom Manchiraju[1]; Jin Yong Oh[1]; [1]Scientific Forming Technologies Corporation

9:45 AM
Thermo-Metallo-Mechanical Modelling of an Austenitic Stainless Steel Bead-on-Plate Weld: *Koen Decroos*[1]; [1]Catholic University of Leuven

10:10 AM Break

10:40 AM
A High Order Mathematical Model for Calculating Casting Temperature Field Based on ADI Method: *Xiaofeng Niu*[1]; Wei Liang[1]; [1]Taiyuan University of Technology

11:05 AM
Microstructure Evolution Modeling for Solution Treatment of Aluminum Alloys: Hebi Yin[1]; *Adrian Sabau*[1]; Timothy Skszek[2]; Xiaoping Niu[3]; [1]Oak Ridge National Laboratory; [2]Vehma International; [3]Prometek Research Centre

11:30 AM
Yield Strength Prediction for Rapid Age-hardening Heat Treatment of Aluminum Alloys: Hebi Yin[1]; *Adrian Sabau*[1]; Gerard Ludtka[1]; Timothy Skszek[2]; Xiaoping Niu[3]; [1]Oak Ridge National Laboratory; [2]Vehma International; [3]Prometek Research Centre

Nanostructured Materials for Lithium Ion Batteries and for Supercapacitors: Nanostructured Materials for Lithium Ion Batteries and for Supercapacitors Session III

*Sponsored by:*TMS Electronic, Magnetic, and Photonic Materials Division, TMS: Energy Conversion and Storage Committee
Program Organizer: David Mitlin, University of Alberta and NINT NRC

Tuesday AM
March 5, 2013

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

Session Chairs: David Mitlin, University of Alberta and NINT NRC; Reza Shahbazian-Yassar, Michigan Technological University; Peter Kalisvaart, University of Alberta; Zhi Li, University of Alberta

8:30 AM Invited
The Electrochemical Flow Capacitor for Efficient Grid-Scale Energy Storage: *Yury Gogotsi*[1]; Chris Dennison[1]; [1]Drexel University

8:50 AM Invited
Nanocomposite Materials for Energy Storage Devices: From Supercapacitors to Li-Ion Batteries: *Gleb Yushin*[1]; [1]Georgia Institute of Technology

9:10 AM Invited
Carbonized Chicken Eggshell Membranes with 3D Architectures as High-Performance Electrode Materials for Supercapacitors: *Zhi Li*[1]; Chris Holt[1]; Babak Shalchi Amirkhiz[1]; Xuehai Tan[1]; David Mitlin[1]; [1]University of Alberta

9:30 AM Invited
Hierarchical Carbon Scaffolds for Batteries and Supercapacitors: *Emmanuel Giannelis*[1]; [1]Cornell University

9:50 AM Invited
Chemical Synthesis, Computational Modeling, and Surface Reactions of Silicon Nanotube Anodes and Silicate Cathodes for Lithium Ion Batteries: *Christopher Hinkle*[1]; Amandeep Sra[1]; David Arreaga-Salas[1]; Joseph Rossi[1]; Roberto Longo[1]; Katy Roodenko[1]; KJ Cho[1]; Yves Chabal[1]; [1]University of Texas at Dallas

10:10 AM Break

10:30 AM Invited
Flexible Nanostructured Composite Electrodes for High Performance Supercapacitors: *Xiaodong Li*[1]; [1]University of South Carolina

10:50 AM Invited
Graphenic Material for High Performance Li-Ion Battery Electrodes: *Harold Kung*[1]; Xin Zhao[1]; Cary Hayner[1]; Mayfair Kung[1]; [1]Northwestern University

11:10 AM Invited
Tobacco Mosaic Virus Enabled Si Anodes and LiFePO4 Cathodes for Li-Ion Batteries: *Chunsheng Wang*[1]; Kang Xu[2]; James Culver[1]; Reza Ghodssi[1]; [1]University of Maryland; [2]Army Research Lab

11:30 AM Invited
Capacitive Energy Storage Using Carbon Supercapacitor: From Modeling to Device: *Jingsong Huang*[1]; Rui Qiao[2]; Vincent Meunier[3]; Bobby Sumpter[1]; [1]Oak Ridge National Laboratory; [2]Clemson University; [3]Rensselaer Polytechnic Institute

11:50 AM Invited
Defective Carbon Nanomaterials as the Cathodes for High Performance Lithium Batteries: *Xinwei Cui*[1]; Weixing Chen[1]; [1]University of Alberta

12:10 PM
Controllable Fabrication of SnO_2/SnCo Nanocomposites as Anodes for Lithium Ion Batteries: *Youlan Zou*[1]; [1]Central South University

Neutron and X-Ray Studies of Advanced Materials VI: Centennial and Beyond: Diffraction Across the Time and Length Scale

*Sponsored by:*TMS Structural Materials Division, TMS/ASM: Mechanical Behavior of Materials Committee
Program Organizers: Rozaliya Barabash, Oak Ridge National Laboratory; Xun-Li Wang, City University of Hong Kong; Jaimie Tiley, US Air Force Research Laboratory; Gernot Kostorz, ETH Zurich; Brent Fultz, California Institute of Technology; Peter Liaw, University of Tennessee

Tuesday AM
March 5, 2013

Room: 209
Location: Henry B. Gonzalez Convention Center

Session Chairs: Olivier Delaire, ORNL; Xun-Li Wang, City University of Hong Kong

8:30 AM Keynote
Diffraction from Nanocrystalline Materials: *Paolo Scardi*[1]; [1]University of Trento

8:55 AM Invited
In Situ X-ray Studies of Reactive Synthesis of Metastable Materials: *Carol Thompson*[1]; Edith Perret[2]; Weronika Walkosz[2]; Matthew Highland[2]; Stephen Streiffer[2]; Paul Fuoss[2]; Peter Zapol[2]; G. Brian Stephenson[2]; [1]Northern Illinois University; [2]Argonne National Laboratory

9:15 AM Invited
Nanosize Heterogeneities in Gum-Metals: *Masato Ohnuma*[1]; S Koppoju[1]; Y Oba[1]; S Kuramoto[2]; T Furuta[2]; M Furusaka[3]; M Eldrup[4]; [1]National Institute for Materials Science; [2]Toyota central research; [3]Hokkaido University; [4]DTU Riso campus

9:35 AM Invited
Advances in Serial Femtosecond Crystallography at XFELs: *Kenneth Beyerlein*[1]; [1]DESY

9:55 AM Break

10:05 AM Invited
Synchrotron X-Ray Diffraction of Bone and Teeth to Study Load Partitioning between Mineral and Protein Phases: *David Dunand*[1]; Alix Deymier-Black[1]; Anjali Singhal[1]; Fang Yuan[1]; Jonathan Almer[2]; Catherine Brinson[1]; [1]Northwestern University; [2]Argonne National Laboratory

10:15 AM Invited
Rigorous Simulation of X-Ray Thermal Diffuse Scattering: *Ruqing Xu*[1]; Tai-Chang Chiang[2]; [1]Argonne National Laboratory; [2]University of Illinois at Urbana-Champaign

10:45 AM Invited
New Class of Solid-State Phase Transitions with Purely Dynamical Order: *Michael Manley*[1]; [1]Lawrence Livermore National Laboratory

11:05 AM Invited
In-Situ Neutron Diffraction and Crystal Plasticity Modeling of a-Uranium: Rupalee Mulay[1]; Christopher Calhoun[1]; Elena Garlea[2]; Thomas Sisneros[3]; *Sean Agnew*[1]; [1]University of Virginia; [2]Y-12 National Security Complex; [3]Los Alamos National Laboratory

11:25 AM
An In-Situ Diffraction Study of the Thermal Stability of Texture and Microstructure as a Function of Processing Parameters for Cu/Nb Nanolamellar Composites fabricated via Accumulative Roll Bonding: *John Carpenter*[1]; Sven Vogel[1]; Rodney McCabe[1]; Shijian Zheng[1]; Ruifeng Zhang[1]; Irene Beyerlein[1]; Nathan Mara[1]; [1]Los Alamos National Laboratory

11:45 AM
Anharmonic Phonon Behavior in α-Fe at High Temperatures: *Lisa Mauger*[1]; Matthew Lucas[2]; Jorge Munoz[1]; Sally Tracy[1]; Brent Fultz[1]; [1]California Institute of Technology; [2]Air Force Research Laboratory

11:55 AM Invited
Investigating Microscopic Heat Transport with Neutron Scattering: *Olivier Delaire*[1]; [1]Oak Ridge National Laboratory

12:15 PM
In Situ Synchrotron Investigation of the Martensitic Phase Transformation in High-Alloyed Austenitic Cast Trip Steel under High Hydrostatic Pressure: *Anja Weidner*[1]; Stephanie Ackermann[1]; Sebastian Henkel[1]; Dirk Kulawinski[1]; Gerd Lathe[2]; Markus Schwarz[1]; Christian Schimpf[1]; Christian Segel[1]; David Rafaja[1]; Horst Biermann[1]; [1]TU Bergakademie Freiberg; [2]Geofroschungszentrum Potsdam

12:30 PM Invited
In Situ X-Ray Studies of $La_{0.6}Sr_{0.4}Co_{0.2}Fe_{0.8}O_{3-\delta}$ Thin Films under Applied Electrochemical Potential: *Edith Perret*[1]; Mitchell Hopper[1]; Jeffrey Eastman[1]; Peter Baldo[1]; Kee-Chul Chang[1]; Brian Ingram[1]; Hoydoo You[1]; Paul Fuoss[1]; [1]Argonne National Laboratory

Ni-Co 2013: Electrometallurgy

Sponsored by: The Minerals, Metals and Materials Society, Metallurgical Society of the Canadian Institute of Mining Metallurgy and Petroleum, Chinese Society for Metals, GDMB Society for Mining, Metallurgy, Resource and Environmental Technology, Society for Mining Metallurgy and Exploration, Mining and Materials Processing Institute of Japan, Associacao Brasileira de Metalurgia, Materiais e Mineracao, Southern African Institute of Mining and Metallurgy (SAIMM), Minerals Engineering International Online, Cobalt Development Institute, Societe Francaise de Metallurgie et de Materiaux, TMS Extraction and Processing Division, TMS: Hydrometallurgy and Electrometallurgy Committee, TMS: Pyrometallurgy Committee
Program Organizer: Thomas Battle, Midrex Technologies

Tuesday AM
March 5, 2013
Room: 007D
Location: Henry B. Gonzalez Convention Center

Session Chairs: Michael Moats, Missouri University of Science and Technology; Nathan Stubina, Barrick Gold Corp

8:30 AM
Acid Mist Abatement in Base Metal Electrowinning: *Tim Robinson*[1]; David White[2]; Ross Grassi[3]; [1]Republic Alternative Technologies; [2]Snowden mining Industry Consultants; [3]Amec Mining and Metals/ Australia

8:55 AM
Boleo Cobalt Electrowinning Development: *Jianming Lu*[1]; David Dreisinger[1]; Thomas Gluck[2]; [1]University of B.C.; [2]Baja Mining

9:20 AM
Comparison of Intercell Contact Bars for Electrowinning Plants: *Chris Boon*[1]; Rob Fraser[1]; Tim Johnston[1]; Douglas Robinson[1]; [1]Hatch

9:45 AM
Nickel and Cobalt Recovery from a Disseminated Nickel Concentrate Using the CESL Process: *Tannice McCoy*[1]; Keith Mayhew[1]; [1]Teck Resources Limited

10:10 AM Break

10:20 AM
High Current Density Electrowinning of Nickel in EMEW Cells: *Jeremy Robinson*[1]; Ian Ewart[1]; Michael Moats[2]; Shijie Wang[3]; [1]Electrometals USA; [2]Missouri University of Science and Technology; [3]Rio Tinto Kennecott Utah Copper

10:45 AM
Process Measurement and Controlling of the Electro Refining/ Winning Operations: *Shijie Wang*[1]; Daniel Kim[1]; [1]Rio Tinto Kennecott Utah Copper

11:10 AM
Helm Tracker™ Cathode Current Sensing Technology: *Tim Johnston*[1]; Rob Fraser[1]; John Yesberg[1]; Sebastien Nolet[1]; Chris Boon[1]; [1]Hatch

11:35 AM
The Effects of Dithionate and Thiosulfate Ions on the Deposition of Cobalt and Nickel from Sulfate Solutions: *Michael Nicol*[1]; Venny Tjandrawan[1]; [1]Murdoch University

Novel Synthesis and Consolidation of Powder Materials : Novel Synthesis, Processing and Consolidation of Powder Materials

Sponsored by: TMS Materials Processing and Manufacturing Division, TMS: Powder Materials Committee
Program Organizers: Ma Qian, The University of Queensland; Iver Anderson, The Ames Laboratory

Tuesday AM
March 5, 2013

Room: Lone Star Salon C
Location: Grand Hyatt

Session Chairs: Zak Fang, The University of Utah; Deliang Zhang, The University of Waikato

8:30 AM
Metallic Nanocomposites Powders Fabricated through Nanoparticle Assembly with Aluminum in Immiscible Molten Salt: *Jiaquan Xu*[1]; Lianyi Chen[1]; Hongseok Choi[1]; Hiromi Konishi[1]; Xiaochun Li[1]; [1]University of Wisconsin-Madison

8:50 AM Invited
Chemical Synthesis and Physical Dispersion of Cobalt Nanoparticles by Liquid Phase Reduction: *Young Do Kim*[1]; Seoung Yeul Kwak[1]; Jin Ho Lee[1]; Hyun Seon Hong[2]; [1]Hanyang University; [2]Institute for Advanced Engineering

9:20 AM Invited
Fabrication of Structural and/or Functional Powders by Gas Atomization Process: *Soon-Jik Hong*[1]; [1]Kongju National University and Institute for Rare Metals

9:50 AM
Fragmentation of TiN Particles by Ultrasonic Treatment: *Jiyu Ma*[1]; Jinwu Kang[1]; Tianyou Huang[1]; [1]Tsinghua University

10:10 AM Break

10:30 AM
Ultrasound Atomizer-Microwave Heating Joint Synthesis of ZnO Nano-Powders with Shell-Structures: *Lei Guo*[1]; [1]Key Laboratory of Unconventional Metallurgy, Kunming University of Science and Technology

10:50 AM
Low-Temperature Combustion Synthesis Method for Preparation of Tungsten Carbide as Gas Diffusion Electrodes Catalyst: *Ping Li*[1]; Liqun Cui[1]; Mingli Qin[1]; Xuanhui Qu[1]; [1]University of Science and Technology Beijing

11:20 AM
Novel Process to Produce Functionally Graded (FG) Cemented Tungsten Carbide and Its Mechanical Properties: *Kyu Sup Hwang*[1]; Xu Wang[1]; Peng Fan[1]; Zhigang Fang[1]; [1]University of Utah

11:40 AM
The Effect of Structural Homogeneity and Refinement on Mechanical Properties for WC-FeAl Composites: *Ryoichi Furushima*[1]; Akihiro Matsumoto[1]; Kiyotaka Katou[1]; Hiroyuki Hosokawa[1]; [1]Nationa Institute of Advanced Industrial Science and Technology

12:00 PM
Nanostructured Multi-Phase Titanium Based Materials Consolidated from Particles by Severe Plastic Deformation: *Wei Xu*[1]; Xianshun Wei[1]; Edward Lui[1]; Matthieu Bardet[1]; Jean-Francois Silvain[2]; Kenong Xia[1]; [1]University of Melbourne; [2]CNRS, Universite de Bordeaux

Pb-free Solders and Emerging Interconnect and Packaging Technologies: Mechanical Behavior I

Sponsored by: TMS Electronic, Magnetic, and Photonic Materials Division, TMS: Electronic Packaging and Interconnection Materials Committee
Program Organizers: Nikhilesh Chawla, Arizona State University; Srinivas Chada, Whirlpool; Darrel Frear, Freescale Semiconductor; John Elmer, LLNL; Tae-Kyu Lee, Cisco Systems; Yan Li, Intel; Laura Turbini, Research In Motion; Kwang-Lung Lin, National Cheng Kung University; Sohoon Yoo, Korea Institute of Industrial Technology

Tuesday AM
March 5, 2013

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

Session Chair: To Be Announced

8:30 AM
High Temperature Nanoindentation of Microstructural Constituents in a Sn-rich Pb-Free Solder: *Jon Molina-Aldareguia*[1]; Saeid Lotfian[1]; Kyle Yazzie[2]; Javier LLorca[1]; Nikhilesh Chawla[2]; [1]IMDEA Materials Institute, 28040-Madrid, Spain; [2]Arizona State University

8:50 AM
Mechanical Properties of Single Grain Cu6Sn5 Intermetallic Compound (IMC) Using Combined Nanoindentation and Electron Backscatter Diffraction (EBSD) Imaging: *Ousama Abdelhadi*[1]; Leila Ladani[1]; [1]University of Alabama

9:10 AM
Effect of Solder Microstructure on Mechanical and Thermal Shock Properties: Anil Kantarcioglu[1]; Mustafacan Kutsal[1]; *Eren Kalay*[1]; [1]METU

9:30 AM Break

9:50 AM
Influence of the IMC Size on the Mechanical Behavior in Miniaturized Solder Interconnects: *Julien Magnien*[1]; Golta Khatibi[1]; Herbert Ipser[1]; [1]University of Vienna

10:10 AM
Effect of Thermal Cycling on Interface Evolution in Sn-3.5Ag Solder Joints: *Govindarajan Muralidharan*[1]; Chad Parish[1]; Kanth Kurumaddali[1]; Scott Leslie[2]; [1]Oak Ridge National Laboratory; [2]Powerex Inc

10:30 AM
Combined Experimental and Computational Study on the Activity of Slip Systems in Single-Joint Tensile Deformation: *Payam Darbandi*[1]; Farhang Pourboghrat[1]; Thomas Bieler[1]; Tae-Kyu Lee[2]; [1]Michigan State University; [2]Cisco Systems, Inc

10:50 AM
Failure of Solder Joints Investigated at the Relevant Length Scale: *Bastian Philippi*[1]; Andreas Schießl[2]; Angelika Schingale[2]; Gerhard Dehm[3]; [1]Materials Center Leoben; [2]Continental Automotive GmbH; [3]Austrian Academy of Sciences

Phase Stability, Phase Transformations, and Reactive Phase Formation in Electronic Materials XII: Interfacial Reactions of the Pb-free Solder Joints

Sponsored by: TMS Electronic, Magnetic, and Photonic Materials Division, TMS: Alloy Phases Committee
Program Organizers: Chao-hong Wang, National Chung Cheng University; Chih-Ming Chen, National Chung Hsing University; Jae-Ho Lee, Hongik University; Ikuo Ohnuma, Tohoku University; Clemens Schmetterer, TU Bergakademie Freiberg; Yee-Wen Yen, National Taiwan University of Science and Technology; Shien-Ping Feng, The University of Hong Kong; Shih-Kang Lin, National Cheng Kung University

Tuesday AM
March 5, 2013
Room: 203B
Location: Henry B. Gonzalez Convention Center

Session Chairs: Chih-Ming Chen, National Chung Hsing University; Shien-Ping Feng, The University of Hong Kong

8:30 AM Invited
Reaction Evolution and Alternating Layer Formation in Sn/(Bi1-xSbx)$_2$Te$_3$ Couples: *Sinn-wen Chen*[1]; Hsin-jay Wu[1]; Chih-yu Wu[1]; Chun-fei Chang[1]; Chung-yi Chen[1]; [1]National Tsing Hua University

8:50 AM
Interfacial Reactions in the Cu/Ga/Cu Sandwich Joints: *Cheng-liang Cho*[1]; Shih-kang Lin[1]; [1]National Cheng Kung University

9:05 AM
Interfacial Reactions between Au-Ge Eutectic Solders and Cu Substrates: Bo-Hsun Hsu[1]; *Shih-kang Lin*[1]; [1]National Cheng Kung University

9:20 AM
Retardation of Cu-Sn Intermetallic Compounds at the Sn-3.0Ag-0.5Cu-0.1Ni/Cu-15Zn Interface during Thermal Aging: *Wei-Yu Chen*[1]; Chi-Yang Yu[1]; Jenq-Gong Duh[1]; [1]National Tsing Hua University

9:35 AM
Volume Shrinkage Induced by Interfacial Reactions in Micro Joints: *C. Li*[1]; J. Yu[1]; Z. Zhu[1]; C. Kao[1]; [1]National Taiwan University

9:50 AM
Diffusion Barrier Characteristic and Breakdown Mechanism of Ni3P Crystalline Layer in Sn-3.0Ag-0.5Cu/ENEPIG Solder Attachments with Ultrathin Ni-P Deposit: *Cheng Ying Ho*[1]; Jenq-Gong Duh[1]; [1]National Tsing Hua University

10:05 AM Break

10:20 AM Invited
Kinetics of Solid-State Reactive Diffusion between Sn and Ni-V Alloys: *Masanori Kajihara*[1]; [1]Tokyo Institute of Technology

10:40 AM
Linear Growth and Cruciform Pattern Formation in Sn-Zn/Ni Interfacial Reactions: *Chao-hong Wang*[1]; Hsien-hsin Chen[1]; [1]National Chung Cheng University

10:55 AM
EBSD Investigation of Cu-Sn IMC Microstructural Evolution in the Cu/Sn-Ag/Cu Microbumps during Isothermal Annealing: *Wei-Hsiang Wu*[1]; Ling-Huang Hsu[1]; Chun-Chieh Wang[1]; Cheng-En Ho[1]; [1]Yuan Ze University

11:10 AM
Solid-State Reactions by Surface and Bulk Diffusion between Sn-3.5Ag Solder and Ag Substrate: *Beom-Yong Lee*[1]; Joo-Youl Huh[1]; [1]Korea University

11:25 AM
Interfacial Reactions of SAC305 on ECEPIG and EC Surface Finishes: *Jia-Hong Hong*[1]; Albert T. Wu[1]; [1]National Central University

11:40 AM
Effects of Pd(P) Thickness on Microstructure and Mechanical Behavior in Sn-3.0Ag-0.5Cu/Au/Pd/Ni-P Solder Joints during Soldering: *Wen-Lin Chen*[1]; Jenq-Gong Duh[1]; [1]National Tsing Hua University

11:55 AM
Multiphase Intermetallic Growth in Space-Confined Ni/Sn/Cu Diffusion Couples: *Wen-Lin Shih*[1]; C. Robert Kao[1]; [1]National Taiwan Universuty

Phase Transformation and Microstructural Evolution: General Phase Transformations - Non-Ferrous: Part II

Sponsored by: TMS Materials Processing and Manufacturing Division, TMS: Chemistry and Physics of Materials Committee, TMS/ASM: Computational Materials Science and Engineering Committee, TMS: Integrated Computational Materials Engineering Committee, TMS/ASM: Phase Transformations Committee, TMS: Process Technology and Modeling Committee, ASM: Alloy Phase Diagrams Committee
Program Organizers: Amy Clarke, Los Alamos National Laboratory; Sudarsanam Suresh Babu, Ohio State University; Rajarshi Banerjee, University of North Texas; John Morral, Ohio State University; Brian Gleeson, University of Pittsburgh; Carelyn Campbell, National Institute of Standards & Technology; Yongho Sohn, University of Central Florida; Yunzhi Wang, Ohio State University

Tuesday AM
March 5, 2013
Room: 204B
Location: Henry B. Gonzalez Convention Center

Session Chairs: Dan Thoma, Los Alamos National Laboratory; Robert Field, Los Alamos National Laboratory

8:30 AM
A Microstructurally-Driven Materials Design Approach for Magnesium Alloy Development: *Zachary Bryan*[1]; Michele Manuel[1]; [1]University of Florida

8:50 AM
Crystallographic and Kinetic Origins of Acicular and Banded Microstructures in U-Nb Alloys: *Dan Thoma*[1]; Robert Field[1]; [1]Los Alamos National Laboratory

9:10 AM
Cubic to Trigonal Phase Transformation Due to Inclusion of the Boron in the Lattices of Ni$_3$Al Phase Found at the Grain Boundaries of Boron Doped Ni$_3$Al Alloy: *Mohammad Shamsuzzoha*[1]; [1]University of Alabama

9:30 AM
Effect of Precipitate Microstructure on Strength of Alloy 718: *Duchao Lv*[1]; Ning Zhou[1]; Donald Mcallister[1]; Michael Mills[1]; Yunzhi Wang[1]; [1]OSU MSE

9:50 AM
Evolution of Two-Phase Gamma-Gamma-Prime' Microstructure in a Ternary Co-W-Al Alloy: *Eric Lass*[1]; Peter Bocchini[2]; Kil-Won Moon[1]; Maureen Williams[1]; Carelyn Campbell[1]; Ursula Kattner[1]; David Dunand[2]; David Seidman[2]; [1]NIST; [2]Northwestern University

10:10 AM Break

10:30 AM
Martensite Superelasticity in Beta-Ti Alloys: *Oliver Joris*[1]; David Dye[1]; Nick Jones[2]; [1]Imperial College; [2]Cambridge

10:50 AM
Martensitic Transformation in NiTi and NiTiCu Shape Memory Alloys: Lagrangian Dynamics Simulation: *Oleg Shchyglo*[1]; Umut Salman[2]; Alphonse Finel[3]; [1]ICAMS, Ruhr University Bochum; [2]Harvard School of Engineering and Applied Sciences; [3]LEM ONERA-CNRS

11:10 AM
Phase Stability of Ternary Antifluorite Type Compounds in the Quasi-Binary Systems Mg_2X-Mg_2Y (X,Y=Si, Ge, Sn) Via Ab-Initio Calculations: Romain Viennois[1]; *Philippe Jund*[1]; Catherine Colinet[2]; Jean-Claude Tédenac[1]; [1]Université Montpellier 2 - ICGM; [2]Science et Ingénierie des Matériaux et Procédés,CNRS

11:30 AM
Structural Evolution and Phase Transformation in Ni50-xMn39Sn11+x Alloys: *Wu Wang*[1]; Jinke Yu[2]; Sichuang Xue[2]; Qijie Zhai[3]; Hongxing Zheng[2]; [1]Shanghai University, Laboratory for Microstructures ; [2]Shanghai University, Laboratory for Microstructures; [3]Shanghai University, Laboratory of Modern Metallurgy & Materials Processing

11:50 AM
The B2-B19'-BCO Transformation in Ni-Ti: An Ab-Initio Investigation: *Anjana Talapatra*[1]; Raymundo Arroyave[1]; [1]Texas A&M University

12:10 PM
Investigation of the Effect of Ta Content on the Phase Transformation of a New High-Temperature Co-Based Superalloy: *Peyman Samimi*[1]; Juah Song[1]; Yue Liu[1]; P. Collins[1]; [1]University of North Texas

Phase Transformation and Microstructural Evolution: Non-conventional Phase Transformation Paths: Part I

*Sponsored by:*TMS Materials Processing and Manufacturing Division, TMS: Chemistry and Physics of Materials Committee, TMS/ASM: Computational Materials Science and Engineering Committee, TMS: Integrated Computational Materials Engineering Committee, TMS/ASM: Phase Transformations Committee, TMS: Process Technology and Modeling Committee, ASM: Alloy Phase Diagrams Committee
Program Organizers: Amy Clarke, Los Alamos National Laboratory; Sudarsanam Suresh Babu, Ohio State University; Rajarshi Banerjee, University of North Texas; John Morral, Ohio State University; Brian Gleeson, University of Pittsburgh; Carelyn Campbell, National Institute of Standards & Technology; Yongho Sohn, Univ of Central Florida; Yunzhi Wang, Ohio State University

Tuesday AM
March 5, 2013
Room: 204A
Location: Henry B. Gonzalez Convention Center

Session Chairs: Rajarshi Banerjee, University of North Texas; Sudarsanam Babu, The Ohio State University

8:30 AM Introductory Comments

8:35 AM Invited
Non-Conventional Transformation Pathways in Titanium Alloys: *Hamish Fraser*[1]; Yufeng Zheng[1]; Robert Williams[1]; Soumya Nag[2]; Srivillipurthur Srinivasan[2]; Peter Collins[2]; Rajarshi Banerjee[2]; [1]The Ohio State University; [2]University of North Texas

9:05 AM Invited
Phase Transformation Pathways: Partha Ghosh[1]; A. Arya[1]; R. Tewari[1]; G. Dey[1]; *S. Banerjee*[1]; [1]Bhabha Atomic Reseach Centre

9:35 AM
Non-Conventional Microstructure Formation through Devitrification of Al-RE Metallic Glass: *Can Yildirim*[1]; Mert Ovun[1]; E. Park[2]; Ryan Ott[2]; Paul Voyles[3]; Matthew Kramer[2]; Eren Kalay[1]; [1]METU; [2]Ames Laboratory US DOE; [3]University of Wisconsin, Madison

9:55 AM Break

10:10 AM Invited
High Magnetic Field Processing: The Enabling Disruptive Science and Technology Path to Achieve the Next Generation of Structural and Functional Materials: *Gerard Ludtka*[1]; Gail Ludtka[2]; John Wilgen[1]; Roger Kisner[1]; Don Nicholson[1]; Orlando Rios[1]; Chad Parish[1]; Michael Brady[1]; [1]Oak Ridge National Laboratory; [2]Retired from Oak Ridge National Laboratory

10:40 AM Invited
Nitride Precipitation in Compositionally Heterogeneous Alloys: A Non Conventional Phase Transformation Path: *Goune Mohamed*[1]; Van Landeghem Hugo[2]; Jessner Peter[3]; Danoix Frederic[4]; Danoix Raphael[4]; Béatrice Hannoyer[4]; Abdelkrim Redjaimia[2]; Thierry Epicier[5]; [1]ICMCB-Bordeaux1; [2]IJL; [3]GPM; [4]GPM-Université de Rouen; [5]MATEIS-INSA de Lyon

11:10 AM Invited
Aberration Corrected Lorentz Microscopy of Magnetic Domains in Finely Twinned Ferromagnetic Shape Memory Alloys: Shan Hua[1]; Abhijeet Budruk[1]; *Marc De Graef*[1]; [1]Carnegie Mellon University

11:40 AM Invited
Deformation-Induced Transformation Reactions: *John Perepezko*[1]; Zhe Wang[1]; [1]University of Wisconsin-Madison

12:10 PM
Evolution of Microstructure at High Speed Frictional Interfaces: *Jacqueline Milhans*[1]; James Hammerberg[1]; Ramon Ravelo[2]; Timothy Germann[1]; Brian Holian[1]; [1]Los Alamos National Laboratory; [2]Physics Dept, University of Texas

Physical and Mechanical Metallurgy of Shape Memory Alloys: NiTi (Hf,Zr) Shape Memory Alloys

*Sponsored by:*TMS/ASM: Phase Transformations Committee
Program Organizers: Haluk Karaca, University of Kentucky; Ibrahim Karaman, Texas A&M University; Othmane Benafan, NASA Glenn Research Center; Ryosuke Kainuma, Tohoku University; Hans Jurgen Maier, Univ of Paderborn

Tuesday AM
March 5, 2013
Room: Lone Star Salon B
Location: Grand Hyatt

Session Chairs: Ronald Noebe, NASA Glenn; Peter Anderson, Ohio State University

8:30 AM
Effects of Precipitation on the Thermomechanical Response of Ni-Ti-Hf High Temperature Shape Memory Alloys: Xiang Chen[1]; Daniel Coughlin[1]; Michael Mills[1]; Glen Bigelow[2]; Ronald Noebe[2]; *Peter Anderson*[1]; [1]The Ohio State University; [2]NASA Glenn Research Center

9:00 AM
Characteristics of a New Precipitate Phase in Ni-rich Ni-Ti-Hf and Ni-Ti-Zr High Temperature Shape Memory Alloys: *Ruben Santamarta*[1]; Jaume Pons[1]; Alper Evirgen[2]; Raymundo Arroyave[2]; Haluck Karaca[3]; Ibrahim Karaman[2]; Ronald Noebe[4]; [1]University of the Balearic Islands; [2]Texas A&M University; [3]University of Kentucky; [4]NASA Glenn Research Center

9:20 AM
Characterizations of a Precipitate Phase in Ni Rich NiTiHf Alloys: *Fan Yang*[1]; Patrick Phillips[2]; Daniel Coughlin[1]; Limei Yang[1]; Arun Devaraj[3]; Libor Kovarik[3]; Ronald Noebe[4]; Michael Mills[1]; [1]The Ohio State University; [2]University of Illinois at Chicago; [3]EMSL, Pacific Northwest National Laboratory; [4]NASA Glenn Research Center

9:40 AM
Microstructural Characterization and Shape Memory Behaviour in Ni-29.7Ti-20Hf (at.%): *Billy Hornbuckle*[1]; Taisuke Sasaki[2]; Ron Noebe[3]; Glen Bigelow[3]; Mark Weaver[1]; Gregory Thompson[1]; [1]University of Alabama; [2]National Institute for Materials Science; [3]NASA Glenn Research Center

10:00 AM Break

10:20 AM
Effects of Composition and Heat Treatments on the Shape Memory Behavior of NiTiHf alloys: *Sayed Saghaian*[1]; Haluk Karaca[1]; Hirobumi Tobe[1]; Ronald Noebe[2]; [1]University of Kentucky; [2]NASA Glenn research Center

10:40 AM
Composition and Aging Effects for Nickel Rich NiTiHf Alloys: *Daniel Coughlin*[1]; Glen Bigelow[2]; Anita Garg[2]; Ronald Noebe[2]; Michael Mills[1]; [1]The Ohio State University; [2]NASA Glenn Research Center

11:00 AM
Effect of Heat Treatment Temperature on Shape Memory Characteristics in Ti38-Ni50-Hf12 Shape Memory Alloy: *Chang Seok Bae*[1]; Won Ki Ko[1]; Jae Il Kim[1]; [1]Dong-a University

11:20 AM
Hardness and Microstructure Stability in Ni-Rich Nitinol Alloys with and without Hf Additions: *Billy Hornbuckle*[1]; Taisuke Sasaki[2]; Ron Noebe[3]; Mark Weaver[4]; Gregory Thompson[1]; [1]University of Alabama; [2]National Institute for Materials Science; [3]NASA Glenn Research Center; [4] University of Alabama

11:40 AM
Effect of Ni Content on Aging Behavior of (88-X)Ti-XNi-12Hf(X=50.0~51.0)(at%) Alloys: *Jeung-won Jo*[1]; Nam-seok Kim[1]; Jong-taek Yeom[2]; Jae-geun Hong[2]; Jae-il Kim[3]; Tae-hyun Nam[1]; [1]Gyeongsang National University; [2]Korean Institute of Materials Science; [3]University of Dong-A

12:00 PM
Workability and Martensitic Transformation of (88-X)Ti-XNi-12Hf (X=50.0~49.0)(at%) Alloys: *Nam-Seok Kim*[1]; Jeung-Won Jo[1]; Jong-Taik Yeom[2]; Jae-Geun Hong[2]; Jae-il Kim[3]; Tae-Hyun Nam[1]; [1]Gyeongsang National University; [2]Korean Institute of Materials; [3]University of Dong-A

Recent Developments in Biological, Electronic, and Functional Thin Films and Coatings: Biological, Electronic, and Functional Thin Films and Coatings III

*Sponsored by:*TMS Electronic, Magnetic, and Photonic Materials Division, TMS: Thin Films and Interfaces Committee
Program Organizers: R. Narayan, UNC/NCSU Joint Department of Biomedical Engineering; Choong-Un Kim, University of Texas at Arlington; Jian Luo, Clemson University; Nancy Michael, University of Texas at Arlington; Nuggehalli Ravindra, New Jersey Institute of Technology; Adele Carradò, IPCMS

Tuesday AM
March 5, 2013

Room: 214D
Location: Henry B. Gonzalez Convention Center

Session Chair: N. M. Ravindra, New Jersey Institute of Technology

8:30 AM
A Novel Dip-Coating Method for Metaliziing Alumina with Aluminum Film: *Xiao-shan Ning*[1]; [1]Tsinghua University

8:50 AM
CuCoMnOx as a Functional Coating for Solar Absorbers Using Sol Gel Technique: *Nahed El Mahallawy*[1]; Ali Yehia[1]; Shoeib Madiha[2]; [1]The German University in Cairo; [2]CMRD

9:10 AM
Cu-Ni-Mo Films with Low Electrical Resistivities and High Thermal Stabilities Designed by the Cluster-Plus-Glue-Atom Model: Xiaona Li[1]; Jinn P Zhu[2]; Qing Wang[1]; *Chuang Dong*[1]; [1]Dalian University of Technology; [2]National Taiwan University of Science and Technology

9:30 AM
Orientation Dependence of Interface Layer on High-k/GaN MOS Structures: *Jung Woo*[1]; Derek Johnson[1]; Mary Coan[2]; Harlan Harris[1]; [1]Texas A&M University; [2]National Aeronautics and Space Administration

9:50 AM Break

10:10 AM
Deposition and Characterization of Tungsten Carbide Thin Films by DC Magnetron Sputtering for Wear Resistant Applications: Tolga Tavsanoglu[1]; Ceren Begum[1]; *Murat Alkan*[1]; Onuralp Yucel[1]; [1]Istanbul Technical University

10:30 AM
Effect of Temperature on the Structure and Corrosion Properties of Nano-Twin Cu Thin Film Deposited by Unbalanced Magnetron (UBM) Sputtering: *Kai Hung Yang*[1]; Fan-Yi Ouyang[1]; [1]National Tsing Hua University

Recent Developments in the Processing, Characterization, Properties, Performance and Applications of Metal Matrix Composites: Processing, Microstructure and Mechanical Properties II

Sponsored by: TMS Structural Materials Division, TMS/ASM: Composite Materials Committee
Program Organizers: Martin Pech-Canul, Centro de Investigacion y de Estudios Avanzados del Instituto Politecnico Nacional; Zariff Chaudhury, Materion Coporation; Golam Newaz, Wayne State University

Tuesday AM
March 5, 2013
Room: Bowie A
Location: Grand Hyatt

Session Chairs: Zariff Chaudhury, Materion Corporation; Martin Pech-Canul, CINVESTAV IPN SALTILLO

8:30 AM
Production and Nanostructure of Carbon Nanotubes and Diamond Based Composite Materials: *F. Khalid*[1]; [1]GIK Inst. Eng. Sci & Tech

8:50 AM
Electrical Conductivity and Thermal Shock Resistance of Mo-ZrO_2 Cermet: *Lei Tang*[1]; Yanling Guo[1]; Tao Zeng[1]; Jieyu Zhang[1]; Jifang Xu[2]; Jianchao Li[3]; Fei Ruan[1]; [1]Shanghai University; [2]Soochow University; [3]Vocational and Industry Institute of Hebei

9:10 AM
Electrode Process of Al (III) and Its Surface Alloying on Cu Substrate in AlCl3-NaCl Melts: *Hongmin Kan*[1]; Ning Zhang[1]; Xiaoyang Wang[1]; [1]Shenyang University

9:30 AM
Behavior of Al_4C_3 in Al/TiC Composites under Controlled Humid Environment: Evangelina Trujillo-Vázquez[1]; *Martin Pech-Canul*[1]; Saúl Gallardo-Heredia[1]; José Flores-García[1]; [1]Centro de Investigacion y de Estudios Avanzados del Instituto Politecnico Nacional

9:50 AM
Effect of Reinforcement Coating, Alloy Chemistry and Aging Treatment on the Moduli of Elasticity and Rupture of Al/SiCp Composites: Ricardo Martínez-López[1]; *Martin Pech-Canul*[1]; Maximo Pech-Canul[1]; Luis Gonzalez[1]; Zariff Chaudhury[2]; Golam Newaz[3]; [1]Centro de Investigacion y de Estudios Avanzados del Instituto Politecnico Nacional; [2]Materion Corporation; [3]Wayne State University

Refractory Metals 2013: Refractory Metal-based Materials III

Sponsored by: TMS Structural Materials Division, TMS: Refractory Metals Committee
Program Organizers: David Honecker, Climax Molybdenum; Omer Dogan, DOE National Energy Technology Laboratory

Tuesday AM
March 5, 2013
Room: Mission A
Location: Grand Hyatt

Session Chairs: Todd Leonhardt, Rhenium Alloys, Inc.; Gary Rozak, H.C. Starck Inc.

8:30 AM
The Manufacture of a Novel Alloy through the Use of Mechanical Alloying and Sintering of Tungsten and Manganese Metal Powders: Shaunn Pickering[1]; *Kevin Jaansalu*[2]; [1]Department of National Defence; [2]Royal Military College of Canada

8:50 AM Question and Answer Period

8:55 AM
Applications of Bond-Order Potentials for bcc Refractory Metals: *Miroslav Cak*[1]; Thomas Hammerschmidt[1]; Ralf Drautz[1]; [1]ICAMS, Ruhr-Universität Bochum

9:15 AM Question and Answer Period

9:20 AM
Predicting Deformation of Single Crystal Niobium Using Crystal Plasticity Finite Element Method: *Aboozar Mapar*[1]; Thomas Bieler[1]; Farhang Pourboghrat[1]; Christopher Compton[1]; [1]Michigan State University

9:40 AM Question and Answer Period

9:45 AM
Mechanical Properties and Constitutive Modeling of A New Tantalum Plate: *Shuh Rong Chen*[1]; G. Gray[1]; John Bingert[1]; Mike Lopez[1]; Veronica Livescu[1]; Carl Trujillo[1]; Carl Cady[1]; [1]Los Alamos National Laboratory

10:05 AM Question and Answer Period

10:10 AM Break

10:30 AM
Microstructural Observations of Dynamic Abnormal Grain Growth in Tantalum: *Nicholas Pedrazas*[1]; Thomas Buchheit[2]; Elizabeth Holm[2]; Eric Taleff[1]; [1]University of Texas at Austin; [2]Sandia National Laboratories

10:50 AM Question and Answer Period

10:55 AM
Initial Study of a Novel Tungsten – 35at% Manganese Alloy by Mechanical Alloying Technique: *Ossama Elsebaie*[1]; Kevin Jaansalu[1]; [1]Royal Military College of Canada

11:15 AM Question and Answer Period

11:20 AM
Hardness and Microstructure Changes in Tungsten Heavy Alloy Subjected to ECAE: *Zachary Levin*[1]; K. Hartwig[1]; Robert Barber[1]; David Alven[1]; [1]Texas A&M University

11:40 AM Question and Answer Period

11:45 AM Concluding Comments

REWAS 2013: Enabling Materials Resource Sustainability: Enabling Sustainability through Metal Production

Sponsored by: Chinese Society for Metals, The Mining and Materials Processing Institute of Japan (MMIJ), TMS Extraction and Processing Division, TMS: Recycling and Environmental Technologies Committee
Program Organizers: Christina Meskers, Umicore Precious Metals Refining; Anne Kvithyld, SINTEF; Markus Reuter, Outotec Oyj; Randolph Kirchain, Massachusetts Institute of Technology; Mark Schlesinger, Missouri University of Science and Technology; Gregory Krumdick, Argonne National Laboratory; Cong Wang, Saint-Gobain High Performance Materials; Gabrielle Gaustad, Rochester Institute of Technology; Diana A. Lados, Worcester Polytechnic Institute; Brajendra Mishra, Colorado School of Mines; Jeffrey S. Spangenberger, Argonne National Laboratory

Tuesday AM
March 5, 2013
Room: 006A
Location: Henry B. Gonzalez Convention Center

Funding support provided by: Xstrata; SINTEF; Outotec; Umicore, and CR3, the Center for Resource Recovery and Recycling

Session Chairs: Kari Heiskanen, Aalto University; Bart Blanpain, KU Leuven

8:30 AM Introductory Comments

8:35 AM
Highly Efficient Slag Cleaning – Latest Results from Pilot-Scale Tests: Juergen Schmidl[1]; *Roland König*[2]; Axel Weyer[2]; Rolf Degel[2]; Harald Kadereit[1]; [1]Aurubis AG; [2]SMS Siemag AG

9:00 AM
The Revival of Onahama Smelter & Refinery from the Disaster by the Great East Japan Earthquake: *Naoki Horihata*[1]; Shoji Kawashima[1]; Tetsuro Sakai[1]; [1]Onahama Smelting & Refining Co.,Ltd

9:25 AM
Leaching of Uranium and Vanadium from Korean Domestic Ore: Rajesh Kumar Jyothi[1]; *Joon Soo Kim*[1]; [1]Korea Institute of Geoscience and Mineral Resourses (KIGAM)

9:50 AM Break

10:10 AM
Assessment of Quality Improvements by Delivering Molten Aluminum Alloys Instead of Ingots: *Salem Seifeddine*[1]; Anton Bjurenstedt[1]; Tomas Liljenfors[2]; [1]School of Engineering/ Jönköping University; [2]Stena Aluminium AB

10:35 AM
Study of Adsorption Property of Ga(III) onto Strongly Basic Resin for Ga Extraction from Bayer Liquor: *Zhuo Zhao*[1]; Yongxiang Yang[1]; Hao Lu[1]; Zhongsheng Hua[1]; Xiaoling Ma[2]; [1]Anhui University of Technology; [2]Shimadzu (China) Co. Ltd

11:00 AM
Synthesis of Organosilicon Complexes from Rice Husk Derived Silica Nanoparticles: Weixing Wang[1]; Jarett Martin[2]; Rong Cai[2]; Wenxi Huang[1]; Anhua Liu[1]; Aijie Han[3]; *Luyi Sun*[2]; Haoran Chen[2]; [1]South China University of Technology; [2]Texas State University; [3]The University of Texas-Pan American

11:25 AM
Pre-drying Eucalyptus Saligna for Carbonization: *Marcelo Mourao*[1]; Lina Cardona[1]; Cyro Takano[1]; [1]University of Sao Paulo

11:50 AM
PGM Recycling from Catalysts in a Closed Hydrometallurgical Loop with an Optional Cerium Recovery: *Stefan Steinlechner*[1]; [1]CDL for Optimization & Biomass Utilization in Heavy Metal Recycling

REWAS 2013: Enabling Materials Resource Sustainability: Enabling Sustainability through Recycling & End-of-Pipe Solutions I

Sponsored by: Chinese Society for Metals, The Mining and Materials Processing Institute of Japan (MMIJ), TMS Extraction and Processing Division, TMS: Recycling and Environmental Technologies Committee
Program Organizers: Christina Meskers, Umicore Precious Metals Refining; Anne Kvithyld, SINTEF; Markus Reuter, Outotec Oyj; Randolph Kirchain, Massachusetts Institute of Technology; Mark Schlesinger, Missouri University of Science and Technology; Gregory Krumdick, Argonne National Laboratory; Cong Wang, Saint-Gobain High Performance Materials; Gabrielle Gaustad, Rochester Institute of Technology; Diana A. Lados, Worcester Polytechnic Institute; Brajendra Mishra, Colorado School of Mines; Jeffrey S. Spangenberger, Argonne National Laboratory

Tuesday AM
March 5, 2013
Room: 006A
Location: Henry B. Gonzalez Convention Center

Funding support provided by: Xstrata; SINTEF; Outotec; Umicore, and CR3, the Center for Resource Recovery and Recycling

Session Chair: Randolph Kirchain, Massachusetts Institute of Technology; Christina Meskers, Umicore Precious Metals Refining; Anne Kvithyld, SINTEF

8:30 AM Introductory Comments

8:35 AM
Thermal Processing of Industrial Ashes for Ferrovanadium Production: Yanping Xiao[1]; *Yongxiang Yang*[2]; Alan Lai[2]; Rob Boom[2]; [1]Anhui University of Technology; [2]TU Delft

9:00 AM
Characterization of Copper Slag: *Xuan Wang*[1]; [1]K.U.Leuven

9:25 AM
Recovery of Zinc and Iron from Steel Mill Dusts by the Use of a TBRC: A Possible Mini-Mill Solution?: *Juergen Antrekowitsch*[1]; [1]University of Leoben

9:50 AM Break

10:10 AM
ISASMELT™ for Recycling of Valuable Elements Contributing to a More Sustainable Society: *Gerardo Alvear Flores*[1]; Stanko Nikolic[1]; [1]Xstrata Technology

10:35 AM
Metal Recovery from Industrial Solid Waste – Contribution to Resource Sustainability: *Yongxiang Yang*[1]; Yanping Xiao[2]; [1]TU Delft; [2]Anhui University of Technology

11:00 AM
Secondary Processors and Landfills – Partnerships that Work: David Roth[1]; *Ben Brewer*[1]; [1]By: Ben Brewer / Recycling Ventures LLC

11:20 AM
Material and Energy Beneficiation of the Automobile Shredder Residues: *Noureddine Menad*[1]; Ndue Kanari[2]; Sylvain Guignot[1]; Frederic Diot[2]; Lev Filippov[2]; Fabien Thomas[2]; Jacques Yvon[2]; [1]BRGM; [2]University

11:45 AM
Compared Study of a Water Drainage from a Closed Gold Tailing Pond and from a New One: Treatment of the Residual Cyanide: *Begoña Fernández*[1]; Julia Ayala[1]; Maria Ordiales[1]; Ana Castañon[1]; [1]Universidad de Oviedo

Synergies of Computational and Experimental Materials Science II: Processing and Phase Transformations

*Sponsored by:*TMS Materials Processing and Manufacturing Division, TMS/ASM: Computational Materials Science and Engineering Committee, TMS: Integrated Computational Materials Engineering Committee
Program Organizers: Katsuyo Thornton, University of Michigan; Thomas Buchheit, Sandia National Laboratories; Anthony Rollett, Carnegie Mellon University; David Rowenhorst, Naval Research Laboratory

Tuesday AM
March 5, 2013
Room: 217A
Location: Henry B. Gonzalez Convention Center

Session Chairs: Alessandro Mottura, University of Birmingham; Alexis Lewis, Naval Research Laboratory

8:30 AM Introductory Comments

8:35 AM Invited
3D Experiments and Simulations of Growth during Recrystallization: *Dorte Jensen*[1]; [1]DTU

9:05 AM Invited
Comparing Computed and Measured Grain Boundary Properties: *Elizabeth Holm*[1]; Gregory Rohrer[1]; Anthony Rollett[1]; Stephen Foiles[2]; Michael Chandross[2]; [1]Carnegie Mellon University; [2]Sandia National Laboratories

9:35 AM Invited
Experimental Measurement of 3D Grain Boundary Networks in Polycrystalline Materials: *Alexis Lewis*[1]; David Rowenhorst[1]; [1]Naval Research Laboratory

10:05 AM Break

10:20 AM Invited
Synergies between First-Principles Calculations and Experiments in the Development of New Co-Based Superalloys: *Alessandro Mottura*[1]; Tresa Pollock[2]; [1]University of Birmingham; [2]University of California, Santa Barbara

10:50 AM
Modelling and Characterisation of the Grain Growth Behaviour in an Advanced Polycrystalline Nickel-Base Superalloy: David Collins[1]; *Bryce Conduit*[2]; Gareth Conduit[2]; Mark Hardy[3]; Rob Mitchell[3]; Howard Stone[2]; [1]University of Oxford; [2]University of Cambridge; [3]Rolls-Royce plc.

11:10 AM
Investigation of Nucleation Mechanisms for Intergranular Complexion Transitions and Abnormal Grain Growth by Monte Carlo Modeling: *William Frazier*[1]; Anthony Rollett[1]; Gregory Rohrer[1]; [1]Carnegie Mellon University

11:30 AM
Modeling and Experimental Characterization of Texture Evolution in Zirconium during Dynamic Extrusion: *Juan Escobedo*[1]; Carl Trujillo[1]; Ellen Cerreta[1]; Ricardo Lebensohn[1]; Daniel Martinez[1]; George Gray[1]; [1]Los Alamos National Laboratory

11:50 AM
Relating Experimental Liquid Metal Embrittlement Testing and Calculated Surface Energies: *Auger Thierry*[1]; Duane Johnson[2]; LinLin Wang[3]; Samuel Hemery[1]; [1]MSSMAT/Ecole Centrale Paris; [2]Iowa State University; [3]Ames Laboratory

12:10 PM
Pressure and Temperature Dependent Anisotropy of Tetragonal Cerium: *Adam Cadien*[1]; Howard Sheng[1]; [1]School of Physics, Astronomy and Computational Sciences, George Mason University

Three-Dimensional Materials Science VII: Characterization of Three-Dimensional Structures: Experimental & Simulated

*Sponsored by:*TMS Structural Materials Division, TMS: Advanced Characterization, Testing, and Simulation Committee
Program Organizers: Jonathan Madison, Sandia National Laboratories; Nikhilesh Chawla, Arizona State University; Michael Groeber, Air Force Research Laboratory

Tuesday AM
March 5, 2013
Room: 212A
Location: Henry B. Gonzalez Convention Center

Session Chairs: Megna Shah, AFRL, Wright Patterson AFB; McLean Echlin, University of California, Santa Barbara

8:30 AM Invited
The 3D Analysis of Orientation Gradients within Deformed Materials: *David Rowenhorst*[1]; Alexis Lewis[1]; [1]Naval Research Laboratory

9:00 AM
DualBeam™ FIB/EBSD Characterization of Microstructure Morphology in Ti Alloys: *Daniel Huber*[1]; John Sosa[1]; Vikas Dixit[1]; Brian Welk[1]; Robert Williams[1]; Hamish Fraser[1]; [1]The Ohio State University

9:20 AM Invited
Simultaneous 3D EBSD and EDS Via Serial Sectioning in a FIB/SEM: *Stuart Wright*[1]; Matthew Nowell[1]; [1]EDAX

9:50 AM Break

10:05 AM
Interfacial Surface Measures as a Tool for Investigating Porosity in Laser-Welds of 304-L Stainless Steel: *Jonathan Madison*[1]; Larry Aagesen[2]; [1]Sandia National Laboratories; [2]University of Michigan

10:25 AM
Application of Moment Invariants to Automated Microstructure Analysis: *Lily Nguyen*[1]; Marc De Graef[1]; [1]Carnegie Mellon University

10:45 AM
Quantifying the Effect of Spatial Resolution on the Accuracy of Morphological Microstructure Distributions: *Gregory Loughnane*[1]; Michael Groeber[2]; Michael Uchic[2]; Ramana Grandhi[1]; [1]Wright State University; [2]Air Force Research Laboratory

11:05 AM Break

11:20 AM Invited
Test of the Estimation of the Growth Path Envelope from Size Distribution Evolution Measurements: *Robert DeHoff*[1]; Burton Patterson[1]; David Rule[1]; Veena Tikare[1]; Amy Adams[1]; [1]University of Florida

11:50 AM
Serial Section Investigation of Grain Volume and Topological Distributions: *Amy Adams*[1]; Tyler Kaub[1]; David Rule[1]; Burton Patterson[1]; Robert DeHoff[1]; Veena Tikare[2]; [1]University of Florida; [2]Sandia National Laboratories

12:10 PM
Topological Event Rates in Grain Growth: *Burton Patterson*[1]; Robert DeHoff[1]; David Rule[1]; Veena Tikare[2]; [1]University of Florida; [2]Sandia National Laboratories, New Mexico

2013 Functional Nanomaterials: Synthesis, Properties and Applications: Low-Dimensional Nanomaterials I

Sponsored by: TMS Electronic, Magnetic, and Photonic Materials Division, TMS: Nanomaterials Committee
Program Organizers: Seong Jin Koh, University of Texas at Arlington; Nitin Chopra, University of Alabama; Jiyoung Kim, University of Texas at Dallas; Yuanbing Mao, University of Texas-Pan American; Ashwin Ramasubramaniam, University of Massachusetts; Gregory Thompson, University of Alabama

Tuesday PM
March 5, 2013
Room: 201
Location: Henry B. Gonzalez Convention Center

Funding support provided by: Qualcomm, Inc.

Session Chairs: Seung Kang, Qualcomm, Inc; Yuanbing Mao, University of Texas-Pan American

2:00 PM Invited
Self-Organized Synthesis of Bimetallic Nanostructures: Experiments, Modeling and Emergent Behavior: Ritesh Sachan[1]; Vanessa Ramos[1]; Sagar Yadavali[1]; Mikhail Khenner[2]; Anup Gangopadhyay[3]; Gerd Duscher[1]; *Ramki Kalyanaraman*[1]; Hernando Garcia[4]; [1]University of Tennessee; [2]Western Kentucky University; [3]Washington University in St. Louis; [4]Southern Illinois University in Edwardsville

2:35 PM
Radiation Effects in Nanoporous Gold: *Magdalena Serrano de Caro*[1]; Engang Fu[1]; Luis Zepeda-Ruiz[2]; Yongqiang Wang[1]; Kevin Baldwin[1]; Eduardo Bringa[3]; Michael Nastasi[4]; Alfredo Caro[1]; [1]Los Alamos National Laboratory; [2]Lawrence Livermore National Laboratory; [3]CONICET and Instituo de Ciencias Basicas ; [4]Nebraska Center for Energy Sciences Research

2:55 PM
Enhancement of Catalytic Performance in the Pt Nanoparticle by Doping Zirconia Support with Y or Ce: A DFT Calculation: Myung Shin Ryu[1]; *Hyuck Mo Lee*[1]; [1]KAIST

3:15 PM Break

3:35 PM Invited
Magnetic Polypropylene Nanocomposites Reinforced with Maleic Anhydride Grafted Polypropylene as Surfactant: Qingliang He[1]; Suying Wei[1]; *John Zhanhu Guo*[1]; [1]Lamar University

4:10 PM
Solution Growth of ZnO Thin Films from Different Seeded Substrates: *Ruihong Zhang*[1]; Elliott Slamovich[1]; Carol Handwerker[1]; [1]Purdue University

4:30 PM
The Influence of Yttrium Doping on the Structural and Optical Properties of Zinc Oxide Nanowires: *Hyung Woo Choi*[1]; Kyu-Sung Lee[2]; T. Alford[1]; [1]Arizona State University; [2]Electronics and Telecommunications Research Institute (ETRI)

4:50 PM
Interactions of Gold Nanoparticles and Amphiphilic Block Copolymer Mask: From the Dot-pattern Creation with Supercritical CO_2 and Colloidal Solution to the Essence of Nanocrystal Growth with Catalyst System: *Severine Boyer*[1]; Chihiro Iwamoto[2]; Ryutaro Nakagawa[2]; Hirohisa Yoshida[2]; [1]CNRS ; [2]Tokyo Metropolitan University

5:10 PM
Synthesis and Luminescence Properties of Core@Shell RE:A2B2O7@A'B'O3 Nanoparticles: Suresh Alaparthi[1]; Rolando Soto[1]; Yuanbing Mao[1]; [1]University of Texas - Pan American

4th International Symposium on High-Temperature Metallurgical Processing: Alloy and Materials Preparation II

Sponsored by: TMS Extraction and Processing Division, TMS: Energy Committee, TMS: Materials Characterization Committee, TMS: Pyrometallurgy Committee
Program Organizers: Tao Jiang, Central South University; Jiann-Yang Hwang, Michigan Technological University; Phillip Mackey, Consultant; Onuralp Yücel, ITU; Guifeng Zhou, Wuhan Iron and Steel

Tuesday PM
March 5, 2013
Room: 008B
Location: Henry B. Gonzalez Convention Center

Session Chairs: Ken Marsden, Idaho National Laboratory; Ting'an Zhang , Northeastern University

2:00 PM
Production of Fe-Based Alloys by Metallothermic Reduction of Mill Scales from Continuous Casting Processes: *Mehmet Bugdayci*[1]; Murat Alkan[1]; Onuralp Yücel[1]; [1]Istanbul Technical University

2:20 PM
Study of Heat Flux in CSP Continuous Casting Mold: Wen Yang[1]; *Lifeng Zhang*[1]; Xinghua Wang[1]; [1]University of Science and Technology Beijing

2:35 PM
The Effect of Thermomechanical Ageing of Aluminium–Copper Alloy (MATLAB Approach): Adekunle Adegbola[1]; *Ajibade Omotoyinbo*[2]; Oladayo Olaniran[2]; Akeem Ghazali[1]; Olugbenga Fashina[1]; [1]The Polytechnic, Ibadan; [2]Federal University of Technology, Akure, Nigeria

2:55 PM
Research on Inclusions in CuCr Alloy Prepared by Thermit Reduction: *Dou Zhihe*[1]; Zhang Ting'an[1]; Shi Guanyong[1]; Du Yanjun[1]; Niu Liping[1]; Lv Guozhi[1]; Liu Yan[1]; He Jicheng[1]; [1]Northeastern University

3:15 PM
Copper-Based Multi-Component Alloys by Vacuum Distillation to Separate Copper Enriched Lead, Silver and Other Valuable Metals Research: *Heng Xiong*[1]; Bin Yang[1]; Dachun Liu[1]; Baoqiang Xu[1]; Xiumin Chen[1]; Yong Deng[1]; [1]Kunming University of Science and Technology

3:35 PM Break

3:45 PM
An Overview of Research on Au & Ag Recovery in Copper Smelter: *Yifeng Shi*[1]; Zhonglin Ye[2]; [1]Yunnan Copper Co., Ltd.; [2]Yunnan Copper Smelting & Processing Complex

4:05 PM
The Analysis of Orthogonal Experiment Method of Carbon-Coated $LiNi_1/3Mn_1/3Co1/3O_2$ Via Microwave-pyrolysis Method: Yamei Han[1]; *Zhengfu Zhang*[1]; Libo Zhang[1]; Jinhui Peng[1]; Mengbi Fu[1]; [1]Kunming University of Science and Technology

4:25 PM
Comparative Study on the Metal Aluminum Produced from Alumina by Carbothermic Reduction and Carbothermic-Chlorination: *Qingchun Yu*[1]; Bin Yang[1]; Yong Deng[1]; Fei Wang[1]; Heng Xiong[1]; Yongnian Dai[1]; [1]Kunming University of Science and Technology

4:45 PM
Continuous Synthesis and Performance of Cathode Material LiNi1/3Co1/3Mn1/3O2 for Lithium Ion Batteries: *Fu Mengbi*[1]; [1]Key Laboratory of Unconventional Metallurgy for Education Ministry

5:05 PM
Influence of Mechanical Vibration on Grain Refinement of Copper during Solidification: *Yanbing Zong*[1]; [1]University of Science and Technology Beijing

5:20 PM
Tensile Mechanical Properties and Brittle Effect of Austempered Cr-Mo Alloy Steel: *Cheng-Yi Chen*[1]; Truan-Sheng Lui[1]; Fei-Yi Hung[1]; Li-Hui Chen[1]; [1]National Cheng Kung University

Acta Materialia Materials and Society Award Special Symposium: "Global R&D Trends – Implications for Material Sciences": Global R&D Trends -- Implications for Material Sciences

*Sponsored by:*TMS: Materials and Society Committee, TMS: Public and Governmental Affairs Committee, TMS: Materials Innovation Committee
Program Organizer: Kevin Hemker, Johns Hopkins University

Tuesday PM
March 5, 2013
Room: Lila Cockrell Theatre
Location: Henry B. Gonzalez Convention Center

Funding support provided by: Acta Materialia and Elsevier

Session Chair: Kevin Hemker, Johns Hopkins University

2:00 PM Introductory Comments

2:05 PM Invited
The Evolving R&D Model: International Trends and U.S. Competitiveness: *Jeffrey Wadsworth*[1]; [1]Battelle Memorial Institute

2:45 PM Invited
Linking the Challenges of Materials Technology with Opportunities in Materials Research: *William Nix*[1]; [1]Stanford University

3:15 PM Break

3:30 PM Invited
Research and Development: The Key to Competitiveness in the 21st Century: *Craig Barrett*[1]; [1]Intel Corporation

4:00 PM Invited
Prospects and Challenges for a Global Expansion of Nuclear Energy: *Siegfried Hecker*[1]; [1]Center for International Security and Cooperation

4:30 PM Invited
Innovation in the New Era of Global Science and Engineering: *Subra Suresh*[1]; [1] U.S. National Science Foundartion

Advanced Materials and Reservoir Engineering for Extreme Oil & Gas Environments: Novel Alloys and Coatings

*Sponsored by:*TMS Materials Processing and Manufacturing Division, TMS Structural Materials Division, TMS Electronic, Magnetic, and Photonic Materials Division, TMS: Nanomaterials Committee
Program Organizers: Indranil Roy, Schlumberger; Brajendra Mishra, Colorado School of Mines; Manuel Marya, Schlumberger Technology Corporation; Kuo-Chiang Chen, Schlumberger; Partha Ganguly, Schlumberger; Richard Lewis, Schlumberger; Suveen Mathaudhu, U.S. Army Research Office; Nitin Chopra, The University of Alabama; Xinghang Zhang, Texas A&M University; Greg Kusinski, Chevron; John Meng, BP America Inc.; Jefferson Rodrigues, Petrobras; Justin Cheney, Scoperta

Tuesday PM
March 5, 2013
Room: Lone Star Salon A
Location: Grand Hyatt

Session Chairs: Brajendra Mishra, Colorado School of Mines; Heidi Maupin, U.S. Army Research Office

2:00 PM Introductory Comments Brajendra Mishra, Colorado School of Mines

2:10 PM Keynote
Nanostructuring High-Strength Molybednum Alloys for Unprecedented Tensile Ductility: *Evan Ma*[1]; [1]Johns Hopkins University

2:40 PM
Nanostructured Nitride-based Thin Films with Enhanced Multifunctionalities: *Haiyan Wang*[1]; Fauzia Khatkhatay[1]; Ichchan Kim[1]; Liang Jiao[1]; Xinghang Zhang[1]; [1]Texas A&M University

3:00 PM
Thin Films for Gas Sensing at Extreme Temperatures and in Harsh Environments for Advanced Fossil Energy Applications: *Paul Ohodnicki*[1]; Thomas Brown[1]; Congjun Wang[1]; John Baltrus[1]; Michael Buric[1]; [1]National Energy Technology Laboratory

3:20 PM
Novel Precipitation Hardened Aluminum Alloys for Oilfield Applications: From Research to Commercialization: *Manuel Marya*[1]; Timothy Dunne[1]; Tatiana Reyes Hernandez[1]; [1]Schlumberger

3:40 PM Break

3:55 PM Keynote
Oxides as Energy Materials in Extreme Environments: *Shriram Ramanathan*[1]; [1]Harvard University

4:25 PM
Catalytic Rare Earth Nanostructure Coatings for Extreme Environments: *Sudipta Seal*[1]; Virendra Singh; [1]University of Central Florida

4:45 PM
Evolution of Microstructure of NiCrBSi-WC Overlays for Enhancement of Wear Resistant Properties: *Tonya Wolfe*[1]; Gary Fisher[1]; Hani Henein[2]; [1]Alberta Innovates - Technology Futures; [2]University of Alberta

5:05 PM
High Strain Rate Deformation of Al-Si-Mg Matrix Composites: *Nikhil Gupta*[1]; Dung Luong[1]; Dinesh Pinisetty[1]; Atef Daoud[2]; [1]Polytechnic Institute of New York University; [2]Central Metallurgical R&D Institute

5:25 PM Concluding Comments

Advanced Materials for Power Electronics, Power Conditioning, and Power Conversion: Advanced Materials for High Power, High Temperature, and High Frequency Power Electronics

Sponsored by: TMS Electronic, Magnetic, and Photonic Materials Division, TMS: Energy Conversion and Storage Committee, TMS: Magnetic Materials Committee
Program Organizers: Paul Ohodnicki, National Energy Technology Laboratory; Clive Randall, Penn State University; Michael Lanagan, Penn State University; Michael McHenry, Carnegie Mellon University; Rachel Myers-Ward, Naval Research Laboratory

Tuesday PM
March 5, 2013
Room: 007A
Location: Henry B. Gonzalez Convention Center

Session Chair: Paul Ohodnicki, National Energy Technology Laboratory

2:00 PM Introductory Comments

2:05 PM Keynote
Power Magnetic Materials: Ayman El-Refaie; Satish Prabhakaran; Vijay Srivastava; *Francis Johnson*[1]; [1]GE Global Research

2:50 PM Invited
Capacitors for Wide Operating Temperatures: *Erik Brandon*[1]; Marshall Smart[1]; Linda Del Castillo[1]; Harish Manohara[1]; Mohammad Mojarradi[1]; Elizabeth Kolawa[1]; Keith Chin[1]; [1]Caltech/JPL

3:20 PM Break

3:40 PM Invited
Components for Advanced Power Conditioning Techniques: *William Reass*[1]; [1]Los Alamos National laboratory

4:10 PM Invited
Optimization of Amorphous and Nanocrystalline Soft Magnetic Materials for High Frequency Inductors: *Christian Polak*[1]; Giselher Herzer[1]; [1]Vacuumschmelze GmbH & Co. KG

4:40 PM Invited
Nanocomposite Magnets for Power Electronic Applications: IEEE Distinguished Lecture: *Michael McHenry*[1]; Samuel Kernion[1]; Alex Leary[1]; Vincent DeGeorge[1]; Matthew Lucas[1]; Paul Ohodinicki[1]; [1]Carnegie Mellon University

5:10 PM
Texture and Magnetic Property of Rolled Fe-6.5%Si Thin Sheets: Yongchuang Yao[1]; *Yuhui Sha*[1]; Jinlong Liu[1]; Fang Zhang[1]; Liang Zuo[1]; [1]Northeastern University

Advances in Surface Engineering: Alloyed and Composite Coatings II: Laser Processing and Hard Coatings

Sponsored by: TMS Materials Processing and Manufacturing Division, TMS: Surface Engineering Committee
Program Organizers: Srinivasa Bakshi, Indian Institute of Technology Madras; Graham McCartney, University of Nottingham; Arvind Agarwal, Florida International University; Sandip Harimkar, Oklahoma State University

Tuesday PM
March 5, 2013
Room: Bowie B
Location: Grand Hyatt

Funding support provided by: Bulk Nanostructured Materials Programs, Office of Naval Research

Session Chair: To Be Announced

2:00 PM Invited
Laser Melt Injection of Ceramic Particles in Metals: Processing, Microstructure and Properties: *Jeff De Hosson*[1]; Vasek Ocelik[1]; [1]University of Groningen

2:25 PM
Laser Surface Modifications of Iron-Based Bulk Amorphous Alloys: *Ashish Singh*[1]; Sameer Paital[2]; Narendra Dahotre[2]; Sandip Harimkar[1]; [1]Oklahoma State University; [2]University of North Texas

2:40 PM
Laser Welding of Low Carbon Steel Using Fe-based Metallic Glass Filler: *Seyyed Habib Alavi*[1]; Hitesh Vora[2]; Narendra Dahotre[2]; Sandip Harimkar[1]; [1]Oklahoma State University; [2]University of North Texas

2:55 PM
Laser Alloying of Ta on Al 1100 for Improved Corrosion Protection: *Ravi Rajamure*[1]; Hitesh Vora[1]; Santhanakrishnan S[1]; Srinivasan Srivilliputhur[1]; Narendra Dahotre[1]; [1]University of North Texas

3:10 PM
Characteristics of H13 Tool Steel Coatings by Pulsed Nd:YAG Laser Cladding: *Shaodong Wang*[1]; Jianyin Chen[1]; Lijue Xue[1]; [1]National Reseach Council Canada

3:25 PM
Laser Surface Powder Alloying of Titanium with Nb and Cu Powders: *João Fogagnolo*[1]; Adilson Rodrigues[1]; Milton Lima[2]; Rubens Caram[1]; [1]University of Campinas; [2]Instituto de Estudos Avançados

3:40 PM Break

3:55 PM
Experimental Evaluation of Subsurface Damage Due to Rolling Contact Fatigue in Case Hardened Bearing Steel via Micro-Indentation Mapping: Abir Bhattacharyya[1]; Nagaraj Arakere[1]; *Ghatu Subhash*[1]; [1]University of Florida

4:10 PM
Numerical Evaluation of Surface and Subsurface Damage Due to Rolling Contact Fatigue in Case Hardened M50-NiL Bearing Steel: *Nagaraj Arakere*[1]; anup Pandkar[1]; Ghatu Subhash[1]; [1]University of Florida

4:25 PM
Wear Analysis of D.C. Pulsed Plasma Nitriding of AISI 4340 Low Alloy Steel for Crankshaft Application: *Arul Varman*[1]; M Balasubramanian[1]; [1]Indian Institute of Technology-Madras

4:40 PM
Atom Probe Tomography Characterization of CrN Precipitation in Low Temperature Plasma Nitrided 316L Austenitic Stainless Steel: *Frederic Danoix*[1]; Andrius Martinavicius[1]; Raphaële Danoix[1]; Michel Drouet[2]; Gintas Abrasonis[3]; Béatrice Hannoyer[1]; [1]CNRS - Université de Rouen; [2]Institut PPRIME, UPR 3346, CNRS, Université de Poitiers; [3]Helmholtz-Zentrum Dresden Rossendorf

4:55 PM
Characteristics and Wear Performance of Nitrided Ti_6Al_4Va: *Farid Siyahjani*[1]; [1]Istanbul Technical University

Alloys and Compounds for Thermoelectric and Solar Cell Applications: Solar Cells

Sponsored by: TMS Electronic, Magnetic, and Photonic Materials Division, TMS: Alloy Phases Committee, TMS: Energy Conversion and Storage Committee
Program Organizers: Sinn-wen Chen, National Tsing Hua University; Yoshisato Kimura, Tokyo Institute of Technology; Chih-Huang Lai, National Tsing-Hua University; CW Nan, Tsinghua University; G. Jeffrey Snyder, California Institute of Technology; Hubert Scherrer, Ecole des Mines

Tuesday PM
March 5, 2013
Room: 007C
Location: Henry B. Gonzalez Convention Center

Session Chairs: Albert Wu, National Central University; Sinn-Wen Chen, National Tsing Hua University

2:00 PM
Effects of Selenizaiton Pressure on CIGS Thin Films by Two-step Process: *Wei-Hao Ho*[1]; Chia-Hao Hsu[1]; Shih-Yuan Wei[1]; Chuan Chang[1]; Chih-Huang Lai[1]; [1]Department of Materials Science and Engineering, National Tsing Hua University

2:20 PM
Simple and Economical Paste Coating of CIGS Based Solar Cell's Absorber Layer Deposition: *Muhammad Aftab Akram*[1]; Mohammad Islam[2]; Sofia Javed[1]; Mohammad Mujahid[1]; [1]National Uiversity of Sciences and Technology Pakistan; [2]Center of Excellence for Research in Engineering Materials (CEREM), King Saud University

2:40 PM
Fabrication and Characterization of CGS/n-Si Heterojunction for Photovoltaic Application: *Uwadiae Obahiagbon*[1]; Hudu Mohammed[1]; Burcu Ozden[2]; Tamara Isaac-Smith[2]; Okechukwu Akpa[1]; Micheal Awaah[1]; Minseo Park[2]; Kalyan Das[1]; [1]Tuskegee University; [2]Auburn University

3:00 PM
Segregation of Ge Nano-crystals in Amorphous SiGe Matrix: *Yao Tsung Ouyang*[1]; Albert T. Wu[1]; [1]National Central Universuty, Department of Chemical and Materials Engineering

3:20 PM Break

3:35 PM
Surface Area Enhancement of Titania Nanopowders Using Instant Microwave Treatment for DSSC Applications: *Sofia Javed*[1]; Muhammad Aftab Akram[1]; Mohammad Mujahid[1]; [1]National University of Sciences and Technology Pakistan

3:55 PM
Experimental and Computational Analysis of New Photoelectric Materials GaN_XAs_{1-X} Properties: *Shi Zhou*[1]; Huimin Lu[1]; Lian Zhou[1]; [1]Beihang University

4:15 PM Invited
Materials Genome Approach to Computational Design of Nanostructured Thermoelectrics: J. Doak[1]; S. Hao[1]; *Chris Wolverton*[1]; [1]Northwestern University

4:40 PM Concluding Comments

Alumina and Bauxite: Red Mud

Sponsored by: TMS Light Metals Division, TMS: Aluminum Committee
Program Organizer: Pat Clement, Alcoa

Tuesday PM
March 5, 2013
Room: 212B
Location: Henry B. Gonzalez Convention Center

Session Chair: Scott Moffatt, Cytec Industries

2:00 PM Introductory Comments

2:10 PM
Automatic Control of Drum Filters Operation: *Aline Sampaio*[1]; [1]Alunorte - Alumina do Norte do Brasil S.A.

2:30 PM
A New Technology for Dry Disposal of Alunorte's Bauxite Residue: *Marcelo Castro*[1]; Roberto Trindade[1]; Ronaldo Pantoja[1]; Eduardo Queiroz[1]; [1]Hydro Alunorte

2:50 PM
Pilot Test of Bauxite Residue Carbonation With Flue Gas: *Luis Venancio*[1]; José Antonio Souza[2]; Emanuel Macedo[2]; Fernando Botelho[2]; Gláucia César[2]; [1]Federal University of Para ; [2]Federal University of Para

3:10 PM Break

3:25 PM
Management of Industrial Waste: The Case of Effective Utilization of Red Mud and Fly Ash at Vedanta Aluminium Limited - Lanjigarh: *Mukesh Kumar*[1]; Bimlananda Senapati[1]; C. Sateesh Kumar[1]; [1]Vedanta Aluminium Limited

3:45 PM
Iron Recovery from Red Mud by Reduction Roasting-Magnetic Separation: *Mingjun Rao*[1]; Jinqiang Zhuang[1]; Guanghui Li[1]; Jinghua Zeng[1]; Tao Jiang[1]; [1]School of Minerals Processing and Bioengineering, Central South University

4:05 PM
Removal of Methylene Blue from Aqueous Solutions Using a Novel Granular Red Mud Mixed with Cement: Lu Shuaidan[1]; L. T. Q. Xuan[1]; *Ju Shaohua*[1]; Peng Jinhui[1]; Zhang Libo[1]; [1]Key Laboratory of Unconventional Metallurgy, Kunming University of Science and Technology

4:25 PM Concluding Comments

Aluminum Alloys: Fabrication, Characterization and Applications: Casting and Solidification

Sponsored by: TMS Light Metals Division, TMS: Aluminum Processing Committee
Program Organizers: Zhengdong Long, Kaiser Aluminum; Subodh Das, Phinix LLC; Tongguang Zhai, University of Kentucky; William Golumbfskie, Naval Surface Warfare Center

Tuesday PM
March 5, 2013
Room: 213A
Location: Henry B. Gonzalez Convention Center

Session Chair: Nagaumi Hiromi, Suzhou Research Institute for Nonferrous Metals

2:00 PM
Atom Probe Analysis of Sr Distribution in AlSi Foundry Alloys: *Jenifer Barrirero*[1]; Michael Engstler[1]; Frank Mücklich[1]; [1]Saarland University

2:20 PM
The Role of Sr on Microstructure Formation and Mechanical Properties of Al-Si-Cu-Mg Casting Alloy: *Mohammadreza Zamani*[1]; Salem Seifeddine[1]; [1]Jonkoping University

2:40 PM
Modification of the Eutectic Mg_2Si-Phase of AlMgSi-Cast Alloys: Thomas Pabel[1]; Tose Petkov[1]; Christian Kneissl[1]; *Peter Schumacher*[2]; [1]Austrian Foundry Research Institute; [2]University of Leoben

3:00 PM
The Influence of Casting Speed in the as Cast Strip Mechanical Properties of 8079 and 8006 Alloys: *Dionisios Spathis*[1]; John Tsiros[1]; [1]Hellenic Aluminium Industry (ELVAL SA)

3:20 PM
Effect of Cooling Rate on Iron-Rich Intermetallic Phases in 206 Cast Alloys: Kun Liu[1]; Xinjin Cao[1]; *X. Grant Chen*[1]; [1]University of Quebec at Chicoutimi

3:40 PM Break

4:00 PM
Continuous Casting of Aluminum Clad Ingot by Electromagnetic Stirring: *Jong Ho Kim*[1]; [1]Research Institute of Industrial Science and Technology

4:20 PM
Effect of the Thermal Modulus and Mould Type on the Grain Size of $AlSi_7Mg$ Alloy: Ibon Lizarralde[1]; Andrea Niklas[1]; Ana Fernández-Calvo[1]; *Jacques Lacaze*[2]; [1]IK4-AZTERLAN; [2]Université de Toulouse

4:40 PM
Effect of Iron in Al-Mg-Si-Mn Ductile Diecast Alloy: *Shouxun Ji*[1]; [1]Brunel University

5:00 PM
Oxidation Behavior of Al_2Ca Added Al-5Mg Alloy in the Liquid State: *Young-Ok Yoon*[1]; Hyun Kyu Lim[1]; Shae K. Kim[1]; [1]Korea Institute of Industrial Technology

5:20 PM
Steel-Cast-Alloy-Composite-Castings for High-Performance Die Cooling Applications: *Heiner Michels*[1]; Andreas Bührig-Polaczek[1]; Uwe Vroomen[1]; David Becker[2]; [1]RWTH Aachen University, Foundry Institute; [2]Fraunhofer-Institut für Lasertechnik ILT

5:40 PM
Alloy $AlSi_30$ Cast in the Process of Rapid Solidification and Consolidated in the Process of Plastic Forming: *Wojciech Szymanski*[1]; Marcin Szymanek[2]; Janusz Zelechowski[2]; Mariusz Bigaj[2]; Maciej Gawlik[2]; Bartlomiej Plonka[2]; [1]Institute of Non-Ferrous Metals ; [2]Institute of Non-Ferrous Metals

Aluminum Reduction Technology: Cell Operations and Process Control

Sponsored by: TMS Light Metals Division, TMS: Aluminum Committee
Program Organizer: Mark Cooksey, CSIRO

Tuesday PM
March 5, 2013
Room: Grand Ballroom C2
Location: Henry B. Gonzalez Convention Center

Session Chair: Pascal Lavoie, Light Metals Research Centre

2:00 PM Introductory Comments

2:05 PM
Improvement of Alumina Dissolution Rate through Alumina Feeder Pipe Modification: *Jayson Tessier*[1]; Gary Tarcy[1]; Eliezer Batista[1]; Xiangwen Wang[1]; Patrice Doiron[1]; [1]Alcoa

2:30 PM
Reduction Cell Restart Method Influence on Cell Life Evolution: *Mikhail Lukin*[1]; Richard Jeltsch[2]; [1]Kubikenborg Aluminium AB; [2]Jeltsch Consulting

2:55 PM
Start of an Aluminum Reduction Cell without Liquid Bath: Kayron Lalonde[1]; *Brian Audie*[1]; Willy Kristensen[1]; Timothy Snyder[1]; [1]Century Aluminum

3:20 PM
A MIMO Modeling Strategy for Bath Chemistry: *Fabio Soares*[1]; Roberto Limao[1]; [1]UFPA

3:45 PM Break

3:55 PM
Cumulative Distributions of Metallic Impurities: *Stephen Lindsay*[1]; [1]Alcoa, Inc.

4:20 PM
Sodium Content in Aluminum and Current Efficiency - Correlation Through Multivariate Analysis: *Lukas Dion*[1]; László Kiss[1]; Gilles Dufour[2]; François Laflamme[2]; Patrice Chartrand[3]; [1]Université du Québec à Chicoutimi; [2]Aluminerie Alouette Inc.; [3]Polytechnique de Montréal

4:45 PM
Gas-Solid Flow Applications for Powder Handling in Aluminum Smelters Processes: *Paulo Douglas Vasconcelos*[1]; Andre Mesquita[2]; [1]Albras Alumínio Brasileiro S.A; [2]Federal University of Para

5:10 PM
Operational Experience of Advanced Alumina Handling Technology in a Russian Smelter: *Jan Paepcke*[1]; Arne Hilck[1]; Sergey Marshalko[2]; [1]Claudius Peters Projects GmbH; [2]Rusal

Aluminum Reduction Technology: Environment I

Sponsored by: TMS Light Metals Division, TMS: Aluminum Committee
Program Organizer: Mark Cooksey, CSIRO

Tuesday PM
March 5, 2013

Room: Grand Ballroom C1
Location: Henry B. Gonzalez Convention Center

Session Chair: Stephan Broek, Hatch Ltd

2:00 PM Introductory Comments

2:05 PM
Reduction in HF Emission Through Improvement in Operational Practices: Gregory Meintjes[1]; Ali Al Zarouni[1]; Maryam Al Jallaf[1]; Devadiga H. R.[1]; Ali Jassim[1]; Kamel Al Aswad[1]; Sharana Gowda[1]; Milton Khan[1]; Arvind Kumar[1]; [1]Dubal

2:30 PM
Trace Element Concentration in Particulates from Pot Exhaust and Depositions in Fume Treatment Facilities: *Heiko Gaertner*[1]; Arne Petter Ratvik[1]; Thor Anders Aarhaug[2]; [1]NTNU; [2]SINTEF

2:55 PM
The Study and Applications of Modern Potline Fume Treatment Plant (FTP): *Deng Xiang*[1]; Lv Weining[1]; Liu Xun[1]; Deng Qiyi[1]; Yi Xiaobing[2]; [1]CHALIECO; [2]CHALIECO

3:20 PM
F&GTC: Combined Treatment of Pot Gases and Anode Baking Furnace Fumes: *Bassam Hureiki*[1]; Chin Lim[1]; Fabienne Virieux[2]; [1]SOLIOS ENVIRONNEMENT SA; [2]FIVES SOLIOS

3:45 PM Break

3:55 PM
Compact Filter Design for Gas Treatment Centers: *Peter Verbraak*[1]; Peter Klut[1]; Travis Turco[1]; Erik Dupon[2]; Edo Engel[2]; [1]Danieli Corus BV; [2]Danieli Corus Technical Services

4:20 PM
An Innovative Compact Heat Exchanger Solution for Aluminium Off-Gas Cooling and Heat Recovery: *El Hani Bouhabila*[1]; Erling Naess[2]; Victoria Kielland Einenjord[3]; Fabienne Virieux[4]; [1]Solios Environnement SA; [2]Norwegian University of Science and Technology; [3]HYDRO; [4]Fives Solios

4:45 PM
Latest Filter Developments Increasing Existing Aluminium Smelter Gas Treatment Centre Capacity and Reducing Emissions: *Michael Neate*[1]; Bradley Currell[1]; [1]Advancetex International

5:10 PM
Reduced Ventilation of Upper Part of Aluminum Smelting Pot: Potential Benefits, Drawbacks, and Design Modifications: *Ruijie Zhao*[1]; Louis Gosselin[1]; Mario Fafard[1]; Donald Ziegler[2]; [1]University Laval and Aluminium Research Centre-REGAL; [2]Alcoa Canada Primary Metals

5:35 PM
Latest Developments in Potroom Building Ventilation CFD Modelling: *Nathalie Menet*[1]; Guillaume Girault[1]; Nicolas Monnet[1]; Catherine Turpin[2]; Lionel Soulhac[3]; [1]Rio Tinto Alcan; [2]Sillage Environnement; [3]Université de Lyon, CNRS, Ecole Centrale de Lyon, INSA Lyon, Université Claude Bernard Lyon I

Biological Materials Science Symposium: Bioinspired Material Science and Processing

Sponsored by: TMS Electronic, Magnetic, and Photonic Materials Division, TMS Structural Materials Division, TMS: Biomaterials Committee
Program Organizers: Candan Tamerler, University of Washington; Molly Gentleman, Texas A & M University; Po-Yu Chen, National Tsing Hua University; Kajal Mallick, University of Warwick; Rajendra Kumar Kasinath, Unversity of Montana; Paul G. Allison, US Army Corp of Engineers

Tuesday PM
March 5, 2013

Room: 214C
Location: Henry B. Gonzalez Convention Center

Funding support provided by: Biomaterials Program, National Science Foundation

Session Chairs: Paul Allison , US Army Engineer Research and Development Center; Ryan Roeder, University of Notre Dame

2:00 PM Keynote
Micropatterned Artificial Gecko Surfaces: A Path to Switchable Adhesive Function: *Eduard Arzt*[1]; [1]INM – Leibniz Institute for New Materials

2:40 PM
Mechanics without Muscles: The Fast Motion of the Venus Flytrap and Bio-Mimetic Robotics: Qiaohang Guo[1]; Huang Zheng[2]; Wei Li[3]; Yiting Ding[4]; Guangyou Hao[5]; Guiping Su[1]; Junjie Lin[1]; Wenzhe Chen[3]; *Zi Chen*[6]; [1]FuJian University of Technology; [2]Fujian Radio and Television University; [3]Fuzhou University; [4]Tsinghua University; [5]Arnold Arboretum of Harvard University; [6]Washington University in St. Louis

3:00 PM
Shape Memory Effects in Moisture-Induced Twisting of Wood Slivers: *Nayomi Plaza*[1]; Joseph Jakes[2]; Donald Stone[1]; Samuel Zelinka[2]; [1]UW Madison; [2]Forest Products Laboratories

3:15 PM Invited
Bioinspired Materials Derived from Butterfly Wing: *Tongxiang Fan*[1]; [1]Shanghai Jiaotong University

3:45 PM Break

4:00 PM Keynote
Bioinspired Materials Processing and Forming: *Mohan Edirisinghe*[1]; [1]University College London

4:40 PM Invited
Ice-templated Biomaterials: *Ulrike Wegst*[1]; [1]Thayer School of Engineering. Dartmouth College

5:10 PM
Biomimetic Synthesis and AC-conductivity Studies of Crystalline Bone Graft Material: *Pradyumnan P P*[1]; Binitha M P[1]; [1]University of Calicut

5:25 PM Invited
Materials by Design: Silk and Silk-Like Protein Materials: *Markus Buehler*[1]; David Kaplan[2]; Joyce Wong[3]; [1]Massachusetts Institute of Technology; [2]Tufts University; [3]Boston University

Bulk Metallic Glasses X: Structures and Mechanical Properties II

*Sponsored by:*TMS Structural Materials Division, TMS/ASM: Mechanical Behavior of Materials Committee
Program Organizers: Peter Liaw, The University of Tennessee; Hahn Choo, The University of Tennessee; Yanfei Gao, The University of Tennessee; Gongyao Wang, University of Tennessee

Tuesday PM
March 5, 2013
Room: Lone Star Salon D
Location: Grand Hyatt

Funding support provided by: Materials Processing and Manufacturing Division, National Science Foundation

Session Chairs: J. Eckert, IFW Dresden; Marios Demetriou, California Institute of Technology

2:00 PM Keynote
Effects of Deformation on the Properties of Metallic Glasses: A. L. Greer[1]; [1]University of Cambridge

2:30 PM
Using Artificial Microstructures to Understand Microstructure Property Relationships in Metallic Glasses: *Wen Chen*[1]; Baran Sarac[1]; Jan Schroers[1]; [1]Yale University

2:45 PM Invited
Mechanistic and Thermodynamic Origins of Toughness in Metallic Glasses: *Marios Demetriou*[1]; Bernd Gludovatz[2]; William Johnson[1]; Robert Ritchie[2]; [1]California Institute of Technology; [2]Materials Sciences Division, Lawrence Berkeley National Laboratory

3:05 PM
Improved Mechanical Behavior of Ni-free Ti-based Bulk Glassy Alloys by Minor Substitution of "Soft" Atoms: *Mariana Calin*[1]; Na Zheng[1]; Annett Gebert[1]; Jürgen Eckert[1]; [1]IFW Dresden

3:20 PM Invited
Flow and Fracture Studies on Metallic Glasses: *John Lewandowski*[1]; [1]Case Western Reserve University

3:40 PM Break

3:55 PM
Influence of Bonding and Processing on the Mechanical Properties of Pd–Si–Cu-Based Bulk Metallic Glasses: *Davide Granata*[1]; Erwin Fischer[1]; Victor Wessels[1]; Jörg Löffler[1]; [1]ETH Zürich

4:10 PM Invited
Deformation Mechanisms in Metastable CuZrAl Composites: J. Eckert[1]; K.K. Song[2]; S. Pauly[2]; Y. Zhang[2]; R. Li[3]; [1]University of Tennessee; [2]IFW Dresden; [3]Beihang University

4:30 PM
Influence of Chemical Composition on Mechanical Properties and Glass Forming Ability of LM1b Alloy: *Joseph Stevick*[1]; James Yurko[2]; Ryan Coniam[3]; Edgar Vidal[2]; [1]Liquidmetal Technologies; [2]Materion Brush Inc.; [3]Visser Precision Cast LLC

4:45 PM Invited
Structural Origins Underlying the Varying Fragility, Excess Specific Heat and Plasticity of Different Glassy Alloys: *Evan Ma*[1]; [1]Johns Hopkins University

5:05 PM
Influence of Severe Plastic Deformation in Different Temperature Regimes on Zr-Based Bulk Metallic Glasses: *Denise Beitelschmidt*[1]; Sergio Scudino[1]; Steffen Kaiser[1]; Konrad Kosiba[1]; Mihai Stoica[1]; Matthias Hockauf[1]; Uta Kuehn[1]; Juergen Eckert[1]; [1]IFW Dresden

5:20 PM Invited
Making Metallic Glasses Plastic by Control of Stress Gradient: Zhitao Wang[1]; *Yi Li*[1]; [1]National University of Singapore

5:40 PM Invited
Controlled Shear Band and Fracture in Bulk Metallic Glasses: *Chun-Hway Hsueh*[1]; [1]National Taiwan University

6:00 PM
Crystallization of Phase Separated Pd41.5Ni41.5P17.5 BMGs: *Zhenduo Wu*[1]; Si Lan[1]; Hin Wing Kui[1]; [1]Chinese University of Hong Kong

Bulk Metallic Glasses X: Structures and Modeling

*Sponsored by:*TMS Structural Materials Division, TMS/ASM: Mechanical Behavior of Materials Committee
Program Organizers: Peter Liaw, The University of Tennessee; Hahn Choo, The University of Tennessee; Yanfei Gao, The University of Tennessee; Gongyao Wang, University of Tennessee

Tuesday PM
March 5, 2013
Room: Bowie A
Location: Grand Hyatt

Funding support provided by: Materials Processing and Manufacturing Division, National Science Foundation

Session Chairs: Dong Ma, ORNL; Tao Yuan, Ohio University

2:00 PM Invited
In-Situ Diffraction Studies of Crystallization in Bulk Metallic Glasses: *Dong Ma*[1]; Alexandru Stoica[1]; Xun-Li Wang[1]; [1]ORNL

2:20 PM
Prediction of Amorphous Forming Ability by Thermodynamic Approach in Ferrous Amorphous Alloys: *Seungmun Jung*[1]; Jeonghyeon Do[1]; Byeong-Joo Lee[1]; Sunghak Lee[1]; [1]Pohang University of Science and Technology

2:35 PM Invited
Statistical Modeling of Size Effects on the Bending-Fatigue Life of a Zirconium-Based Bulk-Metallic Glass: *Tao Yuan*[1]; Gongyao Wang[2]; Qingming Feng[2]; Peter Liaw[2]; Yoshihiko Yokoyama[3]; Akihisa Inoue[3]; [1]Ohio University; [2]The University of Tennessee, Knoxville; [3]Tohoku University

2:55 PM
Numerical Simulations of High-Strain-Rate Plate Impact of an Iron-Based Bulk Metallic Glass: *Gauri Khanolkar*[1]; Veronica Eliasson[1]; [1]University of Southern California

3:10 PM Invited
Studies of the Local Atomic Packing in a Metallic Glass: *Cang Fan*[1]; C. T. Liu[2]; P. Liaw[3]; [1]Nanjing University of Science and Technology; [2]City University of Hong Kong; [3]University of Tennessee

3:30 PM Invited
Molecular Dynamics Simulation of Solidification and Vitrification in Al-Sm Alloys: *Mikhail Mendelev*[1]; Matthew Kramer[1]; [1]Ames Laboratory

3:50 PM Break

4:05 PM Invited
Molecular Dynamics Study on a Thermal Rejuvenation of Amorphous Metals: *Masato Wakeda*[1]; Junji Saida[2]; Shigenobu Ogata[1]; [1]Osaka University; [2]Tohoku University

4:25 PM Invited
Polytetrahedral Packing in Metallic Glasses: *Yongqiang Cheng*[1]; Evan Ma[2]; [1]Oak Ridge National Laboratory; [2]Johns Hopkins University

4:45 PM
Analysis System (NSYS)-Based Simulation and Optimization on the Temperature Field of Amorphous Ingots Made by Water Quenching: *Gong Li*[1]; Wei Zhao[2]; Zhiqian Sun[1]; P. Liaw[1]; Riping Liu[2]; [1]UTK; [2]Yanshan University

5:00 PM Invited
Microyielding Mechanisms Study of Polycrystalline Dendrites Embedded in a Bulk-Metallic Glass within Engineering Elastic Limit: *E-Wen Huang*[1]; Junwei Qiao[2]; Peter Liaw[3]; [1]National Central University; [2]Taiyuan University of Technology; [3]University of Tennessee

5:20 PM
An Early-Stage Spinodal Decomposition Microstructural Ti36.2Zr30.3Fe4Cu8.3Be21.2 Bulk Metallic Glass with Exceptional Glass-Forming Ability: *Long Zhang*[1]; Haifeng Zhang[1]; Zhengwang Zhu[1]; [1]Institute of Metal Research, Chinese Academy of Sciences

Cast Shop for Aluminum Production: Aluminum Cast Shop III

*Sponsored by:*TMS Light Metals Division, TMS: Aluminum Committee
Program Organizer: Gyan Jha, Tri-Arrows Aluminum

Tuesday PM
March 5, 2013
Room: 210A
Location: Henry B. Gonzalez Convention Center

Session Chair: Randall Bowers, SECAT Inc.

2:00 PM
Optimisation of Grain Refinement: *John Courtenay*[1]; Rein Vainik[1]; Bader Saglam[2]; [1]MQP Limited; [2]Eti Aluminium Co.Inc.

2:20 PM
Grain Refiner for Al-Si Alloys: Hari Babu Nadendla[1]; Magdalena Nowak[1]; *Leandro Bolzoni*[1]; [1]Brunel University

2:40 PM
AlTi5B1 Grain Refiners on the Casting of DIN 226 Aluminum Alloys: *Onuralp Yucel*[1]; Ceyhun Yapici[1]; Ahmet Turan[1]; [1]Istanbul Technical University

3:00 PM
Production of Al–Ti–B Grain Refining Master Alloys from B_2O_3 and K_2TiF_6 by Microwave Irradiation: *Zhou Cai*[1]; [1]Chongqing University of Science and Technology

3:20 PM
The Mechanism of Grain Refinement of Aluminium by Zirconium: *Feng Wang*[1]; Dong Qiu[1]; Zhilin Liu[1]; John Taylor[1]; Mark Easton[2]; Mingxing Zhang[1]; [1]School of Mechanical and Mining Engineering, The University of Queensland; [2]School of Physics and Materials Engineering, Monash University

3:40 PM Break

4:00 PM
Effects of Yb Additions on Refinement of Eutectic Si in Al-5Si Alloys: *Jiehua Li*[1]; Peter Schumacher[1]; [1]The University of Leoben

4:20 PM
Development of Al-TiC Alloys Using Powder Metallurgy as Grain Refiners for Aluminum and Its Alloys: *Abdel-Nasser Omran*[1]; [1]Mining and Metallurgical Department, Faculty of Engineering-Al-Azhar University

4:40 PM
Influence of Vanadium on the Microstructure of A356 Foundry Alloy: *Thomas Ludwig*[1]; Paul Schaffer[2]; Lars Arnberg[1]; [1]NTNU Trondheim; [2]Hydro Aluminium

Characterization of Minerals, Metals and Materials 2013: Characterization of Inorganic Materials

*Sponsored by:*TMS Extraction and Processing Division, TMS: Materials Characterization Committee
Program Organizers: Jiann-Yang Hwang, Michigan Technological University; Chen-Guang Bai, Chongqing University; John Carpenter, DOE LANL; Shadia Ikhmayies, Al Isra University; Bowen Li, Michigan Technological University; Mingming Zhang, ArcelorMittal Global R&D; Sergio Monteiro, State University of North Rio de Janeiro; Zhiwei Peng, Michigan Technological University

Tuesday PM
March 5, 2013
Room: 206A
Location: Henry B. Gonzalez Convention Center

Session Chairs: John Aveson, University of Cambridge; Lei Zhang, WISCO R&D

2:00 PM
Dissolution Mechanism of Lime in FeOx-SiO_2-V_2O_3-TiO_2 Slag: Rui Tang[1]; Yu Wang[1]; Shuo Wang[1]; Kun Wen[1]; *Hong-Yi Li*[1]; Bing Xie[1]; [1]Chongqing University

2:20 PM
Estimation of Slag in Ferrochromium: *Robert Kozicki*[1]; Eric Graham[1]; George Wrightson[1]; [1]Andrew S. McCreath & Son, Inc.

2:40 PM
Experimental Characterization of Heterogeneous Phase Blast Furnace Slag Bearing Titania: Lu Zhang[1]; *Tao Jiang*[1]; Xiangxin Xue[1]; [1]Northeastern University

3:00 PM
Improved Thermal Shock Resistance of Shaped Alumina-Chromia Products: *Sonja Breyner*[1]; Klaus Santowski[1]; Thomas Prietl[1]; [1]RHI AG

3:20 PM
Solidification Characteristics of Fe-Mn Alloy during Near-Rapid Solidification: *Yuanyi Guo*[1]; Ke Xie[1]; Wenbin Xia[1]; Shichao Zhao[1]; Changjiang Song[1]; Qijie Zhai[1]; [1]Shanghai Key Laboratory of Modern Metallurgy & Materials Processing, Shanghai University

3:40 PM
The Effect of Work-Hardening and Heat Treatment of Mild-Carbon Steel on Cyclic Deformation Behavior: *Gerhard Tober*[1]; Christian Ruback[1]; Maria Kuttig[1]; Petra Maier[1]; [1]University of Applied Sciences Stralsund

4:00 PM
Thermal Stability and Mechanical Properties of nanocrystalline Fe-Ni-Zr Alloys: *Hasan Kotan*[1]; Mostafa Saber[1]; Carl Koch[1]; Ronald Scattergood[1]; [1]North Carolina State University

4:20 PM
Prediction of Ductility Parameter and Its Correlation with Electrical Resistivity of Microwave Annealed TiAl Intermetallics: *Debesh Mishra*[1]; Amarpreet Bir[1]; Tula Ram[1]; Vijaya Agarwala[1]; Ramesh Agarwala[1]; [1]IIT Roorkee

4:40 PM
Experimental Investigation on Oxidation Modification of Granulated Copper Slag at Intermediate Temperature: Bo Zhang[1]; Shuai Niu[1]; Zengli Liao[1]; Pu Tang[1]; Jienan Liu[1]; Huaiwei Zhang[1]; Xin Hong[1]; [1]Shanghai University

5:00 PM
Research on the Process of Alkaline Pressure Oxidation for Pretreating Anode Slime: *Weifeng Liu*[1]; Tianzu Yang[1]; Lin Chen[1]; Wanda Bin[1]; Shu Bin[1]; [1]Central South University

5:20 PM
Experimental Study on Optimization of Slag Splashing Modifiers with Magnesite Tailings: *Jing Li*[1]; XiaoFeng Qi[1]; [1]Liaoning University of Science&Technology

Characterization of Minerals, Metals and Materials 2013: Characterization Technologies

*Sponsored by:*TMS Extraction and Processing Division, TMS: Materials Characterization Committee
Program Organizers: Jiann-Yang Hwang, Michigan Technological University; Chen-Guang Bai, Chongqing University; John Carpenter, DOE LANL; Shadia Ikhmayies, Al Isra University; Bowen Li, Michigan technological University; Mingming Zhang, ArcelorMittal Global R&D; Sergio Monteiro, State University of North Rio de Janeiro; Zhiwei Peng, Michigan Technological University

Tuesday PM
March 5, 2013
Room: 206B
Location: Henry B. Gonzalez Convention Center

Session Chair: John Carpenter, DOE LANL

2:00 PM
An Iterative Approach to the 3D Reconstruction of Magnetic Vector Fields Using Lorentz Electron Tomography: *Emma Humphrey*[1]; Charles Bouman[2]; Marc De Graef[1]; [1]Carnegie Mellon University; [2]Purdue University

2:20 PM
Application of Precession Electron Diffraction in Density Calculations of Geometrically Necessary Dislocations: *Yue Liu*[1]; Iman Ghamarian[1]; P. Collins[1]; [1]University of North Texas

2:40 PM
Applying Precession Electron Diffraction (PED) to Study the Effect of Deformation by High Pressure Torsion (HPT) on the Texture Evolution in Copper-Niobium Nanostructured Multilayers Fabricated by Accumulative Roll Bonding (ARB): *Subhasis Sinha*[1]; Elvan Ekiz[2]; Nathan Mara[3]; Anthony Rollett[1]; Pascal Bellon[2]; Robert Averback[2]; Mohsen Pouryazdan[4]; Horst Hahn[4]; [1]Carnegie Mellon University; [2]University of Illinois Urbana Champaign; [3]Los Alamos National Laboratory; [4]Karlsruhe Institute of Technology

3:00 PM
Automated Quantification of SiC-Particles in Solidified A356 Aluminum Using Image Pro-Plus 7.0: *Robert Fritzsch*[1]; Behzad Mirzaei[1]; Mark Kennedy[2]; Ragnhild Aune[1]; [1]Norwegian University of Science and Technology; [2]Norwegian University of Science and Technology

3:20 PM
Development of a High-Pressure Scanning Probe Microscope Used to Study In Situ Corrosion Mechanisms: *Christophe Harder*[1]; Lilian Berlu[1]; Benoît Reneaume[1]; [1]CEA

3:40 PM
Fractography as a Tool to Assess the Occurrence of Fatigue Fractures in Complex-Microstructure Structural Components: *Donato Firrao*[1]; Paolo Matteis[1]; [1]Politecnico di Torino

4:00 PM
High Capacity Mechanical Testing System for In-Situ Investigations in a Large (1.5 Meter) Chamber Scanning Electron Microscope (SEM): Robin Woracek[1]; Stephen Young[1]; Dayakar Penumadu[1]; *Jason Leszczewicz*[2]; Edward Kintzel[3]; [1]University of Tennessee, Knoxville; [2]Western Kentucky University ; [3]Western Kentucky University

4:20 PM
High Resolution Electron Backscatter Diffraction: *T Ben Britton*[1]; Jun Jiang[1]; Angus Wilkinson[1]; [1]Department of Materials, University of Oxford

4:40 PM
Quantitative X-Ray Fluorescence Determination of Elemental Composition of Micro-Constituents Smaller than the Electron Probe Volume: *Adam Gesing*[1]; Paul Marchwica[2]; Sharon Lackie[2]; Jerry Sokolowski[2]; [1]GCI; [2]University of Windsor

5:00 PM
Three-Dimensional Duplex Morphology of MnS-AlN and Thermodynamic Analysis: *Yue Gong*[1]; ChuanJie Cai[1]; Jing Chen[1]; ShaoBo Zheng[1]; HuiGai Li[1]; [1]Shanghai University

5:20 PM
Yield Maps and Texture Analysis of Pure Copper: *Joel House*[1]; Erica Cosmutto[2]; Richard Harris[1]; Joseph Chason[2]; Michael Nixon[1]; Pavol Stofke[3]; [1]Air Force Research Laboratory; [2]Florida State University; [3]US Army ARDEC

5:40 PM
Combinational TEM and APT Characterization of ODS Alloys by SPS: *Y. Wu*[1]; Kerry Allahar[1]; Jatuporn Burns[1]; Brian Jaques[1]; Indrajit Charit[1]; Darryl Butt[1]; James Cole[1]; [1]Boise State University

Computational Thermodynamics and Kinetics: Molecular Dynamics Simulations II

*Sponsored by:*TMS Electronic, Magnetic, and Photonic Materials Division, TMS Materials Processing and Manufacturing Division, TMS: Alloy Phases Committee, TMS: Chemistry and Physics of Materials Committee, TMS/ASM: Computational Materials Science and Engineering Committee, TMS: Integrated Computational Materials Engineering Committee, TMS/ASM: Phase Transformations Committee, TMS: Process Technology and Modeling Committee
Program Organizers: Jörg Neugebauer, Max-Planck-Institut für Eisenforschung GmbH; Carelyn Campbell, NIST; Dongwon Shin, Oakridge National Lab; Zi Kui Liu, Penn State; Michael Demkowicz, Massachusetts Institute of Technology; Raymundo Arroyave, Texas A & M University; Shenyang Hu, Pacific Northwest National Laboratory

Tuesday PM
March 5, 2013
Room: 207A
Location: Henry B. Gonzalez Convention Center

Session Chairs: Yunfeng Shi, Rensselaer Polytechnic Institute; Brian Wirth, University of Tennessee

2:00 PM Invited
ReaxFF Reactive Force Field: Applications to Atomistic-Scale Simulations of Reactions and Properties of Complex Alloys And Mixed-Metal Oxides: *Adri van Duin*[1]; Osvalds Verners[1]; Chenyu Zou[1]; Yun-Kyung Shin[1]; Karthik Vishnu[1]; [1]Penn State

2:25 PM
Molecular Dynamics Simulations of Vacancy and Oxygen Diffusion in Pure Ni and NiAl Alloys Using ReaxFF Reactive Force Fields: *Karthik Guda Vishnu*[1]; Adri C.T. van Duin[1]; [1]Penn State University

2:40 PM
Development of ReaxFF Reactive Force Fields for Fe/Al/Ni/O/S Alloy and the Study of Oxidation Behavior on the Ordered Metallic Alloy Surface in Sulfurous Environment: *Yun Kyung Shin*[1]; Adri vdn Duin[1]; Hyunwook Kwak[2]; Alex Vasenkov[2]; [1]Pennsylvania State University; [2]CFD Research Corporation

2:55 PM
Formation of Intermetallic Phase during Reactive Wetting of Al on Ni: *Ying Sun*[1]; Edmund Webb[2]; [1]Drexel University; [2]Lehigh University

3:10 PM
Higher-Order Interface Stiffness Measurements via Molecular Dynamics Simulation: *S. R. Wilson*[1]; [1]Ames Laboratory, USDOE

3:25 PM Break

3:50 PM Invited
Gas Diffusion in Disordered Nanoporous Carbon: *Yunfeng Shi*[1]; [1]Rensselaer Polytechnic Institute

4:15 PM
Effect of Grain Boundary Structural Transformation on Grain Boundary Diffusion: A Molecular Dynamic Study: *Y. Mishin*[1]; Mark Asta[2]; Timofey Frolov; [1]George Mason University; [2]University of California Berkeley

4:30 PM
Molecular Dynamics Simulations of the Structure Transformation during the Cu Heating process under Vacuum: *Sun Shu-Hong*[1]; Chen Xiu-Min[1]; Zhang Feng-Xia[2]; Yang Bin[1]; [1]Kunming University of Science and Technology; [2]Faculty of Metallurgy and Materials, Kunming Metallurgy College

4:45 PM
Diffusion of Lithium Ions in Lithium Lanthanum Titanate Crystals and Amorphous Grain Boundaries: A Molecular Dynamics Simulation Study: *Chao-hsu Chen*[1]; Jincheng Du[1]; [1]University of North Texas

Cost Affordable Titanium IV: Low Cost Processing: Fundamentals

*Sponsored by:*TMS Structural Materials Division, TMS: Titanium Committee
Program Organizers: M. Ashraf Imam, Naval Research Lab; Sam Froes, University of Idaho (Retired); Ramana Reddy , The University of Alabama

Tuesday PM
March 5, 2013
Room: 217C
Location: Henry B. Gonzalez Convention Center

Session Chairs: Deepak Kapoor, US Army, ARDEC; Deliang Zhang, The University of Waikato

2:00 PM Invited
Research and Development of Low-cost Titanium Alloys for Biomedical Applications: *Mitsuo Niinomi*[1]; Masaaki Nakai[1]; Junko Hieda[1]; Ken Cho[1]; Toshikazu Akahori[2]; Tomokazu Hattori[2]; Masahiko Ikeda[3]; [1]Tohoku University; [2]Meijo University; [3]Kansai University

2:20 PM
Phase Transformation and Orientation in Direct Consolidation of TiH_2 Powder and Their Effects on Tensile Behavior of P/M Extruded Ti Material: Takanori Mimoto[1]; *Katsuyoshi Kondoh*[1]; Junko Umeda[1]; [1]Osaka University

2:40 PM Invited
Phase Constitution and Heat Treatment Behavior of Low Cost Ti-Mn System Alloys: *Masahiko Ikeda*[1]; Masato Ueda[1]; Kaoru Imaizumi[2]; Mitsuo Niinomi[3]; [1]Kansai University; [2]Daido Steel Co. Ltd.; [3]Tohoku University

3:00 PM
Parameters Optimization of the Process of Ti-46.6Al-1.4Mn-2Mo Alloy by Hot-press Sintering Based on GA and BP Neural Network: *Xuguang Li*[1]; Huimin Lu[1]; Panpan Wang[1]; [1]Beihang University

3:20 PM
Simulation of Powder Compact Forging Process for Producing a Titanium Component: *Navaneeth Velluvakkandi*[1]; Deliang Zhang[1]; Mingtu Jia[1]; [1]University of Waikato

3:40 PM Break

4:00 PM
Microstructure Evolution and Phase Transformations during Sintering Titanium Hydride in Controlled Hydrogen Atmosphere: *Pei Sun*[1]; Zhigang Fang[1]; [1]The University of Utah

4:20 PM
Novel Use of Cold and Hot Isostatic Pressing in Manufacturing Low Cost Ti-6Al-4V Forge Preforms: *Fatos Derguti*[1]; Nicholas Jones[2]; Martin Jackson[1]; [1]University of Sheffield; [2]Cambridge University

4:40 PM
Manufacturing Affordability Associated with an Innovative High-Strength Titanium Alloy: *Luis Ruiz*[1]; [1]ATI

5:00 PM
Precipitation Behaviour in Severe Plastic Deformed Beta-type Titanium Alloy: *Wei Xu*[1]; Xiaolin Wu[1]; Darren Edwards[2]; Mihai Stoica[3]; Mariana Calin[3]; Eckert Jürgen[3]; Kenong Xia[1]; [1]University of Melbourne; [2]Defence Science and Technology Organisation; [3]IFW Dresden

5:20 PM
Composition Design of Multi-Component β-Ti Alloys Based on a Cluster Model: *Qing Wang*[1]; Xiaona Li[1]; Jianbing Qiang[1]; Yingmin Wang[1]; Chuang Dong[1]; [1]Dalian University of Technology

Deformation, Damage, and Fracture of Light Metals and Alloys: Deformation, Damage, and Fracture of Light Metals and Alloys Session III

*Sponsored by:*TMS Light Metals Division, TMS/ASM: Mechanical Behavior of Materials Committee
Program Organizers: Ke An, Oak Ridge National Laboratory; Qizhen Li, University of Nevada, Reno

Tuesday PM
March 5, 2013
Room: 210B
Location: Henry B. Gonzalez Convention Center

Session Chair: Bjorn Clausen, Los Alamos National Laboratory

2:00 PM
Deformation Characteristics of Bulk Ultra-Fine Grained Titanium with Varying Impurity Levels: *Guney Yapici*[1]; Ibrahim Karaman[2]; Hans Maier[3]; [1]Ozyegin University; [2]Texas A&M University; [3]University of Paderborn

2:15 PM
Dwell Sensitive Fatigue of Ordered Ti-6Al-4V: *Ananthi Sankaran*[1]; Trevor Lindley[1]; David Dye[1]; [1]Imperial College

2:30 PM
Effect of Al,V,Fe,O Content on Dynamic Properties of Ti-Al-V Titanium Alloys: *Rui Liu*[1]; Song-xiao Hui[1]; Wen-jun Ye[1]; [1]General Research Institute for Nonferrous Metals

2:45 PM
Effect of Rolling Process on the Texture and Mechanical Properties of Ti-15V-3Cr-3Sn-3Al Alloy Sheet: Xiaoyun Song[1]; Guangshan Hu[1]; Yang Yu[1]; Rui Liu[1]; Wenjun Ye[1]; Songxiao Hui[1]; [1]General Research Institute of Nonferrous Metals

3:00 PM
Heat Treat Study to Improve Damage Tolerance of Titanium Alloy Ti-6Al-2Sn-2Zr-2Mo-2Cr for Aerospace Applications: *Sesh Tamirisa*[1]; Ernie Crist[1]; Pat Russo[1]; [1]RTI International Metals, Inc.

3:15 PM Break

3:25 PM
In-Situ Scanning Electron Microscopy (SEM) Observations of Tensile and Tensile-Creep Deformation of Ti-3Al-2.5V(wt.%): *Hongmei Li*[1]; Carl Boehlert[1]; Thomas Bieler[1]; Martin Crimp[1]; [1]Michigan State Univeristy

3:45 PM
Mechanical Properties of UFG Ti-15Mo-(0.35-0.5) O: *Herbert Boeckels*[1]; Henry Rack[1]; [1]Clemson University

4:00 PM
Texture Development of Aluminum in Multilayered Ti/Al/Nb Sheets Produced by Accumulative Roll-Bonding: *Liming Zhou*[1]; Viola Acoff[1]; [1]The University of Alabama

4:15 PM
Oxidation of Titanium Alloys: *David Brice*[1]; Peyman Samimi[1]; R. Banerjee[1]; J. Cotton[2]; M. Kaufman[3]; P. Collins[1]; [1]University of North Texas; [2]Boeing; [3]Colorado School of Mines

4:30 PM
Modeling the Effects of Orientation, Microstructure, and Interaction Stress on Local Schmid Factor in Two-Phase Titanium Alloys: *William Joost*[1]; Sreeramamurthy Ankem[1]; [1]University of Maryland

4:45 PM
High Temperature Deformation and Microstructural Evolution of TiAlNbCrMo Alloys: *Glenn Bean*[1]; Hans Seifert[2]; Fereshteh Ebrahimi[1]; Michele Manuel[1]; [1]University of Florida; [2]Karlsruhe Institue of Technology

Electrode Technology for Aluminium Production: Bake Furnace Design and Operation

*Sponsored by:*TMS Light Metals Division, TMS: Aluminum Committee
Program Organizers: Les Edwards, Rain CII Carbon; Hans Darmstadt, Rio Tinto Alcan; Sunil Bhajun, Qatalum; Juraj Chmelar, Hydro; Matvey Golubev, Rusal; Pretesh Patel, Light Metals Research Centre; Elaine Sum, Rio Tinto Alcan; Marc Gagnon, Aluminerie Alouette

Tuesday PM
March 5, 2013
Room: 213B
Location: Henry B. Gonzalez Convention Center

Session Chair: Juraj Chmelar, Hydro Aluminium AS

2:00 PM Introductory Comments

2:05 PM
Hydro Aluminium's Historical Evolution of Closed Type Anode Baking Furnace Technology: Michal Tkac[1]; Anders Ruud[1]; Inge Holden[2]; Hogne Linga[1]; [1]Primary Metal Technology; [2]Årdal Carbon

2:30 PM
Use of Mathematical Modelling to Study the Behavior of a Horizontal Anode Baking Furnace: *Yasar Kocaefe*[1]; Noura Oumarou[1]; Mounir Baiteche[1]; Duygu Kocaefe[1]; Brigitte Morais[2]; Marc Gagnon[2]; [1]University of Quebec at Chicoutimi; [2]Aluminerie Alouette inc.

2:55 PM
Study on Anode Baking Parameters in Open-Top and Closed-Type Ring Furnaces: *Mohsen Ameri*[1]; Borzu Baharvand[2]; Mohammad Nabi Batoei[2]; Saeb Sadeghi[2]; [1]Almahdi-Hormozal Aluminum Corporation; [2]Almahdi-hormozal Aluminum Corporation

3:20 PM
Energy Efficiency Improvement in Anode Baking Furnaces: *Cassio Linhares*[1]; [1]Alcoa

3:45 PM Break

3:55 PM
Anode Baking Process Optimization at ALRO: *Pierre Mahieu*[1]; Nicolas Fiot[1]; Arnaud Trillat[1]; Ovidiu Balu[2]; Cristian Stanescu[2]; Fabienne Virieux[3]; [1]Solios Carbone; [2]ALRO; [3]Fives Solios

4:20 PM
Operational and Environmental Benefits on the New Baking Furnace at Boyne Smelter by Use of an Advanced Firing Technology: Detlef Maiwald[1]; Domenico Di Lisa[1]; *Andreas Himmelreich*[1]; Glenn Cordon[2]; Sathya Moodley[2]; [1]Innovatherm; [2]Boyne Smelters Limited

4:45 PM
Laser Mapping of Carbon Bake Furnaces: *Ashley Tews*[1]; Michael Bosse[1]; Robert Zlot[1]; Paul Flick[1]; Meaghan Noonan[2]; [1]CSIRO; [2]Pacific Aluminium

Energy Technologies and Carbon Dioxide Management: Waste Heat Recovery and Furnace Technology

*Sponsored by:*TMS Extraction and Processing Division, TMS Light Metals Division, TMS: Energy Committee, TMS: Education Committee
Program Organizers: Soobhankar Pati, MOxST Inc.; Animesh Jha, University of Leeds; Jaroslaw Drelich, Michigan Technological University; Neale Neelameggham, Ind LLC; Cong Wang, Saint-Gobain High Performance Materials; Leon Prentice, CSIRO

Tuesday PM
March 5, 2013
Room: 006C
Location: Henry B. Gonzalez Convention Center

Session Chairs: Jarek Drelich, MTU; Cong Wang, Saint Gobain

2:00 PM Introductory Comments

2:05 PM
Waste Heat Recovery Opportunities in a Magnesium Silicothermic Reduction Plant: *James Sever*[1]; [1]Nevada Clean Magnesium, Inc.

2:25 PM
Effect Of Batch Charging Equipment On Glass Furnace Efficiency: Nasim Soleimanian[1]; *Mark Jolly*[1]; [1]Cranfield University

2:45 PM
Thermodynamic Properties of ORC System with Zeotropic Mixed Working Fluids for Low Temperature Waste Heat Recovery: Xin Zhang[1]; *Hao Bai*[1]; Ning Li[1]; Mengqi Li[1]; Xinrong Zhang[1]; Hongxu Li[1]; Daqiang Cang[1]; [1]University of Science and Technology Beijing

3:05 PM
Energy Saving in a Crude Distillation Unit by a Retrofit Design of Heat Exchanger Networks: Hossein Rezaei[1]; Farhad Shahraki[1]; *Farhad Fazlollahi*[1]; Majid Sarkari[1]; [1]University of Sistan and Baluchestan

3:25 PM Break

3:45 PM
The Optimization of Gases and Thermal Energy in the Upper Zone of Electric Furnaces in Drenas: *Ahmet Haxhiaj*[1]; Egzon Haxhiaj[1]; [1]University of Prishtina

4:05 PM
Economical Energy Responsive Housing with the Lowest Environmental Effects (Focus on Semi- Arid Climate): *Roya Faghaninia*[1]; [1]University of Trento

Fatigue and Fracture of Thin Films and Nanomaterials: Advanced Indentation-based Techniques

*Sponsored by:*TMS Materials Processing and Manufacturing Division, TMS Structural Materials Division, TMS/ASM: Mechanical Behavior of Materials Committee, TMS: Nanomechanical Materials Behavior Committee
Program Organizers: Megan Cordill, Erich Schmid Institute of Materials Science; Daniel Kiener, Montanuniversitaet Leoben; Xinghang Zhang, Texas A &M University ; Daniel Gianola, University of Pennsylvania ; Corinne Packard, Colorado School of Mines

Tuesday PM
March 5, 2013
Room: Bowie C
Location: Grand Hyatt

Funding support provided by: Hysitron, Inc. and Nanomechanics, Inc.

Session Chairs: Megan Cordill, Erich Schmid Institute of Materials Science; Daniel Kiener, Montanuniversiaet Leoben

2:00 PM Invited
Time and Temperature Dependent Mechanical Properties of Materials at Nanometer Length Scale: *Syed Asif Syed Amanulla*[1]; Jeremiah Vieregge[1]; Richard Nay[1]; [1]Hysitron Inc.

2:20 PM Invited
High Temperature Mechanical Behaviour of Nanoscale Multilayers: *Jon Molina-Aldareguia*[1]; Saeid Lotfian[1]; Miguel Monclus[1]; Javier Llorca[1]; Nikhilesh Chawla[2]; Irene Beyerlein[3]; Nathan Mara[3]; [1]IMDEA Materials Institute; [2]Arizona State University; [3]LANL

2:40 PM Invited
Elastic and Plastic Properties of Combinatorial Thin Films Determined by Nanoindentation: *Stephanie Reeh*[1]; Tetsuya Takahashi[1]; Jochen Schneider[1]; Ude Hangen[2]; [1]Materials Chemistry RWTH Aachen University; [2]Hysitron Inc.

3:00 PM Invited
Small Scale Mechanical Testing on Oxide Layers: *Peter Hosemann*[1]; Marisa Rebelo de Figueiredo[1]; David Frazer[1]; Scott Parker[1]; Kenji Kikuchi[2]; Christian Mitterer[3]; [1]UC Berkeley; [2]Ibaraki University; [3]Montanuniversitaet Leoben

3:20 PM Break

3:40 PM Invited
Novel Techniques for Measuring the Piezoelectric Properties of Thin Films with a Nanoindenter: *Esteban Broitman*[1]; Lars Hultman[1]; [1]Linköping University

4:00 PM Invited
Electric Contact Measurements during Indentation of Compliant Carbon Nanotube Turfs: *David Bahr*[1]; Anqi Qiu[1]; [1]Washington State University

4:20 PM Invited
MEMS-Enabled In-Situ Nanomechanical Testing in Electron Microscopes: *Oden Warren*[1]; Yunje Oh[1]; Zhiwei Shan[1]; Douglas Stauffer[1]; Sanjit Bhowmick[1]; Ryan Major[1]; S.A. Syed Asif[1]; [1]Hysitron, Inc.

4:40 PM Invited
Microbeam Bend Tests for Fracture and Fatigue Studies in (Pt,Ni) Al Bond Coats: *Nagamani Jaya*[1]; Kaustubh Venkatraman[1]; Vikram Jayaram[1]; Sanjay Biswas[1]; [1]Indian Institute of Science

Fatigue in Materials: Microstructure-Driven Modeling and In-Situ Fatigue Characterization: Microstructure-Property-Fatigue Deformation & Damage Relationships

*Sponsored by:*TMS Structural Materials Division, TMS/ASM: Mechanical Behavior of Materials Committee
Program Organizers: Michael Sangid, Purdue University; Tongguang Zhai, University of Kentucky; Antonios Kontsos, Drexel University

Tuesday PM
March 5, 2013
Room: 207B
Location: Henry B. Gonzalez Convention Center

Session Chair: Antonios Kontsos, Drexel University

2:00 PM Keynote
Multi-Time Scaling Image Based Crystal Plasticity FE Models Dwell Fatigue Initiation in Polycrystalline Ti Alloys: *Somnath Ghosh*[1]; [1]Johns Hopkins University

2:35 PM Invited
The Role of Elastic Anisotropy, Length Scale and Crystallographic Slip in Fatigue Crack Nucleation, with Application to Stent Fatigue: *Caoimhe Sweeney*[1]; Willem Vorster[2]; Sean Leen[1]; Eisaku Sakurada[3]; Peter McHugh[1]; Fionn Dunne[4]; [1]National University of Ireland, Galway; [2]Oxford University; [3]Nippon Steel Corporation; [4]Imperial College London

3:00 PM
Combining DIC and Ultrasonic Fatigue to Investigate the Very High Cycle Fatigue Behavior of Ti-6242: *Jason Geathers*[1]; J. Wayne Jones[1]; Samantha Daly[1]; [1]University of Michigan

3:20 PM Break

3:40 PM Invited
Integrating Computational Materials Engineering into Probabilistic Damage Tolerance Analysis for Component Design: *Craig McClung*[1]; Michael Enright[1]; Wei-Tsu Wu[2]; Ravi Shankar[2]; [1]Southwest Research Institute; [2]Scientific Forming Technologies Corporation

4:05 PM
Microstructurally Small Fatigue Cracking in an Al-Mg-Si Alloy: Experiments and Modeling: *Ashley Spear*[1]; S.F. Li; J. Lind; Robert Suter; Albert Cerrone[1]; Jacob Hochhalter[2]; Anthony Ingraffea[1]; [1]Cornell University; [2]NASA Langley Research Center

4:25 PM Invited
The Quantification of Resistance of Grain Boundaries to Short Fatigue Crack Propagation in Three-Dimensions in High Strength Al Alloys: Wei Wen[1]; Alfonso Ngan[2]; *Tongguang Zhai*[1]; [1]University of Kentucky; [2]The University of Hong Kong

4:45 PM
High Temperature Tensile and Fatigue Deformation Behavior of Al-1wt%Mg-1.1wt%Si Alloy Hardened by New Cu-Mn based Solid Solution Phase: Kyu-Sik Kim[1]; Si-Young Sung[2]; Bum-Seok Han[2]; Jung-Cheol Park[3]; *Kee-Ahn Lee*[1]; [1]Andong National University; [2]KATECH; [3]RIST

Friction Stir Welding and Processing VII: Friction Stir Welding: High Temperature Materials II

*Sponsored by:*TMS Materials Processing and Manufacturing Division, TMS: Shaping and Forming Committee
Program Organizers: Rajiv Mishra, University of North Texas; Murray Mahoney, Retired from Rockwell Scientific; Yutaka Sato, Tohoku University; Yuri Hovanski, Pacific Northwest National Laboratory; Ravi Verma, General Motors

Tuesday PM
March 5, 2013
Room: Grand Ballroom C3
Location: Henry B. Gonzalez Convention Center

Session Chairs: Yuri Hovanski, Pacific Northwest National Laboratory; Hidetoshi Fujii, Osaka University; Jennifer Wolk, Naval Surface Warfare Center

2:00 PM Invited
Enhanced Friction Stir Welding of Titanium Using Elemental Foils: *Richard Fonda*[1]; Keith Knipling[1]; [1]Naval Research Laboratory

2:20 PM Invited
Fast Diffusers in Friction Stir Welding of Titanium Alloys: *Jennifer Wolk*[1]; Richard Everett[2]; Stephen Szpara[1]; Marc Zupan[3]; Sal Nimer[3]; [1]Naval Surface Warfare Center; [2]Naval Research Laboratory; [3]University of Maryland Baltimore County

2:40 PM
Microstructural and Mechanical Investigations of Friction Stir Welded Ti/Ti- and Ti-alloy/Ti-Alloy-Joints: *Nico Buhl*[1]; Guntram Wagner[1]; Dietmar Eifler[1]; Markus Gutensohn[2]; Frank Zillekens[2]; [1]University of Kaiserslautern; [2]PFW Aerospace

3:00 PM
Microstructural Evolution in Commercially Pure Titanium Thermal Stir Welds: *Richard Fonda*[1]; Keith Knipling[1]; Adam Pilchak[2]; [1]Naval Research Laboratory; [2]Air Force Research Laboratory

3:20 PM
Longitudinal and Transverse Microsample Characterization of Friction Stir Welded Ti-5111: *Salahudin Nimer*[1]; Jennifer Wolk[2]; Richard Everett[3]; Marc Zupan[1]; [1]University of Maryland Baltimore County; [2]Naval Surface Warfare Center Carderock Division; [3]U.S. Naval Research Laboratory

3:40 PM Break

3:55 PM
Fabrication and Mechanical Properties of WC-TiC-Co Hard Materials by Spark Plasma Sintering Method for FSW Tool Application: *JungHan Ryu*[1]; Hyun-Kuk park[1]; Jun-Ho Jang[1]; Ik-Hyun Oh[1]; Han-Sur Bang[2]; Hee-Seon Bang[2]; [1]Korea Institute of Industrial Technology; [2]Chosun University

4:15 PM Invited
Studies on Additive Friction Stir In-625 Coating on HY80 Steel: *Kumar Kandasamy*[1]; Liam Renaghan[1]; Zachary Morrey[1]; Jeffrey Schultz[1]; [1]Aeroprobe Corporation

4:35 PM
Investigation of Microstructure and Mechanical Properties of Friction Stir Lap Jointed Monel 400 and Inconel 600: *Kuk Hyun Song*[1]; Won Yong Kim[1]; Kazuhiro Nakata[2]; [1]Korea Institute of Industrial Technology; [2]Joining and Welding Research Institute

4:55 PM
Fatigue Behavior of Friction Stir Spot Welds in Lap-Shear Specimens of Dissimilar Advanced High Strength Steels: Seung-Hoon Hong[1]; Katherine Avery[1]; Jwo Pan[1]; *Tsung-Yu Pan*[2]; Zhili Feng[2]; Michael Santella[2]; [1]University of Michigan; [2]Oak Ridge National Laboratory

5:15 PM
Microstructure and Mechanical Properties of Oxide Dispersion Strengthened Copper Produced by Friction Stir Processing: *Aude Simar*[1]; Marie-Noëlle Avettand-Fènoël[2]; Rajashekhara Shabadi[2]; Roland Taillard[2]; [1]Universite catholique de Louvain; [2]Université Lille 1

5:35 PM
Mechanical Propeties and Fabrication of WC-Binderless and WC-Binder Hard Materials for Friction Stir Welding Tool Application by Rapid Sintering Method: *Hyun-Kuk Park*[1]; Jung-Han Ryu[1]; Jun-Ho Jang[1]; In-Jin Shon[2]; Ik-Hyun Oh[1]; [1]KITECH / Automotive Components Center; [2]Chonbuk National University / Division of Advanced Materials

5:50 PM
Microstructure and Mechanical Properties of FSW Lap Joint between Pure Copper and 1018 Mild Steel Using Refractory Metal Pin Tools: *Md Shamsujjoha*[1]; Bharat Jasthi[2]; Michael West[1]; Christian Widener[2]; [1]South Dakota School of Mines and Technology; [2]Arbegast Advanced Materials Processing and Joining Laboratory

6:05 PM
Effect of Tool Pin Profile on Microstructure and Mechanical Properties of Friction Stir Welded Pure Copper Joints: *Hamid Khodaverdizadeh*[1]; Akbar Heidarzadeh[1]; Abbas Mahmoudi[1]; [1]Sahand University of Technology

Frontiers in Solidification Science: In-situ Observations and X-ray Imaging

Sponsored by: TMS Materials Processing and Manufacturing Division, TMS: Solidification Committee
Program Organizers: Andre Phillion, University of British Columbia; Silvere Akamatsu, Institut des Nanosciences de Paris; Christoph Beckermann, The University of Iowa; Michel Rappaz, Ecole Polytechnique Federale de Lausanne

Tuesday PM
March 5, 2013

Room: Lone Star Salon F
Location: Grand Hyatt

Funding support provided by: Materials Processing and Manufacturing Division, National Science Foundation

Session Chairs: Andre Phillion, University of British Columbia; Peter D. Lee, The University of Manchester

2:00 PM Invited
Dilatancy during Semi-Solid Deformation: *Christopher Gourlay*[1]; Tomoya Nagira[2]; Catherine O'Sullivan[1]; Hideyuki Yasuda[2]; [1]Imperial College London; [2]Osaka University

2:30 PM Invited
Analysis by Synchrotron X-Ray Imaging of the Equiaxed Grain Evolution during Columnar-to-Equiaxed Transition in Directional Solidification: *Guillaume Reinhart*[1]; Henri Nguyen-Thi[1]; Nathalie Mangelinck-Noël[2]; Bernard Billia[2]; [1]IM2NP - Aix-Marseille Univ; [2]IM2NP - CNRS

3:00 PM
The Influence of Thermo-Solutal Convection on Freckle Formation and Dendritic Growth: *Natalia Shevchenko*[1]; Stephan Boden[1]; Gunter Gerbeth[1]; Sven Eckert[1]; [1]Helmholtz-Zentrum Dresden-Rossendorf

3:20 PM
Dynamic In-Situ Imaging during Al-Cu Alloy Solidification: *Joseph McKeown*[1]; Andreas Kulovits[2]; Thomas LaGrange[1]; Bryan Reed[1]; Jörg Wiezorek[2]; Geoffrey Campbell[1]; [1]Lawrence Livermore National Laboratory; [2]University of Pittsburgh

3:40 PM Break

3:50 PM
A Newly Designed Experiment for High-Pressure Solidification of Transparent Materials: *Severine Boyer*[1]; Charles-Andre Gandin[2]; Jean-Marc Haudin[3]; [1]CNRS/ISAE-ENSMA; [2]CNRS/MINES ParisTech; [3]MINES ParisTech

4:10 PM Invited
Experimental Aspects of Microstructure Formation during Solidification Transients: *Ulrike Hecht*[1]; Victor Witusiewicz[1]; Anne Drevermann[1]; Gerhard Zimmermann[1]; [1]Access e.V.

4:40 PM
Anisotropy Effects in Al-Zn Alloys Revealed by X-Ray Tomographic Microscopy and Phase-Field Simulation: *Paolo Di Napoli*[1]; Jonathan Dantzig[2]; Jonathan Friedli[1]; Julie Fife[3]; Michel Rappaz[1]; [1]EPFL; [2]University of Illinois at Urbana-Champaign; [3]Paul Scherrer Institut

5:00 PM
In Situ and Real Time Characterization of 3D Patterns in Directional Solidification: Comparison between Experiments in Microgravity Aboard the International Space Station and Terrestrial Ones, Convection Influence: Nathalie Bergeon[1]; *Liang Chen*[1]; Bernard Billia[1]; Rohit Trivedi[2]; Damien Tourret[3]; Alain Karma[3]; Rahma Guérin[1]; Jean-Marc Debierre[1]; [1]IM2NP (CNRS - Aix Marseille Université); [2]Iowa State University; [3]Northeastern University

5:20 PM
Quasi-Periodic Recalescence Behaviour in Undercooled Eutectic Alloys: *Andrew Mullis*[1]; Caroline Clopet[1]; Robert Cochrane[1]; [1]University of Leeds

5:40 PM
Dendritic Growth Velocities in Undercooled Melts of B20-Type Intermetallic Compounds: *Jianrong Gao*[1]; Lianghua Zhang[1]; Chao Yang[1]; [1]Northeastern University

High Temperature Electrochemistry: Nuclear Materials

Sponsored by: TMS Extraction and Processing Division, TMS: Pyrometallurgy Committee
Program Organizers: Prabhat Tripathy, Idaho National Laboratory; Guy Fredrickson, Idaho National Laboratory

Tuesday PM
March 5, 2013

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

Session Chairs: Steven Herrmann, Idaho National Laboratory; Carsten Schwandt, University of Cambridge

2:00 PM
Pyroprocessing of Used Light Water Reactor Fuel -- A Study of Integrated Unit Operations at Laboratory Scale: *Steven Herrmann*[1]; Brian Westphal[1]; Guy Fredrickson[1]; Sung Bin Park[2]; Si Hyung Kim[2]; [1]Idaho National Laboratory; [2]Korea Atomic Energy Research Institute

2:30 PM
Purity of Uranium Product from Electrochemical Recycling of Used Metallic Fuel: *Ken Marsden*[1]; Brian Westphal[1]; Mike Patterson[1]; Batric Pesic[1]; [1]Idaho National Laboratory

3:00 PM
Assessment of Mass Balance of the Electrorefining System for Spent LWR Nuclear Fuel Cycle: *Sungbin Park*[1]; Jeong-Guk Kim[1]; Sung-jai Lee[1]; Hansoo Lee[1]; [1]Korea Atomic Energy Research Institute

3:30 PM Break

3:50 PM
Electrochemical Impedance Spectroscopy of Uranium Chloride in Molten LiCl-KCl Eutectic: *Kerry Allahar*[1]; Michael Shaltry[1]; Mark Orazem[2]; Darryl Butt[1]; Supathorn Phongikaroon[3]; Michael Simpson[4]; [1]Center for Advanced Energy Studies; [2]University of Florida; [3]University of Idaho; [4]Idaho National Laboratory

4:20 PM
Electrochemical Studies and Analysis of Uranium Chloride in Molten LiCl-KCl Eutectic: Robert Hoover[1]; Michael Shaltry[1]; *Supathorn Phongikaroon*[1]; Sean Martin[2]; Kumar Sridharan[2]; Michael Simpson[3]; [1]University of Idaho; [2]University of Wisconsin-Madison; [3]Idaho National Laboratory

4:50 PM
Electrochemistry of LiCl-Li_2O-H_2O Molten Salt Systems: *Natalie Gese*[1]; Batric Pesic[2]; [1]Idaho National Laboratory; [2]Department of Chemical & Materials Engineering

Hume-Rothery Award Symposium: Electronic Structure Theory of Stability and Bonding in Alloys: Materials Genome Approaches II

*Sponsored by:*TMS Electronic, Magnetic, and Photonic Materials Division, TMS: Alloy Phases Committee
Program Organizer: Chris Wolverton, Northwestern University

Tuesday PM
March 5, 2013
Room: 205
Location: Henry B. Gonzalez Convention Center

Session Chairs: Vidvuds Ozolins, UCLA; Richard Hennig, Cornell

2:00 PM Invited
Adaptive Genetic Algorithm Method for Crystal Structure Prediction: *Kai Ming Ho*[1]; Manh Cuong Nguyen[1]; Xin Zhao[1]; Feng Zhang[1]; Ian McBrearty[1]; Shunqing Wu[2]; Min Ji[1]; Cai Zhuang Wang[1]; [1]Iowa State University; [2]Xiamen University

2:30 PM Invited
Solving the Global Space-Group Optimization Problem by Evolutionary Algorithms: *Giancarlo Trimarchi*[1]; [1]Northwestern University

3:00 PM Invited
High-Temperature/High-Strength Intermetallic Compounds – Property Correlations and Systematics: *John R. Rodgers*[1]; [1]Innovative Materials Technologies

3:30 PM Break

3:50 PM Invited
Atomistic Calculations of Thermodynamic and Electronic Structure Properties in Chemical Compound Space: *O. Anatole von Lilienfeld*[1]; [1]Argonne National Laboratory

4:20 PM Invited
High-throughput Approach for Predicting Thermodynamic Stability of Solids: *Vladan Stevanovic*[1]; [1]National Renewable Energy Laboratory

4:50 PM Invited
The Quest for Descriptors in High-Throughput Searches: Robustness and Fragility of Topological Insulators: *Stefano Curtarolo*[1]; Kesong Yang[1]; Shidong Wang[1]; Marco Buongiorno Nardelli[1]; [1]Duke University

Hybrid and Hierarchical Composite Materials: Modeling and Design

*Sponsored by:*TMS Structural Materials Division, TMS/ASM: Composite Materials Committee
Program Organizers: Tomoko Sano, US Army Research Laboratory; Charles Randow, US Army Research Laboratory; Chang Soo Kim, University of Wisconsin -Milwaukee

Tuesday PM
March 5, 2013
Room: 215
Location: Henry B. Gonzalez Convention Center

Session Chairs: Charles Randow, U.S. Army Research Laboratory; Mark Pankow, North Carolina State University

2:00 PM
FEA Modeling of Stress Distribution in the Drug-Polymer Coating Composites of Drug-Eluting Stent (DES) Medical Devices.: *Sol Ki Lee*[1]; Chang-Soo Kim[1]; [1]University of Wisconsin - Milwaukee

2:20 PM
Optimal Topology for 3D Woven Lattice Materials: *Seung-Hyun Ha*[1]; Yong Zhang[1]; Longyu Zhao[1]; Keith Sharp[1]; Timothy Weihs[1]; Kevin Hemker[1]; James Guest[1]; [1]Johns Hopkins University

2:40 PM
Transient Analysis of Thermo-Mechanical Loads and Elastic Behaviour of Double Contact Functionally Graded Brake Disks with Temperature-Dependent Material Properties: *Ramesh Kumar Lalwani*[1]; [1]DBIT

3:00 PM
Micromechanical Investigation of Impact on Fluid-Filled Auxetic and Honeycomb Aluminum Cores: *Ryan Karkkainen*[1]; Jerome Tzeng[1]; [1]U.S. Army Research Laboratory

3:20 PM
Application of ALE3D in Modeling Mechanical Properties of Freeze Cast Components: *John Densmore*[1]; Albert Nichols[1]; Rose McCallen[1]; Octavio Cervantes[1]; Alexander Gash[1]; John Molitoris[1]; Luke Brewer[2]; Joseph Hooper[2]; [1]Lawrence Livermore National Laboratory; [2]Naval Postgraduate School

3:40 PM Break

3:55 PM
Modeling and Simulation of the Failure Mechanism of Ceramics during Low Velocity Impact Used in Protective Systems: *Costas Fountzoulas*[1]; Raymond Brennan[1]; [1]U.S. Army Research Laboratory

4:15 PM
Multilength Scale Characterization of Additively Manufactured Hybrid Nickel-Copper Fused Deposition Model Sandwich Cores: *Steven Storck*[1]; Marc Zupan[1]; [1]UMBC

4:35 PM
Mechanical Properties and Failure Mechanisms in Microtruss Materials With Nanocrystalline Hollow Struts: Eral Bele[1]; *Chandra Veer Singh*[1]; Glenn Hibbard[1]; [1]University of Toronto

Integrated Computational Modeling of Materials for Nuclear Energy: Future Directions

*Sponsored by:*TMS Materials Processing and Manufacturing Division, TMS Structural Materials Division, TMS/ASM: Computational Materials Science and Engineering Committee, TMS/ASM: Nuclear Materials Committee
Program Organizers: Remi Dingreville, Sandia National Laboratories; Koenraad Janssens, Paul Scherrer Institute; Timothy Bartel, Sandia National Laboratories

Tuesday PM
March 5, 2013
Room: 202B
Location: Henry B. Gonzalez Convention Center

Session Chair: To Be Announced

2:00 PM Panel Discussion: Future Directions for Integrated Computational Modeling of Materials for Nuclear Energy

Panelists:

- Dr. Marius Stan, Senior Scientist, Argonne National Laboratory
- Dr. Diana Farkas, Program Director, National Science Foundation
- Dr. Simone Massara, Nuclear Science Section of the OECD Nuclear Energy Agency (NEA)

Moderators:

- Remi Dingreville and Timothy J. Bartel, Sandia National Laboratories

Magnesium Technology 2013: Corrosion

*Sponsored by:*TMS Light Metals Division, TMS: Magnesium Committee
Program Organizers: Norbert Hort, Helmholtz-Zentrum Geesthacht; Suveen Mathaudu, US Army Research Office; Neale Neelameggham, IND LLC; Martyn Alderman, Magnesium Elektron

Tuesday PM
March 5, 2013
Room: 214A
Location: Henry B. Gonzalez Convention Center

Session Chairs: Liming Peng, Shanghai Jiaotong University; Carlos Caceres, The University of Queensland

2:00 PM
Efficiency of a New Hexavalent Chromium-Free Chemical Pickling Process Based on Organic and Inorganic Acids on Magnesium Alloys Mg-Y-RE-Zr and Mg-Zn-RE-Zr: *Helene Ardelean*[1]; Antoine Seyeux[1]; Sandrine Zanna[1]; Philippe Marcus[1]; Sophie Pettier[2]; Nathalie Le Pottier[2]; Daniel Lecuru[2]; [1]LPCS UMR 7045 Chimie Paristech; [2]Eurocopter Marignane

2:20 PM
Galvanic Corrosion of Mg-Zr Alloy and Steel or Graphite in Mineral Binders: *David Lambertin*[1]; Adrien Rooses[1]; Fabien Frizon[1]; [1]CEA/DEN

2:40 PM
The Influence of Mg-Zr Master Alloy Microstructure on the Corrosion of Mg: *Darren Gandel*[1]; Mark Easton[2]; Nick Birbilis[1]; Mark Gibson[3]; Trevor Abbott[4]; [1]Monash University; [2]CAST CRC; [3]CSIRO; [4]Magontec Ltd

3:00 PM
Corrosion of Ultrasonic Spot Weldbonds of Magnesium to Steel: *Tsung-Yu Pan*[1]; Zhili Feng[1]; Michael Santella[1]; Jian Chen[1]; [1]Oak Ridge National Laboratory

3:20 PM Break

3:40 PM
A Superior Corrosion Resistant Conversion Coating for Mg-Alloys: *Xiaobo Chen*[1]; Trevor Abbott[2]; Mark Easton[1]; Nick Birbilis[1]; [1]Monash University; [2]Magontec Pty Ltd

4:00 PM
Corrosion and Adhesion Properties of Cerium-Based Conversion Coatings on Mg Alloys: *Surender Maddela*[1]; Matthew O'Keefe[1]; [1]Missouri University of Science and Technology

4:20 PM
Corrosion Behavior of Cerium-Based Conversion Coatings on Magnesium Alloys Exposed to Ambient Conditions: *Carlos Castano*[1]; Surender Maddela[1]; Matthew O'Keefe[1]; [1]Missouri University of Science and Technology

4:40 PM
Formation of Vanadate Conversion Coating on AZ31 Magnesium Alloy: *S. Salman*[1]; K. Kuroda[1]; M Okido[1]; [1]Nagoya University

Magnetic Materials for Energy Applications -III: MagnetoCaloric and Magnetostrictive Materials

*Sponsored by:*TMS Electronic, Magnetic, and Photonic Materials Division, TMS: Energy Committee, TMS: Energy Conversion and Storage Committee, TMS: Magnetic Materials Committee
Program Organizers: Sivaraman Guruswamy, University of Utah; Thomas Woodcock, IFW Dresden; Yongmei Jin, Michigan Technological University; Raju Ramanujan, Nanyang Technological University; Frank Johnson, GE Global Research; Oliver Gutfleisch, Technische Universität Darmstadt

Tuesday PM
March 5, 2013
Room: 217D
Location: Henry B. Gonzalez Convention Center

Session Chairs: Oliver Gutfleisch, Technische Universität Darmstadt; Matthew Willard, Naval Research Laboratory

2:00 PM Invited
γ-FeNi Alloy Nanostructures for Magnetocaloric Applications: Michael McHenry[1]; Huseyin Ucar[1]; David Laughlin[1]; [1]Carnegie Mellon University

2:30 PM Invited
Crystallographic Alignment Effects on the Magnetocaloric Effect of near-Ni_2MnGa Alloys: Anit Giri[1]; Brigitte Paterson[2]; Michael McLeod[3]; Cindi Dennis[2]; Bhaskar Majumdar[3]; Kyu Cho[1]; *Robert Shull*[2]; [1]U.S. Army Research Laboratory; [2]National Institute of Standards and Technology; [3]New Mexico Institute of Mining and Technology

3:00 PM Invited
LaFeCoSi- and GdFeAl-Based Composites with Enhanced Refrigerant Capacity and Table-Like Magnetocaloric Effect: *Ivan Skorvanek*[1]; Jozef Marcin[1]; Bogdan Idzikowski[2]; Piotr Gebara[3]; Piotr Pawlik[3]; [1]Institute of Experimental Physics; [2]Institute of Molecular Physics; [3]Czestochowa University of Technology

3:30 PM Break

3:40 PM Invited
Magnetostriction of Permendur: T Ren[1]; Harsh Chopra; A Lisfi[2]; Armen Khachaturyan; *Manfred Wuttig*[3]; [1]University of Maryland; [2]Morgan State University; [3]Univ of Maryland

4:10 PM Invited
Magnetization and Magnetostriction of Terfenol-D near Spin Reorientation Boundary: *Yongmei Jin*[1]; Ben Wang[1]; [1]Michigan Technological University

4:40 PM
Modeling of Magnetic and Structural Phase Transformations in Co-Ni-Al and Co-Ni-Ga Ferromagnetic Shape Memory Alloys FSMA's: *Hassan Thawabi*[1]; Navdeep Singh[1]; Raymundo Arroyave[1]; [1]Texas A&M University

5:00 PM
The Effect of Annealing on Magneto-Caloric Effect in $Ni_{43}Mn_{42}Co_4Sn_{11}$ Magnetic Shape Memory Alloys: *Nickolaus Bruno*[1]; C. Yegin[1]; I. Karaman[1]; J. Ross[1]; J. Liu[2]; [1]Texas A&M University; [2]Ningbo Institute of Material Technology and Engineering

Materials and Fuels for the Current and Advanced Nuclear Reactors II: Fuels II

Sponsored by: TMS Structural Materials Division, TMS/ASM: Corrosion and Environmental Effects Committee, TMS/ASM: Nuclear Materials Committee
Program Organizers: Ramprashad Prabhakaran, Idaho National Laboratory; Dennis Keiser, Idaho National Laboratory; Raul Rebak, GE Global Research

Tuesday PM
March 5, 2013
Room: 202A
Location: Henry B. Gonzalez Convention Center

Session Chairs: Ramprashad Prabhakaran, Idaho National Laboratory; Dennis Keiser, Idaho National Laboratory

2:00 PM
Release Behavior of Silver in TRISO fuel: Comparison of Experimental Data with Predictions for the AGR-1 Irradiation Experiment: *Paul Demkowicz*[1]; Jason Harp[1]; Blaise Collin[1]; David Petti[1]; [1]Idaho National Laboratory

2:20 PM
Characterization of Irradiated of Metal Waste from the Pyrometallurgical Treatment of Used EBR-II Fuel: *Brian Westphal*[1]; Ken Marsden[1]; William McCartin[1]; Steve Frank[1]; Dennis Keiser[1]; Tae Yoo[1]; DeeEarl Vaden[1]; Dan Cummings[1]; Ken Bateman[1]; [1]Idaho National Laboratory

2:40 PM
In Situ TEM Study of Xe Implantation in U-Mo and U-Zr Alloys: *Di Yun*[1]; Marquis Kirk[1]; Abdellatif Yacout[1]; [1]Argonne National Laboratory

3:00 PM
Uranium-Zirconium Alloy Simulation by Diffusion Couple: *Daniel Koury*[1]; Andrew Conant[2]; Katie Cook[2]; Gerald Egeland[1]; [1]Harry Reid Center, University of Nevada - Las Vegas; [2]Georgia Institute of Technology

3:20 PM
Investigation of Freeze-Cast Scaffolds as an Advanced Reactor Fuel Form: *Clarissa Yablinsky*[1]; Philipp Hunger[2]; Amanda Lang[1]; Shih-Feng Chou[2]; Thomas Gage[1]; Ulrike Wegst[2]; Todd Allen[1]; [1]University of Wisconsin; [2]Dartmouth College

3:40 PM Break

4:00 PM
Interaction of Cd with Ce and Nd in Nuclear Fuel Recycling: Thermochemistry and Phase Equilibria: Barbara Skolyszewska-Kühberger[1]; Rajesh Ganesan[2]; *Herbert Ipser*[1]; [1]University of Vienna; [2]Indira Gandhi Centre for Atomic Research

4:20 PM
Phase Equilibria in the Systems Cd-Pr and Cd-Gd Relevant for Recycling of Nuclear Fuels: *Thomas Reichmann*[1]; Rajesh Ganesan[2]; Herbert Ipser[1]; [1]University of Vienna; [2]Indira Gandhi Centre for Atomic Research

4:40 PM
Evolution of U-Mo Alloy Microstructures During Irradiation: *Dennis Keiser*[1]; Jan-Fong Jue[1]; Jian Gan[1]; Brandon Miller[1]; Adam Robinson[1]; Pavel Medvedev[1]; [1]Idaho National Laboratory

5:00 PM
Interdiffusion between Uranium and Iron: *Assel Aitkaliyeva*[1]; Chao-Chen Wei[2]; Di Chen[2]; Bulent Sencer[1]; J. Kennedy[1]; Lin Shao[2]; [1]Idaho National Laboratory; [2]Texas A&M University

Materials Processing Fundamentals: Metallurgy of Non-Ferrous Metals

Sponsored by: TMS Extraction and Processing Division, TMS: Process Technology and Modeling Committee
Program Organizers: Lifeng Zhang, University of Science and Technology Beijing; Antoine Allanore, Massachusetts Institute of Technology; Cong Wang, Saint-Gobain High Performance Materials; James Yurko, Materion Brush Beryllium and Composites; Justin Crapps, ExxonMobil

Tuesday PM
March 5, 2013
Room: 008A
Location: Henry B. Gonzalez Convention Center

Session Chair: Antoine Allanore, Massachusetts Institute of Technology

2:00 PM
Annealing of Oxide Dispersion Strengthened Alloys Consolidated by Spark Plasma Sintering: *Kerry Allahar*[1]; Jatuporn Burns[1]; Brian Jaques[2]; Y.Q. Wu[1]; Indrajit Charit[3]; Darryl Butt[1]; James Cole[4]; [1]Center for Advanced Energy Studies; [2]Boise State University; [3]University of Idaho; [4]Idaho National Laboratory

2:20 PM
Corrosion Resistance of Zn-Sn Alloys Horizontally Directionally Solidified: Claudia Mendez[1]; Miriam Parra[1]; *Carlos Schvezov*[2]; Alicia Ares[2]; [1]FCEQyN-UNaM; [2]CONICET/FCEQyN-UNaM

2:40 PM
Controlling Plasticity in Nanometer-Scale Accumulative Roll Bonded Cu/Nb Lamellar Composites through Processing Conditions: *John Carpenter*[1]; Rodney McCabe[1]; Sven Vogel[1]; Shijian Zheng[1]; Irene Beyerlein[1]; Nathan Mara[1]; [1]Los Alamos National Laboratory

3:00 PM
High Speed Twin Roll Casting of Al-33 wt. % Cu Strips with Layered Structure -Inspired by Mathematical Modeling: *Seshadev Sahoo*[1]; Sudipto Ghosh[1]; [1]IIT Kharagpur

3:20 PM
Lorentz Force Velocimetry (LFV) Based on an Electromagnet System: *Fatoumata Santara*[1]; André Thess[1]; [1]Institute of Thermodynamics and Fluid Mechanics/Ilmenau University of Technology

3:40 PM Break

3:50 PM
Finite Element Modeling of Material Removal Rate in Powder Mixed Electrical Discharge Machining of Al-SiC Metal Matrix Composites: Umesh Vishwakarma[1]; Akshay Dvivedi[1]; *Pradeep Kumar*[1]; [1]Indian Institute of Technology Roorkee

4:10 PM
Multicriteria Optimization of Rotary Tool Electric Discharge Machining on Metal Matrix Composite: Manjot Cheema[1]; *Akshay Dvivedi*[1]; Apurbba Sharma[1]; Sudeep Biswas[1]; [1]IIT Roorkee

4:30 PM
Structural Modifications during Linear Heating of a Bulk Ultrafine-Grained Al-Cu-Mg Alloy Produced by High-Pressure Torsion: *Ying Chen*[1]; Marco Starink[1]; Nong Gao[1]; [1]University of Southampton

4:50 PM
Characterization of Pore Formation in A356 Alloy with Different Oxide Levels during Directional Solidification: *Hengcheng Liao*[1]; Wan Song[1]; Qigui Wang[2]; [1]Southeast University; [2]GM Global Powertrain Engineering

Mesoscale Computational Materials Science of Energy Materials: Irradiation and Defects

*Sponsored by:*TMS Materials Processing and Manufacturing Division, TMS/ASM: Computational Materials Science and Engineering Committee
Program Organizers: Pascal Bellon, University of Illinois; Alfredo Caro, LANL; Long Qing Chen, Penn State University; Anter El-Azab, Florida State University; Ming Tang, Lawrence Livermore National Laboratory

Tuesday PM
March 5, 2013
Room: 218
Location: Henry B. Gonzalez Convention Center

Session Chairs: Fei Gao, Pacific Northwest National Laboratory; Alfredo Caro, Los Alamos National Laboratory

2:00 PM Invited
A Cellular Monte Carlo Code for the Prediction of Phase Separation and Radiation Induced Segregation in Alloys: *Maylise Nastar*[1]; Thomas Garnier[1]; [1]CEA

2:30 PM
An Atomistic Toolkit for the Calculation of Free Energy Functions of Materials: *Daniel Schwen*[1]; Enrique Martinez[1]; Alfredo Caro[1]; [1]Los Alamos National Laboratory

2:50 PM Invited
Multiscale Modeling of He Effects on Microstructure Evolution in Alpha-Fe: *Fei Gao*[1]; Li Yang[2]; Shenyang Hu[1]; Howard Heinisch[1]; Richard Kurtz[1]; [1]Pacific Northwest National Laboratory; [2]University of Electronic Science and Technology of China

3:20 PM Break

3:40 PM
Atomic Scale Modeling of Point Defects in Materials: Coupling Ab Initio and Elasticity Approaches: *Celine Varvenne*[1]; Emmanuel Clouet[1]; [1]CEA Saclay DEN/DMN/SRMP

4:00 PM Invited
Mesoscopic Modeling of Dislocation-Defect Interactions and Flow Localization in Irradiated BCC Metals: Anirban Patra[1]; *David McDowell*[1]; [1]Georgia Institute of Technology

4:30 PM
Microstructure and Defect Disorder in UO_2: *Abdel-Rahman Hassan*[1]; Jianguo Yu[2]; Anter El-Azab[1]; [1]Purdue University; [2]Idaho National Laboratory

4:50 PM
A Continuum Model for Dynamics of Dislocation Arrays and Applications to Low Angle Grain Boundaries: *Yang Xiang*[1]; Xiaohong Zhu[2]; Shuyang Dai[1]; [1]Hong Kong University of Science and Technology; [2]Jinan University

5:10 PM
Hydrogen-Dislocation Interactions and Cross-Slip Inhibition in FCC Ni: Yizhe Tang[1]; Satish Rao[2]; *Jaafar El-Awady*[1]; [1]Johns Hopkins University; [2]UES Inc.

Microstructural Processes in Irradiated Materials: Ferritic & RPV Steels

*Sponsored by:*TMS Structural Materials Division, TMS/ASM: Nuclear Materials Committee
Program Organizers: Thak Sang Byun, Oak Ridge National Laboratory; Dane Morgan, University of Wisconsin-Madison; Yasuyoshi Nagai, Tohoku University; Zhijie Jiao, University of Michigan-Ann Arbor; Christine Guéneau, CEA-Saclay

Tuesday PM
March 5, 2013
Room: 203A
Location: Henry B. Gonzalez Convention Center

Session Chairs: Takuya Yamamoto, Univ. California Santa Barbara; Jonathan Hyde, National Nuclear Laboratory

2:00 PM Invited
Uncertainties and Assumptions Associated with APT and SANS Characterisation of Irradiation Damage in RPV Steels: *Jonathan Hyde*[1]; Colin English[1]; Paul Styman[2]; Keith Wilford[3]; [1]National Nuclear Laboratory; [2]Oxford University; [3]Rolls-Royce

2:30 PM
Evaluation of the Presence of Vacancies in Irradiation Induced Solute Clusters in Ferritic Model Alloys by Combination of Atom Probe Tomography and X Ray Absorption Spectroscopy: Sebastiano Cammelli[1]; *Bertrand Radiguet*[1]; Philippe Pareige[1]; Yves Serruys[2]; [1]GPM UMR CNRS 6634 - Université et INSA de Rouen; [2]SRMP - CEA

2:50 PM
Use of APT, EFTEM, HRTEM and STEM to Search for 'Slow-Blooming Phases' in High Dose Reactor Pressure Vessel Steels: *Joven Lim*[1]; Jonathan Hyde[1]; Sergio Lozano-Perez[1]; Keith Wilford[2]; Chris Grovenor[1]; [1]The University of Oxford; [2]Rolls Royce

3:10 PM
Ni-Si-Mn Dominated Late Blooming Phases in RPV Steels at High Fluence and Flux: *Peter Wells*[1]; G. Odette[1]; Nicholas Cunningham[1]; Tim Milot[1]; Yuan Wu[1]; Takuya Yamamoto[1]; Doug Klingensmith[1]; James Cole[2]; Brandon Miller[2]; [1]UC Santa Barbara; [2]Idaho National Laboratory

3:30 PM
Effects of Post-Irradiation Annealing and Re-Irradiation on Microstructure in Surveillance Test Specimens of RPV Steel Studied by 3D-AP and Positron Annihilation: *Takeshi Toyama*[1]; Akira Kuramoto[1]; Yasuko Nozawa[1]; Yoshitaka Matsukawa[1]; Masayuki Hasegawa[1]; Matti Valo[2]; Yasuyoshi Nagai[1]; [1]Tohoku University; [2]VTT Technical Research Centre of Finland

3:50 PM Break

4:00 PM
Microstructural Characterization of Test Reactor Irradiated RPV Steels by Post-Irradiation Annealing and State-of-the-Art Characterization Tools: *Takuya Yamamoto*[1]; Takeshi Toyama[2]; Peter Wells[1]; Akira Kuramoto[2]; Yasuyoshi Nagai[2]; G. Robert Odette[1]; [1]Univ. California Santa Barbara; [2]Tohoku University

4:20 PM
APT Characterizations of High Nickel, Low Copper Welds from the Ringhals Surveillance Program: *Michael Miller*[1]; Randy Nanstad[1]; [1]Oak Ridge National Laboratory

4:40 PM
Relationship between Microstructural Change and Hardening by Thermal Aging in Stainless Steel Weld Overlay Cladding of Nuclear Reactor Pressure Vessels: *Yasuyoshi Nagai*[1]; Yuta Kakubo[1]; Tomoaki Takeuchi[2]; Yoshitaka Matsukawa[1]; Takeshi Toyama[1]; Jun Kameda[1]; Yutaka Nishiyama[2]; Jinya Katsuyama[2]; Kunio Onizawa[2]; [1]Tohoku University; [2]JAEA

5:00 PM
Crystal Structure Analysis of Nanometer-Sized G-Phase Precipitates in a d/γ Duplex Stainless Steel Weld Overlay Cladding of Light-Water Reactor Pressure Vessel Steels: *Yoshi Matsukawa*[1]; Tomoaki Takeuchi[2]; Yuta Kakubo[1]; Naoki Ebisawa[1]; Yasuko Nozawa[1]; Takeshi Toyama[1]; Yoshihito Yamaguchi[2]; Jinya Katsuyama[2]; Yutaka Nishiyama[2]; Yasuyoshi Nagai[1]; [1]Tohoku University; [2]Japan Atomic Energy Agency

5:20 PM
Neutron Irradiation Effect on ECAP'ed Steel: *Ahmad Alsabbagh*[1]; Ruslan Valiev[2]; K. Murty[1]; [1]North Carolina State University; [2]Ufa State Aviation Technical University

5:40 PM
Examination of Factors Influencing the Simulation of Neutron-Induced Void Swelling in ODS Ferritic-Martensitic Steels Using Self-Ion Irradiation: *Frank Garner*[1]; Victor Voyevodin[2]; Mychailo Toloczko[3]; Stuart Maloy[4]; Valery Pechenkin[5]; [1]Radiation Effects Consulting; [2]Kharkov Institute of Physics and Technology; [3]Pacific Northwest National Laboratory; [4]Los Alamos National Laboratory; [5]Institute of Physics and Power Engineering

Modeling and Experimental Validation of Multiscale Mechanical Behavior from Atomic Scale to Macro Scale: Interfaces at Low Length Scales

Sponsored by: TMS Materials Processing and Manufacturing Division, TMS Structural Materials Division, TMS: Integrated Computational Materials Engineering Committee, TMS/ASM: Mechanical Behavior of Materials Committee, TMS: Nanomechanical Materials Behavior Committee, TMS: Process Technology and Modeling Committee, TMS: Shaping and Forming Committee

Program Organizers: Nathan Mara, Los Alamos National Laboratory; Jian Wang, Los Alamos National Laboratory; Brad Boyce, Sandia National Laboratories; Jennifer Carter, Case Western Reserve University; Anthony Rollett, Carnegie Mellon University; Jonathan Zimmerman, Sandia National Laboratories

Tuesday PM
March 5, 2013

Room: 211
Location: Henry B. Gonzalez Convention Center

Session Chairs: Irene Beyerlein, Los Alamos National Laboratory; Stephen Foiles, Sandia National Laboratories

2:00 PM Invited
3D Grain Boundary Networks for Integrated Computational Materials Engineering: *Alexis Lewis*[1]; David Rowenhorst[1]; [1]Naval Research Laboratory

2:30 PM
Study of the Relationships between Local Stress State and Slip Activity in Heterogeneous Deformation of Polycrystalline Ti-5Al-2.5Sn with CPFE Simulation: *Chen Zhang*[1]; Hongmei Li[1]; Philip Eisenlohr[2]; Thomas Bieler[1]; Martin Crimp[1]; Carl Boehlert[1]; [1]Michigan State University; [2]Max-Planck-Institut für Eisenforschung

2:50 PM Invited
Multi-Scale Model for Bi-Metal Interface Evolution: *Irene Beyerlein*[1]; Jason Mayeur[1]; Curt Bronkhorst[1]; Nathan Mara[1]; Jian Wang[1]; Hashem Mourad[1]; [1]Los Alamos National Laboratory

3:20 PM
Interface Controlled Plastic Flow Modeled by Strain Gradient Plasticity Theory: *Thomas Pardoen*[1]; Thierry Massart[2]; [1]UCL; [2]ULB

3:40 PM Break

3:50 PM
Deformation Twinning in Cu/Nb Nanolamellar Composites Fabricated by Accumulative Roll Bonding (ARB) Measured Using Electron Backscatter Diffraction(EBSD): *Rodney McCabe*[1]; John Carpenter[1]; Nathan Mara[1]; [1]Los Alamos National Laboratory

4:10 PM Invited
A Predictive Model for Microstructure Evolution in Metallic Multilayers with Immiscible Constituents: *Yao Shen*[1]; Haibo Wan[1]; Xuejun Jin[1]; Jian Wang[2]; [1]Shanghai Jiao Tong University; [2]Los Alamos National Laboratory

4:40 PM Invited
Experimental Observations of the Interactions between Dislocations and Twin Boundaries in Nanocrystalline Face-Centred Cubic Metallic Materials: Yang Cao[1]; Song Ni[1]; Yanbo Wang[1]; *Xiaozhou Liao*[1]; [1]The University of Sydney

5:10 PM
Surface Groove Induced Strain Relaxation and Strengthening of Fivefold-Twinned Silver Nanowire: *Chuang Deng*[1]; [1]University of Manitoba

5:30 PM Invited
Molecular Dynamics Simulation of Grain Growth and Plastic Deformation during Surface Indentation of Nanocrystalline Nickel: Garritt Tucker[1]; *Stephen Foiles*[1]; [1]Sandia National Laboratories

Modeling of Multi-Scale Phenomena in Materials Processing - III: Microstructure Effects

Sponsored by: TMS Materials Processing and Manufacturing Division, TMS/ASM: Computational Materials Science and Engineering Committee, TMS: Process Technology and Modeling Committee, TMS: Integrated Computational Materials Engineering Committee
Program Organizers: Adrian Sabau, Oak Ridge National Laboratory; Anthony Rollett, Carnegie Mellon University; Laurentiu Nastac, The University of Alabama; Jonathan Madison, Sandia National Laboratories; Mei Li, Ford Motor Company

Tuesday PM
March 5, 2013
Room: 216
Location: Henry B. Gonzalez Convention Center

Session Chairs: Anthony Rollett, Carnegie Mellon University; Wei Cai, Stanford University

2:00 PM Introductory Comments

2:05 PM Invited
BCC Crystal Plasticity Model Incorporating Non-Schmid Effect: *Hojun Lim*[1]; Christopher Weinberger[1]; Corbett Battaile[1]; Thomas Buchheit[1]; [1]Sandia National Laboratories

2:45 PM
Study on Effect of Interfacial Anisotropy and Elastic Interaction on Morphology Evolution and Growth Kinetics of a Single Precipitate in Mg-Al Alloy by Phase Field Modeling: Guomin Han[1]; *Zhiqiang Han*[1]; Alan Luo[2]; Anil Sachdev[2]; Baicheng Liu[1]; [1]Tsinghua University; [2]General Motors Global Research and Development Center

3:05 PM
Parametric Study of a Cellular Automata Recrystallization Model: *David Rule*[1]; Jon Madison[2]; Veena Tikare[2]; Liz Holm[2]; [1]University of Florida; [2]Sandia National Laboratories

3:25 PM Break

3:55 PM
Comparison of the Conventional Gravity Sand Casting Process with the Novel CRIMSON Casting Process: *Binxu Zeng*[1]; Mark Jolly[1]; Xiaojun Dai[1]; Carl Reilly[2]; [1]Cranfield University; [2]The University of British Columbia

4:15 PM
Simulation of Electromagnetic Vibration on the Inclusions Agglomeration Behavior in Aluminum Melt: *Leyuan Qiu*[1]; Qiulin Li[2]; Wei Liu[2]; [1]Tsinghua University, China; [2]Tsinghua University

4:35 PM
Predicting the Rate of Dislocation Cross Slip: *Wei Cai*[1]; Jie Yin[1]; [1]Stanford University

4:55 PM
Simulation of Microstructural Morphology Evolution of Ni-45wt.%Mo Droplets during Rapid Solidification Process: *Ma Jie*[1]; Zhang Jie-Yu[2]; Zhao Shun-Li[3]; Zhao Jian[2]; [1]Shanghai University Key Laboratory of Modern Metallurgy & Materials Processing; [2]Shanghai University Key Laboratory of Modern Metallurgy & Materials Processing; [3]Baosteel research institute,Baoshan Iron&Steel Co.,Ltd.

5:15 PM
Microstructure Evolution of a Nb Bicrystal Subjected to Equal Channel Angular Extrusion- Experiment and Modeling: *Shreyas Balachandran*[1]; Arun Srinivasa[1]; Zu Sung[2]; Peter Lee[2]; Karl Hartwig[1]; [1]Texas A&M university; [2]National High Magnetic Field Laboratory

Nanostructured Materials for Lithium Ion Batteries and for Supercapacitors: Nanostructured Materials for Lithium Ion Batteries and for Supercapacitors Session IV

Sponsored by: TMS Electronic, Magnetic, and Photonic Materials Division, TMS: Energy Conversion and Storage Committee
Program Organizer: David Mitlin, University of Alberta and NINT NRC

Tuesday PM
March 5, 2013
Room: 007B
Location: Henry B. Gonzalez Convention Center

Session Chairs: David Mitlin, University of Alberta and NINT NRC; Reza Shahbazian-Yassar, Michigan Technological University; Peter Kalisvaart, University of Alberta; Zhi Li, University of Alberta

2:00 PM Invited
Toward a Na-Ion Battery: *Long Wang*[1]; Maowen Xu; Jie Song; Yuhao Lu; John Goodenough; [1]Univ of Texas at Austin

2:20 PM Invited
New Type of Nanostructured Battery Electrode Materials: *Robert Huggins*[1]; [1]Stanford University

2:40 PM Invited
Multiple-Stripe Lithiation of Individual SnO2 Nanowires: *Scott Mao*[1]; Jianyu Huang[2]; Li Zhong[1]; [1]Department of Mechanical Engineering and Materials Science, Univ. of Pittsburgh; [2]Center for Integrated Nanotechnologies, Sandia National Laboratories

3:00 PM Invited
High Energy Density Lithium Capacitors Using Carbon-Carbon Electrodes: *Jim Zheng*[1]; Wanjun Cao[1]; [1]Florida State University

3:20 PM Invited
In Situ and In Operando Studies of High Capacity Cathodes: *Jason Graetz*[1]; Sung-Wook Kim[2]; Feng Wang[1]; Xiaoya Wang[2]; [1]Brookhaven National Laboratory; [2]Stony Brook University

3:40 PM Break

4:00 PM Invited
The Important Role of Nanostructure in Material and Electrode Design on Electrochemical Performance: *Esther Takeuchi*[1]; Amy Marschilok[1]; Kenneth Takeuchi[1]; [1]Stony Brook University

4:20 PM Invited
Nanostructured Vanadium Pentoxides as Cathodes for Lithium-Ion Batteries: *Guozhong Cao*[1]; [1]University of Washington

4:40 PM Invited
Light-Metal Hydrides as Novel Conversion Mateirals for Li-ion Battery Anodes: *Eric Majzoub*[1]; Tim Mason[1]; Alyssa McFarlane[1]; [1]University of Missouri - St. Louis

5:00 PM Invited
Pressure-Gradient Dependent Diffusion and Crack Propagation in Lithiated Silicon Nanowires: *Vivek Shenoy*[1]; [1]University of Pennsylvania

5:20 PM Invited
Ultrathin Multifunctional Surface Coatings for Lithium Ion Batteries: *Xingcheng Xiao*[1]; [1]General Motors Global R&D Center

5:40 PM Invited
Laser Created Nanostructured Aluminum Current Collector for Supercapacitor Applications: *Dongfang Yang*[1]; [1]National Research Council Canada

6:00 PM
Cyclability Study of Si/TiN/C Composite Anode with High Rate Capability for Lithium-Ion Batteries: *Jiguo Tu*[1]; Shuqiang Jiao[1]; Jungang Hou[1]; Hongmin Zhu[1]; [1]University of Science and Technology Beijing

Neutron and X-Ray Studies of Advanced Materials VI: Centennial and Beyond: In Honor of Prof. T. Ungar: "Advanced Line Profile Analysis"

Sponsored by: TMS Structural Materials Division, TMS/ASM: Mechanical Behavior of Materials Committee
Program Organizers: Rozaliya Barabash, Oak Ridge National Laboratory; Xun-Li Wang, City University of Hong Kong; Jaimie Tiley, US Air Force Research Laboratory; Gernot Kostorz, ETH Zurich; Brent Fultz, California Institute of Technology; Peter Liaw, Univ of Tennessee

Tuesday PM
March 5, 2013
Room: 209
Location: Henry B. Gonzalez Convention Center

Session Chairs: Andras Borbely, EMSE, France; Lavente Balogh, LANL

2:00 PM Introductory Comments

2:05 PM Invited
Asymmetric X-Ray Line Broadening: From the Composite Model to the Dislocation Polarization Induced by External Stress: *Istvan Groma*[1]; Peter Ispanovity[1]; Daniel Tuzes[1]; [1]Eotvos University Budapest

2:25 PM Invited
High-Resolution EBSD and X-Ray Diffraction Analysis of Dislocation Structures in Deformed Copper Single Crystals: Claire Maurice[1]; *Andras Borbely*[1]; [1]Ecole des Mines de Saint-Etienne

2:45 PM Invited
Characterisation of Deformation Induced Microstructures by In-Situ X-ray Synchrotron Bragg Profile Analysis: *Erhard Schafler*[1]; Michael Kerber[1]; Roman Schuster[1]; Florian Spieckermann[1]; Harald Wilhelm[1]; Gerald Polt[1]; Sigrid Bernstorff[1]; Michael Zehetbauer[1]; Tamas Ungar[2]; [1]University of Vienna, Faculty of Physics; [2]Eötvös University Budapest, Department of Material Physics

3:05 PM Invited
Asymmetric X-Ray Line Profiles Revisited: Dissecting Dislocation Structures by High Resolution Reciprocal Space Mapping: *Wolfgang Pantleon*[1]; [1]Technical University of Denmark

3:25 PM Invited
Elasto-Plastic Transition of a Duplex Steel from Combined X-Ray Diffraction, Neutron Diffraction, and Micromechanical Modeling: *Christophe Le Bourlot*[1]; Olivier Castelnau[2]; Brigitte Bacroix[1]; Damien Faurie[1]; [1]LSPM, Univ. Paris Nord; [2]PIMM-CNRS

3:45 PM Break

3:55 PM Invited
Extracting Dislocation Densities from Peak Broadening Analysis: A Multiscale Analysis of Predicted and Experimental Diffraction Peak Profiles: *Carlos Tome*[1]; Levente Balogh[1]; Laurent Capolungo[2]; Anand Kanjarla[1]; Ricardo Lebensohn[1]; [1]Los Alamos National Laboratory; [2]Georgia Institute of Technology

4:15 PM Invited
Phenomenological and Physically Based Approaches to Line-Broadening Analysis: *Davor Balzar*[1]; [1]University of Denver

4:35 PM Invited
The Role of Orientation Factors in XRD Analysis of Microstructure: *Radomir Kuzel*[1]; [1]Charles University in Prague, Faculty of Mathematics and Physics

4:55 PM Invited
Understanding Physical Properties of Nanomaterials from Parameters Obtained by X-Ray Bragg Profile Analysis: *Michael Zehetbauer*[1]; Erhard Schafler[1]; Michael Kerber[1]; [1]University of Vienna

5:15 PM Invited
Texture Evolution in NiAl Deformed by High Pressure Torsion Studied with Synchrotron Radiation: *Werner Skrotzki*[1]; Christine Traenkner[1]; Robert Chulist[1]; Benoit Beausir[2]; Thomas Lippmann[3]; Jelena Horky[4]; Michael Zehetbauer[4]; [1]TU Dresden; [2]Univ. Metz; [3]Helmholtz-Zentrum Geesthacht; [4]Univ. Wien

5:35 PM Invited
Development of the Dislocation Structure of Ferritic Steel during Quenching, Cold Rolling and Annealing: *Peter Szabó*[1]; [1]Budapest University of Technology and Economics

5:55 PM Invited
Application of Line Profile Analysis for the Study of Dislocations in Deep Earth Minerals: *Sebastien Merkel*[1]; Carole Nisr[1]; Gábor Ribárik[2]; Tamás Ungár[2]; Gavin Vaughan[3]; Patrick Cordier[1]; [1]Universite Lille 1; [2]Eötvös University; [3]ESRF

6:15 PM
Microstructure of B2 CoTi and CoZr Determined by 3D X-Ray Diffraction: *Gabor Ribarik*[1]; Tamas Ungar[1]; Levente Balogh[2]; Rupalee Mulay[3]; Sean Agnew[3]; Ulrich Lienert[4]; [1]Eotvos Lorand University, Institute of Physics, Budapest, Hungary; [2]Materials Science and Technology Division, Los Alamos National Laboratory; [3]Materials Science and Engineering, University of Virginia; [4]DESY Photon Science, Deutsches Elektronen-Synchroton

Ni-Co 2013: Pyrometallurgy - Solid-State Processing

Sponsored by: The Minerals, Metals and Materials Society, Metallurgical Society of the Canadian Institute of Mining Metallurgy and Petroleum, Chinese Society for Metals, GDMB Society for Mining, Metallurgy, Resource and Environmental Technology, Society for Mining Metallurgy and Exploration, Mining and Materials Processing Institute of Japan, Associacao Brasileira de Metalurgia, Materiais e Mineracao, Southern African Institute of Mining and Metallurgy (SAIMM), Minerals Engineering International Online, Cobalt Development Institute, Societe Francaise de Metallurgie et de Materiaux, TMS Extraction and Processing Division, TMS: Hydrometallurgy and Electrometallurgy Committee, TMS: Pyrometallurgy Committee
Program Organizer: Thomas Battle, Midrex Technologies

Tuesday PM
March 5, 2013
Room: 007D
Location: Henry B. Gonzalez Convention Center

Session Chair: Shijie Wang, Rio Tinto Kennecott Utah Copper Corp

2:00 PM
Cobalt Recovery through Sulphating Roast of Cu/Co Concentrate of Katanga Mining: *Kamal Adham*[1]; [1]Hatch Ltd.

2:25 PM
Direct Reduction of Transition Metal (Ni, Co, Cr) Oxides with Carbon in the Presence of Calcium Sulphate: *Animesh Jha*[1]; Yotamu Hara[1]; [1]University of Leeds

2:50 PM
Fe and Ni Enriched and Concentrated from Laterite by Coal Base Pre Reduction Followed with Magnetic Separation: *Hongxu Li*[1]; Yu Chen[1]; Chao Wu[1]; Peng Zhang[1]; Chao Li[1]; [1]University of Science and Technology

3:10 PM
Effect of Refractory Materials on Preparation of Ferronickel Nugget by Rotary Hearth Furnace: Donghai Li[1]; Cheng Pan[1]; *Xuewei Lv*[1]; Enguang Guo[1]; Pan Chen[1]; [1]Chongqing University

3:35 PM Break

3:55 PM
Experimental Study on Reduction-Magnetic Separation Process of Low-Grade Nickel Laterite Ore: Fatao Chen[1]; Bo Zhang[1]; Wencai Li[1]; Qiang Wang[1]; Xin Hong[1]; [1]Shanghai University

4:20 PM
New Route for Nano-Structured Ni-Co Alloy Preparation: D. de Macedo; *Eduardo Brocchi*[1]; F. Moura; [1]PUC-Rio

4:40 PM
Solid State Selective Reduction of Nickel from Nickel Laterite Ores: Manuel Zamolla; *Nagendra Tripathi*[1]; [1]Koniambo Nickel SAS

5:00 PM
State of the Art Refractory Corrosion Test Work for the Nonferrous Metals Industry: *Dean Gregurek*[1]; Angelika Ressler; Viktoria Reiter[1]; Anna Franzkowiak[1]; Alfred Spanring[1]; Bob Drew[1]; Dayle Flynn[1]; [1]RHI AG

Novel Synthesis and Consolidation of Powder Materials : Nanostructured or Nanocrystalline Materials

*Sponsored by:*TMS Materials Processing and Manufacturing Division, TMS: Powder Materials Committee
Program Organizers: Ma Qian, The University of Queensland; Iver Anderson, The Ames Laboratory

Tuesday PM
March 5, 2013
Room: Lone Star Salon C
Location: Grand Hyatt

Session Chairs: Eugene Olevsky, San Diego State University; Young Do Kim, Hanyang University

2:00 PM Keynote
Nanostructured Materials Based on Powder Metallurgy Route: *Bernd Kieback*[1]; Thomas Weissgaerber[2]; Thomas Schubert[2]; Lars Röntzsch[2]; [1]Technische Universitaet Dresden; [2]Fraunhofer Institute for Manufacturing and Advanced Materials IFAM

2:40 PM
Consolidation of Nanocrystalline Si by Shock Waves: *Nikoloz Chikhradze*[1]; Akaki Gigineishvili[2]; Mikheil Chikhradze[2]; Bagrat Godibadze[1]; [1]Mining Institute/Georgian Technical University; [2]Georgian Technical University

3:00 PM
Synthesis and Properties of Amorphous and Nanocrystalline W-Based Alloys and Composites: *Steven Livers*[1]; Megan Beck[1]; Kosette Leperi[1]; Zachary Cordero[2]; Hyon-Jee Voigt[2]; Emily Huskins[3]; Daniel Casem[4]; Brian Schuster[3]; Lee Magness[3]; Michael Hurley[1]; Christopher Schuh[2]; Megan Frary[1]; [1]Boise State University; [2]Massachusetts Institute of Technology; [3]Army Research Laboratory; [4]Army Research Laboratory

3:20 PM Break

3:40 PM Invited
New Class of High Strength Nanostructured Steel for Large Scale Industrial Components: *Daniel Branagan*[1]; Jason Walleser[1]; Brian Merkle[1]; Patrick Mack[1]; Alla Sergueeva[1]; Brian Meacham[1]; [1]The NanoSteel Company

4:10 PM Invited
Bulk Nanostructured Materials from Consolidation of Particles by Severe Plastic Deformation: Understanding and Opportunities: *K. Xia*[1]; [1]University of Melbourne

4:40 PM
Nanostructured Al-7wt%Si-0.3wt%Mg Alloy Powders Prepared by High Energy Ball Milling of A356 Aluminium Casting Alloy Machining Chips: *Jiamiao Liang*[1]; Deliang Zhang[1]; [1]Shanghai Jiao Tong University

5:00 PM
Microstructural Characterization of a Powder-Processed Quasicrystal-Reinforced Al-Cr-Mn-Co-Zr Alloy: *Mauricio Gordillo*[1]; Iuliana Cernatescu[2]; Thomas Watson[2]; Mark Aindow[1]; [1]University of Connecticut; [2]Pratt and Whitney Aircraft

Pb-free Solders and Emerging Interconnect and Packaging Technologies: Mechanical Behavior II

*Sponsored by:*TMS Electronic, Magnetic, and Photonic Materials Division, TMS: Electronic Packaging and Interconnection Materials Committee
Program Organizers: Nikhilesh Chawla, Arizona State University; Srinivas Chada, Whirlpool; Darrel Frear, Freescale Semiconductor; John Elmer, LLNL; Tae-Kyu Lee, Cisco Systems; Yan Li, Intel; Laura Turbini, Research In Motion; Kwang-Lung Lin, National Cheng Kung University; Sohoon Yoo, Korea Institute of Industrial Technology

Tuesday PM
March 5, 2013
Room: 217B
Location: Henry B. Gonzalez Convention Center

Session Chair: To Be Announced

2:00 PM
Evaluation of Impact Property of Low-Melting-Point Solder Joints on Cu Pad: *Hiroshi Nishikawa*[1]; Terumasa Yamamoto[1]; [1]Osaka University

2:20 PM
Assessment of Impact Reliability of Sn-Ag-Cu/Cu-xZn Solder Joints in Consideration with Microstructural Evolution Via EBSD Analysis: *Chi-Yang Yu*[1]; Jenq-Gong Duh[1]; [1]National Tsing Hua University

2:40 PM
Development of Solidification Microstructure and Tensile Mechanical Properties of Sn-0.7Cu and Sn-0.7Cu-2.0Ag Xolders: *José Spinelli*[1]; Amauri Garcia[2]; [1]Federal University of São Carlos; [2]University of Campinas

3:00 PM
Impact of Cooling Rate on Low Silver Sn-Ag-Cu Solder Interconnect Board Level Mechanical Shock and Thermal Cycling Performance: *Tae-Kyu Lee*[1]; Choong-Un Kim[2]; Thomas Bieler[3]; [1]Cisco Systems; [2]University of Texas, Arlington; [3]Michigan State University

3:20 PM Break

3:40 PM
Isothermal Fatigue Properties and Their Relation to the Reliability of Lead Free Solder Joints in BGA Assembly: *Huili Xu*[1]; Choong-Un Kim[1]; Tae-Kyu Lee[2]; [1]University of Texas at Arlington; [2]Cisco

4:00 PM
A Microstructurally Adaptive Composite Model for Steady State Creep of Two-phase Sn-Ag-Cu based Solders: *Babak Talebanpour*[1]; Uttara Sahaym[1]; Praveen Kumar[2]; Indranath Dutta[1]; [1]Washington State University; [2]Indian Institute of Sciences

4:20 PM
Study on Solder Grain Orientation and Texture Effect on the Mechanical Reliability: Fay Hua[1]; *K. Lee*[1]; [1]Intel Corporation

Phase Stability, Phase Transformations, and Reactive Phase Formation in Electronic Materials XII: General Issues in Microelectronics

Sponsored by: TMS Electronic, Magnetic, and Photonic Materials Division, TMS: Alloy Phases Committee
Program Organizers: Chao-hong Wang, National Chung Cheng University; Chih-Ming Chen, National Chung Hsing University; Jae-Ho Lee, Hongik University; Ikuo Ohnuma, Tohoku University; Clemens Schmetterer, TU Bergakademie Freiberg; Yee-Wen Yen, National Taiwan University of Science and Technology; Shien-Ping Feng, The University of Hong Kong; Shih-Kang Lin, National Cheng Kung University

Tuesday PM
March 5, 2013
Room: 203B
Location: Henry B. Gonzalez Convention Center

Session Chairs: Shih-Kang Lin, National Cheng Kung University; Jae-Ho Lee, Hongik University

2:00 PM Invited
Synthesis, Characterization and Applications of Cu, Cu_2O and CuO Nanoparticles: *Hyuck Mo Lee*[1]; Chung Seok Choi[1]; Na Rae Kim[1]; Yun Hwan Jo[1]; Inyu Jung[1]; [1]KAIST

2:20 PM
Effects of Bath Conditions and Operating Parameters on Electroless Nickel-Iron Alloy Plating for Microelectronic Applications: Myung-Won Jung[1]; *Jae-Ho Lee*[1]; Sung Kang[2]; [1]Hongik University; [2]IBM Watson Research Center

2:35 PM
Influence of Bath Composition and Operating Parameters on the Composition of Ni-Fe Alloy Deposits: Ju-Hwan Kim[1]; Ho-Kyung Um[2]; Tai-Hong Yim[3]; Ildong Choi[4]; *Jae-Ho Lee*[1]; [1]Hongik University; [2]Korea Institute of Industrial Technology; [3]Korea Institute of Industrial Technology; [4]Korea Maritime University

2:50 PM
Evaluating the Stability of Barrierless Cu-Alloy Film as a Buffer Layer in Microelectronic Devices: *Chon-Hsin Lin*[1]; [1]Asia-Pacific Institute of Creativity

3:05 PM
Study of Wetting Behavior of Gold-Tin Solder on the Gold, Silver Bi-Layer: *Yu-Jin Hu*[1]; [1]National Central University

3:20 PM
Synthesis and Characterization of Sn/SnO_2 Coated Multi-Walled Carbon Nanotubes: *Chien-I Lin*[1]; Mohanty Udit Surya[1]; Kwang-Lung Lin[1]; [1]National Cheng Kung University

3:35 PM Break

3:50 PM Invited
Characteristics of Plasma-Treated Amorphous Ta-Si-C Film as a Diffusion Barrier for Copper Interconnection: *Jau-Shiung Fang*[1]; Wu-Jia Su[1]; Meng-Shuo Huang[1]; Tsung-Shune Chin[2]; [1]National Formosa University; [2]Feng Chia University

4:10 PM
Preparation of AgCu Alloy Nanoparticles Using Thermal Decomposition Process for the Printed Electronics: Na Rae Kim[1]; Inyu Jung[1]; Yun Hwan Jo[2]; *Hyuck Mo Lee*[1]; [1]KAIST; [2]Samsung Display

4:25 PM
Optical Properties of Al_xO_y/Ni/Al_xO_y Multilayer Absorber Coatings Prepared by Reactive Magnetron Sputtering: *Ting-Kan Tsai*[1]; Shun-Jen Hsueh[1]; Jau-Shiun Fang[1]; [1]Nation Formosa University

4:40 PM
Electron Transport and Magnetic Performance of Ni-Nb-Zr Metallic Glass: Haibing Wang[1]; *Jin Chen*[1]; Chuang Dong[1]; Chonglin Chen[2]; [1]Dalian Univ of Technology; [2]University of Texas at San Antonio

4:55 PM
The Preparation and Properties of Hexadecanoic Acid/Polyaniline Phase Change Materials: *Zhang Ling*[1]; Zhu Furong[1]; Zeng Julan[1]; Zheng Shuanghao[1]; Yan Wenpei[1]; Deng Guangrong[1]; [1]Changsha University of Science and Technology

5:10 PM
Investigation of GaN Nucleation on Various Powder Compounds through Hydride Vapor Phase Epitaxy: Seongki Hong[1]; *Hyo-Jong Lee*[1]; Jun-Seok Ha[2]; Soon-Ku Hong[3]; Seog Woo Lee[4]; Meoung Whan Cho[4]; Takafumi Yao[4]; [1]Dong-A University; [2]Chonnam National University; [3]Chungnam National University; [4]Tohoku University

Phase Transformation and Microstructural Evolution: General Phase Transformations - Non-Ferrous: Part III

Sponsored by: TMS Materials Processing and Manufacturing Division, TMS: Chemistry and Physics of Materials Committee, TMS/ASM: Computational Materials Science and Engineering Committee, TMS: Integrated Computational Materials Engineering Committee, TMS/ASM: Phase Transformations Committee, TMS: Process Technology and Modeling Committee, ASM: Alloy Phase Diagrams Committee
Program Organizers: Amy Clarke, Los Alamos National Laboratory; Sudarsanam Suresh Babu, Ohio State Univ; Rajarshi Banerjee, Univ of North Texas; John Morral, Ohio State Univ; Brian Gleeson, University of Pittsburgh; Carelyn Campbell, National Institute of Standards & Tech; Yongho Sohn, Univ of Central Florida; Yunzhi Wang, Ohio State University

Tuesday PM
March 5, 2013
Room: 204B
Location: Henry B. Gonzalez Convention Center

Session Chairs: Matthew Kramer, Ames Laboratory; Greg Thompson, University of Alabama

2:00 PM
Metastable Phases in a Powder Processed Al-Ce-Mn Alloy: *Mauricio Gordillo*[1]; Iuliana Cernatescu[2]; Thomas Watson[2]; Mark Aindow[1]; [1]University of Connecticut; [2]Pratt and Whitney Aircraft

2:20 PM
Nanoscale Precipitation-Strengthened Al-Sc-(V,Nb,Ta) Alloys: *Keith Knipling*[1]; Nhon Vo[2]; David Dunand[2]; David Seidman[2]; [1]Naval Research Laboratory; [2]Northwestern University

2:40 PM
Optimization of a Dilute Al-Er-Sc-Zr-Si Alloy for High-Temperature Applications: *Nhon Vo*[1]; David Dunand[1]; David Seidman[1]; [1]Northwestern University

3:00 PM
Prediction of the Critical Resolved Shear Stress of an Al-Cu-Sn Alloy Containing Shear-Resistant Precipitate Plates: *Hong Liu*[1]; Yipeng Gao[2]; Yunzhi Wang[2]; Jian-Feng Nie[1]; [1]Monash University; [2]The Ohio State University

3:20 PM
The Influence of Sr on Primary Silicon Morphology in Al-Si Hypereutectic Alloys: *Anilajaram Darlapudi*[1]; Sofiane Terzi[2]; Arne Dahle[2]; David StJohn[2]; [1]CAST CRC, Materials Engineering, University of Queensland; [2]University of Queensland

3:40 PM
Thermo -Dynamic & -Kinetic Modeling to Quantify the Evolution of Primary Intermetallics and Dispersoid Phases during Casting and Homogenization in 6xxx Al-Alloys: *Kerem Öksüz*[1]; Wu Jun[1]; Erwin Povden-Karadeniz[2]; Ahmad Falahati[1]; Carsten Melzer[3]; Ernst Kozeschnik[4]; [1]Vienna University of Technology; [2]Vienna University of Technology,Christian Doppler Laboratory; [3]Austria Metall GmbH; [4]Vienna University of Technonlogy & Christian Doppler Laboratory

4:00 PM
Normal Grain Growth in Cu-Al-Mn Shape Memory Alloy: *Takashi Saito*[1]; Tomoe Kusama[2]; Toshihiro Omori[1]; Ikuo Ohnuma[1]; Ryosuke Kainuma[1]; [1]Tohoku University; [2]Furukawa Electric Co., Ltd.

4:20 PM
The Effect of Vitrification Method on the Phase Selection Dynamics of Cu-Zr Alloys: *Tim Cullinan*[1]; Ralph Napolitano[1]; [1]Iowa State University / Ames Laboratory

4:40 PM
The Study of Transformations in Titanium and Ti Alloys by Electrical Resistivity Measurement: *Petr Harcuba*[1]; Michal Hájek[1]; Jana Šmilauerová[1]; Josef Stráský[1]; Irina Semenova[2]; Miloš Janecek[1]; [1]Charles University in Prague; [2]Ufa State Aviation Technical University

5:00 PM
The Interrelationship of Phase Crystallography on Microstructures in Tantalum Carbides: *Gregory Thompson*[1]; Robert Morris[1]; Billie Wang[1]; Christopher Weinberger[2]; [1]University of Alabama; [2]Sanida National Laboratories

5:20 PM
Thermal Stability of Nanotwinned Thin Films: *Eun Soo Park*[1]; Matthew Besser[1]; Matthew Kramer[1]; Ryan Ott[1]; [1]Ames Laboratory

5:40 PM
Thermodynamic Reassessment of the La-Mg-Ni System and Its Application to Hydrogen Storage System: *Xuehui An*[1]; Kong-Bao Wu[1]; Jie-Yu Zhang[1]; Shuang-Lin Chen[1]; Qian Li[1]; [1]Shanghai University

Phase Transformation and Microstructural Evolution: Non-conventional Phase Transformation Paths: Part II

*Sponsored by:*TMS Materials Processing and Manufacturing Division, TMS: Chemistry and Physics of Materials Committee, TMS/ASM: Computational Materials Science and Engineering Committee, TMS: Integrated Computational Materials Engineering Committee, TMS/ASM: Phase Transformations Committee, TMS: Process Technology and Modeling Committee, ASM: Alloy Phase Diagrams Committee

Program Organizers: Amy Clarke, Los Alamos National Laboratory; Sudarsanam Suresh Babu, Ohio State Univ; Rajarshi Banerjee, Univ of North Texas; John Morral, Ohio State Univ; Brian Gleeson, University of Pittsburgh; Carelyn Campbell, National Institute of Standards & Tech; Yongho Sohn, Univ of Central Florida; Yunzhi Wang, Ohio State University

Tuesday PM
March 5, 2013

Room: 204A
Location: Henry B. Gonzalez Convention Center

Session Chairs: Gregory Olson, Northwestern University; Jian Nie, Monash University

2:00 PM Introductory Comments

2:10 PM
Microstructure Evolution of Cu – 15 wt.%Sn Alloy in Semisolid Remelting Processing: *Huseyin Lus*[1]; Gokhan Ozer[1]; Caglar Yuksel[1]; [1]Yildiz Technical University

2:30 PM
On the Formation of Hierarchically Structured $L2_1$-Ni_2TiAl Precipitates in a Ferritic Alloy: *Christian Liebscher*[1]; Velimir Radmilovic[2]; Ulrich Dahmen[3]; Mark Asta[1]; Gautam Ghosh[4]; [1]UC Berkeley; [2]University of Belgrade; [3]Lawrence Berkeley National Laboratory; [4]Northwestern University

2:50 PM
Pseudospinodal Nucleation in Beta-Ti Alloys: *Andrew Boyne*[1]; Soumya Nag[1]; Rajarshi Banerjee[1]; Yunzhi Wang[1]; [1]University of North Texas

3:10 PM Break

3:30 PM
Solidification of Al-Pb Alloy in a Static magnetic field: Hai-Li Li[1]; *Jiu-Zhou Zhao*[2]; [1]Patent Examination Cooperation Center of the Patent Office, SIPO; [2]Institute of Metal Research, CAS

3:50 PM
The Influence of Pressure and Temperature on the High Pressure Phase Transformation in Zirconium: *Ellen Cerreta*[1]; Juan Escobedo[1]; Paulo Rigg[1]; Frank Addessio[1]; Turab lookman[1]; Curt Bronkhorst[1]; Carl Trujillo[1]; Donald Brown[1]; George Gray[1]; [1]Los Alamos National Laboratory

4:10 PM
Transmission Electron Microscopy of Rapid Solidification of AlxCu100-x Thin Films: *Andreas Kulovits*[1]; Jorg Wiezorek[1]; Thomas LaGrange[1]; Bryan Reed[1]; Joseph Mckeown[1]; Geoffrey Campbell[1]; [1]University of Pittsburgh

4:30 PM
Effect of Cooling Rate on Phase Transformation of Continuous Casting Strand: *Mujun Long*[1]; Dengfu Chen[1]; Zhihua Dong[1]; Xing Zhang[1]; [1]Chongqing University

4:50 PM
In-Situ Identification of Phase Transformation During Material Synthesis Processes: Lijun Song[1]; Cunshan Wang[1]; *Jyotirmoy Mazumder*[1]; [1]University of Michigan

5:10 PM
Non-Classical Mechanism of Gamma Prime Precipitation in Nickel Base Alloys: *Tanaporn Rojhirunsakool*[1]; Subhashish Meher[1]; Soumya Nag[1]; Junyeon Hwang[2]; Jaimie Tiley[3]; Rajarshi Banerjee[1]; [1]University of North Texas; [2]Korea Institute of Science and Technology; [3]Air Force Research Laboratory

5:30 PM Invited
Experimental Study and Simulation of Reverse Spinodal Decomposition: *Jacques Lacaze*[1]; Eric Andrieu[1]; [1]Université de Toulouse

Physical and Mechanical Metallurgy of Shape Memory Alloys: High Temperature Shape Memory Alloys

*Sponsored by:*TMS/ASM: Phase Transformations Committee
Program Organizers: Haluk Karaca, University of Kentucky; Ibrahim Karaman, Texas A&M University; Othmane Benafan, NASA Glenn Research Center; Ryosuke Kainuma, Tohoku University; Hans Jurgen Maier, Univ of Paderborn

Tuesday PM
March 5, 2013
Room: Lone Star Salon B
Location: Grand Hyatt

Session Chairs: Michael Kaufman, Colorado School of Mines; Ruben Santamarta, University of the Balearic Islands

2:00 PM
Shape Memory Response of NiTiHfPd High Strength and High Hysteresis Shape Memory Alloys: *Emre Acar*[1]; Haluk Karaca[1]; Hirobumi Tobe[1]; Fan Yang[2]; Michael Mills[2]; Ron Noebe[3]; [1]University of Kentucky; [2]The Ohio State University; [3]NASA Glenn Research Center

2:20 PM
Effect of Precipitation on the Martensitic Transformation Characteristics of a Ni-Rich NiTiZr Alloy: *Alper Evirgen*[1]; Ibrahim Karaman[1]; Ronald Noebe[2]; Ruben Santamarta[3]; Jaume Pons[3]; [1]Texas A&M University; [2]NASA Glenn Research Center; [3]Universitat de les Illes Balears

2:40 PM
The Effect of Aluminum Additions on the Shape Memory Behavior of NiTiHf Alloys: *Derek Hsen Dai Hsu*[1]; Hunter Henderson[1]; B. Hornbuckle[1]; Gregory Thompson[1]; Michele Manuel[1]; [1]University of Florida

3:00 PM
Effect of Alloy Composition on the Phase Transformation and the Shape Memory Behavior of TiPd Alloys: *Yoko Yamabe-Mitarai*[1]; Raju Arockiakumar[1]; Toru Hara[1]; Mamiko Kawakita[1]; Madoka Takahashi[2]; Satoshi Takahashi[2]; Hideki Hosoda[3]; [1]National Institute for Materials Science; [2]IHI Co.; [3]Tokyo Institute of Technology

3:20 PM
Effect of Alloying and Hot Rolling on the Shape Memory Behavior of Ti-Pd Alloys: *Arockiakumar R.*[1]; H. Maheshwari[1]; M. Kawakita[1]; M. Takahashi[2]; S. Takahashi[2]; Yoko-Yamabe Mitarai[1]; [1]NIMS; [2]IHI.Co.

3:40 PM Break

4:00 PM
Study of Phase Transformations in the Ti-Pt System for High Temperature SMAs: Karem Tello[1]; *Michael Kaufman*[1]; Ronald Noebe[2]; [1]Colorado School of Mines; [2]NASA Glenn Research Center

4:20 PM
Effect of Cr Addition on Phase Transformation of AuTi and AuTiCo Shape Memory Alloys: *Hyunbo Shim*[1]; Toshiyuki Kawamura[1]; Masaki Tahara[1]; Tomonari Inamura[1]; Kenji Goto[2]; Hiroyasu Kanetaka[3]; Yoko Yamabe-Mitarai[4]; Hideki Hosoda[1]; [1]Tokyo Institute of Technology; [2]Tanaka Kikinzoku Kogyo K.K.; [3]Tohoku University; [4]National Institute for Materials Science

4:40 PM
Microstructural Influence on the Load Biased Response of Two Ti-lean, Ni-Ti-Pt High Temperature Shape Memory Alloys: *Grant Hudish*[1]; Ronald Noebe[2]; Glen Bigelow[2]; Michael Kaufman[1]; [1]Colorado School of Mines; [2]NASA Glenn Research Center

5:00 PM
Improvement of Mechanical and Shape Memory Properties in Near-Equiatomic Ti-Pt High Temperature Shape Memory Alloys by Addition of Group IV Elements: *Abdul Wadood*[1]; M. Takahashi[2]; S. Takahashi[2]; Hideki Hosoda[3]; Yoko Yamabe-Mitarai[1]; [1]National Institute for Materials Science; [2]IHI Co.; [3]Tokyo Institute of Technology

Recent Developments in Biological, Electronic, and Functional Thin Films and Coatings: Biological, Electronic, and Functional Thin Films and Coatings IV

*Sponsored by:*TMS Electronic, Magnetic, and Photonic Materials Division, TMS: Thin Films and Interfaces Committee
Program Organizers: R. Narayan, UNC/NCSU Joint Department of Biomedical Engineering; Choong-Un Kim, University of Texas at Arlington; Jian Luo, Clemson University; Nancy Michael, University of Texas at Arlington; Nuggehalli Ravindra, New Jersey Institute of Technology; Adele Carradò, IPCMS

Tuesday PM
March 5, 2013
Room: 214D
Location: Henry B. Gonzalez Convention Center

Session Chairs: Terry Alford, Arizona State University; Nancy Michael, UT Arlington

2:00 PM
Effects of Surface Roughness and Surface Energy on Ice Adhesion Strength: *Carol Ellis-terrell*[1]; Michael Miller[1]; Ronghua Wei[1]; [1]Southwest Research Institute

2:20 PM
Protection of Magnesium Alloy Sheets by Hot Cladding of Aluminium: *Heinz Palkowski*[1]; Rudolph Kai-Michael[2]; [1]Clausthal University of Technology; [2]Arcelor Mittal Duisburg

2:40 PM
Effect of Low Temperature Microwave Processing and Copper Content on the Properties of Ag-Cu Thin Film Alloys: Sayantan Das[1]; *Terry Alford*[1]; [1]Arizona State University

3:00 PM
Sol-Gel Derived Electrochromic Tungsten Trioxide (WO3) Film: *Huige Wei*[1]; Xingru Yan[1]; Shijie Wu[2]; Suying Wei[1]; Zhanhu Guo[1]; [1]Lamar University; [2]Agilent Technologies, Inc

3:20 PM Break

3:45 PM
Influence of Si Addition on the Microstructures and Mechanical Properties of CrZrSiN Thin Films: *Jyh-Wei Lee*[1]; Tzu-Chin Tseng[1]; Sung-Hsiu Huang[2]; Tsung-Eong Hsieh[2]; Jenq-Gong Duh[3]; Yu-Chen Chan[3]; Hsien-Wei Chen[3]; [1]Ming Chi University of Technology; [2]National Chiao Tung University; [3]National Tsing Hua University

4:05 PM
Influence of Si Addition on the Microstructures and Mechanical Properties of CrZrSiN Thin Films: *Jyh-Wei Lee*[1]; [1]Ming Chi University of Technology

REWAS 2013: Enabling Materials Resource Sustainability: Enabling Sustainability through Life Cycle Management, LCA and Industrial Ecology

Sponsored by: Chinese Society for Metals, The Mining and Materials Processing Institute of Japan (MMIJ), TMS Extraction and Processing Division, TMS: Recycling and Environmental Technologies Committee
Program Organizers: Christina Meskers, Umicore Precious Metals Refining; Anne Kvithyld, SINTEF; Markus Reuter, Outotec Oyj; Randolph Kirchain, Massachusetts Institute of Technology; Mark Schlesinger, Missouri University of Science and Technology; Gregory Krumdick, Argonne National Laboratory; Cong Wang, Saint-Gobain High Performance Materials; Gabrielle Gaustad, Rochester Institute of Technology; Diana A. Lados, Worcester Polytechnic Institute; Brajendra Mishra, Colorado School of Mines; Jeffrey S. Spangenberger, Argonne National Laboratory

Tuesday PM
March 5, 2013
Room: 006B
Location: Henry B. Gonzalez Convention Center

Funding support provided by: Xstrata; SINTEF; Outotec; Umicore, and CR3, the Center for Resource Recovery and Recycling

Session Chairs: Gabrielle Gaustad, Rochester Institute of Technology; Jeffrey S. Spangenberger, Argonne National Laboratory

2:00 PM Introductory Comments

2:05 PM
Stock Dynamics and Emission Pathways for the Global Aluminum Cycle: *Daniel Müller*[1]; Gang Liu[1]; Colton Bangs[2]; [1]NTNU; [2]Umicore

2:30 PM
Lifecycle and System Perspectives on the Recycling of Paper and Packaging from the Solid Waste Stream: Adam Gesing[1]; *Jiyoun Chang*[2]; Elsa Olivetti[2]; Gabrielle Gaustad[2]; Randolph Kirchain[2]; Subodh Das[3]; [1]GCI; [2]MIT; [3]Phinix LLC

2:55 PM
Sustainable Production of c-Si Solar Cell Materials – A Competitive Advantage?: *Gabriella Tranell*[1]; [1]Norwegian University of Science & Technology

3:20 PM Break

3:40 PM
Phosphorus Flow Analysis for Food Production and Consumption: *Kazuyo Matsubae*[1]; Kenichi Nakajima[2]; Keisuke Nansai[2]; Tetsuya Nagasaka[1]; [1]Tohoku University; [2]National Institute for Environmental Studies

4:05 PM
Quantifying the Export Flow of Used Electronics from the United States: The Case of Laptop Computers: *Huabo Duan*[1]; T. Miller[1]; Jeremy Gregory[1]; Randolph Kirchain[1]; [1]MIT

4:30 PM
Life Cycle Assessment of NdFeB Rare Earth Magnet Recycling: Brent Dolan[1]; Can Erdem[1]; Zhou Lin[1]; David Dornfeld[1]; *Fiona Doyle*[1]; [1]University of California, Berkeley

REWAS 2013: Enabling Materials Resource Sustainability: Enabling Sustainability through Process Design, Modeling & Simulation

Sponsored by: Chinese Society for Metals, The Mining and Materials Processing Institute of Japan (MMIJ), TMS Extraction and Processing Division, TMS: Recycling and Environmental Technologies Committee
Program Organizers: Christina Meskers, Umicore Precious Metals Refining; Anne Kvithyld, SINTEF; Markus Reuter, Outotec Oyj; Randolph Kirchain, Massachusetts Institute of Technology; Mark Schlesinger, Missouri University of Science and Technology; Gregory Krumdick, Argonne National Laboratory; Cong Wang, Saint-Gobain High Performance Materials; Gabrielle Gaustad, Rochester Institute of Technology; Diana A. Lados, Worcester Polytechnic Institute; Brajendra Mishra, Colorado School of Mines; Jeffrey S. Spangenberger, Argonne National Laboratory

Tuesday PM
March 5, 2013
Room: 006A
Location: Henry B. Gonzalez Convention Center

Funding support provided by: Xstrata; SINTEF; Outotec; Umicore, and CR3, the Center for Resource Recovery and Recycling

Session Chairs: Yongxiang Yang, TU Delft; Juergen Antrekowitsch, University of Leoben

2:00 PM Introductory Comments

2:10 PM
Moving Equipment and Workers to a Mine Construction Site at a Logistically Challenged Area: *Laszlo Tikasz*[1]; Dennis Biroscak[2]; Scheale Duvah Pentiah[1]; Robert McCulloch[1]; [1]Bechtel Canada Co.; [2]BECHTEL Co.

2:35 PM
Preparation and Characterization of Fibrous Copper Powder Used for Conductive Filler: *Youqi Fan*[1]; Yongxiang Yang[2]; Yanping Xiao[2]; Zhuo Zhao[1]; [1]Anhui University of Technology; [2]Delft University of Technology

3:00 PM
Silver Selenide Thermodynamics for Copper Anode Slime Refining: *Dawei Feng*[1]; Pekka Taskinen[1]; [1]Aalto University

3:25 PM Break

3:45 PM
Measurement of Thermodynamic Properties of Tellurium in Molten Iron by Transpiration Method: *Shumpei Suzuki*[1]; Takeshi Yoshikawa[1]; Takayuki Nishi[2]; Kazuki Morita[1]; [1]University of Tokyo; [2]Sumitomo Metals Intustries, Ltd

4:10 PM
Thermodynamic Model for Acidic Metal Sulfate from Solubility Data: *Petri Kobylin*[1]; Hannu Sippola[1]; Pekka Taskinen[1]; [1]Aalto University

4:35 PM
Practical Thermodynamic Model for Acidic Sulfate Solutions: *Hannu Sippola*[1]; Petri Kobylin[1]; Pekka Taskinen[1]; [1]Aalto University

5:00 PM
Thermodynamic Analysis of Lead-Fluoride Ion-Water System: Jiayuan Li[1]; Tianzu Yang[1]; *Lin Chen*[1]; Weifeng Liu[1]; [1]Central South University

Synergies of Computational and Experimental Materials Science II: Mechanical Behavior: Plasticity

Sponsored by: TMS Materials Processing and Manufacturing Division, TMS/ASM: Computational Materials Science and Engineering Committee, TMS: Integrated Computational Materials Engineering Committee
Program Organizers: Katsuyo Thornton, University of Michigan; Thomas Buchheit, Sandia National Laboratories; Anthony Rollett, Carnegie Mellon University; David Rowenhorst, Naval Research Laboratory

Tuesday PM
March 5, 2013
Room: 217A
Location: Henry B. Gonzalez Convention Center

Session Chairs: Thomas Buchheit, Sandia National Laboratories; David Rowenhorst, Naval Research Laboratory

2:00 PM Introductory Comments

2:05 PM Invited
Deformation Mechanisms in Nanocrystalline Metals: In-Situ Diffraction Experiments and Atomistic Simulations: *Helena Van Swygenhoven*[1]; [1]Paul Scherrer Institut

2:35 PM
Size-Affected Behavior in Pure Compression of Micron-Sized Metallic Crystals: *Satish Rao*[1]; Dennis Dimiduk[2]; Michael Uchic[2]; Triplicane Parthasarathy[1]; Jaafar El-Awady[3]; Ahmed Hussein[3]; Christopher Woodward[2]; [1]UES Inc.; [2]Air Force Research Laboratory; [3]Johns Hopkins University

2:55 PM
Twinning Dominated Texture Evolution in Bulk Cu-Nb Nano-Lamellar Composites: *Shijian Zheng*[1]; John Carpenter[1]; Jian Wang[1]; Weizhong Han[1]; Robert Dickerson[1]; Irene Beyerlein[1]; Nathan Mara[1]; [1]Los Alamos National Laboratory

3:15 PM
Building Metrological Foundations for Nanoindentation: Coupled Experiments and Modeling: *Lyle Levine*[1]; Chandler Becker[1]; Ron Dixson[1]; Joseph Fu[1]; Yvonne Gerbig[1]; Li Ma[1]; Boon Ng[1]; Bartosz Nowakowski[1]; Ndubuisi Orji[1]; William Osborn[1]; Douglas Smith[1]; Francesca Tavazza[1]; Maureen Williams[1]; [1]National Institute of Standards and Technology

3:35 PM Break

3:50 PM Invited
Orientation Fragmentation in Polycrystals Subjected to Large-Strain Deformations: *Paul Dawson*[1]; Romain Quey[2]; [1]Cornell University; [2]Ecole des Mines de Saint Etienne

4:20 PM
Microstructural Effects on Ductile Damage of Polycrystalline Materials: *Ricardo Lebensohn*[1]; [1]Los Alamos National Laboratory

4:40 PM
Evaluating Raman and Electron Diffraction Nanoscale Strain-Mapping Techniques Via AFM and Finite Element Modeling: *Lawrence Friedman*[1]; Mark Vaudin[1]; Stephan Stranick[1]; Gheorghe Stan[1]; Yvonne Gerbig[1]; William Osborn[1]; Robert Cook[1]; [1]National Institute of Standards and Technology

5:00 PM Invited
Microstructure Effects on Local Plasticity: Closing the Loop Between Experiment and Simulation: *Michael Groeber*[1]; Paul Shade[1]; Michael Uchic[1]; Yoon-Suk Choi[1]; Todd Turner[1]; [1]AFRL

Three-Dimensional Materials Science VII: From 3D-4: New Data Representation Paradigms and Advanced Characterization in Four Dimensions

Sponsored by: TMS Structural Materials Division, TMS: Advanced Characterization, Testing, and Simulation Committee
Program Organizers: Jonathan Madison, Sandia National Laboratories; Nikhilesh Chawla, Arizona State University; Michael Groeber, Air Force Research Laboratory

Tuesday PM
March 5, 2013
Room: 212A
Location: Henry B. Gonzalez Convention Center

Session Chairs: Michael Groeber, AFRL, Wright Patterson AFB; Alexis Lewis, Naval Research Laboratory

2:00 PM Invited
Four-Dimensional Measurement of Interfacial Morphology: John Gibbs[1]; Chal Park[2]; Begum Gulsoy[1]; Julie Fife[3]; Katsuyo Thornton[2]; *Peter Voorhees*[1]; [1]Northwestern University; [2]University of Michigan; [3]Paul Scherrer Institut

2:30 PM
Temporal Evolution of Gamma Prime Precipitates in a Co-Al-W-Ni Quaternary Superalloy: *Daniel Sauza*[1]; Peter Bocchini[1]; Ronald Noebe[2]; David Seidman[1]; David Dunand[1]; [1]Northwestern University; [2]NASA Glenn Research Center

2:50 PM
Temporal Evolution of Three Dimensional Microstructure and Associated Chemical Partitioning in Cobalt Base Superalloys: *Subhashish Meher*[1]; Soumya Nag[1]; Jaimie Tiley[2]; Rajarshi Banerjee[1]; [1]University of North Texas; [2]Air Force Research Laboratory

3:10 PM Break

3:25 PM Invited
Challenges in Data Intensive Science at Synchrotron Based 3D X-Ray Imaging Facilities: *Francesco De Carlo*[1]; Nicholas Schwarz[2]; XIanghui Xiao[2]; Kamel Fezzaa[2]; Steve Wang[2]; Chris Jacobsen[2]; Nikhilesh Chawla[3]; Florian Fusseis[3]; [1]Sandia National Laboratories; [2]Argonne National Laboratory; [3]Arizona State University; [4]Ruhr-Universität Bochum

3:55 PM
Design and Construction of a High-Resolution, Lab-Scale X-Ray Computed Tomography (XCT) System for Four Dimensional (4D) Materials Science: *James Mertens*[1]; Jason Williams[1]; Nikhilesh Chawla[1]; [1]Arizona State University

4:15 PM Break

4:30 PM Invited
Modeling Heterogeneous Materials via Statistical Microstructural Descriptors: *Yang Jiao*[1]; Nikhilesh Chawla[1]; [1]Arizona State University

5:00 PM
Coarsening of Complex Microstructures Simulated Via Phase-Field Method: *Chal-Lan Park*[1]; Peter Voorhees[2]; Katsuyo Thornton[1]; [1]University of Michigan; [2]Northwestern University

5:20 PM
Spherical Images of Faces, Edges and Corners in Grain Structures: *Veena Tikare*[1]; Robert DeHoff[2]; Burton Patterson[2]; David Rule[2]; [1]Sandia National Laboratories, New Mexico; [2]University of Florida

5:40 PM
Topological Paths in Grain Growth: *David Rule*[1]; Burton Patterson[1]; Robert DeHoff[1]; Veena Tikare[2]; [1]University of Florida; [2]Sandia National Laboratories, New Mexico

2013 Functional Nanomaterials: Synthesis, Properties and Applications: Nanomaterials General II

*Sponsored by:*TMS Electronic, Magnetic, and Photonic Materials Division, TMS: Nanomaterials Committee
Program Organizers: Seong Jin Koh, University of Texas at Arlington; Nitin Chopra, University of Alabama; Jiyoung Kim, University of Texas at Dallas; Yuanbing Mao, University of Texas-Pan American; Ashwin Ramasubramaniam, University of Massachusetts; Gregory Thompson, University of Alabama

Wednesday AM
March 6, 2013

Room: 201
Location: Henry B. Gonzalez Convention Center

Funding support provided by: Qualcomm, Inc.

Session Chairs: Gregory Thompson, University of Alabama; Ashwin Ramasubramaniam, University of Massachusetts Amherst

8:30 AM Introductory Comments

8:35 AM Invited
Flexoelectricity: *Pradeep Sharma*[1]; [1]University of Houston

9:10 AM
Synthesis and Magnetostrictive Properties of Nanostructured Fe - Tb Alloys: *Pekka Ruuskanen*[1]; [1]Tampere University of Technology

9:30 AM
A Novel Electrochemical Process for Assembling Hierarchically Aligned Carbon Nanotube-Collagen Composite Macrostructures: *Vasiliki Poenitzsch*[1]; Xingguo Cheng[1]; [1]Southwest Research Institute

9:50 AM
Sub-10 nm Cobalt Nanowires Building via Phase Separation: Synthesis, Simulation, and Characterization: *Yuan Tian*[1]; Zhanping Xu[1]; Daniel Schmidt[1]; Tanjore Jayaraman[1]; Chad Briley[1]; Jeffrey Shield[1]; Mathias Schubert[1]; Eva Franke-Schubert[1]; [1]University of Nebraska-Lincoln

10:10 AM Break

10:30 AM
Fluorescence from Polymers in Uniaxially Stretched Melt Spun Scintillation Fiber Mats: *Stephen Young*[1]; Rohit Uppal[1]; Dayakar Penumadu[1]; David Harper[1]; [1]University of Tennessee, Knoxville

10:50 AM
Graphene as an Electron Mediator in Tantalum Oxynitride Based Composites Z-Schem Photocatalytic Water Splitting: Zheng Wang[1]; *Hou Jungang*[1]; Shuqiang Jiao[1]; Kai Huang[1]; Hongmin Zhu[1]; [1]University of Science and Technology Beijing

11:10 AM
Structural and Magnetic Properties of Pr2Co7-xFex Phase Synthesized by Mechanical Alloying: *Lotfi Bessais*[1]; Riadh Fersi[1]; Najeh Mliki[2]; [1]CNRS; [2]University of Tunis

11:30 AM
Methodology to Colloid Stability in Aqueous Silver Nanoparticles from Redox Method for Power Electronics Interconnections: *Yareni Lara-Rodríguez*[1]; Pedro Quintero[1]; [1]UPRM

11:50 AM
Tailoring the Third Dimension in Layered Materials: Direct Synthesis of Layered Intercalation Compounds and Colloidal Single-Layer Nanosheets: Jingfang Yu[1]; Lichen Xiang[1]; Benjamin Martin[1]; Cody Gummelt[1]; Abraham Clearfield[2]; Zhiping Luo[3]; *Luyi Sun*[1]; [1]Texas State University-San Marcos; [2]Texas A&M University; [3]Fayetteville State University

12:10 PM
Vacuum Synthesis and Luminescence Properties of Terbium-Activated Gadolinium Oxysulfide Nanophosphor: *Fei Wang*[1]; Dachun Liu[1]; Bin Yang[1]; Yongnian Dai[1]; [1]Kunming University of Science and Technology

4th International Symposium on High-Temperature Metallurgical Processing: Roasting, Reduction and Smelting

*Sponsored by:*TMS Extraction and Processing Division, TMS: Energy Committee, TMS: Materials Characterization Committee, TMS: Pyrometallurgy Committee
Program Organizers: Tao Jiang, Central South University; Jiann-Yang Hwang, Michigan Technological University; Phillip Mackey, Consultant; Onuralp Yücel, ITU; Guifeng Zhou, Wuhan Iron and Steel

Wednesday AM
March 6, 2013

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

Session Chairs: Jungshin Kang, The University of Tokyo; Jinhui Peng, Kunming University of Science and Technology

8:30 AM
Cost Benefits of EAF Bottom Purging Systems Due to Metallurgical Improvements: *Marcus Kirschen*[1]; Ashraf Hanna[1]; Karl-M Zettl[1]; [1]RHI AG

8:50 AM
Reduction Process Of Zinc From Concentrates With CO2 Reduced Emission: *Edgar Blanco*[1]; [1]FLSmidth Minerals

9:05 AM
Researches on Reduction Roasting of Low-grade Manganese Oxide Ores Using Biomass Charcoal as Reductant: *Yuanbo Zhang*[1]; Daoxian Duan[1]; Zhixiong You[1]; Guanghui Li[1]; Xiaohui Fan[1]; Tao Jiang[1]; [1]Central South University

9:25 AM
Reduction Behavior of Pellets Balled with Bentonite: Tao Jiang[1]; *Guihong Han*[1]; Yanfang Huang[1]; Guanghui Li[1]; Yuanbo Zhang[1]; [1]Central South University

9:40 AM
Vanadium Distribution Between Blast Furnace Slag and Hot Metal: Jia-Rong Yan[1]; *Bing Xie*[1]; Xiao-Yi Zeng[1]; Qing-Yun Huang[1]; Hong-Yi Li[1]; [1]Chongqing University

9:55 AM Break

10:05 AM
Development of Antimony Smelting Technology in China: *Weifeng Liu*[1]; Tianzu Yang[1]; Lin Chen[1]; shu Bin[1]; Wanda Bin[1]; [1]Central South University

10:25 AM
Effect of Reduction Conditons on Pre-reduction Behaviors of Self-fluxed Pellets in COREX Process: *Deqing Zhu*[1]; Zifu Gao[1]; Jian Pan[1]; [1]Central South University

10:45 AM
Upgrade of Titanium Ore by Selective Chlorination: *Jungshin Kang*[1]; Toru Okabe[1]; [1]The University of Tokyo

11:00 AM
Calcination Factors of Rubidium Extraction from Low-grade Muscovite Ore: Shan Zhiqiang[1]; Shu Xinqian[1]; [1]China University of Mining and Technology

11:20 AM
Enhancing the Reduction Ratio of Panzhihua Llmenite Concentrate with Coke and Ferrosilicon: *Run Huang*[1]; Xuewei Lv[1]; Kai Zhang[1]; Chenguang Bai[1]; Liangying Wen[1]; [1]College of Materials Science and Engineering, Chongqing University

11:30 AM
Reduction and Separation of High Iron Content Manganese Ore and iIs Mechanism: *Zhucheng Huang*[1]; Bin Chai[1]; Yi Lingyun[1]; Tao Jiang[1]; [1]Central South University

11:50 AM
Sticking of Iron Ore Pellets in Direct Reduction with Coal Gas: Behavior and Prevention: Zhucheng Huang[1]; *Yi Lingyun*[1]; Tiehui Li[1]; Tao Jiang[1]; [1]Central South University

12:00 PM
Enhancement of Carbothermal Reduction of Panzhihua Titanomagnetite Concentrates by Borax Additive: *Tu Hu*[1]; Chenguang Bai[1]; Xuewei Lv; Zhigang Lun[1]; [1]Chongqing University

Advanced Materials and Reservoir Engineering for Extreme Oil & Gas Environments: Advance Materials & Innovative Solutions for Oil and Gas I

*Sponsored by:*TMS Materials Processing and Manufacturing Division, TMS Structural Materials Division, TMS Electronic, Magnetic, and Photonic Materials Division, TMS: Nanomaterials Committee
Program Organizers: Indranil Roy, Schlumberger; Brajendra Mishra, Colorado School of Mines; Manuel Marya, Schlumberger Technology Corporation; Kuo-Chiang Chen, Schlumberger; Partha Ganguly, Schlumberger; Richard Lewis, Schlumberger; Suveen Mathaudhu, U.S. Army Research Office; Nitin Chopra, The University of Alabama; Xinghang Zhang, Texas A&M University; Greg Kusinski, Chevron; John Meng, BP America Inc.; Jefferson Rodrigues, Petrobras; Justin Cheney, Scoperta

Wednesday AM
March 6, 2013
Room: Lone Star Salon A
Location: Grand Hyatt

Session Chairs: Manuel Marya, Schlumberger; Nitin Chopra, University of Alabama

8:30 AM Introductory Comments and Plenary Overview Lecture: Hani Elshahawi, Deepwater Technology Advisor, Shell Exploration & Production, Co.

8:55 AM Keynote
Oilfield Corrosion Overview and Research Collaborations: *Brajendra Mishra*[1]; [1]Colorado School of Mines

9:25 AM
Progress on Nano Fluid-based Enhancement of Transport Phenomena for Enhanced Oil Recovery Applications: *M.M. Ohadi*[1]; K.Y. Choo; [1]University of Maryland

9:45 AM
Fluorescent Nanoparticle Tracers for Oil Exploration and Production: *Emmanuel Giannelis*[1]; [1]Cornell University

10:05 AM Break

10:20 AM
Engineered Nanoparticles as Improved Oil Recovery and Flow Assurance Agents Under Harsh Reservoir Conditions: *Chun Huh*[1]; Steven Bryant; Keith Johnston; [1]University of Texas at Austin

10:40 AM Keynote
Analysis of Polymer Materials by Compact and Portable NMR: *Bernhard Bluemich*[1]; [1]RWTH Aachen Univ

11:10 AM Invited
Dynamics of Nanoparticle-Based Complex Fluids in Porous Media: *Jacinta Conrad*[1]; Kai He[1]; Firoozeh Babaye Khorasani[1]; Ramanan Krishnamoorti[1]; [1]University of Houston

11:30 AM
Asphaltenes to Valuable to Burn – New Hybrid Materials: *Russell Chianelli*[1]; [1]Univ of Texas at El Paso

11:50 AM
Development of a First Numerical Approach with an Experimental Confrontation for Diffusion Kinetics and Thermo-diffuso Mechanical Behavior of PVDF/CO2 System: *Severine Boyer*[1]; Jean-Claude Grandidier[2]; Gaelle Rambert[2]; Cedric Baudet[2]; Marie-Helene Klopffer[3]; Laurent CANGEMI[3]; [1]CNRS/ISAE-ENSMA; [2]P PRIME Institute, ISAE-ENSMA; [3]IFP Energies Nouvelles

12:10 PM
In-Service Detection of Damage Severity for Pipeline Steel Inspection: *Angelique Lasseigne*[1]; [1]Generation 2 Materials Technology, LLC

12:30 PM
Novel Reactive Elastomer Composites for Zonal Isolation Packers: On the Swelling Kinetics and Stiffening Mechanism: *Meng Qu*[1]; Dingzhi Han[1]; Travis Hohenberger[2]; Frederick Lemme[2]; Agathe Robisson[1]; [1]Schlumberger-Doll Research; [2]Schlumberger Reservoir Completions

Advanced Materials for Power Electronics, Power Conditioning, and Power Conversion: Wide Bandgap Semiconductor Material Growth and Characterization

*Sponsored by:*TMS Electronic, Magnetic, and Photonic Materials Division, TMS: Energy Conversion and Storage Committee, TMS: Magnetic Materials Committee
Program Organizers: Paul Ohodnicki, National Energy Technology Laboratory; Clive Randall, Penn State University; Michael Lanagan, Penn State University; Michael McHenry, Carnegie Mellon University; Rachel Myers-Ward, Naval Research Laboratory

Wednesday AM
March 6, 2013
Room: 007A
Location: Henry B. Gonzalez Convention Center

Session Chairs: Jennifer Hite, Naval Research Laboratory; David Meyer, Naval Research Laboratory

8:30 AM Invited
Growth of Thick 4H-SiC Epilayers and Defect Reduction: *Hidekazu Tsuchida*[1]; Tetsuya Miyazawa[1]; Xuan Zhang[1]; Masahiro Nagano[1]; Ryohei Tanuma[1]; Isaho Kamata[1]; Masahiko Ito[1]; [1]Central Research Institute of Electric Power Industry (CRIEPI)

9:00 AM
On-Axis Homoepitaxial Growth of 4H-SiC PiN Structure for High Power Applications: *Jawad ul Hassan*[1]; Ian Booker[1]; Louise Lilja[1]; Peder Bergman[1]; Anders Halén[2]; M Fagerlind[3]; Erik Janzén[1]; [1]Linköping University; [2]Royal Institute of Technology; [3]Chalmers University of Technology

9:20 AM Invited
BPD Conversion in a Thin SiC Buffer Layer: *Rachael Myers-Ward*[1]; Nadeem Mahadik[1]; Robert Stahlbush[1]; Virginia Wheeler[1]; Luke Nyakiti[1]; Anindya Nath[1]; Charles Eddy[1]; Kurt Gaskill[1]; [1]NRL

9:50 AM
Surface Reactions of Nitrogen on SiC: *Weijie Lu*[1]; Sorrie Ceesay[1]; Roland Barbosa[2]; Xingguang Zhu[3]; Leonard Feldman[3]; [1]Air Force Research Laboratory; [2]Université Libre de Bruxelles; [3]Rutgers University

10:10 AM Break

10:30 AM Invited
Controlling Gallium Nitride Polarity on Native Substrates: *Jennifer Hite*[1]; Mark Twigg[1]; Jaime Freitas[1]; Michael Mastro[1]; Igor Vergaftman[1]; Jerry Meyer[1]; Shawn O'Connor[1]; Nicholas Condon[1]; Francis Kub[1]; Steven Bowman[1]; Charles Eddy[1]; [1]Naval Research Laboratory

11:00 AM Invited
Elements of Power Conversion Integration in Group-III Nitride Heterojunctions: *Christian Wetzel*[1]; [1]Rensselaer Polytechnic Institute

Advances in Surface Engineering: Alloyed and Composite Coatings II: High Temperature, Wear- and Corrosion-Resistant Coatings

Sponsored by: TMS Materials Processing and Manufacturing Division, TMS: Surface Engineering Committee
Program Organizers: Srinivasa Bakshi, Indian Institute of Technology Madras; Graham McCartney, University of Nottingham; Arvind Agarwal, Florida International University; Sandip Harimkar, Oklahoma State University

Wednesday AM
March 6, 2013
Room: Bowie B
Location: Grand Hyatt

Funding support provided by: Bulk Nanostructured Materials Programs, Office of Naval Research

Session Chair: To Be Announced

8:30 AM Invited
Surface Engineering of Corrosion, Environmental Fracture, Cavitation & Impingement Resistant Materials: *Joseph Farmer*[1]; Alexander Rubenchik[1]; Sarath Menon[2]; Terry McNelley[2]; Lloyd Hackel[3]; [1]Lawrence Livermore National Laboratory; [2]United States Naval Postgraduate School; [3]Curtis-Wright

8:50 AM Invited
Ultrastable Nanoscale Ag Surfaces: A New Paradigm in Surface Oxidation Prevention: Ritesh Sachan[1]; Vanessa Ramos[1]; Abhinav Malasi[1]; Brock Bartley[1]; Gerd Duscher[1]; *Ramki Kalyanaraman*[1]; [1]University of Tennessee

9:10 AM
Effect of Adding 0.2%Zr in D-gun Sprayed Cr3C2 - (NiCr) Coating at High Temperature: *Deepa Mudgal*[1]; Surendra Singh[1]; Satya Prakash[1]; [1]Indian Institute of Technology, Roorkee

9:25 AM
Hot Corrosion Studies of Wire Arc-Spray Coatings on 310S Stainless Steel in an Actual Environment of a Coal Fired Boiler: *Vishwambhar Shukla*[1]; R. Jayaganthan[1]; V K Tewari[1]; [1]Indian Institute of Technology, Roorkee

9:40 AM
Development of Ni-P-TiO2 Nano-Composite Coatings to Resist Environmental Degradation: *Preeti Makkar*[1]; Ramesh Agarwala[1]; Vijaya Agarwala[1]; [1]IIT Roorkee

9:55 AM Break

10:10 AM Invited
Spark Plasma Sintering of Cryomilled Al-Si Claddings onto Al Substrates: *Mathieu Brochu*[1]; Jason Milligan[1]; [1]McGill University

10:30 AM
Effect of Bath Temperature on Corrosion Behavior of Hot-dipped 55%Al-Zn-1.6%Si Coated Steel Sheet in NaCl Solution: *Zengpeng Yang*[1]; Qian Li[1]; Moucheng Li[1]; Jieyu Zhang[1]; Xianxia Yuan[2]; [1]Shanghai University; [2]Shanghai Jiao Tong University

10:45 AM
Microstructure and Wear Properties of Ni-Cu-Cr-Al Multi-component Coatings Prepared by Plasma Spraying: Gautham Prakash[1]; Pramod SL[1]; Prathap Chandran[1]; Cheng Zhang[2]; Arvind Agarwal[2]; Daniel Fabijanic[3]; *Srinivasa Bakshi*[1]; [1]Indian Institute of Technology Madras; [2]Florida International University; [3]Deakin University

11:00 AM
Electrochemical Studies of Electroless Nickel Phosphorus Coating on Carbon Steel in NaCl and NaOH Solutions: Cui Lin[1]; Nazila Dadvand[2]; *Georges Kipouros*[2]; [1]Nanchang Hanhkong University; [2]Dalhousie University

11:15 AM
Deposition of Zinc-Zinc Phosphate Composite Coatings on Steel by Cathodic Electrochemical Treatment: C Kavitha[1]; *Sankara Narayanan TSN*[2]; K Ravichandran [3]; [1]CSIR-National Metallurgical Laboratory; [2]Chonbuk National University; [3]University of Madras

11:30 AM
Improving Corrosion Resistance by Alodine EC2 Coating on Aluminum Alloys: *Jianhui Shang*[1]; Steve Hatkevich[1]; Larry Wilkerson[1]; [1]American Trim LLC

Alumina and Bauxite: Precipitation and Calcination

Sponsored by: TMS Light Metals Division, TMS: Aluminum Committee
Program Organizer: Pat Clement, Alcoa

Wednesday AM
March 6, 2013
Room: 212B
Location: Henry B. Gonzalez Convention Center

Session Chair: Everett Phillips, Nalco Company

8:30 AM Introductory Comments

8:40 AM
Environmentally Safe Operation of Barometric Condensers: *Matthew Jacobs*[1]; [1]Alcoa, Inc.

9:00 AM
Hatch - ETI Aluminyum Precipitation Modeling: Evangelo Stamatiou[1]; *David Chinloy*[1]; Bekir Çelikel[2]; Murat Kayaci[2]; Esra Savkilioglu[2]; [1]Hatch; [2]ETI Aluminyum

9:20 AM
Improve the Classification System in Hydro Alunorte Lines 4/5: *Cleto Junior*[1]; Emerson Moraes[1]; Joaquim Ribeiro[1]; Hans Haraldsen[1]; Everton Santos[1]; José Chartouni[1]; Darlan Gomes[1]; Cesar Magro[1]; [1]Hydro Alunorte

9:40 AM
Increase in the Stability of Gravimetric Classification System of Precipitation at Hydro Alunorte: *Victor Cruz*[1]; Emerson Moraes[1]; Cleto Azevedo Junior[1]; Denise Rodrigues[1]; Adjane Sousa[1]; Alex Furtado[1]; Dauton Silva[1]; [1]Hydro Alunorte

10:00 AM Break

10:15 AM
Experience with Commissioning New Generation Gas Suspension Calciner: *Benny Raahauge*[1]; Susanne Wind[1]; [1]FLSmidth

10:35 AM
Bayer Process Efficiency Improvement: *Songqing Gu*[1]; [1]Chalco

10:55 AM
HyClass(TM) Technology for Improvement of Trihydrate Classification in the Bayer Process: *Jing Wang*[1]; Jaqueline Herrera[1]; Shawn Kostelak[2]; *Kody Frederic*[2]; [1]Nalco an Ecolab Company; [2]Noranda

11:15 AM Concluding Comments

Aluminum Alloys: Fabrication, Characterization and Applications: Thermal Mechanical Processing

Sponsored by: TMS Light Metals Division, TMS: Aluminum Processing Committee
Program Organizers: Zhengdong Long, Kaiser Aluminum; Subodh Das, Phinix LLC; Tongguang Zhai, University of Kentucky; William Golumbfskie, Naval Surface Warfare Center

Wednesday AM
March 6, 2013
Room: 213A
Location: Henry B. Gonzalez Convention Center

Session Chair: Xiyu Wen, University of Kentucky

8:30 AM Invited
Effects of Homogenization Treatment Conditions on the Recrystallization Behavior of Al-1.2Mn Aluminum Alloy Sheets: Pizhi Zhao[1]; *Xinglin Chen*[1]; Wei Chen[1]; Yonghao Zhang[1]; [1]Suzhou Research Institute for Nonferrous Metals

8:50 AM
Textures, Particle Structures and Mn Solution in Al Matrix of Continuous Cast AA3004 and AA3003 Al Alloys After Cold Rolling and Annealing: *Xiyu Wen*[1]; Jingwu Zhnag[2]; Shridas Ningileri[3]; Tongguang Zhai[1]; [1]University of KentuckyY; [2]Yanshan University, P. R. China; [3]Secat Inc.

9:10 AM
Toward a Recrystallized Microstructure in Extruded AA6005A Alloy: Abbas Bahrami[1]; Andrew den Bakker[2]; *Alexis Miroux*[3]; Jilt Sietsma[4]; [1]Materials Innovation Institute (M2i), Technical University of Delft (TuDelft); [2]Nedal Aluminium B.V.; [3]Materials Innovation Institute (M2i); [4]Technical University of Delft (TUDelft)

9:30 AM
Grain Subdivision and Its Effect on Texture Evolution in an Aluminum Alloy Under Plane Strain Compression: *Q. Ma*[1]; W. Mao[2]; B. Li[1]; P.T. Wang[1]; M.F. Horstemeyer[1]; [1]Mississippi State University; [2]University of Science and Technology Beijing

9:50 AM Break

10:10 AM
Fatigue Analysis of Ultrafine Grained Al 1050 Alloy Produced by Cyclic Forward Backward Extrusion: Hamid Alihosseini[1]; *Mohsen Asle Zaeem*[1]; [1]Missouri University of Science and Technology

10:30 AM
A Study of Precipitates Formed during Homogenization in Modified AA6061 Aluminum Alloy: *Liang Chen*[1]; Wei Wen[1]; Yi Han[2]; Hai Zhang[2]; Tongguang Zhai[1]; [1]University of Kentucky; [2]Suzhou Research Institute for Nonferrous Metals

10:50 AM
Effect of Overheated Solution Treatment on Microstructure and Room Temperature Tensile Properties of 2218 Peak-Aged Al-Cu Alloy: *Wang Po-Han*[1]; Ssu-Ta Chen[1]; Truan-Sheng Lui[1]; Li-Hui Chen[1]; Fei Yi Hung[1]; [1]National Cheng Kung University

11:10 AM
Effects of Extrusion Ratios and Isothermal Holding Time on Microstructure Evolution of Al-Mg-Si Semisolid Billet Fabricated by Modified SIMA Process: *Yen-Yu Hou*[1]; Fei-Yi Hung[1]; Truan-Sheng Lui[1]; Li-Hui Chen[1]; [1]National Cheng Kung University

11:30 AM
Effect of Zn Content and Process Parameters on Corrosion Behaviour of Twin-Roll Cast Aluminum Brazing Alloys: Murat Dündar[1]; *Mert Günyüz*[1]; Cemil Isiksaçan[1]; Anil Pastirmaci[1]; [1]Assan Aluminyum A.S.

11:50 AM
Deformation Characteristics of a 2139 Aluminum Alloy: *David Snyder*[1]; [1]Illinois Institute of Technology

Aluminum Processing: Aluminum Processing I

Sponsored by: TMS Light Metals Division, TMS: Aluminum Committee
Program Organizer: Kai Karhausen, Hydro Aluminium Rolled Products GmbH

Wednesday AM
March 6, 2013
Room: 210A
Location: Henry B. Gonzalez Convention Center

Session Chair: To Be Announced

8:30 AM
Strategic Directions of Aluminum Processing: *Adrian Ioana*[1]; [1]University Politehnica of Bucharest

8:50 AM
Experimental Study on the Nanosecond Laser Ablation of Aluminum Alloy 6111: *Parisa Farahmand*[1]; Radovan Kovacevic[1]; [1]Southern Methodist University

9:10 AM
Microstructure Changes in Accumulative Roll-Bonding Processed Twin-Roll Cast AA8006 Aluminium Sheets during Annealing: *Miroslav Cieslar*[1]; Michaela Pokova[1]; [1]Charles University in Prague

9:30 AM Break

9:50 AM
Surface Crack Characterization of Twin Roll Caster Shells and Its Influence on As-Cast Strip Surface Quality: Murat Dündar[1]; Baris Beyhan[1]; *Onur Birbasar*[1]; Hatice Mollaoglu Altuner[1]; Cemil Isiksaçan[1]; [1]Assan Alüminyum A.S

10:10 AM
Effect of Grain Size and Microstructure on Corrosion Resistance of Al-Mg Alloy Processed Through Cryorolling: *Dharmendra Singh*[1]; Nageswara rao[1]; Jayaganthan R[1]; [1]IIT Roorkee

10:30 AM
Ageing Behavior and Mechanical Properties of Cryorolled Al 6061-3 Vol. % SiC Composite: *Nageswararao Palukuri*[1]; Jayaganthan R[1]; [1]IIT Roorkee

10:50 AM
Study of Wire Fabrication of Aluminum Treated with Diboride Particles: *David Florian-Algarin*[1]; O. Marcelo Suarez[1]; [1]University of Puerto Rico Mayaguez(UPRM)

Aluminum Reduction Technology: Potline Operation II: Equipment

*Sponsored by:*TMS Light Metals Division, TMS: Aluminum Committee
Program Organizer: Mark Cooksey, CSIRO

Wednesday AM
March 6, 2013

Room: Grand Ballroom C1
Location: Henry B. Gonzalez Convention Center

Session Chair: Renaud Santerre, Rio Tinto Alcan

8:30 AM Introductory Comments

8:35 AM
Solutions to Address Arc Welding Problems in an Operating Potline: *Yann El Ghaoui*[1]; John Anderson[2]; [1]Rio Tinto Alcan; [2]Diverse Technologies

9:00 AM
Replacement of Damaged Electrical Insulators on Live Cross-Over Busbars Inside a Tunnel: A Methodology Based on Risk Assessment and Numerical Simulation: *Daniel Richard*[1]; André Yelle[1]; Olivier Charette[1]; Andre Felipe Schneider[1]; Jean-François Nadeau[2]; Mickael Glière[3]; Yannick Drouet[3]; Philippe Brème[3]; [1]Hatch; [2]Aluminerie de Bécancour Inc.; [3]Rio Tinto Alcan

9:25 AM
A Thermal-Mechanical Approach for the Design of Busbars Details: *Andre Felipe Schneider*[1]; Olivier Charette[1]; Daniel Richard[1]; Charles Turcotte[1]; [1]HATCH Ltd.

9:50 AM Break

10:00 AM
Study of Technology and Equipment on Magnetic Induction Intensity Weaken for Aluminum Reduction Cells Welding in the Condition of Pot Line Current: Ziqian Wang[1]; Bin Cao[1]; *Tao Yang*[1]; Jun Huang[1]; Meng Li[1]; [1]Guiyang Aluminum Magnesium Design Research Institute Company Limited

10:25 AM
Potline Shutdown and Restart Secured Solutions: *Anne-Gaëlle Hequet*[1]; [1]ECL

10:50 AM
Effect of Watering and Non-Watering Cooling Rates on the Mechanical Properties of an Aluminum Smelter's Potshell: *Ayoola Brimmo*[1]; Mohamed Hassan[1]; Mohamed Ibrahiem[2]; Youssef Shatilla[1]; [1]Masdar Institute; [2]Emartes Aluminum

11:15 AM
Mathematical Model of Cooling of a Stopped Pot and Its Validation: *Mohamed Hassan*[1]; Ayoola Brimmo[1]; Mohamed Ibrahiem[2]; Youssef Shatilla[1]; [1]Masdar Institute; [2]Emartes Aluminum

Biological Materials Science Symposium: Innovative Thin Films and Coating for Biological Interactions (Joint session with Biological, Electrical and Functional Thin Films and Coating Symposium)

*Sponsored by:*TMS Electronic, Magnetic, and Photonic Materials Division, TMS Structural Materials Division, TMS: Biomaterials Committee
Program Organizers: Candan Tamerler, University of Washington; Molly Gentleman, Texas A & M University; Po-Yu Chen, National Tsing Hua University; Kajal Mallick, University of Warwick; Rajendra Kumar Kasinath, Unversity of Montana; Paul G. Allison, US Army Corp of Engineers

Wednesday AM
March 6, 2013

Room: 214C
Location: Henry B. Gonzalez Convention Center

Funding support provided by: Biomaterials Program, National Science Foundation

Session Chairs: Roger Narayan, University of North Carolina at Chapel Hill; Candan Tamerler, University of Washington

8:30 AM
Interfacial Fracture Toughness Measurement of Soft Biological Adhesives: Ahmad Khayer Dastjerdi[1]; Michael Pagano[1]; Mari T. Kaartinen[1]; Marc D. McKee[1]; *Francois Barthelat*[1]; [1]McGill University

8:50 AM
Investigation of the Microscopic Mineral Content Variation in Bone by Electron Probe Microanalyzer (EPMA): *Pei Chun Chou*[1]; Po-Yu Chen[1]; [1]National Tsing Hua University

9:10 AM
Processing, Microstructure Characterization and Biological Performance of Hierarchical Surface Coatings for Titanium: *Ellen Sauter*[1]; Grant Crawford[1]; [1]South Dakota School of Mines and Technology

9:25 AM
Characterization of (Ti,Mg)N Thin Film Coatings Produced Via Physical Vapor Deposition: *Sakip Onder*[1]; Gamze Torun Kose[2]; Fatma Nese Kok[1]; Kursat Kazmanli[3]; Mustafa Urgen[3]; [1]Istanbul Technical University, MOBGAM; [2]Yeditepe University, Genetics and Bioengineering; [3]Istanbul Technical University, Metallurgical and Material Engineering

9:45 AM
Bio-Inspired Multi-Layered Nanocomposites Synthesized with High Volume Fractions of Oriented Inorganic Fillers: *Robert Moser*[1]; Kevin Torres-Cancel[1]; Omar Rodriguez[2]; Ruth Hidalgo-Hernandez[1]; Mei Chandler[1]; Paul Allison[1]; Charles Weiss[1]; John Newman[1]; Oscar Suarez[2]; Oscar Perales-Perez[2]; Philip Malone[1]; [1]US Army Engineer Research and Development Center; [2]University of Puerto Rico at Mayaguez

10:05 AM Break

10:20 AM
Bio-inspired Polyelectrolyte Multilayers as Templates for the Deposition of Thin Calcium Phosphate Coatings: *Guy Ladam*[1]; Khalil Abdelkebir[1]; Fabien Gaudière[1]; Béatrice Labat[1]; Sandrine Morin-Grognet[1]; Hassan Atmani[1]; [1]University of Rouen

10:40 AM
Effect of Chemical Treatments on the Mechanical Properties of Poly-lactic Acid (PLA) and Hemp Biocomposites: Shubhashini Oza[1]; Andrew Carlson[1]; *Na Lu*[1]; [1]University of North Carolina at Charlotte

10:55 AM
Titanium/Polymer Sandwich for Medical Applications: *Heinz Palkowski*[1]; Mohamed Harhash[1]; Le Van Quang[2]; Lia Rimondini[3]; Adele Carradò[2]; [1]Clausthal University of Technology; [2]IPCMS; [3]Universita' del Piemonte Orientale "Amedeo Avogadro"

11:15 AM
Morphological Study and Cell Viability on Calcium-phosphate Layer on 316L-polyolefin System: Quang Van Le[1]; Andrea Cochis[2]; Lia Rimondini[3]; Geneviève Pourroy[1]; Vesna Stanic[4]; Heinz Palkowski[5]; *Adele Carradò*[1]; [1]IPCMS, UMR 7504 UDS-CNRS; [2]Universita' del Piemonte Orientale "Amedeo Avogadro"; [3]Universita' del Piemonte Orientale "Amedeo Avogadro"; [4]Brookhaven National Laboratory; [5]Institute of Metallurgy

11:35 AM
Particle Size Effects on the Morphology and Bioactivity of Flame-Sprayed Titanium Alloy-Bioactive Glass Composite Coatings: Greg Nelson[1]; *John Nychka*[1]; Andre McDonald[1]; [1]University of Alberta

11:55 AM
Structural Characterization and Mechanical Evaluations of Abalone Nacre-inspired Multilayer Coatings Synthesized by RF Sputtering and Pulsed Laser Deposition: Chang-Yu Sun[1]; Yu-Chen Chan[1]; Jyh-Wei Lee[2]; Jenq-Gong Duh[1]; *Po-Yu Chen*[1]; [1]National Tsing Hua University; [2]Ming Chi University of Technology

12:10 PM Invited
Micro- and Nanostructured Surfaces for Implants: *Cenk Aktas*[1]; Marina Martinez[1]; JuSeok Lee[1]; [1]INM - Leibniz-Institut für Neue Materialien

12:30 PM Concluding Comments

Bulk Metallic Glasses X: Fatigue and Corrosion

Sponsored by: TMS Structural Materials Division, TMS/ASM: Mechanical Behavior of Materials Committee
Program Organizers: Peter Liaw, The University of Tennessee; Hahn Choo, The University of Tennessee; Yanfei Gao, The University of Tennessee; Gongyao Wang, University of Tennessee

Wednesday AM
March 6, 2013
Room: Lone Star Salon D
Location: Grand Hyatt

Funding support provided by: Materials Processing and Manufacturing Division, National Science Foundation

Session Chairs: Despina Louca, University of Virginia; Jamie Kruzic, Oregon State University

8:30 AM Invited
The Effects of Fatigue on the Local Structure and Its Dynamics: *Despina Louca*[1]; [1]University of Virginia

8:50 AM Invited
A Shear-Band Toughened Monolithic Metallic Glass Under Cyclic Loading: *Bernd Gludovatz*[1]; Marios Demetriou[2]; William Johnson[2]; Robert Ritchie[3]; [1]Lawrence Berkeley National Laboratory; [2]California Institute of Technology; [3]University of California Berkeley

9:10 AM Invited
Effect of Loading Frequency on Corrosion Fatigue Crack Growth of Zr-Based Bulk Metallic Glass in the Region Near Threshold: *Yoshikazu Nakai*[1]; Toyohiko Koyama[1]; Bo He[1]; [1]Kobe University

9:30 AM Invited
Investigation of Shear-Band and Crack Microstructures Induced by Three-point Bending Fatigue Testing in Zr-Cu-Al Bulk Metallic Glass: *Pei-Ling Sun*[1]; Gongyao Wang[2]; Peter Liaw[2]; [1]Feng Chia University; [2]The University of Tennessee

9:50 AM Invited
Residual Stress Measurement in Amorphous Materials by the Micro-Slot Cutting Method: Assessment of Stress-Calculation Errors: *Bartlomiej Winiarski*[1]; Ken Mingard[2]; Mark Gee[2]; Philip Withers[1]; [1]University of Manchester; [2]National Physical Laboratory

10:10 AM Break

10:25 AM Invited
A Fracture and Fatigue Resistant Bulk Metallic Glass: *Jamie Kruzic*[1]; Steven Naleway[1]; Bernd Gludovatz[2]; Robert Ritchie[2]; [1]Oregon State University; [2]Lawrence Berkeley National Laboratory

10:45 AM
Fatigue Mechanisms of Bulk Metallic Glasses Under Bending Load: *Gongyao Wang*[1]; P. Sun[2]; Y. Yokoyama[3]; P. Liaw[1]; A. Inoue[3]; [1]University of Tennessee; [2]Feng Chia University; [3]Advanced Research Center of Metallic Glasses

11:00 AM Invited
Electrochemical Micromachining of Bulk Metallic Glasses: *Annett Gebert*[1]; Ralph Sueptitz[1]; Margitta Uhlemann[1]; Juergen Eckert[1]; [1]Leibniz-Institute for Solid State and Materials Research IFW Dresden

11:20 AM Invited
Biocompatibility of Zr-Based Bulk Metallic Glasses: An In Vitro Cellular and Biomolecular Investigation: Lu Huang[1]; Peter Liaw[1]; Tao Zhang[2]; *Wei He*[1]; [1]The University of Tennessee; [2]Beihang University

11:40 AM
Effects of Ca-Implantation on Surface Properties and Bioactivity of a Zr-Based Bulk Metallic Glass: *Lu Huang*[1]; Claudiu Muntele[2]; Peter Liaw[1]; Tao Zhang[3]; Wei He[1]; [1]The University of Tennessee; [2]Alabama A&M University; [3]Beihang University

11:55 AM
Electrochemical Tuning of Metallic Glass Nanostructures: *Sundeep Mukherjee*[1]; [1]University of North Texas

Bulk Metallic Glasses X: Mechanical and Other Properties

Sponsored by: TMS Structural Materials Division, TMS/ASM: Mechanical Behavior of Materials Committee
Program Organizers: Peter Liaw, The University of Tennessee; Hahn Choo, The University of Tennessee; Yanfei Gao, The University of Tennessee; Gongyao Wang, University of Tennessee

Wednesday AM
March 6, 2013
Room: Bowie A
Location: Grand Hyatt

Funding support provided by: Materials Processing and Manufacturing Division, National Science Foundation

Session Chairs: Rainer Hebert, University of Connecticut; Jinn Chu, National Taiwan University of Science and Technology

8:30 AM Invited
R-curve Behavior of Zr-Ti-Cu-Al Bulk Metallic Glass with Extraordinary Fracture Toughness: *Jian Xu*[1]; Qiang He[1]; Evan Ma[2]; [1]Institute of Metal Research, Chinese Academy of Sciences; [2]The Johns Hopkins University

8:50 AM
Brazing and Interfacial Reaction of Titanium with Zr-Ti-based Metallic Glass Filler Metal: Duck Hwan Yoon[1]; *Jin Kyu Lee*[1]; [1]Kongju National University

9:05 AM Invited
Thermal and Thermomechanical Analysis of (Ce0.72Cu0.28)78.5Al10Fe10Si1.5 Bulk Metallic Glass: Arif Mubarok[1]; *Rainer Hebert*[2]; [1]University of Massachusetts; [2]University of Connecticut

9:25 AM
Variable Plasticity in Molded Metallic Glass Nanowires: *Daniel Magagnosc*[1]; Golden Kumar[2]; Roman Ehrbar[1]; Mo-Rigen He[1]; Jan Schroers[3]; Daniel Gianola[1]; [1]University of Pennsylvania; [2]Texas Tech University; [3]Yale University

9:40 AM Invited
Time-Dependent Mechanical Behavior, Biodegradability, and Cytocompatibility of Amorphous Mg72Zn23Ca5 and Crystalline Mg70Zn23Ca5Pd2 Materials: Eva Pellicer[1]; Sergio Gonzalez[1]; Andreu Blanquer[1]; Leonar Barrios[1]; Elena Ibañez[1]; Jordi Sort[1]; Carme Nogués[1]; *Maria Baro*[1]; [1]UAB

10:00 AM Break

10:15 AM Invited
Intrinsic and Extrinsic Effects on the Mechanical Behavior of BMGs: *Golden Kumar*[1]; [1]Teaxs Tech University

10:35 AM Invited
Shear Band Multiplication of Bulk Metallic Glass by Surface Modification: Cut Rullyani[1]; *Jinn Chu*[1]; W. D. Li[2]; Y. F. Gao[2]; P. Liaw[2]; Chia-Chi Yu[1]; [1]National Taiwan University of Science and Technology; [2]University of Tennessee

10:55 AM
Modeling Deformation Behavior of Metallic Glasses Spanning a Wide Range of Temperature and Strain Rate: *Pengyang Zhao*[1]; Ju Li[2]; Yunzhi Wang[1]; [1]The Ohio State University; [2]Massachusetts Institute of Technology

11:10 AM Invited
Effects of Alloying Elements on Thermal Stability and Properties of Fe-Based Fe-P-C-B Metallic Glasses: *Wei Zhang*[1]; Canfeng Fang[1]; Yanhui Li[1]; Shin-ichi Yamaura[2]; [1]School of Materials Science and Engineering, Dalian University of Technology; [2]Institute for Materials Research, Tohoku University

11:30 AM
Correlation between Chemical Heterogeneity and Mechanical Properties in Cu-Zr-Al-(Y, Gd) Bulk-Forming Metallic Glasses: *Jin Woo Kim*[1]; Chae Woo Ryu[1]; Eun Soo Park[1]; Ryan Ott[2]; [1]Seoul National University; [2]Ames Laboratory

11:45 AM Invited
Early Stage Oxidation Behavior of Metallic Glasses: Ka Ram Lim[1]; Min Young Na[1]; Kang Chul Kim[1]; Won Tae Kim[2]; *Do Hyang Kim*[1]; [1]Yonsei University; [2]Cheongju University

12:05 PM
Surface Modification in the Bulk Metallic Glasses by Laser Shock Peening: *Xie Xie*[1]; Yunfeng Cao[2]; James Antonaglia[3]; Gongyao Wang[1]; Yung Shin[2]; Yang Ren[4]; Karin Dahmen[3]; Peter Liaw[1]; [1]University of Tennessee; [2]Purdue University; [3]University of Illinois at Urbana Champaign; [4]Argonne National Laboratory

12:20 PM Invited
Variability and Partitioning of Shear Modulus in Metallic Glass: *Yong Yang*[1]; Lishan Huo[2]; Weihua Wang[2]; C. T. Liu[1]; [1]City University of Hong Kong; [2]Key Lab of Extreme Conditions, Institute of Physics, Chinese Academy of Science

Characterization of Minerals, Metals and Materials 2013: Characterization for Environmental Applications

Sponsored by: TMS Extraction and Processing Division, TMS: Materials Characterization Committee
Program Organizers: Jiann-Yang Hwang, Michigan Technological University; Chen-Guang Bai, Chongqing University; John Carpenter, DOE LANL; Shadia Ikhmayies, Al Isra University; Bowen Li, Michigan technological University; Mingming Zhang, ArcelorMittal Global R&D; Sergio Monteiro, State University of North Rio de Janeiro; Zhiwei Peng, Michigan Technological University

Wednesday AM
March 6, 2013

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

Session Chairs: Gaifeng Xue, Wuhan Iron and Steel Corporation; Bowen Li, Michigan Technological University

8:30 AM
Hydrometallurgical Process for the Separation and Recovery of Product from Waste Serpentine Mine: *Zhu Ping*[1]; [1]Shanghai University

8:50 AM
LaCoO3: The Efficient Catalyst to Purify Pollutant Gases: *Farhad Fazlollahi*[1]; Hossein Atashi[1]; Majid Sarkari[1]; [1]University of Sistan and Baluchestan

9:10 AM
Characteristics and Applications of Copper Stamp Sand: *Bowen Li*[1]; Jiann-Yang Hwang[1]; Domenic Popko[2]; [1]Michigan Technological University; [2]Lesktech Ltd

9:30 AM
Characterization of the Clay Soil of the Neighborhood Codin, Located in Campos (RJ), to Produce Soil-Cement Blocks: Afonso Azevedo[1]; *Jonas Alexandre*[1]; Gustavo Xavier[1]; [1]UENF

9:50 AM
Study of Mortars Used in the Projection Mechanized: Afonso Azevedo[1]; Jonas Alexandre[1]; *Gustavo Xavier*[1]; [1]UENF

10:10 AM
Research on Extraction Process of Zinc from Zinc Containing Wastewater: *Jiang Tao*[1]; Hou Li-Cheng[1]; Yang Yong-Bin[1]; Li Qian[1]; [1]Central South University

10:30 AM
Study on Treatment of Coking Wastewater by Three-Dimensional Fluid Bed Electrode Reactor Combined with Fenton Process: *Lei Zhang*[1]; [1]WISCO

10:50 AM
Study on Correlation between COD and TOC of Coking Wastewater: *Chao Liu*[1]; [1]College of Environmental Science & Engineering, Huazhong University of Science &Technology

11:10 AM
Treatment Process for Zinc Containing Wastewater by Ammonia: *Jiang Tao*[1]; Hou Li-Cheng[1]; Yang Yong-Bin[1]; Li Qian[1]; [1]Central South University

11:30 AM
Photocatalytic Activity of TiO2-Doped Diopside: *He Yang*[1]; Dong Liu[1]; Zejian Yang[1]; Xiangxin Xue[1]; Tao Jiang[1]; Yong Yong[1]; [1]Northeastern University

Characterization of Minerals, Metals and Materials 2013: Green Materials

*Sponsored by:*TMS Extraction and Processing Division, TMS: Materials Characterization Committee
Program Organizers: Jiann-Yang Hwang, Michigan Technological University; Chen-Guang Bai, Chongqing University; John Carpenter, DOE LANL; Shadia Ikhmayies, Al Isra University; Bowen Li, Michigan technological University; Mingming Zhang, ArcelorMittal Global R&D; Sergio Monteiro, State University of North Rio de Janeiro; Zhiwei Peng, Michigan Technological University

Wednesday AM
March 6, 2013

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

Session Chairs: Sergio Monteiro, State University Northern Rio De Janeiro; Shujing Zhu, WISCO R&D

8:30 AM
Incorporation of Granite Waste Diamond Wire in Cementitious Matrices: *Leonardo Pedroti*[1]; Carlos Maurício Vieira[1]; Sergio Monteiro[1]; Jonas Alexandre[1]; Gustavo Xavier[1]; [1]UENF

8:50 AM
Study on the Hydraulic Ash-Slag Cementitious Composites (HA-SC) Solidification of Dredged Sludge: *Zhu Shu Jing*[1]; [1]R&D of Wisco

9:10 AM
Characterization of Fluorescent Lamp Glass Waste Powders for Incorporation into Clayey Ceramics: *Alline Morais*[1]; Sergio Monteiro[1]; Jonas Alexandre[1]; Gustavo Xavier[1]; Patrícia Pereira[1]; Carlos Maurício Vieira[1]; [1]State University of the North Fluminense

9:30 AM
Investigation on Mineral, Microstructure and Activity of Coal Gangue in Shanxi Province, China: *Yingyi Zhang*[1]; Ling Xu[1]; Lili Liu[1]; Xidong Wang[1]; Zuotai Zhang[1]; [1]Peking University, China

9:50 AM
Evaluation of Sisal Fibers Components by Infrared Spectroscopy: *Frederico Margem*[1]; Artur Camposo[1]; Romulo Loiola[1]; Sergio Monteiro[2]; [1]UENF; [2]IME

10:10 AM
Simplex Network Modeling for Press-Molded Ceramic Bodies Incorporated with Granite Waste: *Leonardo Pedroti*[1]; Carlos Mauricio Vieira[1]; Sérgio Monteiro[1]; Jonas Alexandre[1]; Gustavo Xavier[1]; [1]UENF

10:30 AM
Tensile Behavior of Epoxy Composites Reinforced with Continuous and Thinner Buriti Fibers: *Frederico Margem*[1]; Giulio Altoe[1]; Romulo Loiola[1]; Sergio Monteiro[2]; Noan Simonassi[1]; [1]UENF; [2]IME

10:50 AM
Influence of the Red Mud Content In Mechanical Properties of Natural Fiber-Reinforced Polymeric Composites: *Mauro OIiveira*[1]; [1]Universidade Federal do Pará

11:10 AM
Flexural Mechanical Characterization of Polyester Composites Reinforced with Continuous Banana Fibers: *Frederico Margem*[1]; Foluke De Assis[1]; Romulo Loiola[1]; Sergio Monteiro[2]; Jean Margem[1]; [1]UENF; [2]IME

Characterization of Nuclear Reactor Materials and Components with Neutron and Synchrotron Radiation: Characterization of Nuclear Reactor Materials and Components with Neutron and Synchrotron Radiation

*Sponsored by:*TMS Structural Materials Division, TMS/ASM: Nuclear Materials Committee
Program Organizers: Meimei Li, Argonne National Laboratory; Jon Almer, Argonne National Laboratory; Donald Brown, Los Alamos National Laboratory; Matthew Kerr, Knolls Atomic Power Laboratory; Paula Mosbrucker, Kinectrics Inc.

Wednesday AM
March 6, 2013

Room: 202B
Location: Henry B. Gonzalez Convention Center

Session Chairs: Meimei Li, Argonne National Laboratory; Jonathan Almer, Argonne National Laboratory

8:30 AM Invited
Zirconium Hydride Characterization Using Synchrotron X-Ray Diffraction: Miguel Vicente Alvarez[1]; *Javier Santisteban*[1]; Pablo Vizcaino[2]; Alejandra Flores[2]; Abraham Banchik[2]; Jonathan Almer[3]; [1]Centro Atómico Bariloche; [2]Centro Atómico Ezieza - CNEA; [3]Advanced Photon Source, Argonne National Laboratory

9:00 AM Question and Answer Period

9:05 AM
Synchrotron Studies on the Stress Relaxation near a Notch in Zr-2.5Nb: *Shuai Wan*[1]; Mark Daymond[1]; Paula Mosbrucker[2]; [1]Queen's University; [2]Kinectrics Inc.

9:20 AM Question and Answer Period

9:25 AM
Effect of Stress on Hydride Precipitation Temperature and Hydride Texture in Zr2.5%Nb Pressure Tubes: Pablo Vizcaino[1]; *Javier Santisteban*[1]; Miguel Vicente-Alvarez[1]; Abraham Banchik[1]; Jon Almer[2]; [1]Comision Nacional de Energia Atómica; [2]Argonne National Laboratory

9:40 AM Question and Answer Period

9:45 AM Break

10:00 AM Invited
Synchrotron X-Ray Characterizations of Nuclear Materials Using the MARS Beamline: Brief Review of Current Studies: Bruno Sitaud[1]; Pier Lorenzo Solari[1]; Sandrine Schlutig[1]; Isabelle Llorens[1]; Marc Souilah[1]; Marie-Laure Lescoat[2]; Denis Menut[2]; Jean-Luc Béchade[2]; Nicolas Jonquères[2]; Olivier Bouty[2]; Sylvain Peuget[2]; Rémi Delorme[2]; Philippe Martin[2]; Christophe Valot[2]; *Sebastiano Cammelli*[1]; [1]Synchrotron SOLEIL; [2]CEA

10:30 AM Question and Answer Period

10:35 AM
Effect of Loading Methodology on Internal Strains Measured: *Travis Skippon*[1]; Bjørn Clausen[2]; Mark Daymond[1]; [1]Queen's University; [2]Los Alamos National Laboratory

10:50 AM Question and Answer Period

10:55 AM
In Situ Characterization of Grade 92 Steel during Tensile Deformation Using High Energy X-Ray Diffraction and Small Angle X-Ray Scattering: *Leyun Wang*[1]; Meimei Li[1]; Jonathan Almer[1]; [1]Argonne National Laboratory

11:10 AM Question and Answer Period

11:15 AM
High-Energy Synchrotron Radiation Study on Anisotropic Loading Behavior of Alloy 230 for VHTR Applications: *Kun Mo*[1]; Hsiao-ming Tung[1]; Jonathan Almer[2]; Meimei Li[2]; Xiang Chen[3]; Weiying Chen[1]; James Stubbins[1]; [1]University of Illinois; [2]Argonne National Laboratory; [3]Oak Ridge National Laboratory

11:30 AM Question and Answer Period

11:35 AM
Thermo-mechanical Treatment of Ultrafine Grained T91 Alloy: *Miao Song*[1]; Xinghang Zhang[2]; Karl Hartwig[2]; [1]Material Science and Engieering Program,Texas A&M University; [2]Department of Mechanical Engineering, Texas A&M University

11:50 AM Question and Answer Period

11:55 AM
Monte Carlo and Molecular Dynamics Study of Atomistic Ordering and Properties in Uranium-Zirconium Alloy: *Alex Moore*[1]; Chaitanya Deo[1]; [1]Georgia Institute of Technology

12:10 PM Question and Answer Period

Computational Discovery of Novel Materials: Interfaces and Microstructure

*Sponsored by:*TMS Electronic, Magnetic, and Photonic Materials Division, TMS Materials Processing and Manufacturing Division, TMS: Integrated Computational Materials Engineering Committee
Program Organizers: Richard Hennig, Cornell University; Dallas Trinkle, University of Illinois at Urbana-Champaign

Wednesday AM
March 6, 2013
Room: 207A
Location: Henry B. Gonzalez Convention Center

Session Chairs: Francesca Tavazza, NIST; Richard Hennig, Cornell University

8:30 AM Invited
Design of Damage Resistant Glasses Guided by Computer Simulation: *Liping Huang*[1]; [1]Rensselaer Polytechnic Institute

9:05 AM
A Van Der Waals DFT Study of Nano-Decorated Graphene Based Nanostructures for Hydrogen Storage: Janet Wong[1]; *Chandra Veer Singh*[1]; [1]University of Toronto

9:25 AM
Magnetic Anisotropy of L10-CoPt Thin Ffilm on Piezoelectric Substrate: *Heechae Choi*[1]; Kwang-Ryeol Lee[1]; [1]Korea Institute of Science and Technology

9:45 AM Break

10:00 AM Invited
Shape Memory Metamaterials with Tunable Thermo-Mechanical Response Via Hetero-Epitaxial Integration: *Alejandro Strachan*[1]; Karthik Guda Vishnu[2]; Keith Morrison[1]; [1]Purdue University; [2]Pennsylvania State University

10:35 AM
A Genetic Algorithm Approach to Design the Micro-Structure for TRIP-Assisted Steel: *Shengyen Li*[1]; Ruixian Zhu[1]; Ibrahim Karaman[1]; Raymundo Arroyave[1]; [1]Texas A&M University

10:55 AM
Model Based Redesign of MX Carbonitrides Strengthened Austenitic Heat Resistant Steels: *Qi Lu*[1]; Wei Xu[1]; Sybrand van der Zwaag[1]; [1]Delft University of Technology

11:15 AM
Properties of Zirconia Gadolinia Ytterbia Yttria Thermal Barrier Coating Studied by First Principles Simulation: *Liuxi Tan*[1]; Shengmin Guo[2]; Ebrahim Khosravi[1]; Shizhong Yang[1]; Lei Zhao[1]; [1]Southern University and A&M College; [2]Louisiana State University

Cost Affordable Titanium IV: The Production and Processing of Titanium Powder

*Sponsored by:*TMS Structural Materials Division, TMS: Titanium Committee
Program Organizers: M. Ashraf Imam, Naval Research Lab; Sam Froes, University of Idaho (Retired); Ramana Reddy , The University of Alabama

Wednesday AM
March 6, 2013
Room: 217C
Location: Henry B. Gonzalez Convention Center

Session Chairs: Zhigang Fang, University of Utah; Kartik Rao, Metalysis

8:30 AM
The Production of Titanium Alloy Powder: *James Withers*[1]; V. Shapovalov[1]; R. Storm[1]; R. O. Loutfy[1]; [1]MER Corporation

8:50 AM Invited
Processing of Titanium Powder into Consolidated Parts & Sheet: Kamal Akhtar[1]; *Damien Mangabhai*[1]; Kerem Araci[1]; Nigel Stone[2]; Delphine Cantin[2]; Yukinori Yamamoto[3]; Thomas Muth[3]; [1]International Titanium Powder; [2]CSIRO; [3]Oak Ridge National Laboratory

9:10 AM Invited
Enhancing the Cost Effectiveness of High Performance Titanium Alloy Component Production by Powder Metallurgy: *Deliang Zhang*[1]; Mingtu Jia[1]; Stiliana Raynova[1]; Fei Yang[1]; Brian Gabbitas[1]; [1]The University of Waikato

9:30 AM Break

9:50 AM Invited
Impurity Scavenging from Powder Metallurgy Titanium Alloys by Rare Earth Elements: *Ma Qian*[1]; Ming Yan[1]; [1]The University of Queensland

10:10 AM Invited
Development and Optimization of Rolled Product Forms Using Blended-Elemental Powder-Based Ti-6AL-4V Alloy: *Sami El-Soudani*[1]; Kuang-O (Oscar) Yu[2]; Ernie Crist[2]; Fusheng Sun[2]; Vladimir Moxson[3]; Vlad Duz[3]; [1]The Boeing Company; [2]RTI International Metals, Inc.; [3]Advanced Materials, Inc.

10:30 AM
Rolled Product Form Development and Optimization Using Blended-Elemental Powder-Based Billets of Ti-6AL-4V Alloy: *Sami El-Soudani*[1]; John Fanning[2]; Megan Harper[2]; Stephen Fox[2]; Vladimir Moxson[3]; Vlad Duz[3]; [1]The Boeing Company; [2]Timet, Inc.; [3]Advanced Materials, Inc.

10:50 AM
Comparison of Properties and Microstructure of Ti-6Al-7Nb Alloy Processed by Different Powder Metallurgy Routes: *Leandro Bolzoni*[1]; Hari Babu Nadendla[1]; Elisa María Ruiz-Navas[2]; Elena Gordo[2]; [1]Brunel University; [2]Universidad Carlos III de Madrid

11:10 AM
Effect of Powder Compact Holding Time on the Microstructure and Properties of Ti-6Al-4V Alloy Produced by Powder Compact Extrusion of a Powder Mixture of HDH Titanium and Al-V Master Alloy: *Fei Yang*[1]; Deliang Zhang[1]; Brian Gabbitas[1]; Huiyang Lu[1]; [1]The University of Waikato

11:30 AM
Solid State Processing Routes for Low-Cost Titanium Powder to Produce Sheet and Complex Forgings: *Nick Weston*[1]; Fatos Derguti[1]; Martin Jackson[1]; [1]University of Sheffield

Deformation, Damage, and Fracture of Light Metals and Alloys: Deformation, Damage, and Fracture of Light Metals and Alloys Session IV

*Sponsored by:*TMS Light Metals Division, TMS/ASM: Mechanical Behavior of Materials Committee
Program Organizers: Ke An, Oak Ridge National Laboratory; Qizhen Li, University of Nevada, Reno

Wednesday AM
March 6, 2013
Room: 210B
Location: Henry B. Gonzalez Convention Center

Session Chair: Ke An, Oak Ridge National Laboratory

8:30 AM Invited
There's Plenty of Room at the Bottom...for Mg-Alloys: *Suveen Mathaudhu*[1]; [1]U.S. Army Research Office

9:00 AM
Direct Observations and Characterization of Twinning in Magnesium: *Benjamin Morrow*[1]; Ellen Cerreta[1]; Rodney McCabe[1]; Carlos Tome[1]; [1]Los Alamos National Laboratory

9:20 AM
Inhomogeneity of Slip Activity in Grains Oriented for Exclusively Non-basal Slip in Polycrystalline AZ31: *Ali Khosravani*[1]; Raja K. Mishra[2]; Surya Kalidindi[3]; Roger Doherty[1]; David Fullwood[4]; [1]Materials Science and Engineering Department, Drexel University; [2]General Motors Research and Development Centre; [3]Materials Science and Engineering Department, Mechanical Engineering and Mechanics, Drexel University; [4]Mechanical Engineering Department, Brigham Young University

9:40 AM
Deformation Behavior of Nanocrystalline Mg-Y Alloy: *Dalong Zhang*[1]; Baolong Zheng[1]; Yizhang Zhou[1]; Suveen Mathaudhu[2]; Enrique Lavernia[1]; [1]University of California-Davis; [2]U.S. Army Research Office

10:00 AM Break

10:10 AM Invited
Deformation Behavior of Magnesium Alloys Investigated using Diffraction Measurements and Self-Consistent Modeling: *Bjørn Clausen*[1]; Huamiao Wang[2]; Martin Lentz[3]; Peidong Wu[2]; Sean Agnew[4]; Carlos Tomé[1]; [1]Los Alamos National Laboratory; [2]McMaster University; [3]Technische Universität Berlin; [4]University of Virginia

10:40 AM
Quasi-Static and Cyclic Mechanical Behavior of 41-50 Magnesium Single Crystal: *Qizhen Li*[1]; [1]University of Nevada, Reno

11:00 AM
Modelling Microplastic Flow in an hpdc Mg-Al Alloy: *Bao Zhang*[1]; Carlos Caceres[1]; [1]The University of Queensland

11:20 AM
Atomistic Simulations of Deformation Mechanisms in Light-Weight hcp Mg-Li Alloys: *Shivraj Karewar*[1]; Niraj Gupta[1]; Alfredo Caro[2]; Srinivasan Srivilliputhur[1]; [1]University of North Texas; [2]Los Alamos National Laboratory

11:40 AM
Quantification of Lattice Defects in Severe-plastic Deformed Metals: *Yoji Miyajima*[1]; [1]Tokyo Institute of Technology

Electrode Technology for Aluminium Production: Anode Quality and Performance

*Sponsored by:*TMS Light Metals Division, TMS: Aluminum Committee
Program Organizers: Les Edwards, Rain CII Carbon; Hans Darmstadt, Rio Tinto Alcan; Sunil Bhajun, Qatalum; Juraj Chmelar, Hydro; Matvey Golubev, Rusal; Pretesh Patel, Light Metals Research Centre; Elaine Sum, Rio Tinto Alcan; Marc Gagnon, Aluminerie Alouette

Wednesday AM
March 6, 2013
Room: 213B
Location: Henry B. Gonzalez Convention Center

Session Chair: Matvey Golubev, Rusal - ITC

8:30 AM Introductory Comments

8:35 AM
Pilot Scale Anodes for Raw Material Evaluation and Process Improvement: *Lorentz Petter Lossius*[1]; Juraj Chmelar[1]; Inge Holden[2]; Hogne Linga[1]; Michal Tkac[1]; [1]Hydro Primary Metal Technology; [2]Hydro Aluminium Årdal Carbon

9:00 AM
Relationships between Coke Properties and Anode Properties – Round Robin 19: Lorentz Petter Lossius[1]; *Marvin Lubin*[2]; Les Edwards[2]; Julien Wyss[3]; [1]Norsk Hydro ASA; [2]Rain CII Carbon; [3]R&D Carbon

9:25 AM
Application of the Artificial Neural Network (Ann) in Predicting Anode Properties: *Dipankar Bhattacharyay*[1]; Duygu Kocaefe[1]; Yasar Kocaefe[1]; Brigitte Morais[2]; Marc Gagnon[2]; [1]University of Quebec at Chicoutimi; [2]Aluminerie Alouette Inc.

9:50 AM
A Model for Predicting the Electrical Resistivity of Baked Anodes: *Dipankar Bhattacharyay*[1]; Duygu Kocaefe[1]; Yasar Kocaefe[1]; Brigitte Morais[2]; Marc Gagnon[2]; [1]University of Quebec at Chicoutimi; [2]Aluminerie Alouette Inc.

10:15 AM Break

10:25 AM
The Role of Electrode Quality in Metal Purity: *Stephen Lindsay*[1]; [1]Alcoa, Inc.

10:50 AM
Electrochemical Characterization of Anode Performance: *Rebecca Thorne*[1]; Camilla Sommerseth[1]; Espen Sandnes[2]; Ole Kjos[3]; Thor Anders Aarhaug[3]; Lorentz Lossius[2]; Hogne Linga[2]; Arne Ratvik[1]; [1]Norwegian University of Science and Technology (NTNU); [2]Hydro Aluminium; [3]SINTEF

11:15 AM
High Capacity Thermobalance Anode Reactivity Testing: Frank Cannova[1]; *Nick Janssen*[1]; Jim Baker[1]; Barry Sadler[2]; [1]BP; [2]Net Carbon Consulting

11:40 AM
Diagnosing Changes in Baked Anode Properties using a Multivariate Data-driven Approach: *Julien Lauzon-Gauthier*[1]; Carl Duchesne[1]; Jayson Tessier[2]; [1]REGAL - Université Laval; [2]Alcoa

Electrode Technology for Aluminium Production: Cathode Materials and Wear

*Sponsored by:*TMS Light Metals Division, TMS: Aluminum Committee
Program Organizers: Les Edwards, Rain CII Carbon; Hans Darmstadt, Rio Tinto Alcan; Sunil Bhajun, Qatalum; Juraj Chmelar, Hydro; Matvey Golubev, Rusal; Pretesh Patel, Light Metals Research Centre; Elaine Sum, Rio Tinto Alcan; Marc Gagnon, Aluminerie Alouette

Wednesday AM
March 6, 2013

Room: Grand Ballroom C2
Location: Henry B. Gonzalez Convention Center

Session Chair: Pretesh Patel, Light Metals Research Center

8:30 AM Introductory Comments

8:35 AM
Evolution of the Thermo-Mechanical Properties of Ramming Paste from Ambient to Operating Temperature in Hall-Heroult Cell: *Stephane Tremblay*[1]; Lyne St-Georges[1]; Laszlo Kiss[1]; Lyès Hacini[2]; Daniel Marceau[1]; Bénédicte Allard[3]; [1]Université du Québec à Chicoutimi; [2]Rio Tinto Alcan; [3]Carbone Savoie

9:00 AM
New Compaction Method for the Production of Large Ramming Paste Samples for 3d Mechanical Characterization: *Pierre-Olivier St-Arnaud*[1]; Donald Picard[1]; Maxime Noël[1]; Houshang Alamdari[1]; Donald Ziegler[2]; Mario Fafard[1]; [1]Université Laval; [2]Alcoa Canada

9:25 AM
Technology for Manufacturing Cathodes Used in Aluminum Reduction in China: Hongjie Yang[1]; *Fengqin Liu*[1]; Xiaopei Yang[1]; [1]Chalco

9:50 AM
The Effect Of Cryolite On The Formation of Aluminum Carbide at the Carbon Aluminum Interface: *Bronislav Novak*[1]; Kati Tschöpe[2]; Arne Petter Ratvik[1]; Tor Grande[1]; [1]Norwegian University of Science and Technology; [2]SINTEF Materials and Chemistry

10:15 AM Break

10:25 AM
Critical Reflections on Laboratory Wear Tests for Ranking Commercial Cathode Materials in Aluminium Cells: *Kati Tschöpe*[1]; Anne Støre[1]; Egil Skybakmoen[1]; Asbjørn Solheim[1]; Tor Grande[2]; Arne Petter Ratvik[2]; [1]SINTEF Materials and Chemistry; [2]Norwegian University of Science and Technology (NTNU)

10:50 AM
Model for Excessive Cathode Wear by a "Carbon Pump" at the Cell Bottom: *Asbjorn Solheim*[1]; Kati Tschöpe[2]; [1]SINTEF; [2]NTNU

11:15 AM
Characterization of Porous Structure and Its Correlation to Sodium Expansion of Graphite Cathode Materials Using Image Analysis: *Xiang Li*[1]; Jilai Xue[1]; [1]Unversity of Science and Technology Beijing

11:40 AM
Studies on the Resistance to Alkali Metal Penetration of Binders for TiB_2-C Composite Cathode Materials: *Fang Zhao*[1]; Zhang Kai[2]; Lai Yan-qing[2]; LI Lin-bo[1]; ZHU Jun[1]; [1]School of Metallurgical Engineering, Xi'an University of Architecture and Technology; [2]Central South University

Energy Technologies and Carbon Dioxide Management: Energy Education

*Sponsored by:*TMS Extraction and Processing Division, TMS Light Metals Division, TMS: Energy Committee, TMS: Education Committee
Program Organizers: Soobhankar Pati, MOxST Inc.; Animesh Jha, University of Leeds; Jaroslaw Drelich, Michigan Technological University; Neale Neelameggham, Ind LLC; Cong Wang, Saint-Gobain High Performance Materials; Leon Prentice, CSIRO

Wednesday AM
March 6, 2013

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

Session Chair: Art Morris, Thermart Software

8:30 AM Introductory Comments

8:35 AM
Global Look at Energy Education and Training: *Arvind Thekdi*[1]; [1]Consultant

9:05 AM
Software for Energy Education: *Art Morris*[1]; Semih Perdahcioglu[2]; [1]Thermart Software; [2]University of Twente

9:35 AM
Courses on Sustainability Issues in Materials Engineering: *Jeffrey Fergus*[1]; [1]Auburn University

10:05 AM Break

10:35 AM
Overview of Industrial Energy Training and Software: *Cynthia Belt*[1]; [1]Consultant

10:55 AM
Report on Subcommittee on Sustainability in Materials Education: *Jeffrey Fergus*[1]; Chris Twigge-Molecey[2]; [1]Auburn University; [2]Hatch

11:25 AM
Teaching about Energy Sources at the University of Illinois (and How to Bring the Subject to Life): *David Ruzic*[1]; [1]University of Illinois

11:55 AM
A Suggestion for Establishing Energy Management Policy in Primary Aluminum Industry by Applying Strategic Management Tools: *Hadi Fanisalek*[1]; [1]Marzban Petro Energy (MPE)

12:25 PM Invited
Perspectives on Energy Education and the Role of TMS: *Garry Warren*[1]; [1]Univ of Alabama

Fatigue and Fracture of Thin Films and Nanomaterials: Micromechancial Testing for Nanomaterial Failure

Sponsored by: TMS Materials Processing and Manufacturing Division, TMS Structural Materials Division, TMS/ASM: Mechanical Behavior of Materials Committee, TMS: Nanomechanical Materials Behavior Committee
Program Organizers: Megan Cordill, Erich Schmid Institute of Materials Science; Daniel Kiener, Montanuniversitaet Leoben; Xinghang Zhang, Texas A &M University ; Daniel Gianola, University of Pennsylvania ; Corinne Packard, Colorado School of Mines

Wednesday AM
March 6, 2013

Room: Bowie C
Location: Grand Hyatt

Funding support provided by: Hysitron, Inc., and Nanomechanics, Inc.

Session Chairs: Daniel Kiener, Montanuniversiaet Leoben; Megan Cordill, Erich Schmid Institute of Materials Science

8:30 AM Invited
Grain Boundary Fracture at the Micron Scale: a Combined Experimental and FEM Approach: Daniel Kupka[1]; Norbert Huber[1]; *Erica Lilleodden*[1]; [1]Helmholtz-Zentrum Geesthacht

9:00 AM
Nanoscale Time-Dependent Plasticity of 1-D Nanomaterials: Yong-Jae Kim[1]; Won Woo Lee[1]; In-Chul Choi[1]; Won Il Park[1]; *Jae-il Jang*[1]; [1]Hanyang University

9:20 AM
In-Situ ACOM-TEM Nanomechanical Testing of <111> Textured Ultrafine Grained Al Thin Films: Plasticity and Fracture Mechanisms: *Hosni Idrissi*[1]; Aaron Kobler[2]; Behnam Amin-ahmadi[1]; Michael Coulombier[3]; Jean-Pierre Raskin[4]; Chrisitan Kübel[2]; Thomas Pardoen[3]; Dominique Schryvers[1]; [1]EMAT. University of Antwerp; [2]Institute of Nanotechnology (INT); [3]Institute of Mechanics, Materials and Civil Engineering, Université catholique de Louvain; [4]Information and Communications Technologies, Electronics and Applied Mathematics (ICTEAM),Université catholique de Louvain

9:40 AM
Direct Observation of Toughening Mechanism of Nano-Twins in Strombus Gigas Conch Shell: *Yoon Ah Shin*[1]; Subin Lee[1]; Jiseong Im[1]; Ga-Young Shin[1]; Kyung Song[1]; Sang Ho Oh[1]; [1]Pohang University of Science and Technology (POSTECH)

10:00 AM Break

10:20 AM Invited
Mechanical Deformation and Failure of Low Dimensional Carbon Nanomaterials: *Jun Lou*[1]; [1]Rice University

10:50 AM
Size-Dependent Elastic and Plastic Behavior in Pd Nanowhiskers: *Lisa Chen*[1]; Gunther Richter[2]; John Sullivan[3]; Dan Gianola[1]; [1]University of Pennsylvania; [2]Max Planck Institute for Intelligent Systems; [3]Sandia National Laboratories

11:10 AM
Mechanical Characterization of Boron Carbide Nanowires: *Youfei Jiang*[1]; Zhe Guan[1]; Terry Xu[1]; [1]The University of North Carolina at Charlotte

11:30 AM
Mechanical Stability of Quasi One-Dimensional Nanostructures (Nanowires): *Charlotte Ensslen*[1]; Reiner Mönig[1]; Andreas Sedlmayr[1]; Oliver Kraft[1]; [1]Karlsruhe Institute of Technology

Fatigue in Materials: Microstructure-Driven Modeling and In-Situ Fatigue Characterization: Fatigue Property Enhancement and Life Prediction

Sponsored by: TMS Structural Materials Division, TMS/ASM: Mechanical Behavior of Materials Committee
Program Organizers: Michael Sangid, Purdue University; Tongguang Zhai, University of Kentucky; Antonios Kontsos, Drexel University

Wednesday AM
March 6, 2013

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

Session Chair: Antonios Kontsos, Drexel University

8:30 AM Keynote
Microstructure-Sensitive Mesoscopic Modeling Fatigue Crack Formation and Early Growth in Polycrystals: Gustavo Castelluccio[1]; William Musinski[1]; *David McDowell*[1]; [1]Georgia Institute of Technology

9:05 AM Invited
A Geometric Approach to Probabilistic Simulation of Microstructurally Small Fatigue Crack Processes in AA 7075-T651: *Anthony Ingraffea*[1]; [1]Cornell University

9:30 AM Invited
Recent Advances in Fatigue Life Prediction: *Michael Sangid*[1]; [1]Purdue University

9:55 AM Break

10:15 AM Invited
History and Future of Fatigue Initiation Analysis in Aerospace Structures: *Mary Lee Gambone*[1]; [1]Rolls-Royce Corporation

10:40 AM Invited
Probabilistic Modeling of Accelerated Fatigue Life Using Step-Stress Loading: *D Gary Harlow*[1]; [1]Lehigh University

11:05 AM Invited
Life-Cycle Performance of Turbine Rotor Materials: A Probabilistic Life-Limit Perspective: James Larsen[1]; *Sushant Jha*[2]; Christopher Szczepanski[1]; Reji John[1]; Andrew Rosenberger[1]; Michael Caton[1]; Patrick Golden[1]; Dennis Buchanan[3]; Jay Jira[1]; Siamack Mazdiyasni[1]; [1]Air Force Research Laboatory; [2]Universal Technology Corporation; [3]University of Dayton Research Institute

11:30 AM Invited
Probabilistic Sensitivity Analysis in Minimum Fatigue Life Prediction of a Shot Peened Titanium Alloy: Reji John[1]; *Sushant Jha*[2]; James Larsen[1]; [1]Air Force Research Laboratory; [2]Universal Technology Corporation

11:55 AM
Life Prediction for Turbopropulsion Systems Under Dwell Fatigue Conditions: *Kwai Chan*[1]; Michael Enright[1]; Jonathan Moody[1]; Ben Hocking[2]; Simeon Fitch[2]; [1]Southwest Research Institute; [2]Elder Research Inc

12:15 PM
Microstructure-Based Fatigue Life Prediction Tool for Gearbox Components: *Raja Pulikollu*[1]; Nathan Bolander[1]; Sandeep Vijayakar[2]; Tony Shen[3]; Matthew Spies[4]; Eric Ames[4]; [1]Sentient Science Corporation; [2]Advanced Numerical Solutions LLC; [3]The Boeing Company; [4]U.S. Army Aviation Applied Technology Directorate

Friction Stir Welding and Processing VII: Friction Stir Welding: Light Materials I

Sponsored by: TMS Materials Processing and Manufacturing Division, TMS: Shaping and Forming Committee
Program Organizers: Rajiv Mishra, University of North Texas; Murray Mahoney, Retired from Rockwell Scientific; Yutaka Sato, Tohoku University; Yuri Hovanski, Pacific Northwest National Laboratory; Ravi Verma, General Motors

Wednesday AM
March 6, 2013
Room: Grand Ballroom C3
Location: Henry B. Gonzalez Convention Center

Session Chairs: Ravi Verma, General Motors; Anthony Reynolds, University of South Carolina; Mitsuo Fujimoto, Kawasaki Heavy Industries, Ltd

8:30 AM Keynote
The Benefits and Opportunities for Friction Stir Welding and Processing within the Automotive Industry: *Blair Carlson*[1]; [1]General Motors

8:55 AM Invited
Effect of Tool Pin Features and Geometries on Quality of Weld during Friction Stir Welding: Md. Reza-E-Rabby[1]; Wei Tang[1]; *Anthony Reynolds*[1]; [1]University of South Carolina

9:15 AM
Aluminum Tailor-Welded Blanks for Automotive Applications: *Yuri Hovanski*[1]; John Carsley[2]; Blair Carlson[3]; Siva Pilli[1]; Susan Hartfield-Wunsch[3]; Mark Eisenmenger[4]; [1]Pacific Northwest National Laboratory; [2]General Motor Research & Development; [3]General Motors; [4]TWB Company

9:35 AM
Effect of Friction Stir Processing on Armor Grade Materials: *Timothy Johnson*[1]; Todd Curtis[2]; Bharat Jasthi[3]; Eric East[1]; Christian Widener[1]; Michael West[1]; [1]South Dakota School of Mines and Technology; [2]Zone Four Engineering, LLC; [3]Arbegast Advanced Materials Processing Laboratory

9:55 AM Break

10:05 AM
The Characterization of the Microstructural Zones and the Spatial Variations of the Mechanical Properties in Friction-Stir Welded 2139 Aluminum Alloy: *Jian Yu*[1]; Brian Justusson[2]; Chian-Fong Yen[1]; [1]ARL; [2]University of Michigan

10:25 AM
Effect of Process Parameters on the Microstructure and Mechanical Properties of Friction Stir Welded 2050-T3 Al-Li Alloy: *Harpreet Sidhar*[1]; Rajiv Mishra[1]; Anthony Reynolds[2]; Lucie Johannes[3]; John Baumann[4]; [1]University of North Texas; [2]University of South Carolina; [3]NASA-Johnson Space Center; [4]The Boeing Company

10:40 AM
Analysis of Mechanical and Metallurgical Properties of Friction Stir Butt Welded AA2024: *Sarah Jurak*[1]; Dwight Burford[1]; Michael McCoy[1]; [1]Wichita State University

10:55 AM
An Innovative Process Applied to the Joining of Steel to Aluminum in a Lap-Joint Configuration: *Camille van der Rest*[1]; Aude Simar[1]; Pascal Jacques[1]; [1]Université catholique de Louvain

11:15 AM
Mechanical and Microstructural Properties of FSW Lap Joints: *Egoitz Aldanondo*[1]; Ekaitz Arruti[1]; Pedro Alvarez[1]; Alberto Echeverria[1]; [1]IK4-LORTEK

11:35 AM
Mechanical Properties of Repaired 7075-T73 Friction Stir Weld Butt Welds: Christian Widener[1]; *John Franklin*[1]; Bharat Jasthi[2]; Michael West[1]; [1]South Dakota School of Mines and Technology; [2]Arbegast Advanced Materials Processing Laboratory

11:55 AM
Refill Friction Stir Spot Welding of Aluminum Alloys for Aviation by Using Shoulder First Plunging Method: *Hideki Okada*[1]; [1]Kawasaki Heavy Industries, LTD.

12:15 PM
Process Development of Integral Fasteners Using Friction Stir Spot Welding with "C-Frame" End Effect or on an Aircraft Cabin Door Made from AA6061-T6 and AA2024-T3: *Alan Handyside*[1]; Vishwanath Iyer[1]; Ron Preston[1]; Enkhsaikhan Boldsaikhan[1]; Michael McCoy[1]; [1]Wichita State University

12:35 PM
Effect of Post-weld Aging on the Corrosion Resistance and Mechanical Properties of Friction Stir Welded Aluminum Alloy 7475-T73: Bharat Jasthi[1]; *Erik Klinckman*[2]; Todd Curtis[1]; Christian Widener[2]; Michael West[2]; Robert Ruokolainen[3]; Ashish Dasgupta[3]; [1]Advanced Materials Processing and Joining Laboratory, South Dakota School of Mines and Technology; [2]South Dakota School of Mines and Technology; [3]Focus: HOPE

12:55 PM
Effect of a Two-stage Tool Probe on the Mechanical Strength and Macrostructure of Friction Stir Spot Welded Aerospace Alloys AA 7075 and AA 2024: A.Vishwanath Iyer[1]; *Enkhsaikhan Boldsaikhan*[1]; Dwight Burford[1]; Michael Mccoy[1]; [1]Wichita State University

1:10 PM
Investigation of Microstructural Evolution in the Transition Zone of Multipass Friction Stir Processed Al-Mg Alloy: Pradeep Shivanna[1]; *Vivek Pancholi*[1]; [1]Indian Institute of Technology Roorkee

Frontiers in Solidification Science: Microstructure Formation I: Experimental

*Sponsored by:*TMS Materials Processing and Manufacturing Division, TMS: Solidification Committee
Program Organizers: Andre Phillion, University of British Columbia; Silvere Akamatsu, Institut des Nanosciences de Paris; Christoph Beckermann, The University of Iowa; Michel Rappaz, Ecole Polytechnique Federale de Lausanne

Wednesday AM
March 6, 2013
Room: Lone Star Salon F
Location: Grand Hyatt

Funding support provided by: Materials Processing and Manufacturing Division, National Science Foundation

Session Chairs: Christopher Gourlay, Imperial College London; Ulrike Hecht, Access e.V.

8:30 AM Invited
Effects of Grain and Interphase Boundary Energy Anisotropy on Directional Solidification Microstructures: *Gabriel Faivre*[1]; Sabine Bottin-Rousseau[1]; Silvere Akamatsu[1]; [1]UPMC

9:00 AM
Cooperative Growth of Primary and Peritectic Phases in Cu-Sn Alloys Solidified at Low Speed: Pseudo-Steady State Regime: *Jonas Valloton*[1]; Jonathan Dantzig[2]; Mathis Plapp[3]; Michel Rappaz[1]; [1]EPFL; [2]EPFL/UIUC; [3]CNRS/Ecole Polytechnique

9:20 AM
Characterization of Fluid Flow Inside Electromagnetically-Levitated Molten Iron-Cobalt Droplets for ISS Experiment for ISS Experiments: *Jonghyun Lee*[1]; Xiao Xiao[1]; Douglas Matson[1]; Robert Hyers[2]; [1]Tufts University; [2]University of Massachusetts

9:40 AM Break

9:55 AM
Enhanced Growth Kinetics in Undercooled FeCo Alloys - Adiabatic Remelting of the Mushy-Zone: *Douglas Matson*[1]; Jackson Dolan[1]; [1]Tufts University

10:15 AM
Crystal Orientation and Morphology Selection in Al-Ag-Cu Ternary Eutectic: *Amber Genau*[1]; Lorenz Ratke[2]; [1]University of Alabama at Birmingham; [2]German Aerospace Center (DLR)

10:35 AM
Nucleation of Twinned Dendrites in Al-Zn-Cr Alloys: Can Icosahedral Solid Clusters Play a Role?: *Güven Kurtuldu*[1]; Philippe Jarry[2]; Michel Rappaz[1]; [1]Computational Materials Laboratory, Ecole Polytechnique Fédérale de Lausanne, Switzerland; [2]Constellium CRV, France

10:55 AM Invited
Ultra-Fast Calorimetry for Studies of Crystallization in Chalcogenides for Phase-Change Memory: *A. L. Greer*[1]; [1]University of Cambridge

11:25 AM
Application of Fast Scanning Calorimetry in the Rapid Solidification of Tin Particles Embedded in Al Matrix: *Weipeng Zhang*[1]; Bingge Zhao[1]; Qijie Zhai[1]; Yulai Gao[1]; [1]School of Materials Science and Engineering, Shanghai University

11:45 AM
Undercooling Dependence on Liquid Overheating by Differential Fast Scanning Calorimetry: *Bin Yang*[1]; John Perepezko[2]; Evgeny Zhuravlev[1]; Yulai Gao[3]; Christoph Schick[1]; [1]University of Rostock; [2]University of Wisconsin-Madison; [3]Shanghai Unviersity

12:05 PM
Size Dependent Nucleation of Single Tin Particles by Differential Fast Scanning Calorimetry: *Bin Yang*[1]; A. S. Abyzov[2]; Evgeny Zhuravlev[1]; Yulai Gao[3]; J. W. P. Schmelzer[1]; Christoph Schick[1]; [1]University of Rostock; [2]National Science Center, Kharkov Institute of Physics and Technology; [3]Shanghai University

High Temperature Electrochemistry: Electrochemistry and Materials Properties

*Sponsored by:*TMS Extraction and Processing Division, TMS: Pyrometallurgy Committee
Program Organizers: Prabhat Tripathy, Idaho National Laboratory; Guy Fredrickson, Idaho National Lab

Wednesday AM
March 6, 2013
Room: 006D
Location: Henry B. Gonzalez Convention Center

Session Chairs: Dihua Wang, Wuhan University; Laurent Cassayre, Laboratoire de Genie Chimique

8:30 AM
Ultrahigh-Purity Materials (>99.9999%) by Electrorefining: *Meng Tao*[1]; [1]Arizona State University

9:00 AM
Influence of FeF2 Content on the Corrosion of Ni-Cased Alloys (NiCrW and NiCrMo) in Molten Fluorides: *Laurent Cassayre*[1]; Thierry Auger[2]; Céline Cabet[3]; Isabelle Drouelle[4]; Jérémy Lezac[1]; Laurent Massot[1]; Mathieu Gibilaro[1]; Pierre Chamelot[1]; [1]Laboratoire de Génie Chimique; [2]MSSMAT; [3]CEA; [4]Institut de Chimie Moléculaire et des Matériaux d'Orsay

9:30 AM
Effect of Electrical Conductivity and Porosity of Cathode on Electro-Deoxidation Process of Ilmenite Concentrate: *Xuyang Liu*[1]; Meilong Hu[2]; Chenguang Bai[2]; Xuewei Lv[2]; [1]Chongqing university; [2]Chongqing University

10:00 AM Break

10:20 AM
Oxygen – Permeable Solid/Melt Composite Membranes: *Valery Belousov*[1]; [1]Baikov IMET RAS

10:50 AM
Zirconia Sensor Device for *In-Situ* Monitoring of Metal Powder Oxidation States: *Jarrod Milshtein*[1]; Soumendra Basu[1]; Srikanth Gopalan[1]; Uday Pal[1]; [1]Boston University

11:20 AM
The Kinetics and Mechanism of Catastrophic Oxidation of Copper.: *Anton Klimashin*[1]; [1]Baikov IMET RAS

11:50 AM
On the Preparation of Mg2Ni Alloy by a New Electrochemical Method: *Fuat Erden*[1]; Ishak Karakaya[1]; Metehan Erdogan[1]; [1]Middle East Technical University

12:10 PM
The Influence of F- Ions on the Electrodeposition of Titanium in Molten Fluoride-chloride Salt: Xiaobo Zhu[1]; Qiuyu Wang[1]; Jianxun Song[1]; Shuqiang Jiao[1]; *HongMin Zhu*[1]; [1]University of Science and Technology Beijing

Hume-Rothery Award Symposium: Electronic Structure Theory of Stability and Bonding in Alloys: Alloy Theory II (Joint Session with Computational Thermodynamics and Kinetics)

Sponsored by: TMS Electronic, Magnetic, and Photonic Materials Division, TMS: Alloy Phases Committee
Program Organizer: Chris Wolverton, Northwestern University

Wednesday AM
March 6, 2013

Room: 205
Location: Henry B. Gonzalez Convention Center

Session Chairs: Alan Ardell, UCLA; Gus Hart, BYU

8:30 AM Invited
High Entropy Alloys a New Class of Structural Materials: Magnetism and Magnetic Interactions: *G. Malcolm Stocks*[1]; Markus Daene[2]; Junqi Yin[1]; Markus Eisenbach[1]; Aurelian Rusanu[1]; Khorgokhuu Odbadrakh[1]; James Morris[1]; Claudia Troparevsky[1]; [1]ORNL; [2]LLNL

9:00 AM Invited
Hybrid Methods for Hybrid Materials: *Stefan Müller*[1]; [1]Hamburg University of Technology

9:30 AM Break

9:50 AM Invited
Effect of Epitaxial Strain on Phase Stability and Domain Structures in Thin Films: *Long Qing Chen*[1]; [1]Penn State University

10:20 AM Invited
Thermodynamic and Kinetic Properties of High Temperature Materials from First Principles: *Anton Van der Ven*[1]; [1]University of Michigan

10:50 AM Invited
Charges States and Their Implications on CALPHAD Modeling: *Zi-Kui Liu*[1]; [1]The Pennsylvania State University

Hybrid and Hierarchical Composite Materials: Characterization and Structure-Property Relationships

Sponsored by: TMS Structural Materials Division, TMS/ASM: Composite Materials Committee
Program Organizers: Tomoko Sano, US Army Research Laboratory; Charles Randow, US Army Research Laboratory; Chang Soo Kim, University of Wisconsin -Milwaukee

Wednesday AM
March 6, 2013

Room: 215
Location: Henry B. Gonzalez Convention Center

Session Chairs: Tomoko Sano, U.S. Army Research Laboratory; Chang Soo Kim, University of Wisconsin -Milwaukee

8:30 AM
Synthesis and Characterization of Inorganic Fullerene Type WS2 and Carbon Nanostructures Composites: Claudia Luhrs[1]; Michael Moberg[1]; *Ashley Maxson*[1]; Luke Brewer[1]; Sarath Menon[1]; [1]Naval Postgraduate School

8:50 AM
Development of Cyclic Damage in Cfrp under Variable Loading Conditions: *Alan Plumtree*[1]; [1]University of Waterloo

9:10 AM
Strain-rate Sensitivity in the Bending Strength of a Forged Turbostratic-Carbon Fiber Composite: *Eric Brannigan*[1]; Alan Jankowski[1]; [1]Texas Tech University

9:30 AM
Effect of Buckypaper Reinforcement on the Hypervelocity Impact Response of Polyethylene Fiber Composites: *Suman Khatiwada*[1]; Enrique Barrera[1]; [1]Rice University

9:50 AM Break

10:05 AM
Characterizing Thin Polyurea Layers Subjected to High Rate Loading: *Charles Randow*[1]; Daniel Casem[1]; Jason Robinette[1]; [1]US Army Research Lab

10:25 AM
Enhanced Permeability of 3D Woven Lattice Material with Experimental Testing and Modeling: *Longyu Zhao*[1]; Seunghyun Ha[1]; Keith Sharp[2]; Andrew Geltmacher[3]; Alex Kinsey[1]; Yong Zhang[1]; Dinc Erdeniz[4]; David Dunand[4]; Kevin Hemker[1]; Jamie Guest[1]; Timothy Weihs[1]; [1]Johns Hopkins University; [2]3TEX, Inc., NC USA; [3]Naval Research Laboratory; [4]Northwestern University

10:45 AM
Composite Crush Response of Hybrid 3D Woven Composites: *Mark Pankow*[1]; Chian-Fong Yen[1]; Anthony Waas[2]; [1]Army Research Laboratory; [2]University of Michigan

11:05 AM
High Rate Through-the-Thickness Response of Hybrid 3D Woven Composites: *Brian Justusson*[1]; Mark Pankow[2]; Anthony Waas[1]; Chian-Fong Yen[2]; [1]University of Michigan; [2]United States Army Research Laboratories

Magnesium-Based Biodegradable Implants Symposium: Performance Assessment and Evaluation

Sponsored by: TMS Electronic, Magnetic, and Photonic Materials Division, TMS Light Metals Division, TMS Structural Materials Division, TMS: Biomaterials Committee, TMS: Magnesium Committee
Program Organizers: Candan Tamerler, University of Washington; Wim Sillekens, European Space Agency

Wednesday AM
March 6, 2013

Room: 214D
Location: Henry B. Gonzalez Convention Center

Funding support provided by: Biological Materials Science Symposium
AND Magnesium Technology Symposium

Session Chairs: Wim Sillekens, ESA - European Space Agency; Jörg Löffler, ETH Zurich

8:30 AM Introductory Comments Candan Tamerler / Wim Sillekens

8:40 AM Keynote
How to Standardize Testing of Biodegradable Metals?: *Frank Witte*[1]; [1]Hannover Medical School

9:20 AM
Corrosion Characterization of Biodegradable Mg Alloys: *Yeoheung Yun*[1]; Yongseok Jang[1]; Boyce Collins[1]; Zongqing Tan[2]; Zhongyun Dong[2]; Jag Sankar[1]; [1]NC A & T State University; [2]University of Cincinnnati

9:40 AM
In Vitro and In Vivo Corrosion Characterization of MgZnCa Alloys: *Zhigang Xu*[1]; Boyce Collins[1]; Zongqing Tan[2]; Christopher Smith[1]; Zhongyun Dong[2]; Yeoheung Yun[1]; Jag Sankar[1]; [1]NC A&T State University; [2]University of Cincinnati

10:00 AM Break

10:20 AM
A Dynamic In Vitro Degradation System for Standardized Mg Degradation Studies: *Florian Evertz*[1]; Birgit Glasmacher[1]; [1]Leibniz Universität Hannover

10:40 AM
In Vivo Corrosion Progression of Bioabsorbable Magnesium for Stents Using a Rodent Model: *Patrick Bowen*[1]; Jaroslaw Drelich[1]; Jeremy Goldman[1]; [1]Michigan Technological University

11:00 AM
Influence of Biological Environment on the Suitability of Magnesium Alloys: Robert Thornton[1]; *Paul Lyon*[1]; Julie Gough[2]; Natasha Bhuiyan[2]; [1]Magnesium Elektron; [2]University of Manchester

11:20 AM
In Vivo Study of Effect of Magnesium Degradation on Osteomyelitis: *Ling Ren*[1]; Jinhao Zeng[2]; Ke Yang[1]; Xifan Mei[2]; [1]Institute of Metal Research CAS; [2]Liaoning Medical University

11:40 AM
Stress Corrosion Cracking of Aluminium-Free Magnesium Alloys in a Simulated Human Body Fluid: Lokesh Choudhary[1]; *R. K. Singh Raman*[1]; Joelle Hofstetter[2]; Peter Uggowitzer[2]; [1]Monash University; [2]ETH Zurich

Magnesium Technology 2013: Texture and Wrought Materials I

*Sponsored by:*TMS Light Metals Division, TMS: Magnesium Committee
Program Organizers: Norbert Hort, Helmholtz-Zentrum Geesthacht; Suveen Mathaudu, US Army Research Office; Neale Neelameggham, IND LLC; Martyn Alderman, Magnesium Elektron

Wednesday AM
March 6, 2013
Room: 214A
Location: Henry B. Gonzalez Convention Center

Session Chairs: Martyn Alderman, Magnesium Elektron; Alok Singh, National Institute for Materials Science

8:30 AM
Microstructure and Texture Evolution in a Magnesium Alloy during Extrusion at Various Extrusion Speeds: *Q. Ma*[1]; S.J. Horstemeyer[1]; B. Li[1]; Z. McClelland[1]; P.T. Wang[1]; M.F. Horstemeyer[1]; [1]Mississippi State University

8:50 AM
Effect of Grain Size and Basal Texture on Tensile Properties and Fracture Characteristics of Extruded AZ31 Alloy: *Hsiang-Ching Chen*[1]; Lui Truan-Sheng[1]; Chen Li-Hui[1]; [1]National Cheng Kung University

9:10 AM
Microstructure Characterization of Weakly Textured and Fine Grained AZ61 Sheet: *Tracy Berman*[1]; William Donlon[1]; Chung-Kai Hung[1]; Patrick Milligan[1]; Raymond Decker[2]; Tresa Pollock[3]; J. Wayne Jones[1]; [1]University of Michigan; [2]nanoMAG, LLC.; [3]University of California, Santa Barbara

9:30 AM
Texture Development in an Extruded Magnesium Alloy during Compression along the Transverse Direction: *Dyuti Sarker*[1]; Daolun Chen[1]; [1]Ryerson University

9:50 AM
The Texture and Microstructure Evolution of Mg-Zn-Ce Alloys: *Mehdi Sanjari*[1]; Seyed-Amir Farzadfar[1]; Tetsuo Sakai[2]; Hiroshi Utsunomiya[2]; In-Ho Jung[1]; Elhachmi Essadiqi[3]; Steve Yue[1]; [1]McGill ; [2]Osaka University; [3]Universite Internationale de Rabat (UIR) Technopolis

10:10 AM Break

10:30 AM
Evolution of Microstructure during Caliber Rolling of AZ31 Alloy: *Alok Singh*[1]; Hidetoshi Somekawa[1]; Tadanobu Inoue[1]; Toshiji Mukai[2]; [1]National Institute for Materials Science; [2]Kobe University

10:50 AM
Effect of Precipitation on Dynamically Recrystallized Grain Size in a Magnesium Alloy: *Abu Syed Humaun Kabir*[1]; Jing Su[1]; In-Ho Jung[1]; Steve Yue[1]; [1]McGill University

11:10 AM
Annealing of Cold and Warm Rolled AZ31B Magnesium Alloy Sheets: *Litzy Lina Catorceno*[1]; Denise Lopes[1]; [1]USP

11:30 AM
Deformation Behavior and Constitutive Relation of As-Extruded Mg-10Gd-3Y-0.5Zr Alloy: *Foisal Mirza*[1]; Daolun Chen[1]; Dejiang Li[2]; Xiaoqin Zeng[2]; [1]Ryerson University; [2]Shanghai Jiao Tong University

11:50 AM
Flow Behavior and Hot Workability of Pre-Extruded AZ80 Magnesium Alloy: *Lei Gao*[1]; Alan Luo[2]; Shiyi Wang[3]; Xiaoqin Zeng[3]; [1]General Motors China Science Lab; [2]General Motors Global Research and Development Center; [3]Shanghai Jiao Tong University

12:10 PM
Gas-Pressure Bulge Forming of Mg AZ31 Sheet at 450°C: *Alexander Carpenter*[1]; Jon Carter[2]; Louis Hector[2]; Eric Taleff[1]; [1]The University of Texas at Austin; [2]General Motors

Magnetic Materials for Energy Applications -III: Novel Materials and Phenomenon

*Sponsored by:*TMS Electronic, Magnetic, and Photonic Materials Division, TMS: Energy Committee, TMS: Energy Conversion and Storage Committee, TMS: Magnetic Materials Committee
Program Organizers: Sivaraman Guruswamy, University of Utah; Thomas Woodcock, IFW Dresden; Yongmei Jin, Michigan Technological University; Raju Ramanujan, Nanyang Technological University; Frank Johnson, GE Global Research; Oliver Gutfleisch, Technische Universität Darmstadt

Wednesday AM
March 6, 2013
Room: 217D
Location: Henry B. Gonzalez Convention Center

Session Chairs: Victorino Franco, Universidad de Sevilla; Oliver Gutfleisch, Technische Universität Darmstadt

8:30 AM Invited
Optimization of the Mechanical Alloying Process of Soft Magnetic Fe-Based Powders: An Equivalent Time Approach: *Javier Blázquez*[1]; Jhon Ipus[1]; Victorino Franco[1]; Alejandro Conde[1]; [1]University of Seville

9:00 AM Invited
Designing Permanent Magnet Machines for Ferrofluid Immersion: *Andy Judge*[1]; [1]DRS

9:30 AM Invited
Soft Magnetic Fe-Based Amorphous and (Nano)Composite Alloys with Very Good Mechanical Properties: *Mihai Stoica*[1]; [1]IFW Dresden

10:00 AM Break

10:15 AM
Investigation of Domain Structure of Alnico Magnets with Magneto-Optical Kerr Effect (MOKE): *Andriy Palasyuk*[1]; Erick Blomberg[1]; Haley Dillon[1]; Fran Laabs[1]; Lin Zhou[1]; Ruslan Prozorov[1]; Matthew Kramer[1]; R. McCallum[1]; Iver Anderson[1]; [1]Ames Laboratory

10:35 AM
Constant Permeability of Fe-B-Si-Nb Crystal-Glassy Composite Bulk Alloy by B_2O_3 Flux Melting and Casting: *Teruo Bitoh*[1]; Shogo Izumi[1]; [1]Akita Prefectural University

10:55 AM
A Density Functional Theory (DFT) Study of 4d Transition Metal Based Full Heusler Compound Co2YSi: *Dibya Rai*[1]; [1]Mizoram University

Materials and Fuels for the Current and Advanced Nuclear Reactors II: Structural Materials I

*Sponsored by:*TMS Structural Materials Division, TMS/ASM: Corrosion and Environmental Effects Committee, TMS/ASM: Nuclear Materials Committee
Program Organizers: Ramprashad Prabhakaran, Idaho National Laboratory; Dennis Keiser, Idaho National Laboratory; Raul Rebak, GE Global Research

Wednesday AM
March 6, 2013
Room: 202A
Location: Henry B. Gonzalez Convention Center

Session Chair: Kumar Sridharan, University of Wisconsin

8:30 AM Invited
Nondestructive Evaluation in the Nuclear Power Industry: *James Wall*[1]; [1]EPRI

9:10 AM
Thermal Embrittlement of Ferritic Stainless Steels: *Julie Tucker*[1]; George Young[1]; Michael Miller[2]; [1]Knolls Atomic Power Laboratory; [2]Oak Ridge National Laboratory

9:30 AM
Stainless Steel Corrosion Fatigue Retardation Behavior at Long Rise Times: *Elaine West*[1]; Nathan Lewis[1]; [1]Knolls Atomic Power Laboratory

9:50 AM
Nanoscale Characterization of Precursor to a Large Best Practice Heat of 14YWT: *Nicholas Cunningham*[1]; Yuan Wu[1]; David Gragg[1]; Kirk Fields[1]; G. Robert Odette[1]; David Hoelzer[2]; Stuart Maloy[3]; [1]UC Santa Barbara; [2]Oak Ridge National Laboratory; [3]Los Alamos National Laboratory

10:10 AM Break

10:30 AM
Microstructure Study of 9Cr-1Mo Ferritic-Martensitic Steel during Creep at the Wide Range of Stress: *Behrang Poorganji*[1]; Deepthi Tammana[1]; Peter Nagy[1]; Vijay. K Vasudevan[1]; [1]University of Cincinnati

10:50 AM
Creep-Fatigue Behavior of Alloy 617 and Alloy 230 at 850ºC: *Xiang Chen*[1]; Mikhail Sokolov[1]; Sam Sham[1]; Donald Erdman[1]; Jeremy Busby[1]; James Stubbins[2]; [1]Oak Ridge National Laboratory; [2]University of Illinois at Urbana-Champaign

11:10 AM
Creep Behavior of High Temperature Alloys as Structural Materials in Generation IV Nuclear Power Plant: *Xingshuo Wen*[1]; Laura Carroll[2]; Richard Wright[2]; T-L. (Sam) Sham[3]; Vijay Vasudevan[1]; [1]University of Cincinnati; [2]Idaho National Laboratory; [3]Oak Ridge National Laboratory

11:30 AM
Parametric Study on Mechanical Property of Ni Based Alloy for Application to VHTR: *Dong-Jin Kim*[1]; [1]KAERI

11:50 AM
The Oxidation Behavior of Hastelloy X and Its Welds at 1223K (950ºC): W.S. Chen[1]; Wu Kai[1]; L.W. Tsay[1]; J.J. Kai[2]; [1]Institute of Materials Engineering, National Taiwan Ocean University; [2]Department of Engineering and System Science, National Tsing Hua University

Materials Processing Fundamentals: Process Metallurgy of Non-Ferrous Metals

*Sponsored by:*TMS Extraction and Processing Division, TMS: Process Technology and Modeling Committee
Program Organizers: Lifeng Zhang, University of Science and Technology Beijing; Antoine Allanore, Massachusetts Institute of Technology; Cong Wang, Saint-Gobain High Performance Materials; James Yurko, Materion Brush Beryllium and Composites; Justin Crapps, ExxonMobil

Wednesday AM
March 6, 2013
Room: 008A
Location: Henry B. Gonzalez Convention Center

Session Chair: James Yurko, Materion Brush Beryllium and Composites

8:30 AM
A Simple Method to Measure Wettability and Surface Energy of TiO Coatings: Jonathan Schuster[1]; Mario Rosenberger[1]; *Carlos Schvezov*[1]; [1]Universidad Nacional de Misiones

8:50 AM
Fabrication and Property Evaluation of Mo Sputtering Target by Spark Plasma Sintering Process: *JungHan Ryu*[1]; Hyun Kuk Park[1]; Jun-Ho Jang[1]; Ik-Hyun Oh[1]; Hyeon Taek Son[1]; [1]Korea Institute of Industrial Technology

9:10 AM
TMAH Wet Etching of Silicon Micro- and Nano-Fins for Selective Sidewall Epitaxy of III-Nitride Semiconductors: *Lianci Liu*[1]; Denis Myasishchev[1]; Vladimir Kuryatkov[1]; Sergey Nikishin[1]; Harlan Harris[2]; Mark Holtz[1]; [1]Texas Tech University; [2]Texas A&M University

9:30 AM
Mathematical Modeling of Thermal and Residual Stress Evolution of Direct Metal Deposition(DMD): Hyung Chae[1]; Jyotirmoy Mazumder[1]; [1]University of Michigan

9:50 AM
Metallurgical Characterisation of Direct Laser Deposited IN718: *Zewen Huang*[1]; Rengen Ding[1]; Ian Mitchell[2]; Gavin Baxter[2]; Mark Nordin[2]; Paul Bowen[1]; [1]The University of Birmingham; [2]Rolls-Royce plc

10:10 AM Break

10:20 AM
Tracking Toxic Trace Elements in the Silicon Production Process: A Detailed Study of the Pathways of Pb and Ba from Raw Material To Product: *Ida Kero*[1]; Mari Næss[1]; Gabriella Tranell[1]; [1]Norwegian University of Science and Technology

10:40 AM
Aging of Supersaturated Ni3Mo Solid Solution Prepared by High Energy Milling: *I. Khalfallah*[1]; A. Aning[1]; C. Bolfarini[2]; [1]Virginia Tech; [2]Federal University of Sao Carlos

11:00 AM
Closed-Loop Control and FEM-Based Thermal Management on Laser Curing of Powder Coatings: *Shuang Liu*[1]; Mark Poullos[2]; Mark Poullos[2]; Fanrong Kong[1]; Radovan Kovacevic[1]; [1]Southern Methodist University; [2]PhotoFusion Company

11:20 AM
Purification of Indium by Vacuum Distillation: Yong Deng[1]; Bin Yang[1]; DongSheng Li[1]; Baoqiang Xu[1]; Heng Xiong[1]; [1]Kunming University of Science and Technology

11:40 AM
Investigating Current Efficiency of Aluminum Electrolysis in NaF-KF-AlF3 System: *Huanhuan Ma*[1]; Jilai Xue[1]; Jigang Li[1]; Yanan Zhang[1]; [1]University of Science and Technology Beijing

Mesoscale Computational Materials Science of Energy Materials: Structural Materials Modeling

Sponsored by: TMS Materials Processing and Manufacturing Division, TMS/ASM: Computational Materials Science and Engineering Committee
Program Organizers: Pascal Bellon, University of Illinois; Alfredo Caro, LANL; Long Qing Chen, Penn State University; Anter El-Azab, Florida State University; Ming Tang, Lawrence Livermore National Laboratory

Wednesday AM
March 6, 2013
Room: 218
Location: Henry B. Gonzalez Convention Center

Session Chairs: Alphonse Finel, CNRS/ONERA; Anter El-Azab, Purdue University

8:30 AM Invited
Phase Field Modeling of Microstructure Formation: Different Ways to Incorporate Plasticity: *Alphonse FINEL*[1]; Maeva Cottura[1]; Pierre-Antoine GESLIN[1]; Benoît APPOLAIRE[1]; Yann Le Bouar[1]; [1]ONERA-CNRS

9:00 AM Invited
Modeling Deformation Mechanisms in Ni-Base Superalloys: Ning Zhou[1]; Hallee Deutchman[1]; Mike Mills[1]; *Yunzhi Wang*[1]; [1]Ohio State University

9:30 AM
Applications of Field Dislocation Mechanics: Saurabh Puri[1]; Amit Acharya[2]; Dennis Dimiduk[3]; *Satish Rao*[1]; [1]UES, Inc; [2]Carnegie Mellon University; [3]Air Force Research Laboratory

9:50 AM
Mesoscale Modeling of the Ttensile Responses of BCC Fe and Mo in the Athermal Regime: *Ronan Madec*[1]; Ladislas Kubin[2]; [1]CEA, DAM, DIF; [2]LEM (CNRS/ONERA)

10:10 AM Break

10:30 AM
Modeling of Coherency Loss Mechanisms: *Pierre-Antoine Geslin*[1]; Benoît Appolaire[1]; Alphonse Finel[1]; [1]LEM ONERA / CNRS

10:50 AM Invited
Dislocation Simulations of the Structure and Properties of Grain Boundaries and Interfaces: *David Srolovitz*[1]; Siu Sin Quek[2]; Adele Lim[2]; Shuyang Dai[3]; Xiang Yang[3]; [1]University of Pennsylvania; [2]Institute of High Performance Computing; [3]Hong Kong University of Science and Technology

11:20 AM
Slip Mechanisms in BCC Single Crystals: In-Situ Laue Diffraction: Cecile Marichal[1]; *Helena Van Swygenhoven*[1]; Steven Van Petegem[1]; Emad Oveisi[2]; Cecile Hébert[2]; [1]Paul Scherrer Institut; [2]EPFL

11:40 AM
Power-Law Creep from Discrete Dislocation Dynamics Simulations: *Amine Benzerga*[1]; Shyam Keralavarma[2]; [1]Texas A&M University; [2]École Polytechnique Fédérale de Lausanne

12:00 PM
Dislocation Avalanche Behavior in Ni Microcrystals for Varying Strain Rates and Deformation Stages: *Dennis Dimiduk*[1]; Michael Uchic[1]; Stefanos Papanikolaou[2]; Jaafar El-Awady[3]; Paul Shade[1]; [1]Air Force Research Laboratory; [2]Yale University; [3]Johns Hopkins University

Microstructural Processes in Irradiated Materials: Austenitic & Duplex Stainless Steels

Sponsored by: TMS Structural Materials Division, TMS/ASM: Nuclear Materials Committee
Program Organizers: Thak Sang Byun, Oak Ridge National Laboratory; Dane Morgan, University of Wisconsin-Madison; Yasuyoshi Nagai, Tohoku University; Zhijie Jiao, University of Michigan-Ann Arbor; Christine Guéneau, CEA-Saclay

Wednesday AM
March 6, 2013
Room: 203A
Location: Henry B. Gonzalez Convention Center

Session Chairs: Christophe Domain, EDF R&D, ; Frank Garner, Radiation Effects Consulting

8:30 AM Invited
Second-Order Radiation Phenomena in Austenitic and High-Nickel Alloys Growing to First Order Importance at Higher Damage Levels Associated with PWR Plant Life Extension: *Frank Garner*[1]; Paula Freyer[2]; Y. Isobe[3]; Larry Greenwood[4]; Maxim Gussev[5]; [1]Radiation Effects Consulting; [2]Westinghouse Electric Company; [3]Nuclear Fuel Industries; [4]Pacific Northwest National Laboratory; [5]Oak Ridge National Laboratory

9:00 AM
Effect of Ni and Cr Alloying on Microstructural Evolution of BOR60-Irradiated Type 304 Stainless Steels: *Lizhen Tan*[1]; Jeremy Busby[1]; [1]Oak Ridge National Laboratory

9:20 AM
Observation of Grain Boundary Segregation in Ion-Irradiated Stainless Steels 316 and Comparison with the Rate Theory Model of a Multicomponent System: *Gyeong-Geun Lee*[1]; Yong-Bok Lee[1]; Hyung-Ha Jin[1]; Junhyun Kwon[1]; [1]Korea Atomic Energy Research Institute

9:40 AM
High Dose Heavy Ion Irradiation of Austenitic Stainless Steels Simulating a Neutron Irradiation: *Jan Michalicka*[1]; Zhijie Jiao[2]; Gary Was[2]; Janelle Wharry[2]; [1]Research Centre Rez; [2]University of Michigan

10:00 AM
Intergranular Cracking at RT of Austenitic Fe-Cr-Ni Alloys Exposed to PWR Conditions: *Young Suk Kim*[1]; Sung Soo Kim[1]; Dae Whan Kim[1]; [1]Korea Atomic Energy Research Institute

10:20 AM Break

10:30 AM
Slip Transfer through Grain Boundaries in Irradiated 304 Stainless Steel: *Bai Cui*[1]; Josh Kacher[1]; Ian Robertson[1]; [1]University of Illinois at Urbana-Champaign

10:50 AM
Relationship between Grain Boundary Character and Crack Initiation of He Irradiated Fe-15Cr-20Ni Ternary Alloy: *Kiyohiro Yabuuchi*[1]; Kazuma Abe[1]; Shuhei Nogami[1]; Akira Hasegawa[1]; [1]Tohoku University

11:10 AM
Effect of Local Environment on Vacancy Properties in BCC FeCr and FCC FeNiCr Alloys by DFT Calculations and Consequences on Diffusion Properties: *Christophe Domain*[1]; Jean Baptiste Piochaud[2]; Davide Costa[1]; Gilles Adjanor[1]; Pär Olsson[3]; Charlotte Becquart[2]; [1]EDF R&D; [2]UMET CNRS EM2VM; [3]KTH

11:30 AM
Influence of Ion Irradiation Coupled with He Implantation on the Swelling Microstructure of Austenitic Stainless Steels: *Xiaoqiang Li*[1]; Franck Fortuna[1]; Aurélie Gentils[1]; [1]Paris-sud University 11

11:50 AM
The Potential for Low-Temperature Swelling in Austentic Stainless Steels: *Roger Stoller*[1]; Alexander Barashev[2]; Stanislav Golubov[1]; [1]Oak Ridge National Laboratory; [2]University of Tennessee

12:10 PM Invited
Thermodynamic Modelling of Volatile Fission Products during SFR Fuel Irradiation: *Jean-Christophe Dumas*[1]; Tam Ngoc Pham Thi[1]; Vincent Bouineau[1]; Jean-Paul Piron[1]; Nathalie Dupin[2]; Christine Gueneau[3]; Stephane Gosse[3]; Pierre Benigni[4]; Jacques Rogez[4]; Philippe Maugis[4]; [1]CEA Cadarache; [2]Calcul Thermo; [3]CEA Saclay; [4]UMR CNRS 6242 & Aix-Marseille University

Modeling and Experimental Validation of Multiscale Mechanical Behavior from Atomic Scale to Macro Scale: Defects at the Atomic Scale

*Sponsored by:*TMS Materials Processing and Manufacturing Division, TMS Structural Materials Division, TMS: Integrated Computational Materials Engineering Committee, TMS/ASM: Mechanical Behavior of Materials Committee, TMS: Nanomechanical Materials Behavior Committee, TMS: Process Technology and Modeling Committee, TMS: Shaping and Forming Committee
Program Organizers: Nathan Mara, Los Alamos National Laboratory; Jian Wang, Los Alamos National Laboratory; Brad Boyce, Sandia National Laboratories; Jennifer Carter, Case Western Reserve University; Anthony Rollett, Carnegie Mellon University; Jonathan Zimmerman, Sandia National Laboratories

Wednesday AM
March 6, 2013

Room: 211
Location: Henry B. Gonzalez Convention Center

Session Chairs: Douglas Spearot, University of Arkansas; Dallas Trinkle, University of Illinois, Urbana-Champaign

8:30 AM Invited
A Concurrent Atomistic-Continuum Methodology for Passing Waves, Heat and Defects from the Atomistic to the Continuum Region: *Youping Chen*[1]; Liming Xiong[1]; Shengfeng Yang[1]; [1]University of Florida

9:00 AM
A DFT Investigation of the Early Stages of Nanoindentation: the Chemical and Mechanical Interactions between a Diamond Indenter and a Ni Slab: *Francesca Tavazza*[1]; Chandler Becker[1]; Lyle Levine[1]; [1]National Institute of Standards and Technology

9:20 AM
Ab Initio DFT Modeling of the Dislocation and Its Mobility in TiN Ceramic: Satyesh Yadav[1]; Rampi Ramprasad[2]; Richard Hoagland[1]; Jian Wang[1]; Amit Misra[1]; Joe Yasi[3]; Dallas Trinkle[3]; *Xiang-Yang Liu*[1]; [1]Los Alamos National Lab; [2]University of Connecticut; [3]University of Illinois at Urbana–Champaign

9:40 AM Invited
Atomistic Simulations of Grain Boundary Associated Distortion in Metallic Materials: *Douglas Spearot*[1]; Shawn Coleman[1]; [1]University of Arkansas

10:10 AM Break

10:20 AM Invited
Decomposing Atomic-Scale Deformation into Elastic and Plastic Parts and the Automated Identification of Grain Boundary Dislocations: *Alexander Stukowski*[1]; [1]Darmstadt University of Technology

10:50 AM
Microstructure and Crack Size Effects on Fatigue Crack Growth Behavior of Non-Ferrous and Ferrous Structural Materials: *Anastasios Gavras*[1]; Diana Lados[1]; [1]Worcester Polytechnic Institute

11:10 AM
Ordering of Point Defects on Deformable Elastic Lattices: *Roman Groger*[1]; [1]Academy of Sciences of the Czech Republic

11:30 AM Invited
Predicting Strength and Cross-Slip of Magnesium Alloys: First-Principles, Solute Distribution, and Deformation: *Dallas Trinkle*[1]; Joseph Yasi[1]; Louis Hector[2]; [1]University of Illinois, Urbana-Champaign; [2]General Motors Technical Center

12:00 PM
Estimation of Dislocation Nucleation Stresses from Nanoindentation by Combined Multiscale Modeling and Experiment: *Li Ma*[1]; Francesca Tavazza[1]; Chandler Becker[1]; Douglas Smith[1]; Lyle Levine[1]; [1]NIST

Modeling of Multi-Scale Phenomena in Materials Processing - III: Fluid Dynamics and Solidification

*Sponsored by:*TMS Materials Processing and Manufacturing Division, TMS/ASM: Computational Materials Science and Engineering Committee, TMS: Process Technology and Modeling Committee, TMS: Integrated Computational Materials Engineering Committee
Program Organizers: Adrian Sabau, Oak Ridge National Laboratory; Anthony Rollett, Carnegie Mellon University; Laurentiu Nastac, The University of Alabama; Jonathan Madison, Sandia National Laboratories; Mei Li, Ford Motor Company

Wednesday AM
March 6, 2013
Room: 216
Location: Henry B. Gonzalez Convention Center

Session Chairs: Adrian Sabau, Oak Ridge National Laboratory; Lifeng Zhang, Missouri University of Science and Technology

8:30 AM Introductory Comments

8:35 AM
Numerical Simulating Study on the Solidification Process of Continuous Casting Billet: *Tongbo Zhang*[1]; Jingshe Li[1]; Hongbo Yang[1]; Fangfang Song[1]; Ting Huang[1]; [1]USTB

9:00 AM
Numerical Simulation of Cavitation under Ultrasonic Treatment: *Jinwu Kang*[1]; Yisen Hu[1]; [1]Tsinghua University

9:25 AM
Optimum Effect of Factors Influencing on Sacrificial Cathodic Protection for Steel Wall: *Saad Kaskah*[1]; [1]Ministry of Industry

9:50 AM Break

10:20 AM
Self-Adapting Withdrawal Technology by Numerical Simulation to Optimize Directional Solidification Process of Superalloy Casting: *Hang Zhang*[1]; Qing Yan Xu[1]; Bai Cheng Liu[1]; [1]Tsinghua University

10:45 AM
Modeling on the Fluid Flow and Inclusion Motion in a Continuous Casting FC-Mold: Qiangqiang Wang[1]; *Lifeng Zhang*[1]; [1]University of Science and Technology Beijing

11:10 AM
Numerical Simulation of Temperature Field and Pressure in Super Large Regenerative Rotary Hearth Furnace: *Qiang Li*[1]; Huimin Lu[1]; Lian Zhou[1]; [1]Beihang University

Nanostructured Materials for Lithium Ion Batteries and for Supercapacitors: Nanostructured Materials for Lithium Ion Batteries and for Supercapacitors Session V

*Sponsored by:*TMS Electronic, Magnetic, and Photonic Materials Division, TMS: Energy Conversion and Storage Committee
Program Organizer: David Mitlin, University of Alberta and NINT NRC

Wednesday AM
March 6, 2013
Room: 007B
Location: Henry B. Gonzalez Convention Center

Session Chairs: David Mitlin, University of Alberta and NINT NRC; Reza Shahbazian-Yassar, Michigan Technological University; Peter Kalisvaart, University of Alberta; Zhi Li, University of Alberta

8:30 AM Invited
Pseudocapacitive Properties of Nanostructured Transition Metal Oxides: *Bruce Dunn*[1]; Veronica Augustyn[1]; Jason Kim[1]; Iris Rauda[1]; Sarah Tolbert[1]; [1]UCLA

8:50 AM Invited
Fracture and Delamination in Thin Film Si Electrodes: Hamed Haftbaradaran[1]; *Huajian Gao*[1]; [1]Brown University

9:10 AM
Microstructural Characterization of Damage Mechanisms of Graphite Electrodes in Lithium-ion Cells: *Ahmet Alpas*[1]; A. Reza Riahi[1]; Sandeep Bhattacharya[1]; [1]University of Windsor

9:30 AM Invited
Nanoarchitecture Electrodes for Energy Storage: *Christopher Johnson*[1]; [1]Argonne National Laboratory

9:50 AM Break

10:10 AM Invited
Structure of the Graphite Anode Solid Electrolyte Interphase in Lithium Ion Batteries: *Brett Lucht*[1]; [1]University of Rhode Island

10:30 AM Invited
Silicon Carbide Nanostructures for Micro-Supercapacitor Applications: *Roya Maboudian*[1]; John Alper[1]; Carlo Carraro[1]; [1]University of California at Berkeley

10:50 AM Invited
Nanostructured Vanadium Oxide for Supercapacitor Electrodes: Allison Engstrom[1]; *Fiona Doyle*[1]; [1]University of California, Berkeley

11:10 AM Invited
High Energy Density Anode Materials Based on SiO-SnCo/FeC for Lithium Batteries: *Ali Abouimrane*[1]; Bo Liu[1]; Yang Ren[1]; Zhigang Fang[2]; Khalil Amine[1]; [1]Argonne National Laboratory; [2]University of Utah

11:30 AM Invited
Graphene Fabrication and Lithium Ion Batteries Applications: *Fuqiang Huang*[1]; [1]Shanghai Institute of Ceramics, Chinese Academy of Sciences

11:50 AM
Nanostructured LiNi0.5Mn1.5O4 Cathode Material with Improved Rate Capability for Lithium Ion Battery: *Yi-Chun Jin*[1]; Jenq-Gong Duh[1]; [1]National Tsing Hua University

Neutron and X-Ray Studies of Advanced Materials VI: Centennial and Beyond: Mesoscale Studies

Sponsored by: TMS Structural Materials Division, TMS/ASM: Mechanical Behavior of Materials Committee
Program Organizers: Rozaliya Barabash, Oak Ridge National Laboratory; Xun-Li Wang, City University of Hong Kong; Jaimie Tiley, US Air Force Research Laboratory; Gernot Kostorz, ETH Zurich; Brent Fultz, California Institute of Technology; Peter Liaw, Univ of Tennessee

Wednesday AM
March 6, 2013

Room: 209
Location: Henry B. Gonzalez Convention Center

Session Chairs: Emil Zolotoyabko, Technion; Rozaliya Barabash, ORNL

8:30 AM Keynote
Slip Mechanisms in BCC Single Crystals: In-Situ Laue Diffraction: *Helena Van Swygenhoven*[1]; Cécile Marichal[1]; Steven Van Petegem[1]; [1]Paul Scherrer Institut

8:50 AM Invited
Advances in 3D Micro-Diffraction with Small Beams.: *Jon Tischler*[1]; Wenjun Liu[1]; Ruqing Xu[1]; B.C. Larson[2]; John Budai[2]; [1]Argonne National Laboratory; [2]Oak Ridge National Laboratory

9:10 AM Invited
A Tunable Multi-Color "Rainbow" Filter for Improved Stress and Dislocation Field Mapping in Polycrystals Using X-Ray Laue Microdiffraction: *Odile Robach*[1]; Jean-Sébastien Micha[2]; Olivier Ulrich[1]; Olivier Geaymond[3]; Olivier Sicardy[4]; Jürgend Härtwig[5]; François Rieutord[1]; [1]CEA-Grenoble / INAC; [2]CNRS / SPrAM; [3]CNRS / Institut Néel; [4]CEA-Grenoble / LITEN; [5]ESRF

9:30 AM Invited
Validating Microstructural Models Using 3D Sub-Micrometer-Resolution X-Ray Characterization: *Lyle Levine*[1]; Peter Geantil[2]; Ben Larson[3]; Jon Tischler[4]; Wenjun Liu[4]; Francesca Tavazza[1]; Mike Kassner[2]; [1]National Institute of Standards and Technology; [2]University of Southern California; [3]Oak Ridge National Laboratory; [4]Argonne National Laboratory

9:50 AM Break

10:00 AM Invited
Metals Behavior at Very High Temperature: *Klaus-Dieter Liss*[1]; Kun Yan[2]; Lisa Thoennessen[2]; Saurabh Kabra[1]; David Carr[1]; Mark Reid[3]; Ali Dehghan-Manshadi[3]; Robert Harrison[1]; Rian Dippenaar[3]; [1]Australian Nuclear Science and Technology Organisation; [2]Australian Nuclear Science and Technology Organisation and University of Wollongong; [3]University of Wollongong

10:20 AM Invited
Quantification of Preferred Orientation in Crystals by Using the March-Dollase Approach: *Emil Zolotoyabko*[1]; [1]Technion

10:40 AM Invited
X-Ray Diffraction Contrast Tomography: A Combined 3D Imaging and Diffraction Methodology for Characterization of Polycristalline Materials: *Yoann Guilhem*[1]; Peter Reischig[1]; Nicola Vigano[1]; Andrew King[2]; Wolfgang Ludwig[1]; [1]Université de Lyon; [2]ESRF

11:00 AM
In Situ Studies of Large Deformation of Monoclinic NiTi: Twinning vs. Slip: *Aaron Stebner*[1]; [1]Caltech

11:20 AM Invited
Spatially-Resolved X-Ray Microdiffraction Studies Inside Individual Grains and Domains: *John Budai*[1]; Jonathan Tischler[2]; Wenjun Liu[2]; Anthony Rollett[3]; Jason Fowlkes[1]; Alexander Tselev[1]; Evgheni Strelcov[1]; Andrei Kolmakov[4]; [1]Oak Ridge National Laboratory; [2]Argonne National Laboratory; [3]Carnegie Mellon University; [4]Southern Illinois University at Carbondale

11:40 AM Invited
In Situ Characterization of Twin Nucleation in Ti Using 3DXRD: *Thomas Bieler*[1]; Leyun Wang[2]; Armand Beaudoin[3]; Peter Kenesei[2]; Ulrich Lienert[2]; [1]Michigan State University; [2]Argonne National Laboratory; [3]University of Illinois

12:00 PM Invited
Residual Stress Determination in Cast Bi-Metallic Joints: *Thomas Watkins*[1]; Donald Erdman[1]; Adrian Sabau[1]; Wei Zhang[1]; Timothy Skszek[2]; Xiaoping Niu[3]; [1]ORNL; [2]Vehma International ; [3]Promatek Research Centre

12:20 PM Invited
New Capabilities for the Analysis of Nanocrystalline Powders Using the WPPPM Approach: *Matteo Leoni*[1]; Paolo Scardi[1]; [1]University of Trento

12:40 PM
Simulation of X-Ray Diffraction Peak Broadening in Dislocated Materials: *Riccardo Gatti*[1]; Benoit Devincre[1]; [1]LEM CNRS-ONERA UMR 104

Ni-Co 2013: Ores and Processing

Sponsored by: The Minerals, Metals and Materials Society, Metallurgical Society of the Canadian Institute of Mining Metallurgy and Petroleum, Chinese Society for Metals, GDMB Society for Mining, Metallurgy, Resource and Environmental Technology, Society for Mining Metallurgy and Exploration, Mining and Materials Processing Institute of Japan, Associacao Brasileira de Metalurgia, Materiais e Mineracao, Southern African Institute of Mining and Metallurgy (SAIMM), Minerals Engineering International Online, Cobalt Development Institute, Societe Francaise de Metallurgie et de Materiaux, TMS Extraction and Processing Division, TMS: Hydrometallurgy and Electrometallurgy Committee, TMS: Pyrometallurgy Committee
Program Organizer: Thomas Battle, Midrex Technologies

Wednesday AM
March 6, 2013

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

Session Chairs: Corby Anderson, Colorado School of Mines; Phillip Mackey, P J Mackey Technology Inc

8:30 AM
Mineralogical Characterization of Cobaltic Oxides from the Democratic Republic of Congo: *Yves Vanbrabant*[1]; Christian Burlet[1]; Pierre Louis[2]; [1]Royal Belgian Institute for Natural Sciences; [2]PEL Consult

8:55 AM
Nickel and Nitric: *William Drinkard*[1]; [1]Drinkard Metalox Inc.

9:20 AM
PolyMet Mining Corporation's NorthMet Process Development: *David Dreisinger*[1]; [1]PolyMet Mining

9:45 AM Break

10:05 AM
Talvivaara Nickel Mine – from a Project to a Mine and Beyond: *Lauri Palmu*[1]; Marja Riekkola-Vanhanen[1]; [1]Talvivaara Mining Company Plc

10:30 AM
The Sintering Character of Limonitic Nickel Laterite: *Hongxu Li*[1]; Chao Wu[1]; Yu Chen[1]; Zhiqian Zhang[1]; Chao Li[1]; [1]University of Science and Technology

10:45 AM
New Techniques for Ore Sorting in Non-Ferrous Mining and Mineral Processing Operations with an Emphasis on Nickel Ores: *A.S. Bamber*; *N.A. Barcza*[1]; [1]MineSense Technologies Ltd

11:10 AM
The Starved Acid Leaching Technology (SALT) for Recovery of Nickel and Cobalt from Saprolites and Caron Plant Residues: *David Dreisinger*[1]; James Clucas[1]; [1]Search Minerals Inc.

Novel Synthesis and Consolidation of Powder Materials : Additive Manufacturing and Novel Consolidation of Powder Materials

*Sponsored by:*TMS Materials Processing and Manufacturing Division, TMS: Powder Materials Committee
Program Organizers: Ma Qian, The University of Queensland; Iver Anderson, The Ames Laboratory

Wednesday AM
March 6, 2013
Room: Lone Star Salon C
Location: Grand Hyatt

Session Chairs: Hilda Chikwanda, Council for Scientific and Industrial Research (CSIR); Kenong Xia, University of Melbourne

8:30 AM
Science and Applications of Gradient Alloys Fabricated through Additive Manufacturing: *Douglas Hofmann*[1]; John-Paul Borgonia[1]; [1]NASA JPL/Caltech

8:50 AM Invited
Selective Laser Melting of Low Modulus Titanium Alloys for Biomedical Applications: *Lai-Chang Zhang*[1]; Timothy Sercombe[2]; [1]Edith Cowan University; [2]The University of Western Australia

9:20 AM Invited
Near-Net-Shape Consolidation of Lightweight PM Materials: *James Knapp*[1]; [1]Materion Brush Beryllium & Composites

9:50 AM
Microstructural and Mechanical Properties of Sintered and Extruded TiNi Alloys by Using TiNi Pre-Alloyed Powder with TiO_2 Particles: *Takayuki Yonezawa*[1]; Tomohiro Yoshimura[1]; Junko Umeda[2]; Katsuyoshi Kondoh[2]; Ryouichi Souba[3]; [1]Osaka University; [2]Joining and Welding Research Institute, Osaka University; [3]TERUMO Corporation

10:10 AM Break

10:30 AM Invited
High Density Powder Forming Using Dynamic Pressing DMC Technology: *Bhanu Chelluri*[1]; Edward Knoth[1]; [1]IAP Research Inc

11:00 AM Invited
Consolidation of Blended Magnesium and Ceramic Powders by Microwave Heating: *M. Ashraf Imam*[1]; Arne Fliflet[1]; Ralph Bruce[2]; Peter Pao[1]; Jerry Feng[1]; [1]Naval Research Lab; [2]Vanderbilt University

11:30 AM
Sensitivity of the Tensile Ductility of Powder Metallurgy a, a+ß and Nearly ß Ti Alloys to Oxygen: *Ya-Feng Yang*[1]; K Kondoh[2]; Ma Qian[1]; [1]University of Queensland; [2]Osaka University

Pb-free Solders and Emerging Interconnect and Packaging Technologies: Sn Whiskering I

*Sponsored by:*TMS Electronic, Magnetic, and Photonic Materials Division, TMS: Electronic Packaging and Interconnection Materials Committee
Program Organizers: Nikhilesh Chawla, Arizona State University; Srinivas Chada, Whirlpool; Darrel Frear, Freescale Semiconductor; John Elmer, LLNL; Tae-Kyu Lee, Cisco Systems; Yan Li, Intel; Laura Turbini, Research In Motion; Kwang-Lung Lin, National Cheng Kung University; Sohoon Yoo, Korea Institute of Industrial Technology

Wednesday AM
March 6, 2013
Room: 217B
Location: Henry B. Gonzalez Convention Center

Session Chair: To Be Announced

8:30 AM Invited
Stress and Microstructure Around Whisker-Forming Grains in Sn Coatings: *Eric Chason*[1]; Fei Pei[1]; Nitin Jadhav[1]; [1]Div of Engineering

8:50 AM
Sn Whisker Mitigation by Introducing Various Thin Films as Diffusion Barrier: *I Made Wahyu Diyatmika*[1]; Jinn Chu[1]; Yee-wen Yen[1]; [1]National Taiwan University of Science and Technology

9:10 AM
Study of Influencing Parameters on Growth of Zn Whiskers on Galvanized Steel in Electronic Components: *Juan Manuel Cabrera Anaya*[1]; Agnès Lina[2]; Patrick Favaro[2]; Yves Bréchet[3]; Marc Verdier[3]; Laurent Cretinon[2]; [1]EDF R&D / INP Grenoble; [2]EDF R&D; [3]INP Grenoble

9:30 AM Break

9:50 AM
Combinatorial Materials Science as an Alloy Screening Method for the Mitigation of Tin Whiskers in Pb-Free Electronics: *Alfredo Díaz-González*[1]; Pedro Quintero-Aguiló[1]; [1]University of Puerto Rico at Mayaguez

10:10 AM
Effect of Sn Whisker Mitigation by Addition of a Small Amount of Bi: *Jung-Lae Jo*[1]; Kyoko Hamasaki[1]; Toru Sugahara[1]; Masanobu Tsujimoto[2]; Katsuaki Suganuma[1]; [1]Osaka University; [2]Uyemura & Co., Ltd.

Phase Transformation and Microstructural Evolution: General Phase Transformations: Materials

*Sponsored by:*TMS Materials Processing and Manufacturing Division, TMS: Chemistry and Physics of Materials Committee, TMS/ASM: Computational Materials Science and Engineering Committee, TMS: Integrated Computational Materials Engineering Committee, TMS/ASM: Phase Transformations Committee, TMS: Process Technology and Modeling Committee, ASM: Alloy Phase Diagrams Committee
Program Organizers: Amy Clarke, Los Alamos National Laboratory; Sudarsanam Suresh Babu, Ohio State Univ; Rajarshi Banerjee, Univ of North Texas; John Morral, Ohio State Univ; Brian Gleeson, University of Pittsburgh; Carelyn Campbell, National Institute of Standards & Tech; Yongho Sohn, Univ of Central Florida; Yunzhi Wang, Ohio State University

Wednesday AM
March 6, 2013
Room: 204B
Location: Henry B. Gonzalez Convention Center

Session Chairs: Adam Creuziger, National Institute of Standards and Technology; Kester Clarke, Los Alamos National Laboratory

8:30 AM
Formation of the Nb2C Phase in the Nb-1Zr-0.1C Alloy: A Case of Interstitial Ordering: *Raghvendra Tewari*[1]; B. Vishwanadh[1]; Gautam Dey[1]; [1]Bhabha Atomic Resrach Centre

8:50 AM
In Situ Raman Analysis of the Indentation Induced Phase Transformation of Crystalline and Amorphous Silicon: *Yvonne Gerbig*[1]; Chris Michaels[1]; Aaron Forster[1]; Santiago Solares[2]; Robert Cook[1]; [1]NIST; [2]University of Maryland

9:10 AM
Uncertainty Analysis in Orientation Distribution Functions: *Adam Creuziger*[1]; Komal Syed[2]; Thomas Gnaeupel-Herold[2]; [1]National Institute of Standards and Technology; [2]University of Maryland

9:30 AM
Optical, Structural, and Electrical Properties of Vanadium Dioxide Grown on Sapphire Substrates with Different Orientations: *Mohammad Nazari*[1]; Yong Zhao[1]; Yanhan Zhu[1]; Ayrton Bernussi[1]; Zhaoyang Fan[1]; Mark Holtz[1]; [1]Texas Tech University

9:50 AM
Thermodynamic in γ→ε Phase Transformation and γ→α' Phase Transformation in Fe-Mn Alloy during Near-rapid Solidification: *Qin Peng*[1]; Changjiang Song[2]; Wenbin Xia[2]; Qijie Zhai[2]; [1]RWTH Aachen; [2]Shanghai Unviersity

10:10 AM
Microstructural Evolution of Alloy Steels: Simone Novarino[1]; Giorgio Scavino[1]; Graziano Ubertalli[1]; Paolo Matteis[1]; *Donato Firrao*[1]; [1]Politecnico di Torino

Phase Transformation and Microstructural Evolution: Non-conventional Phase Transformation Paths: Part III

*Sponsored by:*TMS Materials Processing and Manufacturing Division, TMS: Chemistry and Physics of Materials Committee, TMS/ASM: Computational Materials Science and Engineering Committee, TMS: Integrated Computational Materials Engineering Committee, TMS/ASM: Phase Transformations Committee, TMS: Process Technology and Modeling Committee, ASM: Alloy Phase Diagrams Committee
Program Organizers: Amy Clarke, Los Alamos National Laboratory; Sudarsanam Suresh Babu, Ohio State Univ; Rajarshi Banerjee, Univ of North Texas; John Morral, Ohio State Univ; Brian Gleeson, University of Pittsburgh; Carelyn Campbell, National Institute of Standards & Tech; Yongho Sohn, Univ of Central Florida; Yunzhi Wang, Ohio State University

Wednesday AM
March 6, 2013
Room: 204A
Location: Henry B. Gonzalez Convention Center

Session Chairs: Hamish Fraser, The Ohio State University; Srikumar Banerjee, Bhabha Atomic Research Centre

8:30 AM Invited
Atomic Level Observations of Phase Transformations Occurring during Surface Hardening of TiAl: *Fritz Appel*[1]; [1]Helmholtz Zentrum Geesthacht

9:00 AM
Control of γ-TiAl Lamellae Precipitation from Supersaturated a_2-Ti_3Al Single Crystal by Local Plastic Straining: *Yuichiro Koizumi*[1]; Toshihiro Yamazaki[1]; Akihiko Chiba[1]; Hiroaki Nishiyama[2]; [1]Tohoku University; [2]Hokkaido University

9:20 AM
Effect of Initial Microstructure on Fracture Toughness of 1200 MPa-Class High Strength Steel with Ultrafine Elongated Grain Structure: *Meysam Jafari*[1]; Warren Garrison[1]; Kaneaki Tsuzaki[2]; [1]Carnegie Mellon University; [2]National Institute for Materials Science (NIMS)

9:40 AM
Effect of Microstructure on the Nitrogen Distribution in a Gas Nitrided Carbon Steel: *Masato Yuya*[1]; [1]Sumitomo Metal Industries Ltd.

10:00 AM Break

10:10 AM
BCC-HCP Transition in Fe: Effect of Stress on Transition Mechanisms and Lattice Preferred Orientations: *Sebastien Merkel*[1]; Ainhoa Lincot[2]; Sylvain Petitgirard[3]; Philippe Cardin[2]; [1]Universite Lille 1; [2]Université J. Fourier Grenoble; [3]ESRF

10:30 AM
Microstructural Evolution of Cu/Nb Nanolaminates during Sliding Wear: *Fuzeng Ren*[1]; Aaron Dahlke[1]; Pascal Bellon[1]; Nathan Mara[1]; Irene Beyerlein[1]; [1]University of Illinois at Urbana-Champaign

10:50 AM
Self-Organized Nanolayering Induced by Sliding Wear in Cu-Ag: *Fuzeng Ren*[1]; Salman Arshad[1]; Pascal Bellon[1]; Robert Averback[1]; [1]University of Illinois at Urbana-Champaign

11:10 AM
Strain-Induced Martensitic Transformation in Tensile/Compression Cyclic Deformations of Biomedical Co-Cr-Mo-N Alloy: *Takuya Mitsunobu*[1]; Yuichiro Koizumi[1]; Byoung-Soo Lee[1]; Akihiko Chiba[1]; [1]Tohoku University

11:30 AM
Grain Size Evolution under Tribological Loading as a Function of Sliding Energy Density: *Christian Greiner*[1]; Peter Gumbsch[1]; [1]Karlsruhe Institute of Technology

11:50 AM
Microstructure and Texture Evolution of Cu-Nb Nano-Laminates Subjected To HPT: *Elvan Ekiz*[1]; Timothy Lach[1]; Pascal Bellon[1]; Robert Averback[1]; Nathan Mara[2]; Mohsen Pouryazdan[3]; Horst Hahn[3]; [1]University of Illinois Urbana Champaign; [2]Los Alamos National Laboratory; [3]Karlsruhe Institute of Technology

12:10 PM
Scaling Behavior of Shear Induced Mixing with Length Scale: *Salman Arshad*[1]; Timothy Lach[1]; Mohsen Pouryazdan[2]; Horst Hahn[2]; Pascal Bellon[1]; Shen Dillon[1]; Robert Averback[1]; [1]University of Illinois at Urbana-Champaign; [2]Karlsruhe Institut für Technologie (KIT) Institut für Nanotechnologie

Physical and Mechanical Metallurgy of Shape Memory Alloys: Magnetic and Fe-based Shape Memory Alloys

*Sponsored by:*TMS/ASM: Phase Transformations Committee
Program Organizers: Haluk Karaca, University of Kentucky; Ibrahim Karaman, Texas A&M University; Othmane Benafan, NASA Glenn Research Center; Ryosuke Kainuma, Tohoku University; Hans Jurgen Maier, Univ of Paderborn

Wednesday AM
March 6, 2013
Room: Lone Star Salon B
Location: Grand Hyatt

Session Chairs: Ibrahim Karaman, Texas A&M University; Yasukazu Murakami, Tohoku University

8:30 AM
TEM Studies on Antiphase Boundaries in Magnetic Shape Memory Alloys: *Yasukazu Murakami*[1]; Hyun Soon Park[2]; Daisuke Shindo[1]; Ryosuke Kainuma[1]; [1]Tohoku University; [2]RIKEN

9:00 AM
Segmented Twin Boundaries in 10M Modulated Ni-Mn-Ga Martensite: Robert Chulist[1]; Ladislav Straka[2]; Nataliya Lanska[3]; Aleksandr Soroka[3]; Carl-Georg Oertel[1]; Alexei Sozinov[3]; *Werner Skrotzki*[1]; [1]TU Dresden; [2]Aalto University School of Science and Technology; [3]AdaptaMat Ltd.

9:20 AM
Crystallography and Magnetic Field Induced Strain by Co Doping NiCoMnGa Heusler Alloy: *Takuo Sakon*[1]; Yoshiya Adachi[2]; Hiroyuki Nojiri[3]; Takeshi Kanomata[4]; [1]Ryukoku University; [2]Yamagata University; [3]Tohoku University; [4]Tohoku Gakuin University

9:40 AM
Intra-Variant Boundary in Non-Modulated Ni-Mn-Ga: *Brittany Muntifering*[1]; Libor Kovarik[2]; Robert Pond[3]; Nigel Browning[2]; Peter Müllner[1]; [1]Boise State University; [2]Pacific Northwest National Laboratory; [3]University of Exeter

10:00 AM Break

10:20 AM
Metamagnetic Behavior in Polycrystalline NiCoMnAl Thin Film Alloys: *Steven Rios*[1]; Daniel Bufford[1]; Ibrahim Karaman[1]; Xinghang Zhang[1]; [1]Texas A&M University

10:40 AM
Observation of Strain Glass Transitions in Various Shape Memory Alloys: *James Monroe*[1]; Ibrahim Karaman[1]; Ryosuke Kainuma[2]; [1]Texas A&M University; [2]Tohoku University

11:00 AM
Effects of Alloy Composition and Heat Treatment on Martensitic Transformation in Fe-Ni-Co-Ti-B Alloys: *Doyup Lee*[1]; Toshihiro Omori[1]; Ryousuke Kainuma[1]; [1]Tohoku University

11:20 AM
The Effect of Nano-Precipitates on Superelastic Properties of FeNiCoAlTa Shape Memory Alloy Single Crystals: *Ji Ma*[1]; Billy Hornbuckle[2]; Gregory Thompson[2]; Ibrahim Karaman[1]; Zhiping Luo[1]; [1]Texas A&M University; [2]University of Alabama

11:40 AM
Cyclic Deformation Behavior of Aged FeNiCoAlTa Single Crystals: *Philipp Krooß*[1]; Thomas Niendorf[1]; Ibrahim Karaman[2]; Yuri Chumlyakov[3]; Hans Maier[1]; [1]University of Paderborn; [2]Texas A&M University; [3]Tomsk State University

12:00 PM
Characterization of the Shape Memory Behavior of Single Crystalline FeNiCoAlNb Shape Memory Alloys: *Ali Turabi*[1]; Haluk Karaca[1]; Hirobumi Tobe[1]; Peizhen Li[1]; Burak Basaran[1]; Yuri Chumlyakov[2]; [1]University of Kentucky; [2]Tomsk State University

12:20 PM
Superelastic Response of a Single Crystalline FeMnAlNi Shape Memory Alloy: *Li-Wei Tseng*[1]; Ji Ma[1]; Ibrahim Karaman[1]; Zhiping Luo[1]; Y.I. Chumlyakovc[2]; [1]Texas A&M university; [2]Siberian Physical Technical Institute

REWAS 2013: Enabling Materials Resource Sustainability: Enabling Sustainability through Systems Modelling and Design, Life Cycle Management, LCA and Industrial Ecology

Sponsored by: Chinese Society for Metals, The Mining and Materials Processing Institute of Japan (MMIJ), TMS Extraction and Processing Division, TMS: Recycling and Environmental Technologies Committee
Program Organizers: Christina Meskers, Umicore Precious Metals Refining; Anne Kvithyld, SINTEF; Markus Reuter, Outotec Oyj; Randolph Kirchain, Massachusetts Institute of Technology; Mark Schlesinger, Missouri University of Science and Technology; Gregory Krumdick, Argonne National Laboratory; Cong Wang, Saint-Gobain High Performance Materials; Gabrielle Gaustad, Rochester Institute of Technology; Diana A. Lados, Worcester Polytechnic Institute; Brajendra Mishra, Colorado School of Mines; Jeffrey S. Spangenberger, Argonne National Laboratory

Wednesday AM
March 6, 2013
Room: 006A
Location: Henry B. Gonzalez Convention Center

Funding support provided by: Xstrata; SINTEF; Outotec; Umicore, and CR3, the Center for Resource Recovery and Recycling

Session Chairs: William Rankin, CSIRO; Diana A. Lados, Worcester Polytechnic Institute

8:30 AM Introductory Comments

8:35 AM
A Green Urban Mobility System Solution from the EU Ingrid Project: *Fabrizio D'Errico*[1]; Marco Romeo[2]; Adamo Screnci[3]; [1]Politecnico di Milano; [2]CiaoTech - PNO Consultants Group; [3]Mc Phy Energy

9:00 AM
Recycling-Oriented Product Characterization for Electric and Electronic Equipment as a Tool to Enable Recycling of Critical Metals: Susanne Rotter[1]; Perrine Chancerel; *Maximilian Ueberschaar*; [1]TU-Berlin

9:25 AM Break

9:45 AM
Critical Analysis of Existing Recyclability Assessment Methods for New Product in Order to Define a Reference Method: *Elisabeth Maris*[1]; Daniel Froelich; [1]Institut Arts et Metiers Paris

10:10 AM
Rock Smelting of Copper Ores with Waste Heat Recovery: *Terry Norgate*[1]; Sharif Jahanshahi[1]; Nawshad Haque[1]; [1]CSIRO

10:35 AM
Re-Processing of Mining Waste: An Alternative Way to Secure Metal Supplies of European Union: *Anne-Gwénaëlle Guezennec*[1]; Françoise Bodenan[1]; Guillaume Bertrand[1]; Daniel Cassard[1]; Annabelle Fuentes[1]; Gael Bellenfant[1]; Patrick D'Hugues[1]; Maurice Save[1]; [1]BRGM

11:00 AM
Potential of Steelmaking Slag as New Phosphorous Resource in Terms of Total Materials Requirement.: *Eiji Yamasue*[1]; Kazuyo Matsubae[2]; Kenichi Nakajima[3]; Tetsuya Nagasaka[2]; [1]Kyoto University; [2]Tohoku University; [3]National Institute for Environmental Studies

11:25 AM
Assessing a Reclaimed Concrete Up-Cycling Scheme through Life-Cycle Analysis: *Sylvain Guignot*[1]; Yannick Menard[1]; [1]BRGM

REWAS 2013: Enabling Materials Resource Sustainability: Enabling Sustainability through the Physics of Metals & Materials Processing

Sponsored by: Chinese Society for Metals, The Mining and Materials Processing Institute of Japan (MMIJ), TMS Extraction and Processing Division, TMS: Recycling and Environmental Technologies Committee
Program Organizers: Christina Meskers, Umicore Precious Metals Refining; Anne Kvithyld, SINTEF; Markus Reuter, Outotec Oyj; Randolph Kirchain, Massachusetts Institute of Technology; Mark Schlesinger, Missouri University of Science and Technology; Gregory Krumdick, Argonne National Laboratory; Cong Wang, Saint-Gobain High Performance Materials; Gabrielle Gaustad, Rochester Institute of Technology; Diana A. Lados, Worcester Polytechnic Institute; Brajendra Mishra, Colorado School of Mines; Jeffrey S. Spangenberger, Argonne National Laboratory

Wednesday AM
March 6, 2013

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

Funding support provided by: Xstrata; SINTEF; Outotec; Umicore, and CR3, the Center for Resource Recovery and Recycling

Session Chairs: Gabriella Tranell, Norwegian University of Science & Technology; Markus Reuter, Outotec Oyj

8:30 AM Introductory Comments

8:35 AM
Removal of Heavy Metals from Water by Fly Ash from Coal and Steel Dust, Laboratory Tests: *Francisco Carrillo-Pedroza*[1]; Ma de Jesus Soria-Aguilar[1]; Antonia Martinez-Luevanos[1]; [1]Universidad Autonoma de Coahuila

9:00 AM
Cyanide and Copper Recovery from Barren Solution of the Merrill Crowe Process: *Jose Parga*[1]; Jesus Valenzuela[2]; [1]Technology Institute of Saltillo; [2]Universidad de Sonora

9:25 AM
Northern Regions of Russia as Alternative Sources of Pure Water for Sustainable Development: Challenges and Solutions: Viacheslav Tsukerman[1]; *Anton Gudkov*[1]; Stanislav Ivanov[1]; [1]KSC RAS

9:50 AM Break

10:10 AM
Selective Extraction of Vanadium from the APV-Precipitated Waste Water: Cui Li[1]; *Hong-Yi Li*[1]; Chun-Bin Tu[1]; Tao Zhang[1]; Hai-Xing Fang[1]; Bing Xie[1]; [1]Chongqing University

10:30 AM
Study of Modified Semi-Coke on the Advanced Treatment of Coking Wastewater's Oil: *Chao Liu*[1]; Jiang Huang[1]; [1]Development & Research Center of WISCO

10:55 AM
Pt-doped TiO2 Nanoparticles for Photocatalytic Degradation of Phenols in Wastewater: *Mohamed Barakat*[1]; [1]KAU University

Solar Cell Silicon: Silicon Production and Refining

*Sponsored by:*TMS Extraction and Processing Division, TMS Light Metals Division, TMS: Energy Conversion and Storage Committee, TMS: Recycling and Environmental Technologies Committee
Program Organizers: Gabriella Tranell, Norwegian University of Science and Technology; Arjan Ciftja, SINTEF; Shadia Ikhmayies, Al Isra University; Yulia Meteleva-Fischer, Materials innovation institute (M2i) / Delft University of Technology

Wednesday AM
March 6, 2013

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

Session Chairs: Gabriella Tranell, Norwegian University of Science & Technology; Yulia Meteleva-Fischer, Materials innovation institute (M2i) / Delft University of Technology

8:30 AM Introductory Comments

8:40 AM
Reactive Molecular Dynamic Studies on the Reaction Mechanisms of Carbothermal Silicon Production: *Jan-Philipp Mai*[1]; Gabriele Raabe[2]; Juergen Koehler[2]; [1]JPM Silicon GmbH; [2]University of Braunschweig - Institute of Technology

9:00 AM
Production of Silicon from Silica: Solid-Oxide-Membrane Based Electrolysis Process: *Yihong Jiang*[1]; JiaPeng Xu[1]; Brian Lo[1]; Uday Pal[1]; Soumendra Basu[1]; [1]Boston University

9:20 AM
Carbochlorination Reduction of Silica Oxides: Mei Song[1]; *Meilong Hu*[1]; Lu Liu[1]; Qingyu Deng[1]; Xuewei Lv[1]; Chenguang Bai[1]; [1]Chongqing University

9:40 AM
Quantifying Fracture Behavior of Polycrystalline Silicon Grown via Fluidized Bed Reactor: *Mohamad Zbib*[1]; David Bahr[1]; Matthew Miller[2]; [1]Washington State University; [2]REC Silicon

10:00 AM Break

10:20 AM
Challenges in the Solar Grade Silicon Production through Metallurgical Processes: *Jafar Safarian*[1]; Gabriella Tranell[1]; [1]Norwegian University of Science and Technology

10:40 AM
Solar Grade Silicon Purification Using Liquid Phase Migration Technique: *Kunitoshi Matsunaga*[1]; Takeshi Yoshikawa[1]; Kazuki Morita[1]; [1]The University of Tokyo

11:00 AM
Alloying Refining of Metallurgical Grade Silicon with Rare Earth Elements: *Yulia Meteleva-Fischer*[1]; Yongxiang Yang[2]; Rob Boom[1]; Bert Kraaijveld[3]; Henk Kuntzel[3]; [1]Materials innovation institute (M2i) / Delft University of Technology; [2]Delft University of Technology; [3]RGS development B.V.

11:20 AM
Removal of Boron from Silicon by Reactive Gas Refining: *Øyvind Sortland*[1]; Merete Tangstad[1]; [1]NTNU

11:40 AM
Effect of Oxygen and carbon on Lifetime in Cz Silicon Pulled from Top-Cuts of Casted Multicrystalline Ingot: *Song Zhang*[1]; Eivind Øvrelid[2]; [1]Norwegian University of Science and Technology; [2]SINTEF

12:00 PM
Effect of Impurities in Monocrystalline Silicon for Solar Cells: *Michael Knudson*[1]; Mari Juel[2]; Eivind Øvrelid[2]; Marisa Di Sabatino[1]; [1]NTNU; [2]SINTEF

Symposium on High Entropy Alloys: Alloy Development and Applications

Sponsored by: TMS Structural Materials Division, TMS/ASM: Mechanical Behavior of Materials Committee, TMS: Alloy Phases Committee
Program Organizers: Peter Liaw, The University of Tennessee; Gongyao Wang, University of Tennessee; M. Gao, National Energy Technology Laboratory ; S. Mathaudhu , U.S. Army Research Office

Wednesday AM
March 6, 2013
Room: 203B
Location: Henry B. Gonzalez Convention Center

Session Chairs: Yoshihiko Yokoyama, Tohoku University; Hongbin Bei, Oak Ridge National laboratory

8:30 AM Invited
Automatic Fabrication of High-Entropy Alloys and Their Properties: *Yoshihiko Yokoyama*[1]; Xie Xie[2]; James Antonaglia[3]; Michael Hemphill[2]; Tang Zhi[2]; Tao Yuan[4]; Gongyao Wang[2]; Che-Wei Tsai[5]; Jien-Wei Yeh[5]; Andrew Chuang[2]; Karin Dahmen[3]; Peter Liaw[2]; [1]Tohoku University; [2]University of Tennessee; [3]University of Illinois at Urbana Champaign; [4]Ohio University; [5]National Tsing Hua University

8:55 AM
Search for Lower Density High Entropy Alloys: *James Cotton*[1]; Abraham Munitz[2]; Ryan Oliver[3]; Rodinei Gomes[2]; Gerald Bourne[2]; Michael Kaufman[2]; [1]Boeing Research and Development; [2]Colorado School of Mines; [3]University of Wisconsin-Milwaukee

9:10 AM Invited
Assessing High Temperature Structural Application Potential of FCC Based HEAs: *Young-Won Kim*[1]; Sang-Lan Kim[2]; Christopher Woodward[3]; [1]Gamteck; [2]UES; [3]AFRL

9:35 AM Invited
High Entropy Alloys in the Fe7W6 Frank-Kasper Phase Forming Family: *Michael Widom*[1]; [1]Carnegie Mellon University

10:00 AM Break

10:15 AM Invited
Families of Multiple-Component Single-Phase Solid-Solution High Entropy Alloys: *Hongbin Bei*[1]; [1]Oak Ridge National laboratory

10:40 AM Invited
High-Entropy Glassy Alloys Designed from Ti_2Ni Structure Using Digitalized Crystallographic Database: *Akira Takeuchi*[1]; Junqiang Wang[1]; Na Chen[1]; Wei Zhang[2]; Yoshihiko Yokoyama[2]; Kunio Yubuta[2]; [1]WPI-Advanced Institute for Materials Research, Tohoku University; [2]Institute for Materials Research, Tohoku University

11:05 AM
High-Entropy Alloy to Nitride Coatings Deposited by Reactive DC Sputtering: *Kuo-Cheng Yang*[1]; Chun-Yang Cheng[1]; Szu-Chien Tseng[1]; An-Chou Yeh[1]; Jien-Wei Yeh[1]; [1]National Tsing Hua University

11:20 AM
Non-Equilibrium and Equilibrium Phases in AlCoCrFeNi High-Entropy Alloys: *Zhi Tang*[1]; Oleg Senkov[2]; Chad Parish[3]; Lou Santodonato[1]; Daniel Miracle[2]; Gongyao Wang[1]; Chuan Zhang[4]; Fan Zhang[4]; Peter Liaw[1]; [1]The University of Tennessee; [2]Air Force Research Laboratory; [3]Oak Ridge National Laboratory; [4]CompuTherm LLC

Synergies of Computational and Experimental Materials Science II: Mechanical Behavior: Fatigue and Failure

Sponsored by: TMS Materials Processing and Manufacturing Division, TMS/ASM: Computational Materials Science and Engineering Committee, TMS: Integrated Computational Materials Engineering Committee
Program Organizers: Katsuyo Thornton, University of Michigan; Thomas Buchheit, Sandia National Laboratories; Anthony Rollett, Carnegie Mellon University; David Rowenhorst, Naval Research Lab

Wednesday AM
March 6, 2013
Room: 217A
Location: Henry B. Gonzalez Convention Center

Session Chairs: Anthony Rollet, Carnegie Mellon University; Robert Suter, Carnegie Mellon University

8:30 AM Introductory Comments

8:35 AM Invited
On an Integrated Experimental and Computational Approach to Derive Phenomenological Equations to Predict Fracture Toughness in Titanium Alloys: Iman Ghamarian[1]; Brian Welk[2]; Hamish Fraser[2]; *P. Collins*[1]; [1]University of North Texas; [2]The Ohio State University

9:05 AM
Microstructure-Based Probabilistic Modeling of Life-Limiting Fatigue Mechanisms: *Sushant Jha*[1]; Christopher Szczepanski[2]; Robert Brockman[3]; Craig Przybyla[2]; Reji John[2]; James Larsen[2]; [1]Air Force Research Laboratory/Universal Technology Corporation; [2]US Air Force Research Laboratory; [3]University of Dayton Research Institute

9:25 AM Invited
Combining X-Ray Microtomography with the Finite Elements Method to Study Damage and Cracking in Stuctural Materials: *Henry Proudhon*[1]; Jia Li[1]; Yoann Guilhem[2]; Lucien Laiarinandrasana[1]; Thilo Morgeneyer[1]; Wolfgang Ludwig[2]; Arjen Roos[3]; Samuel Forest[1]; [1]MINES ParisTech; [2]Universite de Lyon; [3]ONERA

9:55 AM Break

10:10 AM Invited
High Energy X-Ray Diffraction Microscopy Combined with Tomography: Creating a Direct Link Between Mesoscale Computational Models and Experimental Measurements: *Robert Suter*[1]; [1]Carnegie Mellon University

10:40 AM
Determination of High Strain Rate Behavior of Steel Using Finite Element Analysis and High Strain Rate Experimentation: *Jeremy Schreiber*[1]; Tim Eden[1]; Ivi Smid[1]; [1]Penn State

11:00 AM
Failure Mode Prediction of a Resistance Spot Weld in Advanced High Strength Steels: *Lili Zheng*[1]; Yanli Wang[1]; Srdjan Simunovic[1]; Wei Zhang[1]; Zhili Feng[1]; [1]Oak Ridge National Laboratory

11:20 AM
Modeling Bending of α-Titanium with Embedded Crystal Plasticity and Analytical Yield Surface Formulations in Implicit Finite Elements: *Marko Knezevic*[1]; Ricardo Lebensohn[1]; Oana Cazacu[2]; Benoit Revil-Baudard[2]; Gwénaëlle Proust[3]; Sven Vogel[4]; Michael Nixon[5]; [1]Materials Science and Technology Division, Los Alamos National Laboratory; [2]Department of Mechanical and Aerospace Engineering, University of Florida; [3]School of Civil Engineering, University of Sydney; [4]Los Alamos Neutron Science Center, Los Alamos National Laboratory; [5]Air Force Research Laboratory, Munitions Directorate

11:40 AM
Correlating Microstructural Features with Dynamic Damage Nucleation: *Veronica Livescu*[1]; John Bingert[1]; Thomas Mason[1]; Daniel Mason[2]; Curt Bronkhorst[1]; [1]Los Alamos National Laboratory; [2]Brigham Young University

Three-Dimensional Materials Science VII: Specialty Session on Three-Dimensional Tools

Sponsored by: TMS Structural Materials Division, TMS: Advanced Characterization, Testing, and Simulation Committee
Program Organizers: Jonathan Madison, Sandia National Laboratories; Nikhilesh Chawla, Arizona State University; Michael Groeber, Air Force Research Laboratory

Wednesday AM
March 6, 2013

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

Session Chairs: Jonathan Madison, Sandia National Laboratories; David Rowenhorst, Naval Research Laboratory

8:30 AM Introductory Comments

8:40 AM Invited
RoboMet.3D: A Fully Automated, Serial Sectioning System for 3D Microstructural Investigations: *Murali Gorantla*[1]; [1]UES, Inc

9:05 AM Invited
Using the TriBeam to Quantitatively Analyze CuW Composites: *McLean Echlin*[1]; Alessandro Mottura[2]; Tresa Pollock[1]; [1]UC Santa Barbara; [2]University of Birmingham

9:30 AM Invited
An Open-Source Engine for the Processing of Electron Backscatter Patterns: *Philippe Pinard*[1]; Marin Lagacé[2]; Pierre Hovington[2]; Raynald Gauvin[3]; Silvia Richter[1]; [1]RWTH Aachen University; [2]Institut de recherche d'Hydro-Québec; [3]McGill University

9:55 AM Break

10:05 AM Invited
Development and Application of Novel Tools and Techniques for the Three-Dimensional Characterization of Numerous Complex Materials: *John Sosa*[1]; Daniel Huber[1]; Vikas Dixit[1]; Peter Collins[2]; Hamish Fraser[1]; [1]The Ohio State University; [2]University of North Texas

10:30 AM Invited
Stochastic Segmentation of Material Images and Image Stacks: Emine Gulsoy[1]; Michael Jackson[2]; Mary Comer[3]; Jeff Simmons[4]; *Marc De Graef*[5]; [1]Northwestern University; [2]BlueQuartz Software; [3]Purdue University; [4]Air Force Research Laboratory; [5]Carnegie Mellon University

10:55 AM Invited
Digital Representation Environment for the Analysis of Microstruccture in 3D (DREAM.3D): *Michael Groeber*[1]; Mike Jackson[2]; [1]AFRL; [2]BlueQuartz Software

11:20 AM Invited
Fast Fourier Transform-Based Micromechanical Modeling of Polycrystals with Direct Input from 3-D Microstructural Images: *Ricardo Lebensohn*[1]; [1]Los Alamos National Laboratory

11:45 AM Invited
3D Image Based Modelling for Materials Applications: Philippe Young[1]; Kerim Genc[2]; Ali Abdul-Aziz[3]; *Simon Richards*; [1]University of Exeter; [2]Simpleware Ltd.; [3]NASA Glenn Research Center

12:10 PM Invited
Studying Complex Microstructure Geometry and Topology with HEDM: An Adaptive, Forward Modeling Approach: *S.F. Li*[1]; Joel Bernier; Bryan Reed; Mukul Kumar; J. Lind; C.M. Hefferan; Robert Suter; Ulrich Lienert; [1]Lawrence Livermore National Lab

2013 Functional Nanomaterials: Synthesis, Properties and Applications: Low-Dimensional Nanomaterials II

Sponsored by: TMS Electronic, Magnetic, and Photonic Materials Division, TMS: Nanomaterials Committee
Program Organizers: Seong Jin Koh, University of Texas at Arlington; Nitin Chopra, University of Alabama; Jiyoung Kim, University of Texas at Dallas; Yuanbing Mao, University of Texas-Pan American; Ashwin Ramasubramaniam, University of Massachusetts; Gregory Thompson, University of Alabama

Wednesday PM
March 6, 2013

Room: 201
Location: Henry B. Gonzalez Convention Center

Funding support provided by: Qualcomm, Inc.

Session Chairs: Jiyoung Kim, University of Texas; Yuanbing Mao, University of Texas-Pan American

2:00 PM
Carbon Encapsulated Platinum Nanoparticles: Growth, Characterization, and Applications: *Nitin Chopra*[1]; Junchi Wu[1]; [1]The University of Alabama

2:20 PM
Green Synthesis of Anisotropic CdSe Nanoparticles under Ambient Condition Via a Non -Phosphine Based Method: Vuyelwa Ncapayi[1]; *Oluwafemi Oluwatobi*[1]; Odey Akpa[1]; Sandile Songca[1]; [1]Walter Sisulu University

2:40 PM
Synthesis of Rhenium Nanoparticles by Gamma Irradiation: *Jessika Rojas*[1]; Carlos Castano[1]; [1]Missouri University of Science and Technology

3:00 PM
Non-Exponential Decay of Quantum Dot Photoluminescence: *Karel Kral*[1]; Miroslav Mensik[2]; [1]Inst. Phys. ASCR, v.v.i.; [2]Institute of Macromolecular Chemistry, ASCR

3:20 PM Break

3:40 PM
Enhanced Electrochemical Performance of Oxide-carbon Composite Nanofibers with Tunable Morphology: *Qiang Li*[1]; Aleksey Altecor[1]; Karen Lozano[1]; Yuanbing Mao[1]; [1]University of Texas Pan-America

4:00 PM
Fluorinated Graphene as a Low-k Dielectric for Graphene Devices: *Srikar Jandhyala*[1]; Greg Mordi[1]; David Hinojos[1]; Hyunjung Shin[2]; Robert Wallace[1]; Jiyoung Kim[1]; [1]University of Texas at Dallas; [2]Kookmin University

4:20 PM
Application of Graphene Oxide to the Construction of Electrochemical Biosensor for Environmental Monitoring: *Li Dan*[1]; Haixia Tong[1]; Xin Li[1]; Zhenyu An[1]; Wenqi Li[1]; Wei Liu[1]; Xiaofeng Zhang[1]; Qian Wang[1]; [1]Changsha University of Science and Technology

4:40 PM
Electrochemical Biosensors Based on T-ZnO Nanostructures and ZnO Nanowires for Highly Sensitive and Real-time Detection of Glucose and Uric Acid: *Yanguang Zhao*[1]; Xiaoqin Yan[1]; Yue Zhang[1]; [1]University of Science & Technology Beijing(USTB)

5:00 PM Concluding Comments Best Graduate Student Paper Award Talks

2013 Materials Innovation Plenary: Innovation in Materials & Manufacturing: 2013 Materials Innovation Plenary Session

*Sponsored by:*TMS: Materials Innovation Committee
Program Organizers: Edward Herderick, EWI; Jud Ready, Georgia Institute of Technology

Wednesday PM
March 6, 2013

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

Funding support provided by: Georgia Institute of Technology.

Session Chairs: Edward Herderick, EWI; Jud Ready, Georgia Institute of Technology

2:00 PM Introductory Comments

2:05 PM Invited
International Space Station as an Innovation Laboratory: Materials Research and Beyond: *Julie Robinson*[1]; [1]NASA Johnson Space Center -- International Space Station

2:35 PM Question and Answer Period

2:40 PM Invited
The National Network for Manufacturing Innovation: *Frank Gayle*[1]; [1]NIST

3:10 PM Question and Answer Period

3:15 PM Invited
New Approaches to Manufacturing Innovation in DOE: *Robert Ivester*[1]; [1]Department of Energy

3:45 PM Question and Answer Period

3:50 PM Invited
Integrated Computational Materials Engineering (ICME): A Study on ICME Implementation in the Aerospace, Automotive, and Maritime Industries: *Tresa Pollock*[1]; [1]University of California Santa Barbara

4:20 PM Question and Answer Period

4:25 PM Panel Discussion

4th International Symposium on High-Temperature Metallurgical Processing: Simulation and Modeling

*Sponsored by:*TMS Extraction and Processing Division, TMS: Energy Committee, TMS: Materials Characterization Committee, TMS: Pyrometallurgy Committee
Program Organizers: Tao Jiang, Central South University; Jiann-Yang Hwang, Michigan Technological University; Phillip Mackey, Consultant; Onuralp Yücel, ITU; Guifeng Zhou, Wuhan Iron and Steel

Wednesday PM
March 6, 2013

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

Session Chairs: Mansoor Barati, University of Toronto; Xiaohui Fan, Central Sourth University

2:00 PM
Simulations for Optimising Plant Flowsheets for Brownfield Improvements: *Andrew Campbell*[1]; Michael Reed[1]; [1]WorleyParsons

2:20 PM
Study on Apprasial Model of Iron Ores Based on Multi-level Fuzzy Comprehensive Evaluation: *Xiao-hui Fan*[1]; Ying Li[1]; Xu-ling Chen[1]; [1]The Central South University

2:40 PM
The Numerical Simulation and Application of Oxygen Lance in 120t BOF of PANSTEEL: *Yong Chen*[1]; Xin-teng Liang[2]; Jian-hua Zeng[2]; Gui-jun LI[3]; Sen-xiang Yang[3]; [1]PANsteel Group Research Institute Co., Ltd. ; [2]PANsteel Group Research Institute Co., Ltd.; [3]Vanadium Recovery & Steelmaking Plant of PZH Steel

3:00 PM
CFD Model Development for Gaseous Reduction of Iron Ore Fines Using Multilayer Moving-fluidized Bed: *Huiqing Tang*[1]; [1]University of Science and Technology Beijing,Beijing

3:15 PM
Modelling the Hardening of Steel AISI 5115 by the Method Kuyucak: Eliana Agaliotis[1]; Mario Rosenberger[2]; *Carlos Schvezov*[1]; Gustavo Sanchez Sarmiento[3]; [1]UNaM - CONICET; [2]UNaM; [3]UBA

3:30 PM
Deformation Simulation of Copper Plates of Slab Continuous Casting Mold: *Xiang-Ning Meng*[1]; [1]Northeastern University

3:50 PM Break

4:00 PM
An Estimation Model for the Viscosities of CaF2(-CaO)-Al2O3 Slags: *Shi Guanyong*[1]; Zhang Ting'an[1]; Niu Liping[1]; Dou Zhihe[1]; [1]Northeastern University

4:20 PM
Numerical Simulation of Slag Foaming in BOS Converter Steelmaking with Population Balance Modeling: *Md Sattar*[1]; Jamal Naser[1]; Geoffrey Brooks[1]; [1]Swinburne University of Technology

4:35 PM
Thermodynamic Modeling of the CaO-FetO-CaF2 System for Application in Electroslag Remelting: *Dmitri Nassyrov*[1]; In-Ho Jung[1]; [1]McGill University

4:55 PM
Determination of Liquidus Temperatures from Viscosity for CaO-Al2O3 Based Slags: Jifang Xu[1]; *Lei Tang*[2]; Minqi Sheng[1]; Jianchao Li[3]; Jieyu Zhang[2]; Kang Wan[1]; [1]Soochow University; [2]Shanghai University; [3]Vocational and Industry Institute of Hebei

5:15 PM
Numerical Simulation of Electromagnetic Fields in Microwave Gas Heating System: Influence of the Dielectric Properties: Xiaobiao Shang[1]; *Junruo Chen*[2]; Nanshang Shen[3]; Yifeng Shi[4]; Bangqi Zhang[4]; Guo Chen[5]; Jinhui Peng[6]; [1]Faculty of Mechanical and Electrical Engineering, Kunming University of Science and Technology,; [2]Faculty of Mechanical and Electrical Engineering, Kunming University of Science and Technology; [3]Yunnan Copper Industry (Group) Co Ltd.; [4]Yunnan Copper Company Limited; [5]Key Laboratory of Unconventional Metallurgy, Kunming University of Science and Technology; [6]Key Laboratory of Unconventional Metallurgy,Kunming University of Science and Technology

5:35 PM
Research and Application of Intelligence Control System for Rotation Speed of Main Exhaust Fan in Sintering Plant: *Li Qiang*[1]; [1]TISCO

5:40 PM
Numerical Modelling of Oxygen Enriched Top-Blown Smelting Reduction Furnace: *Qing Shan*[1]; Wang Hua[1]; Yang Ni[1]; Li Wentao[1]; Wang Junyong[1]; [1]Kunming University of Science and Technology

Advanced Materials and Reservoir Engineering for Extreme Oil & Gas Environments: Materials Challanges in Hostile Environments

*Sponsored by:*TMS Materials Processing and Manufacturing Division, TMS Structural Materials Division, TMS Electronic, Magnetic, and Photonic Materials Division, TMS: Nanomaterials Committee
Program Organizers: Indranil Roy, Schlumberger; Brajendra Mishra, Colorado School of Mines; Manuel Marya, Schlumberger Technology Corporation; Kuo-Chiang Chen, Schlumberger; Partha Ganguly, Schlumberger; Richard Lewis, Schlumberger; Suveen Mathaudhu, U.S. Army Research Office; Nitin Chopra, The University of Alabama; Xinghang Zhang, Texas A&M University; Greg Kusinski, Chevron; John Meng, BP America Inc.; Jefferson Rodrigues, Petrobras; Justin Cheney, Scoperta

Wednesday PM
March 6, 2013
Room: Lone Star Salon A
Location: Grand Hyatt

Session Chairs: Rashmi Bhavsar, Schlumberger; JEFFERSON DE OLIVEIRA, Petrobras - CENPES

2:00 PM Introductory Comments Rashmi Bhavsar, Global Materials Metier Manager and Advisor, Schlumberger

2:10 PM Keynote
Microstructure Engineering of the Heat Affected Zone of X80 Welds for Arctic Applications: *Warren Poole*[1]; Matthias Militzer[1]; [1]The University of British Columbia

2:40 PM
Ultra-Deep Strong Acidizing and Sour Gas Environments: A Materials Evaluation: *Dean Gambale*[1]; [1]Tantaline

3:00 PM Invited
Stability and Reactivity of Iron Sulfide Films in Sour Environments: William Herbert[1]; Aravind Krishnamootry[1]; Minh Dinh[1]; Sidney Yip[1]; Krystyn Van Vliet[1]; *Bilge Yildiz*[1]; [1]Massachusetts Institute of Technology

3:20 PM
Concentration of Corroding Species Affecting pH of Active Solutions and Its Effect on Corrosion Rates: Experiments and Modeling: *Jefferson Rodrigues*[1]; Indranil Roy[2]; [1]Petrobras; [2]Schlumberger

3:40 PM Break

3:55 PM Keynote
Materials Challenges in Hostile Environments for Hydrocarbon Recovery: *Rashmi Bhavsar*[1]; [1]Schlumberger

4:25 PM
High Strength Nickel Alloys for Extreme Oil and Gas Environments: *Raul Rebak*[1]; [1]GE Global Research

4:45 PM
Getting There and Staying There-Challenges to Materials in the HPHT Drilling and Completion Environments: *Michael Freeman*[1]; [1]M-I SWACO

5:05 PM
Effect of Tempering Treatment on Recovery Kinetics of Quenched and Tempered Steels: *Santiago Serebrinsky*[1]; Nicolás Romualdi[1]; Roberto Casanovas[1]; Martín Valdez[1]; Gustavo Kissner[1]; [1]Tenaris

5:25 PM
Assessing Susceptibility of Downhole Alloys to Embrittlement in Completions Brines: *Tatiana Hernandez*[1]; Indranil Roy; Virendra Singh; Manuel Marya; [1]Schlumberger

5:45 PM Concluding Comments

Advanced Materials for Power Electronics, Power Conditioning, and Power Conversion: Wide Bandgap Semiconductor Device Processing and Characterization

*Sponsored by:*TMS Electronic, Magnetic, and Photonic Materials Division, TMS: Energy Conversion and Storage Committee, TMS: Magnetic Materials Committee
Program Organizers: Paul Ohodnicki, National Energy Technology Laboratory; Clive Randall, Penn State University; Michael Lanagan, Penn State University; Michael McHenry, Carnegie Mellon University; Rachel Myers-Ward, Naval Research Laboratory

Wednesday PM
March 6, 2013
Room: 007A
Location: Henry B. Gonzalez Convention Center

Session Chairs: Rachael Myers-Ward, Naval Research Laboratory; Jennifer Hite, Naval Research Laboratory

2:00 PM Advisory: This Session Begins at 2:30 p.m.

2:30 PM
Characterization of ALD Beryllium Oxide as a Potential High-κ Gate Dielectric for AlGaN/GaN High Electron Mobility Transistors (HEMTs): *Derek Johnson*[1]; Jung Yum[2]; Christopher Bielawski[2]; Todd Hudnall[3]; Sanjay Banerjee[2]; H. Harris[1]; [1]Texas A&M University; [2]University of Texas at Austin; [3]Texas State University

2:50 PM
Effect of Oxidation on GaN Studied by Photoluminescence and Raman Spectroscopy: *Gulten Karaoglan*[1]; Vladimir Kuryatkov[1]; Sergey Nikishin[1]; Mark Holtz[1]; Mary Coan[2]; Derek Johnson[2]; Jung Woo[2]; Iman Rezanezhad[2]; Rusty Harris[2]; [1]Texas Tech University; [2]Texas A&M University

3:10 PM Invited
Advanced Dielectric Integration in GaN High Frequency Devices: *David Meyer*[1]; [1]Naval Research Laboratory

3:40 PM Break

4:00 PM
High-Temperature Si Electronics Based on Record-High Schottky Barriers: *Meng Tao*[1]; [1]Arizona State University

4:20 PM Invited
High Energy Dielectrics for Pulse Power and Power Electronic Applications: *Mike Lanagan*[1]; Clive Randall[1]; [1]Penn State University

Advances in Surface Engineering: Alloyed and Composite Coatings II: Engineered Coatings

*Sponsored by:*TMS Materials Processing and Manufacturing Division, TMS: Surface Engineering Committee
Program Organizers: Srinivasa Bakshi, Indian Institute of Technology Madras; Graham McCartney, University of Nottingham; Arvind Agarwal, Florida International University; Sandip Harimkar, Oklahoma State University

Wednesday PM
March 6, 2013
Room: Bowie B
Location: Grand Hyatt

Funding support provided by: Bulk Nanostructured Materials Programs, Office of Naval Research

Session Chair: To Be Announced

2:00 PM
The Hardening Mechanism of Electrodeposited Nanocrystalline Ni-P Alloys During Post-electrodeposition Ageing: *Hiroyuki Miyamoto*[1]; Yosuke Kasazaki[1]; Hiroshi Fujiwara[1]; [1]Doshisha University

2:20 PM
Electrodeposition, Structure and Composition of Ternary Zn-Ni-P Alloys: *Nikolai Boshkov*[1]; Vassil Bachvarov[1]; Miglena Peshova[1]; [1]Institute of Physical Chemistry, Bulgarian Academy of Sciences

2:40 PM
Growth and Structural Characterization of Dual Layer Nano–Microcrystalline Composite Diamond Coatings Deposited on WC–Co substrates: *Ravikumar Dumpala*[1]; Maneesh Chandran[1]; Kumaran Ramamoorthy[1]; Ramamoorthy Balakrishnan[1]; Sri Ramachandra Rao Mamidanna[1]; [1]Indian Institute of Technology Madras

3:00 PM
Surface Modification of Hard Alloys by High Current Pulsed Electron Beam Irradiation: Sheng Zhi Hao[1]; Yue Zhang[1]; Yang Xu[1]; *Chuang Dong*[1]; [1]Dalian University of Technology

3:20 PM
Surface Pretreatment of Galvanized Steel Sheets Relevant to Adhesion Performance of UV Curable Coatings: *Liu Fengguo*[1]; Wang Ying[1]; Xue Xiangxin[1]; [1]Northeastern University

3:40 PM Break

3:55 PM
Protective Silica-Based Coating for Aluminum 6092/SiCp Metal Matrix Composite in Chloride Media: *Abdel Salam Makhlouf*[1]; Feras Alfosail[2]; Zuhair Gasem[2]; [1]Central Metallurgical Research and Development Institute; [2], King Fahd University of Petroleum & Minerals, Dhahran, Saudi Arabia

Alumina and Bauxite: Impurities

*Sponsored by:*TMS Light Metals Division, TMS: Aluminum Committee
Program Organizer: Pat Clement, Alcoa

Wednesday PM
March 6, 2013
Room: 212B
Location: Henry B. Gonzalez Convention Center

Session Chair: Ajai Kumar, Sherwin Alumina Company, LLC

2:00 PM Introductory Comments

2:10 PM
Metallic Impurities from the Mine to Metal Products: *Stephen Lindsay*[1]; [1]Alcoa, Inc.

2:30 PM
The Control of Fluoride Concentration in ETI Alüminyum Bayer Refinery Liquor: *Esra Savkilioglu*[1]; Carl Carton[2]; Kemal Dinç[1]; Meral Baygül[1]; Serkan Ertugral[1]; Seyit Avcu[1]; [1]ETI Alüminyum; [2]Carton Consulting

2:50 PM
Beneficiation of High Silica Bauxite Ores of India – An Innovative Approach: Mukesh Kumar[1]; *Bimalananda Senapati*[1]; C. Sateesh Kumar[1]; [1]Vedanta Aluminium Limited

3:10 PM
Morphological Investigation of Sodium Oxalate Crystals Grown in Aqueous Sodium Hydroxide Solution: *Weng Fu*[1]; James Vaughan[1]; [1]University of Queensland

3:30 PM
Impurities in Raw Gas and Secondary Alumina: *Svetlana Kalyavina*[1]; Arne Petter Ratvik[1]; Thor Anders Aarhaug[2]; [1]NTNU; [2]SINTEF

3:50 PM Concluding Comments

Aluminum Alloys: Fabrication, Characterization and Applications: Solutioning and Aging

*Sponsored by:*TMS Light Metals Division, TMS: Aluminum Processing Committee
Program Organizers: Zhengdong Long, Kaiser Aluminum; Subodh Das, Phinix LLC; Tongguang Zhai, University of Kentucky; William Golumbfskie, Naval Surface Warfare Center

Wednesday PM
March 6, 2013
Room: 213A
Location: Henry B. Gonzalez Convention Center

Session Chair: Tongguang Zhai, University of Kentucky

2:00 PM
Grain Boundary Plane Distribution in Aluminim and Aluminium Alloys: *Valerie Randle*[1]; Lisa Hill[1]; [1]Swansea University

2:20 PM
Microchemistry of Grain Boundary Precipitates and Correlations with Stress Corrosion Cracking Resistance in Al 7079: *Ramasis Goswami*[1]; Ronald Holtz[1]; Stanley Lynch[2]; [1]Naval Research Laboratory; [2]Defence Science and Technology Organisation

2:40 PM
Growth Ledges on Silver-Segregated θ' (Al_2Cu) Precipitates: *Julian Rosalie*[1]; Laure Bourgeois[2]; [1]National Institute for Materials Science; [2]Monash University

3:00 PM
On the Aging Behavior of AA2618 DC Cast Alloy: Peng Shen[1]; Emad Elgallad[1]; *X. Grant Chen*[1]; [1]University of Quebec at Chicoutimi

3:20 PM
Exploring the Spatial Distribution of β Phase Precipitation and Corrosion in 5xxx Alloys: *Daniel Satko*[1]; Joshua Shaffer[2]; Surya Kalidindi[3]; [1]Drexel University; [2]Materials Resources, LLC; [3]Georgia Institute of Technology

3:40 PM Break

4:00 PM
Influence of Elastic Stress Aging on the Precipitation Free Zones of an AA7075 Aluminum Alloy: *Jingwu Zhang*[1]; Wei Gou[1]; Meng Yang[1]; Hui Li[1]; Xiyu Wen[2]; [1]Yanshan University; [2]University of Kentucky

4:20 PM
The Effect of Cold Work on the Precipitation and Recrystallization Kinetics in Al-Sc-Zr Alloys: *C.T. McNamara*[1]; S. Kampe[1]; P.G. Sanders[1]; D.J. Swenson[1]; [1]Michigan Technological University

4:40 PM
An Investigation of β-Phase Precipitation in Al-Mg Alloys during In-Situ TEM Heating/Straining Experiments: *Daniel Scotto D'Antuono*[1]; Jennifer Gaies[2]; William Golumbfskie[2]; Mitra Taheri[3]; [1]Drexel University; [2]Naval Surface Warfare Center; [3]Drexel University

5:00 PM
A Novel Solution Heat Treatment of 7075 -Type Alloy: Mohamed Ibrahim[1]; Agnes Samuel[1]; Saleh Alkahtani[2]; *Fawzy Samuel*[1]; [1]UQAC; [2]Salman bin Abdulaziz University

5:20 PM
Experimental Study of the Al-rich Corner of the Al-Si-Ti System at 500\176C: *Yang Li*[1]; Qun Luo[1]; Jieyu Zhang[1]; Qian Li[1]; [1]Shanghai University

5:40 PM
The Microstructure Evulution and Mechanical Property of Al-Si alloy with Sr Addition with Different Heat Treatment: *Meng Wang*[1]; Qingyou Han[1]; [1]Purdue University

Aluminum Processing: Aluminum Processing II

*Sponsored by:*TMS Light Metals Division, TMS: Aluminum Committee
Program Organizer: Kai Karhausen, Hydro Aluminium Rolled Products GmbH

Wednesday PM
March 6, 2013

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

Session Chair: To Be Announced

2:00 PM
The Effect of Magnesium Content on Microstructure Evolution During Hot Deformation of Aluminum Alloys: *Trevor Watt*[1]; Shinya Yasuda[2]; Koji Ichitani[2]; Ken Takata[3]; Alex Carpenter[4]; Jakub Jodlowski[5]; Eric Taleff[1]; [1]The University of Texas at Austin; [2]Furukawa-Sky Aluminum Corp.; [3]Nippon Steel Corp.; [4]Southwest Research Institute; [5]Schlumberger Technology Center

2:20 PM
High Strength Nanostructured Al-Zn-Mg-Cu-Zr Alloy Manufactured by High-Pressure Torsion: *Chao An*[1]; Huimin Lu[1]; Shilai Yuan[1]; [1]Beihang University

2:40 PM
Corrosion Behavior of 2024 Aluminum Alloy Anodized in Sulfuric Acid Containing Inorganic Inhibitor: *Maysam Mohammadi*[1]; Ali Yazdani[2]; Farzad Mohammadi[1]; Akram Alfantazi[1]; [1]University of British Columbia; [2]Shiraz University

3:00 PM
Laboratory Simulation of Wear during Hot Extrusion of Aluminium: *Goran Kugler*[1]; Milan Tercelj[1]; [1]University of Ljubljana, NTF-OMM

3:20 PM Break

3:40 PM
The Production of Wrought Alloy AlSi30Cu1,5Mg1,2Ni1,5Fe0,8 with Ultrafine Structure: *Marcin Szymanek*[1]; Boguslaw Augustyn[1]; Wojciech Szymanski[1]; Dawid Kapinos[1]; [1]Institute of Non-Ferrous Metals

4:00 PM
The Structure and Properties of Wrought Aluminium Alloys Series 6xxx with Vanadium for Automotive Industry: Marzena Lech-Grega[1]; *Wojciech Szymanski*[1]; Bartlomiej Plonka[1]; Sonia Boczkal[1]; Maciej Gawlik[1]; Mariusz Bigaj[1]; Piotr Korczak[1]; [1]Institute of Non-Ferrous Metals

Aluminum Reduction Technology: Environment II: PFCs

*Sponsored by:*TMS Light Metals Division, TMS: Aluminum Committee
Program Organizer: Mark Cooksey, CSIRO

Wednesday PM
March 6, 2013

Room: Grand Ballroom C1
Location: Henry B. Gonzalez Convention Center

Session Chair: Michael Gershenzon, Alcoa

2:00 PM Introductory Comments

2:05 PM
A Study of Low Voltage PFC Emissions at Dubal: Michel Reverdy[1]; *Abdalla Zarouni*[1]; Ali Al Zarouni[1]; K Venkatasubramaniam[1]; [1]DUBAL

2:30 PM
Continuous PFC Emissions Measured on Individual 400kA Cells: David Wong[1]; *Jerry Marks*[2]; [1]University of Auckland; [2]J Marks & Associates LLC

2:55 PM
PFC and CO2 Emissions from an Australian Aluminium Smelter Using Time-Integrated Stack Sampling and GC-MS, GC-FID Analysis: Paul Fraser[1]; Paul Steele[1]; *Mark Cooksey*[1]; [1]CSIRO

3:20 PM
Investigation on Formation Mechanism of Non-Anode Effect Related PFC Emissions from Aluminum Reduction Cells: *Xiping Chen*[1]; Wangxing Li[1]; Chris Bayliss[2]; [1]Zhengzhou Research Institute of Chalco; [2]the International Aluminium Institute

3:45 PM Break

3:55 PM
On the Mechanism Behind Low Voltage PFC Emissions: *Jomar Thonstad*[1]; Sverre Rolseth[2]; Rudolf Keller[2]; [1]Norwegian Univ. Sc. Technology; [2]SINTEF Materials and Chemistry

4:20 PM
Frequency Response Analysis of Anode Current Signals as a Diagnostic Aid for Detecting Approaching Anode Effects in Aluminum Smelting Cells: *Cheuk-Yi Cheung*[1]; Chris Menictas[1]; Jie Bao[1]; Maria Skyllas-Kazacos[1]; Barry Welch[1]; [1]The University Of New South Wales

4:45 PM
Reduction Strategies for PFC Emissions from Chinese Smelters: *Xiping Chen*[1]; Wangxing Li[1]; Chris Bayliss[2]; [1]Zhengzhou Research Institute of Chalco; [2]The International Aluminium Institute

5:10 PM
Off-gas Analysis of Laboratory-Scale Electrolysis Experiments with Anodes of Various Compositions: *Ole Kjos*[1]; Thor Anders Aarhaug[1]; Egil Skybakmoen[1]; Asbjørn Solheim[1]; Henrik Gudbrandsen[1]; [1]SINTEF

5:35 PM
Hydrolysis of Carbonyl Sulfide (COS) on Smelting Grade Alumina: *Aleksandr Mikhonin*[1]; Neal Dando[1]; Michael Gershenzon[1]; [1]Alcoa

Battery Recycling: Battery Recycling

*Sponsored by:*TMS Extraction and Processing Division, TMS Light Metals Division, TMS: Energy Conversion and Storage Committee, TMS: Recycling and Environmental Technologies Committee
Program Organizers: Gregory Krumdick, Argonne National Laboratory; Linda Gaines, Argonne National Laboratory; John Sullivan, Argonne National Lab

Wednesday PM
March 6, 2013
Room: 006A
Location: Henry B. Gonzalez Convention Center

Session Chairs: Gregory Krumdick, Argonne National Laboratory; John Sullivan, Argonne National Laboratory

2:00 PM Introductory Comments

2:05 PM
A Sustainable Design for a Spent Lithium-Ion Battery Pre-Recycling Process: *Xue Wang*[1]; Gabrielle Gaustad[1]; Callie Babbitt[1]; Chelsea Bailey[1]; [1]Rochester Institute of Technology

2:30 PM
Best Practices and Emerging Trends Shaping Future Battery Collection and Recycling Initiatives: *Marcus Boolish*[1]; [1]Energizer Battery Manufacturing, Inc.

2:55 PM
Cost, Energy, Emissions, and Resource Assessment of the Production of Automotive Batteries: Michael Wang[1]; *John Sullivan*[1]; Danilo Santini[1]; Jennifer Dunn[1]; Kevin Gallagher[1]; Linda Gaines[1]; [1]Argonne National Laboratory

3:20 PM
Dismantling (H)EV Battery Packs, an Integral Part of Umicore's Recycling Solution: *Mark Caffarey*[1]; [1]Umicore USA

3:45 PM Break

4:00 PM
Recovery and Refunctionalization of LiFePO4 Cathode from End-of-Life Commercial Lithium Ion Batteries: *Matthew Ganter*[1]; Gabrielle Gaustad[1]; Callie Babbitt[1]; Brian Landi[2]; [1]Golisano Institute for Sustainability, Rochester Institute of Technology; [2]Chemical Engineering, Rochester Institute of Technology

4:25 PM
Modeling of Synergistic Effect of Cyanex 302 and D2EHPA on Separation of Nickel and Cadmium from Sulfate Leach Liquors of Spent Ni–Cd Batteries: *Ehsan Vahidi*[1]; Ataollah Babakhani[2]; Fereshteh Rashchi[2]; Alireza Zakeri[3]; [1]University of South Florida; [2]University of Tehran; [3]Iran University of Science and Technology

4:50 PM
Recycling of Exhaust Batteries in Lead-Foam Electrodes: *Girolamo Costanza*[1]; Maria Elisa Tata[1]; [1]University of Rome "Tor vergata"

5:15 PM
Chloride Leaching of Spent Lead-Acid Battery Paste: *Mohammad Mehdi Salarirad*[1]; Atefe Sarvi[1]; Narges Bokaian[1]; [1]Amirkabir University of Tech.

5:40 PM
Technical Status and Progress of Lead Recycling of Battery: Wei-feng Li[1]; Li-hua Jiang[1]; *Jing Zhan*[1]; Chuang-fu Zhang[1]; [1]Central South University

Biological Materials Science Symposium: Hierarchical Composites and Biological Materials (Joint session with Hybrid and Hierarchically Structured Composites)

*Sponsored by:*TMS Electronic, Magnetic, and Photonic Materials Division, TMS Structural Materials Division, TMS: Biomaterials Committee
Program Organizers: Candan Tamerler, University of Washington; Molly Gentleman, Texas A & M University; Po-Yu Chen, National Tsing Hua University; Kajal Mallick, University of Warwick; Rajendra Kumar Kasinath, Unversity of Montana; Paul G. Allison, US Army Corp of Engineers

Wednesday PM
March 6, 2013
Room: 215
Location: Henry B. Gonzalez Convention Center

Funding support provided by: Biomaterials Program, National Science Foundation

Session Chairs: Tomoko Sano, US Army Research Laboratory; Po-Yu Chen, National Tsing Hua University

2:00 PM Invited
Insect Joints: Hierarchical Biocomposites with Superior Mechanical and Tribological Properties: *Mustafa Akbulut*[1]; [1]Texas A&M

2:30 PM
Hierarchical Structure and Mechanical Design of Natural Dermal Armors: *Chang-Yu Sun*[1]; Po-Yu Chen[1]; [1]National Tsing Hua University

2:50 PM
Finite Element Modeling of Multilayered Structures of Fish Scales: *Mei Chandler*[1]; Paul Allison[1]; Rogie Rodríguez[2]; Wayne Hodo[1]; Robert Moser[1]; Alan Kennedy[3]; [1]US Army Engineer Research and Development Center, Geotechnical and Structures Laboratory; [2]University of Puerto Rico-Mayaguez; [3]US Army Engineer Research and Development Center, Environmental Laboratory

3:10 PM
Axial Compression of a Hollow Cylinder Filled with a Foam: A Porcupine Quill Study: *Wen Yang*[1]; Joanna McKittrick[1]; [1]University of California, San Diego

3:30 PM Break

3:40 PM Invited
Bioinspired Composites Fabricated by Magnetic Freeze Casting: *Joanna McKittrick*[1]; Michael Porter; Pei-Chun Chiu; Po-Yu Chen; Marc Meyers; [1]University of California, San Diego

4:10 PM
Nature Inspired "Nacre-like" Ceramic-Polymer (SiC-PMMA) Composites: *Valentina Naglieri*[1]; Bernd Gludovatz[1]; Antoni Tomsia[1]; Robert Ritchie[2]; [1]Lawrence Berkeley National Laboratory; [2]University of California Berkeley

4:30 PM
Statistical Model of Fracture in Double Network Gels: *Mark Jhon*[1]; [1]Institute of High Performance Computing

4:50 PM
Effect of Loading Rate on the Mechanical Response of Penetration Experiments on the Biological Multilayered Material System, Atractosteus Spatula Scales:
P. G. Allison[1]; M.Q. Chandler[1]; B.A. Williams[1]; R.D. Moser[1]; A.J. Kennedy[1]; [1]US Army Engineer Research & Development Center

5:10 PM
The Structure and Mechanics of a High-performance Armor: Fish Scales: Deju Zhu[1]; Lawrence Szewciw[1]; Franck Vernerey[1]; *Francois Barthelat*[1]; [1]McGill University

5:30 PM
Water-lubricated Surface as Deadly Trap: Composite Structure and Surface Properties of Insect-Eating Pitcher Plants: *Chiao-Peng Hsu*[1]; Po-Yu Chen[1]; [1]National Tsing Hua University

Biological Materials Science Symposium: Nanoscale Systems and Surfaces for Biological Interactions

*Sponsored by:*TMS Electronic, Magnetic, and Photonic Materials Division, TMS Structural Materials Division, TMS: Biomaterials Committee
Program Organizers: Candan Tamerler, University of Washington; Molly Gentleman, Texas A & M University; Po-Yu Chen, National Tsing Hua University; Kajal Mallick, University of Warwick; Rajendra Kumar Kasinath, Unversity of Montana; Paul G. Allison, US Army Corp of Engineers

Wednesday PM
March 6, 2013
Room: 214C
Location: Henry B. Gonzalez Convention Center

Funding support provided by: Biomaterials Program, National Science Foundation

Session Chairs: Mohan Edirisinghe, University College of London; Jamie Kruzic, Oregon State University

2:00 PM Keynote
Biocompatible Nanoparticle Materials in Cancer Research: *Xiaoyuan Chen*[1]; [1]National Institute of Biomedical Imaging and Bioengineering, National Institutes of Health

2:40 PM
Nanoparticle X-Ray Contrast Agents: *Ryan Roeder*[1]; Cole Lisa[1]; Matthew Meagher[1]; Tracy Vargo-Gogola[1]; Ryan Ross[1]; [1]University of Notre Dame

3:00 PM
Peptide-enabled Hybrid Gold Nanoprobes for Targeted Cell Bioimaging and Biosensing: *Marketa Hnilova*[1]; Nichole Shaw[1]; Meera Shenoy[1]; James Park[1]; Hilal Yazici[1]; Carolyn Gresswell[1]; Mustafa Gungormus[1]; Mehmet Sarikaya[1]; Candan Tamerler[1]; [1]University of Washington

3:15 PM Invited
Nanoparticles for Enzymatic Therapies: *Sadik Esener*[1]; Inanc Ortac[1]; Michael Benchimol[1]; [1]UCSD

3:45 PM Break

3:55 PM Invited
Interferometric Reflectance Imaging Sensor: Detection and Classification of Nanoparticles and Viral Pathogens: Selim Unlu[1]; *Carlos Lopez*; [1]Boston University

4:25 PM
Matrix-Chaperone Technology: Coated MicroSpheres for the Preservation of Biospecimens Dry, at Ambient Temperature: *Michael Hogan*[1]; Tammy Beckham[1]; [1]Texas A&M

4:45 PM Invited
Antibacterial Nanosized Silver Substituted Hydroxyapatite with Enhanced Mechanical Properties: *Sumit Goenka*[1]; Jatin Bhatt; [1]Shanghai University

5:15 PM
Hierarchically Ordered Nanostructures from Functionalized Nano Building Blocks: Rahul Mavinkurve[1]; Jermaine Coffman[1]; Michael Klem[1]; *Rajendra Kasinath*[1]; [1]Montana Tech of the University of Montana

5:35 PM Invited
Graphene Penetrates Cell Membranes Through Atomically Thin Corners and Edges: *Huajian Gao*[1]; [1]Brown University

6:05 PM
Fibronectin Adhesion on Polystyrene Tissue Culture Plates: *Sina Youssefian*[1]; Shawn Regis[2]; Sankha Bhowmick[2]; Nima Rahbar[1]; [1]Worcester Polytechnic Institute; [2]University of Massachusetts - Dartmouth

6:20 PM
Effect of Host Media on Microbial Influenced Corrosion Due to Desulfovibrio Desulfurican: *Ajay Singh*[1]; [1]IIT Roorkee

6:40 PM
Vermiculite Powder Carrying Copper and Silver: A New Antibacterial Material: *Bowen Li*[1]; Jiann-Yang Hwang[1]; Susan Bagley[1]; [1]Michigan Technological University

Bulk Metallic Glasses X: Simulation and Modeling

*Sponsored by:*TMS Structural Materials Division, TMS/ASM: Mechanical Behavior of Materials Committee
Program Organizers: Peter Liaw, The University of Tennessee; Hahn Choo, The University of Tennessee; Yanfei Gao, The University of Tennessee; Gongyao Wang, University of Tennessee

Wednesday PM
March 6, 2013
Room: Lone Star Salon D
Location: Grand Hyatt

Funding support provided by: Materials Processing and Manufacturing Division, National Science Foundation

Session Chairs: Dan Miracle, AF Research Laboratory; Karin Dahmen, University of Illinois at Urbana Champaign

2:00 PM
A Topological Approach to the Discovery of New High Glass-forming Alloys - The Effective Radius Ratio Method: *Kevin Laws*[1]; Daniel Miracle[2]; Karl Shamlaye[1]; Jake Cao[1]; John Scicluna[1]; Michael Ferry[1]; [1]School of Materials Science and Engineering, University of New South Wales; [2]United States Air Force Research Laboratory, Materials and Manufacturing Directorate

2:15 PM Invited
Ab Initio Calculations on Zr-Cu-Al Bulk Metllic Glasses: *Wai-Yim Ching*[1]; Yungfeng Shi[2]; Despina Louca[3]; Gongyao Wang[4]; Peter Liaw[4]; [1]University of Missouri-Kansas City; [2]Rensselaer Polytechnic Institute,; [3]University of Virginia; [4]University of Tennessee

2:35 PM
Analysis of Glass Forming Ability in Aluminum-Based Metallic Glasses Through Atomistic Modeling: *David Riegner*[1]; Logan Ward[1]; Wolfgang Windl[1]; Katherine Flores[2]; [1]The Ohio State University; [2]Washington University

2:50 PM Invited
A Computationally-Driven, Combinatorial Approach to Designing Metallic Glass Alloys: Logan Ward[1]; Peter Tsai[2]; Wolfgang Windl[1]; Kevin Laws[3]; *Katharine Flores*[2]; [1]The Ohio State University; [2]Washington University; [3]University of New South Wales

3:10 PM
Localized Phase Transformation in Amorphous Fe-Si-B Ribbons Using Laser Processing: Atom Probe Analysis and Thermal Model Study: *Shravana Katakam*[1]; Arun Devaraj[2]; Mark Bowden[2]; Daniel Perea[2]; Hitesh Vora[1]; Jun Hwang[1]; Rajarshi Banerjee[1]; Suntharampillai Thevuthasan[2]; Narendra Dahotre[1]; [1]University of North Texas; [2]Pacific Northwest National Laboratory

3:25 PM Break

3:40 PM Invited
The Effects of Potential and Chemical Ordering on Fragility of Liquids: *James Morris*[1]; Takeshi Egami[2]; [1]Oak Ridge National Laboratory; [2]University of Tennessee

4:00 PM Invited
Simple Models for Plastic Deformation and the Statistics of Serrations in the Stress Versus Strain Curves of Bulk Metallic Glasses: *Karin Dahmen*[1]; James Antonaglia[1]; Xie Xie[2]; Matthew Wraith[1]; Junwei Qiao[3]; Y Zhang[4]; Jonathan Uhl[5]; Peter Liaw[2]; [1]University of Illinois at Urbana Champaign; [2]University of Tennessee at Knoxville; [3]Taiyuan University of Technology; [4]University of Science and Technology of Beijing; [5]Private

4:20 PM Invited
Intrinsic Ductility of Glassy Solids: *Yunfeng Shi*[1]; [1]Rensselaer Polytechnic Institute

4:40 PM
Atomistic Modeling of Shear Delocalization of Metallic Glasses under High Compressive Stress: *Narumasa Miyazaki*[1]; Masato Wakeda[1]; Fanqiang Meng[2]; Koichi Tsuchiya[3]; Shigenobu Ogata[1]; [1]University of Osaka; [2]University of Tsukuba; [3]National Institute for Materials Science

4:55 PM
Predicting the Production of Glass Former Alloys by Mathematical Simulation of Spray Forming: *Claudemiro Bolfarini*[1]; Regis Cava[1]; Walter Botta[1]; Claudio Kiminami[1]; [1]Universidade Federal de São Carlos

Bulk Metallic Glasses X: Structures and Mechanical Properties III

Sponsored by: TMS Structural Materials Division, TMS/ASM: Mechanical Behavior of Materials Committee
Program Organizers: Peter Liaw, The University of Tennessee; Hahn Choo, The University of Tennessee; Yanfei Gao, The University of Tennessee; Gongyao Wang, University of Tennessee

Wednesday PM
March 6, 2013
Room: Bowie A
Location: Grand Hyatt

Funding support provided by: Materials Processing and Manufacturing Division, National Science Foundation

Session Chairs: Oleg Senkov, UES, Inc.; Wu Kai, Taiwan Ocean University

2:00 PM Invited
Air Oxidation of a Binary $Cu_{64.5}Zr_{35.5}$ Bulk Metallic Alloy at 573 – 723 K (300 – 450°C): *Wu Kai*[1]; W.S. Chen[2]; Y.H. Wu[2]; P.C. Kao[2]; P.C. Lin[2]; C. P. Chuang[3]; P. Liaw[3]; [1]Institute of Materials Engineering, National Taiwan Ocean University,; [2]Institute of Materials Engineering, National Taiwan Ocean University; [3]Department of Materials Science and Engineering, University of Tennessee

2:20 PM
Mechanical Analysis of Structural Relaxation in Zr50Cu45Al5 Metallic Glass Ribbons by Broadband Nanoindentation Creep: *Zenon Melgarejo*[1]; Joseph Jakes[2]; Jinwoo Hwang[1]; Eren Kalay[3]; Matthew Kramer[3]; Paul Voyles[1]; Donald Stone[1]; [1]University of Wisconsin-Madison; [2]USA Forest Service; [3]Iowa State University

2:35 PM Invited
Combinatorial Influence of Bimodal Size of B2 TiCu Compounds on Plasticity of Ti-Cu-Ni-Zr-Sn-Si Bulk Metallic Glass Composites: Seung Hwan Hong[1]; *Ki Buem Kim*[1]; [1]Sejong University

2:55 PM
Evaluation of Microstructure and Mechanical Properties of Nitrogen Doped ZrCuNiAl Thin Film Metallic Glasses: *Jyh-Wei Lee*[1]; Tzu-Pin Hsiao[2]; Yung-Chin Yang[2]; Chia-Lin Li[3]; Jinn Chu[3]; [1]Ming Chi University of Technology; [2]National Taipei University of Technology; [3]National Taiwan University of Science and Technology

3:15 PM
Nanomechanics of BMGs at Elevated Temperature In Situ in the SEM: *Jeffrey Wheeler*[1]; Rejin Raghavan[1]; Johann Michler[1]; [1]EMPA

3:30 PM Break

3:45 PM Invited
Monitoring of Deformation in Metallic Glasses by Electrical Resistance Measurement: *Eun Soo Park*[1]; [1]Seoul National University

4:05 PM
Oxygen-Assisted Deformation Processes in Zr-Cu-Al Metallic Glasses Via First-principle Molecular Dynamics Simulation: *Chun-Yi Wu*[1]; Yunche Wang[1]; Pei-Ling Sun[2]; [1]National Cheng Kung University; [2]Feng Chia University

4:20 PM Invited
Notch Effect on Deformation and Fracture Behaviours of Bulk Metallic Glasses: *Zhefeng Zhang*[1]; Ruitao Qu[1]; [1]Institute of Metal Research

4:40 PM
Shear Banding Evolution of Metallic Glasses: *Rui Tao Qu*[1]; Zhe Feng Zhang[1]; [1]Institute of Metal Research, Chinese Academy of Sciences

4:55 PM
Study on Fracture Strength Reliability of Mg-Zn-Ca Bulk Metallic Glasses: You Junhua[1]; *Bai Xiaojun*[1]; [1]Shenyang University of Technology

Cast Shop for Aluminum Production: Aluminum Cast Shop IV

*Sponsored by:*TMS Light Metals Division, TMS: Aluminum Committee
Program Organizer: Gyan Jha, Tri-Arrows Aluminum

Wednesday PM
March 6, 2013
Room: 212A
Location: Henry B. Gonzalez Convention Center

Session Chair: Gyan Jha, Tri-Arrows Aluminum

2:00 PM
Influence of Die and Casting Temperatures and Titanium and Strontium Contents on the Technological Properties of Die-Cast A356 in the As-Cast and T6 Condition: *Sebastian Fischer*[1]; Veronika Groten[1]; Johannes Brachmann[1]; Carolin Fix[1]; Thomas Vossel[1]; Andreas Bührig-Polaczek[1]; [1]RWTH Aachen University

2:20 PM
Mechanism of Microstructure Changes of Al-Si Casting Alloy Applying Ultrasonic Vibration: *Jie Song*[1]; Qingyou Han[1]; [1]Purdue University

2:40 PM
Modeling and Simulation of Microstructure Evolution in Solidification and Solution Treatment of Hypoeutectic Al-Si Alloy: *Shi Feng*[1]; [1]Tsinghua University

3:00 PM
The Influence of Tramp Elements to Heterogeneous Modification of AlSi7Mg- Alloys under High Purity Condition: *Veronika Groten*[1]; Andreas Bührig-Polaczek[1]; [1]RWTH Aachen University

3:20 PM Break

3:40 PM
Horizontal Single Belt Strip Casting (HSBC) of Al-Mg-Sc-Zr Alloys: *Mert Celikin*[1]; Donghui Li[1]; Luis Calzado[1]; Mihaiela Isac[1]; Roderick Guthrie[1]; [1]McGill Metals Processing Centre

4:00 PM
Quality Improvement of Aluminium Alloy Castings by Application of a New Casting Facility instead of a Conventional Sand Casting Process: *Xiaojun Dai*[1]; Mark Jolly[1]; Binxu Zeng[1]; [1]Cranfield University

4:20 PM
Preventing Molten Aluminium Water Explosions through the Use of Organic Coatings: *Alex Lowery*[1]; George Stavnes[2]; [1]Wise Chem LLC; [2]Pyrotek Inc

4:40 PM
The Particle Pushing Problem and Its Theory of Aluminum Alloy: *Meng Wang*[1]; Qingyou Han[1]; [1]Purdue University

Characterization of Minerals, Metals and Materials 2013: Characterization of Advanced Materials

*Sponsored by:*TMS Extraction and Processing Division, TMS: Materials Characterization Committee
Program Organizers: Jiann-Yang Hwang, Michigan Technological University; Chen-Guang Bai, Chongqing University; John Carpenter, DOE LANL; Shadia Ikhmayies, Al Isra University; Bowen Li, Michigan technological University; Mingming Zhang, ArcelorMittal Global R&D; Sergio Monteiro, State University of North Rio de Janeiro; Zhiwei Peng, Michigan Technological University

Wednesday PM
March 6, 2013
Room: 206B
Location: Henry B. Gonzalez Convention Center

Session Chair: Shadia Ikhmayies, Al Isra University

2:00 PM
A Comparison between the Properties of SnO2:F Thin Films Prepared by Using Different Doping Compounds: HF and NH4F: *Shadia Ikhmayies*[1]; [1]Al Isra University

2:20 PM
Ab-Initio Calculations of the Optical Properties of d-NbN Single Crystal: *Shadia Ikhmayies*[1]; Bothina Hamad[2]; Jamil Khalifeh[2]; [1]Al Isra University; [2]University of Jordan

2:40 PM
Interface Phase Formation and their Mechanical Properties of Annealed U-Zr Binary Diffusion System: *Chao-Chen Wei*[1]; Robert Balerio[1]; Lin Shao[1]; [1]Texas A&M University

3:00 PM
Phase Equilibrium and Characterization Studies of Pentaglycerol, Tris(Hydroxymethyl)Aminomethane and 2-Amino-2-Methyl-1, 3-Propanediol Ternary Systems: *Wen-Ming Chien*[1]; Ivan Gantan[1]; Amrita Mishra[1]; Dhanesh Chandra[1]; Vamsi Kamisetty[1]; Prathyusha Mekala[1]; [1]University of Nevada, Reno

3:20 PM
Photoluminescence of n-Type CdS Thin Films: *Shadia Ikhmayies*[1]; [1]Al Isra University

3:40 PM
Photoluminescence of P-Type CdTe Thin Films: *Shadia Ikhmayies*[1]; [1]Al Isra University

4:00 PM
Structural and Electronic Properties of d-NbN Single Crystal: First Principles Calculations: *Shadia Ikhmayies*[1]; Bothina Hamad[2]; Jamil Khalifeh[2]; [1]Al Isra University; [2]University of Jordan

4:20 PM
Electrochemical Characterization of Lead-Calcium Alloy in Agitated Zinc Electrowinning Electrolyte: *Maysam Mohammadi*[1]; Farzad Mohammadi[1]; Akram Alfantzai[1]; [1]University of British Columbia

4:40 PM
Effects of Rare Earth Pr on the Mechanical and Electrochemical Properties of Pb-based Alloys: *Liangxing Jiang*[1]; Bo Hong[1]; Xiaoying Yu[1]; Xiaocong Zhong[1]; Junfeng Gui[1]; *Hongliang Zhang*; Yanqing Lai[1]; Yexiang Liu[1]; [1]Central South University

5:00 PM
Synthesis and Characterization of Pb Free Piezoelectric Ceramics - Barium Zirconate Titanate – Barium Calcium Titanate: *Paul Praveen*[1]; Kranti Kumar[1]; T.V. Jayaraman[2]; A R James[3]; Dibakar Das[1]; [1]School of Engineering Sciences and Technology, University of Hyderabad; [2]Department of Mechanical and Materials Engineering, University of Nebraska; [3]Defence Metallurgical Research Laboratory, Hyderabad, India

5:20 PM
Vacuum Hot Pressing Sintering of the High- Dense BN-Ni Composites: *Wang Chao*[1]; [1]Northeastern University

Characterization of Minerals, Metals and Materials 2013: Characterization of High Performance Alloys

Sponsored by: TMS Extraction and Processing Division, TMS: Materials Characterization Committee
Program Organizers: Jiann-Yang Hwang, Michigan Technological University; Chen-Guang Bai, Chongqing University; John Carpenter, DOE LANL; Shadia Ikhmayies, Al Isra University; Bowen Li, Michigan technological University; Mingming Zhang, ArcelorMittal Global R&D; Sergio Monteiro, State University of North Rio de Janeiro; Zhiwei Peng, Michigan Technological University

Wednesday PM
March 6, 2013
Room: 206A
Location: Henry B. Gonzalez Convention Center

Session Chairs: Jian Li, CANMET; Lifeng Zhang, University of Science and Technology Beijing

2:00 PM
Characterizing Primary Dendritic Microstructures to Quantify the Processing-Structure-Property Relationship in Single Crystal Nickel-Based Superalloys: *Mark Tschopp*[1]; Andrew Oppedal[1]; Jon Miller[2]; Michael Groeber[2]; Andrew Rosenberger[2]; Kiran Solanki[3]; [1]Mississippi State University; [2]AFRL; [3]Arizona State University

2:20 PM
Creep Cavitation and Fracture in Single Crystal Superalloy: *Jinqian Zhao*[1]; Jiarong Li[1]; Shizhong Liu[1]; [1]Beijing Institute of Aeronautical Materials

2:40 PM
Deformation Mechanisms at Varying Temperatures in Alloy 718 Ni-Base Superalloy: *Donald McAllister*[1]; Duchao Lv[1]; Patrick Phillips[2]; Ning Zhou[3]; Ben Peterson[4]; Yunzhi Wang[1]; Michael Mills[1]; [1]The Ohio State University; [2]University of Illinois at Chicago; [3]GE Global Research Center; [4]Honeywell Aerospace

3:00 PM
Effects of Microstructure on High Temperature Crack Growth under Sustained Load in a Nickel Based Superalloy: *Yongmin Lu*[1]; Hangyue Li[1]; Zewen Huang[1]; Gavin Baxter[2]; Paul Bowen[1]; [1]University of Birmingham; [2]Rolls-Royce plc

3:20 PM
Investigation of Negative Creep in a Polycrystalline Ni-based Superalloy: *Hallee Deutchman*[1]; Jay Tiley[2]; Robert Hayes[3]; Michael Mills[1]; [1]The Ohio State University; [2]Materials and Manufacturing Directorate, Wright Patterson US Air Force Base; [3]Metals Technology, Inc

3:40 PM
Metallurgical Characterization of Two Different Samples of Waspaloy, Presenting Variation on Chemical Composition, Microstructure, and Hardness: *Miguel Neri*[1]; Alberto Martinez-Villafane[1]; Caleb Carreno-Gallardo[1]; Alma Gonzalez-Escarcega[1]; Octavio Covarrubias-Alvarado[2]; [1]CIMAV, S.C.; [2]FRISA FORJADOS S.A. de C.V.

4:00 PM
The Impact of γ' Precipitate Evolution on the Mechanical Properties of Microstructural Gradients in the Low Solvus High Refractory (LSHR) Nickel Base Superalloy: *Samuel Kuhr*[1]; Babu Viswanathan[2]; Jaimie Tiley[2]; Hamish Fraser[1]; [1]The Ohio State University; [2]Air Force Research Laboratory

4:20 PM
X-Ray Imaging of the Solidification of Nickel-Based Superalloy CMSX4: *John Aveson*[1]; Guillaume Reinhart[2]; Henri Nguyen-Thi[2]; Nathalie Magnelinck-Noël[2]; Amina Tandjaoui[2]; Tamzin Lafford[3]; Neil D'Souza[4]; Bernard Billia[2]; Howard Stone[1]; [1]University of Cambridge; [2]Aix Marseille Univ & CNRS IM2NP; [3]European Synchrotron Radiation Facility; [4]Rolls-Royce plc.

4:40 PM
Combined Cavitation and Slurry Erosion of 16Cr-5Ni Martensitic Stainless Steel: *H J Amarendra*[1]; Gajanan Chaudhari[1]; Sameer Nath[1]; [1]Indian Institute of Technology Roorkee

5:00 PM
Microstructure and Mechanical Properties of Bulk Nanocrystalline 304 Stainless Steel Prepared by an Aluminothermic Reaction Casting and Followed Annealing: *Peiqing La*[1]; Ting Shi[1]; Chengang Chu[1]; [1]Lanzhou University of Technology

5:20 PM
SCW Corrosion Resistance of Candidate Stainless Steels: *Jian Li*[1]; Wenyue Zheng[1]; Penttila S.[2]; Pei Liu[1]; Catherine Bibby[1]; [1]CanmetMATERIALS; [2]VTT

Computational Thermodynamics and Kinetics: Phase Field Simulations

Sponsored by: TMS Electronic, Magnetic, and Photonic Materials Division, TMS Materials Processing and Manufacturing Division, TMS: Alloy Phases Committee, TMS: Chemistry and Physics of Materials Committee, TMS/ASM: Computational Materials Science and Engineering Committee, TMS: Integrated Computational Materials Engineering Committee, TMS/ASM: Phase Transformations Committee, TMS: Process Technology and Modeling Committee
Program Organizers: Jörg Neugebauer, Max-Planck-Institut für Eisenforschung GmbH; Carelyn Campbell, NIST; Dongwon Shin, Oakridge National Lab; Zi Kui Liu, Penn State; Michael Demkowicz, Massachusetts Institute of Technology; Raymundo Arroyave, Texas A & M University; Shenyang Hu, Pacific Northwest National Laboratory

Wednesday PM
March 6, 2013
Room: 207A
Location: Henry B. Gonzalez Convention Center

Session Chairs: Shenyang Hu, Pacific Northwest National Laboratory; James Warren, NIST

2:00 PM Invited
A Phase-Field Crystal Model Coupled to a Vapor Phase: Edwin Schwalbach[1]; *James Warren*[1]; Kuo-An Wu[2]; Peter Voorhees[3]; [1]NIST; [2]National Tsing Hua University; [3]Northwestern University

2:25 PM
An Arbitrary Lagrangian-Eulerian (ALE) Method for Thermal and Dispersed-Phase Analysis of Nano Fluid Using CFD-A Hybrid Approach for Cooling Purpose: *France Kumar Behera*[1]; [1]Konark Institute of Science and Technology

2:40 PM
A PFC Study of Thermodynamical Quantities on Rapid Solidification and Solute Trapping: *Harith Humadi*[1]; Jeff Hoyt[1]; Nikolas Provatas[2]; [1]McMaster University; [2]McGill University

2:55 PM
Phase-Field Simulations of Magnetic Response in Irradiated Fe-Cr Alloys with Distributed Cr Rich Precipitates: *Yulan Li*[1]; Shenyang Hu[1]; John McCloy[1]; Charles Henager[1]; Robert Montgomery[1]; [1]Pacific Northwest National Laboratory

3:10 PM Break

3:35 PM Invited
Computational Study of Microstructure and Property Relations in Ferroelectric Polycrystals: *Yu Wang*[1]; Jie Zhou[1]; [1]Michigan Tech

4:00 PM
Fluctuations in Phase Field Crystal Models Using Capillary-Wave Theory: *Nana Ofori-Opoku*[1]; Jeffrey Hoyt[1]; Nikolas Provatas[2]; [1]McMaster University; [2]McGill University

4:15 PM
Effects of Additive Elements on Lamellar Structure Formation in C40-$NbSi_2$/C11$_b$-$MoSi_2$ Duplex Silicide: A First Principles Based Phase-Field Study: *Toshihiro Yamazaki*[1]; Yuichiro Koizumi[1]; Akihiko Chiba[1]; Koji Hagihara[2]; Takayoshi Nakano[2]; Koretaka Yuge[3]; Kyosuke Kishida[3]; Haruyuki Inui[3]; [1]Tohoku University; [2]Osaka University; [3]Kyoto University

Cost Affordable Titanium IV: Low Cost Powder Processing and Characterization

Sponsored by: TMS Structural Materials Division, TMS: Titanium Committee
Program Organizers: M. Ashraf Imam, Naval Research Lab; Sam Froes, University of Idaho (Retired); Ramana Reddy , The University of Alabama

Wednesday PM
March 6, 2013
Room: 217C
Location: Henry B. Gonzalez Convention Center

Session Chairs: Peter Collins, University of North Texas; Kamal Akhtar, International Titanium Powder

2:00 PM Invited
Recent Progress in the Development of Titanium alloys Processed using Low Cost ADMA TiH2 Powder: *Curt Lavender*[1]; Vineet Joshi[1]; Vladimir Moxon[2]; Vlad Duz[2]; [1]Pacific Northwest National Laboratory; [2]ADMA Advanced Materials

2:20 PM Invited
Critical Experimental Results for Cost Affordable Titanium – From Powder to Applications: *Peter Collins*[1]; Graciela Penso[1]; Peyman Samimi[1]; Juah Song[1]; Thomas Ales[1]; Pete White[1]; [1]University of North Texas

2:40 PM Invited
Sintering of Ti in Hydrogen – Striving for High Performance-to-Cost Ratio: *Zhigang Fang*[1]; Pei Sun[1]; [1]University of Utah

3:00 PM
Developing a Cost Affordable Technology Via PM HIP of Ti Alloys: *Victor Samarov*[1]; [1]Synertech PM Inc.

3:20 PM Break

3:40 PM
Controlled Atmosphere Sintering of Hydrides: An Alternative Route to Produce Ultrafine Grained Titanium by Powder Metallurgy Processes: *Brady Butler*[1]; James Paramore; Pei Sun; Zhigang Fang; [1]US Army Research Lab

4:00 PM
Effects of Lubrication on Density Gradient of Titanium Powder Compact: *Jia Lou*[1]; Brian Gabbitas[1]; Deliang Zhang[1]; [1]The University of Waikato

4:20 PM
Fracture Toughness of Powder Metallurgy and Wrought Titanium Alloys – A Review: *Ajit Singh*[1]; Brian Gabbitas[1]; Deliang Zhang[1]; [1]University of Waikato

4:40 PM
TiCuSi and TiCuSiBAlloys Produced by Powder Forging and Heat Treatment: *Xiaolin Wu*[1]; Wei Xu[1]; Ya Feng Yang[2]; Shudong Luo[2]; Ma Qian[2]; Kenong Xia[1]; [1]The University of Melbourne; [2]The University of Queensland

5:00 PM
Effects of Processing Parameters on Macrozone Formation in Ti-6Al-4V Alloys: *Kai Zhang*[1]; Xinhua Wu[1]; Colleen Bettles[1]; Chris Davies[1]; [1]Monash Univ

5:20 PM
The Effect of P2O5 Content on the Crystallization Behaviors of Ti-Bearing Blast Furnace Slag Using Single Hot Thermocouple Technique: *Sun Qi*[1]; Z.T. Zhang[1]; [1]Peking University

Deformation, Damage, and Fracture of Light Metals and Alloys: Deformation, Damage, and Fracture of Light Metals and Alloys Session V

Sponsored by: TMS Light Metals Division, TMS/ASM: Mechanical Behavior of Materials Committee
Program Organizers: Ke An, Oak Ridge National Laboratory; Qizhen Li, University of Nevada, Reno

Wednesday PM
March 6, 2013
Room: 210B
Location: Henry B. Gonzalez Convention Center

Session Chair: Suveen Mathaudhu, U.S. Army Research Office

2:00 PM Invited
Influence of the Grain Size and Initial Texture on the Yield and Hardening Behaviors of a Mg Alloy: *Hahn Choo*[1]; Yi Wang[1]; [1]Univ of Tennessee

2:30 PM
Characterization of Deformation Anisotropy and Damage in AZ31 alloy: *Babak Kondori*[1]; Amine Benzerga[1]; [1]Texas A&M University

2:50 PM
Effects of Initial Texture on Surrounding Plasticity around Fatigue Crack-tip in a Wrought Magnesium Alloy Using In-Situ Synchrotron X-ray Diffraction Measurements: *Wei Wu*[1]; Chih-Pin Chuang[1]; Ke An[2]; Yanfei Gao[1]; Peter Liaw[1]; [1]The University of Tennessee; [2]Oak Ridge National Laboratory

3:10 PM
ECAP Deformations of Mg Single Crystals: *Hiromoto Kitahara*[1]; Fumiaki Maruno[1]; Masayuki Tsushida[1]; Shinji Ando[1]; [1]Kumamoto University

3:30 PM
Investigation and Characterization of the Mechanical and Thermal Properties of Ultra-Light Mg-Li-Al Alloys: *Ryan Hooper*[1]; Zachary Bryan[1]; Abhinav Seetharamiah[1]; Michele Manuel[1]; [1]University of Florida

3:50 PM Break

4:00 PM
Mechanical Properties and Microstructure of Pure Magnesium Experienced Rolling and Annealing: *Qizhen Li*[1]; Bing Tian[1]; [1]University of Nevada, Reno

4:20 PM
OOrientation Dependence of Bending Deformation Behavior in Magnesium Single Crystals: *Shinji Ando*[1]; Hiromoto Kitahara[1]; [1]Kumamoto University

4:40 PM
Atomic-Scale Growth Mechanism of {-1012}-Type Twins in Magnesium: *Ben Xu*[1]; David Rodney[1]; Laurent Capolungo[2]; [1]INP Grenoble; [2]Georgia Tech Lorraine

5:00 PM
Effect of Microstructural Factors on Damping Capacity in Pure Magnesium: *Hiroyuki Watanabe*[1]; Yasuyoshi Sasakura[2]; Toshiji Mukai[2]; [1]Osaka Municipal Technical Research Institute; [2]Kobe University

5:20 PM
Dynamic Micro-Strain Observation of the Ultrafine-Grained Al-Mg Alloy Using Digital Image Correlation Technique: *Yuzheng Zhang*[1]; Troy Topping[2]; Enrique Lavernia[2]; Steven Nutt[1]; [1]University of Southern California; [2]University of California, Davis

Electrode Technology for Aluminium Production: CBF Environmental & Anode Electrical Connections

*Sponsored by:*TMS Light Metals Division, TMS: Aluminum Committee
Program Organizers: Les Edwards, Rain CII Carbon; Hans Darmstadt, Rio Tinto Alcan; Sunil Bhajun, Qatalum; Juraj Chmelar, Hydro; Matvey Golubev, Rusal; Pretesh Patel, Light Metals Research Centre; Elaine Sum, Rio Tinto Alcan; Marc Gagnon, Aluminerie Alouette

Wednesday PM
March 6, 2013
Room: Grand Ballroom C2
Location: Henry B. Gonzalez Convention Center

Session Chair: Marc Gagnon, Alouette

2:00 PM Introductory Comments and Session Chair Introduction

2:05 PM
Fume Treatment Systems Based on RTO Technology for Carbon Baking Furnaces: *Matthias Hagen*[1]; Bernd Schricker[1]; [1]LTB

2:30 PM
AHEX-A New, Combined Waste Heat Recovery and Emission Control System for Anode Bake Furnaces: *Anders Sorhuus*[1]; Sivert Ose[1]; Geir Wedde[1]; [1]Alstom

2:55 PM
Successful Start-Up of the Fume Treatment Centre at Boyne Smelter Carbon Bake Furnace #4: Jonathan Higley[1]; Glenn Cordon[1]; *Peter Klut*[2]; Rick Oliana[2]; Erik Dupon[3]; Edo Engel[3]; [1]Boyne Smelters Limited; [2]Danieli Corus BV; [3]Danieli Corus Technical Services

3:20 PM
Thermo-Electro-Mechanical Characterization of Anode Interfaces at Operating Conditions: *Hugues Fortin*[1]; Marie-Hélène Martin[2]; Nédeltcho Kandev[1]; Guillaume Gauvin[3]; Donald Ziegler[2]; Mario Fafard[3]; [1]Hydro-Quebec; [2]Alcoa; [3]Université Laval

3:45 PM Break

3:55 PM
A Fully Coupled Thermal-Electrical-Mechanical Transient FEA Model for a 3D Anode Assembly: Dayalan Gunasegaram[1]; *David Molenaar*[1]; [1]CSIRO

4:20 PM
Experimental and Numerical Investigation of Voltage Drop in Anode Assemblies: Ebrahim Jeddi[1]; *Daniel Marceau*[1]; Laszlo Kiss[1]; Lyne St-Georges[1]; Denis Laroche[2]; Lyès Hacini[2]; [1]Université du Québec à Chicoutimi; [2]Rio Tinto Alcan

4:45 PM
Optimization of the Anode-Stub Contact: Effect of Casting Temperature, Contact Stress, Temperature and Surface Roughness: *Bjarte Oye*[1]; Anne Store[1]; Elin Haugland[2]; Jørund Hop[2]; [1]SINTEF; [2]Hydro Aluminium

5:10 PM
Experimental Investigation of Factors Affecting The Electrical Performance of the Stub to Carbon Connection: *David Molenaar*[1]; Tony Kilpatrick[1]; Alex Montalto[2]; [1]CSIRO; [2]RMIT University

Electrode Technology for Aluminium Production: Inert Anodes, Cell Materials and Alternative Processes

*Sponsored by:*TMS Light Metals Division, TMS: Aluminum Committee
Program Organizers: Les Edwards, Rain CII Carbon; Hans Darmstadt, Rio Tinto Alcan; Sunil Bhajun, Qatalum; Juraj Chmelar, Hydro; Matvey Golubev, Rusal; Pretesh Patel, Light Metals Research Centre; Elaine Sum, Rio Tinto Alcan; Marc Gagnon, Aluminerie Alouette

Wednesday PM
March 6, 2013
Room: 213B
Location: Henry B. Gonzalez Convention Center

Session Chair: Elaine Sum, Rio Tinto Alcan

2:00 PM Introductory Comments

2:05 PM
Mechanically Alloyed Cu-Ni-Fe-Y Material as Inert Anode for Al Production: *Valery Ouvarov*[1]; Daniel Guay[1]; Lionel Roue[1]; [1]INRS University

2:30 PM
Cold Spray Deposition of Mechanically Alloyed Cu-Ni-Fe Material for Application as Inert Anodes for Aluminum Production: *Gregory Goupil*[1]; Sebastien Helle[1]; Eric Irissou[2]; Dominique Poirier[2]; Jean Gabriel Legoux[2]; Daniel Guay[1]; Lionel Roué[1]; [1]INRS-EMT; [2]CNRC

2:55 PM
Initial 1000A Aluminum Electrolysis Testing in Potassium Cryolite-Based Electrolyte: *John Hryn*[1]; Olga Tkacheva[1]; Jeff Spangenberger[1]; [1]ANL

3:20 PM
Electrochemical Behavior of Cermet Anodes in Na_3AlF_6-K_3AlF_6-Based Low-Melting Electrolytes for Aluminum Electrolysis: *Guihua Wang*[1]; Xiaofei Sun[1]; [1]University of Science and Technology Beijing

3:45 PM Break

3:55 PM
Production of Aluminum Sulfide through Carbosulfidation Utilising H2S: Md Huda[1]; *M Rhamdhani*[1]; G Brooks[1]; B Monaghan[2]; L Prentice[3]; [1]Swinburne University of Technology; [2]University of Wollongong; [3]CSIRO

4:20 PM
Microstructural Evolution of Cast Iron Used for Cathode Rodding in Aluminum Electrolysis Cell: *Alireza Hekmat-Ardakan*[1]; Gervais Soucy[1]; Loig Rivoaland[2]; [1]Université de Sherbrooke; [2]Rio Tinto Alcan

5:10 PM Concluding Comments

4:45 PM
Preparing Al-Sc-Zr Alloys in Aluminum Electrolysis Process: *Yi Qian*[1]; Jilai Xue[1]; [1]Unversity of Science and Technology Beijing

Energy Technologies and Carbon Dioxide Management: Carbon Footprint Analysis

*Sponsored by:*TMS Extraction and Processing Division, TMS Light Metals Division, TMS: Energy Committee, TMS: Education Committee
Program Organizers: Soobhankar Pati, MOxST Inc.; Animesh Jha, University of Leeds; Jaroslaw Drelich, Michigan Technological University; Neale Neelameggham, Ind LLC; Cong Wang, Saint-Gobain High Performance Materials; Leon Prentice, CSIRO

Wednesday PM
March 6, 2013

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

Session Chairs: Neale Neelameggham, Ind LLC; Leon Prentice, CSIRO

2:00 PM Introductory Comments

2:05 PM
Carbon Foot Printing - A Tool to Identify Improvement Areas in GHG Reduction: *Narasimharaghavan Puliyur Krishnaswamy*[1]; Neha Sahu[1]; [1]Bharat Aluminium Co. Ltd., (A Unit of Vedanta Resources Plc.,), BALCO Nagar, Korba

2:25 PM
Measuring the CO2 Captured on Bauxite Residue Carbonation: *Luis Venancio*[1]; José Antonio Souza[1]; Emanuel Macedo[1]; Otacílio Dias[1]; Iara Santos[1]; [1]Federal University of Para

2:45 PM
Study on Capture, Recovery and Utilization of Carbon Dioxide: *Lian Zhou*[1]; Huimin Lu[1]; Panpan Wang[1]; [1]Beihang University

3:05 PM
Carbon Footprint and Carbon Deficit Analysis of Iron and Steel Industry from 1991 to 2010 in China: Xin Lu[1]; *Hao Bai*[1]; Hebin Zhu[1]; Fuming Wang[1]; [1]University of Science and Technology Beijing

3:30 PM Break

3:55 PM
The Life Cycle Assessment of Metal Materials Used for Automobile Body Materials and Castings: *Hongxu Li*[1]; Zhiqian Zhang[1]; Xiangxin Hao[1]; [1]University of Science and Technology

4:15 PM
It *Is* Rocket Science: the Engineering and Impact of Carbothermal Magnesium Technology: *Leon Prentice*[1]; [1]CSIRO

Fatigue and Fracture of Thin Films and Nanomaterials: Deformation and Strengthening Mechanisms of Nanomaterials

*Sponsored by:*TMS Materials Processing and Manufacturing Division, TMS Structural Materials Division, TMS/ASM: Mechanical Behavior of Materials Committee, TMS: Nanomechanical Materials Behavior Committee
Program Organizers: Megan Cordill, Erich Schmid Institute of Materials Science; Daniel Kiener, Montanuniversitaet Leoben; Xinghang Zhang, Texas A &M University ; Daniel Gianola, University of Pennsylvania ; Corinne Packard, Colorado School of Mines

Wednesday PM
March 6, 2013

Room: Bowie C
Location: Grand Hyatt

Funding support provided by: Hysitron, Inc., and Nanomechanics, Inc.

Session Chairs: Megan Cordill, Erich Schmid Institute of Materials Science; Xinghang Zhang, Texas A &M University

2:00 PM Invited
Exploring the Ductility of Nanocrystalline Metals: *Brad Boyce*[1]; John Sharon[1]; [1]Sandia National Labs

2:30 PM
Synthesis, Characterization and Mechanical Behavior of Nanocrystalline Al-O Thin Films: *Mo-Rigen He*[1]; Patrick Malone[1]; Gang Feng[2]; Saritha Samudrala[3]; Julie Cairney[3]; Daniel Gianola[1]; [1]University of Pennsylvania; [2]Villanova University; [3]University of Sydney

2:50 PM
Mechanical Behavior of Nanostructured Cu/Fe Multilayers: *Youxing Chen*[1]; Yue Liu[1]; Xinghang Zhang[1]; [1]Texas A&M University

3:10 PM
Interface Structures in Al/Nb and Cu/Nb Nanocomposites: *M Polyakov*[1]; A Hodge[1]; [1]University of Southern California

3:30 PM Break

3:50 PM Invited
Nanoindentation of Mineralized Tissues: Current Experimental Methods and Analysis: Virginia Ferguson[1]; Sara Campbell[2]; [1]Colorado School of Mines; [2]University of Colorado, Boulder

4:20 PM
Failure of Nanoscale Tensile Samples Observed by Quantitative In Situ TEM Testing: *Daniel Kiener*[1]; Petra Kaufmann[1]; Andrew Minor[2]; [1]University of Leoben; [2]University California Berkeley

4:40 PM
Microspecimen Testing of the Mechanical Properties of Nanoporous Metals: *Nicolas Briot*[1]; Tobias Kennerknecht[2]; Chris Eberl[2]; John Balk[1]; [1]University of Kentucky; [2]Fraunhofer Institute for Mechanics of Materials IWM

5:00 PM
True Quantitative Scanning Probe Microscopy for Nanoscale Mechanics: *Douglas Stauffer*[1]; Yunje Oh[1]; Ryan Major[1]; S.A. Syed Asif[1]; [1]Hysitron, Inc.

Fatigue in Materials: Microstructure-Driven Modeling and In-Situ Fatigue Characterization: Fatigue in Advanced Materials & Environmental Effects

*Sponsored by:*TMS Structural Materials Division, TMS/ASM: Mechanical Behavior of Materials Committee
Program Organizers: Michael Sangid, Purdue University; Tongguang Zhai, University of Kentucky; Antonios Kontsos, Drexel University

Wednesday PM
March 6, 2013
Room: 207B
Location: Henry B. Gonzalez Convention Center

Session Chair: Tony Zhai, University of Kentucky

2:00 PM Invited
Understanding Fatigue and Corrosion-Fatigue Behavior by In Situ 3D X-ray Synchrotron Tomography: *Nikhilesh Chawla*[1]; [1]Arizona State University

2:25 PM Invited
Fatigue Behavior of Bulk-Metallic Glasses: *Peter Liaw*[1]; Gongyao Wang[1]; Yoshihiko Yokoyama[2]; Xiaoqing Jin[3]; Leon Keer[3]; Akihisa Inoue[2]; [1]University of Tennessee; [2]Advanced Research Center of Metallic Glasses; [3]Northwestern University

2:50 PM
In-Situ Characterization of Fatigue Behavior of Metastable Austenitic Steels Using Electromagnetic Acoustic Transducers: *Dietmar Eifler*[1]; Marek Smaga[1]; Andreas Sorich[1]; Iris Altpeter[2]; Gerd Dobmann[2]; [1]University of Kaiserslautern, Institute of Materials Science and Engineering; [2]Fraunhofer Institute for Non-Destructive Testing,

3:10 PM Invited
A Two-Parameter Model for Fatigue Strength Estimation of High-Strength Steels in Very-High-Cycle-Fatigue Regime: Chengqi Sun[1]; *Youshi Hong*[1]; [1]Institute of Mechanics, Chinese Academy of Sciences

3:35 PM Break

3:55 PM Invited
Effect of Heat Treatment on Fatigue Behavior and Mechanical Properties of Al 7021-T6: *Yasser Ahmed*[1]; [1]German University in Cairo

4:20 PM
Micro Heterogonous Fatigue Cracking Behavior in Dual Phase Materials: *Guocai Chai*[1]; [1]Sandvik Materials Technology

4:40 PM
Micro Structural Model to Analyze Fatigue Behavior on Open Cell Metal Foam: *Hernan Pinto*[1]; Sanjay Arwade[2]; [1]Pontificia Universidad Católica de Valparaíso; [2]University of Massachusetts Amherst

5:00 PM
Effect of Tempering on the Fatigue Resistance of a 5160 Spring Steel: *Diego Lozano*[1]; Rafael Mercado-Solís[1]; [1]Universidad Autónoma de Nuevo León

Friction Stir Welding and Processing VII: Friction Stir Welding: Light Materials II

*Sponsored by:*TMS Materials Processing and Manufacturing Division, TMS: Shaping and Forming Committee
Program Organizers: Rajiv Mishra, University of North Texas; Murray Mahoney, Retired from Rockwell Scientific; Yutaka Sato, Tohoku University; Yuri Hovanski, Pacific Northwest National Laboratory; Ravi Verma, General Motors

Wednesday PM
March 6, 2013
Room: Grand Ballroom C3
Location: Henry B. Gonzalez Convention Center

Session Chairs: Blair Carlson, General Motors; Kevin Doherty, US Army Research Laboratory; Brian Thompson, EWI

2:00 PM Invited
Friction Stir Spot Welding of Aluminum to Magnesium Alloy Sheets: *Wei Yuan*[1]; Harsha Badarinarayan[1]; [1]Hitachi America Ltd.

2:20 PM
On Friction Stir Welding of Mg–Zn-Zr-RE Alloy using Threaded Tools for Aerospace Application: *Manas Mahapatra*[1]; S.P Madavan[1]; Kumar Pradeep[1]; [1]Indian Institute of Technology Roorkee

2:40 PM
Effect of Process Conditions on Friction Stir Spot Welding of ZEK100 Mg Alloy: *Harish Rao*[1]; J Jordon[1]; [1]The University of Alabama

3:00 PM
Evolution of Micro-Texture in Friction Stir Processed Mg-4Y-3RE Alloy: *Nilesh Dendge*[1]; Nilesh Kumar[1]; Deep Choudhuri[1]; J Hwang[1]; Rajiv Mishra[1]; Rajarshi Banerjee[1]; [1]University of North Texas

3:15 PM
Magnesium-based Surface Composite Via Friction Stir Processing: *Shamiparna Das*[1]; Rajiv Mishra[1]; Kevin Doherty[2]; Kyu Cho[2]; Bruce Davis[3]; Rick DeLorme[4]; [1]University of North Texas; [2]U.S. Army Research Laboratory; [3]Magnesium Elektron ; [4]Magnesium Elektron

3:30 PM Break

3:45 PM
Effect of Initial Microstructure on the Microstructural Evolution and Joint Efficiency of a WE43 Alloy during Friction Stir Welding: *Sivanesh Palanivel*[1]; Rajiv Mishra[2]; B. Davis[3]; R. DeLorme[3]; Kevin Doherty[4]; Kyu Cho[4]; [1]Department of Materials Science and Engineering, University of Texas; [2]Department of Materials Science and Engineering, University of North Texas; [3]Magnesium Elektron North America Inc.; [4]U.S. Army Research Laboratory, Materials and Manufacturing Science Division

4:00 PM
Microstructure in Dissimilar Friction Spot Weld of Al to Mg Alloys Observed by Stop-Action Technique: *Uceu Suhuddin*[1]; Vanessa Fischer[1]; Jorge dos Santos[1]; [1]Helmholtz-Zentrum Geesthacht

4:20 PM
Microstructure and Mechanical Properties of Dissimilar Friction Stir Welds between AA6061 and AZ31 Alloy Sheets: *Kwang-jin Lee*[1]; Sang-Hyuk Kim[1]; Kee-Do Woo[2]; [1]Korea Institute of Industrial Technology; [2]Chonbuk National University

4:40 PM
Effect of Corrosion in NaCl-Based Solutions on the Mechanical Properties of Friction-Stir Welded AZ31B Sheet: *Joseph McDermid*[1]; Joseph Kish[1]; Jennifer Thuss[1]; [1]McMaster University

5:00 PM
Metallurgical Characterization of Friction Stir Welded Aluminum Matrix Composites: *Issac Dinaharan*[1]; Santhiyagu Joseph Vijay[1]; Kumaravel Kalaiselvan[2]; B Ashok Kumar[3]; Natarajan Murugan[4]; [1]Karunya University; [2]K.S.Rangasamy College of Technology; [3]Erode Builder Educational Trust's Group of Institutions; [4]Coimbatore Institute of Technology

5:20 PM
Microstructural Gradients and Intermetallic Compounds in Friction Stir Welding of Dissimilar Metals: *Erin Patterson*[1]; Yuri Hovanski[2]; David Field[1]; [1]Washington State University; [2]Pacific Northwest National Laboratory

5:35 PM
Optimization of Wear Rate of Friction Stir Welded Al-B4C Composite: *Kalaiselvan Kumaravel*[1]; Murugan Natarajan[1]; [1]K.S.Rangasamy College of Technology

Frontiers in Solidification Science: Microstructure Formation II: Simulation

Sponsored by: TMS Materials Processing and Manufacturing Division, TMS: Solidification Committee
Program Organizers: Andre Phillion, University of British Columbia; Silvere Akamatsu, Institut des Nanosciences de Paris; Christoph Beckermann, The University of Iowa; Michel Rappaz, Ecole Polytechnique Federale de Lausanne

Wednesday PM
March 6, 2013

Room: Lone Star Salon F
Location: Grand Hyatt

Funding support provided by: Materials Processing and Manufacturing Division, National Science Foundation

Session Chairs: Silvere Akamatsu, CNRS - UPMC; Alain Karma, Northeastern University

2:00 PM Invited
Modelling Late Stage Solidification: *Nikolas Provatas*[1]; Rameez Ashraf[2]; David Montiel[2]; Nana Ofori-Opoku[2]; Vahid Fallah[3]; Jonathan Stolle[2]; [1]McGill University; [2]McMaster University; [3]Waterloo

2:30 PM Invited
Phase-Field Simulations and Geometrical Analysis of Cellular Solidification Fronts: *Mathis Plapp*[1]; Yiwen Ma[1]; [1]CNRS/Ecole Polytechnique

3:00 PM
Phase-Field Approaches to Anisotropic Eutectic Solidification: *Laszlo Granasy*[1]; Tamas Pusztai[1]; Gyula Toth[1]; [1]Wigner Research Centre for Physics

3:20 PM
Phase-Field Simulation of Dendrite Fragmentation: *Christoph Beckermann*[1]; [1]University of Iowa

3:40 PM Break

3:50 PM
Phase Field Modeling of Spiral Eutectic Dendrites: *Tamás Pusztai*[1]; László Rátkai[1]; Attila Szállás[1]; László Gránásy[1]; [1]Wigner Research Centre for Physics

4:10 PM Invited
Liquid Metal Embrittlement: Linking Small Scale Wetting Phenomena and Mesoscopic Pattern Formation: Robert Spatschek[1]; *Claas Hueter*[1]; Fabian Twiste[1]; Efim Brener[2]; Joerg Neugebauer[1]; [1]Max-Planck-Institut fuer Eisenforschung; [2]Forschungszentrum Juelich

4:40 PM
Mesoscopic Modeling of Thermosolutal Equiaxed Dendrites: Valerio De Felice[1]; *Miha Založnik*[1]; Hervé Combeau[1]; Christoph Beckermann[2]; [1]Institut Jean Lamour; [2]University of Iowa

5:00 PM
Computational Study of Competitive Grain Growth and Dendritic Microstructure Selection in Alloy Directional Solidification: *Damien Tourret*[1]; Alain Karma[1]; [1]Northeastern University

5:20 PM
Combined Phase Field – Lattice Boltzmann Simulation of Dendritic Solidification with Fluid Flow and Solid Particle Motion: Dmitry Medvedev[1]; *Oleg Shchyglo*[1]; Fathollah Varnik[1]; Ingo Steinbach[1]; [1]ICAMS, Ruhr University Bochum

5:40 PM
A Three-dimensional Lattice Boltzmann-Cellular Automaton Model for Dendritic Solidification under Convection: *Mohsen Eshraghi*[1]; Bohumir Jelinek[1]; Sergio Felicelli[1]; [1]Mississippi State University

Hume-Rothery Award Symposium: Electronic Structure Theory of Stability and Bonding in Alloys: Semiconductor Alloys

Sponsored by: TMS Electronic, Magnetic, and Photonic Materials Division, TMS: Alloy Phases Committee
Program Organizer: Chris Wolverton, Northwestern University

Wednesday PM
March 6, 2013

Room: 205
Location: Henry B. Gonzalez Convention Center

Session Chairs: Stephan Lany, NREL; Stefan Mueller, Technische Universität Hamburg-Harburg (TUHH)

2:00 PM Invited
Understanding of the Electronic, Optical, and Defect Properties of Cu2ZnSn(S,Se)4 Alloys for Thin-Film Solar Cell Absorbers: *Su-Huai Wei*[1]; [1]National Renewable Energy Lab

2:30 PM Invited
Semiconductor Alloy Calculations: Electronic Structures, Isoelectronic Defect States and Atomic Structure Ordering: *Lin-Wang Wang*[1]; [1]Lawrence Berkeley National Laboratory

3:00 PM Invited
All-Electron Electronic Structure Accuracy for Real Materials and Molecules: *Volker Blum*[1]; Matthias Scheffler[1]; [1]Fritz Haber Institute

3:30 PM Break

3:50 PM Invited
Thermodynamic Theory of Epitaxial Alloys: First-Principles Mixed-Basis Cluster Expansion of (In, Ga)N Alloy Film: *Zhe Liu*[1]; [1]Monash University

4:20 PM Invited
Thermal Conductance at Atomically Clean and Disordered Silicon/Aluminum Interfaces: *Kwiseon Kim*[1]; Sreekant Narumanchi[1]; Woon-Ih Choi[1]; [1]National Renewable Energy Lab

Magnesium-based Biodegradable Implants Symposium: Alloy Development

Sponsored by: TMS Electronic, Magnetic, and Photonic Materials Division, TMS Light Metals Division, TMS Structural Materials Division, TMS: Biomaterials Committee, TMS: Magnesium Committee
Program Organizers: Candan Tamerler, University of Washington; Wim Sillekens, European Space Agency

Wednesday PM
March 6, 2013
Room: 214D
Location: Henry B. Gonzalez Convention Center

Funding support provided by: Biological Materials Science Symposium
AND Magnesium Technology Symposium

Session Chairs: Jaroslaw Drelich, Michigan Tech; Frank Witte, Hannover Medical School

2:00 PM
Density-Functional Theory (DFT) Study on the Alloying Element Effects of Biodegradable Magnesium Alloys: *Marjan Nezafati*[1]; Chang-Soo Kim[1]; [1]University of Wisconsin Milwaukee

2:20 PM
Design and Investigation of the Oxidation Behavior and Degradation Rates of Self-Passivating Mg Alloys: *Ida Berglund*[1]; Harpreet Brar[1]; Jordan Ball[1]; Josephine Allen[1]; Benjamin Keselowsky[1]; Malisa Sarntinoranont[1]; Michele Manuel[1]; [1]University of Florida

2:40 PM
Magnesium-based Alloys for Application in Biomedical Implants: *Telma Matias*[1]; Claudemiro Bolfarini[1]; Bruno Ramasco[1]; Gabriel Asato[1]; [1]Universidade Federal de São Carlos

3:00 PM
Improved Cell Viability, Corrosion Behavior, and Mechanical Properties of Mg-Zn and Mg-Y Based Polycrystalline Alloys for Orthopedic Applications: *Prashant Kumta*[1]; Daeho Hong[1]; Da-Tren Chou[1]; Partha Saha[1]; Oleg Velikokhatnyi[1]; [1]University of Pittsburgh

3:20 PM
Study on the Cell Viability and Cell Adhesion of MgZnCa Alloys: *Christopher Smith*[1]; Zhigang Xu[1]; Jenora Waterman[1]; Jagannathan Sankar[1]; [1]North Carolina A&T State University

3:40 PM Break

4:00 PM
Influence of Neodymium and Heat Treatment on the Mechanical and Corrosive Properties of Cast Mg10Gd Base Alloy: *Petra Maier*[1]; Chamini Mendis[2]; Gerhard Tober[1]; Christian Ruback[1]; Maria Kuttig[1]; Norbert Hort[2]; [1]University of Applied Sciences Stralsund; [2]Helmholtz-Zentrum Geesthacht

4:20 PM
Biodegradable Mg-Zn-Y Alloys with Long-Period Stacking Ordered Structure: Mechanical Properties and In Vitro Degradation Rate: *Jian Xu*[1]; Xu Zhao[1]; Ling-ling Shi[1]; [1]Institute of Metal Research, Chinese Academy of Sciences

4:40 PM
Development of Biodegradable Mg Alloys for Orthopedic Applications.: *Hyung-Seop Han*[1]; Young-Yul Kim[2]; Yu-Chan Kim[1]; Hyun-Kwang Seok[1]; Seok-Jo Yang[3]; [1]Korea Institute of Science and Technology; [2]The Catholic University; [3]Chungnam National University

5:00 PM
In Vivo Evaluation of Mg Alloy Scaffold for Bone Tissue Engineering: *Xingguo Cheng*[1]; [1]Southwest Research Institute

5:20 PM
MgNd2 – A Future Resorbable Magnesium Based Implant Material?: *Jan-Marten Seitz*[1]; Danielle Fau[2]; Rainer Eifler[1]; Jessica Stahl[3]; Manfred Kietzmann[3]; Friedrich-Wilhelm Bach[1]; [1]Leibniz Universität Hannover; [2]University of Pennsylvania; [3]Stiftung Tieraerztliche Hochschule Hannover

5:40 PM
Biodegradable Magnesium Alloys for Cardiovascular Applications: *Waseem Haider*[1]; Edgar Munoz[1]; Kevin Corona[1]; Zia ur Rahman[1]; Luis Pompa[1]; [1]University of Texas Pan American

Magnesium Technology 2013: Wrought Materials II

Sponsored by: TMS Light Metals Division, TMS: Magnesium Committee
Program Organizers: Norbert Hort, Helmholtz-Zentrum Geesthacht; Suveen Mathaudu, US Army Research Office; Neale Neelameggham, IND LLC; Martyn Alderman, Magnesium Elektron

Wednesday PM
March 6, 2013
Room: 214A
Location: Henry B. Gonzalez Convention Center

Session Chairs: Julian Rosalie, National Institute for Materials Science; Jennifer Hay, Agilent Technologies

2:00 PM
Investigation of Mechanical Properties and Deformation Behavior of CaO Added Mg-6Zn-1.2Y Sheets: *Hyun Kyu Lim*[1]; Young-Ok Yoon[1]; Shae K. Kim[1]; [1]Korea Institute of Industrial Technology

2:20 PM
Recrystallization Behavior of a MgAlCa Alloy during Thermomechanical Processing And Subsequent Heat Treatment: *Victoria Miller*[1]; Tresa Pollock[1]; [1]University of California Santa Barbara

2:40 PM
Temperature-Dependent Forming Limit Surface (FLS) for Warm/Hot Forming of Magnesium Alloy Sheets: *Fadi Abu-Farha*[1]; [1]Clemson University

3:00 PM
The Influence of Deformation Mechanisms on Rupture of AZ31b Magnesium Alloy Sheet at Elevated Temperatures: *Aravindha Antoniswamy*[1]; Alexander Carpenter[1]; Jon Carter[2]; Louis Hector[2]; Eric Taleff[1]; [1]University of Texas at Austin; [2]General Motors Corporation

3:20 PM
Influence of Temperature and Rolling Speed on Twin Roll Cast Strip: *Gerrit Kurz*[1]; Lennart Stutz[1]; Dietmar Letzig[1]; Karl Kainer[1]; [1]Helmholtz-Zentrum Geesthacht

3:40 PM Break

4:00 PM
Mathematical Modeling of the Effect of Roll Diameter on the Thermo-Mechanical Behavior of Twin Roll Cast AZ31 Magnesium Alloy Strips: *Amir Hadadzadeh*[1]; Mary Wells[1]; [1]University of Waterloo

4:20 PM
A Multi-Stage Approach for Predicting Fatigue Damage in Friction Stir Spot Welded Joints of Mg AZ31 Alloy: *Harish Rao*[1]; J Jordon[1]; [1]The University of Alabama

4:40 PM
Friction Stir Forging (FSF) and Friction Stir Back Extrusion (FSBE) of Mg AZ31B-F: A Preliminary Investigation: *Fadi Abu-Farha*[1]; [1]Clemson University

5:00 PM
Microstructure Modification and Performance Improvement of Mg-RE Alloys by Friction Stir Processing: Yujuan Wu[1]; *L. M Peng*[1]; F.Y. Zheng[1]; X.W. Li[1]; D.J. Li[1]; W.J. Ding[1]; [1]Shanghai Jiao Tong University

5:20 PM
Increasing Volume Fraction of Precipitates and Strength of a Mg-Zn-Y Alloy by Pre-Aging Deformation: *Julian Rosalie*[1]; Hidetoshi Somekawa[1]; Alok Singh[1]; Toshiji Mukai[2]; [1]National Institute for Materials Science; [2]Kobe University

5:40 PM
Inverse Strain Rate Sensitivity of Bendability of an AZ31 Sheet in Three-Point Bending: *Bin Li*[1]; Stephen Horstemeyer[1]; Andrew Oppedal[1]; Paul Wang[1]; Mark Horstemeyer[1]; [1]Center for Advanced Vehicular Systems

Magnetic Materials for Energy Applications -III: Rare Earth Magnets

*Sponsored by:*TMS Electronic, Magnetic, and Photonic Materials Division, TMS: Energy Committee, TMS: Energy Conversion and Storage Committee, TMS: Magnetic Materials Committee
Program Organizers: Sivaraman Guruswamy, University of Utah; Thomas Woodcock, IFW Dresden; Yongmei Jin, Michigan Technological University; Raju Ramanujan, Nanyang Technological University; Frank Johnson, GE Global Research; Oliver Gutfleisch, Technische Universität Darmstadt

Wednesday PM
March 6, 2013
Room: 217D
Location: Henry B. Gonzalez Convention Center

Session Chairs: Jeff Shield, University of Nebraska, Lincoln; Yongmei Jin, Michigan Tech

2:00 PM Invited
Interfaces at the Atomic Scale in Nd-Fe-B Permanent Magnets: *Thomas Woodcock*[1]; Gino Hrkac[2]; Quentin Ramasse[3]; Thomas Schrefl[4]; Oliver Gutfleisch[5]; [1]IFW Dresden; [2]University of Sheffield; [3]SuperSTEM Facility; [4]St. Pölten University of Applied Sciences; [5]TU Darmstadt

2:35 PM
Performance and Endurance of Nd-Fe-B Sintered Magnets in E-Motor Application Conditions: *Martina Moore*[1]; Ralph Sueptitz[1]; Margitta Uhlemann[1]; Annett Gebert[1]; Ludwig Schultz[1]; Oliver Gutfleisch[2]; [1]IFW Dresden; [2]TU Darmstadt

2:55 PM
Development of High Energy Product Permanent Magnets through Different Additions in Sm-Co System: *Xiujuan Jiang*[1]; Najla Zogheib[1]; Jeffrey Shield[1]; [1]University of Nebraska-Lincoln

3:15 PM
Grain Boundary Micromagnetism Characterization of Nd-Fe-B Sintered Magnet by Synchrotron Radiation Magnetic Circular Dichroism: *Tetsuya Nakamura*[1]; Tomoki Fukagawa[2]; Sepehri Hossein[3]; Takeshi Nishiuchi[2]; Tomohito Maki[2]; Yoshinori Kotani[1]; Yasuo Narumi[4]; Hiroyuki Nojiri[4]; Kazuhiro Hono[3]; Toyohiko Kinoshita[1]; Satoshi Hirosawa[3]; [1]Japan Synchrotoron Radiation Research Institute (JASRI); [2]Hitachi Metals, Ltd.; [3]National Institute for Materials Science; [4]Institute for Materials Research, Tohoku University

3:45 PM Break

4:00 PM
Investigation of Coercivity Mechanisms in High Performance (Nd,Dy)-Fe-B Permanent Magnets with Core-Shell Structure: *Konrad Löwe*[1]; T. Woodcock[2]; Christoph Brombacher[3]; Matthias Katter[3]; Oliver Gutfleisch[1]; [1]Technical University Darmstadt; [2]IFW Dresden; [3]Vacuumschmelze GmbH & Co. KG

4:30 PM
Single Grain and Textured Sub-Micron Particles of Nd2Fe14B for the Preparation of High Energy Density Nanocomposite Magnets: *Santosh Pal*[1]; Ludwig Schultz[1]; Oliver Gutfleisch[2]; [1]IFW Dresden; [2]T U Darmstadt

4:50 PM
Tuning the Electrical Resistivity in Hot-Deformed Nd-Fe-B Magnets: *Simon Sawatzki*[1]; Imants Dirba[2]; Ludwig Schultz[2]; Oliver Gutfleisch[1]; [1]TU Darmstadt; [2]IFW Dresden

5:10 PM
The Temperature Dependence of Magnetic Properties in$(Sm_{0.12}Co_{0.88-y}Fe_y)_{100-2x}Ti_xC_x$ Ferromagnets: *Xiujuan Jiang*[1]; Jeffrey Shield[1]; [1]University of Nebraska-Lincoln

Materials and Fuels for the Current and Advanced Nuclear Reactors II: Structural Materials II

*Sponsored by:*TMS Structural Materials Division, TMS/ASM: Corrosion and Environmental Effects Committee, TMS/ASM: Nuclear Materials Committee
Program Organizers: Ramprashad Prabhakaran, Idaho National Laboratory; Dennis Keiser, Idaho National Laboratory; Raul Rebak, GE Global Research

Wednesday PM
March 6, 2013
Room: 202A
Location: Henry B. Gonzalez Convention Center

Session Chair: Stuart Maloy, Los Alamos National Laboratory

2:00 PM Invited
Materials Corrosion in Molten Fluoride Salts: *Kumar Sridharan*[1]; Robert Sellers[1]; Guiqiu Zheng[1]; Guoping Cao[1]; Mark Anderson[1]; Todd Allen[1]; [1]University of Wisconsin

2:40 PM
Characterization on the Advanced Core and Cladding Steels after Electro Magnetic Pulse Welding: *Yong Yang*[1]; Todd Allen[2]; Sindo Chou[2]; [1]University of Florida; [2]University of Wisconsin-Madison

3:00 PM
Influence of Dissolved Oxygen, Grain Growth and Segregation on the Transport Properties of Zircaloy: *J. B. Henderson*[1]; [1]Netzsch Instruments North America LLC

3:20 PM
Influence of Thermal Aging on Microstructure and Mechanical Properties of CLAM Steel: Lixin Huang[1]; *Yiyin Shan*[2]; Wei Yan[2]; Wei Wang[2]; Ke Yang[2]; [1]College of Materials Science and Engineering, Yanshan University; [2]Institute of Metal Research, Chinese Academy of Sciences

3:40 PM Break

4:00 PM
Microhardness of Hafnium Aluminide Composite Material for Nuclear Reactor Applications: *Donna Guillen*[1]; Bryan Forsmann[2]; [1]Idaho National Laboratory; [2]Boise State University-Idaho Falls

4:20 PM
Fracture Resistance of a Zirconium Alloy with Reoriented Hydrides: *Kwai Chan*[1]; Xihua He[1]; Yi-Ming Pan[1]; [1]Southwest Research Institute

4:40 PM
Diffusional Interactions between HT9 Alloy in Contact with Vanadium and Zirconium: *E. Perez*[1]; J. Cole[1]; J. Gan[1]; R. Fielding[1]; [1]Idaho National Laboratory

5:00 PM
Characteristics of Zircaloy-4 Joints Brazed by a Be-Free Zr-Base Amorphous Sputter Coating: *Minku Lee*[1]; [1]Korea Atomic Energy Research Institute

5:20 PM
Joining of 20Cr-4.5Al ODS Steel and Modified 9Cr-1Mo Steel by Friction Welding; Microstructural Investigation: *Jinsung Jang*[1]; Seok Hoan Jeong[1]; Boyoung Lee[1]; Chang Hee Han[1]; Suk Hoon Kang[1]; [1]Korea Atomic Energy Research Institute

Materials Processing Fundamentals: Recirculation of Materials and Environments

*Sponsored by:*TMS Extraction and Processing Division, TMS: Process Technology and Modeling Committee
Program Organizers: Lifeng Zhang, University of Science and Technology Beijing; Antoine Allanore, Massachusetts Institute of Technology; Cong Wang, Saint-Gobain High Performance Materials; James Yurko, Materion Brush Beryllium and Composites; Justin Crapps, ExxonMobil

Wednesday PM
March 6, 2013
Room: 008A
Location: Henry B. Gonzalez Convention Center

Session Chair: Justin Mandel Crapps, Los Alamos National Lab

2:00 PM
Effects of Ca and Na Containing Additives on WO3 Content in Sheelite Concentrates after Floatation Separation Process: *Jun Zhu*[1]; Jilai Xue[1]; Kang Liu[1]; [1]Unversity of Science and Technology Beijing

2:20 PM
Copper Removal from Molybdenite by Sulfidation-Leaching Process: *Rafael Padilla*[1]; Hugo Letelier[1]; Maria Ruiz[1]; [1]University of Concepcion

2:40 PM
Analysis of Forming Mechanism of Sulfur Dioxide in Iron Ore Sintering Bed: *Zhengjian Liu*[1]; Jianliang Zhang[1]; [1]University of Science and Technology Beijing

3:00 PM
Physical Chemistry of Roasting and Leaching Reactions for Chromium Chemical Manufacturing and Its Impact on Environment – A Review: *Sergio Sanchez-Segado*[1]; Animesh Jha[1]; [1]University of Leeds

3:20 PM
Electrophoretic Classification of Ultrafine Silica Particles in Dilute Aqueous Suspension: *Ryan Corpuz*[1]; Lyn Marie De Juan[2]; [1]MSU-IIT; [2]UP Diliman

3:40 PM Break

4:00 PM
QEMSCAN Analysis of Wadi-Shattu Iron Ore (Libya): *Ali Tajouri*[1]; [1]Faculty of Engineering, University Of Tripoli

4:20 PM
Removal of Arsenic from Enargite Rich Copper Concentrates: *Maria Ruiz*[1]; Ricardo Bello[1]; Rafael Padilla[1]; [1]University of Concepcion

4:40 PM
Effect of Calcium on the Solubility of Zinc Oxide in the Sodium Hydroxide Solution: Chen Ai Liang[1]; Zhu Wei Xiong[1]; Xu Dong[1]; Chen Xing yu[1]; LIu Xu Heng[1]; [1]Hydrometallurgy

5:00 PM
Comprehensive Comparison Study of Different metallurgical Waste for Preparation of Glass-Ceramics: *Yanbing Zong*[1]; Xianbin AI[1]; Quanrui Liu[1]; [1]State Key Laboratory of Advanced Metallurgy, University of Science and Technology Beijing

Materials Science of Nuclear Waste Management I

*Sponsored by:*TMS Structural Materials Division, TMS/ASM: Nuclear Materials Committee
Program Organizers: Kyle Brinkman, Savannah River National Laboratory (SRNL); Ming Tang, Los Alamos National Laboratory (LANL); Kevin Fox, Savannah River National Laboratory (SRNL); Peng Xu, Westinghouse Electric Company

Wednesday PM
March 6, 2013
Room: 202B
Location: Henry B. Gonzalez Convention Center

Session Chairs: Kyle Brinkman, Savannah River National Laboratory; Peng Xu, Westinghouse Electric Company

2:00 PM Invited
Simulation of Alpha-Decay Damage in Nuclear Waste Ceramics using Ion Irradiation: *William Weber*[1]; [1]University of Tennessee

2:30 PM Invited
Thermodynamic Stability of Ceramic Waste Forms Incorporating Strontium and Cesium and the Chemical Effect of Radioactive Decay: *Alexandra Navrotsky*[1]; [1]UC Davis

3:00 PM
Ion Irradiation-Induced Amorphization in Vanadate-Phosphate Apatites: *Jie Lian*[1]; Zhili Dong[2]; Rodney Ewing[3]; [1]Rensselaer Polytechnic Institute; [2]Nanyang Technological University; [3]University of Michigan

3:20 PM
Radiation Stability Study on Glass Ceramic and Crystalline Ceramic Waste Forms for an Advanced Nuclear Fuel Cycle: *Ming Tang*[1]; Anna-Eden Kossoy-Simakov[1]; Gordon Jarvinen[1]; Jarrod Crum[2]; Laura Turo[2]; Kyle Brinkman[3]; Kevin Fox[3]; James Marra[3]; [1]Los Alamos National Laboratory; [2]Pacific Northwest National Laboratory; [3]Savannah River National Laboratory

3:40 PM Break

3:50 PM
Structure and Stability of Wadeite Analogues for Radioactive Cs Disposal: *Hongwu Xu*[1]; [1]LANL

4:10 PM
Valence and Coordination of Iron and Manganese in Simulated SB6 Nuclear Waste Glasses: *Sergey Stefanovsky*[1]; Andrey Shiryaev[2]; Yan Zubavichus[3]; Alex Choi[4]; James Marra[4]; [1]SIA Radon; [2]Institute of Physical Chemistry and Electrochemistry RAS; [3]NRC "Kurchatov Institute"; [4]Savannah River National Laboratory

4:30 PM Invited
Accelerated Chemical Aging of Crystalline Nuclear Waste Forms: *Chris Stanek*[1]; Blas Uberuaga[1]; Brian Scott[1]; Laura Wolfsberg[1]; Meiring Nortier[1]; Wayne Taylor[1]; Nigel Marks[2]; [1]Los Alamos National Laboratory; [2]Curtin University of Technology

5:00 PM
Electronic Structure, Vibrational Spectroscopy, and Thermodynamics of I-Apatite from a First-Principles Study: *Jianwei Wang*[1]; [1]University of Michigan

5:20 PM
Perovskite Structured Oxides for Simultaneous Incorporation of Fission Products: *Siwei Wang*[1]; Ming Tang[1]; Kyle Brinkman[2]; Fanglin Chen[3]; [1]Los Alamos National Laboratory; [2]Savannah River National Laboratory; [3]University of South Carolina

Microstructural Processes in Irradiated Materials: Fusion Materials

*Sponsored by:*TMS Structural Materials Division, TMS/ASM: Nuclear Materials Committee
Program Organizers: Thak Sang Byun, Oak Ridge National Laboratory; Dane Morgan, University of Wisconsin-Madison; Yasuyoshi Nagai, Tohoku University; Zhijie Jiao, University of Michigan-Ann Arbor; Christine Guéneau, CEA-Saclay

Wednesday PM
March 6, 2013
Room: 203A
Location: Henry B. Gonzalez Convention Center

Session Chairs: Roger Stoller, Oak Ridge National Laboratory; Steven Zinkle, Oak Ridge National Laboratory

2:00 PM Invited
Radiation Effects on a High Strength, High Conductivity Copper Alloy: *Steven Zinkle*[1]; [1]Oak Ridge National Laboratory

2:30 PM
Effect of Grain Boundary Characters on Sink Efficiency: *Weizhong Han*[1]; Michael Demkowicz[2]; Engang Fu[1]; Yongqiang Wang[1]; Amit Misra[1]; [1]Los Alamos National Lab; [2]MIT

2:50 PM
Correlation between Irradiation Hardening and Microstructural Evolution in High Purity Reference V-4Cr-4Ti Alloy for Fusion Reactor: *Takuya Nagasaka*[1]; Takeo Muroga[1]; Hideo Watanabe[2]; Takeshi Miyazawa[3]; Masanori Yamazaki[4]; [1]National Institute for Fusion Science; [2]Research Institute for Applied Mechanics, Kyushu University; [3]The Graduate University for Advanced Studies; [4]International Research Center for Nuclear Materials Science, Institute for Materials Research, Tohoku University

3:10 PM
A Replica Technique for Extracting Precipitates from Neutron-Irradiated or Thermal-Aged Vanadium Alloys for TEM Analysis: *Ken-ichi Fukumoto*[1]; Masahiro Iwasaki[2]; [1]RINE/Univ. of Fukui; [2]Univ. of Fukui

3:30 PM
Microstructures of Heavily Neutron-Irradiated SiC/SiC Composites: *Yutai Katoh*[1]; Keith Leonard[1]; Peng Dou[1]; Lance Snead[1]; [1]Oak Ridge National Laboratory

3:50 PM Break

4:00 PM Invited
Multiple Simultaneous Ion Beam (MSIB) Examination of Inertial Fusion Energy Candidate Materials: *Michael Fluss*[1]; Luke Hsiung[1]; William Choi[1]; Peter Hosemann[2]; Estelle Meslin[3]; Jaime Marian[1]; David Hoelzer[4]; [1]LLNL; [2]UC Berkeley; [3]CEA-Saclay; [4]ORNL

4:30 PM
The Microstructure Development of Dispersion-Strengthened Tungsten due to Neutron Irradiation: *Makoto Fukuda*[1]; Akira Hasegawa[1]; Shuhei Nogami[1]; Kiyohiro Yabuuchi[1]; [1]Tohoku University

4:50 PM
Theoretical and Experimental Study of Spatial Effects in 3He Implantation in W: Andrée De Backer[1]; Christophe Ortiz[2]; Christophe Domain[3]; Marie France Barthe[4]; *Charlotte Becquart*[1]; [1]UMET, UMR 8207, EM2VM; [2]Laboratorio Nacional de Fusión por Confinamiento Magnético – CIEMAT; [3]EDF, EM2VM; [4]CNRS, UPR3079 CEMHTI

5:10 PM
The Change in Mechanical Properties of Tungsten after Self-Ion Irradiation: *James Gibson*[1]; David Armstrong[1]; Steve Roberts[1]; [1]Oxford University

5:30 PM
Deuterium Retention in Ion Damaged Tungsten with and without the Presence of Helium: *Yongqiang Wang*[1]; Chunping Xu[1]; Joseph Barton[2]; Nate Mara[1]; Russ Doerner[2]; George Tynan[2]; [1]Los Alamos National Laboratory; [2]University of California

Modeling and Experimental Validation of Multiscale Mechanical Behavior from Atomic Scale to Macro Scale: Multiscale Behavior at Extreme Conditions

*Sponsored by:*TMS Materials Processing and Manufacturing Division, TMS Structural Materials Division, TMS: Integrated Computational Materials Engineering Committee, TMS/ASM: Mechanical Behavior of Materials Committee, TMS: Nanomechanical Materials Behavior Committee, TMS: Process Technology and Modeling Committee, TMS: Shaping and Forming Committee
Program Organizers: Nathan Mara, Los Alamos National Laboratory; Jian Wang, Los Alamos National Laboratory; Brad Boyce, Sandia National Laboratories; Jennifer Carter, Case Western Reserve University; Anthony Rollett, Carnegie Mellon University; Jonathan Zimmerman, Sandia National Laboratories

Wednesday PM
March 6, 2013
Room: 216
Location: Henry B. Gonzalez Convention Center

Session Chairs: Steven Valone, Los Alamos National Laboratory; Nik Chawla, Arizona State University

2:00 PM Invited
Anomalous High Temperature Response of Twin Boundaries in FCC Metals: *Yashashree Kulkarni*[1]; Tanushree Sinha[1]; [1]University of Houston

2:30 PM
Atomics Based Predictive Mechanism of Hydrogen Embrittlement in Iron: *Jun Song*[1]; William Curtin[2]; [1]McGill University; [2]EPFL

2:50 PM
Defect Accumulation during Super-Elastic Load Cycling of Gum Metal.: *Vassili Vorontsov*[1]; Nicholas Jones[2]; David Dye[1]; [1]Imperial College London; [2]University of Cambridge

3:10 PM Invited
High Temperature Mechanical Characterization and Modeling of Al/SiC Nanolaminates: Jon Molina-Aldareguía[1]; S. Lotfian[1]; Kyle Yazzie[2]; Huxiao Xie[2]; Javier LLorca[1]; J. Kevin Baldwin[3]; Amit Misra[3]; *Nikhilesh Chawla*[2]; [1]IMDEA Materials Institute, 28040-Madrid, Spain; [2]Arizona State University; [3]Los Alamos National Laboratory, Los Alamos, NM

3:40 PM Break

3:50 PM
Determination of Strengthening Induced by Dislocation Loops in Irradiated 316 L Steels: From Atomic to Dislocation Dynamics Simulations: *Ghiath Monnet*[1]; Dmitry Terentyev[2]; [1]EDF; [2]SCK-CEN

4:10 PM Invited
Interfaces on Shock-Induced Damage in Two-Phase Metals: Copper-Lead: Saryu Fensin[1]; *Steven Valone*[1]; Ellen Cerreta[1]; George Gray[1]; Adam Farrow[1]; Carl Trujillo[1]; [1]Los Alamos National Laboratory

4:40 PM
Modelling of Size Effects on Behavior of Thin Sheet Metals for Bipolar Plate Manufacturing: *Muammer Koc*[1]; Sasawat Mahabunpachai[2]; [1]Istanbul Sehir University; [2]MTEC

5:00 PM
Molecular Dynamics Study of Strain Rate Sensitivity of Deformation Mechanisms in Nanocrystalline BCC Tantalum: *Laura Smith*[1]; Diana Farkas[1]; Jonathan Zimmerman[2]; Lucas Hale[2]; [1]Virginia Polytechnic Institute and State University; [2]Sandia National Laboratories

5:20 PM
Study of Cyclic Deformation of Mg Single Crystal in [0001] Direction Utilizing In Situ Optical Microscopy: *Qin Yu*[1]; Jian Wang[2]; Yanyao Jiang[1]; [1]Department of Mechanical Engineering, University of Nevada, Reno; [2]Materials Science and Technology Division, Los Alamos National Laboratory

5:40 PM
Laser Induced Projectile Impact Test for High-Strain Rate Characterization of Nanomaterials: *Jae-Hwang Lee*[1]; Edwin Thomas[1]; [1]Rice University

Modeling and Experimental Validation of Multiscale Mechanical Behavior from Atomic Scale to Macro Scale: Polycrystalline Multiscale Plasticity

Sponsored by: TMS Materials Processing and Manufacturing Division, TMS Structural Materials Division, TMS: Integrated Computational Materials Engineering Committee, TMS/ASM: Mechanical Behavior of Materials Committee, TMS: Nanomechanical Materials Behavior Committee, TMS: Process Technology and Modeling Committee, TMS: Shaping and Forming Committee
Program Organizers: Nathan Mara, Los Alamos National Laboratory; Jian Wang, Los Alamos National Laboratory; Brad Boyce, Sandia National Laboratories; Jennifer Carter, Case Western Reserve University; Anthony Rollett, Carnegie Mellon University; Jonathan Zimmerman, Sandia National Laboratories

Wednesday PM
March 6, 2013
Room: 211
Location: Henry B. Gonzalez Convention Center

Session Chairs: Curt Bronkhorst, Los Alamos National Laboratory; Carlos Tome, Los Alamos National Laboratory

2:00 PM Invited
High Energy X-ray Diffraction Microscopy Tracking of Internal Polycrystal Responses to Tensile Deformation: *Robert Suter*[1]; Shiu Fai Li[1]; Jonathan Lind[1]; Reeju Pokharel[1]; Christopher Hefferan[1]; Xi Tan[1]; Ulrich Lienert[1]; Anthony Rollett[1]; [1]Carnegie Mellon University

2:30 PM
Combining Laue Microdiffraction and Digital Image Correlation for Improved Measurements of the Elastic Strain Field with Micrometer Spatial Resolution: Johann Petit[1]; Olivier Castelnau[2]; Michel Bornert[3]; Fengguo Zhang[2]; Odile Robach[4]; JS Micha[4]; olivier ulrich[4]; *Christophe Le Bourlot*[5]; damien Faurie[5]; Felix hofmann[6]; A Korsunsky[6]; [1]PIMM-CNRS; [2]Arts et Metiers ParisTech; [3]École des ponts ParisTech; [4]CEA Grenoble; [5]LSPM; [6]University of Oxford

2:50 PM
A Single Crystal Yield Model for Tantalum Based on Atomistic Simulations: *Lucas Hale*[1]; Jonathan Zimmerman[1]; Christopher Weinberger[1]; [1]Sandia National Laboratories

3:10 PM Invited
Modeling the Crystallographic Texture of Cu/Nb Layered Composites by Accumulated Roll Bonding: *Curt Bronkhorst*[1]; Benjamin Hansen[1]; Hashem Mourad[1]; John Carpenter[1]; Jason Mayeur[1]; Irene Beyerlein[1]; Rodney McCabe[1]; Nathan Mara[1]; Stephen Sintay[1]; [1]Los Alamos National Laboratory

3:40 PM Break

3:50 PM
Modeling Mechanical Response and Texture Evolution of α-Uranium as a Function of Strain Rate and Temperature Using Polycrystal Plasticity: *Marko Knezevic*[1]; Rodney McCabe[1]; Carlos Tomé[1]; Ricardo Lebensohn[1]; Bogdan Mihaila[1]; [1]Materials Science and Technology Division, Los Alamos National Laboratory

4:10 PM Invited
Stress States Associated with Twin Nucleation, Propagation and Detwinning: Anand Kanjarla[1]; Stephen Niezgoda[1]; H. Wang[1]; Jian Wang[1]; P.D. Wu[1]; *Carlos Tome*[1]; [1]Los Alamos National Laboratory

4:40 PM
Understanding Micro-Mechanical Deformation in Zirconium with Nanoindentation, Micro-Cantilevers and High Resolution Electron Backscatter Diffraction: *T Ben Britton*[1]; Jicheng Gong[1]; Edmund Tarleton[1]; Angus Wilkinson[1]; Steve Roberts[1]; [1]Department of Materials, University of Oxford

5:00 PM Invited
Validating Crystal Plasticity Finite Element Simulations with DIC and EBSD Experiments: *Corbett Battaile*[1]; Hojun Lim[1]; Christopher Weinberger[1]; Jay Carroll[1]; Thomas Buchheit[1]; Brad Boyce[1]; [1]Sandia National Laboratories

5:30 PM
Revisiting PSBs Modeling: *Ladislas Kubin*[1]; Maxime Sauzay[2]; [1]LEM, CNRS-ONERA; [2]CEA, SRMA

Nanostructured Materials for Lithium Ion Batteries and for Supercapacitors: Nanostructured Materials for Lithium Ion Batteries and for Supercapacitors Session VI

Sponsored by: TMS Electronic, Magnetic, and Photonic Materials Division, TMS: Energy Conversion and Storage Committee
Program Organizer: David Mitlin, University of Alberta and NINT NRC

Wednesday PM
March 6, 2013
Room: 007B
Location: Henry B. Gonzalez Convention Center

Session Chairs: David Mitlin, University of Alberta and NINT NRC; Reza Shahbazian-Yassar, Michigan Technological University; Peter Kalisvaart, University of Alberta; Zhi Li, University of Alberta

2:00 PM Invited
Stress, Fracture, and Coupled Mechanical-chemical Degradation in Lithium Ion Battery Electrodes: *Yang-Tse Cheng*[1]; Rutooj Deshpande[1]; Juchuan Li[1]; Mark Verbrugge[2]; [1]University of Kentucky; [2]General Motors Research and Development Center

2:20 PM Invited
Inkjet-Printed Graphene for Micro-Supercapacitor: *Linh Le*[1]; Matthew Ervin[2]; De Kong[1]; Brian Fuchs[3]; James Zunino[3]; Woo Lee[1]; [1]Stevens Institute of Technology; [2]U.S. Army Research Lab; [3]Picatinny Arsenal

2:40 PM Invited
Nanostructured Co3O4 Electrodes for Na-Ion Battery Applications from Solution Plasma Spray Technique: *Xuan Zhou*[1]; Ramesh Kumar Guduru[1]; Raghavender Tummala[1]; Pravansu Mohanty[1]; [1]University of Michigan-Dearborn

3:00 PM Invited
Predicting and Imaging Nanocrystals in Metal Alloy Electrodes: *Michael Fleischauer*[1]; A.D.W. Todd[2]; P.P. Ferguson[3]; [1]National Institute for Nanotechnology; [2]National Research Council; [3]Université de Moncton

3:20 PM Break

3:40 PM Invited
Spray Pyrolysis for Synthesis of Nanostructured, High Energy $xLi_2MnO_3 \cdot (1-x)LiMO_2$ (M= Mn, Ni, Co) Cathode Materials: *Richard Axelbaum*[1]; Xiaofeng Zhang[2]; Miklos Lengyel[1]; Ilias Belharouak[2]; Gal Atlas[1]; [1]Washington University in St. Louis; [2]Argonne National Laboratory

4:00 PM Invited
Multinuclear Solid and Liquid State NMR Studies of Battery Materials: *Steve Greenbaum*[1]; [1]Hunter College of CUNY

4:20 PM Invited
***In Situ* Stress Study of Porous V2O5 Films as Li-ion Battery Electrodes**: *Dawei Liu*[1]; Clement Edouard[2]; Brian Sheldon[2]; [1]Alfred University; [2]Brown University

4:40 PM Invited
MXene - A New Family of Two Dimensional Materials for Use in Lithium Ion Batteries and Lithium Ion Capacitors: Michael Naguib[1]; Yohan Dallagnese[1]; Olha Mashtalir[1]; Jérémy Come[2]; Pierre-Louis Taberna[2]; Volker Presser[1]; Patrice Simon[2]; Michel Barsoum[1]; *Yury Gogotsi*[1]; [1]Drexel University; [2]Université Paul Sabatier

5:00 PM Invited
Novel Design of Nanostructured Si Anode on Nanohair Array Polymer Substrate: Min-Suk Jung[1]; Young-Chang Joo[1]; Myoung-Woon Moon[2]; *In-suk Choi*[2]; [1]Seoul National University; [2]Korea Institute of Science and Technology

5:20 PM
Si Thin Film Electrode on TiNi Shape Memory Alloy (Current Collector) with Martensitic Phase: *Yeon-min Im*[1]; Sang-hun Lee[1]; Jung-phil Noh[1]; Gyu-bong Cho[1]; Tae-hyun Nam[1]; [1]Gyeongsang National University

5:40 PM
Synthesis of Nanosheet TiO2(B) with Open Structure for Applications in High-Rate Lithium-ion Batteries: *Ming-Yan Hou*[1]; Yu-Sheng Lin[1]; Jenq-Gong Duh[1]; [1]Department of Materials Science and Engineering, National Tsing Hua University

Neutron and X-Ray Studies of Advanced Materials VI: Centennial and Beyond: Diffraction Studies of Phase Transtions

Sponsored by: TMS Structural Materials Division, TMS/ASM: Mechanical Behavior of Materials Committee
Program Organizers: Rozaliya Barabash, Oak Ridge National Laboratory; Xun-Li Wang, City University of Hong Kong; Jaimie Tiley, US Air Force Research Laboratory; Gernot Kostorz, ETH Zurich; Brent Fultz, California Institute of Technology; Peter Liaw, Univ of Tennessee

Wednesday PM
March 6, 2013

Room: 209
Location: Henry B. Gonzalez Convention Center

Session Chairs: Thomas Watkins, ORNL; Brent Fultz, CALTECH

2:00 PM Keynote
Strain in Semiconductor Nano-Structures using X-ray Bragg Coherent Diffraction Imaging: *Vincent Favre-Nicolin*[1]; Francesca Mastropietro[2]; Joël Eymery[3]; Gerardina Carbone[4]; François Andrieu[5]; Julien Claudon[3]; Jean-Michel Gérard[3]; [1]CEA-Université de Grenoble; [2]Université Aix-Marseille; [3]CEA; [4]ESRF; [5]CEA-LETI

2:20 PM
Probing the Local Structure of the Lead-Free Piezoelectric Na0.5Bi0.5TiO3 by X-Ray and Neutron Scattering: *Jens Kreisel*[1]; [1]CRP Lippmann & Luxembourg University

2:35 PM Invited
What Neutrons Tell Us about Magnetic Shape Memory Materials?: *Volodymyr Chernenko*[1]; Jose Manuel Barandiarán[1]; Patricia Lázpita[1]; Jon Gutiérrez[1]; [1]University of Basque Country (UPV/EHU)

2:55 PM
Time-Resolved High-Energy Small-Angle X-ray Scattering of the γ' Precipitates in a Polycrystalline Nickel-Base Superalloy: *David Collins*[1]; Thomas Connolley[2]; Leigh Connor[2]; Howard Stone[3]; [1]University of Oxford; [2]Diamond Light Source; [3]University of Cambridge

3:10 PM Invited
Using Small Angle Scattering and Atom Probe Tomography as Complementary Tools for Characterising Precipitate Microstructures at the Nanoscale: *Alexis Deschamps*[1]; Frédéric De Geuser[2]; Vicente Araullo-Peters[3]; Julie Cairney[3]; Laurent Couturier[1]; Baptiste Gault[4]; Christophe Sigli[5]; [1]Grenoble Institute of Technology; [2]CNRS, SIMAP; [3]University of Sydney; [4]McMaster University; [5]Constellium Voreppe research Centre

3:30 PM Invited
Monitoring Nanomaterials in Situ Elaboration, Structure, Morphology and Operando Activity by Synchrotron X-Rays Scattering: *Gilles Renaud*[1]; [1]CEA-Grenoble

3:50 PM Break

4:00 PM
Phonon Anharmonicity of Zirconia and Yttirum-Stabilized Zirconia at Elevated Temperatures: A Neutron Scattering Study: *Chen Li*[1]; Hillary Smith[1]; Jorge Munoz[1]; Lisa Mauger[1]; Doug Abernathy[2]; Brent Fultz[1]; [1]Caltech; [2]Oak Ridge National Lab

4:15 PM
Polymer Crystallization in Processing Conditions: Synchrotron SAXS and WAXS Analysis with Millisecond Time Resolution: *Giuseppe Portale*[1]; Dario Cavallo[2]; Gerrit Peters[2]; Giovanni Alfonso[3]; Luigi Balzano[4]; Wim Bras[1]; [1]DUBBLE-CRG, European Synchrotron Radiation Facility; [2]Eindhoven University of Technology; [3]University of Genova; [4]DSM Research

4:30 PM
Study of Formation and Growth of Omega Phase in TIMETAL LCB Using Small Angle X-Ray Scattering: *Jana Smilauerova*[1]; Milos Janecek[1]; Vaclav Holy[1]; Henry Rack[2]; Radomir Kuzel[1]; [1]Charles University; [2]Clemson University

4:40 PM
Thermal Residual Stresses and Strains in Depleted Uranium: *Christopher Calhoun*[1]; James Wollmershauser[1]; Donald Brown[2]; Rupalee Mulay[1]; Elena Garlea[3]; Sean Agnew[1]; [1]University of Virginia; [2]Los Alamos National Laboratory; [3]Y-12 National Security Complex

4:55 PM Invited
Binary Semiconductor Nano-Sized Structures and the Regularities of Diffracted Intensity Pattern Formation under Grazing Incidence Conditions.: *Danylo Grygoryev*[1]; Sergey Lazarev[1]; Philipp Schroth[1]; Mathew Helfrich[1]; Andrey Minkevich[1]; Taras Slobodskyy[2]; Tilo Baumbach[1]; [1]Karlsruhe Institute for Technology; [2]University of Hamburg

5:15 PM
Analysis of Phase Distribution in Thin Surface Layers Comparable to the Penetration Depth of X-Rays: *Paul Rozenak*[1]; [1]Hydrogen Energy Batteries LTD

5:35 PM
Three-Dimensional Diffuse-Scattering Analysis of the Phase Transition in a Ni_2MnGa Ferromagnetic Shape-Memory Alloy by In-Situ High-Energy X-Ray Measurement: *Gang Wang*[1]; [1]Northeastern University

5:50 PM
In-Situ Bragg Edge Imaging for Strain and Phase Mapping under Multi-Axial Loading: *Robin Woracek*[1]; Daykar Penumadu[2]; Anton Tremsin[3]; Nikolay Kardjilov[4]; Andre Hilger[4]; Mirko Boin[4]; Akawut Siriruk[2]; Ingo Manke[4]; Markus Strobl[5]; Joe Kelleher[6]; [1]University of Tennessee & Helmholtz Zentrum Berlin; [2]University of Tennessee; [3]University of California at Berkeley; [4]Helmholtz Zentrum Berlin; [5]ESS design update programme ; [6]STFC Rutherford Appleton Laboratory

Ni-Co 2013: Pyrometallurgy - Smelting

Sponsored by: The Minerals, Metals and Materials Society, Metallurgical Society of the Canadian Institute of Mining Metallurgy and Petroleum, Chinese Society for Metals, GDMB Society for Mining, Metallurgy, Resource and Environmental Technology, Society for Mining Metallurgy and Exploration, Mining and Materials Processing Institute of Japan, Associacao Brasileira de Metalurgia, Materiais e Mineracao, Southern African Institute of Mining and Metallurgy (SAIMM), Minerals Engineering International Online, Cobalt Development Institute, Societe Francaise de Metallurgie et de Materiaux, TMS Extraction and Processing Division, TMS: Hydrometallurgy and Electrometallurgy Committee, TMS: Pyrometallurgy Committee
Program Organizer: Thomas Battle, Midrex Technologies

Wednesday PM
March 6, 2013
Room: 007D
Location: Henry B. Gonzalez Convention Center

Session Chairs: Antoine Allanore, MIT - DMSE/ Sadoway Group; Rodney Jones, Mintek

2:00 PM
HPOXAL of Furnace and Converter Slags - What Have We Learned?: Ilya Perederiy[1]; *Vladimiros Papangelakis*[2]; [1]Vale; [2]University of Toronto

2:25 PM
Nickel, Cobalt and Copper Recovery from Sea Nodules by Direct Smelting Process: *Kamala Sahu*[1]; S. Agarwal[1]; D. Mishra[1]; A. Agrawal[1]; K. M. Godiwalla[1]; R. K. Jana[1]; [1]CSIR-National Metallurgical Laboratory

2:45 PM
Water Atomization of Iron-Nickel Alloys: *Rodney Jones*[1]; [1]Mintek

3:10 PM
Alternative Coolants and Cooling System Designs for Safer Freeze Lined Furnace Operation: *Mark Kennedy*[1]; Mark Weaver[2]; Per Nos[3]; Mia Bratt[4]; [1]Norwegian University of Science and Technology; [2]Alcoa Technical Center; [3]Termek Technology; [4]Elkem AS Research

3:30 PM Break

3:50 PM
Outotec's Ausmelt Top Submerged Lance (TSL) Technology for the Nickel Industry: *Ross Andrews*[1]; Robert Matusewicz[1]; Lauri Aspola[1]; Stephen Hughes[1]; [1]Outotec

4:10 PM
Processing of PGM Containing Ni/Cu Bulk Concentrates in a Sustainable Way by Outotec Direct Nickel Flash Smelting Process: *Satu Jyrkonen*[1]; Matti Luomala[1]; Janne Karonen[1]; Paivi Suikkanen[2]; Kaarlo Haavanlammi[1]; [1]Outotec (Finland) Oy; [2]Boliden Harjavalta Oy

4:30 PM
Nickel-Chromium-Boron Alloys Production by Aluminothermic Processes: *Ozge Caglar Yilmaz*[1]; Murat Alkan[1]; Onuralp Yücel[1]; [1]Istanbul Technical University

Novel Synthesis and Consolidation of Powder Materials: Metal Injection Moulding and Advanced Powder Processing

Sponsored by: TMS Materials Processing and Manufacturing Division, TMS: Powder Materials Committee
Program Organizers: Ma Qian, The University of Queensland; Iver Anderson, The Ames Laboratory

Wednesday PM
March 6, 2013
Room: Lone Star Salon C
Location: Grand Hyatt

Session Chairs: Ping Li, University of Science and Technology Beijing; Stefan Gulizia, CSIRO Materials Science and Engineering

2:00 PM Invited
Room and High Temperature Properties of Injection Molded Superalloy Compacts: *Hideshi Miura*[1]; Syunsuke Morinaka[1]; Toshiko Osada[1]; Hyungoo Kang[1]; Fujio Tsumori[1]; [1]Kyushu University

2:30 PM
Rheological Properties of Feedstock Composed of Titanium Alloy Powder and Polyethylene Glycol-based Binder System for Metal Injection Moulding: *Gnanavinthan Thavanayagam*[1]; Deliang Zhang[1]; Kim Pickering[1]; [1]Waikato Centre for Advanced Materials, School of Engineering, The University of Waikato

2:50 PM Invited
Advances in Lubrication Technology in PM to Promote Higher Sintered Densities: *Francis Hanejko*[1]; [1]Hoeganaes Corporation

3:20 PM Break

3:40 PM Invited
Effect of Surfactants in Pre-Mixing Powders for Oxide Dispersion Strengthened Steel Processing: *Selçuk Kuyucak*[1]; Carlo Tesone[1]; Jian Li[1]; [1]CanmetMATERIALS

4:10 PM
Characterization and Consolidation of Mechanically Modified Titanium Powders for Cold Spray Application: *Stefan Gulizia*[1]; mahnaz jahedi[2]; darren fraser[2]; [1]CSIRO Materials Science & Engineering/Future Manufacturing Flagship; [2]CSIRO Materials Science & Engineering

4:30 PM
Magnetic Property Improvement of PM Fe-50%Ni Soft Magnetic Alloy: *Mingli Qin*[1]; Jidong Ma[1]; Lusha Tian[1]; Lin Zhang[1]; Xiaofeng Zhang[1]; Ping Li[1]; Xuanhui Qu[1]; [1]University of Science and Technology Beijing

4:50 PM
WC–17Co Nanostructured Coating Prepared by Air Plasma Spraying: *Hui Chen*[1]; [1]Southwest Jiaotong University

5:10 PM
Real-Time Diagnostics on Attritor Mill: Towards a Better Scale-Up Model: *Priya Radhi Santhanam*[1]; Edward Dreizin[1]; [1]New Jersey Institute of Technology

Pb-free Solders and Emerging Interconnect and Packaging Technologies: Sn Whiskering and Electromigration

*Sponsored by:*TMS Electronic, Magnetic, and Photonic Materials Division, TMS: Electronic Packaging and Interconnection Materials Committee
Program Organizers: Nikhilesh Chawla, Arizona State University; Srinivas Chada, Whirlpool; Darrel Frear, Freescale Semiconductor; John Elmer, LLNL; Tae-Kyu Lee, Cisco Systems; Yan Li, Intel; Laura Turbini, Research In Motion; Kwang-Lung Lin, National Cheng Kung University; Sohoon Yoo, Korea Institute of Industrial Technology

Wednesday PM
March 6, 2013
Room: 217B
Location: Henry B. Gonzalez Convention Center

Session Chair: To Be Announced

2:00 PM
Tin Whisker and Hillock Growth Mechanism Via Grain Boundary Sliding Coupled with Shear Induced Grain Boundary Migration: *Pylin Sarobol*[1]; John Blendell[1]; Carol Handwerker[1]; [1]Purdue University

2:20 PM
Correlating Whisker/Hillock Growth with Compressive Stress in Sn during Thermal Cycling: *Fei Pei*[1]; Nitin Jadhav[1]; Eric Chason[1]; [1]Brown University

2:40 PM
Effect of Plastic Deformation on Sn Whisker Growth in Electroplated Sn and Sn-Ag: *Jaewon Chang*[1]; Sung Kang[2]; Jaeho Lee[3]; Keun-Soo Kim[4]; Hyuck Mo Lee[1]; [1]KAIST; [2]IBM T.J. Watson Research Center; [3]Hongik University; [4]Hoseo University

3:00 PM
Effects of POSS-Silanol Addition on the Whisker Formation in Sn-Based Pb-Free Electronic Solders: *Sihan Liu*[1]; Yutian Shu[1]; KN Subramanian[2]; Andre Lee[2]; Fu Guo[1]; [1]Beijing University of Technology; [2]Michigan State University

3:20 PM Break

3:40 PM
Two-Dimensional Simulation of Intermetallic Compound Growth during the Lead-Free Soldering under the Influence of Electromigration: *Min Soo Park*[1]; Sean Gibbons[1]; Raymundo Arroyave[1]; [1]Texas A&M University

4:00 PM
The Behavior of Zn-Rich Phase in Sn-9Zn Solder Alloys under Current Stressing: *Jian-Yang He*[1]; Tsung-Chieh Chiu[1]; Albert T. Wu[2]; Kwang-Lung Lin[1]; [1]National Cheng Kung University; [2]National Central University

4:20 PM
The Effect of Current Stressing on Solder Grain Growth and Orientation: *Yu-Lung Lin*[1]; Chih Chen[1]; [1]National Chiao Tung University

4:40 PM
An EBSD Investigation of the Effect of Sn Orientation on Electromigration in Idealized SnAgCu Interconnects: *Christopher Kinney*[1]; Xioranny Linares[1]; Kyu-Oh Lee[2]; J.W. Morris[1]; [1]University of California, Berkeley; [2]Intel Corporation

Phase Transformation and Microstructural Evolution: Non-conventional Phase Transformation Paths: Part IV

*Sponsored by:*TMS Materials Processing and Manufacturing Division, TMS: Chemistry and Physics of Materials Committee, TMS/ASM: Computational Materials Science and Engineering Committee, TMS: Integrated Computational Materials Engineering Committee, TMS/ASM: Phase Transformations Committee, TMS: Process Technology and Modeling Committee, ASM: Alloy Phase Diagrams Committee
Program Organizers: Amy Clarke, Los Alamos National Laboratory; Sudarsanam Suresh Babu, Ohio State Univ; Rajarshi Banerjee, Univ of North Texas; John Morral, Ohio State Univ; Brian Gleeson, University of Pittsburgh; Carelyn Campbell, National Institute of Standards & Tech; Yongho Sohn, Univ of Central Florida; Yunzhi Wang, Ohio State University

Wednesday PM
March 6, 2013
Room: 204A
Location: Henry B. Gonzalez Convention Center

Session Chairs: Dong-Woo Suh, Pohang Institute of Science and Technology (POSTECH); Marc De Graef, Carnegie Mellon University

2:00 PM Invited
Materials Design for Joinability: FSW Aluminum: *Greg Olson*[1]; [1]Northwestern University

2:30 PM
Electron Microscopy Characterization of the Microstructural Evolution of Similar and Dissimilar Titanium Alloys Following Solid State Welding: *Jonathan Orsborn*[1]; Daniel Huber[1]; Robert Williams[1]; Hamish Fraser[1]; [1]The Ohio State University

2:50 PM
Microstructural Evolution in a Weld Overlay Cladding of a Ni-Based Alloy on 2.25Cr-1Mo Steel during Thermal Aging: *Hassan Saghafifar*[1]; [1]Cameron

3:10 PM Break

3:20 PM
Correlation Microstructure/Thermo-Mechanical Process Parameters for Ti6Al4V Alloy: *Kalenda Mutombo*[1]; [1]CSIR

3:40 PM
Microstructural Evolution in Haynes 282 After High Temperature Creep Exposure: *Jeffrey Hawk*[1]; Paul Jablonski[1]; John Sears[1]; [1]U.S. Department of Energy, National Energy Technology Laboratory

4:00 PM
Microstructural Evolution in Ti-5Al-5Mo-5V-3Cr during Continuous Heating: *Yufeng Zheng*[1]; Robert Williams[1]; Soumya Nag[2]; Rajarshi Banerjee[2]; Hamish Fraser[1]; [1]The Ohio State University; [2]University of North Texas

4:20 PM
Modeling Precipitate Microstructure Evolution during Continuous Cooling: *Qing Chen*[1]; Herng-Jeng Jou[2]; Gustaf Sterner[1]; Kaisheng Wu[3]; Johan Bratberg[1]; Anders Engström[1]; Paul Mason[3]; [1]Thermo-Calc Software AB; [2]QuesTek Innovations LLC; [3]Thermo-Calc Software, Inc

4:40 PM
Phase Transformation as a Result of Mechanical Loading and Turning of Metastable Austenitic Steels: *Marek Smaga*[1]; Robert Skorupski[2]; Dietmar Eifler[2]; Patrick Mayer[3]; Jan C. Aurich[3]; [1]Institute of Materials Science and Engineering, University of Kaiserslautern; [2]Institute of Materials Science & Engrg, University of Kaiserslautern; [3]Institute for Manufacturing Technology & Production Systems, University of Kaiserslautern

5:00 PM
TEM Observation of FCC 9R Phase Transformation in Nanocrystalline Pd Thin Films during Hydriding/Dehydriding Cycles: *Hosni Idrissi*[1]; Behnam Amin-ahmadi[1]; Montserrat Galceran[2]; Renaud Delmelle[3]; Marie-Stéphane Colla[3]; Jean-Pierre Raskin[4]; Stéphane Godet[2]; Joris Proost[3]; Thomas Pardoen[3]; Dominique Schryvers[1]; [1]EMAT. University of Antwerp; [2]Service 4 MAT. Université libre de Bruxelles (ULB); [3]IMMC. Université catholique de Louvain; [4]ICTEAM, Université catholique de Louvain

Phase Transformation and Microstructural Evolution: Scale and Subsurface Phase Transformations during High-Temperature Oxidation

Sponsored by: TMS Materials Processing and Manufacturing Division, TMS: Chemistry and Physics of Materials Committee, TMS/ASM: Computational Materials Science and Engineering Committee, TMS: Integrated Computational Materials Engineering Committee, TMS/ASM: Phase Transformations Committee, TMS: Process Technology and Modeling Committee, ASM: Alloy Phase Diagrams Committee
Program Organizers: Amy Clarke, Los Alamos National Laboratory; Sudarsanam Suresh Babu, Ohio State Univ; Rajarshi Banerjee, Univ of North Texas; John Morral, Ohio State Univ; Brian Gleeson, University of Pittsburgh; Carelyn Campbell, National Institute of Standards & Tech; Yongho Sohn, Univ of Central Florida; Yunzhi Wang, Ohio State University

Wednesday PM
March 6, 2013
Room: 204B
Location: Henry B. Gonzalez Convention Center

Session Chairs: Brian Gleeson, University of Pittsburgh; John Morral, The Ohio State University

2:00 PM Invited
Evolution of Scale and Subsurface Alloy Microstructures During Oxidation of Chromia-Forming Alloys in CO2: *David Young*[1]; Thomas Gheno[1]; Daniel Monceau[2]; [1]University of New South Wales; [2]ENSIACET

2:30 PM
Environmental and Compositional Factors Affecting the Establishment of a Stable Alumina Scale: *Xu Liu*[1]; Brian Gleeson[1]; [1]University of Pittsburgh

2:50 PM
Comparison of the High-Temperature Oxidation Behavior of Subsolvus and Supersolvus Treated Advanced Powder Metallurgy Disk Alloys: *Chantal Sudbrack*[1]; Jonathan Yu[2]; Timothy Gorman[3]; Tim Gabb[1]; David Hull[1]; [1]NASA Glenn Research Center; [2]Stanford University; [3]University of Dayton

3:10 PM
Investigation of Oxygen Contents in Various Phases in Gamma-TiAl by Laser-Pulsed Atom Probe Tomograph: *Gopal Das*[1]; Michael Miller[2]; [1]P&W; [2]Oak Ridge National Laboratory

3:30 PM Break

3:50 PM Invited
Internal Oxidation – from Wagner to Interdiffusion Genome: *John Agren*[1]; [1]Royal Institute of Technology

4:20 PM
Phase Field Modeling of Metal Oxidation Kinetics and Its Microstructure Dependence: *Tian-Le Cheng*[1]; Youhai Wen[1]; [1]National Energy Technology Laboratory

4:40 PM
Phase Field Modeling of Tetragonal to Monoclinic Phase Transformation at Zirconium Oxide: Mahmood Mamivand[1]; *Mohsen Asle Zaeem*[2]; Haitham El Kadiri[1]; [1]Mississippi State University; [2]Missouri University of Science and Technology

5:00 PM
Phase Transformations in the Sub-Oxide Layer during the Oxidation of Beta-21s Beta Titanium Alloy: *Amit Behera*[1]; Kristopher Mahdak[1]; Hamidreza Mohseni[1]; Soumya Nag[1]; Jaimie Tiley[2]; Rajarshi Banerjee[1]; [1]University of North Texas; [2]Air Force Research Laboratory

5:20 PM
Phase Evolution Characterization of a Multi-Component Oxide Welding Slag and Its Effect on Weld Properties: *Badri Narayanan*[1]; Amir Avishai[2]; [1]The Lincoln Electric Company; [2]Case Western Reserve University

Physical and Mechanical Metallurgy of Shape Memory Alloys: Multiscale Modeling and Applications

Sponsored by: TMS/ASM: Phase Transformations Committee
Program Organizers: Haluk Karaca, University of Kentucky; Ibrahim Karaman, Texas A&M University; Othmane Benafan, NASA Glenn Research Center; Ryosuke Kainuma, Tohoku University; Hans Jurgen Maier, Univ of Paderborn

Wednesday PM
March 6, 2013
Room: Lone Star Salon B
Location: Grand Hyatt

Session Chairs: Yunzhi Wang, The Ohio State University; Darren Hartl, Texas A&M University

2:00 PM
Simulation of Twinning and Slip in Shape Memory Allloys: *Huseyin Sehitoglu*[1]; Jifeng Wang[1]; Tawhid Ezaz[1]; Hans Maier[2]; [1]University of Illinois; [2]University of Paderborn

2:30 PM
Phase Field Modeling of Domain Structures and Properties of Doped Ferroelastic Systems: Dong Wang[1]; Xiaobing Ren[2]; *Yunzhi Wang*[3]; [1]Xi'an Jiaotong University; [2]National Institute for Materials Science; [3]The Ohio State University

3:00 PM
Modeling Shape Memory Alloy Single Crystalline Responses Using an Anisotropic Yield Surface: *Darren Hartl*[1]; Bjoern Kiefer[2]; Andreas Menzel[2]; [1]Texas A&M University; [2]Technical University Dortmund

3:20 PM
A Finite Element/Phase Field Approach to Study Martensitic Phase Transformations in Shape Memory Alloys: *Harshad Paranjape*[1]; Sivom Manchiraju[1]; Yipeng Gao[1]; Yunzhi Wang[1]; Peter Anderson[1]; [1]The Ohio State University

3:40 PM Break

4:00 PM
The Effect of Ternary Additions and Their Content on the Properties of NiTi Alloys: *Navdeep Singh*[1]; Thien Duong[1]; Sean Gibbons[1]; Anchalee Junkaew[1]; Anjana Talapatra[1]; Shengyen Li[1]; Hassan Thawabi[1]; Raymundo Arróyave[1]; [1]Texas A&M University

4:20 PM
Characterization and Modeling of Trained Nitinol Torsional Actuators under Reverse Bias Loads: James Mabe[1]; Brian Fisher[1]; *Darren Hartl*[2]; [1]The Boeing Company; [2]Texas A&M University

4:40 PM
The Superelastic Behavior of Ti-Ni Superelastic Wire Rope: *Kazuhiro Kitamura*[1]; Yusuke Oda[1]; Yukiharu Yoshimi[2]; [1]Aichi University of Education; [2]Yoshimi Inc.

5:00 PM
Copper Based Shape Memory Alloy a Modern Opportunity to Change Classic Casting Dental Alloys: Irena Gurau[1]; Gheorghe Gurau[2]; Carmela Gurau[2]; [1]University of Medicine and Pharmacy "Carol Davila" Bucharest, Romania; [2]Dunarea de Jos University of Galati, Romania

5:20 PM
Fabricating Tubes of Ni-Mn-Ga Magnetic Shape Memory Alloys by Interdiffusion of Mn and Ga into Ni Tubing: Bin Yuan[1]; Paul Lindquist[2]; *Peiqi Zheng*[3]; Peter Müllner[2]; David Dunand[3]; [1]South China University of Technology; [2]Boise State University; [3]Northwestern University

REWAS 2013: Enabling Materials Resource Sustainability: Enabling Sustainability through Education and Consumer Awareness

Sponsored by: Chinese Society for Metals, The Mining and Materials Processing Institute of Japan (MMIJ), TMS Extraction and Processing Division, TMS: Recycling and Environmental Technologies Committee
Program Organizers: Christina Meskers, Umicore Precious Metals Refining; Anne Kvithyld, SINTEF; Markus Reuter, Outotec Oyj; Randolph Kirchain, Massachusetts Institute of Technology; Mark Schlesinger, Missouri University of Science and Technology; Gregory Krumdick, Argonne National Laboratory; Cong Wang, Saint-Gobain High Performance Materials; Gabrielle Gaustad, Rochester Institute of Technology; Diana A. Lados, Worcester Polytechnic Institute; Brajendra Mishra, Colorado School of Mines; Jeffrey S. Spangenberger, Argonne National Laboratory

Wednesday PM
March 6, 2013

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

Funding support provided by: Xstrata; SINTEF; Outotec; Umicore, and CR3, the Center for Resource Recovery and Recycling

Session Chairs: Cong Wang, Saint-Gobain High Performance Materials; Brajendra Mishra, Colorado School of Mines

2:00 PM Introductory Comments

2:05 PM Invited
Embedding Sustainable Development into Research – Vision of Umicore: *Maurits Van Camp*; Karolien Vasseur; Mieke Campforts; Christina Meskers[1]; [1]Umicore Precious Metals Refining

2:30 PM Invited
The Sustainable Inorganic Materials Management (SIM2) Consortium at KU Leuven: *Bart Blanpain*[1]; [1]KU Leuven

2:55 PM Invited
Having Productive Conversations About Sustainability: Pitfalls and Pathways: *Jason Jay*[1]; [1]MIT Sloan Initiative for Sustainable Business and Society

3:20 PM Break

3:40 PM Invited
Resource Efficient Metal and Material Recycling: *Markus Reuter*[1]; Antoinette van Schaik; [1]Outotec Oyj

4:05 PM Invited
Education, Materials, Sustainability: Joining the Dots: *Philippe Radlovic*[1]; [1]Granta Design Ltd.

4:30 PM Invited
Toward a Closed-Loop Society: Ideas, Education, and Consumer Awareness: *Shinichiro Nakamura*[1]; [1]Waseda University

Solar Cell Silicon: Slag-based Refining of Silicon and Solar Cell Advances

Sponsored by: TMS Extraction and Processing Division, TMS Light Metals Division, TMS: Energy Conversion and Storage Committee, TMS: Recycling and Environmental Technologies Committee
Program Organizers: Gabriella Tranell, Norwegian University of Science and Technology; Arjan Ciftja, SINTEF; Shadia Ikhmayies, Al Isra University; Yulia Meteleva-Fischer, Materials innovation institute (M2i) / Delft University of Technology

Wednesday PM
March 6, 2013

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

Session Chairs: Arjan Ciftja, SINTEF; Shadia Ikhmayies, Al Isra University

2:00 PM
Thermodynamic Calculations for the Removal of B from Liquid Si Using Molten Slag: *In-Ho Jung*[1]; Yumin Zhang[1]; [1]McGill University

2:20 PM
Reductive Removal of Phosphorus in Silicon Using CaO-CaF2 Slag: *Hiroaki Kawamura*[1]; Yutaka Yanaba[1]; Takeshi Yoshikawa[1]; Kazuki Morita[1]; [1]Institute of Industrial Science, The University of Tokyo

2:40 PM
Boron and Phosphors Distribution Equilibria among the Molten Si, Slag and Metal Phases: *Kai Tang*[1]; Egil Krystad[2]; Gabriella Tranell[2]; Merete Tangstad[2]; [1]SINTEF Materials and Chemistry; [2]Norwegian University of Science and Technology

3:00 PM
Distribution of Boron between Silicon and CaO-MgO-SiO_2 Slags: *Lars Klemet Jakobsson*[1]; Merete Tangstad[1]; [1]NTNU

3:20 PM
The Kinetics of boron removal from silicon by oxidative slag refining in the SiO_2-CaO slag system: *Egil Krystad*[1]; Gabriella Tranell[1]; [1]NTNU

3:40 PM Break

4:00 PM
Progress in Developing an Automated Repairing System for Solar Cells by Laser Enabled Silicon Post-Processing: *Joerg Schmauder*[1]; Radovan Kopecek[1]; Radim Barinka[2]; Pavlina Barinkova[2]; Axier Bollar[3]; Dimitris Koumanakos[4]; Nerea Otero[5]; Pablo Romero[5]; [1]ISC Konstanz; [2]Solartec s.r.o.; [3]Ingenieria y Soluciones en Energias Alternativas S.L.; [4]G. Zarlas – D. Koumanakos O.E.; [5]AIMEN Technology Centre

4:20 PM
Potential of Silicon Solar Cells from Metallurgical Process Route: *Pirmin Preis*[1]; Kristian Peter[1]; Erik Enebakk[2]; Anne-Karin Soiland[2]; [1]ISC Konstanz e.V.; [2]Elkem Solar AS

4:40 PM
Segregation of Impurities in Silicon for Solar Cells: *Marisa Di Sabatino*[1]; Antoine Autruffe[1]; Chiara Modanese[1]; Lars Arnberg[1]; [1]NTNU

5:00 PM
Stress and Fracture of Silicon Solar Cells as Revealed by Synchrotron X-Ray Microdiffraction: *Arief Budiman*[1]; Arief Budiman[1]; Alexander Caldwell[1]; C. Bonelli[2]; M. Kunz[3]; N. Tamura[3]; D. Verstraeten[2]; [1]SunPower Corporation; [2]TOTAL Gas & Power; [3]Advanced Light Source (ALS)

5:20 PM
Antireflective Silicon Nanostructures Fabricated by Cheap Chemical Etchant and Coated by Atomic Layer Deposited Al2O3 Layer: *Zhihao Yue*[1]; Honglie Shen[1]; [1]Nanjing University of Aeronautics and Astronautics

5:40 PM
Scale Length Effect on the Fracture Strength of Silicon Wafers: *Tania Vodenitcharova*[1]; Oscar Borrero-López[1]; Mark Hoffman[1]; [1]The University of New South Wales

Symposium on High Entropy Alloys: Modeling and Other

*Sponsored by:*TMS Structural Materials Division, TMS/ASM: Mechanical Behavior of Materials Committee, TMS: Alloy Phases Committee
Program Organizers: Peter Liaw, The University of Tennessee; Gongyao Wang, University of Tennessee; M. Gao, National Energy Technology Laboratory ; S. Mathaudhu , U.S. Army Research Office

Wednesday PM
March 6, 2013
Room: 203B
Location: Henry B. Gonzalez Convention Center

Session Chairs: Takeshi Egami, The University of Tennessee; Michael Gao, National Energy Technology Lab

2:00 PM Invited
Properties of High-Entropy Alloys under Irradiation: *Takeshi Egami*[1]; [1]University of Tennessee

2:25 PM Invited
Preparation and Simulation of FCC High Entropy Alloys: *Douglas Irving*[1]; Carl Koch[1]; Changning Niu[1]; Alexander Zaddach[1]; [1]North Carolina State University

2:50 PM
Ordering Behavior in the Al(x)CoCrCuFeNi High-Entropy Alloys: *Louis Santodonato*[1]; Yang Zhang[2]; Michael Gao[3]; Chad Parish[2]; Mikhail Feygenson[2]; Zhi Tang[4]; Joerg Neuefeind[2]; Richard Weber[5]; Peter Liaw[4]; [1]ORNL and UT; [2]Oak Ridge National Laboratory; [3]National Energy Technology Laboratory; [4]The University of Tennessee; [5]Materials Development Inc.

3:05 PM Invited
Atomistic Simulation of High-Entropy Alloys: *Yongqiang Cheng*[1]; [1]Oak Ridge National Lab

3:30 PM Break

3:45 PM Invited
Computational Thermodynamics Aided High-Entropy Alloy Design: *Chuan Zhang*[1]; Fan Zhang[1]; Shuanglin Chen[1]; Weisheng Cao[1]; Jun Zhu[1]; Zhi Tang[2]; Peter Liaw[2]; [1]CompuTherm LLC; [2]University of Tennessee

4:10 PM
Comparative Studies of the Ground State Properties for $Nb_{25}Mo_{25}Ta_{25}W_{25}$ and $V_{20}Nb_{20}Mo_{20}Ta_{20}W_{20}$ Alloys: *Oleg Starovoytov*[1]; Michael Gao[2]; Shengmin Guo[3]; Ebrahim Khosravi[1]; Jialin Lei[1]; Liuxi Tan[1]; Shizhong Yang[1]; [1]Southern University and A&M College; [2]National Energy Technology Laboratory; [3]Louisiana State University

4:25 PM Invited
Statistical Fatigue-Life Modeling for High-Entropy Alloys: *Tao Yuan*[1]; Michael Hemphill[2]; Zhi Tang[2]; Gongyao Wang[2]; Andrew Chuang[2]; CheWei Tsai[3]; Jien-Wei Yeh[3]; Peter Liaw[2]; [1]Ohio University; [2]The University of Tennessee, Knoxville; [3]National Tsing Hua University

4:50 PM Invited
Oxidation Behavior of TaNbHfZrTi Alloy: A First Principles Simulation Study: *Shizhong Yang*[1]; Michael Gao[2]; Shengmin Guo[3]; [1]Southern University and A&M College; [2]National Energy Technology Laboratory; [3]Louisiana State University

Ultrasonic Welding II: Ultrasonic Welding: Design Principles and Light Metal Joints

*Sponsored by:*TMS Light Metals Division, TMS Structural Materials Division, TMS: Advanced Characterization, Testing, and Simulation Committee, TMS: Materials Characterization Committee, TMS: Young Leaders Committee, ASM-MSCTS: Materials and Processing Committee, METSOC-CIM: Metal Processing and Fabrication Committee
Program Organizer: Frank Balle, University of Kaiserslautern

Wednesday PM
March 6, 2013
Room: 006D
Location: Henry B. Gonzalez Convention Center

Session Chairs: Guntram Wagner, University of Kaiserslautern, Institute of Materials Science and Engineering ; Frank Balle, University of Kaiserslautern, Institute of Materials Science and Engineering and State Research Focus Advanced Materials Engineering (AME)

2:00 PM Introductory Comments

2:15 PM
A Design Procedure for Sonotrodes Based on Dynamic Finite Elements and Laser Triangulation Measurements: Massimiliano Annoni[1]; *Michele Carboni*[1]; [1]Politecnico di Milano

2:35 PM
Fatigue Behavior of Dissimilar Ultrasonic Spot Welds in Lap-Shear Specimens of Magnesium and Steel Sheets with Adhesive: *William Lai*[1]; Jwo Pan[1]; Tsung-Yu Pan[2]; Zhili Feng[2]; Michael Santella[2]; [1]University of Michigan; [2]Oak Ridge National Laboratory

2:55 PM
Temperature Distribution in Ultrasonic Spot Welding of Al/Al and Al/Mg Sheets Via Infrared Thermography Method: *Yansong Zhang*[1]; [1]School of Mechanical Engineering,Shanghai Jiao Tong University

3:15 PM Break

3:45 PM
Ultrasonic Torsion Welding of Light Metals – Process Monitoring and Property Analysis: Jens Magin[1]; *Frank Balle*[1]; [1]Institute of Materials Science and Engineering, University of Kaiserslautern (Germany)

4:05 PM Invited
Microstructural Investigation of Aluminum and Titanium Welds after Ultrasonic Torsion Welding: *Kinga Unocic*[1]; Frank Balle[2]; [1]ORNL; [2]Institute of Materials Science and Engineering, University of Kaiserslautern, Germany

4:25 PM
Microstructure and Mechanical Properties of Ultrasonic Spot Welded Aluminum Alloy to High Strength Low Alloy Steel: *Vikas Patel*[1]; Sanjeev Bhole[1]; Daolun Chen[1]; [1]Ryerson University

4:45 PM
An Analysis of the Tensile-Shear Fatigue Behavior of Lap-Joints Obtained by Ultrasonic Spot Welding and Ultrasonic Spot Welding Plus Adhesive Bonding: *Michele Carboni*[1]; [1]Politecnico di Milano

2013 Functional Nanomaterials: Synthesis, Properties and Applications: Structural Nanomaterials I

*Sponsored by:*TMS Electronic, Magnetic, and Photonic Materials Division, TMS: Nanomaterials Committee
Program Organizers: Seong Jin Koh, University of Texas at Arlington; Nitin Chopra, University of Alabama; Jiyoung Kim, University of Texas at Dallas; Yuanbing Mao, University of Texas-Pan American; Ashwin Ramasubramaniam, University of Massachusetts; Gregory Thompson, University of Alabama

Thursday AM
March 7, 2013
Room: 201
Location: Henry B. Gonzalez Convention Center

Funding support provided by: Qualcomm, Inc.

Session Chairs: Nitin Chopra, The University of Alabama; Yongho Sohn, University of Central Florida

8:30 AM Introductory Comments Best Graduate Student Paper Award Ceremony

8:45 AM Invited
Bulk Nanostructured Metals with Multifunctional Properties: *Ruslan Valiev*[1]; Ilchat Sabirov[2]; Alexander Zhilyaev[3]; Terence Langdon[4]; [1]Ufa State Aviation Technical University; [2]IMDEA Materials Institute; [3]Institute for Metals Superplasticity Problems, Russian Academy of Science; [4]University of Southampton

9:20 AM Invited
Nano-Scale Grain Size Effects Observed on Aluminum Metal Matrix Composites: Strengthening, Stability and Growth: *Yongho Sohn*[1]; Bo Yao[1]; Clara Hofmeister[1]; Catherine Kammerer[1]; Bhaskar Maumdar[2]; Anit Giri[3]; Kyu Cho[3]; [1]University of Central Florida; [2]New Mexico Institute of Mining and Technology; [3]U.S. Army Research Laboratory

9:55 AM Break

10:15 AM Break
Structural Ordering in Fe-Au Nanoclusters: *Pinaki Mukherjee*[1]; Matthew Kramer[2]; Jeffrey Shield[1]; [1]University of Nebraska- Lincoln and Nebraska Center for Materials and Nanoscience; [2]Ames Laboratory and Iowa State University

10:35 AM
Bulk Nanostructured Cu and Cu-based Alloys: Production, Characterization, Mechanical Properties and Deformation Behavior: *Mohsen Samadi Khoshkhoo*[1]; Sergio Scudino[2]; Hamed Bahmanpour[3]; Alexander Kauffmann[2]; Jens Freudenberger[2]; Michael Zehetbauer[4]; Ronald Scattergood[5]; Carl Koch[5]; Jürgen Eckert[2]; [1]Leibniz Institute for Solid State and Materials Research (IFW); [2]Leibniz Institute for Solid State and Materials Research (IFW); [3]University of California Davis; [4]University of Vienna; [5]North Carolina State University

10:55 AM
Nanocrystalline Diamond (NCD) Coatings on High Speed Steel and WC-Co Tools for Metal Forming Applications: *Somaiah Gowthama*[1]; Maneesh Chandran[1]; S S Bhattacharya[1]; M S Ramachandra Rao[1]; P Shanmugam[2]; R Natarajan[2]; [1]Indian Institute of Technology Madras; [2]Tube Investments of India limited, Chennai

11:15 AM
Deformation Behavior of a New Aluminum Alloy Matrix Base Nanocomposite: Rabindra Mahapatra[1]; *Horst Adams*[2]; [1]Naval Air Systems Command; [2]Adamco, Inc.

11:35 AM
Applying Precession Electron Diffraction (PED) to Nano-Twin Copper: *Subhasis Sinha*[1]; Matthew Kramer[2]; Anthony Rollett[1]; [1]Carnegie Mellon University; [2]Ames Laboratory, Iowa State University

11:55 AM
Effect of Carbon Nanotube Reinforcement on the Phase Transformation of Zirconia: *Neelima Mahato*[1]; Pratyasha Mohapatra[2]; Siddharth Rawat[1]; Kantesh Balani[1]; [1]Indian Institute of Technology; [2]National Institute of Technology

4th International Symposium on High-Temperature Metallurgical Processing: Sintering and Pelletization

*Sponsored by:*TMS Extraction and Processing Division, TMS: Energy Committee, TMS: Materials Characterization Committee, TMS: Pyrometallurgy Committee
Program Organizers: Tao Jiang, Central South University; Jiann-Yang Hwang, Michigan Technological University; Phillip Mackey, Consultant; Onuralp Yücel, ITU; Guifeng Zhou, Wuhan Iron and Steel

Thursday AM
March 7, 2013
Room: 008A
Location: Henry B. Gonzalez Convention Center

Session Chairs: Guanghui Li, Central South University; Xuewei Lv, Chongqing university

8:30 AM
Production of Crude Ferronickel from Sivrihisar Laterite Ores of Turkey: *Ender Keskinkilic*[1]; Saeid Pournaderi[2]; Ahmet Geveci[2]; Yavuz A. Topkaya[2]; [1]Atilim University; [2]Middle East Technical University

8:50 AM
Sintering Process of Phosphorite from Leshan,China: Enguang Guo[1]; Donghai Li[1]; Cheng Pan[1]; Mei Liu[1]; *Xuewei Lv*[1]; [1]Chongqing University

9:05 AM
Comprehensive Effect of Coke Breeze and Limestone Particle Size on Sinter Performance in Sintering of a Coarse Hematite Iron Ore: Wang Zhe[1]; Zhang Jianliang[1]; Xing Xiangdong[1]; Ren Shan[1]; Gao Bing[1]; Zhang Xueqi[2]; [1]University of Science and Technology of Beijing; [2]Tianjin Iron and Steel Group Co., LTD

9:20 AM
Mechanisms of Iron and Slag Separation in Carbon Composite Iron Ore Pellets at Lower Temperature: Hongliang Han[1]; *Dongping Duan*[1]; Xing Wang[1]; Yunshu Guo[1]; [1]Institute of Process Engineering, Chinese Academy of Sciences

9:35 AM
Effect of the Raw Material Characteristic of Iron Concentrates on Ballability: *Jian Pan*[1]; Shouyan Yue[1]; Deqing ZHU[1]; Zheng He[1]; [1]Central South University

9:50 AM
Study on Improving the Strength of Copper Concentrate Pellets by Adding Binders: *Xiaohui Fan*[1]; Shan He[1]; Lin Zhang[2]; Yanbin Tang[2]; Guohua Bai[1]; Xuling Chen[1]; Min Gan[1]; [1]Central South University; [2]Daye Nonferrous

10:05 AM Break

10:15 AM
Sintering Process of Chromite Concentrate: Pan Chen[1]; Donghai Li[1]; Cheng Pan[1]; Mei Liu[1]; *Xuewei Lv*[1]; [1]Chongqing University

10:30 AM
Research on Strengthening Consolidation of Magnesium Bearing Hematite Pellets: Lishun Yuan[1]; *Xiaohui FAN*[1]; Min GAN[1]; Guiming Yang[1]; Xiaoxian Huang[1]; Zhi-yun Ji[1]; Zhi-yuan Yu[1]; [1]Central South University

10:50 AM
Study on the Improvements of Reduction Swellability and Low Temperature Reduction Disintegration of Vanadium-Titanium Magnetite Oxidized Pellets: Yufeng Guo[1]; Jianfeng Zhou[1]; Tao Jiang[1]; Feng Chen[1]; *Xiaolei Song*[1]; Minjun Tang[1]; Linjiang Qing[1]; [1]Central South University

11:10 AM
The New On-line Detecting Method of Sintering Mix and Its Basic Research: *Yang Yong-bin*[1]; Tan Qi-bing[1]; Li Qian[1]; Jiang tao[1]; Li Kai[1]; Zhu Yuan-yuan[1]; [1]Central South University

11:30 AM
Optimizing the Sintering Process of Low-Grade Ferromanganese Ores: *Yuanbo Zhang*[1]; Wei Luo[1]; Zhixiong You[1]; Zijian Su[1]; Guanghui Li[1]; Tao Jiang[1]; [1]Central South University

11:45 AM
Study for Influence of Prereduction Degrees on the Softening and Melting Properties of Sintering Ore: *Rui Mao*[1]; [1]University of Science and Technology Beijing

12:00 PM
Mineralization Behavior of Iron Ore Sintering Process: Ying Li[1]; *Xiao-hui Fan*[2]; Xu-ling Chen[2]; [1]The Central South University ; [2]The Central South University

12:15 PM
Effects of Anthracite on Pelletization of Hematite Ore: Tao Jiang[1]; Zhaokun Tang[1]; Yuanbo Zhang[1]; Mingjun Rao[1]; *Guanghui Li*[1]; [1]School of Minerals Processing and Bioengineering, Central South University

4th International Symposium on High-Temperature Metallurgical Processing: Treatment of Solid Slag/Wastes and Complex Ores

Sponsored by: TMS Extraction and Processing Division, TMS: Energy Committee, TMS: Materials Characterization Committee, TMS: Pyrometallurgy Committee
Program Organizers: Tao Jiang, Central South University; Jiann-Yang Hwang, Michigan Technological University; Phillip Mackey, Consultant; Onuralp Yücel, ITU; Guifeng Zhou, Wuhan Iron and Steel

Thursday AM
March 7, 2013
Room: 008B
Location: Henry B. Gonzalez Convention Center

Session Chairs: Abdolkarim Danaei, Ryerson University; Hongxu Li, University of Science and Technology

8:30 AM
Developments of Processing Technologies for Refractory Gold Ores: *Lin Chen*[1]; Tianzu Yang[1]; Weifeng Liu[1]; Deyu Wang[1]; [1]Central South University

8:50 AM
Chloridizing Roasting-Smelting Reduction Methods Applied to Recovery Copper and Iron from Copper Slags: *Li Lei*[1]; Wang Hua[1]; [1]Kunming University of Science and Technology

9:05 AM
Study on Iron Recovery and Desulfurization of Pyrite Cinder: *Xiaohui Fan*[1]; Hongli Wen[1]; Qiong Deng[1]; Min Gan[1]; Guangkun Shen[1]; Shoujian Huang[1]; [1]Central South University

9:25 AM
Effects of Lime Additions on the Sulphur Distribution between Red Mud Based Fluxes and Carbon Saturated Liquid Iron: *Abdolkarim Danaei*[1]; [1]Ryerson University

9:40 AM
Reaction Process of Coal Based Reduction of Siderite Ore: Jian Pan[1]; *Zixing Xue*[1]; Deqing Zhu[1]; Xianlin Zhou[1]; Yanhong Luo[1]; [1]Central South University

10:00 AM Break

10:10 AM
Research on Coal-Based Direct Reduction Enhancement of Vanadium Titanomagnetite: *Yi Xia*[1]; Tao Jiang[1]; Shaowu Yu[1]; Xiangxin Xue[1]; [1]Northeastern University

10:25 AM
Enhanced Reduction of CaF2 and NaF on Vanadium Titano-Magnetite Carbon Composite Pellets: Xing Xiangdong[1]; Zhang Jianliang[1]; Wang Zhe[1]; Ren Shan[1]; Cao Mingming[1]; Liu Zhengjian[1]; Lu Mingchun[2]; [1]University of Science and Technology of Beijing; [2]Tianjin Iron & Steel Association

10:45 AM
Addition of Electric Arc Furnace Dust in Hot Metal at a Temperature of 1500 Degrees Celsius: *Vicente Sobrinho*[1]; Jose Oliveira[1]; Estefano Vieira[1]; Felipe Grill[2]; Victor Telles[2]; Jorge Tenorio[2]; Denise Espinosa[2]; [1]IFES; [2]USP

11:00 AM
An Investigation on Utilization of Ferrous Scrap by Cold-Bonded Pelletizing: *Xiaohui FAN*[1]; Lishun Yuan[1]; Min GAN[1]; Wei LV[1]; Yi WANG[1]; Xuling Chen[1]; [1]Central South University

11:20 AM
Research on the Lead Removal from Pyrite Cinder: Xuling Chen[1]; Guangkun Shen[1]; *Xiaohui Fan*[1]; Qiong Deng[1]; Hongli Wen[1]; Min Gan[1]; [1]Central South University

11:40 AM
The Directional Preparation of Colored Steel Slag Glass-ceramic: *Yanbing Zong*[1]; Wenbin Dai[1]; Jinbiao Bu[1]; [1]University of Science and Technology Beijing

11:55 AM
Removal of Potassium and Sodium in Sintering of Iron Ores: Zeqiang Xie[1]; *Tao Jiang*[2]; Qian Li[2]; [1]Kunming University of Science and Technology; [2]Central South University

Advanced Materials and Reservoir Engineering for Extreme Oil & Gas Environments: Advance Materials & Innovative Solutions for Oil and Gas II

Sponsored by: TMS Materials Processing and Manufacturing Division, TMS Structural Materials Division, TMS Electronic, Magnetic, and Photonic Materials Division, TMS: Nanomaterials Committee
Program Organizers: Indranil Roy, Schlumberger; Brajendra Mishra, Colorado School of Mines; Manuel Marya, Schlumberger Technology Corporation; Kuo-Chiang Chen, Schlumberger; Partha Ganguly, Schlumberger; Richard Lewis, Schlumberger; Suveen Mathaudhu, U.S. Army Research Office; Nitin Chopra, The University of Alabama; Xinghang Zhang, Texas A&M University; Greg Kusinski, Chevron; John Meng, BP America Inc.; Jefferson Rodrigues, Petrobras; Justin Cheney, Scoperta

Thursday AM
March 7, 2013
Room: Lone Star Salon A
Location: Grand Hyatt

Session Chairs: Justin Cheney, Scoperta; Tatiana Hernandez, Schlumberger

8:30 AM Introductory Comments Justin Cheney, CTO, Scoperta

8:35 AM
Effect of High Pressure-Temperature on Conventional and Unconventional Reservoirs: *Richard Lewis*[1]; [1]Schlumberger

9:05 AM
Phase Behavior and Corrosion Mechanisms of Reservoir Fluids Rich in Acid Gases at Extreme Conditions: *Craig Borman*[1]; [1]Schlumberger

9:25 AM
Mechanical Properties of a Cold Worked Nickel Alloy with Nano Dispersions: *Ed Hibner*[1]; Indranil Roy; Lee Pike; Virendra Singh; Manuel Marya; Xinghang Zhang; [1]National Specialty Alloys

9:45 AM
CERTIS High-integrity Reservoir Test Isolation System for HPHT Reservoirs: *Christian Wilkinson*[1]; Indranil Roy[1]; Stephane Hiron[1]; [1]Schlumberger

10:05 AM Break

10:20 AM
The Use of Thermal Spray Technology in Downhole Applications: *Justin Cheney*[1]; [1]Scoperta Inc

10:40 AM
Amorphous Coatings Produced by Spray Forming and Thermal Spray of Fe-Cr-Nb-B Glass Former Alloy: *Claudio Kiminami*[1]; Ana Melle[1]; Conrado Afonso[1]; Claudemiro Bolfarini[1]; Walter Botta[1]; [1]Federal University of S. Carlos

11:00 AM
Wear Resistance of Spray Formed Supermartensitic Stainless Steel Modified with Boron: Guilherme Zepon[1]; *Claudemiro Bolfarini*[1]; [1]Federal University of São Carlos

11:15 AM
Corrosion Resistance of Fe-based Amorphous and Nanocrystalline Alloys: *José Berger*[1]; [1]PPGCEM-UFSCar

11:30 AM
Thermodynamic Modeling Techniques for Use in Developing High Strength, High Hardness Nanocrystalline Steels: *Shengjun Zhang*[1]; [1]Scoperta Inc.

11:50 AM
Formation of Fe-Based Nanostructured Metallic Coatings by Spray Forming: *Claudemiro Bolfarini*[1]; Ana Branquinho[1]; Hugo Germano[1]; Claudio Kiminami[1]; Walter Botta[1]; [1]Universidade Federal de São Carlos

12:10 PM Panel Discussion

Advanced Materials for Power Electronics, Power Conditioning, and Power Conversion: Magnetic Materials for High Frequency Power Electronics

Sponsored by: TMS Electronic, Magnetic, and Photonic Materials Division, TMS: Energy Conversion and Storage Committee, TMS: Magnetic Materials Committee
Program Organizers: Paul Ohodnicki, National Energy Technology Laboratory; Clive Randall, Penn State University; Michael Lanagan, Penn State University; Michael McHenry, Carnegie Mellon University; Rachel Myers-Ward, Naval Research Laboratory

Thursday AM
March 7, 2013
Room: 007A
Location: Henry B. Gonzalez Convention Center

Session Chair: Michael McHenry, Carnegie Mellon University

8:30 AM Invited
Nanocomposite Magnetic Alloys for Power Applications: *Matthew Willard*[1]; Maria Daniil[2]; Keith Knipling[1]; [1]U.S. Naval Research Laboratory; [2]George Washington University

9:00 AM Invited
High frequency Inductor Materials: *Lajos Varga*[1]; [1]Wigner Research Center for Physics of Hung. Acad. Sciences

9:30 AM Break

9:50 AM Invited
Soft Magnetic Materials for High Power and High Frequency Power Electronics: *John Xiao*[1]; Yang Zhou[1]; Xiaoming Kou[1]; Hao Zhu[2]; [1]University of Delaware; [2]Spectrum Magnetics, LLC

10:20 AM
Synthesis, Structure, Property Correlations in FeCo-SiO2 Nanogranular Thin Films for High Frequency Inductor Applications: *Paul Ohodnicki*[1]; Vincent Sokalski[2]; Shen Shen[2]; [1]National Energy Technology Laboratory; [2]Carnegie Mellon University

10:40 AM Invited
Element-Specific Magnetic Structure of Nanocrystallized Ribbons: *Catherine Jenkins*[1]; Sam Kernion[2]; Vincent DeGeorge[2]; Michael McHenry[2]; [1]LBNL; [2]Carnegie Mellon University

11:10 AM
Soft Magnetic Alloy-Polymer Composite for High-frequency Power Electronics Application: *Jesus Calata*[1]; Guo-Quan Lu[1]; Khai Ngo[1]; [1]Virginia Tech

Alumina and Bauxite: Low Grade Alumina Sources

Sponsored by: TMS Light Metals Division, TMS: Aluminum Committee
Program Organizer: Pat Clement, Alcoa

Thursday AM
March 7, 2013

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

Session Chair: Jack Bender, BASF Corporation

8:30 AM Introductory Comments

8:40 AM
Innovative Technology for Alumina Production from Low-grade Raw Materials: *Andrey Panov*[1]; Alexander Senyuta[1]; [1]RUSAL Engineering & Technology Centre

9:00 AM
Improving Characterization of Low Grade Diasporic Bauxite to be Utilize in Jajarm Alumina Plant: *Mohammadtaghi Shadloo*[1]; Mohammad Zarbayani[2]; Esmaeil Jorjani[3]; Mojtaba Aram[4]; [1]Iran Alumina Co.; [2]General Mechanic Company; [3]Science & Research Branch, Islamic Azad University; [4]IMPRC

9:20 AM
The Processing of High Quartz Bauxite: Edgar Gasafi[1]; *Alessio Scarsella*[1]; Vladimir Hartmann[1]; Hans-Werner Schmidt; [1]Outotec GmbH

9:40 AM
Appropriate Reduction and Fe-Al Separation of High Iron Gibbsite: *Zhenggen Liu*[1]; Mansheng Chu[1]; Jue Tang[1]; Yuanting Han[1]; Xianglong Wu[1]; [1]Northeastern University

10:00 AM Break

10:15 AM
Influence of MgO and C/A and Cooling System on Alumina Leaching Property of Calcium Aluminate Slag: *Z. F. Tong*[1]; YingJie Li YingJie Li[2]; Tao Chen[2]; [1] Jiangxi University of Science and Technology; [2]Jiangxi University of Science and Technology

10:35 AM
Calcification-Carbonation Method for Alumina Production by Using Low-Grade Bauxite: *Zhang Ting'an*[1]; Zhu Xiaofeng[1]; Lv Guozhi[1]; Pan Lu[1]; Liu Yan[1]; Zhao Qiuyue[1]; Li Yan[1]; Dou Zhihe[1]; He Jicheng[1]; [1]Northeastern University

10:55 AM
Basic Research on Calcification Transformation Process of Low Grade Bauxite: *Zhu Xiaofeng*[1]; Zhang Ting'an[1]; Lv Guozhi[1]; Liu Yan[1]; Zhao Qiuyue[1]; Li Yan[1]; Dou Zhihe[1]; [1]Northeastern University

11:15 AM
Research on the Phase Transformation and Separation Performance in Calcification-carbonation Method for Alumina Production: *Lv Guozhi*[1]; Zhang Ting'an[1]; Zhu Xiaofeng[1]; Pan Lu[1]; Qin Mingxiao[1]; Liu Yan[1]; Zhao Qiuyue[1]; Dou Zhihe[1]; Li Yan[1]; [1]Northeastern University

11:35 AM Concluding Comments

Aluminum Alloys: Fabrication, Characterization and Applications: Emerging Technology

Sponsored by: TMS Light Metals Division, TMS: Aluminum Processing Committee
Program Organizers: Zhengdong Long, Kaiser Aluminum; Subodh Das, Phinix LLC; Tongguang Zhai, University of Kentucky; William Golumbfskie, Naval Surface Warfare Center

Thursday AM
March 7, 2013

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

Session Chair: Subodh Das, Phinix LLC

8:30 AM
Cold Spray for Repair of Naval Components: *Jennifer Wolk*[1]; Benjamin Bouffard[1]; Frederick Lancaster[2]; Caroline Scheck[1]; [1]Naval Surface Warfare Center; [2]Naval Air System Command

8:50 AM Invited
New Insights into the Solute-Nanostructures in Advanced Al Alloys: *Gang Sha*[1]; Simon Ringer[1]; [1]The University of Sydney

9:10 AM
Transient Microstructural Thermomechanical Fatigue and Deformation Characteristics under Superimposed Mechanical and Thermal Loading in AlSi Based Automotive Diesel Pistons: *Roman Morgenstern*[1]; Scott Kenningley[1]; [1]Federal-Mogul Nuremberg GmbH

9:30 AM
Characterization of Friction Stir Processed Al-Sc-Zr Alloys: *M. Vargas*[1]; G. Chermak[2]; K. Kandasamy[2]; P. Sanders[3]; J. Schultz[2]; A. Aning[1]; S. Kampe[3]; [1]Virginia Tech; [2]Aeroprobe Corporation; [3]Michigan Tech

9:50 AM
Mechanical Behaviour of Cold Formed Metal-Polymer Laminate and the Interaction of Its Layers: *Feidhlim Ó Dubhlaing*[1]; David Browne[1]; Robin Rennicks[2]; Connor Rennicks[2]; [1]University College Dublin; [2]Prodieco Pharmaceutical Components

10:10 AM
Mechanical Behavior of Aluminum Alloy Welds at Large Strains: Jennifer Hyde[1]; Moise Bruhuis[1]; Jidong Kang[2]; *Joseph McDermid*[1]; [1]McMaster University; [2]CANMET Materials

10:30 AM Break

10:50 AM
Effect of Intermediate Annealing on Microstructure and Properties of Roll-Bonded 4343/3xxx/4343 Aluminum Clad Sheets: *Kwangjun Euh*[1]; Hyoung-Wook Kim[1]; Su-Hyeon Kim[1]; Dong Bae Kim[1]; Eunji Baek[1]; Young-Mi Oh[1]; [1]Korea Institute of Materials Science

11:10 AM
Development of ECAP Conform for Fabrication of Ling-Sized Aluminum Rods with Ultrafine-Grained Structure: *Georgy Raab*[1]; Ruslan Valiev[1]; Elvira Gimaltdinova[1]; Viktor Frolov[2]; [1]Ufa State Aviation Technical University; [2]Russian Engineering Company RUSAL

11:30 AM
Mechanical and Tribological Properties of AA2124-Graphene Self Lubricating Nanocomposite: Ahmed El-Ghazaly[1]; Basamat Seif[1]; *Hanadi Salem*[1]; [1]American University in Cairo

11:50 AM
Joining Vacuum High Pressure Die Cast A356 under T4 Treatment to Wrought Alloy 6061: *Meng Wang*[1]; Henry Hu[1]; Yanda Zou[1]; Gary Meng[2]; Patrick Cheng[3]; Yeou-li Chu[3]; [1]University of Windosr; [2]AGS Agreatsun Welding Ltd; [3]Ryobi Die Casting (USA), Inc.

Aluminum Processing: ICME in Aluminum Processing

Sponsored by: TMS Light Metals Division, TMS: Aluminum Committee
Program Organizer: Kai Karhausen, Hydro Aluminium Rolled Products GmbH

Thursday AM
March 7, 2013

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

Session Chair: To Be Announced

8:30 AM Invited
ICME for Lightweighting of Automobile Body Structures and Closures: *Paul Krajewski*[1]; [1]TMS

9:10 AM Invited
Crucial Issues and Future Directions of Through-Process Modeling: *Günter Gottstein*[1]; [1]RWTH Aachen University

9:50 AM Invited
Application of Combined Model Approaches to the Simulation of Microstructure Evolution During Processing of Aluminium Alloys: *Alexis Miroux*[1]; M. Ghosh[2]; S. Kurukuri[3]; R. Dutta[1]; M. de Jong[4]; A. Bahrami[1]; A. van den Boogaard[5]; P.E.J. Rivera-Diaz-Del-Castillo[6]; M.H.F. Sluiter[4]; A.J. den Bakker[7]; [1]Materials Innovation Institute; [2]Bengal Engineering and Science University; [3]University of Waterloo; [4]Delft University of Technology; [5]University of Twente; [6]Metallurgy University of Cambridge; [7]Nedal Aluminium B.V.

10:10 AM Break

10:30 AM
Process Modelling of Extruded AA3xxx Aluminum Products: *Warren Poole*[1]; M Wells; Nick Parson; [1]The University of British Columbia

11:10 AM Invited
Through-Process Simulation of Microstructure and Texture and the Resultant Properties During the Thermo-mechanical Processing of Aluminium Sheet: *Olaf Engler*[1]; [1]Hydro Aluminium Rolled Products GmbH

11:30 AM Invited
Modelling the Evolution in Microchemistry and Microstructure during Thermo-mechanical Processing of Aluminium Alloys: *Knut Marthinsen*[1]; Bjørn Holmedal; Yanjun Li; Trond Furu; [1]Norweigian Univ of Science and Technology

11:50 AM Invited
Uncertainty Quantification in Through-process Modeling of Aluminum Strip Production: *Markus Bambach*[1]; Johannes Lohmar; S Heppner; Kai Karhausen; [1]RWTH Aachen Univ

Biological Materials Science Symposium: Molecular Biomimetics and Bioenabled Materials and Systems

Sponsored by: TMS Electronic, Magnetic, and Photonic Materials Division, TMS Structural Materials Division, TMS: Biomaterials Committee
Program Organizers: Candan Tamerler, University of Washington; Molly Gentleman, Texas A & M University; Po-Yu Chen, National Tsing Hua University; Kajal Mallick, University of Warwick; Rajendra Kumar Kasinath, Unversity of Montana; Paul G. Allison, US Army Corp of Engineers

Thursday AM
March 7, 2013

Room: 214C
Location: Henry B. Gonzalez Convention Center

Funding support provided by: Biomaterials Program, National Science Foundation

Session Chairs: Kalpana Katti, North Dakota State University; Rajendra Kasinath, Montana Tech

8:30 AM Invited
Materials Science and Engineering of Biomolecules on Surfaces: Tailoring the Self-Assembled Peptides on Graphite/Graphene: *Mehmet Sarikaya*[1]; [1]University of Washington

9:00 AM Invited
Modeling Protein-Surface and Protein-Nanoparticle Interactions by Atomistic Simulations: *Stefano Corni*[1]; [1]CNR Istituto Nanoscienze

9:30 AM Invited
Biomineralization of Hydroxyapatite in Nanoclay Galleries: A Modeling and Experimental Study: *Kalpana Katti*[1]; Avinash Ambre[1]; Anurag Sharma[1]; Dinesh Katti[1]; [1]North Dakota State University

10:00 AM Break

10:20 AM
On the Possibility of Modulating Bacteriophage Virulence Employing Iron Doped Hydroxyapatite Biomaterials: *Rajendra Kasinath*[1]; Casey McConnell[1]; Jovanka Voyich[2]; Marisa Pedulla[1]; [1]Montana Tech of the University of Montana; [2]Montana State University

10:40 AM Invited
Self-Assembled Peptide Nanostructures for Template Directed Synthesis of One-Dimensional Inorganic Systems: *Mustafa Guler*[1]; [1]Bilkent University

11:10 AM
Nanomechanical and Wear Behaviors of Remineralized Carious Human Enamel: *Hsiu-Ying Chung*[1]; Hsiu-Mei Lin[1]; [1]Feng Chia University

11:30 AM
Mimicking Biological Interfaces by Self Adhering Hybrid Nanostructures: Deniz Yucesoy[1]; Marketa Hnilova[1]; Mustafa Gungormus[1]; Mehmet Sarikaya[1]; *Candan Tamerler*[1]; [1]University of Washington

11:50 AM Invited
Exploring Nature's Strategies for Creating Functional Materials: *Rajesh Naik*[1]; [1]Air Force Research Laboratory

Biological Materials Science Symposium: Molecular, Cellular and Tissue Engineering

Sponsored by: TMS Electronic, Magnetic, and Photonic Materials Division, TMS Structural Materials Division, TMS: Biomaterials Committee

Program Organizers: Candan Tamerler, University of Washington; Molly Gentleman, Texas A & M University; Po-Yu Chen, National Tsing Hua University; Kajal Mallick, University of Warwick; Rajendra Kumar Kasinath, Unversity of Montana; Paul G. Allison, US Army Corp of Engineers

Thursday AM
March 7, 2013

Room: 215
Location: Henry B. Gonzalez Convention Center

Funding support provided by: Biomaterials Program, National Science Foundation

Session Chairs: Paul Calvert, UMass Dartmouth; Molly Gentleman, Stoony Brook

8:30 AM Keynote
Cranial Defects: Biomaterials and Tissue Engineering Approaches: *Erhan Piskin*[1]; [1]Hacettepe University

9:10 AM
PDGF-Loaded Aligned Collagen Fibers Promote the Proliferation of Adipose-Derived Stem Cells: *Xingguo Cheng*[1]; Christopher Tsao[1]; Douglas Cornet[2]; Victor Sylvia[2]; Robert Christy[3]; [1]Southwest Research Institute; [2]University of Texas Health Science Center at San Antonio; [3]U.S. Army Institute of Surgical Research

9:30 AM Invited
Biomimetic Hydroxyapatite Reinforced Collagen Scaffolds: Robert Kane[1]; Matthew Meagher[1]; Holly Weiss[1]; Yongxing Liu[1]; Joshua Gargac[1]; Glen Niebur[1]; Diane Wagner[1]; *Ryan Roeder*[1]; [1]University of Notre Dame

10:00 AM Break

10:10 AM Invited
Graphene on Cell Stem Growth & Differentiation: Wong Cheng Lee[1]; Candy Haley Y.X. Lim[1]; Hui Shi[1]; Lena A. L. Tang[1]; Yu Wang[1]; Kian Ping Loh[1]; *Chwee Teck Lim*[1]; [1]National University of Singapore

10:40 AM
Fabrication of a Nanobiomaterial from Renewable Resources as a Potential Scaffold in Vascular Tissue Engineering: *Parisa Pooyan*[1]; Rina Tannenbaum[2]; Hamid Garmestani[1]; [1]Georgia Institute of Technology; [2]Boston University

10:55 AM
Shape and Stability of Substrate-Free Cell Films Generated by Mechanical Strain: *Andreas Undisz*[1]; Erik Geuther[1]; Andrea Voelpel[1]; Bernd Sigusch[1]; Markus Rettenmayr[1]; [1]Friedrich-Schiller-University

11:15 AM Invited
Inkjet-Printed Gels for Tissue Engineering: *Paul Calvert*[1]; Skander Limem; David Kaplan; [1]University of Massachusetts Dartmouth

11:45 AM
Parametric Characterisation of Porous 3D Bioscaffolds Fabricated by Adaptive Foam Reticulation Technique: *James Winnett*[1]; Kajal Mallick[1]; [1]University of Warwick

12:00 PM
A Three Dimensional Anisotropic Finite-strain Damage Model of an Incompressible Quadriphasic Mixture: Application for Fibrous Soft Tissue: *Alireza Ostadhossein*[1]; Corina S. Drapaca[1]; [1]Pennsylvania State University

12:20 PM
Silk Fibroin Based Antibacterial Bionanotextile as Wound Dressing: Semih Çalamak[1]; Yeliz Tunç[1]; Ceren Özkul[1]; Meral Özalp[1]; *Kezban Ulubayram*[2]; [1]Hacettepe University Faculty of Pharmacy; [2]Hacettepe University Faculty of Pharmacy

Bulk Metallic Glasses X: Structures and Mechanical Properties IV

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

Program Organizers: Peter Liaw, The University of Tennessee; Hahn Choo, The University of Tennessee; Yanfei Gao, The University of Tennessee; Gongyao Wang, University of Tennessee

Thursday AM
March 7, 2013

Room: Bowie A
Location: Grand Hyatt

Funding support provided by: Materials Processing and Manufacturing Division, National Science Foundation

Session Chairs: Paul Voyles, University of Wisconsin, Madison; Yuri Petrusenko, National Science Center - Kharkov Institute of Physics & Technology

8:30 AM Invited
Mixed Icosahedral and Crystal-Like Short and Medium Range Structure in $Zr_{50}Cu_{45}Al_5$ Bulk Metallic Glass: *Paul Voyles*[1]; Francois Payen[1]; Nayomi Plaza[1]; Jinwoo Hwang[1]; Eren Kalay[2]; Matt Kramer[2]; [1]University of Wisconsin, Madison; [2]Ames Laboratory

8:50 AM Invited
Static Measurements for α- and β-relaxation below T_g in a $Zr_{55}Cu_{30}Ni_5Al_{10}$BMG: *Osami Haruyama*[1]; Kazuhiro Yoshikawa[1]; Hiroyuki Sawada[1]; Yoshihiko Yokoyama[2]; Kazumasa Sugiyama[2]; [1]Tokyo University of Science; [2]Tohoku University

9:10 AM Invited
Relaxation Phenomena in Bulk Metallic Glasses: From ß-Relaxations to Nano-Shear Bands: *Konrad Samwer*[1]; [1]University of Göttingen

9:30 AM
The Correlation between Shear Band/Microcrack Evolution and the Plasticity of a Ti-Based Bulk Metallic Glass Composite: *Wang Yongsheng*[1]; Hao Guojian[1]; Lin Junpin[1]; [1]University of Science and Technology Beijing (USTB)

9:45 AM Invited
Role of the Boundary Shear-Transformation Zones During Compression-Compression Fatigue Experiments: *Yuri Petrusenko*[1]; Alexander Bakai[2]; Sergij Bakai[2]; Peter Liaw[3]; Gongyao Wang[3]; Pei-Ling Sun[4]; [1]National Science Center - Kharkov Institute of Physics & Technology,; [2]National Science Center - Kharkov Institute of Physics & Technology; [3]The University of Tennessee; [4]Feng Chia University

10:05 AM Break

10:20 AM
Variability of Poisson's Ratio and Enhanced Ductility in Amorphous Metal: *Klaus-Dieter Liss*[1]; DongDong Qu[2]; Kun Yan[3]; Mark Reid[4]; Jun Shen[2]; [1]Australian Nuclear Science and Technology Organisation; [2]Harbin Institute of Technology; [3]Australian Nuclear Science and Technology Organisation and University of Wollongong; [4]University of Wollongong

10:35 AM Invited
Shear-Band Arrest during Inhomogeneous Flow of Bulk Metallic Glasses: *Robert Maass*[1]; Peter Derlet[2]; Jörg Löffler[1]; [1]ETH Zurich; [2]Paul Scherrer Institute

10:55 AM Invited
Size Matters: Fabrication and Deformation of Nano-Sized Metallic Glass Structures: *Dongchan Jang*[1]; David Chen[1]; Kelly Guan[1]; Julia Greer[1]; [1]California Institute of Technology

11:15 AM
Deformation Mode Transition by Structural Rejuvenation in Zr-Cu-Al Bulk Metallic Glass: *Koichi Tsuchiya*[1]; Fanqiang Meng[2]; Seiichiro Ii[1]; Yoshihiko Yokoyama[3]; Kei Ozaki[4]; Osami Haruyama[4]; [1]NIMS; [2]University of Tsukuba; [3]Tohoku University; [4]Tokyo University of Science

11:35 AM
Atomic Structural Evolution in Metallic Melts: Hongbo Lou[1]; *Xiaodong Wang*[1]; Qingping Cao[1]; Jianzhong Jiang[1]; [1]Zhejiang University

11:50 AM Invited
Shear Deformation Characteristic and Work Hardening of High Strength Amorphous and Nanocrystalline Ni-W Alloys: *Tohru Yamasaki*[1]; Kazutaka Fujita[2]; [1]University of Hyogo; [2]Ube National College of Technology

12:10 PM
Investigation of Porous Zr-Based Bulk Metallic Glass: You Junhua[1]; *WANG Houchun*[1]; [1]Shenyang University of Technology

Characterization of Minerals, Metals and Materials 2013: Characterization of Minerals

Sponsored by: TMS Extraction and Processing Division, TMS: Materials Characterization Committee
Program Organizers: Jiann-Yang Hwang, Michigan Technological University; Chen-Guang Bai, Chongqing University; John Carpenter, DOE LANL; Shadia Ikhmayies, Al Isra University; Bowen Li, Michigan technological University; Mingming Zhang, ArcelorMittal Global R&D; Sergio Monteiro, State University of North Rio de Janeiro; Zhiwei Peng, Michigan Technological University

Thursday AM
March 7, 2013

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

Session Chairs: Chenguang Bai, Chongqing University; Matthew Andriese, Michigan Technological University

8:30 AM
A Minimum Pollution, Low Energy Process for the Recovery of Cobalt and Copper from Complex Sulphide Minerals: *Yotamu Hara*[1]; [1]Leeds University

8:50 AM
Characteristics and Non-Isothermal Crystallization Kinetics of Spinels in Vanadium Slag Containing High Content of Chromium: Hai-Xing Fang[1]; *Hong-Yi Li*[1]; Tao Zhang[1]; Chao Liu[1]; Cui Li[1]; Bing Xie[1]; [1]Chongqing University

9:10 AM
Characterization and Dry High Intensity Magnetic Separation of Aswan Iron Ore: *M. Sadawy*[1]; A. Latif[1]; T. Taha[1]; A. Amer[1]; [1]Faculty of Engineering, Al-Azhar University, Cairo, Egypt

9:30 AM
Experiment Study on the Sintering Process Optimization of High Chromium Vanadium-Titanium Magnetite: *Yong Zhang*[1]; Jianxing Liu[1]; Gongjin Cheng[1]; Zhenggen Liu[1]; Mansheng Chu[1]; Xiangxin Xue[1]; [1]Northeastern University

9:50 AM
Influence of the Material Properties of Iron Ores on Granulation before Sintering: *Xiaobo Huang*[1]; Chenguang Bai[1]; Rende Zhang[1]; Maojun Zhou[2]; Xuewei Lv[1]; [1]College of Materials Science and Engineering,Chongqing University; [2]Ironmaking plant, Baoshan Iron & Steel Co., Ltd.

10:10 AM
Physicochemical Properties of Slags Generated during the Copper Converting Process: Huaiwei Zhang[1]; Xiaoyan Shi[1]; Fei Sun[1]; Xinlin Li[1]; Xin Hong[1]; [1]Shanghai University

10:30 AM
Pretreatment of Sulfur & Arsenic-Bearing Gold Concentrate by Double-layered Pellet Roasting Process: Jiang Tao[1]; li Xi-Shan[1]; Cui Li-na[1]; Ge Jie[1]; Li Qian[1]; *Yang Yong-bin*[1]; [1]Central South University

10:50 AM
Reduction Mechanisms of Copper, Cobalt and Iron during Low Temperature Recovery from Mineral Sulphide Concentrates: *Yotamu Hara*[1]; [1]Leeds University

11:10 AM
Microwave Dielectric Characterization of Silicon Dioxide: *Zhiwei Peng*[1]; Jiann-Yang Hwang[1]; Byoung-Gon Kim[2]; Matthew Andriese[1]; Xinli Wang[1]; [1]Michigan Technological University; [2]Korea Institute of Geoscience and Mineral Resources

11:30 AM
The Effect of Temperature on Dielectric Permitivity and Microwave Absorption Properties of Anthracite in Microwave Field: Chenhui Liu[1]; *Libo Zhang*[1]; [1]Key Laboratory of Unconventional Metallurgy, Kunming University of Science and Technology

11:50 AM
Recovery of High Grade SnO2 from Cassiterite Ore by Microwave Pretreatment, Leaching and Precipitation: *Gerald Onyedika*[1]; Martin Ogwuegbu[1]; [1]Federal University of Technology, Owerri

12:10 PM
Research on a Novel Technology of Interactive Roast of Complex Low-grade Bismuth Sulfide Ore and Pyrolusite: Chuan-fu Zhang[1]; Zhi-Jian Wang[1]; Chu-ping Xia[1]; *Jing Zhan*[1]; [1]Central South University

Characterization of Minerals, Metals and Materials 2013: Characterization of Soft Materials

Sponsored by: TMS Extraction and Processing Division, TMS: Materials Characterization Committee
Program Organizers: Jiann-Yang Hwang, Michigan Technological University; Chen-Guang Bai, Chongqing University; John Carpenter, DOE LANL; Shadia Ikhmayies, Al Isra University; Bowen Li, Michigan technological University; Mingming Zhang, ArcelorMittal Global R&D; Sergio Monteiro, State University of North Rio de Janeiro; Zhiwei Peng, Michigan Technological University

Thursday AM
March 7, 2013

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

Session Chairs: Gerald Onyedika, Federal University of Technology, Owerri; T.T. Chen, CANMET

8:30 AM
Comparison between HDPE/Clay and HDPE/Piassava Fiber/Clay Treated by Electron-Beam Radiation: *Angel Ortiz*[1]; Cordélia Mara Fazzio Escanhoela[1]; Michelle Gomes[1]; Rene Oliveira[1]; Francisco Díaz[2]; Esperidiana Moura[1]; [1]IPEN-CNEN/SP; [2]Metallurgical and Materials Engineering Department

8:50 AM
Evaluation of the Diameter Dependence on the Tensile Strength of Bagasse Fiber by the Weibull Statistics.: Amanda Luiza Martins[1]; Veronica Candido[1]; Raissa Gouvea[1]; *Sergio Monteiro*[2]; [1]Military Institute of Engineering; [2]State University of the Northern Rio de Janeiro - UENF

9:10 AM
Investigation on the Thermal Conductivity of Inorganic-Filler/Resin Composite: *Kenji Monden*[1]; [1]Denki Kagaku Kogyo K.K.

9:30 AM
Weibull Analysis of the Correlation between the Elastic Modulus and the Diameter of Sponge-Gourd Fibers: *Sergio Monteiro*[1]; Raissa Gouvea[2]; Veronica Candido[2]; Amanda Luiza Martins[2]; [1]Military Institute of Engineering ; [2]Military Institute of Engineering

9:50 AM
Weibull Analysis of the Elastic Modulus of Bamboo Fiber of the Specimen Dendrocalmus Giganteus: *Lucas Martins*[1]; Sergio Monteiro[2]; Frederico Margem[1]; Rômulo Loyola[1]; [1]UENF; [2]IME

10:10 AM
Characterization of Tensile Properties of Jute Fiber Reinforced Epoxy Composites: *Isabela Silva*[1]; Alice Bevitori[1]; Victor da Silva[1]; Frederico Margem[1]; Sergio Monteiro[2]; [1]UENF; [2]IME

10:30 AM
Composite Based on Poly(Vinyl Alcohol), Starch and Sugarcane Bagasse Ashes: Dirce Jacomo[1]; Jaciele Teixeira[2]; Valquíria Silva[2]; Rene Oliveira[2]; *Esperidiana Moura*[3]; Michelle Gomes[2]; Anibal Victor Abreu Castillo[4]; [1]CornProducts Brasil; [2]Instituto de Pesquisas Energeticas E Nucleares - IPEN-CNEN/SP; [3]Instituto de Pesquisas Energeticas E Nucleares - IPEN-CNEN/SP; [4]Laboratorio Tecnologia del Uruguay

10:50 AM
Incipient and Progressive Damage in High-Density Polyethylene under Extreme Tensile Conditions: *Eric Brown*[1]; Jevan Furmanski[1]; Carl Trujillo[1]; Daniel Martinez[1]; George Gray[1]; [1]Los Alamos National Laboratory

11:10 AM
Study Biodegradability, Physical, and Mechanical Properties of Thermoplastic Starch/ Polypropylene Blends: *Afsaneh Dorri Moghadam*[1]; Reza Bagheri[1]; [1]Sharif University of Technology, Iran

11:30 AM
Tensile Behavior of Epoxy Composites Reinforced with Continuous and Aligned Ramie Fibers: *Alice Bevitori*[1]; Isabela Silva[1]; Victor da Silva[1]; Frederico Margem[1]; Sergio Monteiro[2]; [1]UENF; [2]IME

11:50 AM
Tensile Strength of Epoxi Matrix Composites Reinforced with Giant Bamboo Fibers (Dendrocalmus Giganteus): *Lucas Martins*[1]; Sergio Monteiro[2]; Frederico Margem[1]; Rômulo Loyola[1]; [1]UENF; [2]IME

Computational Thermodynamics and Kinetics: Phase Diagrams

Sponsored by: TMS Electronic, Magnetic, and Photonic Materials Division, TMS Materials Processing and Manufacturing Division, TMS: Alloy Phases Committee, TMS: Chemistry and Physics of Materials Committee, TMS/ASM: Computational Materials Science and Engineering Committee, TMS: Integrated Computational Materials Engineering Committee, TMS/ASM: Phase Transformations Committee, TMS: Process Technology and Modeling Committee
Program Organizers: Jörg Neugebauer, Max-Planck-Institut für Eisenforschung GmbH; Carelyn Campbell, NIST; Dongwon Shin, Oakridge National Lab; Zi Kui Liu, Penn State; Michael Demkowicz, Massachusetts Institute of Technology; Raymundo Arroyave, Texas A & M University; Shenyang Hu, Pacific Northwest National Laboratory

Thursday AM
March 7, 2013

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

Session Chairs: Bo Sundman, INSTN, CEA; Zi-Kui Liu, Penn State

8:30 AM Invited
The Open Calphad Initiative: *Bo Sundman*[1]; Ursula Kattner[2]; Mauro Palumbo[3]; Suzana Fries[3]; [1]INSTN, CEA; [2]National Institute of Standards and Technology; [3]ICAMS, RUB

8:55 AM
A Tale of Two States and More: Modeling of New Generation of Lattice Stability from Zero Kelvin with Thermo-Calc 3.0: *Qing Chen*[1]; Wei Xiong[2]; Magnus Jansson[1]; Malin Selleby[2]; Anders Engström[1]; [1]Thermo-Calc Software AB; [2]KTH Royal Institute of Technology

9:10 AM
Low Temperature CALPHAD Based on the New Generation of Lattice Stabilities Down to Zero Kelvin: *Wei Xiong*[1]; Qing Chen[2]; Moshiour Rahaman[3]; Malin Selleby[3]; Andrei Ruban[3]; [1]University of Wisconsin - Madison; [2]Thermo-Calc Software AB; [3]KTH Royal Institute of Technology

9:25 AM
Thermodynamic Modeling of Laves-Phase Hardened Steels – The Fe-Cr-Nb-Si System: *Clemens Schmetterer*[1]; Aurelie Jacob[1]; Torsten Markus[1]; [1]Forchungszentrum Juelich

9:40 AM
Ab-Initio Calculations and Reassessment of U-Nb System: *Thien Duong*[1]; Alexander Landa[2]; Patrice Turchi[2]; Saurabh Bajaj[3]; Raymundo Arroyave[1]; [1]Texas A&M University; [2]Lawrence Livermore National Laboratory; [3]California Institute of Technology

9:55 AM Break

10:20 AM Invited
Thermodynamic Modeling of Oxy-Fluoride System Containing CaO-SiO_2-Al_2O_3-MgO-Na_2O-F System and Its Applications to Mould Flux Design in Steelmaking Process: *In-Ho Jung*[1]; Marie-Aline Van Ende[1]; [1]McGill University

10:45 AM
Calculation of the Phase Equilibria in Nb-Ni-Ti Ternary System: *Guangxiang Tan*[1]; Gui Na[1]; Ming Zhu[2]; Xionggang Lu[1]; Jieyu Zhang[1]; Guangxin Wu[1]; Chonghe Li[1]; [1]Shanghai University; [2]General Research Institute for Nonferrous Metals

11:00 AM
316Nb: Detailed Mechanisms of Sigma Phase Precipitation: Aurelien Perron[1]; *François Buy*[1]; Eric Suzon[1]; Xavier Ledoux[1]; Gwenaël Texier[1]; Joseph Farré[1]; François Cortial[2]; Philippe Petit[3]; [1]CEA; [2]DCNS Research - CESMAN; [3]Aubert & Duval

Cost Affordable Titanium IV: Processing: Property Relationship

*Sponsored by:*TMS Structural Materials Division, TMS: Titanium Committee
Program Organizers: M. Ashraf Imam, Naval Research Lab; Sam Froes, University of Idaho (Retired); Ramana Reddy , The University of Alabama

Thursday AM
March 7, 2013
Room: 217C
Location: Henry B. Gonzalez Convention Center

Session Chairs: K. S. Ravi Chandran, University of Utah; Rohit Bhagat, Warwick University

8:30 AM
The Initial Development of Next Generation, Military Grade Titanium Alloys for Armor Applications: *Tyrone Jones*[1]; Katsuyoshi Kondoh[2]; [1]U.S. Army Research Laboratory; [2]Osaka University

8:50 AM Invited
Beta Gamma Fine Fully Lamellar Materials: Breaking Ductility and Use Temperature Barriers: *Young-Won Kim*[1]; Sang-Lan Kim[2]; Christopher Woodward[3]; [1]Gamteck; [2]UES; [3]AFRL

9:10 AM Invited
Electromagnetic Cold Crucible Technology for the Production of Large γ-TiAl Alloy Ingots with Directional Growth Structures: *Hongsheng Ding*[1]; Ge Nie[1]; Yongzhe Wang[1]; Ruirun Chen[1]; Jingjie Guo[1]; Hengzhi Fu[1]; [1]Harbin Institute of Technology

9:30 AM
The Potential for Discontinuously Reinforced Ti-TiBw Metal Matrix Composites in High Performance Structural Applications: *K. S. Ravi Chandran*[1]; [1]University of Utah

9:50 AM Break

10:10 AM
Economic Surface Treatment of Ti-Alloys to Improve Their Resistance Against Environmental High Temperature Attack: *Alexander Donchev*[1]; Michael Schütze[1]; Rossen Yankov[2]; Andreas Kolitsch[2]; [1]DFI; [2]HZDR

10:30 AM
Mechanical Property Correlation with Microstructural Features in Bimodal and Fully Lamellar Microstructures Developed in the High-Strength, Near-Beta Titanium Alloy, TIMETAL®18: *Adam Young*[1]; Robert Williams[1]; Megan Harper[2]; Steve Fox[2]; Hamish Fraser[1]; [1]Ohio State University; [2]TIMET

10:50 AM
Development of Low Cost and Low Elastic Modulus of Ti-Al-Mo-Fe Alloys for Automotive Applications: *Chenglin Li*[1]; Wenjun Ye[1]; Xujun Mi[1]; Songxiao Hui[1]; Dong-Geun Lee[2]; Yongtai Lee[2]; [1]General Research Institute for Nonferrous Metals; [2]Korea Institute of Materials Science

11:10 AM
Effect of Swirly Segregation of Mo on Omega Phase Precipitation Behavior and Tensile Property of Ti-12Mo Alloy: *Satoshi Emura*[1]; Xiaohua Min[1]; Seiichiro Ii[1]; Koichi Tsuchiya[1]; [1]National Institute for Materials Science

11:30 AM
Grain Refinement in Metastable Beta-type Titanium Alloys by Severe Plastic Deformation: *Wei Xu*[1]; Xiaolin Wu[1]; Lingfei Cao[2]; Darren Edwards[3]; Mihai Stoica[4]; Eckert Jürgen[4]; Kenong Xia[1]; [1]University of Melbourne; [2]Monash University; [3]Defence Science and Technology Organisation; [4]IFW Dresden

11:50 AM
Microstructure and Mechanical Properties of Low Cost Ti-Al-Cr-Fe Titanium Alloy: Guo Wang[1]; *SongXiao Hui*[1]; WenJun Ye[1]; [1]State Key Laboratory for Fabrication & Processing of Nonferrous Metals, General Research Institute for Nonferrous Metals

12:10 PM
Recycling of Titanium Machining Chips by Equal Channel Angular Pressing: *Daniel McDonald*[1]; Wei Xu[2]; Kenong Xia[1]; [1]University of Melbourne and Defence Materials Technology Centre; [2]University of Melbourne

Deformation, Damage, and Fracture of Light Metals and Alloys: Deformation, Damage, and Fracture of Light Metals and Alloys Session VI

*Sponsored by:*TMS Light Metals Division, TMS/ASM: Mechanical Behavior of Materials Committee
Program Organizers: Ke An, Oak Ridge National Laboratory; Qizhen Li, University of Nevada, Reno

Thursday AM
March 7, 2013
Room: 210B
Location: Henry B. Gonzalez Convention Center

Session Chair: Qizhen Li, University of Nevada, Reno

8:30 AM
Internal Stresses in High Strength 7xxx Alloy with Different Textures: Patrick Schloth[1]; Julia Repper[2]; Weimin Gan[3]; Jean-Marie Drezet[1]; Helena Van Swygenhoven[2]; *Steven Van Petegem*; [1]EPFL; [2]Paul Scherrer Institut; [3]Helmholtz-Zentrum Geesthacht (HZG) Out Station at FRM-II

8:50 AM
Influence of the Microstructure on the Fracture Strain of 6xxx Series Aluminum Alloys: *Aude Simar*[1]; Kim Nielsen[2]; Liza Lecarme[1]; Thomas Pardoen[1]; [1]Universite catholique de Louvain; [2]Technical University of Denmark

9:10 AM
Modelling the Mechanical Behaviour and Fracture of an Al-Zn-Mg Electron Beam Weld Based on a Multi-Scale Microstructural Analysis: Quentin Puydt[1]; Sylvain Flouriot[2]; Sylvain Ringeval[2]; *Alexis Deschamps*[1]; Guillaume Parry[1]; Frédéric De Geuser[3]; [1]Grenoble Institute of Technology; [2]CEA Valduc; [3]SIMAP

9:30 AM
Predictions and Modeling of Failure Modes in Crystalline Layered Aluminum Composites: *Prasenjit Khanikar*[1]; Qifeng Wu[1]; Mohammed Zikry[1]; [1]North Carolina State University

9:50 AM
Substructure Evolution during Grain Boundary Sliding in Al Bicrystals: *Rajesh Korla*[1]; S Karthikeyan[1]; A Chokshi[1]; [1]Indian Institue of Science, Bangalore

10:10 AM Break

10:20 AM
Solute Effects in Strengthening and Grain Size Reduction in Mechanically Alloyed Al-Mn Alloys: *Kris Darling*[1]; Anthony Roberts[2]; Heidi Maupin[1]; Suveen Mathaudhu[3]; Laszlo Kecskes[1]; [1]ARL; [2]ORISE; [3]ARO

10:40 AM
A Study of the Strengthening Mechanisms in Al-Based Nanostructured Alloys: *Stella Pedrazzini*[1]; Marina Galano[1]; Fernando Audebert[1]; George D W Smith[1]; Marcela Lieblich[2]; Asuncion Garcia-Escorial[2]; [1]Department of Materials, University of Oxford; [2]CENIM-CSIC

11:00 AM
Characterization of Ti/Al Multilayered Composites Subjected to Perforation Testing: *Derrick Stokes*[1]; Xiu-Ren Bu[2]; Jennifer Conway[1]; Stanley Jones[1]; Viola Acoff[1]; [1]The University of Alabama; [2]Clark Atlanta Unviersity

11:20 AM
Effects of Precipitation on Plastic Instabilities in AA 2198: *Henry Ovri*[1]; Erica Lilleodden[1]; [1]Helmholtz Zentrum Geesthacht

11:40 AM
Material Constitutive Parameter Identification for Aluminum Alloys Using Electromagnetic Forming Coupled with Numerical Simulation: *Jianhui Shang*[1]; Steve Hatkevich[1]; Larry Wilkerson[1]; [1]American Trim LLC

12:00 PM
Improved Environmental Bending Fatigue Strength of Mg-Al-Mn Alloy by Super Vacuum Die Cast: *Wei Wen*[1]; Yan Jin[1]; Alan Luo[2]; Tongguang Zhai[1]; [1]University of Kentucky; [2]General Motors

Fatigue in Materials: Microstructure-Driven Modeling and In-Situ Fatigue Characterization: Advanced and Emerging Technologies in Fatigue Experimentation and Simulation

Sponsored by: TMS Structural Materials Division, TMS/ASM: Mechanical Behavior of Materials Committee
Program Organizers: Michael Sangid, Purdue University; Tongguang Zhai, University of Kentucky; Antonios Kontsos, Drexel University

Thursday AM
March 7, 2013
Room: 207B
Location: Henry B. Gonzalez Convention Center

Session Chair: Michael Sangid, Purdue University

8:30 AM Keynote
Combined High Energy X-ray Diffraction Microscopy and Tomography Measurements On and Around Fracture Surfaces: *Robert Suter*[1]; Xi Tan[1]; Jonathan Lind[1]; Shiu Fai Li[1]; Christopher Hefferan[1]; Ulrich Lienert[2]; [1]Carnegie Mellon University; [2]Argonne National Laboratory

9:05 AM Invited
Understanding Microcrack Initiation Conditions Using Synchrotron X-Rays and Crystal-Scale Material Models: *Matthew Miller*[1]; [1]Cornell University

9:30 AM Invited
Simulating the Mechanical Responses of Polycrystals under Cyclic Loading with a Focus on Comparisons with In Situ Loading Diffraction Experiments: *Paul Dawson*[1]; [1]Cornell University

9:55 AM Break

10:15 AM Invited
In Situ Fatigue Monitoring in Magnesium Alloys: *Antonios Kontsos*[1]; Kavan Hazeli[1]; [1]Drexel University

10:40 AM Invited
Using Ultrasonic Fatigue Methods in the Very High Cycle Fatigue Regime: *J. Wayne Jones*[1]; [1]University of Michigan

11:05 AM Invited
Characterization of Deformation Mechanisms Under Cyclic and Dwell Fatigue in a Polycrystalline Ni-based Superalloy: Dan Wei[1]; Patrick Phillips[2]; Timothy Smith[3]; Dave Mourer[1]; *Michael Mills*[3]; [1]GE Aviation; [2]University of Illinois-Chicago; [3]The Ohio State University

11:30 AM Invited
In-Situ TEM and XRD to Examine Fatigue Mechanisms of Nanocrystalline Metals: *Brad Boyce*[1]; Henry Padilla[1]; John Sharon[1]; Blythe Clark[1]; Daniel Kiener; Daniel Kiener[2]; [1]Sandia National Labs; [2]Montanuniversität Leoben

11:55 AM
Characterizing and Simulating Fatigue Cracking Mechanisms in LSHR: *Albert Cerrone*[1]; Joseph Tucker[2]; Clayton Stein[2]; Ashley Spear[1]; Anthony Rollett[2]; Anthony Ingraffea[1]; [1]Cornell University; [2]Carnegie Mellon University

12:15 PM Concluding Comments

Friction Stir Welding and Processing VII: Friction Stir Processing

Sponsored by: TMS Materials Processing and Manufacturing Division, TMS: Shaping and Forming Committee
Program Organizers: Rajiv Mishra, University of North Texas; Murray Mahoney, Retired from Rockwell Scientific; Yutaka Sato, Tohoku University; Yuri Hovanski, Pacific Northwest National Laboratory; Ravi Verma, General Motors

Thursday AM
March 7, 2013
Room: Grand Ballroom C3
Location: Henry B. Gonzalez Convention Center

Session Chairs: John Baumann, The Boeing Company; Judith Schneider, Mississippi State University; Saumyadeep Jana, PNNL

8:30 AM
Material Flow and Texture in Friction Extruded Wire: Xiao Li[1]; Wei Tang[1]; *Anthony Reynolds*[1]; [1]University of South Carolina

8:50 AM Invited
Nano-Sized Grain Refinement Using Friction Stir Processing: *Brian Thompson*[1]; Kevin Doherty[2]; Jianqing Su[3]; Rajiv Mishra[3]; [1]EWI; [2]U.S. Army Research Laboratory; [3]University of North Texas

9:10 AM
Friction Stir Processing for Mitigation of Sensitization in 5XXX Series Aluminum Alloys: *Anthony Reynolds*[1]; Joel Chrisfield[1]; [1]University of South Carolina

9:30 AM
Friction Stir Processing of Cast Aluminum Alloys: Seeking a Correlation between Process Parameters, Abnormal Grain Growth, and Fatigue Behavior: *Saumyadeep Jana*[1]; Glenn Grant[1]; Blair Carlson[2]; Rajiv Mishra[3]; [1]PNNL; [2]General Motors R & D center; [3]University of North Texas

9:50 AM
Double Sided Multipass Friction Stir Processing and Its Effect on the Superplastic Forming Behaviour of a 5086 Aluminum Alloy: *Pradeep Shivanna*[1]; Vivek Pancholi[1]; [1]Indian Institute of Technology Roorkee

10:10 AM Break

10:20 AM
Modified Friction Stir Processing for Back Extruding Lightweight Alloy Tubes: *Fadi Abu-Farha*[1]; [1]Clemson University

10:40 AM
Novel Applications of Friction Stir Welding and Processing in Aluminum and Magnesium Alloys: *YE CAO*[1]; Andrew L. Biro[1]; Diana Lados[1]; [1]Worcester Polytechnic Institute, Integrative Materials Design Center

10:55 AM Invited
Fabrication of Carbon Nanotube Reinforced Aluminum Matrix Composites Via Friction Stir Processing: *Z.Y. Ma*[1]; Z.Y. Liu[1]; B.L. Xiao[1]; W.G. Wang[1]; [1]Institute of Metal Research, Chinese Academy of Sciences

11:15 AM
Processing and Characterization of Cu-Mo Composite Via Additive Friction Stir Fabrication: *Kumar Kandasamy*[1]; Liam Renaghan[1]; Zachary Morrey[1]; Jeffrey Schultz[1]; [1]Aeroprobe Corporation

11:35 AM
Flow Behavior of SiC Particles as Tracer Material during the Fabrication of MMCs by Friction Stir Processing: *Qing-yu Shi*[1]; Kai Sun[1]; Wei Wang[1]; Xu Kang[1]; [1]Tsinghua University

11:55 AM
Processing, Microstructure and Mechanical Property Correlation in Al-B4C Surface Composite Produced Via Friction Stir Processing: *Mageshwari Komarasamy*[1]; Rajiv Mishra[1]; John Baumann[2]; Glenn Grant[3]; Yuri Hovanski[3]; [1]University of North Texas; [2]The Boeing Company; [3]Pacific Northwest National Laboratory

12:10 PM
Effect of Friction Stir Processing on Room Temperature Forming of AZ31 Alloy: *Phalgun Nelaturu*[1]; Rajiv Mishra[1]; Glenn Grant[2]; Yuri Hovanski[2]; [1]University of North Texas; [2]Pacific Northwest National Laboratory

12:25 PM
Fabrication of Light-Weight, High Thermal Conductivity Metal Matrix Composites Using Friction Stir Processing: Chi-Hoon Jeon[1]; Ho-Cheol Suh[2]; *Yong-Ha Jeong*[1]; Min-Sung Kim[1]; Sung-Tae Hong[1]; Young-Jin Yum[1]; Seung-Hyun Hur[1]; [1]University of Ulsan; [2]Sejong Industrial co

Frontiers in Solidification Science: Atomistic Aspects and Nucleation

*Sponsored by:*TMS Materials Processing and Manufacturing Division, TMS: Solidification Committee
Program Organizers: Andre Phillion, University of British Columbia; Silvere Akamatsu, Institut des Nanosciences de Paris; Christoph Beckermann, The University of Iowa; Michel Rappaz, Ecole Polytechnique Federale de Lausanne

Thursday AM
March 7, 2013
Room: Lone Star Salon F
Location: Grand Hyatt

Funding support provided by: Materials Processing and Manufacturing Division, National Science Foundation

Session Chairs: Christoph Beckermann, University of Iowa; Nikolas Provatas, McGill University

8:30 AM Invited
Coalescence and Mechanical Behavior of Bicrystals during Late-Stage Solidification: Insights from Atomistic and Phase-Field-Crystal Simulations: Alain Karma[1]; [1]Northeastern University

9:00 AM Invited
A Molecular Dynamics and Phase Field Crystal Study of Solute Trapping: Harith Humadi[1]; *Jeffrey Hoyt*[1]; Nikolas Provatas[2]; [1]McMaster University; [2]McGill University

9:30 AM
Experimental Determination of Nucleation Rates: *Gerhard Wilde*[1]; Joachim Bokeloh[1]; [1]University of Muenster

9:50 AM Break

10:00 AM
Step Free Energy Calculations for Faceted Solid-Liquid Interfaces in Stillinger-Weber Silicon: *Timofey Frolov*[1]; Mark Asta[1]; [1]University of California Berkeley

10:20 AM
Modelling of the Nucleation-Free Zone Formed during the Initial Transient of Grain Formation: *Arvind Prasad*[1]; Lang Yuan[2]; Peter Lee[2]; David StJohn[1]; [1]University of Queensland; [2]The University of Manchester

10:40 AM
Atomic Observation of Sr in High Purity Melt Spun Al-5 wt%Si Based Alloys: *Jiehua Li*[1]; Peter Schumacher[1]; [1]The University of Leoben

11:10 AM
Effect of Antimony on Primary Graphite Growth in Cast Iron – From Ab-Initio Calculations to Experimental Observations: Ivan Bleskov[1]; Koenraad Theuwissen[1]; Damien Connetable[1]; *Jacques Lacaze*[1]; [1]Université de Toulouse

11:30 AM
Anisotropy of Mobility and Free Energy of Solid-Liquid Interface in Stochiometric Ni-Zr Compounds: *S. R. Wilson*[1]; M. I. Mendelev[1]; [1]Ames Laboratory, USDOE

11:50 AM
Averaged Voronoi Polyhedron in the Diffusion Controlled Solidification Modeling: Andriy Burbelko[1]; Jacek Poczatek[1]; [1]AGH University of Science and Technology

Hume-Rothery Award Symposium: Electronic Structure Theory of Stability and Bonding in Alloys: Magnetic Materials

Sponsored by: TMS Electronic, Magnetic, and Photonic Materials Division, TMS: Alloy Phases Committee
Program Organizer: Chris Wolverton, Northwestern University

Thursday AM
March 7, 2013
Room: 205
Location: Henry B. Gonzalez Convention Center

Session Chairs: Su-Huai Wei, NREL; Lin-Wang Wang, LBNL

8:30 AM Invited
Finite Temperature, Magnetic, and Many-Body Effects in Ab Initio Simulations of Alloy Thermodynamics: *Igor Abrikosov*[1]; Björn Alling[1]; Peter Steneteg[1]; Lasse Hultberg[1]; Olle Hellman[1]; Igor Mosyagin[1]; Andrey Lugovskoy[2]; Svetlana Barannikova[3]; [1]Linköping University; [2]National Research Technological University MISiS; [3]Institute of Strength Physics and Materials Science and Tomsk State University

9:00 AM Invited
Analytic Bond-Order Potential Including Magnetism and Charge Transfer for Modelling Steel: *Ralf Drautz*[1]; David Pettifor[2]; [1]Ruhr-Universität Bochum; [2]University of Oxford

9:30 AM Break

9:50 AM Invited
Heusler Compounds: From Spintronics to Topological Insulators: *Claudia Felser*[1]; [1]Max Planck Institute

10:20 AM Invited
Magnetism Where You Least Expect It: *Priya Mahadevan*[1]; [1]S.N.Bose National Centre for Basic Sciences

Magnesium-Based Biodegradable Implants Symposium: Advanced Materials and Processing

Sponsored by: TMS Electronic, Magnetic, and Photonic Materials Division, TMS Light Metals Division, TMS Structural Materials Division, TMS: Biomaterials Committee, TMS: Magnesium Committee
Program Organizers: Candan Tamerler, University of Washington; Wim Sillekens, European Space Agency

Thursday AM
March 7, 2013
Room: 214D
Location: Henry B. Gonzalez Convention Center

Funding support provided by: Biological Materials Science Symposium
AND Magnesium Technology Symposium

Session Chairs: Jag Sankar, North Carolina A&T State University; Petra Maier, University of Applied Sciences Stralsund

8:30 AM Invited
Mg-Based Bulk Metallic Glasses for Use as Biodegradable Implants: *Jörg Löffler*[1]; [1]ETH Zurich

9:00 AM
Growing and Characterization of Magnesium Single Crystal for Biodegradable Implant Applications: *Pravahan Salunke*[1]; Madhura Joshi[1]; Frank Witte[2]; Mark Schulz[1]; Maren Pink[3]; Boyce Collins[4]; Vesselin Shanov[1]; [1]University of Cincinnati; [2]Hannover Medical School; [3]Indiana University; [4]North Carolina Agricultural and Technological State University

9:20 AM
Microstructure Design of Ultra-Fine-Grained Mg-Al Alloy for Bioabsorbable Implant Applications: *Toshiji Mukai*[1]; Akiko Yamamoto[2]; Yoshinaka Shimizu[3]; [1]Kobe University; [2]National Institute for Materials Science; [3]Tohoku University

9:40 AM
Effects of Composition and Grain Size on Corrosion Behavior of CaO added Magnesium Alloys as Biodegradable Materials.: *Wonseok Yang*[1]; Hyun Kyu Lim[1]; Young-Ok Yoon[1]; Shae K. Kim[1]; Do Hyang Kim[2]; [1]KITECH; [2]Yonsei University

10:00 AM Break

10:20 AM
Effect of Processing on Mechanical Properties and Corrosion of Pure Mg and Binary Mg-Ca Alloys for Application As Biodegradable Implants: *O. Jay*[1]; Jean-Jacques Blandin[1]; I. Guillotte[1]; P. Donnadieu[1]; J. P. Petit[1]; E. Toyserkani[2]; S. Esmaeili[2]; [1]Université de Grenoble / CNRS; [2]University of Waterloo

10:40 AM
Evolution of the Mechanical and the Corrosion Properties in AE21 and AE42
Magnesium Alloys after Processing through ECAP: *Peter Minárik*[1]; Robert Král[1]; Josef Pešicka[1]; [1]Charles University in Prague, Faculty of Mathematics and Physics

11:00 AM
Influence of Thermo-Mechanical Processing on the Mechanical and Bio-Corrosion Behavior of AZ80-Based Magnesium Alloy for Stent Application: *Jake Edick*[1]; Wim Sillekens[2]; [1]Boston Scientific; [2]TNO

Magnesium Technology 2013: Grain Refinement, Twinning, and Composites

Sponsored by: TMS Light Metals Division, TMS: Magnesium Committee
Program Organizers: Norbert Hort, Helmholtz-Zentrum Geesthacht; Suveen Mathaudu, US Army Research Office; Neale Neelameggham, IND LLC; Martyn Alderman, Magnesium Elektron

Thursday AM
March 7, 2013
Room: 214A
Location: Henry B. Gonzalez Convention Center

Session Chairs: Karl Kainer, Helmholtz-Zentrum Geesthacht; Bin Li, Mississippi State University

8:30 AM
Optimisation of the Process for Obtaining an UFG Structure in WE43 Alloy: *Stanislav Rusz*[1]; Lubomir Cizek[1]; Jan Dutkiewicz[2]; Bartlomiej Plonka[3]; Vit Michenka[4]; Stanislav Tylsar[1]; Michal Salajka[1]; Jan Kedron[1]; Tibor Donic[5]; Eugenius Hadasik[6]; [1]VSB - Technical University of Ostrava; [2]Polish Academy of Science; [3]3Institute of Non Ferrous Metals in Gliwice; [4]Research Institute of Iron and Metallurgy Dobra; [5]Technical University of Zilina; [6]Silesian University of Technology Katowice

8:50 AM
Thermal Stability of Ultra-Fine Grained Magnesium Alloy Processed by Extrusion and ECAP: *Jitka Vrátná*[1]; Miloš Janecek[1]; [1]Charles University in Prague

9:10 AM
Tailoring Precipitates in Mg-6Zn-2Gd Based Alloy Subjected to High Pressure Torsion: *Jiehua Li*[1]; Peter Schumacher[1]; [1]The University of Leoben

9:30 AM
Interaction between a Mg17Al12 Precipitate and {1012} <1012> Twin Boundary in Magnesium Alloys: *Bin Li*[1]; Suveen Mathaudhu[2]; [1]Center for Advanced Vehicular Systems; [2]Army Research Laboratory

9:50 AM
Twin Boundary Migration Creating Zero Shear Strain: In-Situ TEM Observations and Atomistic Simulations: Boyu Liu[1]; *Bin Li*[2]; Zhiwei Shan[1]; [1]Xi'an Jiaotong University; [2]Center for Advanced Vehicular Systems

10:10 AM Break

10:30 AM
Nanoparticle Addition to Enhance the Mechanical Response of Magnesium Alloys Including Nanoscale Deformation Mechanisms: *Muralidharan Paramsothy*[1]; Manoj Gupta[1]; [1]National University of Singapore

10:50 AM
Properties of Extruded Disintegrable Metal Composites: *Bobby Salinas*[1]; Zhiyue Xu[1]; John Welch[1]; [1]Baker Hughes

11:10 AM
Effect of Fiber Volume Fractions on Corrosion Resistance of Mg AM60 Alloy-based Composites in NaCl Solutions: *Xuezhi Zhang*[1]; Xiaoping Niu[2]; Henry Hu[1]; [1]University of Windsor; [2]Promatek Research Center

11:30 AM
Synthesis of Disintegrable Metal Composite for Oilfield Applications: *Zhihui Zhang*[1]; Bobby Salinas[1]; Caleb Newman[1]; Zhiyue Xu[1]; [1]Baker Hughes

Materials and Fuels for the Current and Advanced Nuclear Reactors II: Structural Materials III

*Sponsored by:*TMS Structural Materials Division, TMS/ASM: Corrosion and Environmental Effects Committee, TMS/ASM: Nuclear Materials Committee
Program Organizers: Ramprashad Prabhakaran, Idaho National Laboratory; Dennis Keiser, Idaho National Laboratory; Raul Rebak, GE Global Research

Thursday AM
March 7, 2013
Room: 202A
Location: Henry B. Gonzalez Convention Center

Session Chair: Walter Luscher, Pacific Northwest National Laboratory

8:30 AM
Effects of Oxide Particle Composition on Structure Property Relations in Reduced Activation Ferritic - Oxide Dispersion Strengthened Steels: Jan Hoffman[1]; *T Ben Britton*[2]; David Armstrong[2]; Steve Roberts[2]; Michael Rieth[1]; [1]Karlsruhe Institute of Technology; [2]Department of Materials, University of Oxford

8:50 AM
Microstructural Assessment of Zr-Fe-Ce Alloys as an Inert Matrix for Nuclear Fuels: *Brian Barnhart*[1]; Patrice Turchi[2]; Sean McDeavitt[1]; [1]Texas A&M University; [2]Lawrence Livermore National Laboratory

9:10 AM
Vanadium Coating on F/M Steel for Mitigating the Fuel Cladding Chemical Interaction: *Wei-Yang Lo*[1]; Yong Yang[1]; [1]University of Florida

9:30 AM
Microstructure Study of 800H Alloy at Static and Dynamic Heating Conditions: *Behrang Poorganji*[1]; Deepthi Tammana[1]; Xingshou Wen[1]; Laura Carroll[2]; Richard Wright[2]; T-L. (Sam) Sham[3]; Vijay. K Vasudevan[1]; [1]University of Cincinnati; [2]Idaho National Laboratory; [3]Oak Ridge National Laboratory

9:50 AM
On the Evolution Late Blooming Phases in RPV Steels: Theoretical Foundations, Experimental Observations and Recent Insights: *G. Odette*[1]; Peter Wells[1]; Takuya Yamamoto[1]; Nicholas Cunningham[1]; Yuan Wu[1]; [1]UC Santa Barbara

10:10 AM Break

10:30 AM
Fission Product Diffusion in ß-SiC Using Ion Implanted Multilayer Diffusion Couples: *Shyam Dwaraknath*[1]; Gary Was[1]; [1]University of Michigan

10:50 AM
Influence of Liquid Sodium on the Mechanical Behavior of Modified 9Cr-1Mo Steel: *Samuel Hemery*[1]; Thierry Auger[1]; Jean-Louis Courouau[2]; Fanny Balbaud-Celerier[2]; [1]CNRS; [2]CEA

11:10 AM
Evaluation of Potential Diffusion Barrier Candidates for High-Burnup Metal Fuel Cladding Designs: *Grant Helmreich*[1]; Carissa Humrickhouse-Helmreich[1]; James Vollmer[2]; Rob Corbin[2]; Sean McDeavitt[1]; [1]Texas A&M University; [2]TerraPower

11:30 AM
Structure and Properties of Oxide Dispersion Strengthened 18Cr Steel: *Vijay R.*[1]; Nagini M.[1]; Ramakrishna M.[1]; Sundararajan G.[1]; [1]International Advanced Research Centre for Powder MEtallurgy and New Materials (ARCI)

Materials Science of Nuclear Waste Management II

*Sponsored by:*TMS Structural Materials Division, TMS/ASM: Nuclear Materials Committee
Program Organizers: Kyle Brinkman, Savannah River National Laboratory (SRNL); Ming Tang, Los Alamos National Laboratory (LANL); Kevin Fox, Savannah River National Laboratory (SRNL); Peng Xu, Westinghouse Electric Company

Thursday AM
March 7, 2013
Room: 202B
Location: Henry B. Gonzalez Convention Center

Session Chairs: Ming Tang, Los Alamos National Laboratory; Chris Stanek, Los Alamos National Laboratory

8:30 AM Invited
Steel-Based Alloy Waste Forms for Reprocessing Wastes: *William Ebert*[1]; [1]Argonne National Laboratory

9:00 AM
Melt Processed Crystalline Ceramic Wasteforms for an Advanced Nuclear Fuel Cycle: *Kyle Brinkman*[1]; Jake Amoroso[1]; Kevin Fox[1]; James Marra[1]; Ming Tang[2]; [1]Savannah River National Laboratory (SRNL); [2]Los Alamos National Laboratory (LANL)

9:20 AM
Hot Isostatic Pressing of Chlorine-Containing Plutonium Residues and Wastes: *Martin Stewart*[1]; Sam Moricca[1]; Eric Vance[1]; Ewan Maddrell[2]; Charlie Scales[2]; Jeff Hobbs[3]; R. Authur Day[1]; [1]Australian Nuclear Science and Technology Organisation; [2]National Nuclear Laboratory; [3]Sellafield Ltd.

9:40 AM
Comparison of Hydrogen Insertion Methods to Evaluate the Behavior of Zirconium-Based Cladding during Dry Storage: *Sean McDeavitt*[1]; Brent Heuser[2]; Delia Perez-Nunez[1]; Samuel Kuhr[1]; Jun-Li Lin[2]; Ryan Brito[1]; John Martinez[1]; William Sames[1]; [1]Texas A&M University; [2]University of Illinois and Urbana-Champaign

10:00 AM Break

10:15 AM
Delayed Hydride Cracking Susceptibility of Spent Fuel Rods in Dry Storage: *Young Suk Kim*[1]; [1]Korea Atomic Energy Research Institute

10:35 AM
Net-Shape Al/B4C Metal Matrix Composites (MMCs) for High Specific Stiffness and Neutron Absorption Applications: *Prashant Karandikar*[1]; Matthew Duke[1]; Allyn McCormick[1]; Michael Aghajanian[1]; [1]M Cubed Technologies, Inc.

10:55 AM
Isolation of Matrices for High-Level Radioactive Waste Using Metal Coatings Prepared by Chemical Vapor Deposition: *Boris Bryskin*[1]; Alexander Kostylev[2]; Jorge Pokrovsky; Vladimir Romanovsky; Alexander Lumpov[2]; [1]Bryskin Metallurgical Consulting; [2]Khlopin Radium Institute

11:15 AM
Effect of Alloy Composition on the Environmental cracking of Nickel Alloys in Bicarbonate and Chloride Solutions: Natalia Zadorozne[1]; Ricardo Carranza[2]; C. Giordano[2]; Alicia Ares[3]; *Raul Rebak*[4]; [1]CONICET; [2]Instituto Sabato; [3]Universidad Nacional de Misiones; [4]GE Global Research

11:35 AM
Encapsulation of Mg-Zr Fuel Cladding in Geopolymer Material: *David Lambertin*[1]; Adrien Rooses[1]; Fabien Frizon[1]; Valerie Thiebaut[1]; [1]CEA/DEN

11:55 AM
Neutron and X-Ray Imaging of Cement and Ceramic Wasteforms: *Daniel Brew*[1]; Frikkie de Beer[2]; Peter McGlinn[1]; Mabuti Radebe[2]; Robert Nshimirimana[2]; [1]ANSTO; [2]South African Nuclear Energy Corporation

Microstructural Processes in Irradiated Materials: Nuclear Fuels & Zr-alloy Claddings

Sponsored by: TMS Structural Materials Division, TMS/ASM: Nuclear Materials Committee
Program Organizers: Thak Sang Byun, Oak Ridge National Laboratory; Dane Morgan, University of Wisconsin-Madison; Yasuyoshi Nagai, Tohoku University; Zhijie Jiao, University of Michigan-Ann Arbor; Christine Guéneau, CEA-Saclay

Thursday AM
March 7, 2013
Room: 203A
Location: Henry B. Gonzalez Convention Center

Session Chairs: Brian Cockeram, Bechtel-Bettis; Thierry Wiss, European Commiss, Joint Res Ctr

8:30 AM Invited
Single Effect Studies for Assessing In-Pile Fuel Behavior: *Thierry Wiss*[1]; Dragos Staicu[1]; Arne Janssen[1]; Vincenzo Rondinella[1]; Rudy Konings[1]; [1]EC - JRC - Institute for Transuranium Elements

9:00 AM
Microstructural Investigation of Kr Irradiated UO2: *Lingfeng He*[1]; Mahima Gupta[1]; Clarissa Yablinsky[1]; Jian Gan[2]; Marquis Kirk[3]; Todd Allen[1]; [1]University of Wisconsin-Madison; [2]Idaho National Laboratory; [3]Argonne National Laboratory

9:20 AM
Investigation of Swift Heavy Ion Irradiation Defects in CeO2: *Clarissa Yablinsky*[1]; Jian Gan[2]; Ram Devanathan[3]; Todd Allen[1]; [1]University of Wisconsin; [2]Idaho National Laboratory; [3]Pacific Northwest National Laboratory

9:40 AM
Ab Initio Molecular Dynamics Simulation of Interstitial Diffusion in Ni-Cr Alloys: *Leland Barnard*[1]; Katharina Vortler[1]; Izabela Szlufarska[1]; Dane Morgan[1]; [1]University of Wisconsin-Madison

10:00 AM Break

10:10 AM
Thermodynamic Modeling of the U-Zr System - A Revisit: *Wei Xiong*[1]; Wei Xie[2]; Chao Shen[2]; Dane Morgan[3]; [1]Department of Materials Science and Engineering, University of Wisconsin – Madison; [2]Materials Science Program, University of Wisconsin – Madison; [3]Materials Science Program & Department of Materials Science and Engineering, University of Wisconsin – Madison

10:30 AM
Microstructural Evolution of a Uranium-Zirconium Alloy at Low Fluences: *Maria Okuniewski*[1]; Steven Hayes[1]; Brandon Miller[1]; Assel Aitkaliyeva[1]; Jian Gan[1]; James Madden[1]; Gary Bell[2]; Ron Ellis[2]; Joel McDuffee[2]; Larry Ott[2]; [1]Idaho National Laboratory; [2]Oak Ridge National Laboratory

10:50 AM
Development of Microstructure and Irradiation Hardening of Zircaloy during Low Dose Neutron Irradiation at Nominally 375-440°C: *Brian Cockeram*[1]; K Leonard[2]; T.S. Byun[2]; Lance Snead[2]; Jim Hollenbeck[1]; [1]Bechtel-Bettis; [2]Oak Ridge National Laboratory

11:10 AM
Interactions between Gliding Dislocations and Irradiation Induced Loops in Recrystallized Zircaloy-4: In Situ TEM Tensile Tests and Dislocation Dynamic Simulations: *Julie Drouet*[1]; Fabien Onimus[1]; Laurent Dupuy[1]; Frédéric Mompiou[2]; Simon Perusin[3]; Antoine Ambard[4]; [1]CEA Saclay; [2]CEMES; [3]AREVA NP SAS Fuel Business Unit 10; [4]EDF/R&D Les Renardières

11:30 AM
Theoretical Investigation of Microstructure Evolution and Deformation of Zirconium under Neutron Erradiation: *Alexander Barashev*[1]; Stanislav Golubov[1]; Roger Stoller[1]; [1]Oak Ridge National Laboratory

11:50 AM
Accurate Computation of Point Defect Absorption Rates by Sinks: *Gopinath Subramanian*[1]; Blas Uberuaga[1]; Danny Perez[1]; Carlos Tome[1]; Arthur Voter[1]; [1]LANL

Modeling and Experimental Validation of Multiscale Mechanical Behavior from Atomic Scale to Macro Scale: Dislocation Dynamics

Sponsored by: TMS Materials Processing and Manufacturing Division, TMS Structural Materials Division, TMS: Integrated Computational Materials Engineering Committee, TMS/ASM: Mechanical Behavior of Materials Committee, TMS: Nanomechanical Materials Behavior Committee, TMS: Process Technology and Modeling Committee, TMS: Shaping and Forming Committee

Program Organizers: Nathan Mara, Los Alamos National Laboratory; Jian Wang, Los Alamos National Laboratory; Brad Boyce, Sandia National Laboratories; Jennifer Carter, Case Western Reserve University; Anthony Rollett, Carnegie Mellon University; Jonathan Zimmerman, Sandia National Laboratories

Thursday AM
March 7, 2013

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

Session Chairs: Giacomo Po, University of California, Los Angeles; Marisol Koslowski, Purdue University

8:30 AM Invited
Recent Progress in Dislocation Dynamics: *Sylvie Aubry*[1]; Athanasios Arsenlis[1]; Wei Cai[2]; Steve Fitzgerald[3]; [1]LLNL; [2]Stanford University; [3]Culham Center for Fusion Energy

9:00 AM
Atomistics Analysis of Dislocation Structure and Mechanisms in Semi-Coherent Nanoscale Epitaxial Laminates: *Firas Akasheh*[1]; Bin Li[2]; [1]Tuskegee University; [2]Center of Advanced Vehcular Systems

9:20 AM Invited
Constrained Network Parametric Dislocation Dynamics (CNPDD) in Finite Volumes: *Giacomo Po*[1]; Nasr Ghoniem[1]; [1]UCLA

9:50 AM
Dislocation Microstructure Analysis of Multi-junctions in Large Scale Dislocation Dynamics Simulations of BCC Metals: *Meijie Tang*[1]; Lei Cao[2]; Rich Cook[1]; [1]LLNL; [2]Purdue University

10:10 AM Break

10:20 AM Invited
Multiscale Simulation of Dislocation-Σ11 Grain Boundary Interaction in FCC Materials: Wenshan Yu[1]; *Zhiqiang Wang*[1]; [1]University of North Texas

10:50 AM Invited
Bridging Atomistic and Dislocation Dynamics across Time and Length Scales: *Marisol Koslowski*[1]; [1]Purdue University

11:20 AM Invited
Size Effects in Plastic Deformation: Modeling and Experiment: *Richard LeSar*[1]; [1]Iowa State University

11:50 AM
A Physics-Based Understanding of Size-Effects in FCC Single Crystals: *Jaafar El-Awady*[1]; [1]Johns Hopkins University

Modeling and Experimental Validation of Multiscale Mechanical Behavior from Atomic Scale to Macro Scale: Mechanics at Multiscales

Sponsored by: TMS Materials Processing and Manufacturing Division, TMS Structural Materials Division, TMS: Integrated Computational Materials Engineering Committee, TMS/ASM: Mechanical Behavior of Materials Committee, TMS: Nanomechanical Materials Behavior Committee, TMS: Process Technology and Modeling Committee, TMS: Shaping and Forming Committee

Program Organizers: Nathan Mara, Los Alamos National Laboratory; Jian Wang, Los Alamos National Laboratory; Brad Boyce, Sandia National Laboratories; Jennifer Carter, Case Western Reserve University; Anthony Rollett, Carnegie Mellon University; Jonathan Zimmerman, Sandia National Laboratories

Thursday AM
March 7, 2013

Room: 211
Location: Henry B. Gonzalez Convention Center

Session Chair: To Be Announced

8:30 AM Invited
Electrical Contact Degradation: A Multiscale Simulation Study: *Douglas Irving*[1]; Christopher Freeze[1]; Benjamin Gaddy[1]; Xiaoyin Ji[1]; [1]North Carolina State University

9:00 AM
Comparison of Deformation Behavior in Tantalum Carbides: *Gregory Thompson*[1]; Nicholas De Leon[1]; Billie Wang[1]; Christopher Weinberger[2]; [1]University of Alabama; [2]Sanida National Laboratories

9:20 AM
Massively Parallel Molecular Statics Simulations of the Percolation of Dislocations through a Random Array of Forest Dislocation Obstacles in FCC Nickel: *Satish Rao*[1]; Dennis Dimiduk[2]; Michael uchic[2]; Triplicane Parthasarathy[1]; Alexander Stukowski[3]; Jaafar El-Awady[4]; Christopher Woodward[2]; [1]UES Inc.; [2]Air Force research Laboratory; [3]Lawrence Livermore National Laboratory; [4]Johns Hopkins University

9:40 AM Invited
Phase-Field Simulations of Stress-Induced Twinning and De-Twinning: *Shenyang Hu*[1]; Chuck Henager[1]; [1]Pacific Northwest National Laboratory

10:10 AM Break

10:20 AM Invited
Slip Planes in BCC Tantalum: Towards Resolving the Discrepancy between Modeling and Experiments: *Christopher Weinberger*[1]; Lucas Hale[1]; Garritt Tucker[1]; Ping Lu[1]; Jonathan Zimmerman[1]; Stephen Foiles[1]; [1]Sandia National Labs

10:50 AM
Molecular Dynamics Study on Fullerene-Deposited Thin Film on Si Substrate: *Minwoong Joe*[1]; Kwang-Ryeol Lee[1]; [1]Korea Institute of Science and Technology

11:10 AM
Multiscale Modeling and Experiments on Human Bone: *Dinesh Katti*[1]; Kalpana Katti[1]; Shashindra Pradhan[1]; Chunju Gu[1]; [1]North Dakota State University

11:30 AM Invited
Relating Hierarchical Structure to the Blackness of Butterfly Wings: *Tongxiang Fan*[1]; [1]Shanghai Jiaotong University

12:00 PM
Modeling of Effective Thermal Conductivities of Pt-Cu Alloy Series as a Function of Temperature in the Liquid Region: *Shahid Mehmood*[1]; [1]Quaid-e-Azam University Islamabad

Nanostructured Materials for Lithium Ion Batteries and for Supercapacitors: Nanostructured Materials for Lithium Ion Batteries and for Supercapacitors Session VII

*Sponsored by:*TMS Electronic, Magnetic, and Photonic Materials Division, TMS: Energy Conversion and Storage Committee
Program Organizer: David Mitlin, University of Alberta and NINT NRC

Thursday AM
March 7, 2013
Room: 007B
Location: Henry B. Gonzalez Convention Center

Session Chairs: David Mitlin, University of Alberta and NINT NRC; Reza Shahbazian-Yassar, Michigan Technological University; Peter Kalisvaart, University of Alberta; Zhi Li, University of Alberta

8:30 AM Invited
Integrating Nano-sized Si into Three-Dimensional Structured Macroscopic Composites as High Capacity Anodes for Li-ion Batteries: *Donghai Wang*[1]; Shuru Chen[1]; Ran Yi[1]; Fang Dai[1]; Mikhail Gordin[1]; [1]Penn State University

8:50 AM Invited
Graphene and Carbon Nnaotube Composite Structures for Supercapacitors of High Energy Density: *Lu-Chang Qin*[1]; Jie Tang[2]; [1]University of North Carolina at Chapel Hill; [2]National Institute for Materials Science

9:10 AM Invited
Molecular Dynamics Simulation of Crack Propagation in Silicon Nanowires: *Alireza Ostadhossein*[1]; [1]Pennsylvania State University

9:30 AM Invited
Stretchable Power Sources for Flexible Electronics: *Bingqing Wei*[1]; [1]University of Delaware

9:50 AM Invited
Solid-Electrolyte-Interphase (SEI) Layer: Formation and Dynamic Evolution: *Perla Balbuena*[1]; [1]Texas A&M University, Artie McFerrin Department of Chemical Engineering

10:10 AM Break

10:30 AM Invited
Synthesis and Functionalization of Nanoporous Carbon Materials for Energy-Related Applications: *Sheng Dai*[1]; [1]Oak Ridge National Laboratory

10:50 AM Invited
The Key Roles of Interfaces on the High Performance of TiSnSb as a New Material for Negative Composite Electrodes of Li Ion Batteries: *Henri Wilhelm*[1]; Cyril Marino[2]; Laure Monconduit[2]; Bernard Lestriez[1]; [1]CNRS, Université de Nantes; [2]CNRS, Université de Montpellier II

11:10 AM Invited
Theoretical Investigation of Cathode Catalysts for Alternative Li Batteries: *Ye Xu*[1]; [1]Oak Ridge National Laboratory

11:30 AM Invited
Thin Film Patterned Sandwich Anode Structures for Li-Ion batteries: *Sameer Damle*[1]; Siladitya Pal[1]; Spandan Maiti[1]; Prashant Kumta[1]; [1]University of Pittsburgh

11:50 AM Invited
Ultrathin Surface Coatings for Enhanced Cycleability of Li-Ion Battery Electrodes at Elevated Temperature: *Ying Wang*[1]; Jianqing Zhao[1]; [1]Louisiana State University

12:10 PM Invited
Production of Nano-Structured Silicon Composite by Plasma Spraying with SiO for Negative Electrode of Lithium Ion Batteries: *Makoto Kambara*[1]; Keiichiro Homma[1]; Toyonobu Yoshida[1]; [1]The University of Tokyo

Neutron and X-Ray Studies of Advanced Materials VI: Centennial and Beyond: Strains and Dislocations

*Sponsored by:*TMS Structural Materials Division, TMS/ASM: Mechanical Behavior of Materials Committee
Program Organizers: Rozaliya Barabash, Oak Ridge National Laboratory; Xun-Li Wang, City University of Hong Kong; Jaimie Tiley, US Air Force Research Laboratory; Gernot Kostorz, ETH Zurich; Brent Fultz, California Institute of Technology; Peter Liaw, Univ of Tennessee

Thursday AM
March 7, 2013
Room: 209
Location: Henry B. Gonzalez Convention Center

Session Chairs: Peter Liaw, University of Tennessee; Jaimie Tiley, Air Force Research Laboratory

8:30 AM Invited
Dislocation Structure in Different Texture Components of Highly Textured Zr-2 Rolled Plates Determined by Neutron Diffraction Line Profile Analysis: *Tamás Ungár*[1]; Thomas Holden[2]; Bjørn Clausen[3]; Levente Balogh[3]; Gábor Csiszár[1]; Bertalan Jóni[1]; Donald Brown[3]; [1]Eötvös University Budapest; [2]Northern Stress Technologies; [3]Los Alamos National Laboratory

8:55 AM Invited
Phase Reversion during Compressive Loading of Shocked Alpha/Omega Zirconium: *Bjørn Clausen*[1]; Eric Tulk[1]; Ellen Cerreta[1]; Juan Escobedo-Diaz[1]; Thomas Sisneros[1]; Donald Brown[1]; Jonathan Almer[2]; [1]Los Alamos National Laboratory; [2]Argonne National Laboratory

9:15 AM Invited
Microstructure Evolution of LPSO Structures in Mg-Y-Zn Alloys Examined by In-Situ SAXS: *Hiroshi Okuda*[1]; Toshiki Horiuchi[1]; Yoshihito Kawamura[2]; Michiaki Yamasaki[2]; [1]Kyoto University; [2]Kumamoto University

9:35 AM
In-Situ Studies of the Deformation Characteristics of Intercritically Austempered Ductile Irons Using VULCAN: Alan Druschitz[1]; Sayanti Banerjee; Ke An[2]; Dong Ma[2]; Alexandru Stoica[2]; [1]Virginia Polytechnic Institute and State University (Virginia Tech); [2]Oak Ridge National Laboratory

9:45 AM Invited
Nanoscale Precipitation in a Nanostructured Ferritic Alloy by Small Angle Neutron Scattering and Atom Probe Tomography: *Z. W. Zhang*[1]; L. Yao[1]; X.-L. Wang[1]; K. Littrell[1]; Q. Li[1]; M. Miller[1]; [1]Oak Ridge National Labs

10:05 AM
Synchrotron X-Ray Diffraction Study of Fatigue-Induced Damage in Ni-Based Superalloy: *Chih-Pin Chuang*[1]; Yan Gao[2]; Tim Hanlon[2]; Monica Soare[2]; Jon Almer[3]; Michael Hemphill[1]; Peter Liaw[1]; [1]University of Tennessee; [2]GE Global Research Center; [3]Advanced Photon Source

10:15 AM Break

10:20 AM Invited
Influence of Strain Modes on the Texture Evolution and Martensitic Phase Transformation Kinetics in TRIP Steels: *Hahn Choo*[1]; [1]Univ of Tennessee

10:40 AM
Texture Evolution in Rolled and Recrystallized Fe81Ga19 Sheets: Zhenghua He[1]; *Yuhui Sha*[1]; Fang Zhang[1]; Feifei Lin[1]; Liang Zuo[1]; [1]Northeastern University

10:55 AM
The Influence of Inter- and Intragranular Long Range Strain Distributions on the Accuracy of Dislocation Densities Determined by Diffraction Line Profile Analysis: *Levente Balogh*[1]; Bertalan Joni[2]; Anand Kanjarla[1]; Ricardo Lebensohn[1]; Carlos Tome[1]; Tamas Ungar[2]; [1]Los Alamos National Laboratory; [2]Lorand Eotvos University

11:15 AM
Introduction of Shanghai Synchrotron Radiation Facility and One Scientific Case Focused on Deformation Behavior of Nanostructured Cu/Ag Multilayered Films at Beamline 14B1: *Li Li*[1]; Ru Su[2]; Zhihua Nie[2]; Yandong Wang[2]; [1]Shanghai Institute of Applied Physics; [2]Beijing Institute of Technology

11:30 AM
Austenite Stability Effects in Medium-Mn TRIP Steels: *Paul Gibbs*[1]; Emmanuel De Moor[1]; Amy Clarke[2]; Donald Brown[2]; Bjørn Clausen[2]; Matthew Merwin[3]; Bruno De Cooman[4]; David Matlock[1]; [1]Advanced Steel Processing and Products Research Center, Colorado School of Mines; [2]Los Alamos National Laboratory; [3]U. S. Steel Research and Technology Center; [4]Graduate Institute of Ferrous Technology, Pohang University of Science and Technology

11:45 AM Invited
Amorphous Materials: Potential Avenues for Uncovering Their Atomic Structures: *Claire White*[1]; [1]Los Alamos National Laboratory

12:05 PM
Texture, Stress and Grain Size Analysis by Two-dimensional XRD: *Bob He*[1]; [1]Bruker AXS

12:20 PM
Neutron Diffraction Study of Strain/Stress States and Subgrain Defects in a Creep Deformed Single Crystal Superalloy: *Erdong Wu*[1]; Guangai Sun[2]; Bo Chen[2]; Jian Zhang[1]; Vincent Ji[3]; Vincent Klosek[4]; Marie-Helene Mathon[4]; [1]Institute of Metal Research, Chinese Academy of Science; [2]Institute of Nuclear Physics and Chemistry; [3]Université Paris-Sud 11; [4]Laboratoire Léon Brillouin

Ni-Co 2013: Applications & Recycling

Sponsored by: The Minerals, Metals and Materials Society, Metallurgical Society of the Canadian Institute of Mining Metallurgy and Petroleum, Chinese Society for Metals, GDMB Society for Mining, Metallurgy, Resource and Environmental Technology, Society for Mining Metallurgy and Exploration, Mining and Materials Processing Institute of Japan, Associacao Brasileira de Metalurgia, Materiais e Mineracao, Southern African Institute of Mining and Metallurgy (SAIMM), Minerals Engineering International Online, Cobalt Development Institute, Societe Francaise de Metallurgie et de Materiaux, TMS Extraction and Processing Division, TMS: Hydrometallurgy and Electrometallurgy Committee, TMS: Pyrometallurgy Committee
Program Organizer: Thomas Battle, Midrex Technologies

Thursday AM
March 7, 2013
Room: 007D
Location: Henry B. Gonzalez Convention Center

Session Chairs: Xingbo Liu, West Virginia Univ; Jon Groh, GE Aviation

8:30 AM
Numerical Simulation of Temperature Field in Directional Solidification of Turbine Blade by Liquid Metal Cooling Method: Tang Ning[1]; Xu Qingyan[1]; *Liu Baicheng*[1]; [1]Tsinghua University

8:55 AM
Temporal Evolution of the Morphology and Phase Composition in a Model Ni–Al–Mo Superalloy: Yiyou Tu[1]; Elizaveta Plotnikov[2]; Ronald Noebe[3]; *David Seidman*[2]; [1]Southeast University; [2]Northwestern University; [3]NASA John H. Glenn Research Center

9:20 AM
Influence of Thermomechanical Treatment on Structure and Properties of a Cobalt Based Superalloy: *Pallab Sarkar*[1]; Narahari S. Prasad[1]; Mrinal Chatterjee[1]; Narayana Rao Myneni[1]; [1]Midhani

9:45 AM Break

10:05 AM
Effect of Processing Conditions on Structure, Properties and Performance of a Nickel Base Cast Superalloy for High Temperature Applications: *Mrinal Chatterjee*[1]; Pani Kishore A[1]; Pallab Sarkar[1]; Narayana Rao Myneni[1]; [1]MIDHANI

10:30 AM
Development of Nickel Boron Alloys for Brazing Materials: *Kerem Tasyürek*[1]; Murat Alkan[1]; Onuralp Yücel[1]; [1]Istanbul Technical University

10:55 AM
Microstructural Evolution and Mechanical Behaviour of Hot Deformed 37Ni- 27Fe- 25Cr Alloy: Maribel De la Garza Garza[1]; *Adriana García*[1]; Martha Guerrero-Mata[1]; Rafael Colás[1]; Victor Paramo[2]; [1]FIME, UANL; [2]Frisa Forjados S.A. de C.V.

11:20 AM
Electro-healing cracks in nickel: Xiangui Zheng[1]; *Yinong Shi*[1]; Ke Lu[1]; [1]Shenyang National Laboratory for Materials Science, Institute of Metal Research, Chinese Academy of Sciences

Novel Synthesis and Consolidation of Powder Materials : Porous Structure Fabrication and Thermomechanical Processing

Sponsored by: TMS Materials Processing and Manufacturing Division, TMS: Powder Materials Committee
Program Organizers: Ma Qian, The University of Queensland; Iver Anderson, The Ames Laboratory

Thursday AM
March 7, 2013

Room: Lone Star Salon C
Location: Grand Hyatt

Session Chairs: Selçuk Kuyucak, Dept. of Natural Resources Canada; Soon-Jik Hong, Kongju National University

8:30 AM
Electrolytic Infiltration of Laser Sintered Porous Preforms: *Abhimanyu Bhat*[1]; David Bourell[1]; [1]University of Texas at Austin

8:50 AM Invited
Fabrication of Porous Metallic Compacts Using Electro-Discharge Sintering: Jae Young Cho[1]; *Ki Buem Kim*[1]; [1]Sejong University

9:20 AM
Pore Evolution during Thermomechanical Processing of Sintered Pure Ti: Lingwen Kong[1]; *Xiaolin Wu*[1]; Wei Xu[1]; Shudong Luo[2]; Ya Feng Yang[2]; Ma Qian[2]; Kenong Xia[1]; [1]The University of Melbourne; [2]The University of Queensland

9:40 AM
Mechanical Behavior and Deformation Mechanisms of Polycrystalline Nickel with Controlled Nano/Micro Grain Volume Fractions: *Guy-Daniel Dutel*[1]; David Tingaud[1]; Damien Faurie[1]; Patrick Langlois[1]; Guy Dirras[1]; [1]Université Paris 13

10:00 AM Break

10:20 AM Invited
Turning Machining Chips into Advanced Materials by Powder Metallurgy: *Deliang Zhang*[1]; Jiamiao Liang[2]; Xun Yao[2]; Jianqiang Yan[2]; Liuyang Zhang[2]; [1]Shanghai Jiao Tong University, China/The University of Waikato, NZ; [2]Shanghai Jiao Tong University, China

10:50 AM Invited
Experimental and Theoretical Analysis of Oxygen Solid Solution Strengthening Behavior of P/M Pure Ti Material: Takanori Mimoto[1]; *Katsuyoshi Kondoh*[1]; Li Shufeng[1]; Hisashi Imai[1]; Junko Umeda[1]; [1]Osaka University

11:20 AM
Direct Powder Rolling of Titanium-Platinum (TiPt) Blended Elemental Powders: Silethelwe Chikosha[1]; *Hilda Chikwanda*[1]; [1]CSIR

11:40 AM
Commercially Pure Ti from Powder Forging and Direct Powder Consolidation by Severe Plastic Deformation: *Xiaolin Wu*[1]; Wei Xu[1]; Shudong Luo[2]; Ya Feng Yang[2]; Ma Qian[2]; Kenong Xia[1]; [1]The University of Melbourne; [2]The University of Queensland

Pb-free Solders and Emerging Interconnect and Packaging Technologies: Interfacial Reactions

Sponsored by: TMS Electronic, Magnetic, and Photonic Materials Division, TMS: Electronic Packaging and Interconnection Materials Committee
Program Organizers: Nikhilesh Chawla, Arizona State University; Srinivas Chada, Whirlpool; Darrel Frear, Freescale Semiconductor; John Elmer, LLNL; Tae-Kyu Lee, Cisco Systems; Yan Li, Intel; Laura Turbini, Research In Motion; Kwang-Lung Lin, National Cheng Kung University; Sohoon Yoo, Korea Institute of Industrial Technology

Thursday AM
March 7, 2013

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

Session Chair: To Be Announced

8:30 AM
Dependence of (Cu,Ni)6Sn5 Morphology on the Grain Structures of Ni Substrate in Sn-3.0Ag-0.5Cu/Ni Solder Joints: *Yi-Hsin Wu*[1]; Jenq-Gong Duh[2]; [1]National Tsing Hua University ; [2]National Tsing Hua University

8:50 AM
Effect of Bump Height on Thermomigration Induced Kirkendall Voids on the Pb-Free Flip Chip Solder Joint and Three Dimensional Integrated Circuits Packaging: *Fan-Yi Ouyang*[1]; Wei-Cheng Juh[1]; [1]National Tsing Hua University

9:10 AM
Eliminating Kirkendall Voids during Solid State Aging between Solder and Nano-Twinned Copper with (111) Orientation: *Yi Cheng Chu*[1]; Chih Chen[1]; [1]Department of Materials Science & Engineering, National Chiao Tung University

9:30 AM
Optimization of the Ni(P) Thickness for an Ultrathin Ni(P)-Based Surface Finish in Soldering Applications: *Cheng-En Ho*[1]; Chia-Wei Fan[1]; Hsin-Hui Hua[1]; Wei-Hsiang Wu[1]; [1]Yuan Ze University

9:50 AM Break

10:10 AM
Reliability of Lead-Free BiAgX Pastes for High Temperature Die-Attach Application: *HongWen Zhang*[1]; Runsheng Mao[1]; Ning-Cheng Lee[1]; Liang Yin[2]; [1]Indium Corporation; [2]Universal Instrument Corporation

10:30 AM
Interfacial Reaction and Mechanical Evaluation in Pd-Containing Solder Joints Via Drop and High Speed Impact Test: *Hsiu-Min Lin*[1]; Cheng-Ying Ho[1]; Wen-Lin Chen[1]; Yi-Hsin Wu[1]; De-Hui Wang[2]; Tong-Xing Yong[2]; Jun-Ren Lin[2]; Zhi-Wei Lin[2]; Jenq-Gong Duh[1]; [1]Materials Science and Engineering, National Tsing Hua University; [2]Kinsus Interconnect Technology corporation

Phase Transformation and Microstructural Evolution: General Phase Transformations - Fe Based Alloys: Part I

Sponsored by: TMS Materials Processing and Manufacturing Division, TMS: Chemistry and Physics of Materials Committee, TMS/ASM: Computational Materials Science and Engineering Committee, TMS: Integrated Computational Materials Engineering Committee, TMS/ASM: Phase Transformations Committee, TMS: Process Technology and Modeling Committee, ASM: Alloy Phase Diagrams Committee

Program Organizers: Amy Clarke, Los Alamos National Laboratory; Sudarsanam Suresh Babu, Ohio State Univ; Rajarshi Banerjee, Univ of North Texas; John Morral, Ohio State Univ; Brian Gleeson, University of Pittsburgh; Carelyn Campbell, National Institute of Standards & Tech; Yongho Sohn, Univ of Central Florida; Yunzhi Wang, Ohio State University

Thursday AM
March 7, 2013

Room: 204A
Location: Henry B. Gonzalez Convention Center

Session Chairs: Tadashi Furuhara, Tohoku University; Paul Gibbs, Los Alamos National Laboratory

8:30 AM Invited
Atom Probe Tomography Examination of Carbon and Alloying Elements in Quench and Tempered Steels: *Amy Clarke*[1]; Michael Miller[2]; Robert Field[1]; David Alexander[1]; Kester Clarke[1]; George Krauss[3]; David Matlock[3]; [1]Los Alamos National Laboratory; [2]Oak Ridge National Laboratory; [3]Colorado School of Mines

9:00 AM Invited
Development of New Ferrous Alloys with High Al Content: *Dong Woo Suh*[1]; [1]Pohang University of Science and Technology

9:30 AM
Evolution of Microstructure in Heavily Cold Drawn High-Strength Duplex Stainless Steels UNS S32205 and S32304: *Robert Moser*[1]; Sam Raji[2]; Omar Rodriguez[3]; Robert McCullough[4]; Boris Renteria-Beleno[3]; Paul Allison[1]; Preet Singh[2]; Marcelo Suarez[3]; Oscar Perales-Perez[3]; Daniel Schuetz[2]; Ruth Hidalgo-Hernandez[1]; Lawrence Kahn[2]; Kimberly Kurtis[2]; [1]US Army Engineer Research and Development Center; [2]Georgia Institute of Technology; [3]University of Puerto Rico at Mayaguez; [4]University of Alabama

9:50 AM Break

10:10 AM
Microstructure Evolution of Stainless TWIP Steels: *Linda Mosecker*[1]; Alireza Saeed-Akbari[1]; Wolfgang Bleck[1]; [1]Department of Ferrous Metallurgy RWTH Aachen University

10:30 AM
Study of Microstructural Evolutions in Lean Duplex 2101 during Isothermal Aging: *Jean-Yves Maetz*[1]; Sophie Cazottes[1]; Catherine Verdu[1]; Xavier Kleber[1]; [1]MATEIS-INSA de Lyon

10:50 AM
Ultrafine Grained High-Alloyed Austenitic TRIP/TWIP Steels: *Anja Weidner*[1]; Alexandra Müller[1]; Christian Segel[1]; Horst Biermann[1]; [1]TU Bergakademie Freiberg

11:10 AM
Controlled Setting of the Transformation Kinetics and the Structure Constituents in Low-Temperature Bainite Steels: *Mohamed Soliman*[1]; Heinz Palkowski[1]; [1]TU-Clausthal

11:30 AM
EBSD-Based Analysis of Orientation Relationship Scatter in the FCC-BCC/BCT Martensitic Transformation in Fe-Based Alloys: *Eric Payton*[1]; Victoria Yardley[2]; [1]Federal Institute for Materials Research and Testing; [2]Ruhr-Universitaet Bochum

11:50 AM
Study of the Kinetic of Spinodal Decomposition and G Phase Precipitation in Ferrite of Long Term Thermally Aged Duplex Stainless Steels: *Jonathan Emo*[1]; Cristelle Pareige[1]; Sébastien Saillet[2]; Philippe Pareige[1]; [1]Groupe de Physique des Matériaux; [2]EDF

Phase Transformation and Microstructural Evolution: Phase Field, Phase Field Crystal, Diffusive Molecular Dynamics and Related Models: Part I

Sponsored by: TMS Materials Processing and Manufacturing Division, TMS: Chemistry and Physics of Materials Committee, TMS/ASM: Computational Materials Science and Engineering Committee, TMS: Integrated Computational Materials Engineering Committee, TMS/ASM: Phase Transformations Committee, TMS: Process Technology and Modeling Committee, ASM: Alloy Phase Diagrams Committee

Program Organizers: Amy Clarke, Los Alamos National Laboratory; Sudarsanam Suresh Babu, Ohio State Univ; Rajarshi Banerjee, Univ of North Texas; John Morral, Ohio State Univ; Brian Gleeson, University of Pittsburgh; Carelyn Campbell, National Institute of Standards & Tech; Yongho Sohn, Univ of Central Florida; Yunzhi Wang, Ohio State University

Thursday AM
March 7, 2013

Room: 204B
Location: Henry B. Gonzalez Convention Center

Session Chairs: Heike Emmerich, University of Bayreuth; Ken Elder, Oakland University; Yunzhi Wang, Ohio State University

8:30 AM Introductory Comments

8:35 AM Invited
Diffusive Molecular Dynamics: *Ju Li*[1]; [1]University of Pennsylvania

9:05 AM Invited
Phase Field Crystal Modelling of Strained Epitaxial Films: *Ken Elder*[1]; [1]Oakland University

9:35 AM Break

9:50 AM Invited
Multilayer Thin Film Growth on Crystalline and Quasicrystalline Surfaces: A Phase-Field Crystal Study: *Mikko Haataja*[1]; [1]Princeton University

10:20 AM Invited
Phase-Field Simulations of 3D Eutectic Growth Morphologies in Al-Si Cast Alloys: *Janin Eiken*[1]; Markus Apel[1]; [1]Access

10:40 AM
Calculations of Isothermal Elastic Constants in the Phase-Field Crystal Model: Nirand Pisutha-Arnond; *Victor Chan*[1]; Ken Elder; Katsuyo Thornton; [1]University of Michigan, Ann Arbor

11:00 AM
Phase-Field Crystal Modeling of Clustering in Al-Mg-Si-(Cu) Alloys: *Vahid Fallah*[1]; Shahrzad Esmaeili[2]; Nikolas Provatas[3]; [1]University of Waterloo ; [2]University of Waterloo; [3]McGill University

11:20 AM
A Phase Field Crystal Study of Temperature Oscillations in Explosive Crystallization: *Jonathan Stolle*[1]; Nikolas Provatas[2]; [1]McMaster University; [2]McGill University

11:40 AM Invited
An Efficient Phase-Field Simulation for Solidification of Multicomponent Alloys: S.G. Kim[1]; *W.T. Kim*[2]; Y.B. Park[3]; P.R. Cha[4]; H.Y. Seo[5]; J.T. Choi[5]; [1]Kunsan National University; [2]Cheongju University; [3]Suncheon National University; [4]Kookmin University; [5]Hyundai Steel

12:10 PM
Crystal Phase Field and Atom Probe Tomography Investigation of Spinodal Decomposition in Supersaturated Fe-C Martensites: *Frederic Danoix*[1]; Héléna Zapolsky[1]; Khalid Hoummada[2]; Sébastien Allain[3]; Mohamed Gouné[4]; [1]CNRS - Université de Rouen; [2]IM2NP CNRS; [3]Arcelormittal Maizières Research SA; [4]ICMCB - CNRS

Physical and Mechanical Metallurgy of Shape Memory Alloys: Processing, Powder Metallurgy

*Sponsored by:*TMS/ASM: Phase Transformations Committee
Program Organizers: Haluk Karaca, University of Kentucky; Ibrahim Karaman, Texas A&M University; Othmane Benafan, NASA Glenn Research Center; Ryosuke Kainuma, Tohoku University; Hans Jurgen Maier, Univ of Paderborn

Thursday AM
March 7, 2013
Room: Lone Star Salon B
Location: Grand Hyatt

Session Chairs: Othmane Benafan, NASA Glenn; David Dunand, Northwestern University

8:30 AM
A Novel Superelastic Porous Material Made of a Single Entangled NiTi Wire: *Benjamin Gadot*[1]; Sabine Rolland du Roscoat[2]; Laurent Orgéas[3]; David Rodney[1]; Didier Bouvard[1]; [1]INP Grenoble; [2]Université Joseph Fourier; [3]CNRS - Université Joseph Fourier

8:50 AM
3D Interconnected Channels in NiTiNb Foams: *Catherine Tupper*[1]; Cate Brinson[1]; David Dunand[1]; [1]Northwestern University

9:10 AM
Experimental and Numerical Characterization of Hybrid Shape Memory Alloy (SMA) - MAX Phase Composites: *Ankush Kothalkar*[1]; Brian Lester[1]; Liangfa Hu[1]; Miladin Radovic[1]; Ibrahim Karaman[1]; Dimitris Lagoudas[1]; [1]Texas A&M University

9:30 AM
Mechanical Behaviors of Gradient Porous NiTi Shape Memory Alloy with Long Bone Structure: Ming Lai[1]; Dan Zhou[1]; Bin Yuan[1]; *Yan Gao*[1]; [1]South China University of Technology

9:50 AM
Effect of Pore Structure Regulation on Mechanical Properties and Superelasticity of Porous Ti-22Nb-6Zr Alloy for Biomedical Application: *Ming Lai*[1]; Bin Yuan[1]; Yan Gao[1]; [1]South China University of Technology

10:10 AM Break

10:30 AM
Superelastic Properties of Porous and Dense Cu-Al-Ni Alloys Created by Directional Solidification: *Bin Yuan*[1]; Peiqi Zheng[2]; David Dunand[2]; [1]South China University of Technology; [2]Northwestern University

10:50 AM
Electrochemical Behavior of Ti-Ni-Cu Shape Memory Alloy Ribbons Used for the fabrication of Sensors and Actuators: *Abdel Salam Makhlouf*[1]; [1]Central Metallurgical Research and Development Institute

11:10 AM
Structural, Magnetic, and Microstructural Properties of Rapidly Solidified Ni54Fe21Ga25-xAlx Ribbons: *Imaddin Al-Omari*[1]; K. Kumar[2]; S. Aich[2]; [1]Sultan Qaboos University; [2]Indian Institute of Technology, Kharagpur

11:30 AM
Microstructural Evolution and Characterization of Ti_2Ni Phase in Melt-Spun $Ti_{51.5}Ni_{28.5}$ Shape Memory Ribbons: *Sichuang Xue*[1]; Wu Wang[1]; jinke Yu[2]; Qijie Zhai[2]; Hongxing Zheng[1]; [1]Shanghai University; [2]Shanghai Key Laboratory of Modern Metallurgy & Materials Processing

11:50 AM
Dislocations Induced by Crystal Symmetry Change during Martensitic Transformations: *Yipeng Gao*[1]; Yunzhi Wang[1]; [1]The Ohio State University

REWAS 2013: Enabling Materials Resource Sustainability: Enabling Sustainability through Recycling & End-of-Pipe Solutions II

*Sponsored by:*TMS Extraction and Processing Division, TMS: Recycling and Environmental Technologies Committee
Program Organizers: Christina Meskers, Umicore Precious Metals Refining; Anne Kvithyld, SINTEF; Markus Reuter, Outotec Oyj; Randolph Kirchain, Massachusetts Institute of Technology; Mark Schlesinger, Missouri University of Science and Technology; Gregory Krumdick, Argonne National Laboratory; Cong Wang, Saint-Gobain High Performance Materials; Gabrielle Gaustad, Rochester Institute of Technology; Diana A. Lados, Worcester Polytechnic Institute; Brajendra Mishra, Colorado School of Mines; Jeffrey S. Spangenberger, Argonne National Laboratory

Thursday AM
March 7, 2013
Room: 006B
Location: Henry B. Gonzalez Convention Center

Session Chairs: Jeffrey S. Spangenberger, Argonne National Laboratory; Harald Oosterhof, Umicore

8:30 AM Introductory Comments

8:35 AM
Application of Membrane Distillation and Solvent Extraction for Water, Acid and Metal Recovery from Mining Waste Solutions: *Chu Yong Cheng*[1]; [1]CSIRO Australia

9:00 AM
Metal Recovery by Bioleaching of Mining Sulfidic Wastes – Application to a European Case Study: *Anne-Gwénaëlle Guezennec*[1]; Jérome Jacob[1]; Catherine Joulian[1]; Sébastien Dupraz[1]; Yannick Ménard[1]; Patrick D'Hugues[1]; [1]BRGM

9:25 AM
Recovery of Platinum from Dilute Chloride Media Using Biosorbents: *Bihter Zeytuncu*[1]; M.Hakan Morcali[1]; Onuralp Yucel[1]; [1]Istanbul Technical University

9:45 AM Break

10:05 AM
Bioextraction of Copper from Printed Circuit Boards: Influence of Initial Concentration of Ferrous Iron: *Luciana Yamane*[1]; Denise Espinosa[1]; Jorge Tenório[1]; [1]Polytechnic School of São Paulo University

10:25 AM
Development of Environmentally Friendly Separation and Recovery Process of Rare Metals from Oil Desulfurization Spent Catalyst: *Junji Shibata*[1]; Norihiro Murayama[1]; [1]Kansai University

10:50 AM
A Novel Process for Recovering Valuable Materials from Spent Lithium-ion Batteries: *Gjergj Dodbiba*[1]; Kenji Murata[2]; Toyohisa Fujita[3]; [1]University of Tokyo; [2]Nippon Koki Co. Ltd; [3]The University of Tokyo

REWAS 2013: Enabling Materials Resource Sustainability: Enabling Sustainability through Systems Modelling and Design

Sponsored by: Chinese Society for Metals, The Mining and Materials Processing Institute of Japan (MMIJ), TMS Extraction and Processing Division, TMS: Recycling and Environmental Technologies Committee
Program Organizers: Christina Meskers, Umicore Precious Metals Refining; Anne Kvithyld, SINTEF; Markus Reuter, Outotec Oyj; Randolph Kirchain, Massachusetts Institute of Technology; Mark Schlesinger, Missouri University of Science and Technology; Gregory Krumdick, Argonne National Laboratory; Cong Wang, Saint-Gobain High Performance Materials; Gabrielle Gaustad, Rochester Institute of Technology; Diana A. Lados, Worcester Polytechnic Institute; Brajendra Mishra, Colorado School of Mines; Jeffrey S. Spangenberger, Argonne National Laboratory

Thursday AM
March 7, 2013
Room: 006A
Location: Henry B. Gonzalez Convention Center

Funding support provided by: Xstrata; SINTEF; Outotec; Umicore, and CR3, the Center for Resource Recovery and Recycling

Session Chairs: Daniel Mueller, Norwegian Univ of Science and Technology; Anne Kvithyld, SINTEF

8:30 AM Introductory Comments

8:35 AM
Assessing the Criticality of Metals: *Tom Graedel*[1]; E.M. Harper[1]; Nedal Nassar[1]; [1]Yale University

9:00 AM
Towards Zero Waste Production in the Minerals and Metals Sector: *William Rankin*[1]; [1]CSIRO

9:25 AM
Scenarios for the Development and Improvement of the Life Support Systems of the Arctic Zone of Russia: Tsukerman Viacheslav[1]; *Stanislav Ivanov*[1]; [1]KSC RAS

9:50 AM Break

10:10 AM
Stochastic Modelling of Material-and Energy Properties in Recycling Systems: Maaria Wierink[1]; *Kari Heiskanen*[1]; [1]Aalto University

10:35 AM
Modeling to Evaluate Coordination and Flexibility in Aluminum Recycling Operations: *Elsa Olivetti*[1]; Tracey Brommer[1]; Snorre Fjeldbo[2]; Randolph Kirchain[1]; [1]MIT; [2]Hydro

11:00 AM
IO-MFA and Thermodynamic Approach for Metal Recycling: *Kenichi Nakajima*[1]; Kazuyo Matsubae[2]; Yasushi Kondo[3]; Shinichiro Nakamura[3]; Tetsuya Nagasaka[2]; [1]National Institute for Environmental Studies; [2]Tohoku University; [3]Waseda University

11:25 AM
Development of Efficient Recycling System for Steel Alloying Elements in End of Life Vehicles: *Hajime Ohno*[1]; Kazuyo Matsubae[1]; Kenichi Nakajima[2]; Shinichiro Nakamura[3]; Testsuya Nagasaka[1]; [1]Tohoku University; [2]National Institute for Environmental Studies; [3]Waseda University

Symposium on High Entropy Alloys: Structures and Mechanical Properties

Sponsored by: TMS Structural Materials Division, TMS/ASM: Mechanical Behavior of Materials Committee, TMS: Alloy Phases Committee
Program Organizers: Peter Liaw, The University of Tennessee; Gongyao Wang, University of Tennessee; M. Gao, National Energy Technology Laboratory ; S. Mathaudhu , U.S. Army Research Office

Thursday AM
March 7, 2013
Room: 203B
Location: Henry B. Gonzalez Convention Center

Session Chairs: Yong Zhang, University of Science and Technology Beijing; Oleg Senkov, UES, Inc.

8:30 AM Invited
Microstructure-Property-Processing Relationships in a Series of Al-Cr-Fe-Mn-Ni High Entropy Alloys: *Abraham Munitz*[1]; Gerald Bourne[1]; James Cotton[2]; Michael Kaufman[1]; [1]Colorado School of Mines; [2]The Boeing Company

8:55 AM
Unusual Mechanical Properties of a Quinary, Equiatomic Single-Phase Solid-Solution Alloy: *Frederik Otto*[1]; Hongbin Bei[1]; Antonin Dlouhý[2]; Christoph Somsen[3]; Gunther Eggeler[3]; Easo George[1]; [1]Oak Ridge National Laboratory; [2]Institute of Physics of Materials; [3]Ruhr-University Bochum

9:10 AM Invited
Microstructures and Mechanical Properties AlxCrCuFeNi2 High-Entropy Alloys by Cold Rolling and Heat Treatments: *Yong Zhang*[1]; Sheng Guo Ma[1]; Zhao Di Chen[1]; [1]University of Science and Technology Beijing

9:35 AM
Effect of Cr, Mn and Cu on Phase Evolution and Densification of CoFeNi*M* (*M*=Cr, Mn, Cu)High Entropy Alloys: *Praveen S*[1]; Murty B.S[1]; Ravi Sankar Kottada[1]; [1]Indian Institute of Technology Madras

9:50 AM Break

10:05 AM Invited
Microstructure, Thermal Stability and Mechanical Properties of Refractory High Entropy Alloys: *Oleg Senkov*[1]; Daniel Miracle[1]; Christopher Woodward[1]; [1]Air Force Research Laboratory, Materials and Manufacturing Directorate

10:30 AM
Elevated-Temperature Performance of a Brand New Refractory High-Entropy Alloy: *Chien-Chang Juan*[1]; Jien-Wei Yeh[1]; [1]National Tsing Hua University

10:45 AM Invited
Influence of Processing Parameters on the Microstructure and Mechanical Properties of Lightweight High Entropy Alloys: *Laszlo Kecskes*[1]; Mark Atwater[1]; Vincent Hammond[1]; Hedwig Maupin[1]; Kristopher Darling[1]; [1]US Army Research Laboratory

11:10 AM
Age Hardening of the Al0.5CoCrNiTi0.5 High Entropy Alloy: *Che-Fu Lee*[1]; Tao-Tsung Shun[1]; [1]Feng Chia University

11:25 AM
Tribological Properties of AlCoCrFeNiCu High Entropy Alloy: Tiebang Zhang[1]; Yuan Yu[1]; Jian Li[2]; Hongchao Kou[1]; Rui Hu[1]; *Jinshan Li*[1]; [1]Northwestern Polytechnical University; [2]Wuhan Research Institute of Materials Protection

Ultrasonic Welding II: Ultrasonic Welding: Metallic and Non-metallic Hybrid Joints

*Sponsored by:*TMS Light Metals Division, TMS Structural Materials Division, TMS: Advanced Characterization, Testing, and Simulation Committee, TMS: Materials Characterization Committee, TMS: Young Leaders Committee, ASM-MSCTS: Materials and Processing Committee, METSOC-CIM: Metal Processing and Fabrication Committee
Program Organizer: Frank Balle, University of Kaiserslautern

Thursday AM
March 7, 2013
Room: 006D
Location: Henry B. Gonzalez Convention Center

Session Chairs: Guntram Wagner, University of Kaiserslautern, Institute of Materials Science and Engineering; Frank Balle, University of Kaiserslautern, Institute of Materials Science and Engineering and State Research Focus Advanced Materials Engineering (AME)

8:30 AM
Comparison of Ultrasonic Spot and Torsion Welding for Al/Ti-Joints by Mechanical and Microstructural Characteristics: Daniel Trost[1]; *Frank Balle*[1]; Joseph Robson[2]; Philip Prangnell[2]; [1]University of Kaiserslautern; [2]University of Manchester

8:50 AM
Formation and Distribution of Intermetallic Compounds in Ultrasonic Spot Welding of Aluminum and Copper: *Yansong Zhang*[1]; [1]School of Mechanical Engineering,Shanghai Jiao Tong University

9:10 AM
Ultrasonic Welding of Bulk Carbon Nanotube Conductors to Metallic Interconnects: *Christopher Schauerman*[1]; Jack Alvarenga[2]; Jason Staub[1]; Michael Forney[1]; Ryan Foringer[1]; Brian Landi[1]; [1]Rochester Institute of Technology; [2]Harvard University

9:30 AM
Experimental and Computational Analysis of Ultrasonically Multi-Spot Welded Hybrid Al/CFRP-Structures on Component Level: *Sebastian Schmeer*[1]; Frank Balle[2]; Guntram Wagner[2]; Martin Maier[1]; Dietmar Eifler[2]; [1]Institute for Composite Materials, Kaiserslautern (Germany); [2]University of Kaiserslautern

9:50 AM Concluding Comments Organizer, Frank Balle, University of Kaiserslautern (Germany)

2013 Functional Nanomaterials: Synthesis, Properties and Applications: Structural Nanomaterials II

*Sponsored by:*TMS Electronic, Magnetic, and Photonic Materials Division, TMS: Nanomaterials Committee
Program Organizers: Seong Jin Koh, University of Texas at Arlington; Nitin Chopra, University of Alabama; Jiyoung Kim, University of Texas at Dallas; Yuanbing Mao, University of Texas-Pan American; Ashwin Ramasubramaniam, University of Massachusetts; Gregory Thompson, University of Alabama

Thursday PM
March 7, 2013
Room: 201
Location: Henry B. Gonzalez Convention Center

Funding support provided by: Qualcomm, Inc.

Session Chairs: Nitin Chopra, The University of Alabama; Seong Jin Koh, University of Texas at Arlington

2:00 PM
Effect of Grain Boundary Engineering in Low Stacking Fault Energy Alloys on their Corrosion Resistance: *Indranil Roy*[1]; Manuel Marya[1]; Enrique Lavernia[2]; Farghalli Mohamed[3]; [1]Schlumberger; [2]University of California, Davis; [3]University of California, Irvine

2:20 PM
Characterization of Fe-W Nanoclusters Prepared by Inert Gas Condensation: *Mark Koten*[1]; Williams Lefebvre[2]; Jeffrey Shield[1]; [1]University of Nebraska - Lincoln; [2]University of Rouen

2:40 PM
Ceramic Nanofibers and Carbon Nanotube Reinforced Ceramic Nanofiber Composites Prepared by the Forcespinning Method: *Alfonso Salinas*[1]; Aleksey Altecor[1]; Maricela Lizcano[1]; Mataz Alcoutlabi[1]; Karen Lozano[1]; [1]The University of Texas Pan American

3:00 PM
Next Generation Nanoindenter for Elevated Temperature Nanomechanical Testing: *Gregory Favaro*[1]; Nicholas Randall[2]; Bertrand Bellaton[2]; Bo Zhou[2]; [1]CSM Instruments ; [2]CSM Instruments

3:20 PM Break

3:40 PM
Strategies For Developing Bulk Materials NanoTechnology (BMN) into Industrial Products: *Daniel Branagan*[1]; Brian Meacham[1]; Sheng Cheng[1]; Alla Sergueeva[1]; [1]The NanoSteel Company

4:00 PM
Grain Refinement and Mechanical Properties of CP-Ti Processed by Warm Accumulative Roll Bonding: *Justin Milner*[1]; Fadi Abu-Farha[1]; Cristina Bunget[1]; Vincent Hammond[2]; Thomas Kurfess[3]; [1]Clemson University; [2]US Army Research Laboratory; [3]Georgia Institute of Technology

4:20 PM
Crystallite Size Study of Room-Temperature Tetragonal Zirconia Stabilisation Nano-Confined by Using Electroless Nickel Cladding: *Rong-Tan Huang*[1]; Shin-Ji Yang[1]; Tsung-Shune Chin[2]; [1]National Taiwan Ocean University; [2]Feng Chia University

4:40 PM
Sintering Behavior, Mechanical Properties and Wear Performance of Alumina-Magnesia Ceramic Cutting Tool: *Ayesha Arzumand*[1]; Syeda Sumaiya[2]; AKM Rashid[1]; [1]Bangladesh University of Engineering and Technology; [2]University of Windsor

5:00 PM Concluding Comments

4th International Symposium on High-Temperature Metallurgical Processing: Microwave Heating, Energy and Environment

*Sponsored by:*TMS Extraction and Processing Division, TMS: Energy Committee, TMS: Materials Characterization Committee, TMS: Pyrometallurgy Committee
Program Organizers: Tao Jiang, Central South University; Jiann-Yang Hwang, Michigan Technological University; Phillip Mackey, Consultant; Onuralp Yücel, ITU; Guifeng Zhou, Wuhan Iron and Steel

Thursday PM
March 7, 2013
Room: 008B
Location: Henry B. Gonzalez Convention Center

Session Chairs: Zhiwei Peng, Michigan Technological University; Jianliang ZHANG, University of Science and Technology Beijing

2:00 PM
Microwave Reflection Loss of Ferric Oxide: *Zhiwei Peng*[1]; Jiann-Yang Hwang[1]; Byoung-Gon Kim[2]; Matthew Andriese[1]; Xinli Wang[1]; [1]Michigan Technological University; [2]Korea Institute of Geoscience and Mineral Resources

2:20 PM
Process Optimization by Response Surface Method for Sintering of Chromite Fines by Microwave: *Jian Chen*[1]; [1]Key Laboratory of Unconventional Metallurgy for Education Ministry, Kunming University of Science & Technology

2:40 PM
Life Cycle Assessment of Microwave Hot Air Systems: *Jin Chen*[1]; Guo Chen[1]; Jinhui Peng[1]; [1]Kunming University of Science and Technology

3:00 PM
Chemical Enrichment of Precious Metals in Iron Sulfides Using Microwave Energy: *Matthew Andriese*[1]; Jiann-Yang Hwang[1]; Zhiwei Peng[1]; Bowen Li[1]; [1]Michigan Technological University

3:20 PM
Recent Progress on the Exhaust Gas Recirculation Technology of Iron Ore Sintering Process: *Zhengjian Liu*[1]; Jianliang Zhang[1]; [1]University of Science and Technology Beijing

3:30 PM Break

3:40 PM
Development of Bismuth Smelting Technology in China: Tianzu Yang[1]; Jun Li[1]; *Lin Chen*[1]; Wanda Bin[1]; Shu Bin[1]; Weifeng Liu[1]; [1]Central South University

4:00 PM
Recovery of Palladium and Rhodium from Spent Automobile Catalysts by Microwave Roasting: *CH Ran*[1]; [1]Kunming University of Science and Technology

4:15 PM
Research on the Influence of Moulding Sand with Furan Resin on the Environment: Mariusz Holtzer[1]; Rafal Danko[1]; Artur Bobrowski[1]; Sylwia Zymankowska-Kumon[1]; Michal Kubecki[2]; [1]AGH University of Science and Technology; [2]Institute for Ferrous Metallurgy

4:35 PM
Effects on the Quality of Direct Reduced Iron Made by Microwave Heating with Diverse Coals: *Linqing Dai*[1]; Hongbo Zhu[1]; Jinhui Peng[1]; Libo Zhang[1]; Dong Chen[1]; [1]Kunming University of Science and Technology

4:45 PM
Prediction Method of Pre-Ignition Bed Pressure Drop in Composite Agglomeration Process: Helei Zhang[1]; Heng Yu[1]; Zhengwei Yu[1]; Yuanbo Zhang[1]; *Guanghui Li*[1]; Tao Jiang[1]; [1]School of Minerals Processing and Bioengineering, Central South University

5:05 PM
Co-Gasification Behavior of Metallurgical Coke with High and Low Reactivity: *Zuo Haibin*[1]; Gao Bing[1]; Zhang Jianliang[1]; Wang Zhe[1]; [1]University of Science and Technology Beijing

5:25 PM
Study on Swelling Behavior of Iron Ore Pellets in Direct Reduction with Coal Gas: Zhucheng Huang[1]; Zhikai Liang[1]; *Yi Lingyun*[1]; Tao Jiang[1]; [1]Central South University

5:40 PM
Microwave Absorbing Properties of the Cordierite-mullite: *Guo Chen*[1]; Jin Chen[1]; Shenghui Guo[1]; Xiaojie Zhi[1]; Jinhui Peng[1]; [1]Kunming University of Science and Technology

Advanced Materials for Power Electronics, Power Conditioning, and Power Conversion: Capacitor and Packaging Materials for Advanced Power Electronics

*Sponsored by:*TMS Electronic, Magnetic, and Photonic Materials Division, TMS: Energy Conversion and Storage Committee, TMS: Magnetic Materials Committee
Program Organizers: Paul Ohodnicki, National Energy Technology Laboratory; Clive Randall, Penn State University; Michael Lanagan, Penn State University; Michael McHenry, Carnegie Mellon University; Rachel Myers-Ward, Naval Research Laboratory

Thursday PM
March 7, 2013
Room: 007A
Location: Henry B. Gonzalez Convention Center

Session Chair: Michael Lanagan, Penn State

2:00 PM Invited
Fabrication of PLZT Dielectric Films for Power Inverters in Electric Drive Vehicles: *U. (Balu) Balachandran*[1]; Manoj Narayanan[1]; Shanshan Liu[1]; Beihai Ma[1]; [1]Argonne National Laboratory

2:30 PM Invited
High Dielectric Constant Polymeric Dielectric Materials with High Thermal Stability: *Shihai Zhang*[1]; [1]Strategic Polymer Sciences, Inc.

3:00 PM Invited
High Energy Density and High Temperature Ceramic Multilayer Capacitors Based on Ferroelectrics: *Seongtae Kwon*[1]; Edward Alberta[1]; Wesley Hackenberger[1]; [1]TRS Technologies

3:30 PM Break

3:50 PM
Development and Characterization of High Temperature, High Energy Density Dielectrics for Power Electronics Capacitor Applications: *Dennis Shay*[1]; Niall Donnelly[2]; Clive Randall[1]; [1]Penn State University; [2]Recapping Inc.

4:10 PM
Electromigration of Sintered Nanoscale Silver Films at Elevated Temperature: *Jesus Calata*[1]; Guo-Quan Lu[1]; Khai Ngo[1]; Luu Nguyen[2]; [1]Virginia Tech; [2]Texas Instruments, Inc.

4:30 PM
High Field Electrical Conduction and Its Relation to Thermal Breakdown Strengths in Glass and Ceramic Capacitors: *Doo Hyun Choi*[1]; Michael Lanagan[1]; Clive Randall[1]; [1]Penn State University

4:50 PM
Magnetic-Field Dependent Dielectric Constant of High-Frequency La-Sr-Ni Oxide: *Yang-Ki Hong*[1]; Jaejin Lee[1]; [1]University of Alabama

5:10 PM Invited
Potential Ceramic Dielectrics for Air Force Applications: *Charles Stutz*[1]; [1]Air Force Research Laboratory

Biological Materials Science Symposium: Biomedical Materials Implants and Devices

*Sponsored by:*TMS Electronic, Magnetic, and Photonic Materials Division, TMS Structural Materials Division, TMS: Biomaterials Committee
Program Organizers: Candan Tamerler, University of Washington; Molly Gentleman, Texas A & M University; Po-Yu Chen, National Tsing Hua University; Kajal Mallick, University of Warwick; Rajendra Kumar Kasinath, Unversity of Montana; Paul G. Allison, US Army Corp of Engineers

Thursday PM
March 7, 2013
Room: 214C
Location: Henry B. Gonzalez Convention Center

Funding support provided by: Biomaterials Program, National Science Foundation

Session Chairs: Candan Tamerler, University of Washington; Nima Rahbar, Worcester Polytechnic Institute

2:00 PM Keynote
Ice-templated Scaffolds for Bone Regeneration: *Antoni Tomsia*[1]; [1]Lawrence Berkeley National Laboratory

2:40 PM
Self-Adaptive, Ultra-Compliant Shape Memory Alloys for Medical Implant Applications: *Ji Ma*[1]; Ibrahim Karaman[1]; [1]Texas A&M University

3:00 PM
Effects of Network Architecture and Fibre Microstructure on the Fracture Energy of Stainless Steel Fibre Networks Intended for a Fibrous Scaffold: *Suresh Neelakantan*[1]; Wolfram Bosbach[1]; Athina Markaki[1]; [1]University of Cambridge

3:20 PM
Mechanical Properties and Biocompatability of TNZ40 Beta Titanium Alloys: *Dong-Geun Lee*[1]; Yongtai Lee[1]; Xujun Mi[2]; Wenjun Ye[2]; [1]Korea Institute of Materials Science; [2]General Research Institute for Nonferrous Metals

3:40 PM Break

3:50 PM Invited
Structure and Ionic Diffusion in Novel Bioactive Glasses: *Jincheng Du*[1]; [1]University of North Texas

4:20 PM
Effect of Porous Size and Sintering Condition on Mechanical Property of Ti-based Porous Composite Fabricated by Spark Plasma Sintering: *Eri Miura-Fujiwara*[1]; Takeyuki Kikuchi[1]; Tohru Yamasaki[1]; Yoshimi Watanabe[2]; Equo Kobayashi[3]; [1]University of Hyogo; [2]Nagoya Institute of Technology; [3]Tokyo Institute of Technology

4:40 PM
P/M Processed Titanium Foam for Biomedical Application Using Space Holder Technique: *Gaurav Gupta*[1]; Mohit Sharma[1]; Om Modi[1]; [1]AMPRI bhopal

5:00 PM
An Investigation on the Structural Changes in Synthetic Enamel Mineral Using CW and Ultrafast Pulsed Near-IR Lasers: *Animesh Jha*[1]; Gin Jose[1]; Esam Elmadani[1]; Monty Duggal[1]; Tom Brown[2]; Wilson Sibbett[2]; Christine Crombie[2]; David Walsh[2]; Chris Leburn[3]; [1]University of Leeds; [2]University of St Andrews; [3]Heriot-Watt University

5:20 PM
Zirconia Properties Used for Dentistry Restorations: *Carlos Elias*[1]; Heraldo dos Santos[1]; Claudinei dos Santos[2]; Andrea Melo[1]; [1]Instituto Militar de Engenharia; [2]Universidade do Estado do Rio de Janeiro

5:40 PM
Nano-Scale Adhesion of Parylene C and Stainless Steel 316L: *Sina Youssefian*[1]; Nima Rahbar[2]; [1]Worcester Polytechnic Institute; [2]Worcester Polytechnic Institute

6:00 PM
Structural Competition and Phase Transformations in Binary Ti-Nb Alloys for Biomedical Applications: *Matthias Boenisch*[1]; Christine Mickel[1]; Ajit Panigrahi[2]; Michael Zehetbauer[2]; Thomas Waitz[2]; Annett Gebert[1]; Mariana Calin[1]; Werner Skrotzki[3]; Juergen Eckert[1]; [1]IFW-Dresden; [2]University of Vienna; [3]TU Dresden

6:15 PM
Influence of Surface Treatment of Nitinol on Adhesion and Proliferation on Pre-Osteoblast Cells: *Waseem Haider*[1]; Ryszard Rokicki[2]; [1]University of Texas Pan American; [2]Electrobright

Characterization of Minerals, Metals and Materials 2013: Characterization for Extraction Applications

*Sponsored by:*TMS Extraction and Processing Division, TMS: Materials Characterization Committee
Program Organizers: Jiann-Yang Hwang, Michigan Technological University; Chen-Guang Bai, Chongqing University; John Carpenter, DOE LANL; Shadia Ikhmayies, Al Isra University; Bowen Li, Michigan technological University; Mingming Zhang, ArcelorMittal Global R&D; Sergio Monteiro, State University of North Rio de Janeiro; Zhiwei Peng, Michigan Technological University

Thursday PM
March 7, 2013
Room: 206A
Location: Henry B. Gonzalez Convention Center

Session Chairs: Ailiang Chen, Central South University; Xuewei Lv, Chongqing University

2:00 PM
Co-Intensification of Bio-Oxidizing As-Bearing Gold Ores: *Li Qian*[1]; Yuan Hong-jing[1]; Yang Yong-bin[1]; Jiang tao[1]; Zhang Yan[1]; Bai Guo-hua[1]; [1]Central South University

2:20 PM
Preparation of Nano Copper Oxide Using Metal Powders Recovered from Waste Printed Circuit Boards: *Zhu Ping*[1]; [1]Shanghai University

2:40 PM
The Effect of Flotation Reagents on the Gold Sorption Kinetics and Loading Capacity of Activated Carbon: *Mohammad Mehdi Salarirad*[1]; Ali Behnamfard[1]; [1]Amirkabir University of tech.

3:00 PM
Effect of Copper and Ammonia on Consumption of Thiosulfate in Gold Leaching Solutions: *Jiang Tao*[1]; Wang Dan[1]; Yang yong-bin[1]; Li Qian[1]; [1]Central South University

3:20 PM
Present and Development on the Process of Anode Slime Treatment in China: *Weifeng Liu*[1]; Shuliang Wang[2]; Tianzu Yang[1]; Lin Chen[1]; Shu Bin[1]; Wanda Bin[1]; [1]Central South University; [2]Lanzhou Jinchuan Advanced Materials Technology Co.,Ltd

3:40 PM
Nickel Recovery from Sukinda Chromite Overburden Using *Shewanella Putrefaciens*: *Lala Sukla*[1]; Barada Mishra[1]; Nilotpala Pradhan[1]; Jacintha Esther[1]; [1]Institute of Minerals and Materials Technology

4:00 PM
Composition Control of the Precursor of Fibrous Ni-Co Alloy Powders by Coordinated Coprecipitation: *Jing Zhan*[1]; Chuan-fu Zhang[1]; Yong-lin Yao[1]; [1]Central South University

4:20 PM
The Contrastive Studies of Microwave and Conventional Roasting CuCl Residue from Zinc Hydrometallurgy: Lu Shuaidan[1]; Yaqian Wei[1]; *Shaohua Ju*[1]; Jinhui Peng[1]; Libo Zhang[1]; [1]Key Laboratory of Unconventional Metallurgy, Kunming University of Science and Technology

4:40 PM
Organophilization of a Brazilian Kaolin Clay: *Maria das Graças Valenzuela*[1]; Camila Matos[2]; Orley de Oliveira[2]; Isaac Sayeg[2]; Lucy de Sant'Anna[2]; Flavio Carvalho[2]; Francisco Valenzuela-Díaz[2]; [1]Centro Universitário Estacio Radial de São Paulo; [2]Sao Paulo University

5:00 PM
Indium Extraction Process from Sulfuric Pressure Leaching Solution for Vacuum Furnace Germanium Slag: *Hongyang Cao*[1]; Jimin Wang[1]; Binxiu Wu[2]; Jian Wang[2]; Junhong LI[2]; [1]Guangzhou Research Institute of Non-Ferrous Metals; [2]Shaoguan Smelter

5:20 PM
Research on Desilication Technology from Acid Leaching of High-Grade Silic Stone Coal: *Zhao Qiang*[1]; [1]Changsha Research Institute of Mining and Metallurgy

5:40 PM
Reformulation of a Roofing Tiles Body: *Carlos Maurício Vieira*[1]; Sergio Neves Monteiro[1]; [1]State University of the North Fluminense

Characterization of Minerals, Metals and Materials 2013: Surface, Joint, and Processing of Metals

*Sponsored by:*TMS Extraction and Processing Division, TMS: Materials Characterization Committee
Program Organizers: Jiann-Yang Hwang, Michigan Technological University; Chen-Guang Bai, Chongqing University; John Carpenter, DOE LANL; Shadia Ikhmayies, Al Isra University; Bowen Li, Michigan technological University; Mingming Zhang, ArcelorMittal Global R&D; Sergio Monteiro, State University of North Rio de Janeiro; Zhiwei Peng, Michigan Technological University

Thursday PM
March 7, 2013
Room: 206B
Location: Henry B. Gonzalez Convention Center

Session Chair: Ender Keskinkilic, Atilim University

2:00 PM
Optimization of Process Parameters on the Siffusion Bonding of a Titanium Alloy with Titanium Alloy Sheet: *Chandrappa Kasigavi*[1]; [1]Siddaganga Institute of Technology, Tumkur

2:20 PM
A Route to Fracture Prediction of Spot Welded Boron Steel in Automotive Applications: *Neill Raath*[1]; Darren Hughes[1]; David Norman[2]; Iain McGregor[2]; Anirban Gupta[1]; Richard Dashwood[1]; [1]University of Warwick; [2]Tata Steel Automotive Engineering Research, Development & Technology

2:40 PM
Abrasion Behavior in Humid Condition In Tool Steels H-13 Y D-2: *Isaias Hilerio*[1]; Daniel Muñoz[1]; Alejandro Altamirano[1]; Victor Cortés[1]; [1]UAM Azcapotzalco

3:00 PM
Coating Characterization in CrN Deposited by Magnetron Sputtering Method on AISI 316 Steel: *Isaias Hilerio*[1]; Miguel A. Barrón[1]; Dulce Medina[1]; Roberto Hernández[1]; [1]UAM Azcapotzalco

3:20 PM
Grain Boundary Characterization of Crept Alloy 617: *Fan Zhang*[1]; David Field[1]; [1]Washington State University

3:40 PM
Microstructures and Microstructure Evolution for Inconel 718 Following Electron and Laser Beam Melt Fabrication and Heat Treatment: *K. N. Amato*[1]; E. Martinez[2]; X. Pan[3]; L. Murr[1]; J. Hernandez[1]; S.M. Gaytan[1]; C.A. Terrazas[1]; E. Rodriguez[1]; F. Medina[1]; R.B. Wicker[1]; [1]University of Texas at El Paso; [2]The University of Texas at El Paso; [3]Dalian University of Technology

4:00 PM
Microstructures for Niobium Fabricated by Electron Beam Melting: *Edwin Martinez*[1]; Lawrence Murr[1]; Jennifer Hernandez[1]; X. Pan[2]; Krista Amato[1]; P. Frigola[3]; Cesar Terrazas[1]; Sara Gaytan[1]; Emmanuel Rodriguez[1]; Francisco Medina[1]; Ryan Wicker[1]; [1]University of Texas at El Paso; [2]Dalian University of Technology; [3]RadiaBeam Technologies

4:15 PM
Reduced Building-Vat-Size-Design for Process Parameter Development in Electron Beam Melting System: *Sara Gaytan*[1]; Cesar Terrazas; Francisco Medina[1]; Pedro Frigola[2]; Lawrence Murr[2]; Ryan Wicker[1]; [1]UTEP; [2]RadiaBeam

4:30 PM
Determination of Undercooled Liquid Heat Capacities by Levitation Drop Calorimetry: *Carl Tackes*[1]; Ralph Napolitano[1]; [1]Iowa State University/Ames Laboratory

Computational Thermodynamics and Kinetics: Steels and Oxides

*Sponsored by:*TMS Electronic, Magnetic, and Photonic Materials Division, TMS Materials Processing and Manufacturing Division, TMS: Alloy Phases Committee, TMS: Chemistry and Physics of Materials Committee, TMS/ASM: Computational Materials Science and Engineering Committee, TMS: Integrated Computational Materials Engineering Committee, TMS/ASM: Phase Transformations Committee, TMS: Process Technology and Modeling Committee
Program Organizers: Jörg Neugebauer, Max-Planck-Institut für Eisenforschung GmbH; Carelyn Campbell, NIST; Dongwon Shin, Oakridge National Lab; Zi Kui Liu, Penn State; Michael Demkowicz, Massachusetts Institute of Technology; Raymundo Arroyave, Texas A & M University; Shenyang Hu, Pacific Northwest National Laboratory

Thursday PM
March 7, 2013
Room: 207A
Location: Henry B. Gonzalez Convention Center

Session Chairs: In-Ho Jung, McGill University; Richard Sisson, Worcester Polytechnic Institute

2:00 PM Invited
Modeling the Nitriding: *Richard Sisson*[1]; Mei Yang; [1]WPI

2:25 PM
A New Treatment for the Kinetics of Isothermal Oxidation of Zinc Powders: *Qun Luo*[1]; Qian Li[1]; Jie-Yu Zhang[1]; Kuo-Chih Chou[2]; [1]Shanghai University; [2]University of Science and Technology Beijing

2:40 PM
Computation of Thermal Fields with Non-Stationary Model at Electron Beam Melting of Metals: *Katia Vutova*[1]; Veliko Donchev[2]; Vania Vassileva[2]; [1]Institute of Electronics, Bulgarian Academy of Sciences; [2]Institute of electronics, Bulgarian Academy of Sciences

2:55 PM
Gaseous Reduction of Iron Oxide Fines:Kinetic Parameters Estimation Using Global Minimization Algorithm: *Huiqing Tang*[1]; Zhancheng Guo[1]; [1]University of Science and Technology Beijing,Beijing

3:10 PM Break

3:25 PM
Kinetic Discussion on Deoxidation and Desulphurization of Molten Steel with Calcium Treatment: *Haiyan Tang*[1]; Tongbo Zhang[1]; Jingshe Li[1]; Yanqi Song[1]; [1]University of Science and Technology Beijing

3:40 PM
Experimental Grain Boundary Diffusivities in Magnesium Thin Films Using SIMS: *Ethan Ambroziak*[1]; Nagraj Kulkarni[2]; Bruce Warmack[2]; Bala Radhakrishnan[2]; Boyd Evans III[2]; Kevin Coffey[3]; Yongho Sohn[3]; Jerry Hunter[4]; Jay Tuggle[4]; Graeme Murch[5]; Irina Belova[5]; [1]University of Wisconsin - Madison; [2]Oak Ridge National Laboratory; [3]University of Central Florida; [4]Virginia Polytechnic Institute and State University; [5]The University of Newcastle, Austalia

Deformation, Damage, and Fracture of Light Metals and Alloys: Deformation, Damage, and Fracture of Light Metals and Alloys Session VII

*Sponsored by:*TMS Light Metals Division, TMS/ASM: Mechanical Behavior of Materials Committee
Program Organizers: Ke An, Oak Ridge National Laboratory; Qizhen Li, University of Nevada, Reno

Thursday PM
March 7, 2013
Room: 210B
Location: Henry B. Gonzalez Convention Center

Session Chair: Hongbin Bei, Oak Ridge National Laboratory

2:00 PM Invited
In-situ Neutron Diffraction Study of Microscopic Deformation Processes and the Microstructure Effect in Advanced High-Strength Steels: *Zhenzhen Yu*[1]; Zhili Feng[1]; Ke An[1]; Ling Yang[1]; Wei Zhang[1]; Yanli Wang[1]; Grigoreta Stoica[1]; Alexandru Stoica[1]; Li Sun[2]; Jeff Wang[2]; Xiaochuan Xiong[2]; Shawn Gayden[2]; Blair Carlson[3]; [1]Oak Ridge National Laboratory; [2]General Motors China Science Lab; [3]General Motors R&D Center

2:30 PM
Characterization of Beryllium Under Various Stress State Loading: *Carl Cady*[1]; Donald Brown[1]; Thomas Sisneros[1]; Cheng Liu[1]; Eric Brown[1]; George Gray[1]; [1]Los Alamos National Laboratory

2:50 PM
Friction Welding of γ-TiAl based Alloy Ti-47Al-3.5(Mn+Cr+Nb)-0.8(B+Si) in Investment Cast Condition - Process Development and Joint Properties: *Volker Ventzke*[1]; Nikolai Kashaev[1]; Heinz-Günter Brokmeier[1]; Norbert Huber[1]; [1]Helmholtz-Zentrum Geesthacht GmbH

3:10 PM
Effect of Nonproportional Loadings on Ductile Fracture: *Shamik Basu*[1]; Amine Benzerga[1]; [1]Texas A&M University

3:30 PM Break

3:40 PM
Computational Thermodynamic Calculations of Enthalpy for Constituent Phases and Effects on Deformation and Fracture: *John Chinella*[1]; [1]U.S. Army Research Laboratory

4:00 PM
Phase-Field-Crystal Modeling for Crack Propagation of Ductile Materials: *Gao Yingjun*[1]; [1]Guangxi University

4:20 PM
Modeling and Analysis of the Combined Roughness and Plasticity Induced Fatigue Crack Closure Process: *Justin Crapps*[1]; Steve Daniewicz[2]; [1]Los Alamos National Lab; [2]Mississippi State University

4:40 PM
Void Coalescence Modelling: Strain Hardening, Second Population and Shear Effects: *Thomas Pardoen*[1]; Liza Lecarme[1]; Damien Fabrègue[2]; Cihan Tekoglu[3]; Jean-Baptiste Leblond[4]; [1]UCL; [2]INSA Lyon; [3]TOBB University; [4]Université Paris VI

5:00 PM
Factors Influencing Corrosion of Disintegrable Metal Composite in Downhole Applications: *Swetha Ganeshan*[1]; Zhiyue Xu[1]; Caleb Newman[1]; [1]BHI

Magnesium-Based Biodegradable Implants Symposium: Coatings and Surface Modification

Sponsored by: TMS Electronic, Magnetic, and Photonic Materials Division, TMS Light Metals Division, TMS Structural Materials Division, TMS: Biomaterials Committee, TMS: Magnesium Committee

Program Organizers: Candan Tamerler, University of Washington; Wim Sillekens, European Space Agency

Thursday PM
March 7, 2013

Room: 214D
Location: Henry B. Gonzalez Convention Center

Session Chairs: Candan Tamerler, University of Washington; Jacob Edick, Boston Scientific

2:00 PM Invited
NSF – Engineering Research Center (ERC) for Revolutionizing Metallic Biomaterials: Activities and Opportunities for Globalization: *Jag Sankar*[1]; [1]NC A&T State University

2:30 PM
Bio-active Coatings on Magnesium Alloys for Biomedical Applications: *Prashant Kumta*[1]; Abhijit Roy[1]; Boeun Lee[1]; Nicole Ostrowski[1]; Satish Singh[1]; Sangeetha Kunjukunju[1]; Sung Jae Chung[1]; [1]University of Pittsburgh

2:50 PM
Surface Modification of Mg by MgO-ZrO2 Composite Coatings: *Sankara Narayanan TSN*[1]; Il Song Park[1]; Tae Sung Bae[1]; Min Ho Lee[1]; [1]Chonbuk National University

3:10 PM
Development of Biocompatible Metal and Ceramic Coatings for Biodegradable Magnesium Implants: *Dhananjay Kumar*[1]; S Yarmolenko[1]; Ram Gupta[1]; Prashant Kumta[1]; Kwado Darkwa-Mensah[1]; [1]North Carolina A & T State Univ

3:30 PM Break

3:50 PM
Biocompatibility of Fluoride-Coated Mg/Ca Alloys in a Subcutaneous Mouse Model: *Matthias Peuster*[1]; Juliane Seibt[1]; Thomas Hassel[2]; Friedrich-Wilhelm Bach[2]; Andreas Drynda[3]; [1]University of Chicago; [2]Leibnitz-University Hannover; [3]University of Magdeburg

4:10 PM
Deposition of MgF2 Coating on Mg by Chemical and Electrochemical Methods and Evaluation of Their Corrosion Resistance: *Sankara Narayanan TSN*[1]; Il Song Park[1]; Tae Sung Bae[1]; Min Ho Lee[1]; [1]Chonbuk National University

4:30 PM
Covalent Immobilization of Biomolecules on Magnesium Alloy AZ31: *Joy Gray-Munro*[1]; K. Bissonnette; Sahajmeet Guraya[1]; [1]Laurentian University

4:50 PM
Biodegradable Polymeric Coating on Surface Modified Magnesium Alloys for Controlled Degradation: *Sushma Amruthaluri*[1]; Norman Munroe[1]; Puneet Gill[1]; [1]Florida International University

5:10 PM Concluding Comments Candan Tamerler / Wim Sillekens

Magnesium Technology 2013: Phase Formation

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

Program Organizers: Norbert Hort, Helmholtz-Zentrum Geesthacht; Suveen Mathaudu, US Army Research Office; Neale Neelameggham, IND LLC; Martyn Alderman, Magnesium Elektron

Thursday PM
March 7, 2013

Room: 214A
Location: Henry B. Gonzalez Convention Center

Session Chairs: Alok Singh, National Institute for Materials Science; Alan Luo, General Motors Global Research and Development

2:00 PM
Bounds to Hardening by Solid Solution, Precipitation and Short Range Order in Mg Binary Alloys: *Carlos Caceres*[1]; Saeideh Abaspour[1]; [1]The University of Queensland

2:20 PM
A New Magnesium Alloy System: TEXAS: Björn Wiese[1]; Chamini Mendis[1]; Carsten Blawert[1]; Eric Nyberg[2]; Karl Kainer[1]; Norbert Hort[1]; [1]Helmholtz-Zentrum Geesthacht; [2]Pacific Northwest National Laboratory

2:40 PM
Effect of Sn Additions on the Age Hardening Response, Microstructures and Corrosion Resistance of Mg-0.8Ca (wt%) Alloys: *Chamini Mendis*[1]; Domonkos Tolnai[1]; Carsten Blawert[1]; Norbert Hort[1]; [1]Helmholtz Zentrum Geesthacht

3:00 PM
Phase Stability Investigation of the Mg-Zn-Sm System: *Xiangyu Xia*[1]; Amirreza Zadeh[1]; Chuan Zhang[2]; Xiaoqin Zeng[3]; Donald Stone[1]; Alan Luo[4]; [1]Materials Science Program, University of Wisconsin Madison; [2]Computherm LLC; [3]Shanghai Jiaotong University; [4]General Motor

3:20 PM
In Situ Synchrotron Diffraction of the Solidification of Mg-RE Alloys: *Domonkos Tolnai*[1]; Chamini Mendis[1]; Andreas Stark[1]; Gábor Szakács[1]; Björn Wiese[1]; Karl Kainer[1]; Norbert Hort[1]; [1]Helmholtz Zentrum Geesthacht

3:40 PM Break

4:00 PM
Nucleation Kinetics of the γ-Phase in a Binary Mg-Al Alloy: *Mehdi Lalpoor*[1]; J.S. Dzwonczyk[1]; N. Hort[2]; S.E. Offerman[1]; [1]TU-Delft/ Materials Innovation Institute; [2]Helmholtz Zentrum Geesthacht

4:20 PM
Impurity Diffusion Coefficients of Al and Zn in Mg Determined from Solid-to-Solid Diffusion Couples: *Catherine Kammerer*[1]; Nagraj Kulkarni[2]; Robert Warmack[2]; Kelly Perry[2]; Irina Belova[3]; Graeme Murch[3]; Yongho Sohn[1]; [1]University of Central Florida; [2]Oak Ridge National Laboratory; [3]The University of Newcastle

4:40 PM
Effects of Alloying Elements and Cooling Rate on Morphology of Phases in CaO Added Mg-Al-Si Alloys: *Young-Gil Jung*[1]; Hyun kyu Lim[1]; Young-Ok Yoon[1]; Shae K. Kim[1]; Do Hyang Kim[2]; [1]KITECH; [2]Yonsei University

5:00 PM
Microstructure and Phase Evolution in Mg-Gd and Mg-Gd-Nd Alloys with Additions of Zn, Y And Zr: Suzan Khawaled[1]; *Menachem Bamberger*[1]; Alexander Katsman[1]; [1]Technion - Israel Institute of Technology

5:20 PM
Formation of a Honeycomb Network of Precipitates in Hot Rolled WE43 Mg-Based Alloy: *Deep Choudhuri*[1]; Soumya Nag[1]; Subhashish Meher[1]; Nilesh Dendge[1]; J Hwang[1]; Rajarshi Banerjee[1]; [1]University of North Texas

Microstructural Processes in Irradiated Materials: Novel Systems & Ceramics

*Sponsored by:*TMS Structural Materials Division, TMS/ASM: Nuclear Materials Committee
Program Organizers: Thak Sang Byun, Oak Ridge National Laboratory; Dane Morgan, University of Wisconsin-Madison; Yasuyoshi Nagai, Tohoku University; Zhijie Jiao, University of Michigan-Ann Arbor; Christine Guéneau, CEA-Saclay

Thursday PM
March 7, 2013
Room: 203A
Location: Henry B. Gonzalez Convention Center

Session Chairs: Hidehiro Yasuda, Osaka University; Pascal Bellon, University of Illinois

2:00 PM Introductory Comments

2:10 PM Invited
On the Role of Interfaces on Radiation Damage Evolution in Oxide Heterocomposites: *Blas Uberuaga*[1]; [1]Los Alamos National Laboratory

2:40 PM
Proton Irradiation Study on Zirconium Carbide across Different Temperature and Stoichiometry: *Yina Huang*[1]; [1]University of Wisconsin-Madison

3:00 PM
Ab-Initio Study of Defect Clustering in Irradiated Silicon Carbide: *Chao Jiang*[1]; Dane Morgan[1]; Izabela Szlufarska[1]; [1]University of Wisconsin

3:20 PM Invited
Phase Field Modeling of Radiation Induced Segregation and Precipitation: *Pascal Bellon*[1]; Venkatswara Manga[1]; Dallas Trinkle[1]; Robert Averback[1]; Thomas Garnier[1]; Maylise Nastar[1]; [1]University of Illinois

3:50 PM Invited
MeV Electron-Irradiation-Induced Non-Equilibrium Phase Formations in Nanoparticles: *Hidehiro Yasuda*[1]; [1]Osaka University

4:20 PM
MD Simulations of Radiation Effects on Thermal Properties of Multi-walled Carbon Nanotubes: *Jing Wang*[1]; Di Chen[1]; Lin Shao[1]; [1]Texas A&M University

4:40 PM
Ab Initio Study of Radiation-Induced Amorphization Mechanisms in SiC and ZrC: *Ming-Jie Zheng*[1]; Izabela Szlufarska[1]; Dane Morgan[1]; [1]University of Wisconsin - Madison

5:00 PM
Comparisons of Radiation Damage in He Ion and Proton Irradiated Immiscible Ag/Ni Nanolayers: *Kaiyuan Yu*[1]; Yue Liu[1]; Engang Fu[2]; Yongqiang Wang[2]; Michael Myers[1]; Haiyan Wang[1]; Lin Shao[1]; Xinghang Zhang[1]; [1]Texas A&M University; [2]Los Alamos National Laboratory

5:20 PM
Microstructural Changes in a/ß Ti and Zr alloys and Al-Mg-Si Alloy Due to Ion-Beam Irradiation: *Dhriti Bhattacharyya*[1]; Pranesh Dayal[1]; David Carr[1]; Robert Harrison[1]; Lyndon Edwards[1]; Roman Voskoboinikov[1]; [1]ANSTO

5:40 PM Concluding Comments

Modeling and Experimental Validation of Multiscale Mechanical Behavior from Atomic Scale to Macro Scale: Multiscale Behavior: Strength and Segregation

*Sponsored by:*TMS Materials Processing and Manufacturing Division, TMS Structural Materials Division, TMS: Integrated Computational Materials Engineering Committee, TMS/ASM: Mechanical Behavior of Materials Committee, TMS: Nanomechanical Materials Behavior Committee, TMS: Process Technology and Modeling Committee, TMS: Shaping and Forming Committee
Program Organizers: Nathan Mara, Los Alamos National Laboratory; Jian Wang, Los Alamos National Laboratory; Brad Boyce, Sandia National Laboratories; Jennifer Carter, Case Western Reserve University; Anthony Rollett, Carnegie Mellon University; Jonathan Zimmerman, Sandia National Laboratories

Thursday PM
March 7, 2013
Room: 211
Location: Henry B. Gonzalez Convention Center

Session Chairs: Mark Tschopp, Mississippi State University; Arief Budiman, SunPower Corporation

2:00 PM Invited
Energetics and Length Scales of Point Defect and Element Segregation to Grain Boundaries in Fe: *Mark Tschopp*[1]; Kiran Solanki[2]; Fei Gao[3]; Xin Sun[3]; [1]Mississippi State University; [2]Arizona State University; [3]PNNL

2:30 PM
Binary L12 - Intermetallics: A Statistical-Thermodynamic Modelling of Ordering Phenomena, Behavior and Properties: *Olga Semenova*[1]; Regina Krachler[1]; [1]University of Vienna

2:50 PM
Continuum Dislocation Dynamics Modelling of Mesoscale Deformation of Single Crystals: *Shengxu Xia*[1]; Anter El-Azab[1]; [1]Purdue University

3:10 PM
Geometrical Construction of <uvw>(Σ/ Σn)m‡1 - 90° Twist Quasi-Periodic Bi-Crystals andTheir Quasi-Periodic Grain Boundaries in Cubic Crystals: *Mohammad Shamsuzzoha*[1]; [1]University of Alabama

3:30 PM Break

3:40 PM
Laue Simulation from 3D Discrete Dislocation Dynamic Modelling: Christophe Le Bourlot[1]; *Steven Van Petegem*[1]; Cecile Marichal[1]; Jochen Senger[2]; Daniel Weygand[2]; Helena Van Swygenhoven[2]; [1]Paul Scherrer Institut; [2]KIT

4:00 PM
Multi-Scale Constitutive Modeling for Ni3Al-Based Alloy: *Hongjian Zhang*[1]; Weidong Wen[1]; Haitao Cui[1]; [1]Nanjing University of Aeronautics and Astronautics

4:20 PM Invited
Plasticity in the Nanoscale Cu/Nb Multilayers as Revealed by Synchrotron X-Ray Laue Microdiffraction: *Arief Budiman*[1]; N. Li[1]; N. Mara[1]; M. Kunz[2]; N. Tamura[2]; A. Misra[1]; [1]Los Alamos National Laboratory (LANL); [2]Advanced Light Source (ALS)

4:50 PM
Influence of Iron on Strength of Aluminum Die Cast Alloys: *Mesut Varlioglu*[1]; Goutam Mohapatra[2]; Satyam Sahay[2]; Mohamad El-Zein[1]; [1]Deere & Company; [2]John Deere India Pvt Ltd

5:10 PM
Improving Estimates of Fretting Wear Rates through Microscale Simulations: *Areg Hayrapetian*[1]; Michael Demkowicz[1]; [1]Massachusetts Institute of Technology

Ni-Co 2013: Ni and Co Hydrometallurgy

*Sponsored by:*The Minerals, Metals and Materials Society, Metallurgical Society of the Canadian Institute of Mining Metallurgy and Petroleum, Chinese Society for Metals, GDMB Society for Mining, Metallurgy, Resource and Environmental Technology, Society for Mining Metallurgy and Exploration, Mining and Materials Processing Institute of Japan, Associacao Brasileira de Metalurgia, Materiais e Mineracao, Southern African Institute of Mining and Metallurgy (SAIMM), Minerals Engineering International Online, Cobalt Development Institute, Societe Francaise de Metallurgie et de Materiaux, TMS Extraction and Processing Division, TMS: Hydrometallurgy and Electrometallurgy Committee, TMS: Pyrometallurgy Committee
Program Organizer: Thomas Battle, Midrex Technologies

Thursday PM
March 7, 2013
Room: 007D
Location: Henry B. Gonzalez Convention Center

Session Chairs: Violina Cocalia, Cytec Industries, Inc.; Harald Oosterhof, Umicore

2:00 PM
Continuous Co-Precipitation Behaviour and Stability of Arsenic(V) from Fe(II,III)-Al(III)-Ni(II) Sulphate Effluent Solutions: *Christoph Doerfelt*[1]; George Demopoulos[1]; [1]McGill University

2:25 PM
Hydrochloric Acid Regeneration Via Calcium Sulfate Crystallization for Non-Ferrous Chloride Leaching Processes: *Thomas Feldmann*[1]; George Demopoulos[1]; [1]McGill University

2:50 PM
Hydrometallurgical Nickel Laterite Processing: A Review of Current SX Flowsheets and Industry Trends: *Adam Fischmann*[1]; Shane Wiggett[1]; Troy Bednarski[1]; Violina Cocalia[1]; Cyril Bourget[1]; [1]Cytec Industries Inc.

3:15 PM
Studies on Refining Cobalt Salt Solution by Extraction Chromatography to Prepare High Purity Cobalt: Chen Song[1]; Zhang Li[1]; Lang Shuling[1]; Cai Zhenping[1]; Wang Lijun[1]; [1]General Research Institute for Non-ferrous Metals

3:40 PM Break

4:00 PM
When Laboratory Work and Operating Plant Don't Agree:Commercializing the Caron Ammonia-Ammonia Carbonate Ni Process: *Larry Southwick*[1]; [1]L.M.Southwick & Assoc.

4:25 PM
Selective Production of Co & Ni Powders through Hydrothermal Reduction of Leach Solutions of A Synthetic Matte Containing Cu-Ni-Co-Fe-S: *Devabrata Mishra*[1]; Kyung-Ho Park[2]; Kamala Sahu[1]; Archana Agrawal[1]; Chul-Wo Nam[2]; [1]National Metallurgical Laboratory (CSIR-NML); [2]KIGAM

Phase Transformation and Microstructural Evolution: General Phase Transformations - Fe Based Alloys: Part II

*Sponsored by:*TMS Materials Processing and Manufacturing Division, TMS: Chemistry and Physics of Materials Committee, TMS/ASM: Computational Materials Science and Engineering Committee, TMS: Integrated Computational Materials Engineering Committee, TMS/ASM: Phase Transformations Committee, TMS: Process Technology and Modeling Committee, ASM: Alloy Phase Diagrams Committee
Program Organizers: Amy Clarke, Los Alamos National Laboratory; Sudarsanam Suresh Babu, Ohio State Univ; Rajarshi Banerjee, Univ of North Texas; John Morral, Ohio State Univ; Brian Gleeson, University of Pittsburgh; Carelyn Campbell, National Institute of Standards & Tech; Yongho Sohn, Univ of Central Florida; Yunzhi Wang, Ohio State University

Thursday PM
March 7, 2013
Room: 204A
Location: Henry B. Gonzalez Convention Center

Session Chairs: Amy Clarke, Los Alamos National Laboratory; Sudarsanam Suresh Babu, The Ohio State University

2:00 PM Invited
Variant Selection in Heterogeneous Nucleation during Phase Transformations of Steels: *Tadashi Furuhara*[1]; Goro Miyamoto[1]; [1]Institute for Materials Research, Tohoku University

2:30 PM
Microstructural Characterisation of Bainitic Bearing Steel: *Abdur Bhatti*[1]; Pedro Rivera-Diaz-del-Castillo[1]; [1]Cambridge University

2:50 PM
Microstructure Evolution and Mechanical Properties of Hot-rolled Medium Mn TRIP Steel: Zhihui Cai[1]; *Hua Ding*[1]; Xin Xue[1]; Qibin Xin[1]; Jun Jiang[1]; [1]Northeastern University

3:10 PM
Phase Transformation and Mechanical Properties of a 0.16C-1.5Mn-1.5Al TRIP Steel: *Yongfeng Shen*[1]; Y.D. Wang[1]; Y.D. Liu[1]; x. Sun[1]; L. Zuo[1]; [1]Northeastern University

3:30 PM Break

3:50 PM
A Molecular Dynamics Simulation Study of the Austenite-Ferrite Transformation in Polycrystalline Fe: *Huajing Song*[1]; Jeff Hoyt[1]; [1]Mcmaster University

4:10 PM
Phase Transformation in a Nanostructured ODS Steel Investigated with X-Ray Diffraction: *Steven Van Petegem*[1]; Patrick Schloth[2]; P. Susila[3]; Helena Van Swygenhoven[1]; [1]Paul Scherrer Institut; [2]EPFL; [3]Indian Institute of Technology Madras

4:30 PM
Precipitation and Abnormal Grain Growth in Low Alloy Steels: *Mohammad Abdur Razzak*[1]; Michel Perez[1]; Thomas Sourmail[2]; Sophie Cazottes; Marion Frotey[2]; [1]INSA Lyon; [2]ASCOMETAL

4:50 PM
Optimising Precipitation Hardening in High Strength Steels: *Alfonce Chamisa*[1]; W Rainforth[1]; Eric Palmiere[1]; [1]University of Sheffield

5:10 PM
Phase Transformation and Microstructure Evolution in 304 Stainless Steel during Cryogenic Laser Shock Peening: *Chang Ye*[1]; Gary Cheng[2]; [1]University of Cincinnati; [2]Purdue University

Phase Transformation and Microstructural Evolution: Phase Field, Phase Field Crystal, Diffusive Molecular Dynamics and Related Models: Part II

*Sponsored by:*TMS Materials Processing and Manufacturing Division, TMS: Chemistry and Physics of Materials Committee, TMS/ASM: Computational Materials Science and Engineering Committee, TMS: Integrated Computational Materials Engineering Committee, TMS/ASM: Phase Transformations Committee, TMS: Process Technology and Modeling Committee, ASM: Alloy Phase Diagrams Committee
Program Organizers: Amy Clarke, Los Alamos National Laboratory; Sudarsanam Suresh Babu, Ohio State Univ; Rajarshi Banerjee, Univ of North Texas; John Morral, Ohio State Univ; Brian Gleeson, University of Pittsburgh; Carelyn Campbell, National Institute of Standards & Tech; Yongho Sohn, Univ of Central Florida; Yunzhi Wang, Ohio State University

Thursday PM
March 7, 2013
Room: 204B
Location: Henry B. Gonzalez Convention Center

Session Chairs: W.T. Kim, Cheongju University; Ingo Steinbach, Ruhr-University; Mikko Haataja, Princeton University

2:00 PM Invited
Phase Field for Alloy Design: *Ingo Steinbach*[1]; [1]Ruhr-University

2:30 PM Invited
Phase-Field Modeling for Advanced Alloy Design: *Heike Emmerich*[1]; [1]University of Bayreuth

3:00 PM
Application of the Phase-Field Model to Four-Phase Reactions in Ternary Alloys: *Julia Kundin*[1]; Heike Emmerich[1]; [1]University Bayreuth

3:20 PM
Phase-Field Simulation and Nugget Microstructure Analysis of AZ31 Magnesium Alloy Welds.: *David Montiel*[1]; Lei Liu[2]; Lin Xiao[2]; Norman Zhou[2]; Nikolas Provatas[3]; [1]McMaster University; [2]University of Waterloo; [3]McGill University

3:40 PM Break

4:00 PM Invited
Phase Field Modeling of Microstructure Engineering in Spinodal-Type Magnetic Materials: *Yongmei Jin*[1]; Stephen Hackney[1]; [1]Michigan Technological University

4:30 PM
Phase Field Study of Grain Growth and Texture Evolution: Elastic Loading Effect: *Dong-Uk Kim*[1]; Seong-Gyoon Kim[2]; Won Tae Kim[3]; Pil-Ryung Cha[1]; [1]Kookmin University; [2]Kunsan National University; [3]Chongju University

4:50 PM
Phase Field Modelling of Simultaneous Formation of Ferrite and Bainite in Low-Carbon Steels: *Morteza Toloui*[1]; Matthias Militzer[2]; [1]Centre for Metallurgical Process Engineering,University of British Columbia; [2]Centre for Metallurgical Process Engineering, University of British Columbia

5:10 PM
Phase Field Modelling of Intercritical Annealing in Dual-Phase Steels: *Benqiang Zhu*[1]; Matthias Militzer[1]; [1]University of British Columbia

5:30 PM
Phase Field Simulation of Austenite Decomposition: *Adam Giessmann*[1]; Oleg Shchyglo[1]; Ingo Steinbach[1]; [1]Ruhr University Bochum

Symposium on High Entropy Alloys: Other Properties

*Sponsored by:*TMS Structural Materials Division, TMS/ASM: Mechanical Behavior of Materials Committee, TMS: Alloy Phases Committee
Program Organizers: Peter Liaw, The University of Tennessee; Gongyao Wang, University of Tennessee; M. Gao, National Energy Technology Laboratory ; S. Mathaudhu , U.S. Army Research Office

Thursday PM
March 7, 2013
Room: 203B
Location: Henry B. Gonzalez Convention Center

Session Chairs: Karin Dahmen, University of Illinois at Urbana Champaign; Michael Kaufman, Colorado School of Mines

2:00 PM Invited
Extracting Materials Properties from Crackling Noise and Slip Avalanche Statistics of Slowly-Sheared Materials: *Karin Dahmen*[1]; Xie Xie[2]; James Antonaglia[1]; Marina Laktionova[3]; Elena Tabachnikova[3]; Zhi Tang[2]; Junwei Qiao[4]; Julia Greer[5]; Jien Wei Yeh[6]; Jonathan Uhl[7]; Peter Liaw[2]; [1]University of Illinois at Urbana Champaign; [2]University of Tennessee at Knoxville; [3]National Academy of Sciences of Ukraine; [4]Taiyuan University of Technology; [5]Caltech; [6]National Tsing Hua University; [7]private

2:25 PM Invited
A Combinatorial Approach to the Investigation of Metal Systems That Form Both High Entropy Alloys and Bulk Metallic Glasses: Brian Welk[1]; Peter Liaw[2]; Mark Gibson[3]; *Hamish Fraser*[1]; [1]The Ohio State University; [2]The University of Tennessee; [3]CSIRO

2:50 PM
On the Solidification and Phase Stability of a Co-Cr-Fe-Ni-Ti High-Entropy Alloy: *Yao-Jen Chang*[1]; Che-Wei Tsai[1]; An-Chou Yeh[1]; Jien-Wei Yeh[1]; [1]Dept of Materials Science and Engineering, National Tsing Hua University

3:05 PM Invited
Liquid Phase Separation in Transition Element High Entropy Alloys: Abraham Munitz[1]; Rodinei Gomes[1]; Gerald Bourne[1]; James Cotton[2]; *Michael Kaufman*[1]; [1]Colorado School of Mines; [2]Boeing Research and Development

3:30 PM Break

3:45 PM Invited
Entropy in Solids: *Zi-Kui Liu*[1]; [1]The Pennsylvania State University

4:10 PM
Minor Phase and Defect Effects on Fatigue Behavior of Wrought Al0.5CoCrCuFeNi High-Entropy Alloys: *Zhi Tang*[1]; M. Hemphill[1]; T. Yuan[2]; G. Wang[1]; J. Yeh[3]; C. Tsai[3]; P. Liaw[1]; [1]The University of Tennessee; [2]Ohio University; [3]National Tsing Hua University

4:25 PM Invited
Other Sources of Entropy in Alloys: *Brent Fultz*[1]; [1]California Institute of Technology

4:50 PM Invited
Phase Separation and Intermetallic Formation in "High-Entropy" Alloys: *Chad Parish*[1]; Michael Miller[1]; Louis Santodonato[1]; Zhi Tang[2]; Peter Liaw[2]; [1]Oak Ridge National Laboratory; [2]University of Tennessee

2013 Young Leader Meet the Candidate Poster Session

*Sponsored by:*TMS: Young Leaders Committee
Program Organizers: Kinga Unocic, ORNL; Dongwon Shin, Oak Ridge National Laboratory; Dwayne Shirley, Texas Instruments, Inc.

Sunday PM
March 3, 2013

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

Materials Master Student Looks for a Full-time Engineer Job: *Shuai Wan*[1]; [1]Queen's University

Liquid Metal Batteries for Large Scale Energy Storage Applications: *Hojong Kim*[1]; Donald Sadoway[1]; [1]MIT

Computational Approaches for Multi-scale Design of Magnetostrictive Alloys Galfenol: *Abhishek Kumar*[1]; [1]Aerospace Department

Nanomechanical Properties of Sulfonated Poly(Styrene-Isobutylene-Styrene) Triblock Copolymers: *Omar Movil-Cabrera*[1]; [1]University of Puerto Rico - Mayaguez

Novel Methods of Synthesis of Metal Oxide Nanoparticles: Sarah Kendrick[1]; [1]Material Advantage Clemson University

Dr Jennifer M R Tilley MEng (Hons) (Oxon) DPhil (Oxon): *Jennifer Tilley*[1]; [1]University of Notre Dame

Modeling and Simulations for Quantitative Analyses: *Amy Wang*[1]; [1]University of Antwerp

Understanding Protective Film Formation by Magnesium Alloys: *Hassan Elsentriecy*[1]; Kinga Unocic[1]; Michael Brady[1]; Guang Ling Song[1]; Harry Meyer III[1]; James Keiser[1]; Lawrence Anovitz[1]; Gernot Rother[1]; Jeffery Thomson[1]; Mostafa Fayek[2]; Bruce Davis[3]; [1]Oak Ridge National Laboratory; [2]University of Manitoba; [3]Magnesium Elektron North America

Alloy Design and High Temperature Properties in TiAlNb(Cr,Mo) Alloys: *Glenn Bean*[1]; [1]University of Florida

Investigation of Electromagnetic Acoustic Transduction-Based Processing of Mg Alloy Metal Matrix Nanocomposites: *Hunter Henderson*[1]; [1]University of Florida

Carbon Encapsulated Platinum Nanoparticles: Growth, Characterization, and Applications: *Junchi Wu*[1]; Nitin Chopra[1]; [1]The University of Alabama

Graduate Student Looking for Post-doctoral Career Opportunities: *Chih-Pin Chuang*[1]; [1]University of Tennessee

Investigations of Abnormal Grain Growth Phenomena: *Nicholas Pedrazas*[1]; [1]University of Texas at Austin

Mechanics and Geometry in Soft Matter: from Morphogenesis to Bio-inspired Techonology: *Zi Chen*[1]; [1]Washington University in St. Louis

Microstructurally-Driven Materials Design of Magnesium Alloys: *Zachary Bryan*[1]; [1]University of Florida

Systems Design of Smart, Multifunctional Materials by Integrating Computational Tools with Multiscale Characterization Methods: *Derek Hsen Dai Hsu*[1]; [1]University of Florida

Tackling the Small Questions: *Julian Rosalie*[1]; [1]National Institute for Materials Science

The Direct Production of Low Cost Titanium Powder from Magnesium Powder and Titanium Tetrachloride: *Amin Oliazadeh*[1]; [1]Queen's University

Toughening in Shape Memory Alloy Reinforced Epoxy and Metal Matrix Composites: *Fatmata Barrie*[1]; [1]University of Florida

Understanding the Deformation Behavior of Structural Metals and Alloys: *Aravindha Antoniswamy*[1]; [1]University of Texas at Austin

2013 Functional Nanomaterials: Synthesis, Properties and Applications: Poster Session

*Sponsored by:*TMS Electronic, Magnetic, and Photonic Materials Division, TMS: Nanomaterials Committee
Program Organizers: Seong Jin Koh, University of Texas at Arlington; Nitin Chopra, University of Alabama; Jiyoung Kim, University of Texas at Dallas; Yuanbing Mao, University of Texas-Pan American; Ashwin Ramasubramaniam, University of Massachusetts; Gregory Thompson, University of Alabama

Monday PM
Symposium Poster Area
March 4, 2013

Room: Park View Lobby -
Location: Henry B. Gonzalez Convention Center

Funding support provided by: Qualcomm, Inc.

J-1: Development of CeO2–yttria Stabilized Zirconia Nano Composite Electrolytes for Solid Oxide Fuel Cells: *Alka Gupta*[1]; Shobit Omar[1]; kantesh Balani[1]; [1]I.I.T. Kanpur

J-2: Increased Efficiency of Organic Bulk Heterojunction Solar Cells on Flexible Substrates: *Hyung Woo Choi*[1]; Barry O'Brian[1]; Yong Kyun Lee[1]; N Theodore[2]; T. Alford[1]; [1]Arizona State University; [2]Freescale Semiconductor Inc.

J-3: Influence of Deposition Condition on the Crystallinity and Hydrogen Storage Properties of Mg Thin Films: *Byoungsoo Ham*[1]; Daniel Bufford[1]; Xinghang Zhang[1]; [1]Texas A&M University

J-4: Interfacial Growth of Polyaniline Nanofibers and Nanoparticles between Graphite Oxide Layers toward Electrochemical Energy Storage: *Jiahua Zhu*[1]; Minjiao Chen[1]; Suying Wei[1]; Zhanhu Guo[1]; [1]Lamar University

J-5: Three-Dimensional Oxide Core@shell Nanostructured Array for Electrochemical Energy Storage: *Xing Sun*[1]; Yuanbing Mao[1]; [1]University of Texas Pan-America

J-6: Magnetic Iron Oxide Nanoparticles Stabilized by Maleic Anhydride Grafted Polypropylene: *Qingliang He*[1]; Suying Wei[1]; Zhanhu Guo[1]; [1]Lamar University

J-7: Magnetic Polystyrene Nanocomposites Reinforced with Iron Oxide Nanoparticles: *Xingru Yan*[1]; Xi Zhang[1]; Hongbo Gu[1]; Suying Wei[1]; Zhanhu Guo[1]; [1]Lamar University

J-8: Magnetoresistive Conductive Polyaniline - Barium Titanate Nanocomposites with Negative Permittivity: *Xi Zhang*[1]; Zhanhu Guo[1]; Suying Wei[1]; [1]Lamar University

J-9: Band Gap Narrowing of CdO Powder by Rare Earth Praseodymium Doping: *H.-Y. He*[1]; [1]Shaanxi University of Science and Technology

J-10: Effect of the Heat Input on the Transformation of Retained Austenite on Transformation Induced Plasticity Steel TRIP Welded with Gas Metal Arc Welding Process for Automotive Parts: *Victor Lopez*[1]; Saul Reyes; Gladys Perez[1]; Arturo Reyes[1]; Patricia Zambrano[1]; Joaquin del prado[1]; [1]Corporacion Mexicana de Investigacion en Materiales

J-11: Characterizing Structure of Ag Nanoparticles Buried inside Si and Accompanying Strain-relief Mechanism in Si by High Resolution TEM and RBS Channeling Analysis: *Michael Martin*[1]; [1]Texas A&M University

J-12: Composition Analysis of Co-Doped Light-Emitting Polymer Nanocomposites: *Gail Moruza*[1]; Hillary Benedict[1]; Spencer Waizecker[2]; Kyle Gipson[1]; [1]James Madison University; [2]University of Virginia

J-13: Effect of Co Substitution on Microwave Absorption of BaFe12O19: *Abhishek Chauhan*[1]; Vijaya Agrawala[1]; Dharmendra Singh[1]; [1]IIT Roorkee

J-14: Effect of Thickness on Optical Properties of ZnO:Al Nanofilms: *Dinesh Madhup*[1]; Shanker Chimouriya[1]; [1]NANOLAB

J-15: Effect of Various Compounds on the Nano-Structured Framework of Calcium Silicate: *Ozgul Taspinar*[1]; Tugce Buyukyilmaz[1]; Ayfer Altmisoglu[1]; [1]Istanbul Technical Univ.

J-16: Green Catalyst of Nano Zirconia Doped ZnO: Synthesis, Characterization and Photo-Mineralization Under Visible Light: *Sudarkodi Raman*[1]; Veena Ragupathy[1]; Srimathi Krishnaswamy[1]; Senthil S. Kumaar[2]; Ganapathi N. Subramanian[3]; Kang T.W[3]; [1]CENCON, Hindustan University; [2]Advanced Materials Research Centre; [3]QSRC, Dongguk University

J-17: Influence of the Clay Tipe, the Velocity and Time of Stirring on the Properties of Diverse Organofilic Clays: Francisco Mondelo García[1]; Liaqat Shah[1]; Fabio Almeida[1]; José Valín Rivero[1]; María de Silva Valenzuela[1]; *Francisco Valenzuela Díaz*[1]; [1]Universidade de Sao Paulo

J-18: Photoluminescence in Quantum Nanoparticles of Indirect Gap Materials: *Karel Kral*[1]; Miroslav Mensik[2]; [1]Inst. Phys. ASCR, v.v.i.; [2]Institute of Macromolecular Chemistry, ASCR, v.v.i.

J-19: Photocatalytic Degradation of TOC by Fe2O3/TiO2 Coated on Light Ceramic: *Ju Hua*[1]; [1]Harbin Institute of Technology

J-20: Understanding the Size Control Mechanism for Pt/C Catalysts Made Using the Polyol Method: Pablo Favilla[1]; Jorge Acosta[1]; *Carlos Schvezov*[2]; Daniel Sercovich[3]; Juan Collet-Lacoste[3]; [1]CEDIT - CONICET; [2]University of Misiones; [3]National Atomic Energy Commission

J-21: Photoluminescence Properties of Hierarchical $YBO_3:Eu^{3+}$ Nanostructures: *Sandeep Sohal*[1]; Xianwen Zhang[1]; Archis Marathe[1]; V. V Kuryatkov[1]; Marauo Davis[1]; Louisa J Weeks[1]; Jharna Chaudhuri[1]; Mark Holtz[1]; [1]Texas Tech University

J-22: Response of Nanoporous Palladium Thin Films to Hydrogen Gas: *Xu Jiang*[1]; T. John Balk[1]; [1]University of Kentucky

J-23: Applying Nano Technology To Remove Toxic H2S Gase Compounds From Exuast Gases In Primary Aluminum Industry (Monte Carlo Simulation): *Mohsen Ameri*[1]; Borzu Baharvand[2]; saeb Sadeghi[2]; [1]Aluminium; [2]Almahdi-hormozal Aluminum Corporation

J-24: Model for Metallic Nanoparticles Production: A tool for Design Study: *Silvania Lopes*[1]; Pierre Proulx[2]; Jean-Baptiste Gouriet[1]; Patrick Rambaud[1]; [1]von Karman Institute; [2]University of Sherbrooke

J-25: Nano-Hybrid Organic-Inorganic Thin Films Using Molecular Layer Deposition (MLD): *Jie Huang*[1]; Mingun Lee[1]; Antonio Lucero[1]; Jiyoung Kim[1]; [1]University of Texas at Dallas

J-26: Nanocomposite Photocatalysts Containing TiO2 for Destruction of Bacteria under Visible Light: *Qianqian Lu*[1]; Yuanbing Mao[1]; Jinbo Zhao[1]; Pedro Rojas[1]; [1]UTPA

J-27: Obtaining Microcapsules from PHB/Purified Brazilian Clay Nanonocomposites: Maria Silva-Valenzuela[1]; Wang Hui[2]; Helio Wiebeck[2]; *Francisco Valenzuela-Diaz*[2]; [1]Centro Universitario Estacio Radial Sao Paulo; [2]Universidade de Sao Paulo

J-28: Precursor Modification and Refluxing Effects on Titania Nanostructures Prepared Via Sol Gel Reflux Synthesis: *Sofia Javed*[1]; Mohammad Mujahid[1]; Mohammad Islam[2]; Muhammad Aftab Akram[1]; [1]National University of Sciences and Technology Pakistan; [2]Centre of Excellence for Research in Engineering Materials (CEREM) King Saud University, P.O.Box 800, Riyadh 11421, Saudi Arabia

J-29: Preparation and Growth Mechanism of Fibrous Nickel Cobaltite Spinel Particles: *Jing Zhan*[1]; Chen Wang[1]; Chuan-fu Zhang[1]; [1]Central South University

J-30: Preparation of AlN–Y2O3 Nano-composite Powder Using Combustion Synthesized Precursor: *Aimin Chu*[1]; Mingli Qin[1]; Lin Zhang[1]; Baorui Jia[1]; Huifeng Lu[1]; Xuanhui Qu[1]; [1]University of Science and Technology Beijing

J-31: Preparation of Nanostructure Ni Fibers by Precipitation-Thermal Decomposition-Reduction Process: Zhang Chuanfu[1]; *Yao Yonglin*[1]; Zhan Jing[1]; Wu Jianhui[1]; Li Changjun[1]; [1]Central South University

J-32: Room Temperature Ferromagnetism in Co-Incorporated TiO_2 Films Deposited on Single Crystalline Substrate: *Sudesh Sharma*[1]; Sujeet Chaudhary[2]; Subhash C Kashyap[2]; [1]University of Petroleum and Energy Studies; [2]Indian Institute of Technology Delhi

J-33: Ruthenium Grubbs' Catalyst Nanostructures Grown by UV-Excimer-Laser Ablation for Self-Healing Applications: *Brahim Aissa*[1]; Federico Rosei[1]; Nechache Riad[1]; Emile Haddad[2]; Wes Jamroz[2]; Daniel Therriault[3]; [1]University of Quebec; [2]MPB Technologies Inc.; [3]University of Montreal

J-34: Study on EP Resin Modified Nano-Silica and Mechanical Properties of Composites: *Ju Hua*[1]; An Shihui[1]; Zhang Jin[1]; Yang Liu[1]; [1]Harbin Institute of Technology;

J-35: Surface Functionalization of Forcespun Nylon 6 Nanofibers Deposited with Silver and Copper Thin Films by Thermal Evaporation: Dorina Mihut[1]; Karen Lozano[1]; Luis Materon[1]; Noe Flores[1]; Roman Garcia[1]; *Wenqian Zhao*[1]; [1]The University of Texas Pan American

J-36: Synthesis and Luminescent Properties of Y3Al5012:Ce3+ Thin Film Phosphors Prepared by Pulsed Laser Deposition: *Kittessa Roro*[1]; Francis Dejene[2]; Lekoholollo Koao[2]; [1]Council for Scientific and Industrial research; [2]University of Free State (Qwa-Qwa campus)

J-37: Synthesis and Properties of Multiferroic A2BB'O6@ABO3 Core/Shell Nanocomposite: Andrix Arguelles[1]; *Yesenia Cantu*[1]; Yuanbing Mao[1]; [1]University of Texas Pan-American

J-38: Synthesis of Visible-light-active Photocatalysts for Water Disinfection: *Hermes Chirino*[1]; Jennifer Bravo[1]; [1]UTPA

J-39: Porphyrin Functionalized Iron Oxide-Gold Core-Shell Nanoparticles: *Sandile Songca*[1]; Oluwatobi Oluwafemi[1]; Adeolu Eshilokun[1]; [1]Walter Sisulu University

J-40: Effect of Temperature on Chemical Vapor Deposition Growth of Graphene on Cu: *Sirui Xing*[1]; Wei Wu[1]; Shin-Shem Pei[1]; [1]University of Houston

J-41: High Performance on TiO_2 Nanotubes and Thin Film Based Biosensors for the Detection of Streptavidin: *Mingun Lee*[1]; Antonio Lucero[1]; Jie Huang[1]; Jiyoung Kim[1]; [1]University of Texas at Dallas

J-42: Thermal Conductivity and Specific Heat of Metallic Micro- and Nanowires: *Denis Myasishchev*[1]; Josef Cepak[1]; Mark Holtz[1]; Jordan Berg[1]; [1]Texas Tech University

J-43: Effect of Temperature on the Optical and Structural Properties of Hexadecylamine Capped ZnS Nanoparticles Using Zinc(II) N-ethyl-N-Phenyldithiocarbamate as Single Source Precursor: *Damian Onwudiwe*[1]; Oluwafemi Oluwatobi[1]; Christien Strydom[1]; Sandile Songca[1]; [1]Walter Sisulu University

J-44: Fast Triangular Gate Pulse Measurement Techniques for Intrinsic Electrical Characterization of Graphene Filed-Effect Transistors: *Saungeun Park*[1]; Sangchul Lee[2]; Srikar Jandhyala[1]; Greg Mordi[1]; Jang-Sik Lee[3]; Jiyoung Kim[1]; [1]The University of Texas at Dallas; [2]Gwangju Institute of Science and Technology; [3]Kookmin University

J-45: Single-Particle Placement Using DNA-Conjugated Nanoparticles: *Manouchehr Teimouri*[1]; Pradeep Bhadrachalam[1]; Seong Jin Koh[1]; [1]The University of Texas at Arlington

J-46: Application of Martensitic Transformation Fundamentals to Select Appropriate Alloys for Grain Refining through Martensite Thermomechanical Treatment: Peyman Behjati[1]; *Ahmad Kermanpur*[1]; Abbas Najafizadeh[1]; [1]Isfahan University of Technology

J-48: Synthesis of Graphene/CuO Magnetic Nanocomposite via Solvothermal Processing: Maryam Najafi[1]; *Ahmad Kermanpur*[1]; Abbas Najafizadeh[1]; [1]Isfahan University of Technology

J-47: Optimization of Titanium Dioxide Thin Film Biosensors for Streptavidin Detection: *Antonio Lucero*[1]; Mingun Lee[1]; Jiyoung Kim[1]; [1]University of Texas at Dallas

J-52: Magnetocaloric Properties of Nanostructured Pr2-xDyxFe17: *Lotfi Bessais*[1]; Rym Guetari[1]; Riadh Bez[2]; Bazil Cizmas[3]; Najeh Mliki[2]; [1]CNRS; [2]University of Tunis el Manar; [3]Transilvania University of Brasov

J-50: Effect of Nb on the Formation of Nano/Ultrafine Grain Structure in a Low Carbon Steel by Thermomechanical Treatment: Meisam Abbasi[1]; *Ahmad Kermanpur*[1]; Abbas Najafizadeh[1]; [1]Isfahan University of Technology

J-51: Effect of Phonon Emission and Absorption in Electron Tunneling through Double Quantum Dots: *Pradeep Bhadrachalam*[1]; Ramkumar Subramanian[1]; Kyeongjae Cho[2]; Jiyoung Kim[2]; Seong Jin Koh[1]; [1]The University of Texas at Arlington; [2]The University of Texas at Dallas

J-49: Detection of Ultra-Low Concentrations of DNA Molecules Using Nanoparticle-Based DNA Sensing: *Manouchehr Teimouri*[1]; Yalong Li[1]; Seong Jin Koh[1]; [1]The University of Texas at Arlington

J-53: Effect of Ti on the Formation of Nano/Ultrafine Grain Structure in the 201L Austenitic Stainless Steel through Martensite Thermomechanical Treatment: Saeed Sadeghpour[1]; *Ahmad Kermanpur*[1]; Abbas Najafizadeh[1]; [1]Isfahan University of Technology

4th International Symposium on High-Temperature Metallurgical Processing: Poster Session

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

Program Organizers: Tao Jiang, Central South University; Jiann-Yang Hwang, Michigan Technological University; Phillip Mackey, Consultant; Onuralp Yücel, ITU; Guifeng Zhou, Wuhan Iron and Steel

Monday PM
Symposium Poster Area
March 4, 2013

Room: Park View Lobby -

Location: Henry B. Gonzalez Convention Center

O-1: Using of Spent Moulding Sands for Production of Burned Ceramic Building Materials: Influence for Environment: Józef Danko[1]; Mariusz Holtzer[1]; Rafal Danko[1]; Sylwia Zymankowska-Kumon[1]; [1]AGH University of Science and Technology

Aluminum Alloys: Fabrication, Characterization and Applications: Poster Session

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

Program Organizers: Zhengdong Long, Kaiser Aluminum; Subodh Das, Phinix LLC; Tongguang Zhai, University of Kentucky; William Golumbfskie, Naval Surface Warfare Center

Monday PM
Symposium Poster Area
March 4, 2013

Room: Park View Lobby -

Location: Henry B. Gonzalez Convention Center

C-1: An Investigation on the Refinement Effect of Ti-6Al-4V on Fe-rich Hypo-eutectic Al-Si Alloys: *Tara Foroozan*[1]; Arash Maniee[1]; Reza Taghiabadi[1]; [1]International University of Imam Khomeini

C-2: Characterization of the Developed Precipitates in Al-2 at.%Zn –x at.%Mg, (x=1.8, 2, 2.4, 3, 4.2): *Ghada Abbady*[1]; Nasser Afify[1]; Abd-Elfattah Gaber[1]; [1]Assiut University

C-3: Design and Development of a Permanent Mould for the Production of Motor-Cycle Piston in Sedi-Enugu: *Emmanuel Nwonye*[1]; Chukwunwendu Ilochonwu; [1]Scientific Equipment Development Institute

C-4: Development and Research of New Aluminum Alloys with Transition and Rare-Earth Metals and Equipment for Production of Wire for Electrotechnical Applications by Methods of Combined Processing: *Irina Matveeva*[1]; Viktor Frolov[1]; Leonid Trifonenkov[1]; Sergey Sidelnikov[2]; Nikolay Dovzhenko[2]; [1]UC RUSAL; [2]Siberian Federal University

C-5: Dynamic and Artificial Aging and Formation of Ultrafine Grained Structure in Aluminum Alloys During Severe Plastic Deformation: *Maxim Murashkin*[1]; Elena Bobruk[1]; Vil Kazykhanov[1]; Ruslan Valiev[1]; Xavier Sauvage[2]; [1]Ufa State Aviation Technical University; [2]University of Rouen, CNRS UMR

C-6: Effect of Process Parameters on Centrifugally Cast Al-Si FGM: *Kiran Aithal*[1]; Vijay Desai[2]; Narendranath S[2]; Mukunda P G[1]; [1]Nitte Meenakshi Institute of Tcehnology; [2]National Institute of Technology Karnataka

C-7: Effects of Minor Sc Addtion on the Microstructures and Mechanical Properties of Al-Zn-Mg-Cu Casting Aluminum Alloy: *Guangyu Yang*[1]; Shaojun Liu[1]; Wanqi Jie[1]; [1]Northwestern Polytechnical University

C-8: Influence of Machining Parameters on Al-4.5Cu-TiC In-Situ Metal Matrix Composites: *Pradeep Jha*[1]; Anand Kumar[1]; Manas mahapatra[1]; [1]IIT Roorkee

C-9: Microstructural and Mechanical Characterization of Al-TiC Composites Produced by Mechanical Alloying: *Elif Ozgun*[1]; Lütfi Öveçoglu[1]; [1]Istanbul Technical University

C-10: Microstructural and Mechanical Characterization of MIG Welded Aluminum Alloys Produced with Twin Roll Casting Technique: *Onur Birbasar*[1]; Özgür Akçam[2]; Emrah Özdogru[1]; Baris beyhan[1]; [1]Assan Aluminum; [2]GSI SLV-TR

C-11: Microstructural Evolution in an Al 6061/SiC Composite Processed through Cryorolling Followed by Annealing: *Jayaganthan R*[1]; Nageswararao Palukuri[1]; [1]IIT Roorkee

C-12: Microstructural Features of As-Cast Indium Activated Aluminum Sacrificial Anodes: Muhammed Pourgharibshahi[1]; *Mahmood Meratian*[1]; [1]Isfahan Uni of Tech

C-13: Nanostructured SPD-Processed Aluminum Alloys for Innovative Applications: *Ruslan Valiev*[1]; Ilchat Sabirov[2]; Maxim Murashkin[1]; Leonid Trifonenkov[3]; Evgeny Antipov[4]; [1]Ufa State Aviation Technical University; [2]IMDEA Materials Institute; [3]RUSAL ETC ltd; [4]Moscow State University

C-14: Study of Precipitation Behavior an Al-Cu Superalloy as a Function of Environmental Temperatures: E-Wen Huang[1]; *Ming-Hsien Wen*[1]; Cheng-Si Tsao[2]; Chun-Jen Su[3]; U-Ser Jeng[3]; [1]National Central University; [2]Institute of Nuclear Energy Research, Taiwan; [3]National Synchrotron Radiation Research Center, Taiwan

C-15: The Effect of Thermomechanical Aging of Aluminium – Copper Alloy (MATLAB Approach): *Adekunle Adegbola*[1]; Ajibade Omotoyinbo[2]; Oladayo Olaniran[2]; Akeem Ghazali; Olugbenga Fashina[1]; [1]The Polytechnic, Ibadan; [2]Federal University of Technology, Akure

C-16: Thixoforming of A356 Aluminum Bipolar Plate: *Amir Bolouri*[1]; Chung-gil Kang[1]; [1]Pusan National University

C-17: Fatigue Behavior of Ultra Fine

grained of 5083-Al Alloy Produced by Cryorolling: *Dharmendra Singh*[1]; Jayaganthan R[1]; Palukuri Nageswara rao[1]; [1]IIT Roorkee

C-18: Production Of Single Cylinder Engine Components through High Pressure Die Casting In Sedi Enugu: *Emmanuel Nwonye*[1]; Chukwunwendu Ilochonwu[1]; Okechukwu Nwajagu[1]; [1]Scientific Equipment Development Institute

C-19: The Research of Tensile Shear Failure Load and Microstructure Characteristic of Friction-Stir-Spot-Welded 5083 Al-Mg Alloy: *Chia-Wei Lin*[1]; [1]National Cheng Kung University

Biological Materials Science Symposium: Poster Session

*Sponsored by:*TMS Electronic, Magnetic, and Photonic Materials Division, TMS Structural Materials Division, TMS: Biomaterials Committee

Program Organizers: Candan Tamerler, University of Washington; Molly Gentleman, Texas A & M University; Po-Yu Chen, National Tsing Hua University; Kajal Mallick, University of Warwick; Rajendra Kumar Kasinath, Unversity of Montana; Paul G. Allison, US Army Corp of Engineers

Monday PM
Symposium Poster Area
March 4, 2013

Room: Park View Lobby -

Location: Henry B. Gonzalez Convention Center

Funding support provided by: Biomaterials Program, National Science Foundation

Session Chair: To Be Announced

P-1: Characterization of a Portland Cement for Endodontic Material: *Carlos Elias*[1]; Leticia Chaves de Souza[1]; Hélio Lopes[1]; [1]Instituto Militar de Engenharia

P-2: A Novel Porous Hydroxyapatite Scaffold Coated with Nanostructured Forsterite for Bone Tissue Engineering: *Adel Sheikhhosseini*[1]; [1]IUT

P-3: Biocompatibility and Cytotoxity Study of Ultra Fine Grained Ti-Nb-Zr-CPP Composites Fabricated by SPS Using HEMM Powders: Kee Woo[1]; Kee-Do Woo[1]; Min-Su Kim[1]; Hyung-Sub Kang[1]; *Kee-Do Woo*[1]; [1]Chonbuk National University

P-4: The Effect of Fe and Si Additions to Ti-Nb-Ta-Zr Biocompatible Alloy on Mechanical Properties and Bicompatiblitiy In Vitro: *Josef Stráský*[1]; Petr Harcuba[1]; Ivana Kopova[1]; Lucie Bacakova[1]; Milos Janecek[1]; [1]Charles University

P-5: Modifying Fluorescence Signal of the Photoactive Proteins on Metal Nanoparticles by Modular Peptides: *Esra Yuca*[1]; Marketa Hnilova[2]; Turgay Kacar[3]; Ayten Yazgan Karatas[3]; Candan Tamerler[2]; [1]Department of Molecular Biology and Genetics, Yildiz Technical University, Turkey; [2]GEMSEC, Department of Material Science and Engineering, University of Washington; [3]Department of Molecular Biology and Genetics, Istanbul Technical University

P-6: Biocompatibility and Cytotoxity Study of Ultra Fine Grained Ti-Nb-Zr-CPP Composites Fabricated by SPS Using HEMM Powders: Kee Woo[1]; Kee-Do Woo[1]; Min-Su Kim[1]; Hyung-Sub Kang[1]; *Kee-Do Woo*[1]; [1]Chonbuk National University

P-7: Photoactive Proteins as Marker of Electrochemically Deposited Hydroxyapatite on Titania Nanotubes at Physiological Temperatures: *Sermin Utku*[1]; Esra Yuca[2]; Eren Seckin[3]; Gultekin Goller[3]; Ayten Yazgan-Karatas[3]; Mustafa Urgen[3]; Candan Tamerler[4]; [1]Namik Kemal University; [2]Yildiz Technical University; [3]Istanbul Technical University; [4]University of Washington

POSTERS

Deformation, Damage, and Fracture of Light Metals and Alloys: Poster Session

*Sponsored by:*TMS Light Metals Division, TMS/ASM: Mechanical Behavior of Materials Committee
Program Organizers: Ke An, Oak Ridge National Laboratory; Qizhen Li, University of Nevada, Reno

Monday PM
Symposium Poster Area
March 4, 2013

Room: Park View Lobby -

Location: Henry B. Gonzalez Convention Center

D-1: Alloy Parts Heat Treatment Temperature Monitoring System: *Tian Weiwei*[1]; Cao Wenzhong[1]; Wang Lei[1]; [1] Environmental & Chemical Engineering College of Nanchang University

D-2: Forging of Magnesium Alloy by Impulsive Energy at Room Temperature: Liqun Ruan[1]; Kazuyuki Hokamoto[1]; *Yasuo Marumo*[1]; [1]Kumamoto University

Fatigue and Fracture of Thin Films and Nanomaterials: Poster Session

*Sponsored by:*TMS Materials Processing and Manufacturing Division, TMS Structural Materials Division, TMS/ASM: Mechanical Behavior of Materials Committee, TMS: Nanomechanical Materials Behavior Committee
Program Organizers: Megan Cordill, Erich Schmid Institute of Materials Science; Daniel Kiener, Montanuniversitaet Leoben; Xinghang Zhang, Texas A &M University ; Daniel Gianola, University of Pennsylvania ; Corinne Packard, Colorado School of Mines

Monday PM
Symposium Poster Area
March 4, 2013

Room: Park View Lobby -

Location: Henry B. Gonzalez Convention Center

Funding support provided by: Hysitron, Inc., and Nanomechanics, Inc.

Session Chair: Megan Cordill, Erich Schmid Institute of Materials Science

K-1: Fabrication and Mechanical Behavior of Nanoporous Iridium: *Lei Wang*[1]; John Balk[1]; [1]University of Kentucky

K-2: Fatigue Crack Nucleation in LIGA Nickel MEMS Thin Films: *Wanliang Shan*[1]; Yong Yang[2]; T. Hillie[3]; W. Jordann[3]; Wole Soboyejo[1]; [1]Princeton University; [2]the City University of Hong Kong; [3]National Center for Nano-Structured Materials

K-3: In-Situ Fracture Studies of Thin Copper Films on Polymer Substrates: *Vera Marx*[1]; Christoph Kirchlechner[1]; Ivo Zizak[2]; Megan Cordill[1]; [1]Erich Schmid Institute of Materials Science; [2]Helmholtz-Zentrum Berlin for Materials and Energy

K-4: In-Situ Fracture Toughness Testing of Small-Scale Bi-Embrittled Cu Bicrystals: *Mark McLean*[1]; Rick Vinci[1]; [1]Lehigh University

K-5: In-Situ Monitoring of Thermally Induced Resistivity Changes in Silver Thin Films: *Barbara De Maeyer*[1]; Frederic Van Wontherghem[1]; Joris Proost[1]; [1]Université catholique de Louvain

K-6: Interfacial Fracture of Ductile Films from Compliant Substrates Using Stressed Overlayers: *Megan Cordill*[1]; Vera Marx[2]; Christoph Kirchlechner[2]; Ivo Zizak[3]; [1]Erich Schmid Institute of Materials Science; [2]University of Leoben; [3]Helmholtz-Zentrum Berlin für Materialien und Energie GmbH

K-7: Lifetime and Crack Initiation of FCC Materials in Small Scale under Multiaxial Cyclic Loading in the High and Very High Cycle Fatigue Regimes: *Thomas Straub*[1]; Tobias Kennerknecht[2]; Matthew Berwind[1]; Yuri Lapusta[3]; Chris Eberl[1]; [1]Karlsruhe Insitute of Technology (KIT); [2]Fraunhofer Institute for Mechanics of Materials (IWM); [3]French Institute of Advanced Mechanics (IFMA)

K-8: Mechanical and Structural Properties of Silicon Carbide (SiC): *M. Mamun*[1]; A. Elmustafa[1]; [1]Old Dominion University

K-9: Role of Oxygen Vacancies in Structural and Optical Properties of ZnO Sputtered Thin Films: *Madiha Siddiqi*[1]; Awais Ali[2]; Arshad Bhatti[1]; [1]Comsats Institute of Information Technology Islamabad; [2]Comsats Institute of Information technology Islamabad

K-10: A Comparison of Low Cycle Fatigue Behaviour of UFG Al Produced by Different Rolling Techniques: *Shokoufeh Malekjani*[1]; Peter Hodgson[1]; Nicole Stanford[1]; Timothy Hilditch[1]; [1]Deakin University

Magnesium Technology 2013: Poster Session

*Sponsored by:*TMS Light Metals Division, TMS: Magnesium Committee
Program Organizers: Norbert Hort, Helmholtz-Zentrum Geesthacht; Suveen Mathaudu, US Army Research Office; Neale Neelameggham, IND LLC; Martyn Alderman, Magnesium Elektron

Monday PM
Symposium Poster Area
March 4, 2013

Room: Park View Lobby -

Location: Henry B. Gonzalez Convention Center

Session Chair: Eric Nyberg, Pacific Northwest National Laboratory

E-1: A Study of the Hot and Cold Deformation of Twin Rolled Cast Magnesium Alloy: *Hesamaldin Askari*[1]; John Young[1]; David Field[1]; Ghassan Kridli[2]; Hussein Zbib[1]; [1]Washington State University; [2]Texas A&M University at Qatar

E-2: A Systematic Assessment of the Mg-Zn-RE Alloy Systems: Hailin Chen[1]; *Qing Chen*[1]; [1]Thermo-Calc Software AB

E-3: Characterization of Film Formation on Commercial and Model Magnesium Alloys: *Kinga Unocic*[1]; Hassan Elsentriecy[1]; Michael Brady[1]; Harry Meyer III[1]; James Keiser[1]; Lawrence Anovitz[1]; Gernot Rother[1]; Jeffery Thomson[1]; Mostafa Fayek[2]; Guan-Ling Song[2]; Bruce Davis[3]; [1]ORNL; [2]University of Manitoba; [3]Magnesium Elektron Wrought Products North America

E-4: Development of Texture in Mg-Zn Based Alloys: Jong Youn Lee[1]; Won Tae Kim[2]; Do Hyang Kim[3]; [1]Yonsei University; [2]Cheongju University; [3]Yonsei University

E-5: Ductility of Ultrafine Grained Magnesium Alloy: *Nilesh Kumar*[1]; Rajiv Mishra[1]; [1]University of North Texas

E-6: Dynamic Grain Refinement in Nanostructured Mg Deformed at Cryogenic Temperatures: *Baolong Zheng*[1]; Yizhang Zhou[1]; Suveen Mathaudhu[2]; Enrique Lavernia[1]; [1]University of California, Davis; [2]U.S. Army Research Office

E-7: Dynamic Precipitation during Hot Compression in Two Micro-Alloyed Mg-Al-Ca Alloys: *Jing Su*[1]; Abu Syed Humaun Kabir[1]; In-Ho Jung[1]; Steve Yue[1]; [1]McGill

POSTERS

E-8: Effect of Alloying and Interfaces on the Mechanical Properties of Nano-Grained Mg-Ti_2AlC Composites: *Babak Anasori*[1]; Michel Barsoum[1]; [1]Drexel University

E-9: Effect of Ca and Si Additions on Microstructure of Mg-Al Based Magnesium Alloys: Ren Yinglei[1]; *Geng Ningning*[1]; [1]Shenyang University of Technology

E-10: Effect of Gadolinium and Yttrium Content on Microstructure and Strength of Mg-Li Alloys: *Min Li*[1]; Yihan Liu[1]; Guangchun Yao[1]; Jun Cheng[1]; Guoyin Zu[1]; [1]Northeastern University

E-11: Effect of Grain Size on Tensile Twinning, Basal and Prismatic Slips Activation in Magnesium Alloys: *Ebubekir Dogan*[1]; Sonia Razavi[1]; Ibrahim Karaman[1]; Karl Hartwig[1]; Laszlo Kecskes[2]; Suveen Mathaudhu[3]; Vince Hammond[2]; [1]Texas A&M University; [2]US Army Research Laboratory, Weapons and Materials Research Directorate, Aberdeen Proving Ground; [3]US Army Reserch Laboratory, Army Research Office

E-12: Effect of Si Addition on Microstructure of As-Cast Mg-7Al-2.5Ca-0.4Mn-0.25Sr Alloy: Qiu Keqiang[1]; *He Ying*[1]; [1]Shenyang University of Technology

E-13: Effect of Si and Ca Additions on Microstructure of As-Cast Mg-5%Sn-0.5%Sr Alloy: You Junhua[1]; *Hao Shuai*[1]; [1]Shenyang University of Technology

E-14: Effect of Sr on Microstructure and Mechanical Properties of As-Cast Mg-8Zn-5Al-1Si Alloy: Ren Yinglei[1]; *Yang Shu*[1]; [1]Shenyang University of Technology

E-15: Effect of Temperature on the Deformation Behavior of Magnesium Single Crystals: Ming Zhe Bian[1]; Hua Chul Jung[1]; Kyung Hoon Lee[2]; *Kwang Seon Shin*[1]; [1]Magnesium Technology Innovation Center, Seoul National University; [2]Solution Lab

E-16: Effects of Alloying Elements on Microstructure and Mechanical Properties of Twin Roll Strip-Cast Mg-Al-X Alloys: *Sang Jun Park*[1]; Hwa Chul Jung[1]; Kyung Hoon Lee[2]; Kwang Seon Shin[1]; [1]Magnesium Technology Innovation Center / Seoul National University; [2]Solution Lab

E-17: Effects of Coating Conditions on the Properties of PEO Processed AZ31+Ca Magnesium Alloys: Sun Hwan Kwon[1]; Hwa Chul Jung[1]; Young Hee Park[2]; O Duck Kwon[2]; *Kwang Seon Shin*[1]; [1]School of Materials Science and Engineering, Seoul National University; [2]Research Division of Magnesium, Research Institute of Industrial Science and Technology

E-18: Effects of Heat Treatment on Microstructure and Mechanical Properties of As-Extruded Mg-5Sn-2Si-2Sr Alloy: You Jun-hua[1]; *Guo Qiang*[1]; [1]Shenyang University of Technology

E-19: Effects of P Addition on the Microstructure and Mechanical Properties of Mg-Al-Zn-Cu-xSi Alloy: Keqiang Qiu[1]; *Wang Xiaocheng*[1]; Junhua You[1]; [1]Shenyang University of Technology

E-20: Effects of Sn and Si Addition on Discontinuous Precipitation in Mg-9Al-1Zn: *TaeHee Cho*[1]; SeungHyun Oh[1]; InChang Jung[1]; YoungKyun Kim[1]; WonTae Kim[2]; DoHyang Kim[1]; [1]Yonsei University; [2]Cheongju University

E-21: Electrodepositing Copper on AZ31 Magnesium Alloy Using Copper Hydroxide and Citrate: *Zhu Ping*[1]; Wang You[1]; Chen Yan[1]; Zhou Ming[1]; Zhou Jing[1]; [1]Shanghai University

E-22: Electronic Structure and Properties of Stacking Faults of Mg-X Alloys: A First-Principles Study: *William Wang*[1]; Shunli Shang[1]; Yi Wang[1]; Kristopher Darling[2]; Laszlo Kecskes[2]; Suveen Mathaudhu[3]; Xidong Hui[4]; Zi-Kui Liu[1]; [1]The Pennsylvania State University; [2]U.S. Army Research Laboratory; [3]US Army Research Office; [4]University of Science and Technology Beijing

E-23: Enhanced Room Temperature Sheet Formability of Mg Alloy AZ31 having Tilted-Basal Texture and Fine Grain Size: *Dinakar Sagapuram*[1]; Wilfredo Moscoso[2]; Mert Efe[1]; Srinivasan Chandrasekar[1]; Kevin Trumble[1]; [1]Purdue University; [2]Pontificia Universidad Catolica Madre y Maestra

E-24: Evaluation of Microstructural Effect on Corrosion Behavior of Die-Casting AZ91D Magnesium Alloy: *Heon Kang*[1]; Seung Won Kang[1]; Byung Joon Yim[1]; Donghyun Bae[1]; [1]Yonsei University

E-25: Fabrication of Lotus-Type Porous Magnesium Containing In-Situ Mg2Si Particles and Its Mechanical Properties: Mohsen Mohammadi Zahrani[1]; Mahmood Meratian[1]; Mahdi Hajihashemi[1]; *E. Mohammadi Zahrani*[2]; [1]Isfahan University of Technology; [2]The University of British Columbia

E-26: Final Assessement of Pre-Industrial Solid-State Route for High Performance Mg-System Alloys Production: Conclusion of the Green Metallurgy Eu Project: *Fabrizio D'Errico*[1]; Franz Giger[2]; Gerardo Garces Plaza[3]; [1]Politecnico di Milano; [2]Buhler AG; [3]Centro Nacional de Investigaciones Metalúrgicas

E-27: Formation Kinetics and Characterization of Protective Layer over Magnesium Melt: *Samar Emami*[1]; [1]Department of Metallurgical Engineering University of Utah

E-28: Friction Stir Welding of Magnesium Alloy Plate: *Richard DeLorme*[1]; Sam Wei[2]; Jonathan Martin[2]; Jonathan Perrett[2]; Kyu Cho[3]; [1]Magnesium Elektron North America; [2]TWI Technology Centre (Yorkshire) Ltd; [3]US Armly Research Laboratory

E-29: Hall-Petch Relations for Various Deformation Modes in a Mg Alloy: Diffraction Measurements and VPSC Modeling: *Yi Wang*[1]; Hahn Choo[1]; Yang Ren[2]; Sven Vogel[3]; [1]Univ of Tennessee; [2]Argonne National Laboratory; [3]Los Alamos National Laboratory

E-30: High Strength and Ductile Nanostructured Magnesium-Based Alloys and Nanocomposites: *Marta Pozuelo*[1]; Wei Kao[1]; Jenn-Ming Yang[1]; [1]UCLA

E-31: Influence of Electron Energy Density on Surface Modification of AZ91 Magnesium Alloy Processed by High-Current Pulsed Electron Beam Irradiation: *Mincai Li*[1]; Chuang Dong[1]; Shengzhi Hao[1]; [1]Dalian University of Technology

E-32: Influence of Hydrostatic Pressure on Porosity of Die-Cast Mg Alloys: Experimental and Numerical Studies: Ana Fernandez[1]; Federico Sket[1]; *Jon Molina-Aldareguia*[1]; Teresa Pérez-Prado[1]; Antoine Jérusalem[1]; [1]IMDEA Materials Institute

E-33: Influence of Local Strain State on Twinning Behavior during Compression of AZ31 Magnesium Alloy: *Hongtao Huang*[1]; Andy Godfrey[1]; Wei Liu[2]; Qing Liu[1]; [1]Tsinghua University,Beijing ; [2]Tsinghua University, Beijing ; Tsinghua University,Beijing

E-34: Interactions of Dislocations with Grain Boundaries in Mg: *Jian Wang*[1]; Irene Beyerlein[1]; [1]Los Alamos National Laboratory

E-35: Investigation of Deformation Modes of Magnesium with Crystal Plasticity: *Matthew Priddy*[1]; David McDowell[1]; [1]Georgia Institute of Technology

E-36: Investigation of the Corrosion for Mg–Li-xGd–yY (x=7, 8, 9, 10, 11 wt%; y=1, 2, 3, 4, 5 wt%) Alloys: *Min Li*[1]; Guangchun Yao[1]; Jun Cheng[1]; Yinhan Liu[1]; Zhuokun Cao[1]; [1]Northeastern University

E-37: Mechanical Behavior of Nanocrystalline Mg-9Li-3Al-2.5Sr alloy via Cryomiling and Spark Plasma Sintering: *Yan Yang*[1]; Xiaodong Peng[1]; Baolong Zheng[2]; Weidong Xie[1]; Yizhang Zhou[2]; Enrique Lavernia[2]; [1]Chongqing University; [2]University of California, Davis

E-38: Microstructural Analysis of Severe Plastic Deformed Twin Roll Cast AZ31 for the Optimization of Superplastic Properties: *John Young*[1]; Hesam Askari[1]; Michael Heiden[1]; Yuri Hovanski[2]; Dave Field[1]; Hussein Zbib[1]; [1]Washington State University; [2]Pacific Northwest National Laboratories

E-39: Microstructural Evolution of CaO-added AZ31 Mg Alloys: *Jiwon Jeong*[1]; Jiseong Im[1]; Minhyuk Kwon[1]; Youn Bae Kang[1]; Sang Ho Oh[1]; [1]POSTECH

E-40: Microstructure Evaluation and Micro-Tensile Behavior of AZ31 Mg Alloy Processed by Equal-Channel Angular Pressing: *Jie Xu*[1]; Jittraporn Wongsa-Ngam[2]; Mahmood Shirooyeh[2]; Debin Shan[1]; Bin Guo[1]; Terence Langdon[2]; [1]Harbin Institute of Technology; [2]University of Southern California

E-41: Optimisation of the Process for Obtaining an UFG Structure in Mg Alloys: *Stanislav Rusz*[1]; Lubomir Cizek[1]; [1]VSB - Technical University of Ostrava

E-42: Prediction of Internal Stresses and Texture during Twin Dominated Plasticity in Mg and Mg Alloys: *Laurent Capolungo*[1]; Stéphane Berbenni[2]; Pierre-Alexandre Juan[1]; [1]Georgia Institute of Technology; [2]CNRS

E-43: Preparation and Characterization of High-Purity Magnesia Powder by Direct Pyrolysis Process of Anhydrous Magnesium Chloride: *Niu Liping*[1]; Zhang Ting'an[1]; Zhou Aiping[1]; Lv Guozhi[1]; Dou Zhihe[1]; Shi Guanyong[1]; Jiang Xiaoli[1]; [1]Northeastern University

E-44: Production of a Novel Bulk Nanostructured Mg-Li Alloy Exhibiting Superior Strength and Corrosion Resistance: *Wanqiang Xu*[1]; Michael Ferry[1]; [1]University of New South Wales

E-45: Resolving Dislocation and Twin Deformation Modes in AZ31: *David Fullwood*[1]; Michael Miles[1]; Timothy Ruggles[1]; Travis Rampton[1]; Raj Mishra[1]; [1]Brigham Young University

E-46: Role of Icosahedral Phase in Enhancing the Strength of Mg-Sn-Zn-Al Alloy: *Youngkyun Kim*[1]; Dohyung Kim[2]; Sungwoo Shon[1]; Wontae Kim[3]; Dohyang Kim[1]; [1]Yonsei University; [2]Republic of Korea Air Force; [3]Cheongju University

E-47: Statistics of Slip Avalanches in Simple Models for Slowly-Sheared Magnesium Alloys: *Karin Dahmen*[1]; James Antonaglia[2]; Wei Wu[3]; Ke An[4]; Matthew Wraith[2]; Jonathan Uhl; Peter Liaw[3]; [1] University of Illinois at Urbana Champaign; [2]University of Illinois at Urbana Champaign; [3]University of Tennessee at Knoxville; [4]Oak Ridge National Laboratory

E-48: Strain Rate Dependence of AM30 Magnesium Alloy: *Andrew Oppedal*[1]; Wilburn Whittington[1]; Haitham El Kadiri[1]; Sven Vogel[2]; [1]Mississippi State University; [2]Los Alamos National Laboratory

E-49: Study on Hydrogen Storage Properties of Nanostructured Mg-Re Particles Prepared through Arc Plasma Method: *Jianxin Zou*[1]; Hao Guo[1]; Si Zhou[1]; Xiaoqin Zeng[1]; Wenjiang Ding[1]; [1]Shanghai Jiao Tong University

E-50: Study on the Hot Tearing Susceptibility of Mg-7Al-xCa-2Si-0.8Zn-0.5Sr-0.4Mn Heat-Resistant Magnesium Alloys: You Junhua[1]; *Tao Siwei*[1]; [1]Shenyang University of Technology

E-51: Study on the Hot teaTing Susceptibility of Mg-7Al-xCa-2Si-0.8Zn-0.5Sr-0.4Mn Heat-Resistant Magnesium Alloys: You Junhua[1]; *Tao Siwei*[1]; [1]Shenyang University of Technology

E-52: The Effect of Chemical Modification on Wear Behavior of Mg/Mg_2Si Composite: Negin Maleki[1]; Mahmood Meratian[1]; Masood Panjepour[1]; Mohsen Mohammadi Zahrani[1]; *Ehsan Mohammadi Zahrani*[1]; [1]Department of Materials Engineering, Isfahan University of Technology

E-53: The Mechanical Behavior of Magnesium Alloys Subjected to Severe Plastic Deformation: *Amit Shyam*[1]; Amit Pandey[1]; Zhili Feng[1]; William Peter[1]; Sean Agnew[2]; Balasubramaniam Radhakrishnan[1]; [1]Oak Ridge National Laboratory; [2]University of Virginia

E-54: Twin Roll Casting and Rolling of an Aluminium Free Magnesium Strip: *Dietmar Letzig*[1]; Joachim Wendt[1]; Lennart Stutz[1]; Gerrit Kurz[1]; Karl Kainer[1]; [1]Helmholtz-Zentrum Geesthacht GmbH

E-55: Waste Heat Recovery Opportunities in a Magnesium Silicothermic Reduction Plant: *James Sever*[1]; [1]Nevada Clean Magnesium, Inc.

Materials Processing Fundamentals: Poster Session

*Sponsored by:*TMS Extraction and Processing Division, TMS: Process Technology and Modeling Committee
Program Organizers: Lifeng Zhang, University of Science and Technology Beijing; Antoine Allanore, Massachusetts Institute of Technology; Cong Wang, Saint-Gobain High Performance Materials; James Yurko, Materion Brush Beryllium and Composites; Justin Crapps, ExxonMobil

Monday PM
Symposium Poster Area
March 4, 2013

Room: Park View Lobby -

Location: Henry B. Gonzalez Convention Center

I-1: Luminescence Enhancement of Sky-blue ZnS:Tm Phosphor by Promoter Doping: *Su-Hua Yang*[1]; Yin-Hsuan Ling[1]; [1]National Kaohsiung University of Applied Sciences

I-2: Current Efficiency of Aluminum Electrolysis with Lower Cryolite Ratio and Temperatures: Huanhuan Ma[1]; *Jilai Xue*[2]; Jigang Li[2]; Yanan Zhang; [1]TMS; [2]University of Science and Technology Beijing

I-3: Effect of Thermal History on the Hot Ductility and Fracture Mechanisms of Low Carbon Peritectic Steel: *Zhihua Dong*[1]; Dengfu Chen[1]; Xing Zhang[1]; Mujun Long[1]; [1]Chongqing University

I-4: Influence of Coriolis Force on the Flow Field of Combined Top and Bottom Blown Converter: *Haiyan Tang*[1]; Tongbo Zhang[1]; Jingshe Li[1]; Yongfeng Chen[1]; [1]University of Science and Technology Beijing

I-5: Motion Characteristics of a Powder Particle through the Injection Device with Slats at Finite Reynolds Number: *Zhongfu Cheng*[1]; Miaoyong Zhu[1]; [1]Northeastern University

I-6: Study on Internal Cracks on Continuous Casting Slabs of AH36 Steel: Shufeng Yang[1]; *Lifeng Zhang*[1]; [1]University of Science and Technology Beijing

I-7: X-Ray Diffraction Measurement and Numerical Prediction of Residual Stresses in Laser Welding of High Strength Steel: *Wei Liu*[1]; Fanrong kong[1]; Radovan Kovacevic[1]; [1]Southern Methodist University

I-8: Research on the Influence of Moulding Sand with Furan Resin on the Environment: Mariusz Holtzer[1]; Rafal Danko[1]; Artur Bobrowski[1]; Sylwia Zymankowska-Kumon[1]; Michal Kubecki[2]; [1]AGH University of Science and Technology; [2]Institute for Ferrous Metallurgy

Microstructural Processes of Irradiated Materials: Recent Advances in Nuclear Materials Poster Session

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

Program Organizers: Thak Sang Byun, Oak Ridge National Laboratory; Dane Morgan, University of Wisconsin-Madison; Yasuyoshi Nagai, Tohoku University; Zhijie Jiao, University of Michigan-Ann Arbor; Christine Guéneau, CEA-Saclay

Monday PM
Symposium Poster Area
March 4, 2013

Room: Park View Lobby -

Location: Henry B. Gonzalez Convention Center

Session Chairs: Dane Morgan, University of Wisconsin; Zhijie Jiao, University of Michigan

6:30 PM Introductory Comments

F-1: Investigation of Sink Efficiency of Cu/Nb Interface Via Precipitation Reactions in Cu-Ag Alloy Films under Ion Irradiation: *Xuan Zhang*[1]; Robert Averback[1]; Pascal Bellon[1]; [1]UIUC

F-2: "Cherry-Pit" Nanostructures Induced by Irradiation in Immiscible Alloy Systems: *Shipeng Shu*[1]; Brad Stumphy[1]; Pascal Bellon[1]; Robert Averback[1]; [1]University of Illinois at Urbana-Champaign

F-3: Cavity Swelling in the Chinese RAFM Steel Irradiated with 196MeV Kr- Ions at Elevated Temperatures: *Tielong Shen*[1]; Zhiguang Wang[1]; [1]Institute of Modern Physics, Chinese Academy of Sciences

F-4: Dislocation Loop Microstructure of Proton Irradiated F-M Steel T91: *Cheng Xu*[1]; Gary Was[1]; [1]University of Michigan

F-5: Evolution of Copper-Rich Precipitates in Reactor Pressure Vessel Steels under High-Dose Irradiation: *Mikhail Sokolov*[1]; Randy Nanstad[1]; Michael Miller[1]; [1]ORNL

F-6: TEM Characterization of Dislocation Loops and Precipitates in RPV Steels under Neutron and Charged Particle Irradiations: *Yuan Wu*[1]; Takuya Yamamoto[1]; Peter Wells[1]; Nicholas Cunningham[1]; Robert Odette[1]; Kiyohiro Yabuuchi[2]; Akihiko Kimura[2]; James Cole[3]; [1]UCSB; [2]Kyoto University; [3]Idaho National Lab

F-7: Kinetic Simulations of Iron Chromium Alloys under Thermal Agiing and Irradiation: *Oriane Senninger*[1]; Frederic Soisson[1]; Enrique Martinez[2]; Maylise Nastar[1]; [1]CEA; [2]Los Alamos National Laboratory

F-8: Modeling of Mn-Ni-Si-Cu Precipitation in Reactor Pressure Vessel Steels: *Huibin Ke*[1]; Wei Xiong[1]; George Odette[2]; Dane Morgan[1]; [1]University of Wisconsin-Madison; [2]University of California-Santa Barbara

F-9: Modeling of Radiation Induced Segregation in Non-Dilute Fe-Cr: *Katharina Vortler*[1]; Leland Barnard[2]; Izabela Szlufarska[1]; Dane Morgan[1]; [1]Dept of Materials Science and Engineering, University of Wisconsin-Madison; [2]Materials Science Program, University of Wisconsin – Madison

F-10: On the Effects of Helium-DPA Interactions on Microstructural Evolution in Tempered Martensitic Steels: A Summary of Dual Ion Irradiation Results and Comparisons with In Situ He Injection: *Takuya Yamamoto*[1]; Yuan Wu[1]; G. Robert Odette[1]; Kiyohiro Yabuuchi[2]; Akihiko Kimura[2]; [1]Univ. California Santa Barbara; [2]Kyoto University

F-11: On the Evolution of Ni-Si-Mn Dominated Phases and Solute Segregation in RPV Steels under Charged Particle Irradiation: *Peter Wells*[1]; Takuya Yamamoto[1]; Yuan Wu[1]; Nicholas Cunningham[1]; G. Odette[1]; Kiyohiro Yabuuchi[2]; Akihiko Kimura[2]; [1]UC Santa Barbara; [2]Kyoto University

F-12: A Kinetic Monte-Carlo Study of Self-Interstitial Atom Behavior near Edge Dislocation in a Metallic Crystal: *Tomoaki Suzudo*[1]; Stanislas Golubov[2]; Alexander Barashev[2]; [1]Japan Atomic Energy Agency; [2]Oak Ridge National Labolatory

F-13: Early Stage Irradiation Defects in F82H Model Alloys: *Shaosong Huang*[1]; Koichi Sato[1]; Mikio Horiki[1]; Qiu Xu[1]; Toshimasa Yoshiie[1]; [1]Research Reactor Institute,Kyoto University

F-14: Effects of Normalizing Routes on Microstructures and Mechanical Properties of the 9Cr-0.5Mo-2W-V-Nb-B Steel: *Jong-Hyuk Baek*[1]; Jun-Hwan Kim[1]; Sung-Ho Kim[1]; Chan-Bock Lee[1]; [1]KAERI

F-15: Thermal Stability of He Bubbles in Nanostructured Ferritic Alloy 14YWT: Chad Parish[1]; Kevin Teng[1]; Philip Edmondson[2]; Qian Li[1]; Yanwen Zhang[1]; *Michael Miller*[1]; [1]Oak Ridge National Laboratory; [2]Oxford University

F-16: Effect of Yttrium on Irradiation Hardening of Ion Irradiated V-4Cr-4Ti Alloys: *Takeshi Miyazawa*[1]; Takuya Nagasaka[2]; Yoshimitsu Hishinuma[2]; Takeo Muroga[2]; Hideo Watanabe[3]; [1]Graduate University for Advanced Studies; [2]National Institute for Fusion Science; [3]Research Institute for Applied Mechanics

F-17: Processing and Characteristics of High Toughness Nanostructured Ferritic Alloys: *Thak Sang Byun*[1]; David Hoelzer[1]; Ji Hyun Yoon[2]; Suk Hoon Kang[2]; Yong Bok Lee[2]; Stuart Maloy[3]; [1]Oak Ridge National Laboratory; [2]Korea Atomic Energy Research Institute; [3]Los Alamos National Laboratory

F-18: Bulk Fabrication and Characterization of Fe-Y2Ti2O7 Interfaces with the Specified Orientation Relationships Found in ODS Alloys: *Tiberiu Stan*[1]; Yuan Wu[1]; G. Robert Odette[1]; Kurt Sickafus[2]; [1]University of California Santa Barbara; [2]University of Tennessee

F-19: Investigation of the Anisotropic Behavior of Radiation Induced Segregation with Grain Boundary Type in 316L Stainless Steel: *Christopher Barr*[1]; Greg Vetterick[1]; Kinga Unocic[2]; Khalid Hattar[3]; Mitra Taheri[1]; [1]Drexel University; [2]Oak Ridge National Laboratory; [3]Sandia National Laboratories

F-20: Irradiation Behavior of Plasma Nitrided Stainless Steel 316L: *Robert Balerio*[1]; [1]Texas A&M University

F-21: Precipitates in Heavy-Ion Irradiated Stainless Steels at High Fluences: *Zhijie Jiao*[1]; Gary Was[1]; Anton van der Ven[1]; Danny Edwards[2]; [1]University of Michigan; [2]Pacific Northwest National Laboratory

F-22: In Situ Studies of Heavy Ion Irradiated Nanocrystalline Ni and 304L Stainless Steel: *C. Sun*[1]; M. Song[1]; K.Y. Yu[1]; Y Chen[1]; Mark Kirk[2]; M. Li[2]; H. Wang[1]; K. Hartwig[1]; X. Zhang[1]; [1]Texas A&M University; [2]Argonne National Laboratory

F-23: Vacancy Clustering in Zirconium and the Influence of Hydrogen from Ab Initio Calculations: *Celine Varvenne*[1]; Olivier Mackain[1]; Emmanuel Clouet[1]; [1]CEA Saclay DEN/DMN/SRMP

F-24: GENESIS : An Open Platform for the Study and Nano Analysis (Atom Probe, SEM Cross Beam Station and MET (In Situ Straining, Temperature, Tomography) of Irradiation Effects in Radioactive Materials for Nuclear Application: *Philippe Pareige*[1]; Bertrand Radiguet[1]; Cristelle PAREIGE[1]; [1]Rouen University

F-25: Thermal Resistance of UO2 Grain Boundaries under Extreme Radiation Conditions: *Tianyi Chen*[1]; Di Chen[1]; Lin Shao[1]; [1]Texas A&M University

F-26: The Incorporation and Migration of a Single Xenon Atom in Cerium Oxide: *Yinbin Miao*[1]; Wei-Ying Chen[1]; Aaron Oaks[1]; James F. Stubbins[1]; [1]University of Illinois at Urbana-Champaign

F-27: Radiation Stability of Nanocrystalline Silicon Carbide: *Laura Jamison*[1]; Beata Tyburska-Pueschel[1]; Peng Xu[2]; Kumar Sridharan[1]; Todd Allen[1]; [1]University of Wisconsin-Madison; [2]Westinghouse Electric Company

F-28: Ion Irradiation Damage Study on Titanium Aluminides: Young-won Kim[1]; Stuart Maloy[2]; Ming Tang[3]; [1]UES-Materials & Processes; [2]LANL; [3]Los Alamos National Laboratory

F-29: Correlation between Fracture Toughness and Microstructure for Neutron Irradiation in Ceramics Materials: *Kouhei Tada*[1]; Masashi Watanabe[2]; Tatsuo Shikama[1]; [1]Touhoku University; [2] Japan Atomic Energy Agency

Modeling and Experimental Validation of Multiscale Mechanical Behavior from Atomic Scale to Macro Scale: Poster Session

*Sponsored by:*TMS Materials Processing and Manufacturing Division, TMS Structural Materials Division, TMS: Integrated Computational Materials Engineering Committee, TMS/ASM: Mechanical Behavior of Materials Committee, TMS: Nanomechanical Materials Behavior Committee, TMS: Process Technology and Modeling Committee, TMS: Shaping and Forming Committee

Program Organizers: Nathan Mara, Los Alamos National Laboratory; Jian Wang, Los Alamos National Laboratory; Brad Boyce, Sandia National Laboratories; Jennifer Carter, Case Western Reserve University; Anthony Rollett, Carnegie Mellon University; Jonathan Zimmerman, Sandia National Laboratories

Monday PM
Symposium Poster Area
March 4, 2013

Room: Park View Lobby -

Location: Henry B. Gonzalez Convention Center

Session Chair: Jian Wang, Los Alamos National Laboratory

G-1: A Defect Avalanche Approach To Characterize Inelastic Yield And Flow In Nanocrystalline Metals: *Shreevant Tiwari*[1]; David McDowell[1]; [1]Georgia Institute of Technology

G-2: Characterizing Deformation Behavior of Gum Metal: *Rohini Sankaran*[1]; Velimir Radmilovic[2]; Daryl Chrzan[1]; Andrew Minor[1]; J.W. Morris[1]; [1]University of California, Berkeley; [2]University of Belgrade

G-3: Comparison of Volume-Based and Feature-Based Approaches to Material Property Distribution Prediction: *Daniel Sparkman*[1]; Harry Millwater[1]; [1]University of Texas at San Antonio

G-4: Computational Approaches for Multi-Scale Design of Magnetostrictive Alloys Galfenol: *Abhishek Kumar*[1]; Veera Sundararaghavan[1]; [1]Aerospace Department

G-5: Crystallographic Study of Zr Poisoning of Al-Ti-B Grain Refinement Using the Edge-to-Edge Matching Model: Yuan-chun Huang[1]; *Zheng-bing Xiao*[1]; Hong-yuan Zhu[1]; [1]Central South University

G-6: Effects of Hot Compressive Dwell on Fatigue Crack Growth Behavior of Cast Aluminum Alloys: *Xiang Chen*[1]; Diana Lados[1]; Richard Pettit[2]; [1]Worcester Polytechnic Institute; [2]Fracture Lab

G-7: In-Situ Observations and Simulation of Damage Accumulation during Plastic Deformation of Polycrystals: *Reeju Pokharel*[1]; Anthony Rollett[1]; Jonathan Lind[1]; Xi Tan[1]; Robert Suter[1]; Shiu Fai Li[2]; Ricardo Lebensohn[3]; [1]CMU; [2]Livermore National Lab; [3]Los Alamos National Lab

G-8: Influence of Grain Boundary Structure on Interfacial Fracture under Tensile Loading: Cohesive Zone Model Informed by Atomistic Simulations: *Ilaksh Adlakha*[1]; Kiran Solanki[1]; Mark Tschopp[2]; [1]ASU; [2]CAVS

G-9: Mechanical Behavior and Thermal Stability of Differently Oriented Nanotwinned Ag Films: *Daniel Bufford*[1]; Haiyan Wang[1]; Xinghang Zhang[1]; [1]Texas A&M University

G-10: Mechanical Properties of Al-5182 Processed by Asymmetric Rolling: *Saeed Tamimi*[1]; Augusto Lopes[2]; Jose Gracio[1]; Edgar Rauch[3]; Said Ahzi[4]; Frederic Barlat[1]; [1]TEMA, Mechanical Eng. Dep. University of Aveiro; [2]Departamento de Engenharia CeraÃmica e do Vidro, Universidade de Aveiro; [3]Génie Physique et Mécanique des Matériaux, ENSPG-INPG; [4]Institute of Fluid and Solid Mechanics; IMFS, University of Strasbourg,

G-11: Multiscale Modeling and Experiments of Deformation of Nanoscale Metallic Multilayer Systems: *Niaz Abdolrahim*[1]; Rachel Schoeppner[1]; Ioannis Mastorakos[1]; David Bahr[1]; Hussein Zbib[1]; [1]Washington State University

G-12: Plastic Deformation of a Nano-Precipitate Strengthened Ni-Base Alloy Investigated by Complementary In-Situ Neutron Diffraction Measurements and Molecular-Dynamics Simulations: E-Wen Huang[1]; *Yu-Lih Huang*[1]; Yu-Chieh Lo[2]; Wen-Jay Lee[3]; Peter Liaw[4]; [1]National Central University, Taiwan; [2]Massachusetts Institute of Technology; [3]National Center for High-Performance Computing; [4]University of Tennessee

G-13: Simulation of Casting Process for Grinding Disc Seat: Qiu Keqiang[1]; *Zheng Nan*[1]; [1]Shenyang University of Technology

G-14: Spatially Resolved Acoustic Spectroscopy for Component-Scale Orientation Imaging: Case Studies in Alloys for Aerospace Propulsion Applications: *John Aveson*[1]; Richard Smith[2]; Wenqi Li[2]; Jethro Coulson[2]; David Rugg[3]; Neil D'Souza[3]; Howard Stone[1]; Steve Sharples[2]; [1]University of Cambridge; [2]University of Nottingham; [3]Rolls-Royce plc.

G-15: Strengthening Mechanisms of Highly Textured Cu/Co Multilayers: *Yue Liu*[1]; Youxing Chen[1]; Kaiyuan Yu[1]; Haiyan Wang[1]; Xinghang Zhang[1]; [1]Texas A&M University

G-16: The Small-scale Deformation Behaviour of Tungsten: *James Gibson*[1]; David Armstrong[1]; Steve Roberts[1]; [1]Oxford University

G-17: *In Situ* Virtual Diffraction Analysis of Alumina during Ion Bombardment: *Shawn Coleman*[1]; Wesley Barrows[1]; Douglas Spearot[1]; [1]University of Arkansas

G-18: Mechanical Behaviors of Nanostructures of Low Melting Temperature Metals as Revealed by Synchrotron Laue X-ray Microdiffraction: *Arief Budiman*[1]; M. Burek[2]; L. Berla[3]; D. Jang[4]; M. Kunz[5]; N. Tamura[5]; William Nix[3]; Julia Greer[4]; Ting Tsui[2]; [1]Los Alamos National Laboratory (LANL); [2]University of Waterloo; [3]Stanford University; [4]California Institute of Technology; [5]Advanced Light Source (ALS)

G-19: Understanding {112} Slip in Tantalum: *Jonathan Zimmerman*[1]; Lucas Hale[1]; Christopher Weinberger[1]; [1]Sandia National Laboratories

G-20: Modeling Interfaces in Solids: From Atomic Scale to Meso/Macro-Scale: *Jian Wang*[1]; Keonwook Kang[1]; Ruifeng Zhang[1]; Haijian Chu[1]; Caizhi Zhou[1]; Irene Beyerlein[1]; [1]Los Alamos National Laboratory

G-21: A Thermomechanical Damage Inelastic Model For Amorphous Polymers: *David Francis*[1]; Mark Horstemeyer[1]; Jean-Luc Bouvard[1]; [1]Mississippi State University

Nanostructured Materials for Lithium Ion Batteries and for Supercapacitors: Poster Session

*Sponsored by:*TMS Electronic, Magnetic, and Photonic Materials Division, TMS: Energy Conversion and Storage Committee
Program Organizer: David Mitlin, University of Alberta and NINT NRC

Monday PM
Symposium Poster Area
March 4, 2013

Room: Park View Lobby -

Location: Henry B. Gonzalez Convention Center

N-1: Use of Nanostructured Sn Thin Film Anodes for Lithium Ion Batteries: *Deniz Polat*[1]; Ozgul Keles; [1]ITU

Neutron and X-Ray Studies of Advanced Materials VI: Centennial and Beyond: Poster Session

*Sponsored by:*TMS Structural Materials Division, TMS/ASM: Mechanical Behavior of Materials Committee
Program Organizers: Rozaliya Barabash, Oak Ridge National Laboratory; Xun-Li Wang, City University of Hong Kong; Jaimie Tiley, US Air Force Research Laboratory; Gernot Kostorz, ETH Zurich; Brent Fultz, California Institute of Technology; Peter Liaw, Univ of Tennessee

Monday PM
Symposium Poster Area
March 4, 2013

Room: Park View Lobby -

Location: Henry B. Gonzalez Convention Center

H-1: Characterization by X-Ray Diffraction (XRD) of Heat Input Effect on the Transformation of Retained Austenite on Transformation Induced Plasticity Steel TRIP Welded with Gas Metal Arc Welding Process: *Victor Lopez*[1]; saul reyes[1]; gladys perez[1]; arturo reyez[1]; patricia zambrano[2]; Joaquin Del prado[3]; [1]Corporacion Mexicana de Investigacion en Materiales; [2]FIME; [3]metalsa

H-2: Texture Evolution during the Processing of 3.0% Silicon Steel with 0.5%Al and 2.5%Al: Jin Long Liu[1]; *Yu Hui Sha*[1]; Fang Zhang[1]; Liang Zuo[1]; [1]Northeastern University

H-3: The Competition between the Stress Relaxation and Load Transfer in NiAl-Strengthened Iron-Based Alloys: *Zhiqian Sun*[1]; Shenyan Huang[2]; Zhenke Teng[3]; Gian Song[1]; Gongyao Wang[1]; Peter Liaw[1]; [1]The University of Tennessee; [2]GE Global Research; [3]United States Steels Automotive Center

H-4: Formation of Cube and Goss Texture after Primary Recrystallization in Electrical Steels: *Jin Long Liu*[1]; Yu Hui Sha[1]; Ke Hu[1]; Fang Zhang[1]; Liang Zuo[1]; [1]Northeastern University

H-5: Micro-Deformation Mechanisms of a Dendrite/Zr-Based Bulk-Metallic-Glass Composite Subjected to Plastic Deformation: E-Wen Huang[1]; *Jer-Yi Liao*[1]; Yu-Lih Huang[1]; Peter Liaw[2]; Junwei Qiao[3]; Philip Withers[4]; [1]National Central University; [2]University of Tennessee; [3]Taiyuan University of Technology; [4]University of Manchester

Pb-free Solders and Emerging Interconnect and Packaging Technologies: Poster Session

*Sponsored by:*TMS Electronic, Magnetic, and Photonic Materials Division, TMS: Electronic Packaging and Interconnection Materials Committee
Program Organizers: Nikhilesh Chawla, Arizona State University; Srinivas Chada, Whirlpool; Darrel Frear, Freescale Semiconductor; John Elmer, LLNL; Tae-Kyu Lee, Cisco Systems; Yan Li, Intel; Laura Turbini, Research In Motion; Kwang-Lung Lin, National Cheng Kung University; Sohoon Yoo, Korea Institute of Industrial Technology

Monday PM
Symposium Poster Area
March 4, 2013

Room: Park View Lobby -

Location: Henry B. Gonzalez Convention Center

M-1: Asymmetrical Growth of Intermetallic Compounds Due to Thermomigration of Cu in Molten SnAg Solder: *Yi-Sa Huang*[1]; Chih Chen[1]; [1]National Chiao Tung University

M-2: Characterization of Microstructure and Sn Crystal Orientation Evolution in Large-Area Lead-Free Solder Joints in High Temperature Packaging Applications: Bite Zhou[1]; *G Muralidharan*[2]; Kanth Kurumadalli[2]; Andrew Kercher[2]; Chad Parish[2]; Scott Leslie[3]; Thomas Bieler[1]; [1]Michigan State University; [2]Oak Ridge National Laboratory; [3]Powerex Inc

M-3: EBSD Study of Electromigration Damage in Idealized SnAgCu 305 Interconnects Containing a Ni Layer: Xioranny Linares[1]; Chris Kinney[1]; Kyu-oh Lee[2]; John Morris[1]; *Linda Dada*; [1]UC Berkeley; [2]Intel Corporation

M-4: Effects of Microstructure on Temperature Distribution in Sn-based Pb-free Solder Joints under Direct Current Stressing: *Xu Zhang*[1]; KN Subramanian[2]; Andre Lee[2]; Fu Guo[3]; [1]Beijing University of Technology ; [2]Michigan State University; [3]Beijing University of Technology

M-5: Evaluation of Mechanical Properties in the Solder Joint with Ameliorated Nickel-Iron Alloy Films UBM during Thermal Treatments: *Hsiu-Min Lin*[1]; Jenq-Gong Duh[1]; [1]Materials Science and Engineering, National Tsing Hua University

M-6: Evolution of Resistance across Eutectic Sn-Bi Solder Joints under Simultaneous Thermal Cycling and Current Stressing: *Yong Zuo*[1]; Limin Ma[1]; KN Subramanian[2]; Andre Lee[2]; Fu Guo[1]; [1]Beijing University of Technology; [2]Michigan State University

M-7: Evolution of Tin Whiskers during Thermal Cycling: *Ying Wang*[1]; Carol Handwerker[1]; John Blendell[1]; [1]Purdue University

M-8: Fracture Behavior of Simulated SnAgCu Solder Micro-Bump Joints: Effects of Process and Service Conditions: *Zhe Huang*[1]; Uttara Sahaym[1]; Indranath Dutta[1]; Ganesh Subbarayan[2]; Rajen Sidhu[3]; [1]Washington State University; [2]Purdue University; [3]Intel Corporation

M-9: Interfacially Engineered Micro and Nano-Scale Cu-In Composites for High Heat Flux Thermal Interface Materials Applications: *Kathryn Mireles*[1]; Jia Liu[1]; Uttara Sahaym[1]; Indranath Dutta[1]; Mukul Renavikar[2]; Rajen Sidhu[2]; Ravi Mahajan[2]; [1]Washington State University; [2]Intel Corporation

M-10: Joint Properties of Sn-58Bi Solder Bumps on Flexible Substrate: *Min Su Kim*[1]; Yong-Ho Ko[1]; Sehoon Yoo[1]; Jeong-Han Kim[1]; Chang-Woo Lee[1]; [1]Korea Institute of Industrial Technology

POSTERS

M-11: Mechanical Property and Fracture Behavior of High Temperature Pb-Free Solder: *Hsiu Chen Tu*[1]; Kwang-Lung Lin[1]; [1]National Cheng Kung University

M-12: Mechanisms of Creep Deformation in Pure Sn Solder Joints: K. Lee; John Morris; *Fay Hua*[1]; [1]Intel Corporation

M-13: Metastable Phases in Sn-Ni Solders: *Sergey Belyakov*[1]; Christopher Gourlay[1]; [1]Imperial College London

M-14: Observation of Deformation Twin in Lead-Free Solder Joints and Its Formation Mechanism: *Huili Xu*[1]; Choong-Un Kim[1]; Tae-Kyu Lee[2]; Thomas Bieler[3]; [1]University of Texas at Arlington; [2]Cisco System Inc.; [3]Michigan state university

M-15: Sn-Co/Ag and Sn-Co/Cu Interfacial Reactions with/without Electromigration: *Chia-ming Hsu*[1]; Sinn-wen Chen[1]; Jui-shen Chang[1]; [1]National Tsing Hua University

M-17: Hillock Nucleation from Thermally-Cycled Large-Grain Pb-Free Solder Films: *Carol Handwerker*[1]; John Koppes; Pylin Sarobol; Wei-Hsun Chen; John Blendell; [1]Purdue University

M-16: Effect of Intermetallic Reaction Characteristics on Reliabilities of Fine Pitch Solder Microbump: *Young-Bae Park*[1]; Jong-Jin Park[1]; Sung-Hyuk Kim[1]; Jong-Myung Park[1]; [1]Andong National University

M-18: Stress/Strain Analysis and Anisotropic Effects on Whisker Formation in Thermally-Cycled Tin Films: *Wei-Hsun Chen*[1]; Ying Wang[1]; Pylin Sarobol[1]; John Koppes[1]; John Blendell[1]; Carol Handwerker[1]; [1]Purdue University

M-19: Structural Size Effects on the Mechanical Behavior of Different Phases of Sn-3.5Ag Solder Joints: *Ousama Abdelhadi*[1]; Leila Ladani[1]; [1]University of Alabama

M-20: Study of Fast Phase Transformation of Ni-Sn Intermetallic Compounds during Electromigration Test in Fine-Pitch Microbumps: *Yuan-Wei Chang*[1]; Yi-Sa Huang[1]; Chih Chen[1]; Nicholas Kao[2]; Eason Chen[2]; Daniel Lee[2]; J.Y. Juang[2]; [1]National Chiao Tung University; [2]Siliconware Precision Industries Co., Ltd.

M-21: Thermomigration Induced Fast Dissolution of Interstitial Ni in Three-Dimensional Integrated Circuits Packaging: *Yzu-Yang Lin*[1]; Fan-Yi Ouyang[1]; Wei-Cheng Juh[1]; [1]National Tsing Hua University

M-22: Tin Nanoparticles Based Solder Paste for Low Temperature Processing: *Alfredo Díaz-González*[1]; Pedro Quintero-Aguiló[1]; [1]University of Puerto Rico at Mayaguez

Recent Developments in the Processing, Characterization, Properties, Performance and Applications of Metal Matrix Composites: Poster Session

*Sponsored by:*TMS Structural Materials Division, TMS/ASM: Composite Materials Committee
Program Organizers: Martin Pech-Canul, Centro de Investigacion y de Estudios Avanzados del Instituto Politecnico Nacional; Zariff Chaudhury, Materion Coporation; Golam Newaz, Wayne State University

Monday PM
Symposium Poster Area
March 4, 2013

Room: Park View Lobby -

Location: Henry B. Gonzalez Convention Center

Session Chairs: Zariff Chaudhury, Materion Corporation; Martin Pech-Canul, CINVESTAV IPN SALTILLO

L-1: Wear Characteristics of Aluminum Matrix Nanocomposites with Ce-TZP/Al2O3 Nanocompsite Produced by Powder Metallurgy at Different Sintering Temperatures: Niloofar Soltani[1]; Amin Bahrami[2]; *Martin Pech-Canul*[3]; [1]Sharif University of Technology; [2]Razi Metallurgical Research Center; [3]Centro de Investigación y de Estudios Avanzados del Instituto Politécnico Nacional-Unidad Saltillo

L-2: The Effect of Ti on Mechanical Properties of Extruded In-Situ Al-15% Mg2Si Composite: Niloofar Soltani[1]; Amin Bahrami[2]; *Martin Pech-Canul*[3]; Ahmad Razaghian[4]; Masoud Emamy[5]; [1]Sharif University of Technology; [2]Razi Metallurgical Research Center; [3]Centro de Investigación y de Estudios Avanzados del Instituto Politécnico Nacional-Unidad Saltillo; [4]Imam Khomeini International University; [5]University of Tehran

General Poster Session: General Poster Session

Monday PM
Poster Area
March 4, 2013

Room: Park View Lobby - General

Location: Henry B. Gonzalez Convention Center

A-1: Dual-scale Plastic Deformation Behavior of High Nitrogen Duplex Stainless Steel by Multiscale in-situ Experiments: *Yong-Min Kim*[1]; Yong Seok Choi[1]; Tae Ho Lee[2]; Dong-Ik Kim[3]; Kyu Hwan Oh[1]; Heung Nam Han[1]; [1]Seoul National University; [2]Korea Institute of Materials Science; [3]Korea Institute of Science and Technology

A-2: An Investigation of the Corrosion Behavior of AM60B-xZn(x=0.5~2.0wt%) Alloys with Salt Spray Test: Min-Seok Moon[1]; *Myung-Han Yoo*[1]; Kee-Do Woo[2]; Shin-Jae Kang[2]; Joon-Hyuk Song[1]; Je-Ha Oh[1]; [1]Chonbuk National University, Jeonju Institute of Machinery Carbon Composites; [2]Chonbuk National University

A-3: A Study on Structural Integrity of the Carbody in Railway Rolling Stocks: *Sung Cheol Yoon*[1]; Sung Hyuk Park[1]; Joon Hyung Ryu[1]; Hee Up Lee[1]; Kyoung Chang Park[2]; [1]Korea Railroad Research Institute; [2]Hyundai Rotem Company

POSTERS

A-4: Application of Non-stationary Thermal Model for Simulation and Investigation of Heat and Refining Processes of Ti During EBMR: *Katia Vutova*[1]; Veliko Donchev[1]; Vania Vassileva[1]; Dinesh Amalnerkar[2]; Nagegownivari Munirathnam[2]; Tirthalli Prakash[2]; [1]Institute of electronics, Bulgarian Academy of Sciences; [2]Centre for Materials for Electronics Technology (C-MET)

A-5: A Study for Microstructures of Inconel 690 Used in Heat-Transfer Tube for Nuclear Power Plant Steam Generators during Cold-Working Process: *Ji Haeng Heo*[1]; Seon-jin Kim[1]; Gyeongsu Shin[1]; Jaeyong Yun[1]; [1]Hanyang University,

A-6: Effect of Heat Treatment Environment on the Properties of Cold Sprayed Cu-15at.%Ga Coating Material for Sputtering Target: *Kee-Ahn Lee*[1]; Byung-Chul Choi[1]; Hyung-Jun Kim[2]; [1]Andong National University; [2]RIST

A-7: Effect of Heat Treatment Environment on the Densification of Cold Sprayed Ti Coating Layer: Ji-Sang Yu[1]; Hyung-Jun Kim[2]; Ik-Hyun Oh[3]; *Kee-Ahn Lee*[1]; [1]Andong National University; [2]RIST; [3]KITECH

A-8: A Study on the Stress Test of Truck Frames for Gondola Car: *Sung Cheol Yoon*[1]; Jeongguk Kim[1]; [1]Korea Railroad Research Institute

A-9: Effect of Ca or CaO Addition on Microstructure and Thermal Conductivity of Mg-4Al-2Sn Alloys: *Gun Young Oh*[1]; Hyun Kyu Lim[1]; Young-Ok Yoon[1]; Shae K. Kim[1]; [1]KITECH

A-10: Characterization of Precipitation in an Al-Mg-Mn-Cu Alloy: *Yasuhiro Aruga*[1]; [1]Kobe Steel, Ltd.

A-11: Effect of CaO Addition on the Oxidation Resistance of AZ91D Eco-Mg Alloys: *Jin-Kyu Lee*[1]; Hyung-Jo Yoo[1]; Sung-Min Park[1]; Shae K. Kim[2]; [1]HMK CO., LTD; [2]KITECH

A-12: Effect of Interface Phases between Copper Circuit and AAO Layers for Enhancing Peel Strength: *Hyo-Soo Lee*[1]; [1]KITECH

A-13: Effect of Interface Phases between Copper Circuit and AAO Layers for Enhancing Peel Strength: *Hyo-Soo Lee*[1]; [1]KITECH

A-14: Bistable Morphing Structures: Geometric and Mechanistic Determination: *Zi Chen*[1]; Qiaohang Guo[2]; Carmel Majidi[3]; Wenzhe Chen[4]; David Srolovitz[5]; Mikko Haataja[6]; [1]Washington University in St. Louis; [2]FuJian University of Technology; [3]Carnegie Mellon University; [4]Fuzhou University; [5]Institute of High Performance Computing; [6]Princeton University

A-15: Combustion of Aluminum Powder Compacts due to Dynamic High-Strain-Rate Loading: *Jennifer Breidenich*[1]; Michael Clemenson[2]; Nick Glumac[2]; Naresh Thadhani[1]; [1]Georgia Institute of Technology; [2]University of Illinois Urbana-Champaign

A-16: Determination of Undercooled Liquid Heat Capacities by Levitation Drop Calorimetry: *Carl Tackes*[1]; Ralph Napolitano[1]; [1]Iowa State University/Ames Laboratory

A-17: A Study on the Structural Design of the Car Body for Freight Car: *Sung Cheol Yoon*[1]; Jeongguk Kim[1]; [1]Korea Railroad Research Institute

A-18: Effect of Aging Treatment on the Mechanical Properties of 6082 Al Wrought Alloy: *Young-Ok Yoon*[1]; Hyun Kyu Lim[1]; Shae K. Kim[1]; [1]Korea Institute of Industrial Technology

A-19: Effect of Microstructure on Creep Resistance of LPSO Phase-Containing Mg-Zn-Gd Extruded Alloys: *Yuri Jono*[1]; Michiaki Yamasaki[1]; Yoshihito Kawamura[1]; [1]Kumamoto University

A-20: Effect of Aging Time on Microstructure and Mechanical Properties of Al2Ca Added Diecast Al-11%Si-1.6%Cu-Mg Alloy: Gil Yong Yeom[1]; Young Ok Yoon[1]; Hyun Kyu Lim[1]; Shae K. Kim[1]; [1]Korea Institute of Industrial Technology

A-21: Effect of Aging Time on Microstructure and Mechanical Properties of Diecast Al-10Si-2Cu-0.3Mg Alloy: *Shae K. Kim*[1]; [1]Korea Institute of Industrial Technology

A-22: Mechanical Properties of Radio Frequency Plasma Assisted Chemical Vapor Deposited Diamond-Like Carbon (DLC) Thin Films: M. Mamun[1]; D. Stegall[1]; M. Korwin-Pawlowski[2]; A. Elmustafa[1]; [1]Old Dominion University; [2]Université du Québec en Outaouais

A-23: Composite Materials Reinforced By Basalt and Carbon Hybrid Fibers: *Nikoloz Chikhradze*[1]; Guram Abashidze[1]; Levan Japaridze[1]; [1]Mining Institute/Georgian Technical University

A-24: Application of Fast Scanning Calorimetry in the Rapid Solidification of Tin Particles Embedded in Al Matrix: *Weipeng Zhang*[1]; Bingge Zhao[1]; Qijie Zhai[1]; Yulai Gao[1]; [1]School of Materials Science and Engineering, Shanghai University

A-25: Copper Nanopillars under High Strain Rates: *Henry A. Colorado*[1]; Artemio Navarro[1]; Sergey Prikhodko[1]; Sunnel Kodambaka[1]; Jenn-Ming Yang[1]; Nasr Ghoniem[1]; Vijay Gupta[1]; [1]University of California, Los Angeles

A-26: Nanoindentation Investigation of the Reactive Pulsed Laser Deposited Superconducting Niobium Nitride Thin Films: M. Mamun[1]; A. Farha[1]; Y. Ufuktepe[2]; S. Kimura[3]; T. Hajiri[4]; K. Imura[4]; F. Karadag[2]; H. Elsayed-Ali[1]; A. Elmustafa[1]; [1]Old Dominion University; [2]Cukurova University; [3]UVSOR Facility; [4]Nagoya University

A-27: Nanomechanical Investigation of Femtosecond Pulsed Laser Deposited InN on Si(100): M. Mamun[1]; M. Hafez[1]; H. Elsayed-Ali[1]; A. Elmustafa[1]; [1]Old Dominion University

A-28: Kinetic Study of Recovery of Iron from Cassiterite Ore: Martin Ogwuegbu[1]; *Gerald Onyedika*[1]; [1]Federal University of Technology, Owerri

A-29: Evaluation of Fracture Toughness by Nanoindentation: *Reza Mirshams*[1]; [1]University of North Texas

A-30: Electrical and Electrochemical Characterization of Lithium Ion Cells: Jorge Acosta[1]; Pablo Favilla[1]; *Carlos Schvezov*[2]; Juan Colllet-Lacoste[3]; [1]CEDIT - CONICET Fellow; [2]University of Misiones; [3]National Atomic Energy Commission

A-31: Microstructural Characterization and Analysis of Cold Spray Al Alloys: *Baillie McNally*[1]; Danielle Belsito[1]; Victor Champagne[2]; Richard Sisson[1]; [1]Worcester Polytechnic Institute; [2]Army Research Lab

A-32: Fatigue Characterisitcs of CNT Reinforced Al Composite Materials for Automotive Applications: *Jong Kook Lee*[1]; Byung Ho Min[1]; Hoon Mo Park[1]; Do Suck Han[1]; [1]Hyundai Motor

A-33: Modeling of a Displacive Transformation within Continuous Displacement Cluster Variation Method: *Naoya Kiyokane*[1]; Tetsuo Mohri[1]; [1]Hokkaido University

A-34: Highly Porous Mo with Interconnected Pore Channels Synthesized from Camphene/MoO_3 Slurry by Freeze-Drying Process: *Myung-Jin Suk*[1]; Si-Young Chang[2]; Sung-Tag Oh[3]; [1]Kangwon National University; [2]Korea Aerospace University; [3]Seoul National University of Science and Technology

A-35: High Temperature Oxidation Behavior of Fe-Cr-Al Alloy Powder Porous Metal and Strip: Seon-Hui Lim[1]; Jae-Sung Oh[1]; Man-Ho Park[2]; Kwon-Oh Oh[2]; *Kee-Ahn Lee*[1]; [1]Andong National University; [2]Alantum(Co.)

A-36: Get Ready: *Ji Haeng Heo*[1]; Seon Jin Kim[1]; Gyeong su Shin[1]; Jae yong Yun[1]; [1]Hanyang University

A-37: Effect of W on the Thermal Stability of γ` Precipitate in Two Experimental Inconel 740: *Gyeong Su Shin*[1]; Ji Haeng Heo[1]; Jae Yong Yun[1]; Seon Jin Kim[1]; [1]Hanyang Univ.

A-38: Effect of Shape Memory Transformation Media in Ex-Situ BMG Matrix Composites: Hyeon Seok Oh[1]; *Wook Ha Ryu*[1]; Jin Kyu Lee[2]; Yeon Wook Kim[3]; Eun Soo Park[1]; [1]Seoul National University; [2]Kongju National University; [3]Keimyung University

A-39: Fabrication of Sintered-Body Ti-pd from Hydride Dehydride Ti Powder for Machine Tool and It;s Mechanical Properties: Ik-Hyun Oh[1]; *Hyun-Kuk Park*[1]; Jung-Han Ryu[1]; Jun-Ho Jang[1]; [1]KITECH / Automotive Components Center

A-40: Effects of Carrier Gases on the Microstructures and Properties of Ti Coating Layers Manufactured through the Cold spraying: Myeong-Ju Lee[1]; Ji-Sang Yu[1]; Hyung-Jun Kim[2]; *Kee-Ahn Lee*[1]; [1]Andong National University; [2]RIST

A-41: Improvement in Wear Resistance of Carbon Steels Induced by Pulsed Electron Beam Surface Treatment: *Kemin Zhang*[1]; [1]Shanghai University of Engineering Science

A-42: Investigation of Optimum Cementation Conditions of Ruthenium with Experimental Design: *Bihter Zeytuncu*[1]; M.Hakan Morcali[1]; O.Halil Çelik[1]; Onuralp Yucel[1]; [1]Istanbul Technical University

A-43: Improved Performance of Metal-Based Dye-Sensitized Solar Cells by Introducing a TiN Nanocrystalline Thin Film: *Wei-Lun Tai*[1]; Fan-Yi Ouyang[1]; [1]National Tsing Hua University

A-44: Hot Working Behaviour of As-Cast Mg-4Sn-2Ca Alloy: K. Suresh[1]; *Pitcheswara Kamineni*[1]; Y.V.R.K. Prasad[2]; Norbert Hort[3]; [1]City University of Hong Kong; [2]processingmaps.com; [3]Helmoltz-Zentrum Geesthacht

A-45: Effects of Aluminum Content and Plate Thickness on the Microstructure and Tensile Properties in AM Series Magnesium Alloys: *Erin Deda*[1]; Mei Li[2]; Jacob Zindel[2]; Xin Sun[3]; John Allison[1]; [1]University of Michigan; [2]Ford Motor Company; [3]Pacific Northwest National Laboratory

A-46: Grain-Refinement and Dispersion Hardening of Ferritic Steel Surface through Friction Stir Processing: *Yoshihisa Kimoto*[1]; Toru Nagaoka[1]; Hiroyuki Watanabe[1]; Masao Fukusumi[1]; Yoshiaki Morisada[2]; Hidetoshi Fujii[2]; [1]Osaka Municipal Technical Research Institute; [2]Joining and Welding Research Institute, Osaka University

A-47: Monitoring of Railway Braking Characteristics: *Jeongguk Kim*[1]; Sung Cheol Yoon[1]; [1]Korea Railroad Research Institute

A-48: Microstructures and Hardness Properties for β-Phase Ti-24Nb-4Zr-8Sn Alloy Fabricated by Electron Beam Melting: *J. Hernandez*[1]; S.J. Li[2]; E. Martinez[1]; L. Murr[1]; X. Pan[3]; K. Amato[1]; X.Y. Cheng[2]; F. Yang[2]; C.A. Terrazas[1]; E. Rodriguez[1]; S.M. Gaytan[1]; Y.L. Hao[2]; R. Yang[2]; F. Medina[1]; R.B. Wicker[1]; [1]University of Texas at El Paso; [2]Institute of Metal Research; [3]Dalian University of Technology

A-49: Precipitation Hardening Effect of Ti-Al-Mo-Fe Alloy: *Dong-Geun Lee*[1]; Yongtai Lee[1]; Chenglin Li[2]; Xujun Mi[2]; Wenjun Ye[2]; [1]Korea Institute of Materials Science; [2]General Research Institute for Nonferrous Metals

A-50: The Inoculation of Chromium White Cast Iron: *Dariusz Kopycinski*[1]; [1]AGH University of Science and Technology

A-51: Some Aspects of Workability of Engineering Materials: *Bashir Raddad*[1]; Abdulbaset Frefer[2]; Mohee Abdel-Rahman[2]; Ali Tajouri[2]; [1]University of Alfateh, Mechanical Department; [2]University of Tripoli

A-52: The Behavior of Boride Compounds in High Elastic Aluminum Alloy Using In-Situ Reaction: *Hoonmo Park*[1]; Hoodam Lee[1]; Kyungmoon Lee[1]; Taegyu Lee[1]; Hyuk Kang[1]; Do-Suck Han[1]; [1]Hyundai motors

A-53: Observation of Texture Evolution in AZ31 Magnesium Alloy during Plane Strain Deformation and Static Recrystallization: *Keunho Lee*[1]; Jun-Ho Park[1]; Yong-Min Kim[1]; Kyung Il Kim[1]; Dong-Ik Kim[1]; Kyu Hwan Oh[1]; Heung Nam Han[1]; [1]Seoul National University

A-54: Used Foundry Sand Reclamation in New Vibratory Unit: *Rafal Danko*[1]; Jozef Danko[1]; Mariusz Holtzer[1]; [1]AGH University of Science and Technology

A-55: Non-isothermal Kinetics Research of the Pellet under High Reduction Potential: *Zuo Haibin*[1]; Jiao Kexin[1]; Xu Runsheng[1]; Zhang Jianliang[1]; [1]USTB

A-56: Performance Degradation Due to Practical Operating Stresses and Post-Fabrication Measures to Improve Stability in Mixed Oxide Thin Film Transistors: *Andrew Knight*[1]; Rajitha Vemuri[2]; Muhammad Hasin[2]; N Theodore[3]; Aprillya Lanz[1]; Terry Alford[2]; [1]Norfolk State University; [2]Arizona State University; [3]Freescale Semiconductor Inc.

A-57: The High Temperature Oxidation Behavior of Ni-Cr-Al Powder Porous Metal: Jae-Sung Oh[1]; Sung-Hwan Choi[1]; Man-Ho Park[2]; *Kee-Ahn Lee*[1]; [1]Andong National University; [2]Alantum (Co)

A-58: Oxidation Behavior of Nb-Modified MAR-M247 Superalloy at 1000°C in Air: *Renato Baldan*[1]; Carlos Nunes[1]; Gilberto Coelho[1]; [1]USP - University of São Paulo

A-59: The Use of Conductive Carbon Nanotubes/Polymer Nonwoven Nanofiber Composites as Shielding Materials for Electromagnetic Interference and Radiation Shielding: *George Garza*[1]; Alfonso Salinas[1]; Mataz Alcoutlabi[1]; Karen Lozano[1]; [1]The University of Texas Pan American

A-60: Organic Coatings To Prevent Molten Aluminium Water Explosions: *Alex Lowery*[1]; Joe Roberts[2]; [1]Wise Chem LLC; [2]Pyrotek Inc

A-61: Poly Methyl Methacrylate-Halloysite Composite Nanofibers Prepared via Forcespinning: *Aileen McCleaf*[1]; Ram Thapa[1]; Karen Lozano[1]; [1]The University of Texas Pan American

A-62: Recrystallization and Grain Growth in Binary Titanium-Aluminum Alloys: *Anna Colletti*[1]; John Allison[1]; [1]University of Michigan

A-63: Real-Time Diagnostics on Attritor Mill: Towards a Better Scale-Up Model: *Priya Radhi Santhanam*[1]; Edward Dreizin[1]; [1]New Jersey Institute of Technology

A-64: Reduction of Pellets of Basic Oxygen Furnace (BOF) Dust Using Hydrogen: *Eduardo Junca*[1]; Girley Rodrigues[1]; Victor Telles[1]; Denise Espinosa[1]; Jorge Tenório[1]; [1]University of São Paulo

A-65: Thermal Mechanical Fatigue Crack Growth from Laser Drilled Holes in Single Crystal Material: Raymond Kersey[1]; *Alexander Staroselsky*[1]; [1]Pratt & Whitney

A-66: Assessment of the Addition of Electric Arc Furnace Dust in Hot Metal at a Temperature of 1500°Celsius: *Vicente Sobrinho*[1]; Jose Oliveira[1]; Estefano Vieira[1]; Victor Telles[2]; Felipe Grillo[2]; Jorge Alberto Tenorio[2]; Denise Espinosa[2]; [1]IFES; [2]USP

A-67: Title: Investigation of the Very High Cycle Fatigue Behavior of Binary Ti-Al Alloys by Ultrasonic Fatigue: *Sinsar Hsie*[1]; James Jones[1]; John Allison[1]; [1]University of Michigan

A-68: Chemical Synthesis to Obtain Ceramic Pigments: *Oscar Restrepo*[1]; Edgar Chavarriaga[1]; [1]National University of Colombia

A-69: Study of pH Dependent Redox Potential of Cerium Oxide Nanoparticles: *Shashank Saraf*[1]; Ajay Karakoti[2]; Swetha Barkam[1]; Sudipta Seal[1]; [1]University of Central Florida; [2] Pacific Northwest National Lab

A-70: Thermographic Nondestructive Evaluation of Railway Bogies: *Jeongguk Kim*[1]; [1]Korea Railroad Research Institute

A-71: An Assessment of the Maximum Entropy Production Rate for the Prediction of Solidification Bifurcations during Directional Solidification.: *Yaw Bensah*[1]; J Sekhar[1]; [1]University of Cincinnati

A-72: Transformation Sequence in Bitumen Quenched 0.4C Dual Phase Steel: *Hakeem Amuda*[1]; Adeolu Adeolu Adesoji[1]; [1]University of Lagos

A-73: Characterization and Corrosion Behavior of Oxide Layer on Mg Alloy Via Plasma Electrolytic Oxidation in Two Different Electrolytes: *Young Gun Ko*[1]; Kang Min Lee[2]; Ki Ryong Shin[2]; In Jun Hwang[2]; Dong Hyuk Shin[2]; [1]Yeungnam University; [2]Hanyang University

A-74: Influence of Pulse Frequency on Surface Properties in Titanium VIa Plasma Electrolytic Oxidation Process: You Chan Jung[1]; Sang Il Yoon[1]; In Jun Hwang[1]; *Young Gun Ko*[2]; Dong Hyuk Shin[1]; [1]Hanyang University; [2]Yeungnam University

A-75: Nitinol Commercialization Accelerator – Ohio Third Frontier: *Janet Gbur*[1]; John R Lewandowski[1]; Hossein Lavvafi[1]; Melissa Young[2]; David Schwam[1]; James McGuffin-Cawley[1]; Michael Nathal[3]; Santo Padula II[3]; John J Lewandowski[1]; [1]Case Western Reserve University; [2]Cleveland Clinic; [3]NASA Glenn Research Center

A-76: Production of Nanostructured ZnFe2O4 Particles via Ultrasonic Spray Pyrolysis Method: *Kamil Burak Dermenci*[1]; Burcak Ebin; Sebahattin Gurmen; [1]Anadolu University

A-77: Development of Novel Thermally Stable Mo-Based Metallic Glasses: *Jin Woo Kim*[1]; Eun Soo Park[1]; Joon Seok Kyeong[2]; Do Hyang Kim[2]; [1]Seoul National University; [2]Yonsei University

A-78: Nanomechanical Properties of Zirconium Processed by Means of Surface Mechanical Attrition Treatment: *Conghui Zhang*[1]; Yaomian Wang[1]; Xiaomei He[1]; [1]Xi'an University of Architecture and Technology

A-79: In Situ SEM Investigation on Deformation Behavior of a Dual Phase Stainless Steel: *Enyu Guo*[1]; Tao Jing[1]; [1]Tsinghua University

A-80: Salvinia sp Applied to AMD Treatment: Equilibrium Time and Biomass Characterization: *Flávia Silvas*[1]; Erika Gusmão[2]; Daniella Buzzi[3]; Ivo Schneider[4]; José Oliveira[2]; Denise Espinosa[3]; Jorge Tenório[3]; [1]Polythecnic School of São Paulo University ; [2]Instituto Federal do Espirito Santo; [3]Polythecnic School of São Paulo University; [4]Universidade Federal do Rio Grande do Sul

A-81: Beyond Hume-Rothery Rules in Al-Based Approximants and Quasicrystals: *Jean-Marie Dubois*[1]; [1]Institut Jean Lamour

A-82: Physical Properties of Thermoelectric Zinc Antimonide Using First-Principles Calculations: *Philippe Jund*[1]; Kinga Niedziolka[1]; Xiaoma Tao[2]; Jean-Claude Tédenac[1]; [1]Université Montpellier 2 - ICGM; [2]College of Physical Science and Technology

A-83: The Electron Per Atom Ratios of Ideal Metallic Glasses Unveiled by Cluster-Resonance Model: *Chuang Dong*[1]; Guang Han[1]; Jianbing Qiang[1]; Yingmin Wang[1]; Qing Wang[1]; Peter Häussler[2]; [1]Dalian University of Technology; [2]Chemnitz University of Technology

A-84: Tight Binding Understanding of Carbon Defects in Steel: *Nicholas Hatcher*[1]; Georg Madsen[1]; Ralf Drautz[1]; [1]ICAMS, Ruhr-Universität Bochum

A-85: First-principles Models for Phase Stability of Ternary Fe-Cr-Ni Alloys: *Duc Nguyen-Manh*[1]; Marek Muzyk[1]; Mikhail Lavrentiev[1]; Sergei Dudarev[1]; [1]Culham Centre for Fusion Energy

A-86: Structural Vacancies in Titanium Oxycarbides from First-principles Calculations: Bo Jiang[1]; GeGe Zhou[1]; Kai Huang[1]; Hongmin Zhu[1]; [1]USTB

A-87: Stabilizing Materials' Cheminstry by Implementation of Real-time Elemental Laser-induced Breakdown Spectroscopy (LIBS) Analyzer: *Michael Gaft*[1]; Yoni Groisman[1]; Alexander Baryshnikov[2]; [1]Laser Distance Spectrometry; [2]Icon Steel

A-88: Effect of Sintering Temperature on Densification Behavior of Spark Plasma Sintered Molybdenum: *Gultekin Goller*[1]; Filiz Sahin[1]; Fatih Denizalp[1]; Onuralp Yucel[1]; [1]Istanbul Technical University

Biological Materials Science Student Poster Session

*Sponsored by:*TMS Structural Materials Division, TMS: Biomaterials Committee

Program Organizers: Candan Tamerler, University of Washington; Molly Gentleman, Texas A&M University; Po-Yu Chen, National Tsing Hua University; Kajal Mallick, University of Warwick; Rajendra Kasinath, Montana Tech of the University of Montana; P. G. Allison, US Army Engineer Research & Development Center

Monday PM & Young Leader Poster Area
March 4, 2013

Room: Park View Lobby - Student

Location: Henry B. Gonzalez Convention Center

SB-1: Bioactive Protein Based Ceria-PLGA 3D Scaffold for Tissue Regeneration: *Swetha Barkam*[1]; Biman Mandal[2]; Soumen Das[1]; Sudipta Seal[1]; [1]University of Central Florda; [2]Indian Institute of Technology Guwahati

SB-2: Influence of Anodization on Morphology, Hydrogen Evolution, pH, Cytotoxicity and Electrochemical Properties of Mg Alloys/ MMCs: *Puneet Gill*[1]; Norman Munroe[1]; Ryszard Rokicki[2]; [1]Florida International University; [2]Electrobright

SB-3: Laboratory Equipment for Implant Material Testing: Tribocorrosion of Load Bearing Joints - Test Methodology, Analysis and Validation: *Ali Tabeshian*[1]; Dan Persson[2]; Steven Savage[3]; Ragnhild Aune[1]; [1]Norwegian University of Science and Technology; [2]SWEREA KIMAB AB; [3]Swedish Defense Research Agency (FOI)

SB-4: Comparison of Nacre and Bioinpsired Nanocomposites Using In-Situ SEM Mechanical Characterization: *Omar Rodriguez-Negron*[1]; Robert Moser[2]; Paul Allison[2]; Kevin Torres-Cancel[2]; Mei Chandler[2]; Charles Weiss[2]; James Jordon[3]; J. Schirer[4]; [1]UPRM/ ARMY ERDC; [2]Army ERDC; [3]University of Alabama; [4]Hysitron Inc.

SB-5: Gold Nanoprobes for Detection of Mycobacteria Species: Filiz Sayar[1]; *Farzaneh Moghtader*[1]; Erhan Piskin[1]; [1]Hacettepe University

SB-6: Rotating Bending and Flex Bending Fatigue of Oxide-Finished Nitinol Wire: *Janet Gbur*[1]; John J Lewandowski[1]; [1]Case Western Reserve University

SB-7: Additive Manufactured Porous Titanium Implants: Sintering Protocols: *Ahmad Basalah*[1]; Esmaeili Shahrzad[1]; Ehsan Toyserkani[1]; [1]University of Waterloo

SB-8: Development of Hot-Rolled Co–Cr–W-Based Alloys for CAD/ CAM Dentistry: *Kenta Yamanaka*[1]; Manami Mori[2]; Koji Kuramoto[1]; Emi Onodera[1]; Akihiko Chiba[1]; [1]Tohoku University; [2]NISSAN ARC, LTD.

SB-9: Tensile Behavior of Major and Minor Ampullate Silks from Latrodectus Hesperus (Black Widow) Spider: *Antony Kirubanandham*[1]; Sandeep Basu[2]; Bennett Addison[3]; Jeff Yarger[3]; Nikhilesh Chawla[1]; [1]Arizona State University; [2]Agilent, Chandler, AZ; [3]Department of Chemistry, Arizona State University, Tempe, AZ 85287

SB-10: Wettability, Cytocompatibility and Tribology of Functionalized Carbon Nanotube and Al2O3 Reinforced Ultra High Molecular Weight Polyethylene Biocomposite: *Anup Patel*[1]; Kantesh Balani[1]; [1]IIT-Kanpur

SB-11: Mechanical and Tribological Properties of Antibacterial ZnO-UHMWPE Biocomposites: *Rajeev Sharma*[1]; Ambreen Nisar[1]; Kantesh Balani[1]; [1]IIT Kanpur

SB-12: Synthesis and Characterization of Metal-doped Hydroxyapatite Based Antimicrobial Agent: *Muhammad Aftab Akram*[1]; Sofia Javed[1]; Asif Mehmood[1]; Mohammad Mujahid[1]; [1]National Uiversity of Sciences and Technology Pakistan

SB-13: The Use of New Titanium-based Alloys as Functionally Graded Biomaterials for Dental Implantology: *Nicolas Gozdecki*[1]; Frederic Prima[1]; [1]Ecole Nationale Supérieure de Chimie de Paris

SB-14: Surface Engineering Approaches for Enhanced Wear and Osseo-Integration Properties of Ti-35Nb-7Zr-5Ta Orthopedic Alloy: *Pavani Kami*[1]; Sanket Dahotre[1]; Sushanth Reddy[1]; Soumya Nag[1]; Thomas Scharf[1]; Narendra Dahotre[1]; Rajarshi Banerjee[1]; [1]University of North Texas

SB-15: Metal Binding Fluorescent Proteins for Bio-Imaging and Bio-Sensing Applications: Banu Taktak Karaca[1]; Elif Karaca[1]; Esra Yuca[2]; Bulent Balta[1]; Mehmet Sarikaya[3]; Candan Tamerler[3]; [1]Molecular Biology and Genetics Department and MOBGAM, Istanbul Technical University, Istanbul, Turkey; [2]Molecular Biology and Genetics Department, Yildiz Technical University, Istanbul, Turkey; [3]Materials Science and Engineering Department and GEMSEC, University of Washington, Seattle, WA, US

SB-16: Antimicrobial Activity on Calcium Phosphate Coated Nanotubular Titanium Surfaces by Modular Chimeric Peptides: *Hilal Yazici*[1]; Gizem Habib[2]; Deniz Yucesoy[1]; Burak Caliskan[2]; Sermin Utku[2]; Mustafa Urgen[2]; Candan Tamerler[1]; [1]University of Washington; [2]Istanbul Technical Univeristy

SB-17: Nano–Scale Mechanical Behavior of Hydrogels: A Molecular Dynamic Study: *Hossein Salahshoor*[1]; Nima Rahbar[1]; Mazdak Tootkaboni[2]; [1]Worcester Polytechnic Institute; [2]University of Massachusetts Dartmouth

SB-18: Langmuir Blodgett Film Deposition of Gold Nanoparticles on Glass Using Self Organization of Bi-Funtional Peptides: *Nur Mustafaoglu*[1]; Marketa Hnilova[2]; Candan Tamerler[2]; Mustafa Urgen[3]; [1]Department of Chemical and Biomolecular Engineering, University of Notre Dame; [2]GEMSEC, Genetically Engineered Materials Science and Engineering Center, Department of Materials Science and Engineering, University of Washington; [3]Department of Metallurgical and Materials Engineering, Istanbul Technical University

SB-19: Bio-structural analysis and modeling: the Paddlefish rostrum as a structure for bioinspiration.: *Jeremiah Deang*[1]; [1]Mississippi State University

SB-20: Effect of Surface Treatments on Titanium Alloys: *Maria Hernandez*[1]; Zia ur Rahman[1]; Luis Pompa[1]; Waseem Haider[1]; [1]University of Texas Pan American

SB-21: Influence of Surface Treatments on 316L Stainless Steel: *Suzanna White*[1]; Kevin Corona[1]; Luis Pompa[1]; Waseem Haider[1]; [1]University of Texas Pan American

SB-22: The Impact of Austenitic Stainless Steel Grain Structure from Nano-Grained Regime to Coarse-Grained Regime on Osteoblast Functions using a Novel Metal Deformation-Annealing Sequence: *Krishna Chaitanya Nune*[1]; Devesh Misra[1]; Pavan Venkata Surya Challa[1]; [1]University of Louisiana at Lafayette

SB-23: Bisphosphonate functionalized gold nanoparticles enable enhanced detection of breast microcalcifications: *Lisa Cole*[1]; Tracy Vargo-Gogola[2]; Ryan Roeder[1]; [1]University of Notre Dame; [2]Indiana University School of Medicine - South Bend

EMPMD 2013 Technical Division Student Poster Contest - Undergraduate

*Sponsored by:*TMS Electronic, Magnetic, and Photonic Materials Division, TMS: Young Leaders Committee

Monday PM & Young Leader Poster Area
March 4, 2013

Room: Park View Lobby - Student

Location: Henry B. Gonzalez Convention Center

SPU-1: Indium-Zinc Oxide TFT Device Performance Under Combined Bias and Thermal Stressing and Effects of Post-Fabrication Annealing: *Sebastian Husein*[1]; Rajitha Vermuri[1]; Terry Alford[1]; [1]Arizona State University

SPU-2: Photoelectrochemical Studies of Hydroxyphosphate and Hydroxysulfate Minerals for Solar Hydrogen Production: *Reed Wittman*[1]; Man Li[1]; Ran Zhao[1]; Qian Cheng[1]; Candace Chan[1]; [1]Arizona State University

SPU-3: Pressure Contact Examinations of Superconducting Persistent Joints: *Courtney Pape*[1]; Max Davey[1]; Michael Kuldell[1]; [1]The Ohio State University

SPU-4: Correlation of Pressure to Bonding Capabilities Using Novel Heat Treatment Methods in Prototype Sn-Bi Alloys: *W. Tuttle*[1]; Charles Fisher[1]; Michele Manuel[1]; [1]University of Florida

SPU-5: Ab-Initio Calculation of Thermoelectric Material Properties: *Mark Hornak*[1]; Mike Williard[1]; Rodney Jones[1]; [1]The Ohio State University

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SPG-6: Research on Prediction of the Stability of Partially Stabilized Zirconia Baeds on LM-BP Neural Network: *Li Dongbo*[1]; Peng Jinhui[2]; Guo Shenghui[2]; [1]Yunnan Copper Industry Co., LTD; [2]Kunming University of Science and Technology

SPG-7: Interfacial Reactions Between Au-Ge Eutectic Solders and Cu Substrates: *Hao-miao Chang*[1]; Bo-Hsun Hsu[1]; Shih-kang Lin[1]; [1]National Cheng Kung University

SPG-8: Supersaturation and Phase Stability of Pb-Sn Alloys Under Current Stressing: *Chao-kuei Yeh*[1]; Shih-kang Lin[1]; [1]National Cheng Kung University

SPG-9: Nanocrystalline FeNiCoO Particles - Ultrasonic Spray Pyrolysis Method (USP): cigdem toparli[1]; Burçak Ebin[1]; *Sebahattin Gurmen*[1]; [1]istanbul technical university

SPG-10: Nanomechanical Properties of Sulfonated Poly(Styrene-Isobutylene-Styrene) Triblock Copolymers: *Omar Movil-Cabrera*[1]; Agnes Padovani[1]; [1]University of Puerto Rico - Mayaguez

SPG-11: Liquidus Projection of the Sn-In-Ag-Zn Quaternary System: *Jui-Shen Chang*[1]; Sinn-wen Chen[1]; Chia-ming Hsu[1]; Wang-ting Chiu[1]; Che-wei Hsu[1]; Ru-bo Chang[1]; [1]National TsingHua University

SPG-12: Production and Characterization of Nano-Crystalline Spherical Copper-Indium (Cu-In) Alloys by Ultrasonic Spray Pyrolysis and Hydrogen Reduction (USP-HR): Ramazan Apaydin[1]; Burçak Ebin[1]; *Sebahattin Gürmen*[1]; [1]Istanbul Technical University

SPG-13: Electrochemical Capacitance of Iron Oxide Based Nanotubular Electrodes: *Abraham Jurovitzki*[1]; [1]University of Utah

SPG-14: Effects on Microstructure and Magnetic Properties of Modified Thermomagnetic Annealing and Heat Treatments on Commercial Alnico Magnet Alloys: *Haley Dillon*[1]; Lin Zhou[1]; Iver Anderson[1]; R. William McCallum[1]; Matthew Kramer[1]; Steve Constantinides[2]; Andriy Palasyuk[1]; [1]Ames Laboratory; [2]Arnold Magnetic Technologies

SPG-15: Grain Boundary Engineering (GBE) of Nickel 200: *Olivia Underwood*[1]; Jeff Evans[1]; [1]University of Alabama in Huntsville

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SPG-18: Synthesis and Characterization of PtAg@Pt Multiply Twinned Structure Core-shell Nanoparticles: *Subarna Khanal*[1]; Danial Bahena[1]; J. J. Velázquez Salazar[1]; Miguel Jose-Yacaman[1]; [1]UTSA

SPU-16: Porosity and Percolation in Sintered Recycled Glass for Polluted Soil Filtering: *Gerardo Nazario*[1]; Wesley Cuadrado[1]; Jasmine Figueroa[1]; Liliana Hernández[1]; Andrea López[1]; O. Marcelo Suárez[1]; [1]University of Puerto Rico at Mayaguez

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Room: Park View Lobby - Student

Location: Henry B. Gonzalez Convention Center

SPG-19: Fabrication and Characterization of Nanoporous Aluminum via Selective Dissolution of Al-Zn Alloys: *Elvin Estremera*[1]; O. Marcelo Suarez[1]; Arturo Hernandez-Maldonado[1]; [1]University of Puerto Rico

SPG-17: Slag Solidification Modeling: *Dmitri Nassyrov*[1]; In-Ho Jung[1]; [1]McGill University

SPG-20: Direct Titanium Powder Production Through the Use of Pre-Conditioned Magnesium Powder: *Amin Oliazadeh*[1]; Boyd Davis[1]; John Peacey[1]; [1]Queen's University

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SPU-21: Effects of Boron and Zinc on Impact Tests of Al-B-Zn Alloy: *Marcos Corchado*[1]; Fernando Reyes-Tirado[1]; Oscar Suarez[1]; [1]University of Puerto Rico-Mayaguez

SPU-22: Biodegradation Behavior and Mechanical Properties of a Mg-Sc-Y Alloy for Degradable Implant Applications: *Maria Di Bonaventura*[1]; Ida Svensson Berglund[1]; Michele Manuel[1]; [1]University of Florida

SPU-23: Global Electrochemical Techniques to Characterize Localized Corrosion Behavior on Aluminum Alloys: *Joseph Croteau*[1]; [1]Boise State University

SPU-24: Reconstruction and Visualization of Three-Dimensional Particle Distribution and Morphology in Magnesium Metal Matrix Composites: *Cody Heitman*[1]; Hunter Henderson[1]; Zachary Bryan[1]; Orlando Rios[2]; Gail Mackiewicz Ludtka[2]; Alexander Melin[2]; Michele Manuel[1]; [1]University of Florida; [2]Oak Ridge National Laboratory

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SPG-25: Microstructural Evolution of ZEK100 Mg Alloy Sheets During Friction Stir Spot Welding: *Rogie Rodriguez*[1]; James Jordon[1]; [1]The University of Alabama

SPG-26: Electronic Structure and Properties of Stacking Faults of Mg-X Alloys: A First-principles Study: *William Wang*[1]; Shunli Shang[1]; Yi Wang[1]; Kristopher Darling[2]; Laszlo Kecskes[2]; Suveen Mathaudhu[3]; Xidong Hui[4]; Zi-Kui Liu[1]; [1]The Pennsylvania State University; [2]US Army Research Laboratory; [3]US Army Research Office; [4]University of Science and Technology Beijing

SPG-27: On the Processing of Aluminum Wires Treated with Diboride Nanoparticles and their Electrical and Mechanical Properties: *David Florian-Algarin*[1]; O. Marcelo Suarez[1]; Alexandra Padilla[1]; [1]University of Puerto Rico Mayaguez(UPRM)

SPG-28: Simulating Hot Forming of Light-weight Alloy Sheets: Alexander Carpenter[1]; *Aravindha Antoniswamy*[1]; John Lee[1]; Louis Hector[2]; Jon Carter[2]; Eric Taleff[1]; [1]University of Texas at Austin; [2]General Motors

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SPU-29: Influence of Electrode Design on Electrochemical Impedance Response in Oil to Improve Engine Life: *Sanjeev Acharya*[1]; Michael Hurley[1]; [1]Boise State University

SPU-30: Atomistic Simulation of Ion Bombardment on Alpha and Gamma Alumina: *Wesley Barrows*[1]; Shawn Coleman[1]; Douglas Spearot[1]; [1]University of Arkansas

SPU-31: Molecular Dynamics Simulations of Tensile Deformation of Single Layer and Bulk MoS_2: *Joseph Simpson*[1]; James Stewart[1]; Douglas Spearot[1]; [1]University of Arkansas

SPU-32: Phase Transformations in High Strength Welds: Tiffiny Trykowski[1]; Melisse Aspery[1]; Gabriel Henschen[1]; Andrew Kerr[1]; [1]The Ohio State University

SPU-33: Stand Up Paddleboard Design: Jessica West[1]; Laura Thornton[1]; Matthew Dunmead[1]; [1]Ohio State University

SPU-34: Characterization of Nanocrystalline W-based Alloys: *Megan Beck*[1]; Steven Livers[1]; [1]Boise State University

SPU-35: Effect of Processing on Corrosion Behavior of Case Hardened Aerospace Bearing Steels: *Veronica Rafla*[1]; [1]Boise State University

SPU-36: Processing and Mechanical Characterization of a NbB_2/Al Composite: *Neshma Lopez*[1]; Jose Moreno[1]; O. Marcelo Suarez[1]; [1]University of Puerto Rico - Mayaguez

SPU-37: Sensitivity of Interfacial Energy on Transformation Kinetics in Structural Alloys: Michael Kovarik[1]; Beth Yoak[1]; *Erik Bowdish*[1]; [1]The Ohio State University

SPU-38: Thin-wall Fludity Spiral: *Kerry Bisset*[1]; [1]UAB Materials Engineering

SPU-39: Dynamic Recrystallization of Stainless Steel 316L: A Comparison of Experimental Results to Computer Simulation: *Megan Beck*[1]; Koyuki Fritchman[1]; [1]Boise State University

SPU-40: Oxidation Study of Cerium Monosulfide Powder: *Sumit Tamrakar*[1]; Darryl Butt[1]; Brian Jaques[1]; Joshua Kane[1]; [1]Boise State University

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Room: Park View Lobby - Student

Location: Henry B. Gonzalez Convention Center

SPG-41: Microstructural Characterization of Grey Cast Iron: *Arul Varman*[1]; [1]Indian Institute of Technology-Madras

SPG-42: Fabrication of Hierarchical Arrays of sub-30nm Vertically Aligned, Amorphous Silicon-Oxide Nano-wires: *Taiwo Alabi*[1]; Suman Das[1]; Dajun Yuan[1]; [1]Georgia Institute of Technology

SPG-43: Application of Fast Scanning Calorimetry in the Rapid Solidification of Tin Particles Embedded in AL Matrix: *Weipeng Zhang*[1]; Bingge Zhao[1]; Qijie Zhai[1]; Yulai Gao[1]; [1]Shanghai University

SPG-44: Cold Spray Modeling: A Computation Method for Predicting Bulk Properties of Cold Sprayed Deposits: *Luke Bassett*[1]; [1]Worcester Polytechnic Institute

SPG-45: Creep Analysis of Heterogenous Microstructure of Grade 91 Steel Using Stress Relaxation Method: *Bishal Silwal*[1]; Jacob Walker[1]; Leijun Li[1]; [1]Utah State University

SPG-46: Laser Ablation of Cold Sprayed Aluminum: *Aaron Birt*[1]; [1]Worcester Polytechnic Institute

SPG-47: Solidification Characteristics of Fe-Mn Alloy During Near-Rapid Solidification: *Yuanyi Guo*[1]; Ke Xie[1]; Wenbin Xia[1]; Shichao Zhao[1]; Changjiang Song[1]; Qijie Zhai[1]; [1]Shanghai Key Laboratory of Modern Metallurgy & Materials Processing, Shanghai University

SPG-48: The Oxidation of Steel as a Result of Heating Processes: *Christina Sobotka*[1]; [1]Montanuniversitaet Leoben

SPG-49: 3D Reconstruction of Prior Beta Grain Orientations in Friction Stir Processed Ti-6Al-4V: *Adam Shiveley*[1]; Adam Pilchak[1]; Michael Groeber[1]; Jay Tiley[1]; [1]United States Air Force

SPG-51: Ultra-fine Grained Microstructure in 9310 Steel: *Thomas Kozmel*[1]; Sammy Tin[1]; [1]Illinois Institute of Technology

SPG-50: Controlled Rotation and Collection of Electron Backscattered Diffraction Patterns from Round Bar Test Samples: *Kevin Shiveley II*[1]; Adam Shiveley[1]; Jay Tiley[1]; [1]United States Air Force

SPG-52: Liquidus Projection of the Ternary Thermoelectric Co-Sb-Ga System: *Yuan-Chun Chien*[1]; Sinn-wen Chen[1]; Jui-shen Chang[1]; G. Snyder[2]; [1]National Tsing Hua University; [2]Materials Science, California Institute of Technology

SPG-53: Vanadium Carbide Formation and Stabilization for High Strength Steel Applications: *Krista Limmer*[1]; Julia Medvedeva[1]; [1]Missouri S&T

SPG-54: On the Fabrication of Sputtering Aluminum Targets Containing AlB2 Particles and Their Use in the Deposition of Thin Films: *Ulises Barajas*[1]; Sugeily Flores[1]; O. Marcelo Suárez[1]; [1]University of Puerto Rico

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SPU-55: Hydroxyapatite-Polyurethane Composite Biomaterial: Monica Hadley[1]; *Luke Carpenter*[1]; Josh Enmark[1]; [1]The Ohio State University

SPU-56: Infiltration and Characterization of Ceramic Freeze Casted Scaffolds for Nuclear Fuel Application: *Thomas Gage*[1]; Clarissa Yablinsky[1]; Ulrike Wegst[1]; Todd Allen[1]; [1]University of Wisconsin-Madison

SPU-57: Controlled Growth of Ultrathin Molecular Films: *Jason Leszczewicz*[1]; Edward Kintzel[1]; [1]Western Kentucky University

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Monday PM & Young Leader Poster Area
March 4, 2013

Room: Park View Lobby - Student

Location: Henry B. Gonzalez Convention Center

SPG-58: Parametric Study of Si and Cu Infiltration Dynamics with a Transient Contact Angle in a C/C Composite: *Khurram Iqbal*[1]; [1]Dalian University of Technology

SPG-59: Effect of Alloying Elements and Spark Plasma Sintering Parameters on Nnano-dispersion Formation in Nanostructured Ferritic Steels: *Somayeh Pasebani*[1]; Indrajit Charit[1]; [1]University of Idaho

SPG-60: Delayed Hydride Cracking in Zirconium Alloys: *William Sames*[1]; John Martinez[1]; Ryan Brito[1]; Sean McDeavitt[1]; [1]Texas A&M University

SPG-61: Radiation Stability of Nanocrystalline Silicon Carbide: *Laura Jamison*[1]; Beata Tyburska-Pueschel[1]; Peng Xu[2]; Kumar Sridharan[1]; Todd Allen[1]; [1]University of Wisconsin-Madison; [2]Westinghouse Electric Company

SPG-62: Structural Evolution and Phase Transformation in Ni50-xMn39Sn11+x Alloys: *Wu Wang*[1]; Jinke Yu[1]; Sichuang Xue[1]; Qijie Zhai[1]; Hongxing Zheng[1]; Hongxing Zheng[1]; [1]Shanghai University

SPG-63: Ab-initio Study of Energetics and Stability of Ni-X (X=Be, Al, Ti, Mn, Zn) Intermetallic Compounds: *Nikolas Antolin*[1]; Oscar Restrepo[1]; Wolfgang Windl[1]; [1]Ohio State University

SPG-64: Microstructural Characterization of Melt-spun $Ti_{51.5}Ni_{48.5}$Ribbons: *Sichuang Xue*[1]; Wu Wang[1]; Jinke Yu[1]; Qijie Zhai[1]; Hongxing Zheng[1]; [1]Shanghai University

SPG-65: Austenite Stability during Low Cycle Fatigue of Advanced Steels: *Greg Lehnhoff*[1]; Kip Findley[1]; [1]Colorado School of Mines

SPG-66: Characterization of Discontinuous Cellular Carbide Precipitation in INCONEL® 740H: Andrea Casias[1]; *Greg Lehnhoff*[1]; Kip Findley[1]; Chester Van Tyne[1]; [1]Colorado School of Mines

SPG-67: Synthesis and Properties of Hollow Metallic Glass Micro-trusses: *Jan Rys*[1]; Dongchan Jang[1]; Tobias Schaedler[2]; Alan Jacobsen[2]; William Carter[2]; Julia Greer[1]; [1]California Institute of Technology; [2]HRL Laboratories Limited Liability Company

SPG-69: On the Determination of Tortuosity Index of Polyimide Foam for Aerospace Applications: *Sugeily Flores-Bonano*[1]; Félix Rodríguez-Ruiz[1]; O. Suárez[1]; Walter Silva-Araya[1]; [1]University of Puerto Rico - Mayagüez

SPG-68: Stochastic Analysis Based on Weibull Statistics Assisted by Artificial Neural Network Simulations in Concretes containing Fly Ash, Micro/Nano-SiO2 under Indirect Tension: *Luis Zapata*[1]; Genock Portela[1]; Marcelo Suarez[1]; [1]University of Puerto Rico, Mayagüez College of Engineering

SPG-71: Thermal, Microstructural, and Mechanical Characterization of NiTiHf Shape Memory Alloys with Aluminum Additions: *Derek Hsen Dai Hsu*[1]; Fatmata Barrie[1]; Hunter B. Henderson[1]; B. Chad Hornbuckle[2]; Gregory B. Thompson[2]; Michele V. Manuel[1]; [1]University of Florida; [2]The University of Alabama

SPG-70: Fabrication and Characterization of Chitin-carbon Nanotube Composites: *Sujeily Soto*[1]; O. Marcelo Suarez[1]; Deborah Marty[1]; [1]University of Puerto Rico

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YP-1: Innovative Production Method of Ultra High Strength Aluminum Matrix Nanocomposite Foams: *Khalil Khalil*[1]; [1]King Saud University

YP-2: Fatigue-induced Grain Coarsening and its Influence on the Electrical Resistance of Cu Films on Polyimide: Oleksandr Glushko[1]; *Megan Cordill*[2]; [1]University of Leoben; [2]Erich Schmid Institute

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YP-3: Researches Regarding the Structure Investigations on New Materials of the Composite Type: *Ilie Butnariu*[1]; [1]University Politehnica Bucharest

YP-4: Looping Sulfide Oxidation™ Process for the Production of Molybdenum Oxides from Molybdenite: *Joseph Lessard*[1]; Esra Cankaya-Yalcin[1]; Daniel Gribbin[1]; [1]Orchard Material Technology, LLC

YP-5: A Review of Energy Use in Fine Grinding: *Jan de Bakker*[1]; [1]BBA, Inc

YP-6: Calcium-Bismuth Electrodes for Large-Scale Energy Storage (Liquid Metal Batteries): *Hojong Kim*[1]; Dane Boysen[1]; Takanari Ouchi[1]; Donald Sadoway[1]; [1]MIT

YP-7: Information Sharing as a Remedy to Demand Amplification in Supply Chains: *matloub hussain*[1]; [1]Abu Dhabi University

YP-8: Sustainable Materials Extraction: *Rachel DeLucas*[1]; Antoine Allanore[1]; [1]Massachusetts Institute of Technology

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YP-9: Friction Stir Back Extrusion (FSBE) of Lightweight Alloys: *Fadi Abu-Farha*[1]; [1]Clemson University

YP-10: TEM and SAXS: Partners for Stereological Analysis: *Julian Rosalie*[1]; Brian Pauw[1]; [1]National Institute for Materials Science

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YP-11: Investigation of Secondary Hardening in MP35N Using Analytical Scanning Transmission Electron Microscopy: *Dan Sorensen*[1]; William Gerberich[2]; K. Andre Mkhoyan[2]; [1]Medtronic Neuromodulation; [2]University of Minnesota, Department of Chemical Engineering and Materials Science

YP-12: Optimization of Thermal Properties of Copper-Diamond Composites via Interface Engineering: *Vikas Sinha*[1]; Jonathan Spowart[2]; [1]Air Force Research Laboratory; UES, Inc.; [2]Air Force Research Laboratory

YP-13: Ternary Eutectic Growth of Nanostructured Thermoelectric Ag-Pb-Te Materials: *Hsin-Jay Wu*[1]; Wei-jian Foo[2]; Sinn-wen Chen[1]; G. Snyder[3]; [1]National Tsing Hua university; [2]National University of Singapore; [3]California Institute of Technology

YP-14: Synthesis of Ti-TiC Nanocomposites by In-situ Reaction Sintering of Ti-Carbon Mixtures: *Srinivasa Bakshi*[1]; Vasanthakumar K[1]; Karthiselva N[1]; [1]Indian Institute of Technology Madras

YP-15: Processing, Fabrication and Testing of Bulk Metallic Glass Composite Hardware: *Douglas Hofmann*[1]; [1]NASA JPL/Caltech

YP-16: Nanocrystal Formation From an Amorphous Precursor: *Eren Kalay*[1]; Matthew Kramer[2]; [1]METU; [2]Ames Laboratory US DOE

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March 4, 2013

Room: Park View Lobby - Student

Location: Henry B. Gonzalez Convention Center

YP-17: Structure and Properties of the Y_2O_3/Fe Interface using First Principles Calculations: *Samrat Choudhury*[1]; Christopher Stanek[1]; Blas Uberuaga[1]; [1]Los Alamos National Laboratory

YP-18: Effects of Fe and Co Substitutions by Ni in La-Ni-O Perovskite-Type Oxides in Reforming of Methane with CO2 and O2: *Alireza Jahangiri*[1]; Hassan Pahlavanzadeh[2]; Hamidreza Aghabozorg[3]; Jafar Towfighi[2]; [1]Ottawa University; [2]Tarbiat Modares University; [3]Research Institute of Petroleum Industry

YP-19: New Insight into the Mechanism of Irradiation-Assisted Stress Corrosion Cracking: *Bai Cui*[1]; Ian Robertson[1]; [1]University of Illinois at Urbana-Champaign

YP-21: In Situ Characterization of Grade 92 Steel during Tensile Deformation Using High Energy X-ray Diffraction and Small Angle X-ray Scattering: *Leyun Wang*[1]; Meimei Li[1]; Jonathan Almer[1]; [1]Argonne National Laboratory

YP-22: Interfacial Fracture of Ductile Films from Compliant Substrates Using Stressed Overlayers: *Megan Cordill*[1]; [1]Erich Schmid Institute of Materials Science

YP-23: Substructural Observations in Magnesium: *Benjamin Morrow*[1]; Rodney McCabe[1]; Ellen Cerreta[1]; Carlos Tomé[1]; [1]Los Alamos National Laboratory

YP-24: Fatigue Properties of Small Scale Materials: *Olivier Pierron*[1]; [1]Georgia Institute of Technology

YP-25: Microscale Observations on the Definitions of Elastic Limit and Yield Point: *Amit Pandey*[1]; Robert Wheeler[2]; Amit Shyam[1]; [1]ORNL; [2]MicroTesting Solutions LLC

YP-26: The Effect of Prior Exposures on the Notched Fatigue Behavior of Disk Superalloy ME3: *Chantal Sudbrack*[1]; Susan Draper[1]; Timothy Gorman[2]; Jack Telesman[1]; Tim Gabb[1]; David Hull[1]; Daniel Perea[3]; Daniel Schreiber[3]; [1]NASA Glenn Research Center; [2]University of Dayton (NASA USRP); [3]Pacific Northwest National Laboratory

YP-27: In-situ Probing of Microscopic Deformation Kinetics in Advanced High-Strength Steels: *Zhenzhen Yu*[1]; Rozaliya Barabash[1]; Oleg Barabash[2]; Wenjun Liu[3]; Zhili Feng[1]; [1]Oak Ridge National Laboratory; [2]University of Tennessee; [3]Argonne National Laboratory

YP-28: Competition between Average and Local Properties of a Grain Boundary in Spall Processes: *Saryu Fensin*[1]; Steven Valone[1]; Ellen Cerreta[1]; George Gray[1]; [1]Los Alamos National Laboratory

INDEX

A

B

INDEX

INDEX

C

INDEX

D

INDEX

E

F

INDEX

G

H

INDEX

I

J

INDEX

K

INDEX

L

INDEX

M

N

INDEX

O

P

INDEX

Q

R

INDEX

S

INDEX

INDEX

T

U

V

W

INDEX

X

Y

Z

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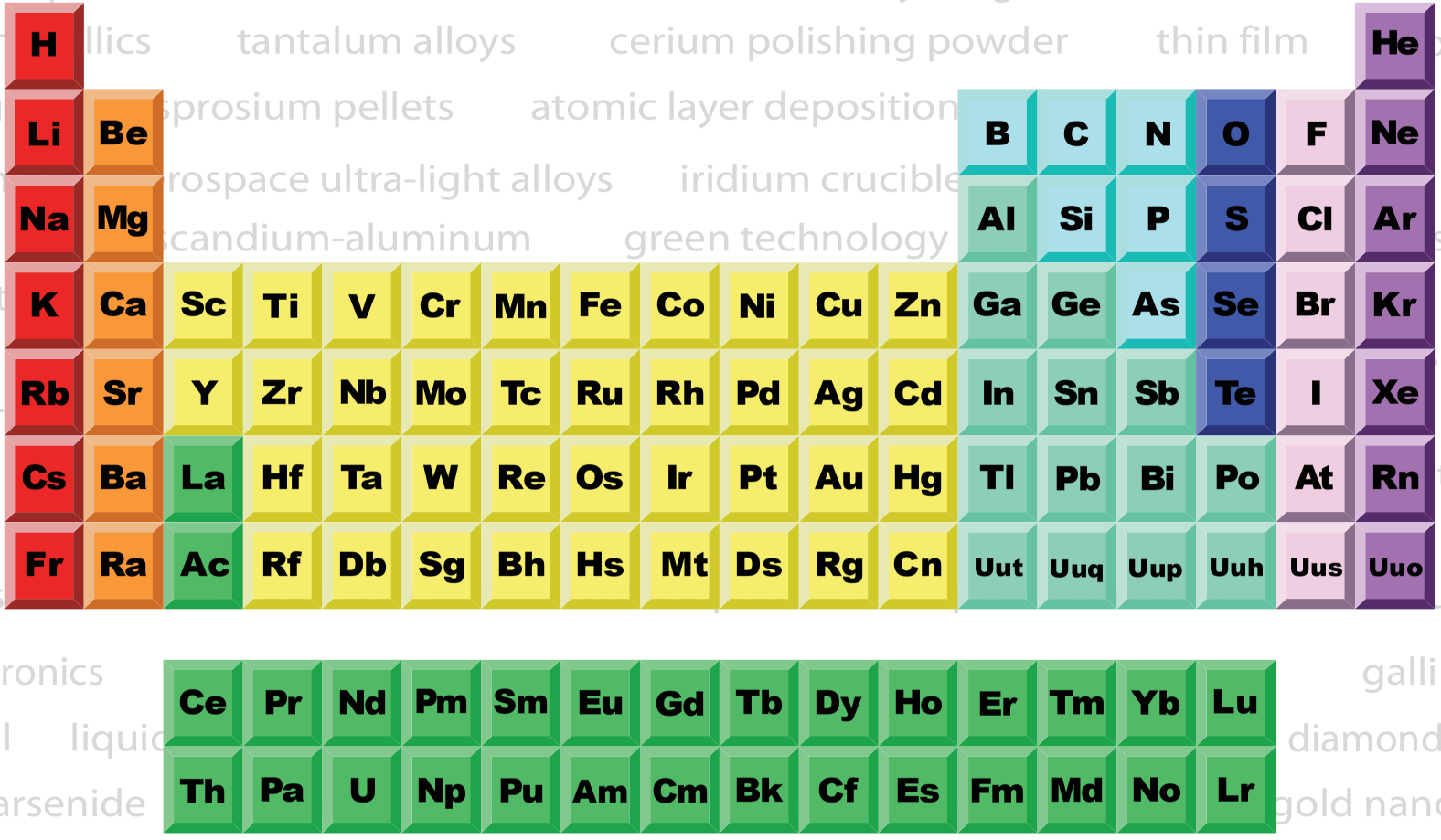

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