## Program Highlights

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## Additive Manufacturing

### Additive Manufacturing of Composites and Complex Materials II

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- **Techniques/Applications**
  - MON PM 304 55
- **Metals and Metallic Composites**
  - TUE PM 304 72

### Additive Manufacturing of Metals: Fatigue and Fracture

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- **Session II**
  - WED PM 304 112
- **Session III**
  - THU AM 304 132

### Additive Manufacturing of Metals: Microstructure and Material Properties

- **Microstructure Development in AM Processes**
  - MON AM 301 34
- **Microstructure and Mechanical Properties in Ti Alloys**
  - MON PM 301 56
- **Processing and Properties of Alloy 718**
  - MON PM 302 56
- **Porosity and Microstructural Effects**
  - TUE PM 301 72
- **Properties of AM Manufactured Alloys**
  - TUE PM 302 72
- **AM Processing of Stainless Steels**
  - WED AM 302 90
- **New Alloys for AM and Process Optimization**
  - WED AM 301 90
- **AM Processing of Aluminum and Non-ferrous Alloys**
  - WED PM 301 112
- **Phase Formation and Stresses**
  - WED PM 302 113

### Additive Manufacturing of Metals: Post Processing

- **Physical Processing**
  - MON AM 303 34
- **Thermal Processes I**
  - MON PM 303 57
- **Thermal Processes II**
  - TUE PM 303 73

### Additive Manufacturing of Metals: Powder Feedstock Characterization and Performance

- **Characterization of Powder for AM**
  - MON AM 305 35
- **Powder Production**
  - MON PM 305 57

### Additive Manufacturing: In-situ Process Monitoring and Control

- **Session I**
  - WED AM 303 91
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**Materials Testing, Processing, and Applications**

**Structural Materials, Fuels, and Irradiation Effects**

**Materials Issues in Nuclear Waste Management**

**Nuclear Waste Management Strategies**

**Nuclear Waste Process Analysis and Modeling**

**Fundamental Issues in Nuclear Waste Management**

**Fundamentals and Characterization**

**Actinide and Lanthanide Materials II**

**Oxides, Compounds, and Metals**

**Metallic Fuels**

**Advancements in In-situ Electron Microscopy Characterization II**

**Mechanical Behaviors**

**Radiation Environments**

**Novel Instrumental Designs**

**Composites and Simulations**

**Characterization of Fracture and Fragmentation Phenomena Across Multiple Length Scales: From Atomistic to Macroscopic Approaches**

**Modeling of Fracture and Fragmentation Processes: Meso-/Macroscopic Scales**

**Fracture and Fragmentation Phenomena: Lower Length Scales Methodologies**

**Interfaces, Grain Boundaries and Surfaces from Atomistic and Macroscopic Approaches**

**Structure and Chemistry of Interfaces**

**Interface Thermodynamics**

**Surface Phenomena**

**Interfaces and Polycrystals; Interface Kinetics I**

**Interface Kinetics II**

**Interface Properties**

**International Symposium on Defects, Transport, and Related Phenomena**

**Lithium Ion Conductors/Modeling Defect and Transport**

**Proton Conductors**

**Anion Transport**

**Chemo-Mechanical Coupling**

**Transport at Interfaces**

**Materials Property Understanding through Characterization**

**Novel Tech I**

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**Non-metals**

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**Phase Stability, Diffusion Kinetics, and their Applications (PSDK-XII)**

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**Phase Transformations and Microstructural Evolution in Ti and Its Alloys**

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**Iron and Steel (Ferrous Alloys)**

**Advanced Steel Metallurgy: Products and Processing**

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**Advances in Zinc-coated Sheet Steel Processing and Properties**

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**Gas/Metal Reactions, Diffusion and Phase Transformation during Heat Treatment of Steel**

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**Shaping and Forming of Advanced High Strength Steels II**

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<td>Materials Selection and Surface Analyses for Corrosion Prevention and Detection</td>
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<td>Steels and Advanced Materials</td>
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<td>Lightweight Materials</td>
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<td>Coatings and Protection/Corrosion Technologies</td>
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<td>Surface Protection for Enhanced Materials Performance: Science, Technology, and Application</td>
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<td>Thermal and Environmental Barrier Coatings</td>
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<td>Oxidation and Corrosion</td>
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<td>Oxidation, Corrosion, and Tribological Coatings</td>
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<td>Corrosion and Functional Coatings</td>
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<td>Thermal Protection Materials and Systems</td>
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<td>TPS Materials - Methods of Testing and Analysis; TPS Materials Development and Testing</td>
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<td>Nanotechnology for Energy, Environment, Electronics, Healthcare and Industry Applications</td>
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**Responsive Functional Nanomaterials**

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MON AM 320 50
**Session II**
MON PM 320 69
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**Session V**
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**Responsive Functional Nanomaterials**

**Session I**
MON AM 319 53
**Session II**
MON PM 319 70

**Theory, Manufacturing and Applications of Ceramic/Metal (CerMet) nano-laminates**

**Ceramic/Metal (CerMet) Nano-laminates I**
MON AM 319 53
**Ceramic/Metal (CerMet) Nano-laminates II**
MON PM 319 70

**Processing and Product Manufacturing**

**Advanced Manufacturing, Processing, Characterization and Modeling of Functional Materials**

**Session I**
MON AM 324 35
**Session II**
MON PM 324 58

**Boron, Boron Coatings, Boron Compounds and Boron Nanomaterials: Structure, Properties, Processing, and Applications**

**2D Boron & Physical Properties**
MON AM 330 38
**Novel Synthesis & Boron Suboxide**
MON PM 330 60
**Theory of Bulk Systems**
TUE PM 330 75
**Novel Synthesis & Coatings**
WED AM 330 93

**Design, Processing, and Development of Structural Materials**

**Advanced Processing and Additive Manufacturing**
MON AM 328 41
**Complex and Multicompetent Alloys**
MON PM 328 61
**Mesoscale Microstructure: Simulations and Experiments**
TUE PM 328 77
**Alloys for Power and Energy**
WED AM 328 95
**Deformation Behavior of Structural Materials**
WED PM 328 117

**Joining of Advanced and Specialty Materials (JASM XVII)**

**Nano & Micro Joining**
MON AM 326 45
**Brazing**
MON PM 326 64
**Friction Stir Welding**
TUE PM 326 80
**Welding Metallurgy**
WED AM 326 99
**Dissimilar Metal Welds**
WED PM 326 121
**Welding Processes**
THU AM 326 138

**Light Metals Alliance: Light Metal Technology 2017**

**Light Metals Technology: Invited**
TUE PM 414 81
**Light Metals Technology: Aluminum - Product Development**
WED AM 415 100
**Light Metals Technology: Titanium**
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**Light Metals Technology: Characterization**
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**Light Metals Technology: Magnesium & General Presentations**
WED PM 414 122

**Mechanochemical Synthesis and Reactions in Materials Science II**

**Session I**
TUE PM 327 83
**Session II**
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<td>Composites: Imaging and Characterization</td>
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<td>Multifunctional Ceramic- and Metal-matrix Composites: Processing, Properties, and Performance</td>
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<td>General Processing and Characterization of CMCs and MMCs/Miscellaneous topics on MMM and CMCs</td>
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<td>Emerging/Novel REM/REE Applications I</td>
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<td>REE Panel Keynote and Discussion</td>
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<td>Regulatory Issues and the Effect of New Advances in REE Separation and Metal Making Technologies</td>
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<td>Current Production Status, Availability, and Economics of REE/REM</td>
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<td>Synthesis Characterization, Properties and Applications of Functional Porous Materials</td>
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<td>Porous Material Applications in Environmental and Sustainable Fields</td>
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<td>Structure-property-performance</td>
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<td>Synthesis, Characterization and Modeling</td>
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<td>The 9th International Symposium on Green and Sustainable Technologies for Materials Manufacturing and Processing</td>
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<td>Novel Green Design of Ceramics I/Novel Green Technologies for Energy and High Temperature Applications</td>
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<td>Next Generation Green Technologies I</td>
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<td>Titanium Powder Metallurgy</td>
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<td>Ultra High Performance Metals, Metal Alloys, Intermetallics, and Metal Matrix Composites for Aerospace, Defense, and Automotive Applications</td>
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<td>High Performance / Ultrafine Grained / Nanostructured Low Density Alloys</td>
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<td>Bulk Metallic Glass / High Entropy Alloys</td>
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### Special Topics

**ACerS Robert B. Sosman Award Symposium: Tailoring Ceramic Microstructures: Understanding and Tuning of Materials Performance**

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**Best Practices in Academic Laboratory Safety**

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**Curricular Innovations and Continuous Improvement of Academic Programs (and Satisfying ABET along the Way): The Elizabeth Judson Memorial Symposium**

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**Data and Tools for Materials Discovery and Design**

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**Diversity in STEM and Best Practices to Improve It**

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**Failure Analysis and Prevention**

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**Fifty Years of Metallography and Materials Characterization**

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**Perspectives for Emerging Materials Professionals**

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**Special Session on Emerging Technologies to Develop and Commercially Adopt Innovative Materials**

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ACerS/EPDC: Arthur L. Friedberg Ceramic Engineering Tutorial and Lecture
Monday AM  Room: 315  Location: DLL Convention Center
October 9, 2017

9:00 AM Invited
Structure-property-processing Relationships in Composite Materials: Rosario Gerhardt; *Georgia Institute of Technology

Actinide and Lanthanide Materials II – Oxides, Compounds, and Metals
Program Organizers: Clarissa Yablinesky, Los Alamos National Laboratory; Adam Farrow, Los Alamos National Laboratory; Jason Jeffries, Lawrence Livermore National Laboratory; Kester Clarke, Los Alamos National Laboratory; Clarissa Yablinsky, Los Alamos National Laboratory; Clinique L. Brundidge, Naval Nuclear Laboratory
Monday AM  Room: 405  Location: DLL Convention Center
October 9, 2017

Session Chairs: Adam Farrow, Los Alamos National Laboratory; Jason Jeffries, Lawrence Livermore National Laboratory

8:00 AM Invited
Probing Local Disorder in Actinide Oxides: Raul Palomares; Jacob Shamblin; Maik Lang; *The University of Tennessee

8:40 AM
Purification of Lanthide Isotopes Using Electromagnetic Isotope Separation: Tyler Bronson; Kevin Dudek; Chris Leibman; *Los Alamos National Laboratory

9:00 AM
Predictive Modeling for Strongly Correlated f-electron Systems: A First-principles and Database Driven Machine Learning Approach: Tovfig Ahmed; Heike Harper; Alexander Balatsky; *Los Alamos National Laboratory; *Uppsala University

9:20 AM Invited
The Irradiated Materials Characterization Laboratory—Current Capabilities and Recent Results: Karen Wright; Lingfeng He; Brandon Miller; Daniel Jadernas; Brandon Hernandez; *Idaho National Laboratory

10:00 AM Break

10:20 AM Invited
Plutonium Phase Diagrams in the New Edition of the Plutonium Handbook: Aurelien Perron; Patrice Turchi; Lida Timofeeva; Jason Jeffries; David Clark; Robert Hanrahan; *Lawrence Livermore National Laboratory; A. A. Bochvar All-Russia Research Institute of Inorganic Materials (VNIINM); *Los Alamos National Laboratory; DOE-NNSA

11:00 AM
d-phase 239Pu-Ga Alloys at Low Temperature by Pulsed Neutron Diffraction: Alice Smith; Sven Vogel; Jianzhong Zhang; Adrian Losko; Scott Richmond; Michael Ramos; Franz Freibert; *Los Alamos National Laboratory

11:20 AM
Real Time Evolution of Elastic Moduli to Study Aging δ-Pu: Boris Maiorov; *Los Alamos National Laboratory

11:40 AM
Peak-force Quantitative Nanomechanical Mapping of Ga-stabilized d-Pu: Miles Beach; Miguel Santiago Cordoba; Igor Usov; *Los Alamos National Laboratory

Additive Manufacturing of Composites and Complex Materials II – Processing
Program Organizers: Dirk Lehmhus, ISIS Sensorial Materials Scientific Centre; Jonathan Spowart, Air Force Research Laboratory; Nikhil Gupta, New York University
Monday AM  Room: 304  Location: DLL Convention Center
October 9, 2017

Session Chairs: Jonathan Spowart, Air Force Research Laboratory; Nikhil Gupta, New York University

8:00 AM
3D Printing in Maxillofacial Surgery: Assessment to Print Mandibular Fixation Plates: Iliaria Campioni; Nikhil Gupta; Iliaria Cacciotti; Niccolò Cusano University; New York University, Tandon School of Engineering

8:20 AM Invited
Additive Manufacturing of Functional Graded Multi-materials via Selective Laser Melting – Microstructure and Mechanical Behavior: Florian Hengsbach; Peter Koppa; Martin Holzweissig; Madison Buns; Peter Hoyer; Thomas Tröster; Mirko Schaper; Paderborn University; Benteler Automotive

8:40 AM Invited
Additive Manufacturing of Interpenetrating Phase Composites with Exceptional Damage-tolerance: Alexander Pawlowski; Zachary Cordero; Matthew French; Thomas Math; J. Keith Carver; Ralph Dinwiddie; Amy Elliot; Amit Shyam; Derek Splitter; University of Tennessee; Rice University; Oak Ridge National Laboratory

9:00 AM Invited
Additive Manufacturing via Ambient Reactive Extrusion: Cynthia Katchko; Orlando Rios; David Fenn; Reza Rock; Kurt Olson; Oak Ridge National Laboratory; PPG Industries

9:20 AM Keynote
Development of New Resin Chemistries for Additive Manufacturing Processes of Composites: Hilmar Koerner; Air Force Research Laboratory

10:00 AM Break

10:20 AM
Effect of Porosity on Stochastic Fracture of Additive Manufactured Polymer Matrix Composites: Eric Anderson; Ozgur Keles; San Jose State University

10:40 AM
Formulation of UV Curable Resins Utilized in Vat Photo Polymerization for the Additive Manufacturing of Gun Propulsion Charge in 3D Printers: David Bird; Elbert Caravaca; US Army

11:00 AM
Laser-matter Interactions in Laser Beam Melting of High Performance Alumina-zirconia Oxide Ceramics: Liliana Moniz; Christophe Colin; Marie-Hélène Berger; Jean-Dominique Bartout; Mines Paristech

11:20 AM
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Additive Manufacturing of Metals: Microstructure and Material Properties – Microstructure Development in AM Processes

Program Organizers: Andrzej Wojcieszynski, ATI Powder Metals; Ulf Ackelid, Freemelt AB; Ola Harrysson, North Carolina State University; Sudarsanam Babu, The University of Tennessee, Knoxville

Session Chair: Andrzej Wojcieszynski, ATI Powder Metals

8:00 AM Invited
Microstructure Development in 3D Printed Metals: Anthony Rollett; 'Carnegie Mellon University

8:40 AM Characterization of Novel Lattice Structures Formed through Additive Manufacturing with Aluminum, Titanium, and Magnesium Alloys: Eric Faerison; 'Quad City Manufacturing Laboratory & Western Illinois University

9:00 AM Influence of Volumetric Energy Density and Temperature on Crystallographic Texture and Microscopic Defects in a 3-D Printed Stainless Steel Alloy: Hahn Choo; Austin Ngo; Xianghui Xiao; Yang Ren; Manyalibo Matthews; Elena Garleat; 'University of Tennessee; 'Argonne National Laboratory; 'Lawrence Livermore National Laboratory; 'N-D National Security Complex

9:20 AM Experimental and Numerical Study of Additive Manufactured Stain-less Steel Lattice Structures: Alexander Tanabe; Wadim Reschetnik; Kay-Peter Hoyer; Gunter Kullmer; Mirko Schaper; 'Paderborn University

9:40 AM Effect of Microstructure on Anisotropic Ductility in Additively Manufactured Metallic Materials: Allison Beese; Zhuqing Wang; Alexander Wilson-Heid; 'Pennsylvania State University

10:00 AM Break

10:20 AM Location Dependence of the Microstructure in Selectively Laser Melting NITi: Brian Franco; Ji Ma; Gustavo Tapia; Jun Liu; Alaa Elwawy; Raymundo Arroyave; Ibrahim Karaman; 'Texas A&M University

10:40 AM A Comparative Study of Solidification Microstructure of Electron Beam and Laser Melted Powder Mixtures of Ni and Sn: Jianrong Gao; Rijie Zhao; Yeqing Wang; Jerry Guo; Brant Wu; 'Northeastern University; '2Dynasty Metal Additive Manufacturing Systems Co., Ltd

11:00 AM Manufacturing TiAl Parts with Electron Beam Melting: Processing - Microstructure - Mechanical Property Relationships: Ercan Cakmak; Peeyush Nandwana; Yukinori Yamamoto; Dongwon Shin; Indrani Sen; Thomas Watkins; Ryan Dehoff; Roger England; Allen Haynes; 'Oak Ridge National Laboratory; 'India Institute of Technology Kharagpur; 'Cummins Inc.


Additive Manufacturing of Metals: Post Processing – Physical Processing

Program Organizers: Ola Harrysson, North Carolina State University; Andrzej Wojcieszynski, ATI Powder Metals; Ulf Ackelid, Freemelt AB; Sudarsanam Babu, The University of Tennessee, Knoxville

Monday AM Room: 303 Location: DLL Convention Center

Session Chair: Ola Harrysson, NC State University

8:00 AM Keynote
A Method for Integrating Additive and Subtractive Operations for Metal Parts - Direct Additive Subtractive Hybrid Manufacturing (DASH): Matt Frank; Ola Harrysson; Rick Wysk; Niechen Chen; Harshad Srinivasan; Guangyu Hou; Carter Keough; 'Iowa State University; 'North Carolina State University

8:40 AM Analysis of Fatigue Behavior of Ti-6Al-4V Made by Electron Beam Melting after Additional Surface Processing: Carter Keough; Harvey West; Richard Wysk; Ola Harrysson; 'North Carolina State University

9:00 AM Effect of Shot Peening on Steel: Sachin Patil; 'Bharat Forge Ltd

9:20 AM Electrochemical Surface Finishing of Additively Manufactured Parts: Timothy Half; Holly Garich; Stephen Snyder; E Taylor; 'Faraday Technology Inc.

9:40 AM Keynote
Mechanism and Effect of Post-processing on the Morphology and Surface Integrity of Metal AM Components: Ashif Iquebal; Satish Bukkapatnam; 'Texas A&M University

10:20 AM Break

10:40 AM The Effects of Ultrasonic Nanocrystal Surface Modification on the Fatigue Performance of 3D-printed Ti6Al4V: Hao Zhang; Richard Chiang; Haifeng Qin; Zhencheng Ren; Dong Lin; Gary Doll; Vijay Vasudevan; Yalin Dong; Chang Ye; 'University of Akron; 'University of Cincinnati; 'Timken Engineered Surfaces Laboratories, University of Akron; 'Kansas State University

11:00 AM Tailoring Microstructure and Residual Stress Profile of Selective Laser Melted Parts by Laser Shock Peening: Nikola Kalentics; Eric Boillat; Patrice Peyre; Roland Logé; 'EPFL; 'Processes and Engineering in Mechanics and Materials Laboratory (PIMM), CNRS-ENSAM ParisTech

11:40 AM Microstructural Evolution of a Novel High Strength Aluminum Alloy for Aerospace Additive Manufacturing Applications: Jacob Rindler; Eric Fodrai; John Barnhart; Michael DeVito; 'Northrop Gruman
Additive Manufacturing of Metals: Powder Feedstock Characterization and Performance – Characterization of Powder for AM
Program Organizers: Andrzejest Wójcieszynski, ATI Powder Metals; Ulf Ackelid, Freemelt AB; Ola Harrysson, North Carolina State University; Sudarsanam Babu, The University of Tennessee, Knoxville

Monday AM  Room: 305  Location: DLL Convention Center
Session Chair: Timothy Horn, North Carolina State University

8:00 AM
Additive Manufacturing: Characterizing Metal Powder Features and Detecting Contaminants: Amber Dalley1; Stephen Kennedy1; Greg Kotyk1; ‘RJ Lee Group

8:20 AM
Preparation and Characterization of Alternative Stainless Steel Feedstock Powders for Use in Additive Manufacturing: Blake Fallenwider1; Julie Schoenung1; Kaka Ma1; ‘Colorado State University; ‘University of California Irvine

8:40 AM
Characterization of Differently Atomized Powder Using Micro Computed X-ray Tomography for Additive Manufacturing of Alloy 625: Colleen Hilla1; Amir Mostafaei1; Erica Stevens1; Markus Chmielus1; ‘University of Pittsburgh

9:00 AM
Industry Comparison of Powder Feedstock Variability on The Performance of Selective Laser Melting Ni-based Superalloy 718: Chantal Sudbrack1; David Ellis1; Bradley Lerch1; Timothy Smith1; Richard Booth1; Kenneth Cooper1; Jonathan Tyka1; Ivan Locci1; Paul Chao1; Benjamin Richards1; ‘NASA Glenn Research Center; ‘NASA Marshall Space Flight Center; ‘NASA White Sands Test Facility; ‘University of Toledo; ‘Carnegie Mellon University; ‘Northwestern University

9:20 AM
From Powder to Part – Why AM Needs a TQM System from Starting Material to Built Component: Nate Kistler1; ‘LPW Technology

9:40 AM
Characterization of Ejected Particles or Spatter during Laser Powder Bed Additive Manufacturing: Chris Rock1; Maria Witherow1; Tim Horn1; Harvey West1; ‘NC State, Center for Additive Manufacturing and Logistics

10:00 AM  Break

10:20 AM
Chemical and Physical Characterization of Recycled Metal Powders: Bradley Barnhart1; James McGuffin-Cawley1; ‘Case Western Reserve University

10:40 AM
Proposed Strategy for Analysis and Management of Re-cycled Powder Materials: Najib Baig1; Will Marsden1; Stephen Warde1; John Twedal1; ‘Granta Design

11:00 AM
Inductively-coupled Plasma Powder Metallurgy: An Overview of Applications for Additive Manufacturing: Jean-Francois Carrier1; ‘Tekna Plasma Systems

11:20 AM
Characterizing the Effect of Thermal Processing on Powder Al Alloys for Additive Manufacturing Applications: Caitlin Walde1; Danielle Cote1; Richard Sisson1; Victor Champagne1; ‘Worcester Polytechnic Institute; ‘US Army Research Laboratory

11:40 AM
Design of Experiments Approach for DMLS: Krista Limmer1; Andelle Kudzi1; Efrain Hernandez1; Mark Tschoopp1; Brandon McWilliams1; ‘U.S. Army Research Laboratory

Advanced Manufacturing, Processing, Characterization and Modeling of Functional Materials – Session I
Program Organizers: Markus Chmielus, University of Pittsburgh; Mohammad Elahinia, University of Toledo; Reginald Hamilton, The Pennsylvania State University; Haluk Karaca, University of Kentucky; Reza Mirzaeifar, Virginia Tech

Monday AM  Room: 324  Location: DLL Convention Center
Session Chair: To Be Announced

8:00 AM Invited
Complexity of and Broader Opportunities in Additively Manufactured NiTi Shape Memory Alloys: Ibrahim Karan1; Ji Ma1; Brian Franco1; Kubra Karayagiz1; Luke Johnson1; Jun Liu1; Gustavo Tapia1; Mohammad Mahmoud1; Alaa Elwany1; Raymundo Arroyave1; ‘Texas A&M University

8:40 AM
Selection of SLM Process Parameters to Tailor the Microstructure and Superelasticity of Ni-rich NiTi Alloys: Soheil Soadi1; Narges Shayesteh Moghaddam1; Sayed Ehsan Saghai1; Amirhesam Amerinatanz2; Mohammad Elahinia1; Haluk Karaca1; ‘University of Kentucky; ‘University of Toledo

9:00 AM
Laser Directed Energy Deposition Additive Manufactured NiTi SMAs: Heat-Treated Material Microstructures and Superelasticity: Beth Bimber-Last1; Reginald Hamilton1; Todd Palmer1; ‘The Pennsylvania State University

9:20 AM
Heat-free Processing and Low-power Additive Manufacturing of Metallic Products through Metastable Material States: Andrew Martin1; Christophe Frankiewicz1; Ian Tevis1; Zach Martin1; Dipak Paramanik1; Martin Thuo1; ‘Iowa State University; ‘SAFI-Tech

9:40 AM
High-throughput Experimentally Guided Discovery of Next Generation High-temperature Shape Memory Alloys: Bandar AlMangour1; Zongkai Yan1; Mark Miao1; Joost Vlassak1; ‘Harvard University
10:00 AM Break

10:20 AM Invited
Additive Manufacturing and Processing of Functional Magnetic Materials: Markus Chmielus1; Eric Stevens2; Katerina Kimes2; Amir Mostafaei2; Jakub Toman2; 1University of Pittsburgh

11:00 AM Numerical Modeling of Mechanical Behavior of 3D Printed Ni-Mn-Ga Parts Using Finite Element Analysis: Eric Myers2; Matt Caputo2; Rafaela Vannutelli1; C. Virgil Solomon1; 1Youngstown State University

11:20 AM Additive Manufacturing of Geometrically Complex Parts from Ni-Mn-Ga Prealloyed Powders with Various Morphologies: Matthew Caputo1; C. Virgil Solomon1; 1Youngstown State University

11:40 AM Epitaxial Growth of a Magnetic Shape-memory Alloy via Directed Energy Deposition: Jakub Toman1; Peter Müllner1; Markus Chmielus1; 1University of Pittsburgh; 2Boise State University

Advanced Materials for Oil and Gas Applications - Performance and Degradation – Advanced Materials for Oil Gas Applications
Program Organizers: Yellapu Murty, MC Technologies LLC; Paal Bratland, OneSubsea; Andrzej Wojcieszynski, ATI Powder Metals; Maria Sawford, ATI; Xi Shan, GE Oil & Gas

Monday AM Room: 338 Location: DLL Convention Center
Session Chair: Ria Asfahani, US Steel

8:00 AM Invited
Understanding the Corrosion Behavior in High Strength Copper-nickel-tin Spinodal Alloys: Carole Trybus1; Bob Kusner1; Nathan Goebel1; Fritz Grensing2; William Nielsen1; Diane Nielsen1; 1Matierion Performance Alloys; 2Matierion Performance Alloy

8:40 AM Predicting (Downhole) Solid Particle Erosion: Insights from a Material Perspective: John Stevens1; Bo Yu1; 1Baker Hughes

9:00 AM Synchrotron Based Tomographic Imaging of Shale: C.M. Hefferan1; B.R. Bandli1; D.R. Blood1; R. Cunningham1; D.B. Menasche1; A.D. Rollett1; S.F. Schlaegle1; 1R.J. Lee Group; 2EQT Corporation; 3Carnegie Mellon University; 4Hamiltonian Group LLC

9:20 AM Sour Service Material Qualification Challenges for Div 3 HPHT Equipment: Michael Burns3; 1Stress Engineering Services, Inc.

9:40 AM Temperature and Strain Rate Dependence of Mechanical Properties in Line Pipe Steels: Taylor Jacobs1; Mary Rosprim1; David Matlock1; Kip Findley1; 1Colorado School of Mines

10:00 AM Break

10:20 AM Development of High Strength Low C – 13%Cr Martensitic Stainless Steel by More Mo Addition: Shuji Hashizume1; 1TenarisNKK Tubes

10:40 AM Controlled Degradation and Self-expanding Materials for Oil and Gas: Andrew Sherman1; Brian Werry1; Nick Farkas2; 1Terves Inc; 2Powdermet Inc

11:00 AM Nanostructured Steel Susceptibility to Sulfide Stress Cracking: Arash Shadavaran1; Raymundo Case1; Argie Rumann2; 1Texas A&M University; 2VODIK Industries

11:20 AM A Metallurgical Look at the Direct Energy Deposition Additive Manufacturing Repair of Ferrous Alloy Parts: Manuel Marya1; Srinand Karuppoo1; Virendra Singh2; You Lu3; 1Schlumberger Technology Corporation

11:40 AM Additive Manufacturing for Oil and Gas Applications: Matthias Giesecke1; Christoph Wangenheim1; Madison Burns2; René Kube3; 1Baker Hughes INTEQ GmbH

Advanced Steel Metallurgy: Products and Processing – Session I
Program Organizers: Emmanuel De Moor, Colorado School of Mines; Amar De, ArcelorMittal Global R&D; Kester Clarke, Colorado School of Mines; Alia Sergueeva, The NanoSteel Company; Charles Enloe, General Motors; Daniel Branagan, The NanoSteel Company; Matthew Kiser, Caterpillar Inc

Monday AM Room: 406 Location: DLL Convention Center
Session Chairs: Emmanuel De Moor, Colorado School of Mines; Charles Enloe, General Motors

8:00 AM Microstructure and Tensile Properties of Medium Mn Two-stage TRIP Steels: Daniel Field1; David Van Aken1; 2Missouri S&T

8:20 AM Deformation Twinning Mechanisms of TWIP Steel Revealed by In-situ Transmission Electron Microscopy: Jin-Kyung Kim1; Minhyeok Kwon1; Bruno De Cooman1; 1Graduate Institute of Ferrous Technology, POSTECH

8:40 AM The Impact of Aluminum on the Microstructure and Deformation Behavior in Medium-Mn TRIP Steels: B Yu1; Y Injeti1; Devesh Misra1; 1University of Texas at El Paso

9:00 AM The Role of Microstructure in Damage Development of 1st and 3rd Generation AHSS during Air Bending: Clemens Suppan1; Thomas Hebesberger1; Andreas Pichler1; Johannes Rehl1; Otmar Kolednik2; 1Voestalpine Stahl GmbH; 2Erich Schmid Institute of Materials Science, Austrian Academy of Sciences

9:20 AM High Temperature Tempering Behavior of Martensite during AHSS Manufacturing: Evgenii Poliak1; Olga Girina1; Pavan Venkatasury1; Damon Panahi1; 1ArcelorMittal USA

9:40 AM Hydrogen Trapping Behavior in a Strained Ferritic-martensitic Dual Phase Steel: Hiroshi Okano1; Shusaku Takagi1; 1JFE Steel Corporation
10:00 AM Break

10:20 AM
An Integrated Computational Approach for the Development of Automotive Steels: JiHyu Park1; Myung-Yeon Kim1; Jae-Hyeok Shim1; Jin-Yoo Suh2; Woo-Sang Jung1; Sung Chul Cha2; Seung-Hyun Hong2; 1Korea Institute of Science and Technology; 2Hyundai Motor Group

10:40 AM
Architecturing TWIP Steels for Energy Absorption and Lightweighting: Mackenzie Jones1; Hang Yu1; 'Virginia Tech

11:00 AM
Austenite Growth and Retention Simulations in Intercritically Annealed Medium Manganese Steels: Josh Mueller2; Emmanuel De Moor1; 1Advanced Steel Processing and Products Research Center, Colorado School of Mines

11:20 AM
Characterizing High Mn TRIP STEELS for Thick Plate Applications: Katherine Sebeck1; Richard Gerth1; Ryan Howell1; 1US Army TARDEC; 2US Army PEO GCS

11:40 AM
Temperature and Strain Rate Effects on Tensile Deformation Behavior of a Medium Mn TRIP Steel: Whitney Poling1; Kip Findley2; Emmanuel De Moor1; John Speer2; 1National Institute of Standards and Technology; 2Colorado School of Mines

Advancements in In-situ Electron Microscopy Characterization II – Mechanical Behaviors
Program Organizers: Yue Liu, Shanghai Jiao Tong University; Nan Li, Los Alamos National Laboratory; Khalid Hattar, Sandia National Laboratories; T. John Balk, University of Kentucky; Josh Kacher, Georgia Tech

Monday AM
Room: 411
Location: DLL Convention Center

Session Chairs: Yue Liu, Shanghai Jiao Tong University; Nan Li, Los Alamos National Lab

8:00 AM Invited
Integrative In-situ TEM: Khalid Hattar1; Brittany Muntifering1; Patrick Price1; Chris Barr1; Samuel Briggs1; Caitlin Taylor1; Daniel Bufford1; 1Sandia National Laboratories

8:30 AM Invited
Dislocation Shielding Enhancement of Toughness in Brittle Materials: William Gerberich1; Eric Hintsala1; University of Minnesota; Hysitron, Inc.

9:00 AM Invited
In Situ High Resolution TEM for Diffusive Deformation: Scott Mao1; Li Zhong1; Yang He1; University of Pittsburgh

9:30 AM Invited
In Situ Observations of Twin Interactions in HCP Metals: Rodney McCabe1; Fulin Wang1; Yue Liu1; Benjamin Morrow1; Sean Agnew2; 1Los Alamos National Laboratory; 2University of Virginia

10:00 AM Break

10:20 AM Invited
Atomic-level Study of Twinning and Phase Transformation Mechanisms in Crystalline Materials: Jian Wang1; 1University of Nebraska-Lincoln

10:50 AM Invited
Insights into the Deformation of Nanoporous Gold Using Scanning Nanobeam Diffraction: Thomas Ball1; James Ciston1; Nicolas Briot1; Andrew Minor2; 1University of Kentucky; 2National Center for Electron Microscopy

11:20 AM
Probing Deformation of Amorphous Porous Carbon Nanospheres: In-situ Experiment and Computational Analysis: Baoxing Xu1; 1University of Virginia

11:40 AM
In Situ TEM Investigation of the Thermal, Mechanical, and Corrosion Stability of CoCrFeNiMn High Entropy Alloy: Elaf Anber1; Chris Barr1; Mitra Taheri1; 1Drexel University

Advances in Zinc-coated Sheet Steel Processing and Properties – Advances in Zinc-coated Sheet Steel Processing and Properties
Program Organizers: Frank Goodwin, International Zinc Association; Joseph McDermid, McMaster University

Monday AM
Room: 403
Location: DLL Convention Center

Session Chair: To Be Announced

8:00 AM
Influence of Oxidizing Gas and Surface Microstructure on the Kinetics of High-temperature Oxidation of a CMnSi Advanced High-Strength Steel (AHSS): Mary Story1; Bryan Webler1; 1Carnegie Mellon University

8:20 AM
A Phase Field Model for Multiphase Oxidation of Advanced High Strength Steels: Alireza Togbafwe1; Mohsen Asle Zaeem1; 1Missouri University of Science and Technology

8:40 AM
Study on Selective Oxidation of a Mn-Al Advanced High Strength Steel: Shiang-Ren Tsai1; Chiung-Wen Hsu1; Liwen Chang1; 1National Sun Yat-Sen University

9:00 AM
Internal Stresses and Processing Modeling for Galvanized and Galvannealed DP Steels: Hongwei Ma1; 1WISCO

9:20 AM
Application of V-N Microalloying in Ultra-high Strength Martensitic Sheet Steels for Hot-dip Galvanising: David Martin1; Bevis Hutchinson1; 1Swerea KIMAB AB

9:40 AM
New Filler Metal for Producing High-Speed Welds in Thin-gauge Coated Steels with Minimal Porosity: Susan Fiore1; 1Hobart Brothers

10:00 AM Break

10:20 AM
Design and Characterization of Core-shell Nanocounters Impregnated with Inhibitor for Active Corrosion Protection of Low Carbon Steel: Kamelia Kamburova1; Neli Boshkova1; Nikolai Boshkov1; Tssetsa Radeva1; 1Institute of Physical Chemistry, Bulgarian Academy of Sciences
10:40 AM
Obtaining Zinc Coatings on a Sheet Steel in SHS Conditions: Borys Sereda1; Dmytro Sereda2; 1DSTU; 2Zaporizhzhya State Engineering Academy

Alumina at the Forefront of Technology II – Processing of Alumina Ceramics
Program Organizers: William Walker, Federal-Mogul Corporation; Marina Pascucci, CeraNova Corporation; Charles Compson, Almatis; William Carty, Alfred University

Monday AM  Room:  316  Location:  DLL Convention Center
Session Chair:  William Walker, Federal-Mogul Powertrain

8:00 AM Invited
Colloidal Behavior of Alumina Suspended in an Aqueous Medium: William Carty1; Hyojin Lee1; 1Alfred University

8:40 AM Invited
An Exact DLVO Solution for Various Powders in Non-aqueous Mediums to Predict Suspension Stability: Keith DeCarlo1; 1Blasch Precision Ceramics

9:20 AM
Corrosion of Alumina Powders in an Aqueous Medium: William Carty2; Hyojin Lee1; Randy Mauzy1; Paul Ormond1; 1Alfred University; 2AluChem, Inc.

9:40 AM
3D Printing of High-performance Alumina Parts: Johannes Homa1; Martin Schwentenwein1; 1Lithoz GmbH

10:00 AM Break

10:20 AM
Particle Packing and Sintering of 3-D Printed Alumina: Patrick Cigno1; William Carty1; Hyojin Lee1; 1Alfred University

10:40 AM
Injection Molding Different Shaped Ceramics and Understanding Process Variation: Jordan Otminski1; 1LEDVANCE LLC

11:00 AM
Evaluation of Polishing Damage and Relief in Sintered Alumina: Alicia Mayville1; Hyojin Lee1; William Carty1; 1Alfred University

11:20 AM
Surface Finish Improvements for Alumina Components Shaped by Green Grinding: William Walker1; 1Federal-Mogul Corporation

Best Practices in Academic Laboratory Safety – Session I
Program Organizers: Elizabeth Kupp, Penn State University; Theresa Kotancheck, Evolved Analytics LLC; Edgar Lara-Curzio, Oak Ridge National Laboratory

Monday AM  Room:  321  Location:  DLL Convention Center
Session Chairs:  Theresa Kotancheck, Evolved Analytics LLC; Elizabeth Kupp, Penn State University

8:00 AM Invited
Value Based Safety and Its Potential to Transform Workplace Culture (…and How Your Attitude towards Safety Can Make You a Better Job Candidate): Daniel Vaughn1; 1Corning Incorporated

8:40 AM Invited
Creating an Effective Safety Culture in a University Environment: Gary Messing1; 1The Pennsylvania State University

9:20 AM Invited
Engaging Diverse Stakeholders for Improving Safety Culture in Academic Laboratories: John Howarter1; 1Purdue University

10:00 AM Break

10:20 AM Invited
Risk in Academic Laboratories from the Perspective of an Industrial Safety Professional: J. Douglas Jeter1; 1Verity Technical Consultants, LLC

11:00 AM Invited
ABET Safety Criteria for Accreditation of Colleges of Engineering: Diane Albert1; 1Diane Albert Law

11:40 AM Invited
Root Cause Investigations & Key Learnings: Dawn Mason1; 1Eastman Chemical Company

Boron, Boron Coatings, Boron Compounds and Boron Nanomaterials: Structure, Properties, Processing, and Applications – 2D Boron & Physical Properties
Program Organizers: Jens Kunstmann, TU Dresden; Roumiana Petrova, New Jersey Institute of Tech; Scott Beckman, Washington State University

Monday AM  Room:  330  Location:  DLL Convention Center
Session Chair:  Jens Kunstmann, TU Dresden

8:00 AM Invited
Novel Properties of Dirac Fermions in Borophene: Iwao Matsuda1; Baojie Feng1; 1The University of Tokyo

8:40 AM Invited
Borophene in Its Multiple Forms: Structure, Properties, and Possible Applications: Nevill Gonzalez Szwacki1; 1University of Warsaw

9:20 AM Invited
Two-Dimensional Boron Icosahedral Structures: Ming Ye1; 1University of Louisville
10:00 AM Break

10:20 AM Invited
Physical Properties of Liquid Boron: Junpei Okada¹; ¹Tohoku University

11:00 AM
High-entropy Metal Diborides: A New Class of Ultrahigh Temperature Ceramics: Joshua Gild², Yuan Yao Zhang³, Tyler Harrington¹, Cormac Toher¹, Pranab Sarker¹, Sicong Jiang¹, Matthew Quinn¹, Will Mellor¹, Naixie Zhou¹, Lavina Backman¹, Elizabeth Opila¹, Stefano Curtarolo², Kenneth Vecchio², Jian Luo¹; ¹University of California, San Diego; ²Duke University; ³University of Virginia

Ceramics and Glasses Simulations and Informatics – Bridging Space and Time Scales
Program Organizers: Mathieu Bauchy, University of California, Los Angeles; Peter Kroll, University of Texas Arlington

Monday AM Room: 311 Location: DLL Convention Center

Session Chairs: Mathieu Bauchy, University of California, Los Angeles; Liping Huang, Rensselaer Polytechnic Institute

8:00 AM Invited
Development and Application of ReaxFF Reactive Force Field for Glass/Electrolyte Systems: Adri van Duin¹, Seung Ho Hahn¹, Mark Fedkin¹, Yun Shin¹, Nabankur Dasgupta¹; ¹Penn State

8:40 AM Invited
A Reax-Force-Field for Simulations of Silicon Oxycarbide Ceramics: Iliia Ponomarenko¹, Peter Kroll¹; ¹University of Texas at Arlington

9:20 AM
Rapid Composite Material Property Prediction Using Machine Learning: Grace Gu¹, Chun-Teh Chen¹, Markus Buehler¹; ¹MIT

9:40 AM
Influence of Mass and Charge Disorder on Thermal Conductivity of Entropy Stabilized Oxides by Molecular Dynamics Simulation: Mina Lim¹, Zsolt Rak², Ashutosh Giri², Samuel Daigle², Jeffrey Braun², Christina Rost², Patrick Hopkins², Donald Brenner¹; ¹North Carolina State University; ²University of Virginia

10:00 AM Break

10:20 AM Invited
Reaching Experimental Times at the Atomic Scale in Complex Materials: The Kinetic Activation-Relaxation Technique: Normand Mousseau¹; ¹Université de Montréal

11:00 AM
Molecular Mechanisms of Amorphous Creep: Dynamical Heterogeneities in Deformation and Flow: Penghui Cao¹, Michael Short¹, Sidney Yip¹; ¹Massachusetts Institute of Technology

11:20 AM
Characterization and Modeling of Microstructural Level Stresses in Brittle Materials: Melissa Teague¹; ¹Sandia National Laboratories

11:40 AM
Direct Numerical Simulation of Failure Mechanisms in Brittle Polycrystalline Structures: Hao Jiang¹, Zongyue Fan¹, Bo Li¹; ¹Case Western Reserve University

Characterization of Fracture and Fragmentation Phenomena Across Multiple Length Scales: From Atomistic to Macroscopic Approaches – Modeling of Fracture and Fragmentation Processes: Meso-/Macroscopic Scales
Program Organizers: Remi Dingeville, Sandia National Laboratories; Pierre-Alexandre Juan, Sandia National Laboratories

Monday AM Room: 415 Location: DLL Convention Center

Session Chair: To Be Announced

8:00 AM Invited
An Integrated Two-scale Modeling Approach to the Simulation of Fragmentation in Brittle Materials: John Bignell¹; ¹Sandia National Laboratories

8:20 AM
Fracture between a Suspended Polymeric Film and a Metallic Substrate: Experiments and Models: Jing Du¹, Emily Hampp², Wanliang Shan³, Wole Soboyejo⁴; ¹Penn State University; ²Stryker; ³University of Nevada, Reno; ⁴Worcester Polytechnic Institute

8:40 AM
Quantitative Phase-field Modeling of Crack Propagation in Multiphase Materials: Arezoo Emdadi¹, Mohsen Asle Zaeem¹, William Fahrenholz¹, Gregory Hilmas¹; ¹Missouri University of Science and Technology

9:00 AM
Predicting the Impact of Material Microstructure on Brittle Fracture Using a Phase Field Fracture Model: Michael Tonks¹, Shuaifang Zhang¹, Srujan Rokkam², Pritam Chakraborty³; ¹Pennsylvania State University; ²Advanced Cooling Technologies; ³Indian Institute of Technology Kanpur

9:20 AM
Crystal Plasticity Finite Element Simulation of Fatigue Failure in Polycrystalline Al7075-T651 Alloys, Part I: The Reconstruction, and Microstructure/Property Convergence of RVE: Xiaohui Tu¹, Ahmad Shahba¹, Jinlei Shen¹, Somnath Ghosh¹; ²Johns Hopkins University

9:40 AM
Crystal Plasticity Finite Element Simulation of Fatigue Failure in Polycrystalline Al7075-T651 Alloys, Part II: Modeling Cyclic Deformation and Fracture: Ahmad Shahba¹, Xiaohui Tu¹, Jinlei Shen¹; ²Johns Hopkins University

10:00 AM Break

10:20 AM Invited
Applying Micromorphic Filter on 3D Beam FEA with Idealized Periodic Micro-structure: Richard Regueiro¹, Farhad Shahabi¹, Boning Zhang¹, Joseph Bishop¹, ¹University of Colorado Boulder; ²Sandia National Laboratories
11:00 AM
The Effect of Loading Rate on Fracture Toughness Measurements for Various Materials: Carl Cady1; Cheng Liu2; 1Los Alamos National Laboratory

11:20 AM
A Peridynamics Framework for Modeling of Corrosion Damage Phenomena: Srujan Rokkan1; Michael Brothers1; Max Gunzburger2; Sachin Shanbhag3; Kishan Goel1; 1Advanced Cooling Technologies, Inc.; 2Florida State University; 3Naval Air Station - Pax River

11:40 AM
A Peridynamics-FEM Approach for Crack Path Prediction in Fiber-reinforced Composites: Quang Truong1; Srujan Rokkan1; Max Gunzburger2; Kishan Goel1; 1Advanced Cooling Technologies, Inc.; 2Florida State University; 3Naval Air Systems Command

12:00 PM
Crack Growth Path Prediction Based on Surface Roughness Evolution: Jalal Fathi Sola1; Randall Kelton1; Haiying Huang1; Efstathios Meletis1; 1University of Texas at Arlington

Curricular Innovations and Continuous Improvement of Academic Programs (and Satisfying ABET along the Way): The Elizabeth Judson Memorial Symposium – Course and Curriculum Improvements; ABET Update

Program Organizers: Devarajan Venugopalan, University of Wisconsin-Milwaukee; Jeffrey Fergus, Auburn University; Janet Callahan, Boise State University; Thomas Bieler, Michigan State University; Ronald Gibala, University of Michigan; Tonya Stone, Mississippi State University

Monday AM  Room: 306
October 9, 2017  Location: DLL Convention Center

Session Chair: Dev Venugopalan, Univ of Wisconsin-Milwaukee

8:00 AM
Levelling the Field – Inclusive Excellence: Janet Callahan1; 1Boise State University

8:20 AM
Effects of Flipped and Inter-semester Calculus I on Engineering Retention and Graduation Rates: Steven Pilgrim1; Joseph Petrillo1; 1Alfred University

8:40 AM
Thermal Spray Operator Certification: Dale Moody1; Peter Foy1; 1Plasma Powders and Systems Inc.

9:00 AM
Changes in ABET Engineering Criteria 3 and 5: Jeffrey Fergus1; 1Auburn University

9:20 AM Invited
ABET Academic Advisory Council Participation & Listening Session: Joseph Sussman1; Michael Milligan1; 1ABET

10:00 AM Break

10:20 AM
An Active-learning Experience with ‘Doc’ Neelley: Ronald Gibala1; 1University of Michigan

10:40 AM
Enhanced Student Learning from Computer-based Visualizations of Crystal Structures: Susan Gentry1; Tanya Faltens2; 1University of California, Davis; 2Purdue University

11:00 AM
Successes & Lessons Learned in an Undergraduate Computational Lab Sequence for Materials Science & Engineering: Alison Polasik1; Stephen Niezgoda1; 1The Ohio State University

11:20 AM
New Resources for Teaching Introductory Materials Science and Engineering: Hannah Melia1; Luca Mas1; Marc Fry1; 1Granta Design

11:40 AM Invited
Everyday Adventures of Applying Active Learning Pedagogies: The Great, the Good, and the Unfortunate: Jennifer Carter1; 1Case Western Reserve University

Data and Tools for Materials Discovery and Design – Materials Information Infrastructure

Program Organizers: Zi-Kui Liu, The Pennsylvania State University; David McDowell, Georgia Institute of Technology; Carelyn Campbell, National Institute of Standards and Technology; Laura Bartolo, Northwestern University; Bryce Meredig, Citrine Informatics; Mark Tschopp, Army Research Laboratory; Dane Morgan, University of Wisconsin - Madison; Afina Lupulescu, ASM International

Monday AM  Room: 323
October 9, 2017  Location: DLL Convention Center

Session Chairs: David McDowell, Georgia Tech; Zi-Kui Liu, Penn State

8:00 AM Keynote
A Data Laboratory for Materials Design: A New Paradigm for a Materials Information Infrastructure: Krishna Rajan1; 1University at Buffalo: SUNY

8:40 AM Invited
The Role of Infrastructure in Materials Informatics: C. Campbell1; I. Foster2; G. Olson1; L. Bartolo1; J. de Pablo1; Peter Voorhees2; 1National Institute for Standards and Technology; 2University of Chicago; 3Northwestern University

9:00 AM Invited
Using the Materials Commons in Integrated Computational Materials Science Workflows: Brian Puchala1; Glenn Tarcea1; Terry Weymouth1; Tracy Berman1; John Allison1; 1University of Michigan, Ann Arbor

9:20 AM Invited
Developing Infrastructure for High Quality Data of Materials Properties: Zi-Kui Liu1; Richard Otis2; Brandon Bocklund1; 1The Pennsylvania State University; 2Jet Propulsion Laboratory

9:40 AM
Materials Informatics Discovery Platform & RESTfulAPI: Alexandr Isayev1; Alexander Tropsha1; 1University of North Carolina at Chapel Hill

10:00 AM Break

10:20 AM Invited
Methods for Discovery and Design of Advanced Materials Across Length Scales: Susan Sinnott1; 1The Pennsylvania State University
10:40 AM Invited
An Integrated Collaborative Environment for ICME: Charles Ward¹; Matthew Jacobsen¹; ¹Air Force Research Laboratory

11:00 AM
Development of the NIST Materials Resource Registry as a Means to Advertise, Find, and Use Materials-related Resources: Chandler Becker¹; Alden Dima¹; Raymond Plante¹; Sharief Yousef³; Andrea Medina-Smith¹; Laura Bartolo³; Robert Hanisch³; Bryan Webler³; ³Carnegie Mellon University; ¹National Institute of Standards and Technology; ³Northwestern University

11:20 AM
A Paradigm Shift in Advanced Manufacturing and System Life Management: Jerry Evans¹; Grizelda Loy-Kraft³; ³Future Way Designs LLC; ²Air Force Research Lab/RQTE

Design, Processing, and Development of Structural Materials – Advanced Processing and Additive Manufacturing

Program Organizers: Tomoko Sano, U.S. Army Research Laboratory; Mitra Taheri, Drexel University

Monday AM Room: 328 Location: DLL Convention Center

Session Chairs: Suveen Mathaudhu, University of California, Riverside; Mitra Taheri, Drexel University

8:00 AM Invited
Novel Structural Materials Processing via Shear Assisted Processing and Extrusion (ShAPE): Nicole Overman³; Scott Whalen³; Matthew Olszta³; David Catalini¹; Karen Kruska¹; Jens Darsell¹; Vineet Joshi¹; Hellen Jiang¹; Glenn Grant¹; Suveen Mathaudhu¹; ³Pacific Northwest National Laboratory; ¹University of California Riverside

8:20 AM
Severe Plastic Deformation Effects on Nanoscale Oxide Dispersion of Internally Oxidized Fe-V Alloys: Anna Weiss¹; Stephen Kachur¹; Yoosuf Picard¹; Bryan Webler¹; ¹Carnegie Mellon University

8:40 AM
High Strength and High Conductivity in Re-processed Hypereutectic CuCr Alloys: Ayodele Olufinjana²; NY Woo²; ²University of the Sunshine Coast; ²Universiti Brunei Darussalam

9:00 AM
Machining-based Process for Sheet Directly on As-cast AA6013: Xiaolong Bai³; Srinivasan Chandrasekar³; Kevin Trumble³; ³Purdue University

9:20 AM
Laser-assisted Ultrasonic Surface Modification of Ti6Al4V Alloy: Jun Liu¹; Sergey Suslov¹; Haiqin Qin¹; Zhengcheng Ren¹; Gary Doll¹; Yalin Dong¹; Chang Ye¹; ¹University of Akron; ²Qatar Environment and Energy Research Institute

9:40 AM
Increasing Fracture Strength in Bulk Metallic Glasses Using Ultrasonic Nanocrystal Surface Modification: Chi Ma¹; Haiqin Qin¹; Zhengcheng Ren¹; Stephanie O’Keefe¹; Joseph Stevick¹; Gary Doll¹; Yalin Dong¹; Bartloniec Wilinski¹; Chang Ye¹; ¹The University of Akron; ²Liquidmetal Technologies, Inc; ³University of Manchester

10:00 AM Break

10:20 AM Invited
Processing of Ferritic Alloys for Nuclear Applications: Stuart Maloy¹; Eda Aydogan¹; Thomas Lienert¹; Ben Eftink¹; G. Robert Odette³; Md Ershadul Alam³; Souptik Pal³; David Hodzer³; John Lewandowski³; R. Webster³; Thak Sang Byun³; ³Los Alamos National Laboratory; ²University of California, Santa Barbara; ³Oak Ridge National Laboratory; ¹Case Western Reserve University; ²Pacific Northwest National Laboratory

10:40 AM Invited
Hybrid Advanced Manufacturing of Structural Materials: Brett Conner¹; Richard Wysk¹; Ola Harisson¹; Guha Manogharan¹; ²Youngstown State University; ²North Carolina State University; ²Pennsylvania State University

11:20 AM
Application of FEA to Determine the Effect of Forging Variables on the Occurrence of Abnormal Grain Growth during Subsequent Beta Annealing of Ti-6Al-4V: Lee Morris¹; ¹Air Force Institute of Technology

11:40 AM
Effect of Solidification Behavior on Microstructures and Mechanical Properties of K4169 Alloy Investment Casting: Maodong Kang¹; Jun Wang¹; Haiyan Gao¹; ¹Shanghai Jiao Tong University

Emerging Multifunctional Materials for Bio, EO, RF and Radiation Sensors – Emerging Multifunctional Materials for Bio, EO, RF and Radiation Sensors I

Program Organizers: Narsingh Singh, University of Maryland, Baltimore County; Dimitra Stratis-Cullum, Army Research Laboratory; Ravindra Nuggehalli, NJIT

Monday AM Room: 331 Location: DLL Convention Center

Session Chairs: Nuggehalli Ravindra, New Jersey Institute of Technology; Koyar Rane, Rani Channamma University

8:00 AM Invited
Introductory Remarks: Carbon with Unique Mixed Morphologies for EO, Microelectronics and Structural Applications: Narsingh Singh¹; ¹University of Maryland, Baltimore County

8:20 AM Invited
Solution Combustion Synthesis of Alumina-titania Ceramics for High-frequency Electronic Packaging: Francesca Deganello¹; Leonardo Francesca Liotta¹; Valeria La Parola¹; Gabriel Maria Ingo¹; Cristina Riccucci¹; Goffredo De Portù¹; Oscar Peverini¹; Anna Venezia¹; ¹CNR-ISMN Palermo, Italy; ²CNR-ISMN Montelibretti, Roma, Italy; ³CNR-ISTEC Faenza, Italy; ⁴CNR-IEIIT Torino, Italy

8:40 AM Invited
Dielectric and Magnetic Properties of Bismuth Copper Titatanate Based Nanocomposite: Kamdeo Manda³; ³Indian Institute of Technology (BHU)

9:00 AM Invited
Magnetic Field Assisted Assembly: B.S. Mani¹; Nuggehalli Ravindra¹; ¹New Jersey Institute of Technology
9:20 AM Invited
Characterizing Nitrogen-vacancy (NV) Centers in Diamond Nanostructure
Formed by Pulsed Laser Annealing Technique at Room Temperature and
Ambient Pressure: Anagh Bhaumik; Jagdish Narayan; North Carolina State
University
9:40 AM
Design of Multifunctional Materials: Chalcogenides and Chalcopyrites:
Christopher Cooper; Ching Hua Su; Fow-Sen Choa; Bradley Arnold; Narsingh
Singh; University of Maryland, Baltimore County
10:00 AM Break
10:20 AM Invited
Electrical Properties of Multifunctional Double Perovskite Oxides for
Future Application: Dev Mahato; National Institute of Technology Patna
10:40 AM
Development of Next Generation Biosensors and Biohybrid Systems Using
Synthetic Biology Approaches: Bryn Adams; Jessica Terrell; Dimitra Stratis-
Cullum; US Army Research Lab
11:00 AM
Domain Structure and Evolution in Magnetostrictive Fe-Ga Alloys: Matt
Tianen; Yongmei Jin; Keat Ong; Michigan Tech
11:20 AM
Black Silicon Based Microbolometer: Sita Rajyalaxmi Marthi; Ashan
Banobre; Nuggehalli Ravindra; New Jersey Institute of Technology
11:40 AM
Solid-state Synthesis of Novel Organic Complexes and Their Physico-
chemical and Fluorescence Studies: Ramanand Rai; Umesh Neupane; Banaras
Hindu University

Failure Analysis and Prevention – Fatigue and Fracture
Program Organizers: Andrew Havics, pH2, LLC; Pierre Dupont,
Schaeffler Belgium Spt/Bvba; Burak Akyuz, ATS, Inc.
Monday AM Room: 408
October 9, 2017 Location: DLL Convention Center
Session Chairs: William Rossey, General Electric Aviation; Brett Miller,
IMR Metallurgical Services; Thomas Kozina, NTN Bearing Co.; Robert
Kupkovits, Exponent
8:00 AM
Failure Analysis of a Large Silo: Milo Kral; University of Canterbury
8:20 AM
Rolling Bearings Failures and Prevention: Dorota Szczesniak; Aneta
Komada; General Electric
8:40 AM
Fracture Mechanism Observed in a Pressure Vessel: Diane Boose; Debbie
Aliya; T. K. Holdings; Aliya Analytical, Inc.
9:00 AM
Gas Turbine Blade Failure Behavior During High Cycle Regime: Tomasz
Didenko; GE Aviation
9:20 AM
The Role of Nickel Plating on the Fatigue Failure of a Bronze Consumer
Product: Jonathan Trenkle; Noah Budiansky; Paul Vergheese; Quinn Horn; Exponent, Inc.
9:40 AM
Low Time Starter Gear Fracture Event in Large Commercial Aviation
Engine: Wesley Pridemore; GE-Aviation
10:00 AM Break
10:20 AM Invited
Failure Analysis of Tactical Aircraft Ejection Seat Catapult Sleeves: Erik
Mueller; National Transportation Safety Board
10:40 AM
Nuts and Bolts - Atypical and Interesting Failures: Ronald Parrington;
Engineering Systems Inc. (ESI)
11:00 AM
Fatigue Life Extension of the M4A1 Carbine Bolt: Adam Foltz; Thomas
Grego; Gregory Vigilante; US Army ARDEC
11:20 AM
Metallurgical Evaluation of 2 Cracked Gas Turbine Fuel Tube Flanges with
Unusual Loading: William Rossey; GE Aviation
11:40 AM
Fatigue Behavior of Sheet-bulk Metal Formed Components: Hans-Bernward
Besse; Dmytro Rodman; Leibniz Universität Hannover

Failure Analysis and Prevention – Microanalysis,
Microscopy and Metallography in Failure Analysis (Joint FAS-IMS)
Program Organizers: Andrew Havics, pH2, LLC; Pierre Dupont,
Schaeffler Belgium Spt/Bvba; Burak Akyuz, ATS, Inc.
Monday AM Room: 407
October 9, 2017 Location: DLL Convention Center
Session Chairs: Daniel Dennies, DMS, Inc.; James Lane, Professional
Analysis and Consulting, Inc; Andrew Havics, pH2, LLC
8:00 AM Invited
Methanol Pipeline Failure in the Canyon Express Pipeline System: George
Vander Voort; Consultant - Struers Inc.
8:20 AM Invited
Use of Nomarski Differential Interference Contrast (DIC) Microscopy in
FA: Andrew Havics; pH2, LLC
8:40 AM Invited
Investigation of Mechanical Property Changes due to Low Temperature
Thermal Treatment of Steels: Daniel Dennies; DMS, Inc.
9:00 AM Invited
Fastener Failure Mode Effects Analysis – A Microstructural Approach:
Michael Connelly; Frauke Hogue; Casey Products; Hogue Metallography
9:20 AM Invited
Failure of High-Strength Socket Head Cap Screws due to Incorrect Alloy:
Jeff Rodelas; Donald Susan; Rob Sorensen; Joseph Michael; Sandia National
Laboratories
9:40 AM  Structural and Thermal Behavior of CuS-Na$_2$S-P$_2$S$_5$ Glasses: Piyush Sharma; Paramjyot Jha; O. P. Pandey; Thapar University; Chandigarh University

10:00 AM Break

10:20 AM  Effects of B$_2$O$_3$/SiO$_2$ Substitution on In Vitro Bioactivity and Properties of Bioactive Glasses: Xiaonan Lu; Lu Deng; Po Hsuen Kuo; Mengguo Ren; Ian Buterbaugh; Caitlin Huntley; Ty Thomas; Jincheng Du; University of North Texas

10:40 AM  The Effects of B203 on the Structures and Properties 20Na2O-30CaO-50P2O5 Glasses: Parker Freudenberg; Britanny Curtis; Richard Brow; Missouri University of Science and Technology; Iowa State University

11:00 AM New Optimization Scheme for Potential Development for Multi-component Oxide Glasses: Siddharth Sundararaman; Simona Ispas; Walter Kob; Liping Huang; Rensselaer Polytechnic Institute; University de Montpellier

11:20 AM Pressure Quenching Effect on Structure and Property of Sodium Borosilicate Glasses from Molecular Dynamics Simulations: Mengguo Ren; Jincheng Du; University of North Texas

11:40 AM Molecular Dynamics Simulation on Aluminosilicate Oxyfluoride Glass: Junjie Zhao; Xiaotong Chen; Jincheng Du; Qian Xu; Zhou Luo; Xusheng Qiao; Xianping Fan; Zhejiang University; University of North Texas; Massachusetts Institute of Technology

**MONDAY AM**

**Hybrid Organic-Inorganic Materials for Alternative Energy – Battery and Electrolytes**
**Program Organizers:** Andrei Jitianu, Lehman College, City University of New York; Lisa Klein, Rutgers University; Lia Stanciu, Purdue University; Mihaela Jitianu, William Paterson University

Monday AM  Room: 402
October 9, 2017  Location: DLL Convention Center

Session Chairs: Lisa Klein, Rutgers University; Andrei Jitianu, Lehman College - City University of New York

**8:00 AM Invited**
Cold Sintering of Ceramic and Composite Solid Lithium Ion Conductors: Enrique Gomez; Chris Lyon; Clive Randall; The Pennsylvania State University

**8:30 AM Invited**
Carbon Nanotube Aerosols: Mohammad Islam; Carnegie Mellon University

**9:00 AM Invited**
Chemical Pre-intercalation Approach for Facile Synthesis of Hybrid Battery Electrode Materials: Ekaterina Pomerantseva; Drexel University

**9:30 AM Invited**
Development of Inorganic-organic Hybrid Materials for Electrochemical Energy Storage: Donghai Wang; Penn State University

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**Glass, Amorphous, and Optical Materials: Common Issues within Science & Technology – Structure-property Relations 1**

**Program Organizers:** Gang Chen, Ohio University; Steve Martin, Iowa State University

Monday AM  Room: 310
October 9, 2017  Location: DLL Convention Center

Session Chairs: Pierre Lucas, University of Arizona; Jincheng Du, University of North Texas

**8:00 AM**
Glass: A Structural Definition Rather than a Material Type?: Alis Clare; NYSCC Alfred University

**8:20 AM**
Determining the Structure of Stable and Supercooled Liquids by High Energy X-ray Diffraction: Martin Wilding; Chris Benmore; Rick Weber; Oliver Alderman; Anthony Tamalonis; Mark Wilson; John Parise; University College London; Argonne National Laboratory; Materials Development Inc.; University of Oxford; Stony Brook University

**8:40 AM**
Observation of a Strong-to-fragile Transition in the Tetrahedral Melt ZnCl2: Pierre Lucas; Garrett Coleman; Venkateswara Rao Manga; Pierre Deymier; B.G. Potter; Krishna Muralidharan; University of Arizona

**9:00 AM**
The Effect of Thermal History on Glass Structure and Its Crystallization Mechanism: Ji-Yeon Baek; Seung-Ho Shin; Seon-Hyo Kim; Jung-Wook Cho; Pohang University of Science and Technology(PoSTECH); Graduate Institute of Ferrous Technology(GIFT), Pohang University of Science and Technology(PoSTECH)

**9:20 AM**
Research on the Activation Energy of the Crystallization Process for the Amorphous Solids in Blast Furnace Slag: Haifeng Wang; Central Iron & Steel Research Institute, China

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**9:40 AM**
Failure Analysis of a Retaining Ring of a Motor: Mehdi Taheri; Erhan Ulwan; Otto Yong; 1-30- Forensic Engineering; Acuren Group Inc; Ontario Power Generation

**10:00 AM**  Break

**10:20 AM**
Failure Analysis of a Galvanized Pull-Out Step: Joseph Lemberg; Myra Dyer; Eric Guyer; Exponent Failure Analysis Associates, Inc.

**10:40 AM**
Forensic Evaluation of Ball Valve Failures in HVAC Recirculation Lines of High-rise Residential Buildings: Eduardo Marti; Dinh Matei; Origin and Cause

**11:00 AM**
Precipitation Behavior and Microstructure Evolution of High Cr Steel during Creep Deformation: Genki Nishikawa; Shoichi Nambu; Toshihiko Koseki; The University of Tokyo

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**9:40 AM**
Structural and Thermal Behavior of CuS-Na$_2$S-P$_2$S$_5$ Glasses: Piyush Sharma; Paramjyot Jha; O. P. Pandey; Thapar University; Chandigarh University

**10:00 AM**  Break

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**9:40 AM**
Cold Sintering of Ceramic and Composite Solid Lithium Ion Conductors: Enrique Gomez; Chris Lyon; Clive Randall; The Pennsylvania State University

**8:30 AM**  Invited
Carbon Nanotube Aerosols: Mohammad Islam; Carnegie Mellon University

**9:00 AM**  Invited
Chemical Pre-intercalation Approach for Facile Synthesis of Hybrid Battery Electrode Materials: Ekaterina Pomerantseva; Drexel University

**9:30 AM**  Invited
Development of Inorganic-organic Hybrid Materials for Electrochemical Energy Storage: Donghai Wang; Penn State University
10:00 AM  Break

10:20 AM  Invited
Exfoliation of Transition Metal Dichalcogenides into Nanosheets and Performance as Sodium Ion Battery Electrode: Monsur Abass; Lamuel David; Gurpreet Singh; 1Kansas State University

10:50 AM  Invited
Hybrid Solid Polymer Electrolytes for Lithium Metal Batteries: Christopher Li; Qiwei Pan; 1Drexel University

11:20 AM  Invited

11:50 AM  Cold Sintering Process for Development of High-performance Lithium Ion Batteries: Joo-Hwan Seo; Kris Verlinde; Ramakrishnan Rajagopalan; Thomas Mallouk; Clive Randall; 1Penn State University

Interfaces, Grain Boundaries and Surfaces from Atomistic and Macroscopic Approaches – Structure and Chemistry of Interfaces
Program Organizers: Dominique Chatain, CNRS, Aix-Marseille University; John Blendell, Purdue University; Wayne Kaplan, Technion - Israel Institute of Technology

Monday AM  Room:  410
October 9, 2017  Location:  DLL Convention Center

Session Chairs: Wayne Kaplan, Technion; Eduardo Saiz, Imperial College London

8:00 AM  Keynote
Surface Ordering on Eutectic Droplets and Its Relationship to Nanowire Growth: Frances Ross; 1IBM T. J. Watson Research Center

8:40 AM  Keynote
Imaging Dynamic Materials Processes at Solid-liquid Interfaces by Scanning Transmission Electron Microscopy (STEM): Nigel Browning; B. Mehdi; Andrew Stevens; Libor Kovarik; Andrey Liyu; 1Pacific Northwest National Laboratory

9:20 AM  Invited
Electric Field Induced Equilibrium Grain Boundary Configurations in Perovskite Ceramics: Klaus van Benthem; 1University of California, Davis

9:40 AM  Invited
Understanding Grain and Domain Boundary Network Evolution Using In Situ Microscopy: Mitra Taberi; 1Drexel University

10:00 AM  Break

10:20 AM  Keynote
The Structure and Properties of Low-angle Tilt Grain Boundaries in SrTiO$_3$: Roger De Sousa; 1RWTH Aachen University

11:00 AM  Invited
The Effect of Interfaces on Magnetic Structure in Skyrmion B20 Thin Films Using Aberration Corrected TEM/STEM: Bryan Esser; Adam Ahmed; Roland Kawakami; David McComb; 1Ohio State University

11:20 AM  Invited
Interfacial Line Defects: Bridging Structural Information Between Atomic and Continuum Length Scales: Douglas Medlin; 1Sandia National Laboratories

11:40 AM  Ag Segregation Induced Nano facetting of an Asymmetric Tilt Grain Boundary in Copper: Nicolas Peter; Christian Liebscher; Raheleh Hadian; Blazej Grabowski; Christoph Kirchlechner; Gerhard Dehm; 1Max-Planck Institut für Eisenforschung GmbH

International Symposium on Defects, Transport and Related Phenomena – Lithium Ion Conductors/Modeling Defect and Transport
Program Organizers: Tatsuya Kawada, Tohoku University; Manfred Martin, RWTH Aachen University; Sangtae Kim, University of California, Davis

Monday AM  Room:  409  Location:  DLL Convention Center

Session Chairs: Manfred Martin, RWTH Aachen University; Xing Guo, Huazhong University of Science and Technology

8:00 AM  Invited
Garnet-type Ionic Conductors for All-solid-State Lithium Ion Batteries: Xin Guo; 1Huazhong University of Science & Technology

8:40 AM  Invited
The Crucial Role of Structural Defects in Modulating the Anion Redox Mechanism in Li-rich Layered Transition Metal Oxide Electrodes: William Gent; Kipil Lim; Jihyun Hong; Yufeng Liang; Michael Toney; Wanli Yang; David Prendergast; William Chueh; 1Stanford University; 2Lawrence Berkeley National Laboratory; 3SLAC National Accelerator Laboratory

9:20 AM  Preparation and Lithium-ion Conduction of Nonstoichiometric Lithium Hydro-closo-borates: Akira Takano; Itaru Oikawa; Hitoshi Takamura; 1Tohoku University

9:40 AM  Predicting Defect Formation Energies from Statistical Learning of Bulk Properties: Amit Samanta; Joel Varley; Vince Lordi; 1Lawrence Livermore National Laboratory; 2SLAC National Accelerator Laboratory

10:00 AM  Break

10:20 AM  Modeling of Transport Properties in Bulk Silicon Thermoelectric Materials with high ZT: Aria Hosseini; Jackson Harter; Devin Coleman; Todd Palmer; Lorenzo Mangolini; Alex Greenay; 1University of California, Riverside; 2Oregon State University

10:40 AM  First-principles Study of Inert Gas Incorporation and Migration in Zirconium Nitride: Zhi-Gang Mei; Abdellatif Yacout; 1Argonne National Laboratory
11:00 AM  
**Density Functional Theory Modeling of the Cation Diffusion in Bulk La$_{1-x}$Sr$_x$MnO$_{3-d}$ for Solid Oxide Fuel Cell Cathodes:** Yueh-Lin Lee$^1$; Yuhua Duan$^1$; Dane Morgan$^2$; Dan Sorescu$^1$; Harry Abernathy$^1$; Gregory Hachtel$^1$; $^1$National Energy Technology Laboratory; $^2$University of Wisconsin-Madison

11:20 AM  
**Percolation Effects during Ionic Motion:** Manfred Martin$^1$; $^1$RWTH Aachen University

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### Joining of Advanced and Specialty Materials (JASM XIX) – Nano & Micro Joining

**Program Organizers:** Boian Alexandrov, The Ohio State University; Mathieu Brochu, McGill University; Anming Hu, University of Tennessee; Darren Barborak, A2Z WSI; Akio Hirose, Osaka University; Peng He, Harbin Institute of Technology; Zhiyong Gu, University of Massachusetts Lowell; Vikas Patel, ArcelorMittal USA

#### Monday AM

- **Room:** 326
- **Location:** DLL Convention Center

**Session Chairs:** Anming Hu, University of Tennessee Knoxville; Tomokazu Sano, Osaka University

**Evolving Nanojoining:** Akio Hirose$^1$; $^1$Osaka University

**Mechanism Study of Resistive Switching Memory Devices in Perspective of Nanojoining:** Ming Xiao$^1$; Kevin Musselman$^1$; Walter Duley$^1$; Norman Zhou$^1$; $^1$University of Waterloo

**Synthesis and Nano-joining of Multi-segmented Metallic Nanowires:** Jirai Wang$^1$; Fan Gao$^1$; Zhiyang Li$^1$; Zhiyong Gu$^1$; $^1$University of Massachusetts Lowell

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### Materials for Nuclear Energy Applications – Irradiation Effects in Materials

**Program Organizers:** Kumar Sridharan, University of Wisconsin; Jake Amoroso, Savannah River National Laboratory; Aladar Csontos, Nuclear Regulatory Commission; Kevin Fox, Savannah River National Laboratory; Yutai Kato, Oak Ridge National Laboratory; Bill Lee, Imperial College of London; Josep Matyas, Pacific Northwest National Laboratory; Raul Rebak, GE Global Research; Cory Trivelpiece, Savannah River National Laboratory

#### Monday AM

- **Room:** 401
- **Location:** DLL Convention Center

**Session Chairs:** Kumar Sridharan, University of Wisconsin; Peter Hosemann, University of California, Berkeley

**Low-temperature Sintering Joining Techniques through Reduction of Metallic Oxides:** Akio Hirose$^1$; $^1$Osaka University

**Ultrafast Laser Sintering of Al Nanoparticles for Al-air Batteries:** Anming Hu$^1$; Yongchao Yu$^1$; $^1$University of Tennessee

**Improvement of Reliability of Metal-to-Metal Joints Bonded Using Redox Reactions of Ag-O-CuO-Mixed Paste:** Takafumi Yao$^1$; Tomoki Matsuda$^1$; Tomokazu Sano$^1$; Akio Hirose$^1$; $^1$Osaka University

**Development of High Dose Radiation Tolerant Materials for Nuclear Applications:** Stuart Malloy$^2$; Eda Aydogan$^1$; B. Eftink$^1$; Tarik Saleh$^1$; Mychailo Teloczko$^1$; Thak Sang Byun$^1$; R. Webster$^1$; G. Robert Odette$^1$; Md Ershadul Alam$^1$; Souptik Pal$^1$; David Hoezler$^1$; Los Alamos National Laboratory; Pacific Northwest National Laboratory; University of California, Santa Barbara; Oak Ridge National Laboratory

**Proton Irradiation of Pure Nickel:** Mitchell Mattucci$^1$; Pooyan Changizian$^1$; Mark Daymond$^1$; Queen’s University

**Promise and Limitations of Ion Irradiations for Understanding High Dose Radiation Effects in Materials:** Steven Zinkle$^1$; $^1$University of Tennessee

**Development of High Dose Radiation Tolerant Materials for Nuclear Applications:** Stuart Malloy$^2$; Eda Aydogan$^1$; B. Eftink$^1$; Tarik Saleh$^1$; Mychailo Teloczko$^1$; Thak Sang Byun$^1$; R. Webster$^1$; G. Robert Odette$^1$; Md Ershadul Alam$^1$; Souptik Pal$^1$; David Hoezler$^1$; Los Alamos National Laboratory; Pacific Northwest National Laboratory; University of California, Santa Barbara; Oak Ridge National Laboratory

**Proton Irradiation of Pure Nickel:** Mitchell Mattucci$^1$; Pooyan Changizian$^1$; Mark Daymond$^1$; Queen’s University
9:00 AM
Automation of Selected Area Channeling Pattern Acquisition and Analysis in a Field-emission Gun Scanning Electron Microscope: Joseph Tessmer1; Sarasang Singh2; Yoosuf Picard3; Marc DeGraef4; ’Carnegie Mellon University

10:20 AM Invited
Recent Developments Using Electron Channelling for Non-destructive Structural Characterization: Yoosuf Picard1; Joseph Tessmer2; Marc DeGraef3; ’Carnegie Mellon University

11:40 AM
Investigation of Magnetic Domain Walls in Co-Pt Ordered Alloys Using Lorentz TEM: Isha Kashyap1; Marc De Graef2; ’Carnegie Mellon University

Multifunctional Ceramic- and Metal-matrix Composites: Processing, Properties and Performance – Trends in the Development of CMCs and MMCs
Program Organizers: Martin Pech-Canul, Cinvestav IPN- Unidad Saltillo; Golam Nowaz, Wayne State University

Monday AM Room: 329
Location: DLL Convention Center

Session Chair: Martin Pech-Canul, Cinvestav Saltillo

8:00 AM
Fe-Cr-B Metal/Ceramic Composite Manufacturing with Metal Injection Molding and Its Microstructure, High Temperature Tensile and High Temperature Oxidation Properties: Yeon-Ab Joo1; Young-Kyun Kim1; Tae-Sik Yoon2; Kee-Ahn Lee1; ’Inha University; ’Bestmer

8:20 AM
Effect of Carbon Nanostructures on Aluminum Metal Matrix Composites Performance: Jacob Smith1; Aditya Kameshwara1; Frank Kraft2; Keerti Kappagantula3; ’Nanomaterials and Energetic Systems Lab (NESL); ’Center for Advanced Materials Processing (CAMP)

8:40 AM
Integrated Computational/Experimental Design of Self-healing CMCs: Ingo Markel1; Damian Cupid1; Martin Steinbrück1; Hans Seifert1; ’Karlsruhe Institute of Technology

9:00 AM
Comparisons between Liquid and Solid Phase Sintering of Ta-Cu Composite for Electric Contact Materials: Won Ju1; Sang-Hoon Choi2; Tae-Koo Kim3; Yong-Jin Park4; Jun-Sung Park5; Jae-Young Song3; Yong-Do Kim4; Ho-Sang Sohn5; So-Yeong Lee2; Kyoung-Tae Park7; ’Korea Institute of Industrial Technology, Hanyang University; ’Korea Institute of Industrial Technology; ’Shinseung Metal Industrial Co. Ltd.; ’Hanyang University; ’Kyungpook National University
Effect of Impact Angle on Ceramic Deposition Behavior in Composite Cold Spray: A Finite-Element Study; Rohan Chakrabarty; Jun Song; 1McGill University

Microstructure and Properties of Al-TiAl3 Composites Fabricated by Liquid-phase Reaction of Al with Accumulative Roll-bonded Ti; Qingsong Mei; Ye Ma; X. Y. Yang; 2Wuhan University

Boron Nitride Nanosheet Reinforced Copper Matrix Composite with Improved Corrosion Resistance; Shui Sia Su; 1Texas A&M University

Cavitation Erosion, Slurry Erosion and Solid Particle Erosion Performance of Metal Matrix Composite (MMC) Coatings Sprayed with Modern High Velocity Thermal Spray Processes; Ville Matikainen; Silvia Rubio Peregrina; Niko Ojala; Heli Koivuluoto; Jan Schubert; Sarka Houdkova; Petri Vuoristo; 1Tampere University of Technology; 2University of West Bohemia

New Insights to the Bonding Mechanisms in Metal-ceramic Composite Cold Spray; Rohan Chakrabarty; Jun Song; 1McGill University

Multifunctional Oxides – Properties and Applications of Multifunctional Metal Oxides

Program Organizers: Xiaqing Pan, University of California, Irvine; Chonglin Chen, University of Texas at San Antonio; Quanxi Jia, University at Buffalo – The State University of New York; Judith Driscoll, University of Cambridge

Monday AM Room: 312 Location: DLL Convention Center

Session Chairs: Shijie Wang, Institute of Materials Research and Engineering (IMRE), A*STAR (Agency for Science, Technology, and Research); Bae Ho Park, Konkuk University

8:00 AM Invited
The Development of Pseudocapacitance in Oxide Materials; Bruce Dunn; 1University of California, Los Angeles

8:40 AM
Magnetoelectricity of CoFe2O4 and Tetragonal Phase BiFeO3 Thin Films Prepared by Pulsed Laser Deposition; Min Gao; Ravindranath Viswan; Xiao Tang; Jiefang Li; Dwight Viehland; 1Virginia Tech

9:00 AM
Asymmetric Structure of 90°176 Domain Walls and Interaction with Defects in PbTiO3; Anand Chandrasekaran; 1University of Connecticut

9:20 AM Invited
Integration of High-k Metal Oxide Dielectrics with 2D MoS2 Materials; Shijie Wang; 1Institute of Materials Research and Engineering (IMRE), A*STAR (Agency for Science, Technology, and Research)

9:40 AM Invited
Van der Waals Oxide Heteroepitaxy for Transparent and Flexible Electronics; Ying-Hao Chu; 1National Chiao Tung University

10:00 AM Break

10:20 AM
E-field Induced Giant Dynamic Magnetization Change in Self-assembled BFO-CFO/PMN-PT Heterostructures; Xiao Tang; Ravindranath Viswan; Min Gao; Jiefang Li; Dwight Viehland; 1Virginia Tech

10:40 AM Invited
Electric-field Control of Tri-state Phase Transformation with Selective Dual-ion Switch; Pu Yu; 1Tsinghua University

11:20 AM
Domain Specific Photoreduction of Ag+ on the Surface of Ferroelastic 947-WO3; Ajay Pisat; Paul Salvador; Gregory Rohrer; 1Carnegie Mellon University

Next Generation Biomaterials – Innovations in Biomedical Materials/Nanostructured Biomaterials

Program Organizers: Roger Narayan, UNC/NCSU Joint Department of Biomedical Engineering; Jie Huang, University College London; Vipul Davé, Johnson & Johnson; Sanjiv Lakshman, Lynntech, Inc.; Marc in het Panhuis, University of Wollongong; Mohan Edirisinghe, University College London

Monday AM Room: 334 Location: DLL Convention Center

Session Chairs: Leif Hermansson, Doxa AB; Eng San Thian, National University of Singapore; Hideyuki Kanematsu, Suzuka National College of Technology; Mohan Edirisinghe, University College London

8:00 AM
Biokinetic Modeling of Nickel Released from Cardiovascular Devices; David Saylor; Vaishnavi Chandrasekar; Brent Craven; David Simon; Eric Sussman; Alan Hood; Ronald Brown; 1FDA-CDRH-OSR

8:20 AM Invited
Functional Materials and Structures by Pressurised Gyration Process; Santharavathanan Mahalingam; Mohan Edirisinghe; University College London

8:40 AM Invited
Bioceramic Dental Cements - An Application Area Extended; Leif Hermansson; 1Doxa AB

9:00 AM Invited
Nanoscale Structure and Properties of Biomaterials; Federico Rosel; 1INRS

9:20 AM Invited
Solving Musculoskeletal Issues Using Engineering Approaches; Eng San Thian; 1National University of Singapore

9:40 AM Invited
Material Selection to Manufacture Percutaneous Heart Valves: Where are the Priorities?; Robert Guidoin; Rachid Zegdir; Jifu Mao; Daniel How; Ze Zhang; 1Laval University; 2Hôpital Européen Georges Pompidou; 3Peninsula College of Medicine and Dentistry; 4Université Laval
Perspectives for Emerging Materials Professionals – Perspectives for Emerging Materials Professionals, Session I
Program Organizers: Dharma Maddala, Arconic Technology Center; Rachel Bethancourt, Failure Analysis Associates; Jesse Angle, Exponent, Failure Analysis Associates; K Shugart, UES, Inc

Monday AM
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Perspectives for Emerging Materials Professionals – Perspectives for Emerging Materials Professionals, Session I

Perspectives for Emerging Materials Professionals – Perspectives for Emerging Materials Professionals, Session I
Program Organizers: Dharma Maddala, Arconic Technology Center; Rachel Bethancourt, Exponent, Failure Analysis Associates; K Shugart, UES, Inc

Monday AM
October 9, 2017
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Location: DLL Convention Center

Session Chairs: Dharma Maddala, Arconic Technology Center; Rachel Bethancourt, Failure Analysis Associates; K Shugart, UES, Inc

8:00 AM
Finding a Materials Engineering Position within the US Federal Government: Brian Bayette1; 1NAVAIR FRC East, Cherry Point, NC

8:20 AM Invited
Experiences and Thoughts on Professional Development: Kevin Fox2; 1Savannah River National Laboratory

8:40 AM Invited
Career Planning...Professionalism/Networking: Who is the Decision Maker?: Frederick Schmidt3; 1ASM International

9:00 AM
New Challenges, New Connections and New Solutions: John Stevens1; 1Baker Hughes

9:20 AM Invited
Careers in Technical Consulting: David Schoen1; 1Exponent, Inc.

9:40 AM Invited
Environmental Sustainability in the Material World: John Wolodko1; 1University of Alberta

10:00 AM Break

10:20 AM Invited
International Experience: Preparing American Engineers with Global Perspective: Mufit Akinc1; 1Iowa State University

10:40 AM
My International Metal Career: Production, Equipment and Services – From Entrepreneur to Corporate Structures: Thomas Wingens1; 1WINGENS - International Industry Consultancy

11:00 AM

Phase Stability, Diffusion Kinetics, and Their Applications (PSDK-XII) – Session I: Diffusion, Kinetics and Applications
Program Organizers: Wei Xiong, University of Pittsburgh; Raymundo Arroyave, Texas A & M University; Ji-Cheng Zhao, The Ohio State University; Arthur Pelton, Ecole Polytechnique

Monday AM
Room: 413
Location: DLL Convention Center

Session Chairs: Shuanglin Chen, CompuTherm LLC; William Yi Wang, Northwestern Polytechnic University

8:00 AM
Primary Crystallization of Al Nanocrystals in a Al88Y7Fe5 Metallic Glass: Thermodynamic and Kinetic Analyses: Ye Shen1; 1University of Wisconsin-Madison; Seth Imhoff1; 1Los Alamos National Laboratory

8:20 AM
Diffusivity Analysis with Steep Concentration Gradient: Zhangqi Chen1; 1The Ohio State University

8:40 AM
Dissolution of Secondary Phases in Al Alloys Using DICTRA Simulations: Kyle Fitzpatrick-Schmidt1; 1University of Central Florida; Abhishek Mehta1; 1The University of Newcastle

9:00 AM
Experimental Demonstration of Simultaneous Measurement of Isotope-free Tracer and Interdiffusion Coefficients: Esin Schulte1; 1Chesapeake Research Laboratory; Abhishek Mehta1; 1The University of Newcastle

9:20 AM
First-principles Calculations of Factors Contributing to Non-dilute Impurity Diffusion Coefficients in Metals: Chelsey Hargather1; 1Harrison Lee1; 1John O’Connell1; 1ShunLiang Chang1; 1Xi-Kui Liu1; 1New Mexico Institute of Mining and Technology; 2John Wolodko1; 1University of Alberta

9:40 AM
My International Metal Career: Production, Equipment and Services – From Entrepreneur to Corporate Structures: Thomas Wingens1; 1WINGENS - International Industry Consultancy

11:00 AM
9:40 AM Invited

Improvement of a Mobility Database for the γ Phase in the Co-rich Co-Al-W-Ni System: Kil-Won Moon1; Carolyn Campbell1; Maureen Williams1; Greta Lindwall1; Peisheng Wang2; Ursula Kattner1; ‘National Institute of Standards and Technology

10:00 AM Break

10:20 AM Multicomponent Diffusion Mobility Descriptions for Co Based Superalloys: Greta Lindwall1; Kil-Won Moon1; Eric Lass1; Carolyn Campbell1; ‘National Institute of Standards and Technology

10:40 AM Simulations of Precipitation Kinetics: Elastic Stress Effect and Non-spherical Particles: Kaisheng Wu1; Qing Chen1; Johan Jeppsson1; Paul Mason1; ‘Thermo-Cale Software Inc; ‘Thermo-Cale Software AB

11:00 AM Diffusion Kerf Couples and Thermotransport Experiments for Synthesis and Screening of Non-equimolar High Entropy Alloys: Nagraj Kulkarni1; Graeme Murch1; Irina Belova1; ‘The University of Newcastle

11:20 AM Liquid-solid Diffusion in Liquid Aluminum/Stainless Steel: Farzaneh Farhadi1; Richard Sisson1; ‘Center for Heat Treating Excellence (CHTE), Worcester Polytechnic Institute (WPI)

11:40 AM Grain Growth and Precipitate Coarsening during Ultrasonic Welding of Nanocrystalline Alloys: Donovan Leonard1; Matthew French2; Austin Ward2; Zachary Cordero2; ‘Oak Ridge National Laboratory; ‘Rice University

11:00 AM Break

10:20 AM Variable Frequency Microwave (VFM) Processing of Battery Electrodes: Ifshikhar Ahmad1; Pa Zhang1; Peter Aurora1; ‘Lambda Technologies; ‘Navitas Advanced Solutions Group

10:40 AM Average Permittivity and Microwave Heating Characteristics of Electric Conductor and Insulator (Dielectrics) Mixtures: Noboru Yoshikawa1; ‘Tohoku University

11:00 AM Evolution of Distinct Phase Composition in TiO2 Thin Films Grown under Electromagnetic Excitation: Nathan Nakamura1; Maxwell Terban1; Simon Billinge2; B. Reeja Jayan1; ‘Carnegie Mellon University; ‘Columbia University

11:20 AM Investigation of Microwave Solid State Synthesis of Highly Ordered Structures: Christina Wildfire1; Edward Sabolsky2; Michael Spencer1; Dushyant Shekhar1; ‘NETL; ‘West Virginia University

11:40 AM Effect of Zn Substitution on Bi1.6Pb0.4Sr2Ca2Cu3−xZnxO10 Thin Films Prepared by Pulsed Laser Deposition: Ghazala Hermiz1; Mahdi Suhail1; Suzan Shakouri1; ‘Baghdad University-College of Science; ‘Department of Physics, College of Education University of Mustansiriyah
Responsive Functional Nanomaterials – Session I
Program Organizers: Ziqi Sun, Queensland University of Technology; Jiahua Zhu, The University of Akron; Wenxian Li, Shanghai University; Dawei Wang, University of New South Wales; Wenping Sun, University of Wollongong; Liangzhi Kou, Queensland University of Technology; Wenzhuo Wu, Purdue University

Monday AM Room: 320
October 9, 2017 Location: DLL Convention Center

Session Chairs: Ziqi Sun, Queensland University of Technology; Yue Li, Institute of Solid State Physics, CAS

8:00 AM Keynote Design and Property Studies of Organic-inorganic Hybrid Semiconductor Materials for Solar Cell Applications: Clemens Burda; Case Western Reserve University

8:40 AM Keynote Nanocarbons in Novel Solar Cells: Joe Shapter; Munkhbayar Batmunkh; Mahmaz Jazi; LePing Yu; Cameron Shearer; Flinders University

9:20 AM Invited Direct Photocatalysts of Metal Nanoparticle: Not Only Surface Plasmon: Sarina Sarina; Queensland University of Technology

9:40 AM Keynote One-dimensional Nanomaterials for Energy Storage: Liqiang Mai; Wuhan University of Technology

10:20 AM Break

10:40 AM Invited Edible Electronics: Bioinspired Materials and Structures for Ingestible Batteries: Christopher Bettinger; Carnegie Mellon University

11:00 AM Invited Nanoarchitectural Design of Functional Materials for Electrochemical Energy Storage: Xiaolei Wang; Concordia University

11:20 AM Invited Carbon-based Materials for Energy Storage and Conversion: Ji Liang; Hui-Ming Cheng; Shizhang Qiao; Institute for Superconducting & Electronic Materials; Institute of Metal Research; Institute of Metal Research; School of Chemical Engineering

Rare Earth Metals, Compounds, and Alloys: Synthesis, Processing, Emerging Applications, Recent Advances, Future Challenges – Emerging/Novel REM/REE Applications I
Program Organizers: Yellapu Murty, MC Technologies LLC; Eric Klier, U.S. Army Research Laboratory; Jack Lifton, Jack Lifton LLC

Monday AM Room: 325
October 9, 2017 Location: DLL Convention Center

Session Chair: Yellapu Murty, MC Technologies

8:00 AM Introductory Comments - Yellapu V. Murty

8:05 AM Keynote Historical Perspectives on Rare Earths, Critical Materials, and the Legacy of Karl Gschneidner: Alexander King; The Ames Laboratory

8:45 AM Invited Opportunities and Challenges for the Rare Earth Magnet Industry: Jinfang Liu; Electron Energy Corporation

9:15 AM Invited On The Utility of Rare Earth Elements as Alloying Additions to Magnesium Alloys: Current Status and Considerations: Nick Birbilis; Monash University

9:45 AM Invited Rare Earth Metals (REMs) Additions for Precipitation Strengthening High-performance Al and AlMg Alloys: Frank Palm; Dieter Isheim; Airbus Defence and Space GmbH; Northwestern University

10:15 AM Break

10:35 AM Invited Magnetocalorics: Rare Earths are Paving the Way to Efficient Cooling: Vitaly Pecharsky; Iowa State University

11:05 AM Invited Advances in Scalable Nano-manufacturing and Assembly Techniques - Role of REEs: Josh Collins; Intelligent Material Solutions, Inc.

11:35 AM Invited Cost-effective Separation of Rare-earth Elements Using the RapidSX(TM) Process: Gareth Hutch; Darcy Tait; Patrick Wong; Innovation Metals Corp; Process Research Ortech Inc.
Shaping & Forming of Advanced High Strength Steels
II – Shaping & Forming of Advanced High Strength Steels: Modeling
Program Organizers: Kester Clarke, Colorado School of Mines; Tyson Brown, General Motors Corporation; Myoung-Gyu Lee, Korea University; Amy Clarke, Colorado School of Mines; Kip Findley, Colorado School of Mines; Mark Stoudt, National Institute of Standards and Technology
Monday AM
October 9, 2017
Room: 404
Location: DLL Convention Center
Session Chair: Kester Clarke, Colorado School of Mines

8:00 AM Keynote
Robust CAE Modeling of Retained Austenite-containing GEN3 Steels: Louis Hector Jr.; T.W. Brown; Anil Sachdev; General Motors

8:40 AM Invited
Computational Design of Steel Chemistries: Matthias Militzer; The University of British Columbia

9:20 AM Invited
Modeling Yield Surface Evolution for Steels after Uniaxial Tension Prestrain: Frederic Barlat; Shakil Bin Zaman; Kim Jin-Hwan; Pohang University of Science and Technology; University of Twente

9:40 AM Invited
Joining of Double Sheet Metal Blanks Using Deep Drawing and Springback Behavior: Dennis Hofmann; Mathias Liewald; University of Stuttgart

10:00 AM Break

10:20 AM
Modeling Springback with a Multi-surface Approach for Nonlinear Unloading-reloading Behavior of Sheet Metal: Jeong-Yeon Lee; Gihyun Bae; Frederic Barlat; Myoung-Gyu Lee; Korea University; POSCO; POSTECH

11:00 AM
A Design of Experiments Approach for Determining Sensitivities of Various Forming Limit Analyses Techniques to Changes in Experimental Parameters: Dilip Banerjee; Mark Iadicola; National Institute of Standards and Technology

Surface Properties of Biomaterials – Surface Properties of Biomaterials: Porous Surfaces, Bioactivity and Biocompatibility
Program Organizers: Jason Langhorn, DePuy Synthes Joint Reconstruction; Susmita Bose, Washington State University; Amit Bandyopadhyay, Washington State University; Venu Varanasi, Texas A & M Health Science Center
Monday AM
October 9, 2017
Room: 335
Location: DLL Convention Center
Session Chair: Jason Langhorn, DePuy Synthes

8:00 AM Invited
Characterization of Current and Evolving Porous Surface Structures of Titanium Implants and Medical Devices via Scanning Electron Microscope Imaging and White Light Interferometry: Julius Bonini; Dayna Kinsey; Kevin Shoemaker; Krista Biggs; Laciedeon M + P

8:40 AM Osteoblast Functions of Bioactive 3D Printed Porous Ti-6Al-4V Scaffolds: Krishna Chaitanya Nune; RDK Misra; SJ Li; YI Hao; W Zhang; University of Texas at El Paso

9:00 AM
Biofilm Formation on Titanium Alloy Surfaces in a Laboratory Biofilm Reactor: Hideyuki Kanematsu; Shun Kanesaki; Hikonaru Kudara; Akiko Ogawa; Takeshi Kourogi; Daisuke Kuroda; Nobumitsu Hira; National Institute of Technology, Suzuka College

9:20 AM
Electrothermally Polarized TiO2 Nanotubes for Early Stage Osseointegration: Anish Shivaram; Indranath Mitra; Susmita Bose; Amit Bandyopadhyay; Washington State University

9:40 AM
Impact of Wettability of Copper-based Surfaces on Its Antimicrobial Efficacy: Monika Walikowska; Piotr Osuch; Beata Smyrak; Andrzej Mamala; Tadeusz Krych; Anna Rozanska; Dorota Romaniszyn; Agnieszka Chmielarczyk; Malgorzata Bulanda; AGH University of Science and Technology; Jagiellonian University Medical College

10:00 AM Break

10:20 AM
Curcumin Loaded 3D Printed Calcium Phosphate Bone Tissue Engineering Scaffolds with Enhanced Osteogenesis and Angiogenesis: Naboneeta Sarkar; Dishary Banerjee; Susmita Bose; Washington State University

10:40 AM
Curonometrically Smooth Surfaces for Studying Cell-surface Interactions: Paige Stock; Terry Lowe; Casey Davis; Rebecca Reiss; Andras Korenyi-Both; Colorado School of Mines; New Mexico Institute of Mining & Technology

11:00 AM
Manufacture Cell Actuator Using Ultrasonic Nanocrystal Surface Modification: Yuan Liang; Yalin Dong; Chang Ye; University of Akron
11:20 AM
In Vitro Hydroxyapatite Precipitation on Ti-6Al-4V and Ti-6Al-7Nb Alloys: Effect of Alkaline & Hydrothermal Treatments: Mahmoud Abdel-Salam1; Waleed Khalifa1; Shimaaw El-Hadaf1; ‘Cairo University; ’Central Metallurgical Research and Development Institute

11:40 AM
X-ray Activated Photocatalytic TiO2 Coatings for Self-disinfection: Keng Ho Cheung1; Praned Koshy1; Morejca Pabrubwe1; Brendan Lee1; Megan Lord1; Charles Sorrell1; ’UNSW Sydney; ’Royal Perth Hospital

Surface Protection for Enhanced Materials Performance: Science, Technology, and Application—Thermal and Environmental Barrier Coatings
Program Organizers: Kang Lee, NASA Glenn Research Center; Yutaka Kagawa, University of Tokyo; Dongming Zhu, NASA Glenn Research Center; Rodney Trice, Purdue University; Daniel Mumm, University of California, Irvine; Mitch Dorfman, Oerlikon Metco (US); Christian Moreau, Concordia University; Emmanuel Boakye, UES Inc.

Monday AM
Room: 333
Location: DLL Convention Center

Session Chairs: Kang Lee, NASA Glenn Research Center; Daniel Mumm, University of California, Irvine

8:00 AM Invited
Suspension Plasma Spraying of Thermal Barrier Coatings: Robert Vaßen1; Dapeng Zhou1; ’Forschungszentrum Jülich GmbH

8:40 AM
Interactions between ZrO2-Y2O3-Ta2O5 Thermal Barrier Oxides and Silicate Melts: Najeh Abdul-Jabbar1; Abel Fernandez1; Richard Jackson1; Carlos Levi1; ’University of California, Santa Barbara

9:00 AM
Determination of Crystallization Kinetic Parameters of CMAS with T/EBC Materials: James Stokes1; Bryan Harder1; Valerie Wiesner1; Douglas Wolfe1; ’Applied Research Laboratory, The Pennsylvania State University; ’NASA Glenn Research Center

9:20 AM
High Temperature Environmental Barrier Coatings Deposited Via Plasma Spray–physical Vapor Deposition: Bryan Harder1; Kang Lee1; Dongming Zhu1; Valerie Wiesner1; ’NASA Glenn Research Center

9:40 AM
CMAS-induced Failure of Environmental Barrier Coatings: Experiments and Modelling: Will Summers1; David Poerschke1; Matt Begley1; Carlos Levi1; Frank Zok1; ’University of California, Santa Barbara

10:00 AM Break

10:20 AM
Experimental Measurements of Thermal Barrier Coating Interfacial Fracture Toughness as a Function of Mode-mix: Simon Lockyer-Bratton1; Jaafar El-Awady1; Kevin Hemker1; ’Exponent; ’Johns Hopkins University

10:40 AM
Characteristics of Thermal Barrier Coatings in ZrO2-La2O3-Gd2O3 Systems Fabricated by Suspension Plasma Spray: Hyung-Tae Kim1; Soyal Lee1; Yoon-Suk Oh1; Sung-Min Lee1; Seongwon Kim1; Byung-Koo Kang2; ’Korea Institute of Ceramic Engineering and Technology; ’National Institute of Materials Science

11:00 AM
Oxidation Resistance of Diffusion Coatings of Advanced TBCs Elaborated from Low Al-activity slurries: Benjamin Greigore1; Gilles Bonnet2; Fernando Pedraza3; ’University of La Rochelle

11:20 AM
On the Thermal Insulation Performances of Advanced TBCs based on Al/Cr and Al/Al2O3 slurries: Germain Boissonnet1; John Nicholls2; Gilles Bonnet1; Fernando Pedraza3; ’Univérsité de La Rochelle; ’Cranfield University

11:40 AM
Sintering Behaviour of Columnar Nanostructured Thermal Barrier Coatings Produced by Axial Suspension Plasma Spraying: Ashish Ganvir1; Nicolaie Markoescu1; Mohit Gupta1; Robert Vassen1; Shrikant Joshi1; ’University West; ’Forschungszentrum Julich

The 9th International Symposium on Green and Sustainable Technologies for Materials Manufacturing and Processing – Novel Green Design of Ceramics/I Novel Green Technologies for Energy and High Temperature Applications
Program Organizers: Surojit Gupta, University of North Dakota; Jun-ichi Talami, Yokohama National University; Tatsuki Ohji, National Institute of Advanced Industrial Science and Technology (AIST); Mrityunjay Singh, Ohio AeroSpace Institute, NASA Glenn Research Center; Marsha Bischel, Armstrong World Industries, Inc., PA; Makio Naito, Osaka University, Japan; Hisayuki Suematsu, Nagaoka University of Technology, Japan; Yiquan Wu, Alfred University, NY

Monday AM
Room: 317
Location: DLL Convention Center

Session Chairs: Sankha Banerjee, Lyles College of Engineering; Yu Zhong, Florida International University; Daniel Kopp, Rutgers University; Surojit Gupta, University of North Dakota

8:00 AM Invited
Reducing CO2 Emissions by 20% With Ceramics: Richard Riman1; Daniel Kopp1; Ryan Anderson1; Kevin Blint2; ’Rutgers University; ’RRTC, Inc.

8:40 AM Invited
Review of Recent Advances in Green Concrete: Allen Aphlett1; ’Oklahoma State University

9:20 AM
Glass-ceramics from Sinter-crystallization of Engineered Waste Glass Mixtures: Patricia Rabelo Monich1; Eurico Bernardo1; ’University of Padova

9:40 AM Invited
Fabrication and Characterization of Flexible Multiphasic Electro-active Thin Films Towards Development of Energy Harvesting Devices: Sankha Banerjee1; ’California State University, Fresno

10:20 AM Break

10:40 AM Invited
The Impact of CO2 and SO2 Gas Impurities to the Formation of Secondary Phases on LSCF Cathode: Shadi Darvish1; Yu Zhong2; ’Florida International University
11:00 AM  Invited  
High Temperature Oxidation Behavior of Kanthal A1 and Kanthal APM: 
Sedigheh Rashidi1; Amit Pandey2; Rajeev Kumar Gupta3; 1The University of Akron; 2Rolls Royce LG Fuel Cell Systems Inc

11:20 AM  Invited  
Cure Monitoring for Production Cycle Optimization of Composite Wind 
Turbine Blades: Matthew Cavalli1; 1University of North Dakota

Theory, Manufacturing and Applications of Ceramic/Metal (CerMet) Nano-laminates – Ceramic/Metal (CerMet) Nano-laminates I

Program Organizers: Iman Salehinia, Northern Illinois University; Jian Wang, University of Nebraska-Lincoln; Ioannis Mastorakos, Clarkson University; Siddhartha Pathak, University of Nevada, Reno; Bilal Mansoor, Texas A&M University at Qatar; Georges Ayoub, American University of Beirut; Shuai Shao, Louisiana State University

Monday AM  Room: 319  
October 9, 2017  Location: DLL Convention Center

Session Chairs: Shuai Shao, Louisiana State University; Ioannis Mastorakos, Clarkson University

8:00 AM  Invited  
Strain Hardening and Plasticity in Metal-hard Phase Nanolaminates: Amit Misra1; Jian Wang2; 1University of Michigan

8:30 AM  Invited  
Designing High Fracture Toughness Nanocomposites via In Situ TEM Approach: Nan Li1; Satyesh Yadav2; Xiang-Yang Liu3; Jian Wang4; Amit Misra5; Nathan Mara1; 1Los Alamos National Laboratory; 2University of Nebraska-Lincoln; 3University of Michigan

9:00 AM  Invited  
Corrosion Resistance Properties of Advanced Interface Material Based on Ti-TiN Nano-layers: Bilal Mansoor1; Chaudhry Usman2; 1Texas A&M University at Qatar

9:20 AM  Invited  
Atomistic and Meso-scale Modeling on Deformation and Fracture Behavior of TiN-Al Nanolaminates: Ridvan Sakidjo1; Paul Simanjuntak2; Caizhi Zhou3; 1Missouri State University; 2Missouri University of Science and Technology

9:40 AM  Invited  
Atomistic Simulation of Scratch Behavior of Ceramic/Metal (CerMet) Nanolaminates: Iman Salehinia1; Adnan Rasheed2; 1Northern Illinois University

10:00 AM  Break

10:20 AM  Invited  
Deformation Behavior of AI/SiC Nanolaminates: Experiments and Simulation: Nikhilesh Chawla1; 1Arizona State University

10:50 AM  Invited  
Deformation Mechanisms in Ti/TiN Multilayer under Compressive Loading and Nanoindentation: Wei Yang1; Georges Ayoub2; Bilal Mansoor3; Iman Salehinia4; 1Texas A&M University at Qatar; 2American University of Beirut; 3Northern Illinois University

11:10 AM  Invited  
Continuum Modeling of Dislocation Structures at Semicoherent Interfaces: Niaz Abdolrahim1; Michael Demkowicz2; 1University of Rochester; 2Texas A&M University

11:40 AM  Invited  
Deformation behavior of Ceramic/Metallic Multilayer Nano-composites: Mohsen Damad1; Shuai Shao2; Iman Salehinia3; Ioannis Mastorakos4; Georges Ayoub5; Hussein Zbib6; 1Washington State University; 2Louisiana State University; 3Northern Illinois University; 4Clarkson University; 5University of Michigan Dearborn


Program Organizers: Sylvia Johnson, NASA Ames Research Center; Jeff DeMange, University of Toledo; Thomas Reimer, German Aerospace Center; Wolfgang Fischer, Airbus Safran Launchers GmbH; Erica Corral, The University of Arizona

Monday AM  Room: 327  
October 9, 2017  Location: DLL Convention Center

Session Chairs: Jeff DeMange, University of Toledo; Thomas Reimer, DLR - Institute of Structures and Design; Sylvia Johnson, NASA Ames (Ret.); Wolfgang Fischer, Airbus Defence & Space

8:00 AM  Invited  
Characterization Capabilities of Ultrasonic Interferometry for Estimating Surface Temperature and Heat Flux of Materials under Severe Heating Loads: Dominik Bottländer1; Jay Frankel1; 1University of Tennessee

8:20 AM  Invited  
Nonlinear Inverse Heat Conduction Problem of Surface Temperature and Heat Flux Estimation for TPS Materials by Calibration Integral Equation Method: Hongchu Chen1; Jay Frankel1; 1University of Tennessee at Knoxville, Department of Mechanical, Aerospace and Biomedical Engineering

8:40 AM  Invited  
Development of a New Small Sample High Temperature and Heat Flux Test Facility for Evaluating and Characterizing Material Responses through an Inverse Analysis: Jay Frankel1; Hongchu Chen2; Dominik Bottladder3; 1University of Tennessee

9:00 AM  Invited  
Review of High Temperature Thermal Conductivity Measurement Methods: Justin Griffin1; Ryan Nelson2; Stephen Steiner3; 1Aerogel Technologies

9:40 AM  Invited  
Influence of Extreme Thermal Cycling on Multi-layer Insulators Used in Space: Megan Cordill1; 1Erich Schmid Institute of Materials Science

10:00 AM  Break

10:20 AM  Invited  
CMC Sandwich Development and Testing for TPS Application: Thomas Reimer1; Bernhard Heidenreich2; Dietmar Koch1; 1DLR
10:40 AM
Development of the European Conformal Ablative-charring Material and Performances Assessment: Grégory Pinaud1; M. Desbordes1; J. Bertrand1; J.M. Bouilly1; G. Vekinis2; Jorge Barcena2; B. Esser4; 1Airbus Safran Launchers; 2Institute of Nanoscience and Nanotechnology, NCSR; 3Tecnalia Research & Innovation; 4Deutsches Zentrum für Luft- und Raumfahrt e.V. German Aerospace Center (DLR)

11:00 AM
The Potential of Aerogels as Insulators for Thermal Protection Systems of Reusable Launch Vehicles: Thomas Reimer1; Barbara Milow1; Christian Zuber1; Anna Kolbe1; 1DLR

11:20 AM
Syntactic Composites for Thermal Protection Systems: Andrew Sherman1; 1Powdermet Inc

Program Organizers: Ali Yousefiani, Boeing Research and Technology; Troy Topping, California State University, Sacramento; Robert Dillon, Jet Propulsion Laboratory

Monday AM
Room: 307
October 9, 2017
Location: DLL Convention Center

Session Chair: Troy Topping, California State University, Sacramento

8:00 AM
Novel Castable High Strength Al-Mg-Za Alloys: Yangyang Fan1; Diran Apelian1; 1Worcester Polytechnic Institute

8:20 AM
A New Strategy to Achieve High Strength at Elevated Temperatures in Aluminum Alloys: Nhon Vo1; Evander Ramos1; Davaadog Bayansan1; Amirreza Sanaty-Zadeh1; David Dunand2; David Seidman2; 1NanoAl LLC; 2Northwestern University

8:40 AM
Improved Mechanical Properties of Si3N4 Metal Matrix Nanocomposites Fabricated by Microwave Sintering Followed by Hot Extrusion: Abdal Shakeroot1; Penchal Reddy Mariti1; Fareeza Ubaid1; Ana Mohamed1; M Gupta1; 1Qatar University, Doha, Qatar; 2Suez University; 3National University of Singapore

9:00 AM
Large Strain Extrusion Machining Production of Strong Aluminum Alloy Electrical Conductors: Mohammed Issaah1; Xiaolong Bai1; Srinivasan Chandrasekar1; Kevin Trumble1; 1Purdue University

9:20 AM
Fracture Characteristics of Discontinuously Reinforced Aluminum Composites: Conrad Park1; Erica Bindas1; Corey Meyer1; Don Hashiguchi2; Kyung Chung2; John Lewandowski2; Matthew Willard3; 1Case Western Reserve University; 2Materion Brush Incorporated

9:40 AM
Features of the Microstructure of Rapidly Cooled Alloys of the Al-Mg-Zr-X System: Dmitrii Budelovskii1; Vadim Lipin1; Sergey Petrovich1; Sergey Ganin1; 1Saint Petersburg Polytechnic University

10:00 AM Break

10:20 AM Invited
Ultrafine Grained Al Alloy Matrix Composites: A Review on the Effect of Microconstituents on Mechanical Performance: Kaka Ma1; 1Colorado State University

11:00 AM
Effect of Sintering Temperature on the Hardness and Corrosion Behavior of a Nanocrystalline Al-Ni Alloy: Javier Esquivel1; Matthew Wachowiak1; Sean O’Brien1; Rajeev Gupta1; 1The University of Akron

11:20 AM
Mechanical Properties of Aluminum Silicon Carbide Particulate Metal Matrix Composites: Erica Bindas1; Corey Meyer1; Conrad Park1; John Lewandowski1; Matthew Willard1; Don Hashiguchi1; Kyung Chung1; 1Case Western Reserve University; 2Materion Brush

11:40 AM
High Strength Mg-Al Alloys Produced by High-energy Ball Milling: Mohammad Umar Farooq Khan1; Farhan Mirza1; Rogelio De Las Casas Aranda1; Rajeev Gupta1; 1The University of Akron

ACerS Richard M. Fulrath Award Session
Program Organizer: Sheikh Ali Akbar, The Ohio State University

Monday PM
Room: 315
October 9, 2017
Location: DLL Convention Center

2:00 PM Invited
Development of Ion-conducting Glasses for Solid-state Batteries: Akitoshi Hayashi1; 1Osaka Prefecture University

2:40 PM Invited
Synthesis of High Crystalline and Fine BaTiO3 Powder for Thinner Ni-MLCCs Via Solid State Root: Chie Kawamura1; 1Taiyo Yuden Co., Ltd.

3:00 PM Invited
New Functionality from Reconfigurable Ferroelastic Domains in Ferroelectric Films: Jon Ihlefeld1; 1Sandia National Laboratories

3:20 PM Invited
Development of Mass Production of Ni-nanopowder for the Internal Electrode of MLCC by DC Thermal Plasma Process: Hideki Tanaka1; 1Shoei Chemical, Inc.

3:40 PM Invited
Do Fields Matter? -- Microstructure Evolution in Ceramic Oxides: Klaus van Benthem1; 1University of California, Davis

54
Actinide and Lanthanide Materials II – Metallic Fuels

Program Organizers: Clarissa Yablinsky, Los Alamos National Laboratory; Adam Farrow, Los Alamos National Laboratory; Jason Jeffries, Lawrence Livermore National Laboratory; Kester Clarke, Los Alamos National Laboratory; Clinique L. Brundidge, Naval Nuclear Laboratory

Monday PM Room: 405 Location: DLL Convention Center

Session Chairs: Clarissa Yablinsky, Los Alamos National Laboratory; Clinique Brundidge, Bechtel Marine Propulsion Corp.

2:00 PM Invited
Coupled Experimental and Simulation Approach to Study Transmutation Fuels: Assel Aitkaliyeva1, a University of Florida

2:40 PM
Mitigating Fuel-cladding Chemical Interactions Using Tellurium and Antimony as Dopants in Metallic Fuel Systems: Nathan Jerred1, Rabi Khanal1, Indrajit Chari1, Samrat Choudhury1, Michael Benson1, Robert Mariani1, University of Idaho; Idaho National Laboratory

3:00 PM
Electronic Structure of Metal Cerium under High Pressure: Lu Haiyan1, Li Huang1, China Academy of Engineering Physics Physics and Chemistry Laboratory

3:20 PM
The Recrystallization Behavior of Deformed Uranium: Cody Miller1, Rodney McCabe1, Daniel Coughlin1, John Carpenter1, David Alexander1, Los Alamos National Laboratory

3:40 PM
Unraveling the Age Hardening Response in U-Nb Alloys: Robert Hackenberg1, Geralyn Hemphill1, Robert Forsyth1, Pallas Papin1, Ann Kelly1, Tim Tucker1, Robert Aikin, Jr.1, David Alexander1, Mike Lopez1, Amy Clarke1, Logan Ward1, Los Alamos National Laboratory; Colorado School of Mines; University of Chicago

4:00 PM
An Examination of Differences between Single Crystal and Polycrystalline UBe12, Heather Vols1, Sven Vogel1, Alice Smith1, James Smith1, Zachary Fisk1, Bjorn Winkler1, Matthew Dirmeyer1, Elizabeth Judge1, Los Alamos National Laboratory; University of California - Irvine; Goethe Universität

Additive Manufacturing of Composites and Complex Materials II – Techniques/Applications

Program Organizers: Dirk Lehnhus, ISIS Sensorial Materials Scientific Centre; Jonathan Spowart, Air Force Research Laboratory; Nikhil Gupta, New York University

Monday PM Room: 304 Location: DLL Convention Center

Session Chairs: Tushar Borkar, Cleveland State University; Linmin Wu, Indiana University-Purdue University Indianapolis

2:00 PM Invited
A Novel Concept of Micro-extrusion through High Aspect Ratio Nozzles for High Speed Additive Manufacturing: Leon Shaw1, Ling Li1, S. M. Imran Ayub1, Illinois Institute of Technology

2:20 PM
Additive Manufacturing for Innovative Electric Motor Designs: Michael Halbig1, NASA Glenn Research Center

3:00 PM
Additively Manufactured Pseudo A-sandwich Structures: Gerard Simon1, Thomas Ekiert1, Air Force Research Laboratory; Riverside Research Institute

3:20 PM
Experimental and Computational Study of Novel Additively Manufactured Foams: Diab Abueidda1, Iwona Jasiuk1, Rashid Abu Al-Rub1, University of Illinois at Urbana-Champaign; Masdar Institute of Science and Technology

3:40 PM
Interfacial Bonding Quality Prediction and Improvement for Fusion Deposition Modeling by Layerwise Additive Manufacturing Analytical Block Technique: Jinquan Cheng1, CS3DM

4:00 PM
Selective Reinforcement of Aerospace Structures Using Ultrasonic Additive Manufacturing: Adam Hehr1, Justin Wenning1, Mark Norfolk1, John Sheridan1, Marcia Domack1, Fabrisonic LLC; Sheridan Solutions LLC; NASA Langley Research Center

4:20 PM
Structural Integration of Sensors / Actuators by Laser Beam Melting for Tailored Smart Components: Thomas Toeppe1, Holger Lausch1, Michael Arnold1, Michael Brand1, Eric Hense1, Fraunhofer Institute for Machine Tools and Forming Technology IWU; Fraunhofer Institute for Ceramic Technologies and Systems IKTS

4:40 PM Invited
Thermomechanical Characterization of 3D Printed Epoxy Nanocomposites: Brett Compton1, University of Tennessee
Additive Manufacturing of Metals: Microstructure and Material Properties – Microstructure and Mechanical Properties of Ti Alloys

Program Organizers: Andrzej Wojcieszynski, ATI Powder Metals; Ulf Ackelid, Freemelt AB; Ola Harrysson, North Carolina State University; Sudarsanam Babu, The University of Tennessee, Knoxville

Monday PM  Room: 301  Location: DLL Convention Center

Session Chair: Anthony Rollett, Carnegie Mellon University

2:00 PM  Invited
Linking Microstructure, Impact Properties and Deformation Mechanisms of Laser Powder Bed Fusion Ti-6Al-4V Parts: Joon Phil Choi1; Flavio Silva1; Mathieu Brochu1; 1McGill University

2:40 PM  Microstructural Evolution and Mechanical Properties of Optomec LENS Fabricated Ti6Al4V (ELI) Alloy Components: Nana Arthur1; Hein Moller1; Annelize Botes1; Sisa Pityana1; ‘Council for Scientific and Industrial Research (CSIR)

3:00 PM  Microstructural Properties of Heat Treated LENS In-situ Additively Manufactured Titanium Aluminide: Monnamme Tlotleng1; Thabo Lengopeng1; Sisa Pityana1; Lerato Tshabalala1; Nombi Mathé1; Bathulele Masina1; ‘Council of Scientific and Industrial Research; University of Johannesburg; ‘Council of Scientific and Industrial Research; Tshwane University of Technology

3:20 PM  Laser Metal Deposition of Ti-6Al-4V Structures: Analysis of the Build Height Dependent Microstructure and Mechanical Properties: Markus Hellmann1; Mauritz Moeller1; Claus Emmelmann1; Imela Burkhardt1; Stefan Riekehr1; Volker Ventzek1; Nikolai Kashaev1; Josephin Enz1; ‘Institute of Laser and System Technologies (iLAS), Hamburg University of Technology (TUHH); ‘LZN Laser Zentrum Nord GmbH; ‘Heinrich-Hertz-Institut fuer Nachrichtentechnik; ‘Institute of Materials Research, Materials Mechanics

3:40 PM  Residual Stress Characterization in Additive Manufactured Powder Bed Fusion – Laser (PBF-L) Ti-6Al-4V Alloy: You Lu1; Michael Gharhouri1; Srinad Karuppoor1; Manuel Marya1; ‘Schlumberger; ‘Canadian Nuclear Laboratories

4:00 PM  Influence of Scan Velocities on Material Properties of Laser Based Coatings of Ni-Co on Ti-6Al-4V Alloy: Oluwemijade Adesina1; Abinshola Popoola1; ‘Tshwane University of Technology, Pretoria, South Africa

4:20 PM  Decomposition of a’ Martensite of Ti-6Al-4V Alloy during Electron Beam Melting: Kentir Jumana1; Manami Mori1; Yasuke Onuki1; Shigeo Sato1; Akihiko Chiba1; ‘Tohoku University; ‘National Institute of Technology, Sendai College; ‘Ibaraki University

Additive Manufacturing of Metals: Microstructure and Material Properties – Processing and Properties of Alloy 718

Program Organizers: Andrzej Wojcieszynski, ATI Powder Metals; Ulf Ackelid, Freemelt AB; Ola Harrysson, North Carolina State University; Sudarsanam Babu, The University of Tennessee, Knoxville

Monday PM  Room: 302  Location: DLL Convention Center

Session Chair: Sudarsanam Babu, University of Tennessee

2:00 PM  Creep Response of Post-processed Electron-beam-melted Inconel 718 at 650°C and 580/600 MPa: Alfred Okello1; Ryan Dehoff1; Michael Kirka1; Kinga Unocic1; ‘Oak Ridge National Laboratory

2:20 PM  Effect of Processing Parameters on the Properties of Inconel 718 Manufactured by Direct Metal Laser Sintering: Grace De Leon Nope1; Diego Espinosa-Arbelaez1; Jorge Corona1; Juan Muñoz-Saldaña1; Luis Gerardo Trapa Martínez1; Juan Alvarado-Orozco1; ‘CINVESTAV-QRO; ‘CIDESI; ‘CIATEQ

2:40 PM  Microstructural Characterization and Modeling of SLM Superalloy 718: Timothy Smith1; Pete Bonacuse1; Chantal Sudbrack1; ‘NASA Glenn Research Center

3:00 PM  Microstructure and Mechanical Properties of Direct Laser Metal Deposited Inconel 718: Ajay Bhagavatnam1; Abhishek Ramakrishnan1; Karthik Adapa1; Amrinder Singh1; Guru Dinda1; ‘Wayne State University

3:20 PM  Microstructural Prediction in 3D Printed IN 718: Pachara Pipat Prompattum1; Shi-Chune Yao1; Austin Gerlt1; P. Chris Pistorius1; Anthony Rollett1; Richard Martukanitz2; Peter Coutts2; ‘Carnegie Mellon University; ‘Penn State University

3:40 PM  Quantitative Microstructure Analysis of Inconel 718 Grain Boundary Network: Sharniece Holland1; Lin Li1; ‘The University of Alabama

4:00 PM  STEM Phase Mapping and Precipitate Evolution in Additively Manufactured Alloy 718: C. Austin Wade1; Bernd Baufeld2; ‘Nuclear Advanced Manufacturing Research Centre; ‘University of Manchester

4:20 PM  Effect of Geometry on Grain Structure for a Custom High Gamma Prime Ni-alloy Processed by EBM AM: Curtis Frederick1; Edwin Schwappbach1; Michael Kirka1; Alex Plotkowski1; Suresh Babu1; ‘UTK; ‘AFRL; ‘ORNL
Additive Manufacturing of Metals: Post Processing – Thermal Processes

Program Organizers: Ola Harrysson, North Carolina State University; Andrzej Wojcieszynski, ATI Powder Metals; Ulf Ackelid, Freemelt AB; Sudarsanam Babu, The University of Tennessee, Knoxville

Monday PM, Room: 303 October 9, 2017 Location: DLL Convention Center

Session Chair: Matthew Frank, Iowa State University

2:00 PM
Characterization of Hastelloy X Fabricated by Electron Beam Melting and Selective Laser Melting: Sebastien Dryepondt¹; Mike Kirka¹; Oak Ridge National Laboratory

2:40 PM
Effect of Hot Isostatic Pressing on the Microstructure and Mechanical Properties of Steel Matrix Nanocomposites Fabricated by Selective Laser Melting: Bandar AlMangour¹; Dariusz Grzesiak²; Jenn-Ming Yang³; ¹Harvard University; ²West Pomeranian University of Technology; ³University of California, Los Angeles

3:00 PM
Effect of Post-processing on AM Pore Geometry: Richard Fonda¹; Andrew Geltmacher¹; Jerry Feng¹; David Rowenhorst¹; ¹US Naval Research Laboratory

3:20 PM
Exposure of Additively Manufactured Material to Elevated Temperatures Post HIP: Michael Velez¹; Patrick Martin²; John Porter³; Brian Hayes¹; ¹UES inc.; ²AFRL (Ret.)

3:40 PM
Investigating the Effect of Post-HIP Heat Treatments on Porosity Regrowth in Powder-bed Metal Additively Manufactured Components Using Synchrotron-based X-ray Microtomography: Ross Cunningham¹; Anthony Rollett¹; ¹Carnegie Mellon University

4:00 PM
Microstructure and Indentation Hardness of SLE-Deposited René80 Superalloy with Post-process Heat Treatment: Andriy Dotsenko¹; Amrita Basak¹; Suman Das¹; ¹Georgia Tech

4:20 PM
Microstructure and Mechanical Properties of Selectively Laser Melted AlSi10Mg Alloy before and after Heat Treatment: Le Zhou¹; Abhishek Mehta¹; Esin Schulz²; Brandon McWilliams³; Kyu Cho³; Yongho Sohn³; ¹University of California, Los Angeles; ²Army Research Laboratory

4:40 PM
Hot Pressing Effect on Microstructural and Mechanical Properties of SLM Al10Si1Mg Alloy: Katsumashi Kondoh¹; Biao Chen¹; Junko Umeda¹; Seung Moon¹; Xiling Yao¹; Guijun Bi¹; ¹Osaka University; ²Nanyang Technological University; ³Singapore Institute of Manufacturing Technology

Additive Manufacturing of Metals: Powder Feedstock Characterization and Performance – Powder Production

Program Organizers: Andrzej Wojcieszynski, ATI Powder Metals; Ulf Ackelid, Freemelt AB; Ola Harrysson, North Carolina State University; Sudarsanam Babu, The University of Tennessee, Knoxville

Monday PM, Room: 305 October 9, 2017 Location: DLL Convention Center

Session Chair: Andrzej Wojcieszynski, ATI Powder Metals

2:00 PM
Comparison of Water and Gas Atomized 316L Powder Material for PBF: Simon Jahn¹; ¹IFW Jena

2:20 PM
Role of Atomization Gas on Stabilizing Retained Austenite in Additively Manufactured 17-4 PH Grade Stainless Steel: Scott Meredith¹; Todd Palmer¹; Rich Martukanitz¹; Jared Blecher²; ¹Applied Research Laboratory, Pennsylvania State University; ²3D Systems, Inc

2:40 PM
Effects of Atomizing Pressure, Melt Temperature and Molten Metal Flow Rate on the Particle Size and Yield of Gas Atomized Al10SiMg Powders: Sharon Park¹; Le Zhou¹; Jae'mara Mundy²; Edward Dein³; Brandon McWilliams³; Kyu Cho³; Yongho Sohn³; ¹University of Central Florida; ²Army Research Laboratory

3:00 PM
Characterization of Powder Produced by Modulation-assisted Machining: Indrani Biswas¹; Steven Rodriguez¹; James Mann¹; Kevin Trumble¹; Srinivasan Chandrasekar¹; ¹Purdue University

3:20 PM
Shape Memory Alloy Powders from a Low Pressure, Low Temperature Hydriding-pulverizing-dehydriding Process: Silvia Murguia¹; Yoav Snir¹; Arielle Clauer¹; Heather Dunn¹; Wendy Grogg¹; Raymond Brennan¹; Marcus Young¹; ¹University of North Texas; ²Nuclear Research Center-Negev; ³U.S. Army Research Laboratory

3:40 PM
Property Variation of AM Fabricated Parts – Influence of Feed Stock Powder: Elias Jelis¹; Rajendra Sadangi¹; Michael Hespos¹; Matthew Clemente¹; Fernando Echavarria-Hidalgo¹; ¹U.S. Army, ARDEC, Picatinny Arsenal

4:00 PM
Robust Production. Microcracking Eliminated: It Starts with Chemistry: Larry Somrack¹; William Jarosinski¹; Bill Andreski¹; Melissa Gorris¹; ¹NSL Analytical Services, Inc.; ²Praxair Surface Technology
Advanced Manufacturing, Processing, Characterization and Modeling of Functional Materials – Session II
Program Organizers: Markus Chmielus, University of Pittsburgh; Mohammad Elahinia, University of Toledo; Reginald Hamilton, The Pennsylvania State University; Haluk Karaca, University of Kentucky; Reza Mirzaeiifar, Virginia Tech

Monday PM Room: 324 Location: DLL Convention Center
Session Chair: To Be Announced

2:00 PM Invited
Additive Manufacturing for Shape Memory Material Design: Reginald Hamilton1; Todd Palmer1; 1The Pennsylvania State University

2:20 PM
In Vitro Corrosion Behavior of Additively Manufactured NiTi Porous Structures for Bone Implant Applications: Hamdy Ibrahim1; Ahmadreza Jahadakbar1; Narges Moghaddam1; Amirhesam Amerinatanz1; Mohammad Elahinia1; 1The University of Toledo

2:40 PM
Superelasticity in Room Temperature Aged Fe-Mn-Al-Ni Wires: Hande Ozcan1; Ji Ma1; Jeffrey Brown1; Ronald Noebe1; Yurii Chumlyakov1; Ibrahim Karaman1; 1Texas A&M University

3:00 PM
Modeling of Biomimetic Structures Actuated by Shape Memory Alloys: Natalie Zelezni1; Alejandro Hinojos1; Michael Mills1; Haluk Karaca2; Mohammad Elahinia3; James McGuffin-Gawley1; Peter Anderson1; 1The Ohio State University; 2University of Kentucky; 3University of Toledo; 3Case Western Reserve University

3:20 PM
Modeling of Coaxial Jet Mixing for Novel Material Properties: David Spang1; 1Rowan College at Burlington County

3:40 PM
Binder Jet Additive Manufacturing of Magnetocaloric Foams: Katerina Kimes1; Erica Stevens1; Amir Mostafaei1; Jakub Toman1; Markus Chmielus1; 1University of Pittsburgh

4:00 PM
Rapid Intense Pulsed Light Sintering of Silver Nanowire Networks on Polycarbonate for Transparent, Conductive Films: Rajiv Malhotra1; Michael Dexter1; 1Oregon State University

4:20 PM
Conductivity Investigation of Cubic-YSZ Single Crystals by Applying the CALPHAD Approach: Mohammad Asadikya1; Yu Zhong1; 1Florida International University

Advanced Steel Metallurgy: Products and Processing – Session II
Program Organizers: Emmanuel De Moor, Colorado School of Mines; Amar De, ArcelorMittal Global R&D; Kester Clarke, Colorado School of Mines; Alla Sergueeva, The NanoSteel Company; Charles Enloe, General Motors; Daniel Branagan, The NanoSteel Company; Matthew Kiser, Caterpillar Inc

Monday PM Room: 406 Location: DLL Convention Center
Session Chairs: Kip Findley, Colorado School of Mines; Matthew Kiser, Caterpillar Inc

2:00 PM
Mechanical Stability of Retained Austenite in Austempered Fe-Mn-Si Medium Carbon Steel: Tadashi Furuhara1; Takeshi Kaneshita1; Goro Miyamoto1; 1Tohoku University

2:20 PM
Liquid Metal Embrittlement of Resistance Spot Welded 1180TRIP Steel - Effects of Crack Geometry on Weld Mechanical Performance: Du-Youl Choi1; Sang-Ho Uhm1; Charles Enloe2; Hokook Lee1; Gyoosung Kim1; Curt Horvath2; 1POSCO Global R&D Center; 2General Motors

2:40 PM
Effect of Austenite Transformation on the Hole Expansion Properties of Q&P and Medium Mn Steels: Singon Kang1; Jihoon Kim1; Jiyeon Yun1; Jinkyung Kim1; Bruno De Cooman1; 1POSTECH

3:00 PM
Chemical Composition and Cooling Rate Effect on Microstructure Evolution in AHSS Grades: Rafael Coura Giacomin1; Bryan Weber1; Jonathan Becerril1; Carnegie Mellon University

3:20 PM
Designing Tough Nanostructured Bainite: Peter Kirbiš1; Tatjana Pintosk1; Ivan Anzel1; Mihael Bruncko1; 1SIJ Metal Ravne d.d.; 2University of Maribor, Slovenia

3:40 PM
Structures and Mechanisms Enabling Cold Formability In NanoSteel 3rd Generation AHSS: Alla Sergueeva1; Andrew Frerichs1; Brian Meacham1; Sheng Cheng1; Daniel Branagan1; 1The NanoSteel Company

4:00 PM
Flash® Bainite: Cold Stamping 1500 to 1800MPa Structural and Energy Absorbing Components to <2T Bend Radii: Gary Cola1; 1SFP Works, LLC

4:20 PM
Microstructure and Mechanical Behavior of a TWIP Fe-15Mn-2.5Si-2Al Steel: Xiaoxue Chen1; Jianguo Li1; Laszlo Kecskes1; Quiming Wei1; 1UNC-Charlotte; 2University of Northwestern Poly-technical University; 3US Army Research Laboratory
Advancements in In-situ Electron Microscopy Characterization II – Radiation Environments
Program Organizers: Yue Liu, Shanghai Jiao Tong University; Nan Li, Los Alamos National Laboratory; Khalid Hattar, Sandia National Laboratories; T. John Balk, University of Kentucky; Josh Kacher, Georgia Tech

Monday PM  Room:  411
October 9, 2017  Location:  DLL Convention Center

Session Chairs: Khalid Hattar, Sandia National Laboratories; Engang Fu, Peking University

2:00 PM  Invited
TEM with In Situ Ion Irradiation of Nuclear Materials: Meimei Li1; 1Argonne National Laboratory

2:30 PM  Invited
Detwinning through Migration of Twin Boundaries (TBs) in Nanotwinned Cu Films under Ion Irradiation: Jinlong Du1; Y.X. Liang1; P.P. Wang1; K.Y. Yu1; M.A. Kirk1; Z.M. Wu1; E.G. Fu1; 1Peking University; 2Chinese University of Petroleum; 3Argonne National Laboratory

3:00 PM  Invited
In Situ Studies on Radiation Resistance of Nanoporous Metals: Jin Li1; Cuncai Fan1; Youxing Chen1; Xinghang Zhang1; 1Purdue University; 2Los Alamos National Laboratory

3:30 PM  Invited
In Situ Analysis of Ion Irradiation Damage in Nanocrystalline Tungsten Alloys: Olivia Donaldson1; Khalid Hattar2; Jason Trelewicz2; 1Stony Brook University; 2Sandia National Laboratories

3:50 PM  Invited
Irradiation of Nanoporous Gold and Niobium – Effects on Mechanical Properties: Nicolas Briot1; Maria Kosmidou1; 1University of Kentucky

Alumina at the Forefront of Technology II – Sintering and Microstructure of Alumina Ceramics
Program Organizers: William Walker, Federal-Mogul Corporation; Marina Pascucci, CeraNova Corporation; Charles Compson, Almatis; William Carty, Alfred University

Monday PM  Room:  316
October 9, 2017  Location:  DLL Convention Center

Session Chair: Charles Compson, Almatis, Inc.

2:00 PM  Invited
New Approaches for Grain Boundary Informatics as a Pathway to Processing Reliability: Jeffrey Rickman1; Yan Wang2; Christopher Marvel3; Martin Harmer1; Anthony Rollett1; Charles Compson1; 1GrainBound, Inc.; 2Lehigh University; 3Lehigh University; 4Carnegie Mellon University; 5Almatis Inc.

2:40 PM  Invited
Powder Chemistry Effects on the Sintering of Bayer Alumina: Tobias Frueh1; Elizabeth Kupp1; Charles Compson2; Joe Atria3; Gary Messing1; 1The Pennsylvania State University; 2Almatis, Inc.

3:00 PM  Invited
Densification and Grain Growth of Alumina in the Presence of a Liquid Phase: Sarah Whipkey1; Hyojin Lee2; William Carty2; 1New York State College of Ceramics at Alfred University

3:20 PM  Invited
Investigating the Origin of Abnormal Grain Growth in Specialty Alumina: Christopher Marvel1; Yan Wang2; Animesh Kundu3; Jeffrey Rickman1; Martin Harmer1; Joe Atria3; Charles Compson1; 1GrainBound, Inc.; 2Lehigh University; 3Lehigh University; 4Almatis Inc.

3:40 PM  Invited
Second Phase Formation During Sintering of Bayer Alumina: Tobias Frueh1; Elizabeth Kupp1; Charles Compson2; Joe Atria3; Gary Messing1; 1The Pennsylvania State University; 2Almatis, Inc.

4:00 PM  Invited
Pore Size Analysis for Alumina Ceramics: William Walker1; 1Federal-Mogul Corporation

ASM Alpha Sigma Mu Lecture
Monday PM  Room:  335
October 9, 2017  Location:  DLL Convention Center

2:30 PM  Invited
Creating the Materials of Tomorrow: Joseph Newkirk1; 1Missouri University of Science and Technology

Best Practices in Academic Laboratory Safety – Session II
Program Organizers: Elizabeth Kupp, Penn State University; Theresa Kotanchek, Evolved Analytics LLC; Edgar Lara-Curzio, Oak Ridge National Laboratory

Monday PM  Room:  321
October 9, 2017  Location:  DLL Convention Center

Session Chair: Edgar Lara-Curzio, Oak Ridge National Laboratory

2:00 PM  Invited
Laying the Foundation: Ten Elements of an Effective Laboratory Safety Management Program: J Cocchio1; Gord Winkel2; Neil Anderson3; 1The University of Alberta

2:40 PM  Question and Answer Period Discussion about Laboratory Safety Management Program Presentation

3:00 PM  Demonstration Student video competition - presentation of videos and announcement of prize winners
2:00 PM Invited
Ternary Borides Nb7Fe3B8 and Ta7Fe3B8 with Kagome-type Iron Framework: Andreas Leithe-Jasper1; Qiang Zheng1; Roman Gumieniuk2; Juri Grin1; 1MPI-CPIS; 2TU-Bergakademie, Freiberg

2:40 PM
Microstructure and Phase Control during Synthesis of Nanocrystalline Ultrahigh Temperature Tantalum Hafnium Diboride Powders (Tax Hf1-B) via Carbothermal/Borothermal Reduction Reaction: Paniz Foroughi1; Zhe Cheng1; 1Florida International University

3:00 PM
Synthesis, Consolidation and In-situ Indentation Studies on Bulk Boron Suboxide: Archana Loganathan1; Pranjal Nautiyal1; Paniz Foroughi1; Jian Yu2; Brandon McWilliams1; Zhe Cheng1; Benjamin Boesl1; Arvind Agarwal1; 1Florida International University; 2US Army Research Laboratory

3:20 PM Question and Answer Period

3:40 PM
Processing Effects on Stoichiometry in Hot-pressed Boron Suboxide Ceramics: Taylor Shoulders1; Kristopher Behler1; Jerry LaSalvia1; Lionel Vargas-Gonzalez2; 1U.S. Army Research Laboratory

4:00 PM
Effect of Oxide Additives on the Densification, Microstructure, and Hardness of Hot-pressed Boron Suboxide: Kristopher Behler1; Jerry LaSalvia1; Christopher Marvel1; Scott Walck1; Martin Hamer1; 1U.S. Army Research Laboratory (SURVICE Engineering); 2U.S. Army Research Laboratory; 3Lehigh University

2:00 PM Invited
Atomic Level Simulation of Defects and Diffusion in Ceramics: Ram Devanathan1; Kerry Garret1; Michele Conroy1; Weilin Jiang1; 1Pacific Northwest National Laboratory

2:40 PM Invited
Tuning the Structure and Properties of Glass Aided by Computer Simulation: Liping Huang1; 1Rensselaer Polytechnic Institute

3:20 PM Invited
Effect of Irradiation on Cement Hydrates: Evidence of a Topological Self-organization: N. M. Anoop Krishnan1; Bu Wang2; Gaurav Sant1; Mathieu Bauchy1; 1University of California, Los Angeles

4:00 PM
Ab-initio Molecular Dynamic Simulations of Amorphous Nitrides at High-Pressure: Peter Kroll1; 1University of Texas at Arlington

4:20 PM
Commonalities in Frequency-dependent Viscoelastic Damping in Glasses: Raghavan Ranganathan1; Pawel Keblinski1; Yunfeng Shi1; 1Massachusetts Institute of Technology; 2Rensselaer Polytechnic Institute

Characterization of Fracture and Fragmentation Phenomena Across Multiple Length Scales: From Atomistic to Macroscopic Approaches – Fracture and Fragmentation Phenomena: Lower Length Scales Methodologies
Program Organizers: Remi Dingreville, Sandia National Laboratories; Pierre-Alexandre Juan, Sandia National Laboratories

2:00 PM Invited
Interface Chemistry and Strain Rate Effect on Fracture in Energetic Material Interfaces: Chandra Prakash1; Vikas Tomar2; 1Purdue University

2:40 PM
A Novel Approach for Selecting Grain Boundary Sets for Intergranular Fracture Studies Using Molecular Dynamics Simulations: Doruk Aksoy1; Remi Dingreville1; Douglas Spearot1; 1University of Florida; 2Sandia National Laboratories

3:00 PM
Do Voids Initiate at Grain Boundaries?: Philip Noell1; Brad Boyce1; Jay Carroll1; Khalid Hattar1; Blythe Clark1; 1Sandia National Laboratories

3:20 PM
Thermo-mechanical Deformation Responses in Transition Metal Carbides at Ultra-high Temperatures: Gregory Thompson1; Morgan Ross2; Chase Smith1; Nick DeLeon1; Christopher Weinberger2; 1University of Alabama; 2Colorado State University

3:40 PM
In-situ 3D Observation of Grain Evolution in a Cu Polycrystal: Ruili Chen1; Reeju Pokharel1; Bjorn Clausen2; Ricardo Lebonsohn2; Peter Kenesel2; Robert Suter1; 1Carnegie Mellon University; 2Los Alamos National Laboratory; 3Argonne National Laboratory

4:00 PM
Investigating Heterogeneous Deformation in Polycrystalline Al 6061 Using In-situ SEM Tensile Test and HREBSD Characterization: Yung Suk Yoo1; Jay Carroll1; John Emery2; Josh Kacher1; 1Georgia Institute of Technology; 2Sandia National Laboratories
Curricular Innovations and Continuous Improvement of Academic Programs (and Satisfying ABET along the Way): The Elizabeth Judson Memorial Symposium – Design in Materials Science and Engineering

Program Organizers: Devarajan Venugopalan, University of Wisconsin-Milwaukee; Jeffrey Fergus, Auburn University; Janet Callahan, Boise State University; Thomas Bieler, Michigan State University; Ronald Gibala, University of Michigan; Tonya Stone, Mississippi State University

Monday PM  Room: 306
October 9, 2017  Location: DLL Convention Center

Session Chair: Gregg Janowski, Univ of Alabama - Birmingham

2:00 PM
Preparing Students for Open-ended Projects through Hands-on Tools and Techniques Demonstrations: Christopher Levey1; Kevin Baron1; 1Dartmouth

2:20 PM
One Approach for Improving the Senior Design Experience for Students and Faculty: Ben Church1; Nidal Abu-Zahra1; 1University of Wisconsin-Milwaukee

2:40 PM
Failure Analysis as a Capstone Experience in the Undergraduate Materials Science and Engineering Program at Wright State University: Raghavan Srinivasan1; 1Wright State University

3:00 PM
Incorporating Design into the Senior Thesis Capstone in MATSE at Penn State University: Robert Kimel1; 1Penn State University

3:20 PM
Approaches to Design in Materials Science and Engineering and Related Programs: Panel Discussion: Chet Tan Tyne1; Gregg Janowski1; Raghav Srinivasan1; Devarajan Venugopalan1; 1Colorado School of Mines; 1University of Alabama at Birmingham; 1Wright State University; 1University of Wisconsin-Milwaukee

Data and Tools for Materials Discovery and Design – Combinatorial First Principles and High Throughput Methods for Screening: Challenges and Opportunities

Program Organizers: Zi-Kui Liu, The Pennsylvania State University; David McDowell, Georgia Institute of Technology; Carolyn Campbell, National Institute of Standards and Technology; Laura Bartolo, Northwestern University; Bryce Meredig, Citrine Informatics; Mark Tschopp, Army Research Laboratory; Dane Morgan, University of Wisconsin - Madison; Afina Lupulescu, ASM International

Monday PM  Room: 323
October 9, 2017  Location: DLL Convention Center

Session Chairs: Dane Morgan, University of Wisconsin - Madison; James Warren, National Institute of Standards and Technology

2:00 PM Keynote
Data and Tools for Materials Discovery and Design: The Materials Innovation Infrastructure: James Warren1; 1National Institute of Standards and Technology

2:40 PM Invited
High-throughput Materials Discovery and Development: Computational Tools for Data Generation and Advanced Characterization: Marco Buongiorno Nardelli1; 1University of North Texas

3:00 PM Invited
Materials Discovery and Design at Finite Temperatures: Jan Janssen1; Albert Giersk1; Blazej Grabowski1; Tilman Hickel1; 1Jülich Neugebauer1; 1Max-Planck-Institut für Eisenforschung GmbH

3:20 PM Invited
High-throughput and Machine-learning Diffusion Modeling with the Materials Simulation Toolkit (MAST): Dane Morgan1; Tam Mayeshiba1; Henry Wu1; 1University of Wisconsin - Madison

4:00 PM
Combining Hi Throughput Computations and Hi Throughput Experiments to Accelerate Discovery and Development of Structural Alloys: Dan Miracle1; Bhaskar Majumdar1; Katelin Wertz1; Stephane Gorsse1; 1AF Research Laboratory; 1New Mexico Institute of Mining and Technology; 1CNRS, ICMCB, UPR 9048, 33600 Pessac

4:20 PM
High-throughput Identification and Characterization of Two-dimensional Materials Using Density Functional Theory: Kamal Choudhary1; Ryan Beams1; Irina Kalish1; Francesca Tavazza1; 1National Institute of Standards and Technology

4:40 PM
Estimating Thermal Expansion with Intrinsic Quantum Thermodynamics: Ryo Yamada1; Michael von Spakovsky1; William Reynolds1; 1Virginia Polytechnic Institute and State University

Design, Processing, and Development of Structural Materials – Complex and Multicomponent Alloys

Program Organizers: Tomoko Sano, U.S. Army Research Laboratory; Mitra Taheri, Drexel University

Monday PM  Room: 328
October 9, 2017  Location: DLL Convention Center

Session Chairs: Anit Giri, US Army Research Laboratory; Tomoko Sano, U.S. Army Research Laboratory

2:00 PM Invited
Experimental and Computational Investigation of Microstructures and Mechanical Behavior of High-entropy Alloys (HEAs): Peter Liu1; Haoyan Diao1; Tingkun Liu1; Yanfei Gao1; Jonathan Poplawsky1; Wei Guo1; Karin Dahmen1; 1University of Tennessee; 1Oak Ridge National Laboratory; 1University of Illinois at Urbana-Champaign

2:20 PM Invited
Design and Development of Lightweight Corrosion Resistant Compositionally Complex Alloys: Nick Birbilis1; 1Monash University

2:40 PM
Microstructure and Mechanical Properties of a Nanostructured High Entropy Alloy Processed via Heavy Rolling: Xiaojun Liu1; Feng Wang1; Zhigang Yan1; Fei Chen1; Enrique Lavernia1; 1Wuhan University of Technology; 1Yanshan University; 1University of California, Irvine
3:00 PM Invited
Compositional Modeling of High-Entropy Alloys: Thermodynamics, Elasticity, and Solid Solution Strengthening: Michael Gao1; Mike Widom2; Jeffrey Hawk3; 1National Energy Technology Lab; 2Carnegie Mellon University

3:20 PM
Microhardness and Microstructure of Nanocrystalline Nb25Mo55Ta3W25 High Entropy Alloys: AntT Giril1; Anthony Roberts1; Chad Hornbuckle2; Thomas Luckenbaug3; Vincent Hammond3; Kris Darling3; 1US Army Research Laboratory

3:40 PM
Designing Novel Cermet Materials in the Ti-B-Fe-Mo System: Alexander Lark1; Vikas Jindal1; Ahmed Degnah1; K.S. Ravi Chandran1; 1University of Utah

4:00 PM
Deformation Processing and Recrystallization of Single Crystal Ni-base Superalloys: Sarah Frith1; Kyle Ventura1; Gerhard Fuchs1; 1University of Florida

Emerging Multifunctional Materials for Bio, EO, RF and Radiation Sensors – Emerging Multifunctional Materials for Bio, EO, RF and Radiation Sensors II Program Organizers: Narsingh Singh, University of Maryland, Baltimore County; Dimitra Stratis-Cullum, Army Research Laboratory; Ravindra Nuggehalli, NJIT

Monday PM Room: 331
October 9, 2017 Location: DLL Convention Center

Session Chairs: Dimitra Stratis-Cullum, Army Research Laboratory; Liliana Braescu, Université du Québec; Dev Mahato, National Institute of Technology

2:00 PM Invited
Magnetic Composites for Stretchable Wireless Power Systems: Nathan Lazarus1; 1US Army Research Laboratory

2:20 PM Invited
Spin-orbit Coupling Effects on Multiferroic Properties of the Multifunctional Oxides: Liliana Braescu1; Francois Vidal1; Alain Pignon1; 1INRS Canada & Alfasial University KSA; 2Institut National de la Recherche Scientifique

2:40 PM Invited
Multicontrolable Metasurfaces: Akhlesh Lakhtakia1; 1Penn State University

3:00 PM Invited
Display of Gold-binding Peptides by Living Bacteria for Bioelectrochemical Systems: Justin Jahnke1; Deborah Sarkes1; Jessica Terrell2; Bryn Adams2; Margaret Hurley1; James Sumner1; Dimitra Stratis-Cullum1; 1US Army Research Laboratory

3:20 PM Invited
Magnetically Augmented Rotational System - Properties and Performance: Shuang Du1; Ruolei Liu1; Yan Liu1; Tiansee Chow1; Nuggehalli Ravindra1; 1New Jersey Institute of Technology; 2Energy Technology Development Inc.

3:40 PM Invited
Multifunctional Hydroxyapatites: Design of Materials for Laser Host and Bone Applications: Stacey Sova1; Jayati Bhavsar1; Puja Gautam1; Bradley Arnold1; Lisa Kelly1; Paul Smith1; Kamdeo Mandal1; Narasimha Prasad1; Narsingh Singh1; 1University of Maryland, Baltimore County

4:00 PM Invited
Advancement in the Synthesis Techniques for Energy Storage Materials and Their Characterizations: Laxman Singh1; Youngil Lee1; Minsoo J1; 1University of Ulsan

4:20 PM Invited
Visible Light Sensitive Photo-catalytic Semi-conducting Metal Oxides in Abating Water Pollution: Koyar Rane1; Rajesh Joshi2; Sunil Jalalpure2; Sunee Dodamuni3; 1Rani Channamma University (State University); 2Regional Medical Research Centre (Indian Council of Medical Research); 3KLE University’s College of Pharmacy

Failure Analysis and Prevention – additive Manufacturing, Processing & Corrosion Failures Program Organizers: Andrew Havics, pH2, LLC; Pierre Dupont, Schaeffler Belgium Srl/Bvba; Burak Akyuz, ATS, Inc.

Monday PM Room: 407
October 9, 2017 Location: DLL Convention Center

Session Chairs: Amber Dalley, RJ Lee Group; Charles White, IME Dept,Kettering University; Thomas Ackerson, Curtiss Wright - IMR Test Labs; Richard McSwain, McSwain Engineering Incorporated; Andrew Havics, pH2, LLC

2:00 PM Invited
Crack Reduction in NiCr-alloys When Processed by additive Manufacturing Using the Laser Powder Bed Process: William Jarosinski1; Larry Somrack2; 1Praxair Surface Technologies, Inc.; 2NSL Analytical

2:20 PM Invited
Additive Manufacturing Process Inherent Failure Mechanisms: Joy Gockel1; Luke Sheridan1; Bo Whip1; Eric Tatman1; Sonya Sokhey1; 1Wright State University

2:40 PM Invited
Failure Analysis and Engineering Challenges of additive Manufacturing Processes: Daniel Dennies1; 1DMS, Inc

3:00 PM Invited
Characterization of Ancient Steel Tie-rods for Structural Integrity Assessment of Historic Masonry Buildings: Donato Ferraudo1; Paolo Matteis1; Giorgio Scavino1; Giuseppe Ferro1; 1Politecnico di Torino - DISAT; 2Politecnico di Torino - DISEG

3:20 PM Invited
Acid Dew Point Corrosion Induced Failure in Boiler Economizer Tubes: Urbi Pal1; Sandip Bhattacharya1; Goutam Mukhopadhyay1; 1Tata Steel

3:40 PM Invited
Analysis of Corrosion Damage to a Zinc Die-cast Plumbing Fitting: Tim Jur1; Richard Edwards1; Ron Windam1; 1Engineering Design & Testing Corp

4:00 PM Invited
Impact of Corrosion on Coal Mining Equipment: J.V. Pellegrino Jr.1; 1RJ Lee Group

4:20 PM Invited
Failure Analysis of Cracked Rotor Wedges of a Generator: Mehdi Taheri1; Erhan Ulvan1; 1-30- Forensic Engineering ; 2Acuren Group Inc
Glass, Amorphous, and Optical Materials: Common Issues within Science & Technology – Structure-property Relations II
Program Organizers: Gang Chen, Ohio University; Steve Martin, Iowa State University

Monday PM Room: 310 Location: DLL Convention Center
Session Chair: John Kieffer, University Of Michigan

2:00 PM Invited
Extreme Entropy Mixed Anion Mixed Cation Mixed Glass Former Glasses:
Steve W. Martin; Steven Kmiec; Melinda Hoy; Peter Enz; Alison Whale; 1Iowa State University

2:20 PM
Elastic Properties and Ionic Migration Mechanisms in Mixed-network
Former Glasses: Weimin Wang; Randil Lynn Christensen; Brittany Curtis; Steve Martin; John Kieffer; 1University of Michigan; 1Iowa State University

2:40 PM
Stretched Exponential Relaxation of Glasses: Origin of the Mixed Alkali Effect: Yingtian Yu; John Mauro; Mathieu Bauchy; 1University of California, Los Angeles; 2Corning Inc.

3:00 PM
Indentation and Scratch of Mixed-Alkali Glasses: Jared Seaman; Peter Lezzi; Timothy Gross; 2Corning Incorporated

3:20 PM
Indentation Deformation Mechanisms in Ternary Alkali Aluminosilicate Glasses: Timothy Gross; 2Corning Inc.

3:40 PM
Understanding Cracking Behavior of Glass from Its Elastic and Plastic Response to Hydrostatic Compression: Siva Priya Jaccani; Liping Huang; 1Rensselaer Polytechnic Institute

4:00 PM
A Surface Science Perspective of the Usable Strength of Glass: Nisha Sheehy; Jiawei Luo; Joy Banerjee; Carlo Pantano; Seong Kim; 1Penn State University; 2Corning

4:20 PM
The Effect of Stress on the Kinetics of Surface Stress Relaxation in Glass:
Emily M. Aaldenberg; Thierry Blanchet; Minoru Tomozawa; 1Rensselaer Polytechnic Institute

4:40 PM
Dissolution Behavior of MoO3-Fe2O3-P2O5 Glasses: Jincheng Bai; Daniel Drury; Jenhisen Hsu; Richard Brow; Cheol-Woon Kim; Joe Szabo; Adam Zervos; 1Missouri University of Science and Technology; 2MOSCI Corporation

5:00 PM
Investigating Alteration of Pre-viking Hillfort Glasses from the Brobrog Hillfort Site, Sweden: Carolyn Pearce; Jamie Weaver; Edward Vicenzi; Thomas Lam; Tamas Varga; Micah Miller; Bruce Arey; Michele Conroy; John McClay; Rolf Sjoholm; Michael Schweiger; David Peeler; Albert Kruger; Pacific Northwest National Laboratory; 1National Institute of Standards and Technology; 3Smithsonian Institution; 4Washington University; 5Lulea University of Technology; 6Department of Energy

Hybrid Organic-Inorganic Materials for Alternative Energy – Photovoltaics and Electrochemistry
Program Organizers: Andrei Jitianu, Lehman College, City University of New York; Lisa Klein, Rutgers University; Lia Staniciu, Purdue University; Mihaela Jitianu, William Paterson University

Monday PM Room: 402 Location: DLL Convention Center
Session Chair: Ekaterina Pomerantseva, Drexel University

2:00 PM Invited
Optical-scale Microarrays for Enhanced Light Emitting Diode and Dye Sensitized Solar Cell Performance: James Gilchrist; Nelson Tansu; Mark Snyder; 1Lehigh University

2:30 PM Invited
Design of Solar Active Metal-oxide/Carbon-nanotube Aerogel Photocatalysts and Nano-photoelectrochemical Cell Arrays: Paul Salvador; Hang-Ah Park; Siyuang Liu; Youngseok Oh; Gregory Rohrer; Mohammad Islam; 1Carnegie Mellon University

3:00 PM Invited
P-type Dye-Sensitized Solar Cells and Fuels: Challenges and Opportunities: Yixiong Wu; 1Ohio State University

3:30 PM Invited
Oxide Nano-sheet Based Hybrid Structures: Kevin Pachuta; Emily Pentzer; Alp Sehirlioglu; 1Case Western Reserve University

4:00 PM
Hybrid Supercapacitors Fabricated from Commercial Organic Wastes and Metal Oxides: Engin Ciftyurek; Kaushlendra Singh; Latha Sirivanandan; Katarzyna Sabolskaya; Tugrul Yumak; Ed Sabolsky; 1WVU

4:20 PM
DFT and TD-DFT of Electronic and Optical Properties for Novel Cyclometalated Ruthenium Complexes for Dye-sensitized Solar Cells (DSSCs): Nambury Babu; Said Vua; John Makangara; Isaac Onoka; 1The University of Dodoma

Innovations in Materials and Processes for Solar PV Applications – Innovations in Materials and Processes for Solar PV Applications
Program Organizers: Sheela Ramasesha, Divecha Center for Climate Change, Indian Institute of Science; Nicholas Ekma-Daoukas, Imperial College

Monday PM Room: 408 Location: DLL Convention Center
Session Chair: To Be Announced

2:00 PM Introductory Comments

2:10 PM
Dewetted Gold Coatings as Templates for Uniform Cadmium Selenide Films: Warren Rucker; Tianxing Ma; Jonathan Singer; Dunbar Birnie; 1Rutgers University
I. Effects of Recycled Slag on Boron Removal from Metallurgical-grade Silicon with Active Component Addition: Xuetao Luo; Chenghao Lu; 'Xiamen University

2:50 PM
Interface Study Of Passivated Silicon Wafers For High Efficiency Photovoltaics By Transmission Electron Microscopy: Haider Ali; Winston Schoenfeld; Kristopher Davis; 'University of Central Florida

3:10 PM
Probing Charge Transport Behavior in PbS Quantum Solar Cells Using Multiple Illumination Directions: Matthew Duff; 'University of Pittsburgh

3:30 PM
Tunnel Layer Dielectrics for High Barrier Height Contacts in Photovoltaics Using Indium Tin Oxide: Nicholas Strandwitz; 'Lehigh University

II. Interfaces, Grain Boundaries and Surfaces from Atomistic and Macroscopic Approaches – Interface Thermodynamics

Program Organizers: Dominique Chatain, CNRS, Aix-Marseille University; John Blendell, Purdue University; Wayne Kaplan, Technion - Israel Institute of Technology

Monday PM
Room: 410
Location: DLL Convention Center

Session Chairs: Paul Wynblatt, Carnegie Mellon University; Dominique Chatain, CNRS, Aix-Marseille University

2:00 PM
Recent Progress in Atomistic Modeling of Materials Interfaces: Yuri Mishin; 'George Mason University

2:40 PM
Continuum Modelling of Grain Boundary Wetting: Robert Spatschek; Clas Hütter; 'Forschungszentrum Juelich

3:20 PM Invited
Predicting Phase Behavior of Interfaces with Evolutionary Algorithms: Qiang Zhu; Amit Samanta; Bingxi Li; Robert Rudd; Timofey Frolov; 'University of Nevada Las Vegas; 'Lawrence Livermore National Laboratory; 'University of California Davis

3:40 PM Invited
Defect Interactions in Multilayer Graphene: Rachel Zucker; Mark Asta; 'University of California, Berkeley

4:00 PM
An Effective Phase-field Model for Anisotropic Interfaces: A Phase-field Crystal Approach: Nana Ofori-Opoku; James Warren; Peter Voorhees; 'Northwestern University; 'National Institute of Standards and Technology

4:20 PM
Grain Boundary Phase Transition Kinetics in Ionic Ceramics: Suryanarayana Karra; Wolfgang Rhe inheimer; Michael Hoffmann; R. Edwin Garcia; 'Purdue University; 'Karlsruhe Institute of Technology

III. International Symposium on Defects, Transport and Related Phenomena – Proton Conductors

Program Organizers: Tatsuya Kawada, Tohoku University; Manfred Martin, RWTH Aachen University; Sangtae Kim, University of California, Davis

Monday PM
Room: 409
Location: DLL Convention Center

Session Chair: Roger De Souza, RWTH Aachen University

2:00 PM
High Performance, Fuel-flexible Protonic Ceramic Fuel Cells via In-situ Exsolution of Ni Nanoparticles: Chuancheng Duan; Neal Sullivan; Robert Braun; Robert Kee; Huayang Zhu; Ryan O’Hayre; 'Colorado School of Mines

2:20 PM Invited
Proton Conduction in Zeolite and Application to Water Electrolysis: Yuki Terayama; Naohiro Shimoda; Shigeo Sato kawa; Yoshitsugu Sone; Hiroshi Matsumoto; 'Kyushu University; 'Seikei University; 'Japan Aerospace Exploration Agency

3:00 PM Invited
Triple Conducting Oxides for Electrochemical Applications: Meagan Papac; Chuancheng Duan; Ann Derr; Andriy Zakutayev; Vladan Stefanovic; Michael Sanders; Ryan O’Hayre; 'Colorado School of Mines; 'National Renewable Energy Laboratory

3:40 PM Invited
Cation Diffusion in A\(_2\)B\(_4\)O\(_3\) Perovskites: Tor Grande; Rokas Sažinas; 'Norwegian University of Science and Technology

IV. Joining of Advanced and Specialty Materials (JASM XIX) – Brazing

Program Organizers: Boian Alexandrov, The Ohio State University; Mathieu Brochu, McGill University; Anming Hu, University of Tennessee; Darren Barborak, AZZ WSI; Akio Hirose, Osaka University; Peng He, Harbin Institute of Technology; Zhiyong Gu, University of Massachusetts Lowell; Vikas Patel, ArcelorMittal USA

Monday PM
Room: 326
Location: DLL Convention Center

Session Chairs: Michael Halbig, NASA Glenn Research Center; Zhenzhen Yu, Colorado School of Mines

2:00 PM
Brazing of Inconel 600 by a Newly Designed Multi-Principal-Component Alloy Filler Foil: Zhenzhen Yu; Minrui Gao; Stephen Liu; 'Colorado School of Mines

2:20 PM
Brazing of Nickel Superalloys Using High Entropy Alloy Bulk Material and Nanopaste: Denzel Bridges; Suhong Zhang; Samantha Lang; Zhenzhen Yu; Zhili Feng; Anming Hu; Minrui Gao; 'University of Tennessee, Knoxville; 'Colorado School of Mines; 'Oak Ridge National Laboratory
2:40 PM  
Brazing of Steel 304 and Inconel 718 Using Ni Nanoparticle Paste: Siuhong Zhang1; Denzel Bridges1; Zhili Feng1; Anming Hu1; 1University of Tennessee, Knoxville; 2Oak Ridge National Laboratory

3:00 PM  
Transient Liquid Phase Bonding of Ni-based-alloy-H230 for Compact Heat Exchangers for Application in Supercritical CO2 Power Cycles: Monica Kapoor1; Omer Dogan1; Jeffrey Hawk1; 1National Energy Technology Lab

3:20 PM  
Understanding Chloride-induced Stress Corrosion Cracking Behavior of SS304 for Dry Storage Canisters for Spent Nuclear Fuels Storage: Nilesh Kumar1; KL Murti2; 2NC State University

3:40 PM  
Oxidation and Corrosion Resistance of ZrC4AlCn MAX Phases for Future Lead-cooled Fast Reactors: Alan Carter1; Jie Song2; Kip Findley2; Michael Kaufman3; 3Colorado School of Mines

4:00 PM  
Frettig Wear Behaviors of Surface-Modified Zr Cladding Supported by Pre-oxidized Spacer Grid: Young-Ho Lee1; Jung-Hwan Park1; Dong-Jun Park2; Hyun-Gil Kim2; Jae-Ho Yang2; 1Korea Atomic Energy Research Institute; 2Korea Atomic Energy Research Institute

Materials for Nuclear Energy Applications – Corrosion of Materials in Nuclear Energy Systems

Program Organizers: Kumar Sridharan, University of Wisconsin; Jake Amoroso, Savannah River National Laboratory; Aladar Csontos, Nuclear Regulatory Commission; Kevin Fox, Savannah River National Laboratory; Yutai Katoh, Oak Ridge National Laboratory; Bill Lee, Imperial College of London; Josef Matyas, Pacific Northwest National Laboratory; Raul Rebak, GE Global Research; Cory Trivelpiece, Savannah River National Laboratory

Monday PM  
Room: 401  
Location: DLL Convention Center

Session Chairs: Stuart Maloy, Los Alamos National Laboratory; Yutai Katoh, Oak Ridge National Laboratory

2:00 PM Invited  
Corrosion Mechanism of Incoloy 800H Alloy in High Temperature Thermal Energy Storage MgCl2-KCl Salts: Xiaxiang Peng1; Ramana Reddy1; 1The University of Alabama

2:20 PM  
Bulk and Surface Grain Boundary Engineering for Improved Resistance to Corrosion and Stress Corrosion Cracking of Nuclear Alloys: Abhishek Telang1; Amrinder Gill1; Mukul Kumar1; Sebastien Teyssere1; Seetha Mannava2; Dong Qian3; Vijay Vasudevan4; 1Integer Holdings Corp; 2AK Steel; 3Lawrence Livermore National Laboratory; 2Idaho National Laboratory; 4University of Cincinnati; University of Texas at Dallas

2:40 PM  
Corrosion Resistance of Pure SiC and SiC-NFA Composite under High Temperature Water Vapor Conditions: Kaijie Ning1; Kathy Lu1; 1Virginia Tech

3:00 PM  
High Temperature Oxidation of SPS Sintered CrC2-coated SiC-NFA Composites in Water Vapor Containing Environment: Kaustubbh Bawane1; Kathy Lu1; 1Virginia Polytechnic Institute and State University

3:20 PM  
Understanding Chloride-induced Stress Corrosion Cracking Behavior of SS304 for Dry Storage Canisters for Spent Nuclear Fuels Storage: Nilesh Kumar1; KL Murti2; 2NC State University

3:40 PM  
Assessment of Aging Degradation Mechanisms of Alloy 709 for Sodium Fast Reactors: Alan Carter1; Jie Song2; Kip Findley2; Michael Kaufman3; 3Colorado School of Mines

Materials Property Understanding through Characterization – Novel Tech II

Program Organizers: Indrajit Dutta, Corning Incorporated; Nicholas Smith, Corning Incorporated

Monday PM  
Room: 412  
Location: DLL Convention Center

Session Chair: Christian Kiesielowski, Lawrence Berkeley National Laboratory

2:00 PM  
Characterizing Novel Transducers for High Temperature Thermal Measurements Using Time Domain Thermoreflectance: Christina Rost1; Kevin Ferri2; Charlotte Dawes1; Trent Borman2; Jon-Paul Maria1; Patrick Hopkins1; 1University of Virginia; 2North Carolina State University; University of New South Wales

2:20 PM Invited  
In Situ Raman Mapping Of Mechanically Stressed Materials: A Combination for Simultaneous Raman Spectroscopy and Nanoindentation: Yvonne Gerbig1; Chris Michaels1; Robert Cook1; 1National Institute of Standards and Technology (NIST)

3:00 PM Invited  
Visualization of Ferroelastic Domain Switching in (K,Na,Li)(Nb,Ta)O3: Yonnie Gerbig1; Chris Michaels1; Robert Cook1; 1National Institute of Standards and Technology (NIST)

3:20 PM  
Surface Frenkel Defects in MnO Nanoparticles: Quantification Enabled by X-ray Spectroscopy and Total Scattering: Scott Misture1; Peter Metz1; Peng Guo1; 1Alfred University

3:40 PM Invited

Session Chair: Monica Kapoor1; Omer Dogan1; Jeffrey Hawk1; 1National Energy Technology Lab
Multifunctional Oxides – Synthesis, Characterization, and Modeling of Metal Oxides

Program Organizers: Xiaojing Pan, University of California, Irvine; Chonglin Chen, University of Texas at San Antonio; Quanxi Jia, University at Buffalo – The State University of New York; Judith Driscoll, University of Cambridge

Monday PM Room: 312 Location: DLL Convention Center

Session Chairs: Rafal Dunin-Borkowski, Forschungszentrum Jülich; Ping Lu, Sandia National Laboratories

2:00 PM Invited
Atomatic Interface Structures and Properties In Self-assembled Vertically Aligned Nanocomposite Thin Films by Advanced Scanning Transmission Electron Microscopy: Ping Lu; Lin Zhou; Jon Ihlefeld; Wei Pan; Sandia National Laboratories; Ames Laboratory

2:20 PM Invited
First-principles Design of Two-dimensional Electron Gas in the Perovskite-Oxide-Based Interface Materials: Chengshuo Cui; Junjie Song; Hengzhong Fan; Yunfeng Su; Litian Hu; State Key Laboratory of Solid Lubrication, Lanzhou Institute of Chemical Physics of the Chinese Academy of Sciences

2:40 PM Invited
Selective Heat Treatment of Spray-formed Composite Tool Steels: Chengsong Cui; Alwin Schulz; Dawid Nadolski; IWT Bremen

3:00 PM Invited
The Influence of Nano TiN Additions on Mechanical Properties and Fracture Behaviour of Spark Plasma Sintered SAF 2205: Samuel Oke; Mahlatse Mphahlele; Oladeji Ige; Oluwasegun Falodun; Babatunde Obadele; Peter Olubambi; University of Johannesburg

3:20 PM Invited
Tribological Design of Ceramics—formulating New Composites: Yongsheng Zhang; Junjie Song; Hengzhong Fan; Yunfeng Su; Litian Hu; State Key Laboratory of Solid Lubrication, Lanzhou Institute of Chemical Physics of the Chinese Academy of Sciences

3:40 PM Invited
Thermal and Electrical Properties of Bilayer Al/B4C/Rice Husk Ash Composite: Amin Bahrami; Niloofar Soltani; Shaghayegh Soltani; Martin Pech-Canul; Carlos Gutiérrez; Luis Gonzalez; Angela Möller; Jashoua Tapp; Aleksandr Gurlo; University Nacional Autónoma de México; Technical University of Berlin;Technical University Berlin; Johannes Gutenberg-University Mainz; Technische Universität Berlin

3:40 PM Invited
Nanoscale Tailoring of Oxygen Vacancy Distribution by Mechanical-loaded Scanning Probe: Bo Wang; Saikat Das; Ye Cao; Sergei Kalinin; Tae Won Noh; Long-Qing Chen; The Pennsylvania State University; Seoul National University; Oak Ridge National Laboratory

2:00 PM
Localized Thin Film Damage Sourced and Monitored via Pump-probe Modulated Thermoreflectance: Brian Donovan; John Tomko; Ashutosh Giri; David Olson; John Gaskins; Patrick Hopkins; United States Naval Academy; University of Virginia

2:20 PM
Multifunctional Ceramic- and Metal-matrix Composites: Processing, Properties and Performance – General Processing and Characterization of CMCs and MMCs/Miscellaneous topics on MMCS and CMCs:

Program Organizers: Martin Pech-Canul, Cinvestav IPN- Unidad Saltillo; Golam Newaz, Wayne State University

Monday PM Room: 329 Location: DLL Convention Center

Session Chair: Martin Pech-Canul, Cinvestav Saltillo
Next Generation Biomaterials – Next Generation Biomaterials I
Program Organizers: Roger Narayan, UNC/NCSU Joint Department of Biomedical Engineering; Jie Huang, University College London; Vinul Davé, Johnson & Johnson; Sanjiv Lalwani, Lymtech, Inc.; Marc in het Panhuis, University of Wollongong; Mohan Edirisinghe, University College London

Monday PM
October 9, 2017
Room: 334
Location: DLL Convention Center

Session Chairs: Bikramjit Basu, Indian Institute of Science; Masahiro Yoshimura, National Cheng Kung University

2:00 PM Invited
Development of Multifunctional Bioceramics and External Field Stimulated Cell Functionality Modulation: A New Paradigm: Bikramjit Basu1; B. Sunil Kumar1; Greeshma Thrivikraman1; 1Indian Institute of Science

2:20 PM Invited
The New Biomaterials Frontier: Bubbles-Vesicles-Particles-Capsules-Fibres: Mohan Edirisinghe1; 1University College London

2:40 PM Invited
Cancer Cell Targeting and Photothermal Therapy of Theranostics from Multifunctional Tissue Engineering Scaffolds: Lin Guo1; Min Wang1; 1The University of Hong Kong

3:00 PM
Multicomponent and Multifunctional Tissue Engineering Scaffolds: Min Wang1; 1The University of Hong Kong

3:20 PM Invited

3:40 PM Invited
Permanent and Resorbable Patient-specific Implants Made by Additive Manufacturing: Johannes Homa1; Franz Weber2; Martin Schwentenwein3; 1Lithoz GmbH; 2University Hospital and University of Zurich

4:00 PM Invited
3D Printing of Microneedles: Roger Narayan1; 1UNC/NCSU Joint Department of Biomedical Engineering

Perspectives for Emerging Materials Professionals – Perspectives for Emerging Materials Professionals, Session II
Program Organizers: Dharma Maddala, Arconic Technology Center; Rachel Bethancourt, Cherry Aerospace, a SPS Technologies Company; Jesse Angle, Exponent, Failure Analysis Associates; K Shugart, UES, Inc

Monday PM
October 9, 2017
Room: 414
Location: DLL Convention Center

Session Chairs: Dharma Maddala, Arconic Technology Center; Rachel Bethancourt, Fitbit; Jesse Angle, Exponent, Failure Analysis Associates; K Shugart, UES, Inc

2:00 PM Invited
Can You Spell Entrepreneur?: Larry Hanke1; 1Materials Evaluation and Engineering, Inc

2:20 PM
From Gator to Investigator: How I Became a Failure Analyst and How You Can Too: Erik Mueller1; 1National Transportation Safety Board

2:40 PM Invited
Leadership Development: A 15 Minute Crash Course: Robert Schwartz1; 1University of Missouri System

3:00 PM Invited
From Undergraduate to Journal Editor: A Professional Development Story: William Fahrenholz1; 1Missouri University of Science and Technology

3:20 PM
Mentoring 101: Laura Jean Weidman1; 1Department of Defense

3:40 PM

4:00 PM
Measuring Up My Career (So Far) at NIST: Adam Creuziger1; 1National Institute of Standards and Technology

4:20 PM
The Value of Networking: Jaret Frafjord1; 1IMR Test Labs - Portland

Phase Stability, Diffusion Kinetics, and Their Applications (PSDK-XII) – Session II: Thermodynamics, Modeling and Databases
Program Organizers: Wei Xiong, University of Pittsburgh; Raymundo Arroyave, Texas A & M University; Ji-Cheng Zhao, The Ohio State University; Arthur Pelton, Ecole Polytechnique

Monday PM
October 9, 2017
Room: 413
Location: DLL Convention Center

Session Chairs: Greta Lindwall, National Institute of Standards and Technology; Nagraj Kulkarni, Knoxville TN

2:00 PM
A Regular Solution Model for a Single-phase High Entropy and Enthalpy Alloy: Shuanglin Chen1; J. Morral2; 1CompuTherm, LLC; 2Ohio State University
2:20 PM
Thermodynamic Database for the Co-Al-W-Ni-Ti-Ta-Cr-based Superalloys: Peisheng Wang1; Wei Xiong2; Ursula Kattner3; Carelyn Campbell4; Eric Lass4; Greg Olson4; 1Northwestern University and NIST; 2University of Pittsburgh; 3National Institute of Standards and Technology; 4Northwestern University

3:00 PM
Effect of Convection on Phase Selection and Interface Stability in Directional Solidification of Peritectic Alloys: Peiman Shahbeigi Roadposhti1; Ryan Dibiase1; Harold Brody3; 1University of Connecticut

3:20 PM
CALPHAD Assessment of the Carbon-Hafnium-Zirconium System: Theresa Davey3; Thomas Mellon4; Suzana Fries1; Michael Finnis1; 1Imperial College London

3:40 PM
Re-assessment of the ZrO2-Y2O3 (YSZ) System Thermodynamic Database: Mohammad AsadiKhiyavi1; Ya Zhong1; 1Florida International University

4:00 PM
Thermodynamics and Kinetics Studies of the Zr-O System from First-principles Calculations: Brian Puchala1; Min-Hua Chen2; Anton Van der Ven3; 1University of Michigan, Ann Arbor; 2University of California, Santa Barbara

Rare Earth Metals, Compounds, and Alloys: Synthesis, Processing, Emerging Applications, Recent Advances, Future Challenges – Emerging/Novel REM/REE Applications II
Program Organizers: Yellapu Murty, MC Technologies LLC; Eric Klier, U.S.Amy Research Laboratory; Jack Lifton, Jack Lifton LLC

Monday PM Room: 325
Location: DLL Convention Center

Session Chair: Eric Klier, Army Research Laboratories

2:00 PM Invited
Microwave Joining Process of an AluminoSilicate Ceramic Material for Radioactive Waste Containers: Greg Kalfayan1; Dominique Geocurio2; Sébastien Saunier3; Christophe Menunier2; Nathalie Texier-Mandoki1; 1CNRS UMR 5307 Laboratoire Georges Friedel and Andra; 2CNRS UMR 5307 Laboratoire Georges Friedel; 3Andra

2:20 PM Invited
Microwave-augmented Crystallization and Decrystallization in Ceramic Processing – A Phenomenology-Based Commentary: Boon Wong1

3:00 PM Invited
Effect of Density and Crystallization on the Hardness of Spark Plasma Sintered Fe – based Bulk Amorphous Alloy: Tanagi Paul1; Sandip Harimkar2; 1Oklahoma State University; 2Rutgers University

3:20 PM Invited
Understanding the Mechanism of Flash Sintering with In Situ EDXRD Experiments: Shikhar Jha3; Harry Charalambous1; Thomas Tsakalakos1; 1Alfred University

3:40 PM Invited
Understanding the Mechanism of Flash Sintering with In Situ EDXRD Experiments: Dibiase1; Harold Brody1; 1University of Connecticut

4:00 PM Invited
Microwave Technology for Commercial Scale Processing of Ceramic Materials: Prasad Apte1; 1Harper International

Program Organizers: Morsi Mahmoud, King Fahd University of Petroleum and Minerals (KFUPM) & City for Scientific Research and Technological Applications (SRTA City); Dinesh Agrawal, Pennsylvania State University; Guide Link, Karlsruhe Institute of Technology; Motoyasu Sato, Chubu University; Rishi Raj, University of Colorado at Boulder

Monday PM Room: 318
Location: DLL Convention Center

Session Chairs: Daudi Waryoba, Penn State University; Noboru Yoshikawa, Tohoku University

2:00 PM Invited
Ultrafast Laser Processing of Ceramics and Glasses: S. Sandaram1; 1Alfred University

2:20 PM Invited
Monika Willert-Porada Memorial Lecture: Microwave Processing from Fundamentals to Application: Thorsten Gerdes1; 1University of Bayreuth

2:40 PM Invited
Characterization and Modeling of Epoxy Resin Reaction Kinetics by Use of In-situ Dielectric Measurements: Dhidik Prastiyanto1; Guido Link2; John Jelonnek2; Manfred Thumm2; 1State University of Semarang; 2Karlsruhe Institute of Technology

2:00 PM Keynote
Partial Substitution of Scandium with Rare-Earth Elements in Dilute Al-Sc-RE Alloys with Nanometric, Coherent Tri aluminate Precipitates: David Dunand1; David Seidman1; 1Northwestern University

3:00 PM Invited
The Aging Response of a Sc-free Al0.045Er0.08Hf0.08Zr (at.%) Alloy: Richard Michl3; David Dunand1; David Seidman1; 1Northwestern University

3:10 PM Invited
Supply Chain Requirements for New Ocean Resource: John Halkyard1; Nhon Vo2; Troy Tack3; Jack Lifton4; 1Ocean Minerals, LLC; 2NanoAL, LLC; 3Tactical Alloys; 4Technology Metals Research, LLC

3:40 PM Invited
An Aluminum Alloy Containing Rare Earth Elements for Elevated Temperature Applications: Gregory Hildeman1; 1Performance Power Materials,Inc.

4:10 PM Invited
Replacing Scandium by Heavy Rare-earth Metals in High-performance Aluminum Alloys: Nhon Vo1; Davaadorj Bayansan1; David Dunand3; David Seidman1; 1NanoAl LLC; 2Northwestern University
New Aluminum Alloys Based on Common Rare Earth Additives: David Weiss; Orlando Rios; ‘Eck Industries, Inc.; ‘Oak Ridge National Laboratory

Responsive Functional Nanomaterials – Session II
Program Organizers: Ziqi Sun, Queensland University of Technology; Jiahua Zhu, The University of Akron; Wenxian Li, Shanghai University; Dawei Wang, University of New South Wales; Wenping Sun, University of Wollongong; Liangzhi Kou, Queensland University of Technology; Wenzhuo Wu, Purdue University

Monday PM Room: 320 Location: DLL Convention Center
Session Chairs: Liangzhi Kou, Queensland University of Technology; Ji Liang, Institute for Superconducting & Electronic Materials

2:00 PM Invited
Domain Walls and Phase Boundaries - New Nanoscale Functional Elements in Complex Oxides: Jan Seidel1; ‘UNSW Sydney

2:20 PM Invited
Physical Stimuli-dependent Response in Oxide-based Nanoscale Electronic Memories: Taimur Ahmed1; Sumeet Walia1; Madhu Bhaskaran1; Sharath Sriram1; ‘RMIT University

2:40 PM Invited
Transparent Stretchable Oxide Electronics: Philipp Gutruf1; Sharath Sriram1; Madhu Bhaskaran1; ‘RMIT University

3:00 PM Invited
Paving Thermal Highway with Self-organized Nanocrystals in Transparent Polymer Composites: Liwen Mu1; Tao Ji1; Nitin Mehra1; Jiahua Zhu1; ‘The University of Akron

3:20 PM Invited
Strain-effected Ultrafast Spin Dynamics on Endohedral Fullerenes: Chun Li1; Jing Liu1; Rui Huang1; ‘Northwestern Polytechnical University

3:40 PM Invited
Room Temperature Ferromagnetism of Fe and Ni co-doped ZnO Diluted Magnetic Semiconductor Prepared under High Magnetic Field: Ying Li1; Muhammad Tariq1; Wenxian Li1; Zhongrui Yu1; Yemin Hu1; Mingyuan Zhu1; Hongming Jin1; Kang Deng1; ‘Shanghai University

4:00 PM Invited
Crystal Facet Engineering Modification of the Nanomagnetism of Transition Metal Oxides: Wenxian Li1; Ziqi Sun1; Ying Li1; Yemin Hu1; ‘Shanghai University; ‘Queensland University of Technology

4:20 PM Invited
How to Publish Articles Rapidly in Journal of Materials Science & Technology?: Dong Luo1; ‘Institute of Metal Research, CAS
Surface Protection for Enhanced Materials Performance: Science, Technology, and Application – Oxidation and Corrosion
Program Organizers: Kang Lee, NASA Glenn Research Center; Yutaka Kagawa, University of Tokyo; Dongming Zhu, NASA Glenn Research Center; Rodney Trice, Purdue University; Daniel Mumm, University of California, Irvine; Mitch Dorfman, Oerlikon Metco (US); Christian Moreau, Concordia University; Emmanuel Boakye, UES Inc.

Monday PM Room: 333
October 9, 2017 Location: DLL Convention Center

Session Chairs: Dongming Zhu, NASA Glenn Research Center; Rodney Trice, Purdue University

2:00 PM Invited
Residual Stresses in a NiCrY Coating on a Powder Metal Disk Superalloy: Tim Gabb1; Rick Rogers1; James Nesbitt1; Robert Miller1; Susan Draper1; Jack Telesman1; 1NASA Glenn Research Center

2:40 PM
Growth of Al2O3 Scales on Hf, Y, and Si-modified Ni-20Al-5Cr Bond Coat Alloys: Wei-Ting Chen1; Brian Gleeson2; Arthur Heuer1; 1Case Western Reserve University; 2University of Pittsburgh

3:00 PM
Hot Corrosion and Oxidation Behavior of Optimized NiCoCrAl-based Coatings Deposited via Directed Vapor Deposition: Patrick Brennan1; Brian Gleeson1; 1University of Pittsburgh

3:20 PM
Burner Rig Studies of Type II Hot Corrosion of Superalloys for Shipboard Turbine Applications: Kevin Meisner1; Valentina Angelici Avincola1; Elizabeth Oplta1; 1University of Virginia

3:40 PM
Observation of Al2O3 Microstructure Changes during Isothermal Thermogravimetric Oxidation of Grain Refined NiAl: Rachel White1; Mark Weaver1; 1University of Alabama

4:00 PM
The Effect of Oxygen Partial Pressure on Grain Boundary Transport Kinetics in Alumina: Yan Wang1; Helen Chan1; Jeffrey Rickman1; Martin Harmer1; 1Lehigh University

4:20 PM
Evaluation of Protective Coatings for High-temperature Steam Oxidation in Coal-fired Power Plants: Eugene Medvedovski1; Tomasz Dudziak1; Konrad Jura1; 1Endurance Technologies Inc.; 2Foundry Research Institute; 3EDF Poland

The 9th International Symposium on Green and Sustainable Technologies for Materials Manufacturing and Processing – Novel Green Design of Ceramics II
Program Organizers: Surojit Gupta, University of North Dakota; Jun-ichi Tatami, Yokohama National University; Tatsuki Ohji, National Institute of Advanced Industrial Science and Technology (AIST); Mritunjay Singh, Ohio Aerospace Institute, NASA Glenn Research Center; Marsha Bischof, Armstrong World Industries, Inc., PA; Makio Naito, Osaka University, Japan; Hisayuki Suematsu, Nagaoka University of Technology, Japan; Yiquan Wu, Alfred University, NY

Monday PM Room: 317
October 9, 2017 Location: DLL Convention Center

Session Chairs: Yiquan Wu, Alfred University; Amit Pandey, LG Fuel Cell Systems Inc.

2:00 PM Invited
Flash Sintering of Multiphase Ceramics: Martha Mecartney1; 1University of California, Irvine

2:40 PM
Corrosion and Mechanical Properties of Y2SiO5 Environmental Barrier Coatings: Byung-Koog Jang1; Nobuo Nagashima1; Shunkichi Ueno2; Hyung-Tae Kim3; 1National Institute for Materials Science; 2Nihon University; 3Korea Institute of Ceramic Engineering and Technology

3:00 PM
Optimization of the Test Condition for 3-pt and 4-pt Flexural Tests Using Thin Ceramic Plate: Hiroyuki Miyazaki1; Hideki Hyuga1; Kiyoshi Hirao1; Tatsuki Ohji1; 1National Institute of Advanced Industrial Science and Technology

3:20 PM
Syntheses of Calcium Lanthanum Sulfide with and without a Sulfurization Process: Yiyu Li1; Yiquan Wu1; 1Alfred University

Theory, Manufacturing and Applications of Ceramic/Metal (CerMet) Nano-laminates – Ceramic/Metal (CerMet) Nano-laminates II
Program Organizers: Iman Salehnia, Northern Illinois University; Jian Wang, University of Nebraska-Lincoln; Ioannis Mastorakos, Clarkson University; Siddhartha Pathak, University of Nevada, Reno; Bilal Mansoor, Texas A&M University at Qatar; Georges Ayoub, American University of Beirut; Shuai Shao, Louisiana State University

Monday PM Room: 319
October 9, 2017 Location: DLL Convention Center

Session Chairs: Iman Salehnia, Northern Illinois University; Georges Ayoub, University of Michigan Dearborn; Bilal Mansoor, Texas A&M University at Qatar

2:00 PM Invited
Insights from Variable Temperature and Ultra-High Strain Rate Testing of Model Nanolaminate and Nanocomposite Films Realized by Alternating Atomic Layer Deposition, Sputtering and Inert Gas Condensation of Nanoparticles: Johann Michler1; 1EMPA—Swiss Federal Laboratories for Materials Science and Technology
2:30 PM Invited
Understanding Mechanical Integrity of Metal/Ceramic Interfaces through In-situ Microscale Mechanical Testing and Multiscale Modeling and Simulations: Shuai Shao1; Xiaoma Zhang2; Bin Zhang2; Yang Mu3; Collin Wick2; Ramu Ramachandran2; Wenjin Meng2; 1Louisiana State University; 2Louisiana Tech University

2:50 PM Invited
Mechanical and Physical Characterization of Ti/TiN Nano-laminate Structures: David Field1; Tarang Munigole1; 1Washington State University

3:20 PM Invited
Two Approaches for Novel Nuclear Reactor Fuel Cladding with Silicon Nitride and Nanoporous Tungsten Layers on Zircaloy-4: Mechanical Properties and Corrosion Resistance: Ryan Gautier1; Thuong Bui1; Kevin Addamo2; Kristian Hernandez2; Erika Coker1; Tanih Okan1; Bilal Mansoor2; 1Texas A&M University; 2Texas A&M University at Qatar

3:40 PM Invited
Synthesis and Characterization of Metallic Nanoparticles in a Ceramic Matrix: Weilin Jiang1; Michele Conroy1; Ram Devanathan1; 1Pacific Northwest National Laboratory

4:10 PM Invited
Multiaxial Tension/Compression Asymmetry of Ti/TiN Nano Laminates: MD Investigation: Wei Yang1; Georges Ayoub2; Iman Salehinia2; Bilal Mansoor2; Hussein Zbib2; 1Texas A&M University in Qatar; 2University of Michigan Dearborn; 3Northern Illinois University; 4Washington State University

4:30 PM Invited
Geometric Relation of Equilibrium Phase in Multi-Component System Phase Diagram: Chengjun Liu1; Jiyu Qiu1; Lifeng Sun1; Maofa Jiang1; Qing Zhao1; 1Northeastern University China

Ultra High Performance Metals, Metal Alloys, Intermetallics, and Metal Matrix Composites for Aerospace, Defense, and Automotive Applications – Bulk Metallic Glass / High Entropy Alloys
Program Organizers: Ali Yousefian, Boeing Research and Technology; Troy Topping, California State University, Sacramento; Robert Dillon, Jet Propulsion Laboratory

Monday PM
Room: 307
Location: DLL Convention Center

Session Chair: Robert Dillon, NASA Jet Propulsion Laboratory

2:00 PM Invited
Developments in Ultra-low Temperature Mechanisms Enabled by Bulk Metallic Glass Alloys: Robert Dillon1; John Paul Borgonia1; Scott Roberts1; Douglas Hofmann1; Andrew Kennett1; Stephen Hales1; J. Smith1; Jason Schuler1; Bryan McEnerney1; Andrew Shapiro1; 1Jet Propulsion Laboratory; 2NASA Langley Research Center; 3NASA Kennedy Space Center

2:40 PM Invited
Thermal Cycling of Bulk Metallic Glass Gears for Enhanced Performance: Scott Roberts1; Douglas Hofmann1; Peter Dillon1; 1JPL/NASA

3:20 PM Invited
Effect of Interstitial Atoms on the Magnetic and Mechanical Properties of Equiatomic FeCoNiCrMn High-entropy Alloys: Suok-Min Na1; Alison Flatau1; Nicholas Jones2; 1University of Maryland; 2Naval Surface Warfare Center

3:40 PM
Microstructure, Phase Equilibria and Properties of Chromium Containing Refractory-based Concentrated Complex Alloys: Francisco Cuay1; Kevin Chaput2; Todd Butler2; Christopher Woodward2; Paul Mason2; John Foltz2; Elyorjon Jumaev2; Amy Clarke2; Michael Kaufman2; Colorado School of Mines; 1Air Force Research Laboratory; 2Thermo-Calc Software Inc; 3ATI Metals

4:00 PM Invited
Effects of Elemental Interaction on Microstructure and Mechanical Property of Multicomponent TiZrHfNiCuM (M=Co, Fe) High Entropy Alloy System: Hae Jin Park1; Young Seok Kim1; Ki Buem Kim1; 1Sejong University

4:20 PM Invited
Microstructure and Mechanical Properties of AlCoCrNi High Entropy Alloy: Elyorjon Jumaev1; Ki Buem Kim1; 1Sejong University

TMS/ASM Joint Distinguished Lectureship in Materials and Society Award: What Do We Need and How Will We Get It?: Alexander King1; 1U.S. Department of Energy (DOE) Energy Innovation Hub at Ames Laboratory

9:40 AM Invited
ACerS Edward Orton Jr. Memorial Lecture: What’s New in Nuclear Reactors?: Steven Zinkle1; 1UTK/ORNL Governor’s Chair, Department of Nuclear Engineering and Department of Materials Science and Engineering; University of Tennessee, Knoxville

10:30 AM Invited
ACerS Frontiers of Science and Society - Rustum Roy Lecture

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Additive Manufacturing of Composites and Complex Materials II – Metals and Metallic Composites
Program Organizers: Dirk Lehnhus, ISIS Sensorial Materials Scientific Centre; Jonathan Spowart, Air Force Research Laboratory; Nikhil Gupta, New York University

Tuesday PM Room: 304
October 10, 2017 Location: DLL Convention Center

Session Chairs: Adam Hehr, Fabrisonic LLC; Florian Hengsbach, Paderborn University

2:00 PM Development of High-performance 316L Stainless Steel Nanocomposites by Selective Laser Melting: Processing-microstructure-property Relation: Bandar AlMangour1; Dariusz Grzesiak2; Jenn-Ming Yang1; 1Harvard University; 2West Pomeranian University of Technology; 1University of California, Los Angeles

2:20 PM Functionally Grading Aluminum Alloy to Titanium Aluminide (TiAl) by Laser Based Directed Energy Deposition: Bandar AlMangour1; Jessica Pehr1; Abdalla Nassar1; Wesley Mitchell1; Todd Palmer1; Ted Reutzel1; 1Applied Research Laboratory at Penn State; 2Sandia National Laboratories

2:40 PM Invited
Laser Additive Manufacturing of In Situ Metal Matrix Composites: Tushar Borkar1; Rajarshi Banerjee2; 1Cleveland State University; 2University of North Texas

3:00 PM Microstructural Origins of Spatially Tailored Functional Response in NiTi SMAs: Ji Ma1; Brian Franco1; Kubra Karayagiz1; Luke Johnson1; Jun Liu1; Gustavo Tapia1; Alaa Elwany3; Raymundo Arroyave1; Ibrahim Karaman1; 1Texas A&M University

3:20 PM Phase Field Simulation of Dendritic Solidification during Additive Manufacturing: Linnin Wu1; Yi Zhang2; Jing Zhang3; 1Indiana University - Purdue University Indianapolis

3:40 PM Invited
Selective Laser Melting of Tungsten Heavy Alloys: Aljaz Ivekovic1; Kim Vanmeensel2; Jef Vleugels2; Jean-Pierre Kruth1; 1KU Leuven

Additive Manufacturing of Metals: Microstructure and Material Properties – Porosity and Microstructural Effects
Program Organizers: Andrzej Wojcieszynski, ATI Powder Metals; Ulf Ackelid, Freemelt AB; Ola Harrysson, North Carolina State University; Sudarsanam Babu, The University of Tennessee, Knoxville

Tuesday PM Room: 302
October 10, 2017 Location: DLL Convention Center

Session Chair: Tim Horn, North Carolina State University

2:00 PM Origins of Anisotropic Mechanical Behavior in Additively Manufactured Ti-6Al-4V by Directed Energy Deposition: Jay Keist1; Daudi Waryoba2; Todd Palmer1; 1Applied Research Laboratory at Penn State; 2Penn State DuBois

2:20 PM Mechanical and Corrosion Properties of CoCrFeNiTi-based High-entropy Alloy Additive Manufactured Using Selective Laser Beam Melting: Tadashi Fujieda1; Hiroshi Shiratori2; Kosuke Kuwabara1; Kenta Yamanaka2; Yuichiro Koizumi1; Akihiko Chiba1; Seiichi Watanabe1; 1Hitachi, Ltd.; 2Tohoku University; 3Hokkaido University

2:40 PM Thermal Ratcheting and Its Effects on Microstructure and Anisotropic Material Properties in Metal Melting Laser Powder Bed Fusion Based Additive Manufacturing: Deepankar Pal1; Javed Akram1; Pradeep Chalavadi1; Abdul Khan1; Brent Stucker1; 13DSIM

3:00 PM Porosity Analysis via 3D Serial Sectioning for Additively Manufactured Alloy Samples: Veeraragavan Sundar2; Satya Ganti1; Bryan Turner1; 1UES Inc.

3:20 PM Characterization of 316L Lattice Structures Fabricated via Electron Beam Melting: Stefan Roos1; Lars-Erik Rännar2; Andrey Koptyug1; Jonas Danvind1; 1Mid Sweden University

3:40 PM Microstructure Gradient Development in A356 AM Parts: Melissa Trask1; Shih Chou1; Mathieu Brochu1; 1McGill University

4:00 PM Invited
Additive Manufacturing of 316L Stainless Steel Using Electron Beam Melting Technology: Runju Samant1; 1EWI

4:20 PM The Influence of Post-build Microstructure on the Corrosion of Additively-manufactured 17-4 Stainless Steel: Mark Stout1; Eric Lass1; Maureen Williams1; Richard Ricker1; Carolyn Campbell1; Lyle Levine1; 1National Institute of Standards and Technology

Additive Manufacturing of Metals: Microstructure and Material Properties – Properties of AM Manufactured Alloys
Program Organizers: Andrzej Wojcieszynski, ATI Powder Metals; Ulf Ackelid, Freemelt AB; Ola Harrysson, North Carolina State University; Sudarsanam Babu, The University of Tennessee, Knoxville

Tuesday PM Room: 302
October 10, 2017 Location: DLL Convention Center

Session Chair: Tim Horn, North Carolina State University

2:00 PM Porosity Analysis via 3D Serial Sectioning for Additively Manufactured Alloy Samples: Veeraragavan Sundar2; Satya Ganti1; Bryan Turner1; 1UES Inc.

3:00 PM Porosity Analysis of AM Powder Based on Machine Learning Approach and In-situ Annealing Technique for Observation of Property Evolution of AM Material: He Liu1; Rachel Lim1; Christopher Kantzos Kantzos1; A. D. Rollett1; R. M. Suter1; 1Carnegie Mellon University

3:20 PM Characterization of 316L Lattice Structures Fabricated via Electron Beam Melting: Stefan Roos1; Lars-Erik Rännar2; Andrey Koptyug1; Jonas Danvind1; 1Mid Sweden University

3:40 PM Microstructure Gradient Development in A356 AM Parts: Melissa Trask1; Shih Chou1; Mathieu Brochu1; 1McGill University

4:00 PM Additive Manufacturing of 316L Stainless Steel Using Electron Beam Melting Technology: Runju Samant1; 1EWI

4:20 PM The Influence of Post-build Microstructure on the Corrosion of Additively-manufactured 17-4 Stainless Steel: Mark Stout1; Eric Lass1; Maureen Williams1; Richard Ricker1; Carolyn Campbell1; Lyle Levine1; 1National Institute of Standards and Technology
3:20 PM
Characterization of Deformation-induced Phase Transformation and Mechanical Properties of Additively Manufactured Stainless Steel: Zhuqing Wang2; Allison Beese1; 1Pennsylvania State University

3:40 PM
Microstructures of Low-C and Medium-C Steel Hybrid Layers Additively Deposited on Cast Iron Using Directed Energy Deposition (DED) Technique: Seul Bi Lee1; Yoon Suk Choi2; Jae Hyun Yu1; Sang-Hu Park1; Do-Sik Shim2; Dae-Geun Nam3; 1Pusan National University; 2Korea Maritime and Ocean University; 3Korea Institute of Industrial Technology

4:00 PM
Additive Manufacturing of CoFe-based Magnetostrictive Materials Using the LENS System: Nicholas Jones1; Jin-Hyeong Yoo1; Tomoko Sano2; Ryan Ott3; 1Naval Surface Warfare Center, Carderock Division; 2Army Research Laboratory; 3Ames Laboratory

4:20 PM
Fabrication of Fe-based Bulk Metallic Glass via Direct Metal Laser Sintering: Zaynah Mahbooba1; Lena Thorsson2; Mattias Unosson2; Timothy Horn1; Ola Harrysson1; 1North Carolina State University; 2Sindre Metals

4:40 PM
Effect of Post-built Heat Treatment on Microstructure-creep Relationship of Nickel Base Superalloy Fabricated by Powder Bed Additive Manufacturing: Hyeun Song1; Wei Zhang1; Tom McLaughy2; Alber Sadeck2; 1The Ohio State University; 2EWI

4:40 PM
High Temperature Deformation and Oxidation Behavior of Inconel 718 Alloy Manufactured with Selective Laser Melting: Yeon-ji Kang1; Yong-jin Kim2; Ji-hun Yu2; Kee-Ahn Lee3; 1Inha University; 2Korea Institute of Materials Science

Additive Manufacturing of Metals: Post Processing – Thermal Processes II
Program Organizers: Ola Harrysson, North Carolina State University; Andrzej Wojcieszynski, ATI Powder Metals; Ulf Ackelid, Freemelt AB; Sudarsanam Babu, The University of Tennessee, Knoxville

Tuesday PM  Room: 303  Location: DLL Convention Center

Session Chair: Anthony Rollett, Carnegie Mellon University

2:00 PM
Reducing the Uncertainty in Mechanical Properties of Electron Beam Melted Ti-6Al-4V via Hot Isostatic Pressing: Peeyush Nandwana1; Sean Yoder3; Ryan Dehoff1; 1Oak Ridge National Laboratory

2:20 PM
Effect of Heat Treatment on Type 316L SS Microstructure and Tensile Properties: Paul Korinko1; Ken Imrich1; Dean Thompson2; Alexander Hollingshead3; Timothy Krents1; Dale Hitchcock1; 1Savannah River National Laboratory

2:40 PM
Effect of Hot Isostatic Pressing on Hastelloy X Produced by Selective Laser Melting: Maria Montero-Sistiaga1; Kopila Gurung1; Miguel Godino-Martinez1; Steve Nardone1; Sai Krishna Enbothula1; Shadi Darvish3; 1Oak Ridge National Laboratory; 2Quintus Technologies AB

3:00 PM
Effect of Tetraethoxysilane(TEOS) Oligomer on the Cathodic Disbondment of Epoxy-polyamine Coating: Haoran Wang1; Qixin Zhou1; 1The University of Akron

3:20 PM
Electroplating of Aluminum from Aqueous Solutions: John Watkins1; Xu Zhou1; Dave Luebke1; Hunaid Nulwala1; 1LumiShield Technologies

3:40 PM
Electrodeposited Ni-W and Ni-P Coatings with and without TiO2 Nanoparticles: Devesh Duddhich Shreeram1; Sai Krishna Enbothula1; Shengxi Li1; Hongbo Cong1; Gary Doll1; 1University of Akron

4:00 PM
Evaluation of the Effect of Electroless Ni-P Coating Thickness on the Corrosion Resistance of Ck45 Steel Substrate: Amin Babii Baboukani1; Ahmad Saatchi2; Shadi Darvish1; Mohammad Assadiyoun3; 1Department of Mechanical and Materials Engineering, Florida International University; 2Materials Science & Engineering, University of Wisconsin Madison; 3Florida International University

Advanced Coatings for Wear and Corrosion Protection – Advanced Coatings for Wear and Corrosion Protection I
Program Organizers: Evelina Vogli, LiquidMetal Group Holdings, Inc.; Fei Tang, DNV GL; Emad Omrani, University of Wisconsin - Milwaukee; Afsaneh Dorri Moghadam, University of Wisconsin-Milwaukee; Pradeep Menezes, University of Nevada Reno; Pradeep Rohatgi, University of Wisconsin-Milwaukee

Tuesday PM  Room: 338  Location: DLL Convention Center

Session Chairs: Emad Omrani, University of Wisconsin - Milwaukee; Afsaneh Moghadam, University of Wisconsin-Milwaukee

2:00 PM
Linear, Hydrophobic, Antioxidant Copolymers for Enhanced Performance of Anticorrosion Coatings: Hanna Hlushko1; Yenny Cubides1; Raman Hlushko1; Homero Castaneda-Lopez2; Svetlana Sukhishvili3; 1Texas A&M University

2:20 PM
Environmentally Friendly Corrosion Inhibiting Primers to Resist Cosmetic Corrosion: Arif Mubarok1; Beth Furar1; Ryan Mayo3; 1PPG Industries

2:40 PM
Effect of Tetraethoxysilane(TEOS) Oligomer on the Cathodic Disbondment of Epoxy-polyamine Coating: Haoran Wang1; Qixin Zhou1; 1The University of Akron

3:00 PM
Electroplating of Aluminum from Aqueous Solutions: John Watkins1; Xu Zhou1; Dave Luebke1; Hunaid Nulwala1; 1LumiShield Technologies

3:20 PM
Electrodeposited Ni-W and Ni-P Coatings with and without TiO2 Nanoparticles: Devesh Duddhich Shreeram1; Sai Krishna Enbothula1; Shengxi Li1; Hongbo Cong1; Gary Doll1; 1University of Akron

3:40 PM
Influence of W Content on the Mechanical Wear and Corrosion Behaviour of Ped Ni-W Alloy Coatings: Sundararajan Govindan1; Mvn Vamsi2; Nitin Wasekar3; 1Indian Institute of Technology Madras; 2McGill University; 3ARCI

4:00 PM
Effect of Hot Isostatic Pressing for Effective Pore Closure: Shuai Shao1; Scott Thompson2; Nima Shamsaei2; 1Louisiana State University; 2Auburn University

4:20 PM
Effect of Electroless Ni-P Coating Thickness on the Corrosion Resistance of Ck45 Steel Substrate: Amin Babii Baboukani1; Ahmad Saatchi2; Shadi Darvish1; Mohammad Assadiyoun3; 1Department of Mechanical and Materials Engineering, Florida International University; 2Materials Science & Engineering, University of Wisconsin Madison; 3Florida International University
Advanced Steel Metallurgy: Products and Processing – Session III

Program Organizers: Emmanuel De Moor, Colorado School of Mines; Amar De, ArcelorMittal Global R&D; Kester Clarke, Colorado School of Mines; Alla Sergueeva, The NanoSteel Company; Charles Enloe, General Motors; Daniel Branagan, The NanoSteel Company; Matthew Kiser, Caterpillar Inc

Tuesday PM
October 10, 2017
Location: DLL Convention Center

Session Chairs: Amar De, ArcelorMittal Global R&D; Justin Raines, SSAB Americas

2:00 PM
A Medium-carbon, Bainitic, Air-hardening Steel for Heat Treat Reduction: Matthew Kiser1; Tianjun Liu 1; Mohammed Maniruzzaman 1; Robert Pickerill 1; 1Caterpillar Inc

2:20 PM
Alloy Design and Heat Treatment of High Strength Forged Steel for Large Crankshaft: Chul Bong Park 1; Hyunjoon Park 1; Jong-Hyun Hwang 1; YoungCheol Yoon 1; 1Hyundai Heavy Industry

2:40 PM
Effect of Intercritical Deformation on Final Microstructure in Low Carbon Grades: Unai Mayo 1; Nerea Iasisti 1; Jose Rodriguez-Ibabé 1; Pello Uranga 1; 1CEIT and Tecnun (University of Navarra)

3:00 PM
New Generation Structural Steel Metallurgy: Steven Jansto 1; 1CBMM-North America, Inc.

3:20 PM
Nucleation of Graphite Particles Formed in Medium Carbon Steel after Graphitising Anneal: Aqil Inam 1; David Edmonds 2; Rik Brydson 2; 1University of the Punjab; 2University of Leeds

3:40 PM
The Effect of Vanadium and Other Microalloying Elements on the Microstructure of Bainitic HSLA Steels: Julian Benz 1; Steven Thompson 1; 1Colorado School of Mines

4:00 PM
The Effects of Ausaging Heat Treatment on Mechanical Properties of a Medium Carbon Secondary Hardening Steel: Ziheng Wu 1; Yu Lin 1; Justin Kim 1; Warren Garrison 1; 1Carnegie Mellon University

Advancements in In-situ Electron Microscopy Characterization II – Novel Instrumental Designs

Program Organizers: Yue Liu, Shanghai Jiao Tong University; Nan Li, Los Alamos National Laboratory; Khalid Hattar, Sandia National Laboratories; T. John Balk, University of Kentucky; Josh Kacher, Georgia Tech

Tuesday PM
Room: 411
October 10, 2017
Location: DLL Convention Center

Session Chairs: John Balk, University of Kentucky; Josh Kacher, Georgia Tech

2:00 PM Invited
Insights into Strain-induced Local Chemical Ordering and Structural Polarization from Scanning Electron Nanodiffraction: Jim Ciston 1; Rachel Traylor 1; Thomas Pekin 2; Yifei Meng 1; Roberto dos Reis 1; Colin Oplus 1; Andrew Minor 1; 1Lawrence Berkeley National Laboratory; 2University of California, Berkeley

2:30 PM Invited
Investigating Local Corrosion Processes in Real and Diffraction Space by In Situ TEM Liquid Cell Experiments: Jordan Key 1; Shixian Zhu 1; Christopher Rouleau 1; Raymond Unocie 1; Yao Xie 1; Josh Kacher 1; 1Georgia Tech; 2Oak Ridge National Laboratory

3:00 PM
Scale Effects Examined by In Situ Tribology: Douglas Stauffer 1; Eric Hintsala 1; SA Syed Asif 1; 1Bruker Nano Surfaces

3:20 PM
Defect Image Simulations: Progress towards Incorporating Atomistics and Dislocation Dynamics for SEM and TEM: Marc De Graef 1; 1Carnegie Mellon University

3:40 PM
The Nanolab: Current and Emerging Techniques for Advanced Analytical Microscopy in Modern Materials Science: Andrew Holwell 1; 1Carl Zeiss Microscopy

4:00 PM
In-situ Meso-scale Mechanical Testing in the SEM: Charles Spellman 1; Alex Arzoumanidis 1; 1Psylotech

4:20 PM
A New Structure Optimizer Using Genetic Algorithms for a Wide Range of Material Types: Jason Maldonis 1; Zhongnan Xu 1; Zhewen Song 1; Dane Morgan 1; Paul Voyles 1; 1University of Madison, Wisconsin
Alumina at the Forefront of Technology II – Sapphire, Nano and High Purity Alumina

Program Organizers: William Walker, Federal-Mogul Corporation; Marina Pascucci, CeraNova Corporation; Charles Compson, Almatis; William Carty, Alfred University

Tuesday PM  
October 10, 2017  
Room: 316  
Location: DLL Convention Center

Session Chair: Marina Pascucci, CeraNova Corporation

2:00 PM
High Purity Alumina for Hierarchical Porous Ceramics: Justin Otto1; Lionel Bonneau1; Philippe Auroy1; 1Baikowski International

2:20 PM
Modified Hydrothermal Synthesis of α-Alumina Nanoparticles below the Thermodynamic Size Limit: John Drazin1; James Wollnershauser2; Edward Gorzkowski1; 1ASEE Postdoc at US Naval Research Laboratory; 2NRL

2:40 PM
Reducing the Size of Alpha-alumina Nanocrystals below the Thermodynamic Size Limit and Related Sintering Phenomena: James Wollnershauser1; Boris Feigelson1; John Drazin1; Dana Kazeroon1; Edward Gorzkowski1; 1Naval Research Laboratory; 2ASEE at U.S. Naval Research Laboratory; 3Virginia Polytechnic Institute and State University

3:00 PM
Synthesis of Continuous Zirconia Modified Alumina Fibers: Jingyu Li1; Tong Zhao1; Zihai Yang1; Yuanchao Li1; 1Tunable Materials

3:20 PM
CVD Alumina-based Nanocomposite Coatings: Zhenyu Liu1; Chen Chen1; Peter Leicht1; Rodrigo Cooper1; Dev Banerjee1; 1Kennametal Inc

ASM Edward DeMille Campbell Memorial Lecture

Tuesday PM  
October 10, 2017  
Room: 407  
Location: DLL Convention Center

12:45 PM Invited
Magnetic Transformations and Phase Diagrams: David LAughlin1; 1Carnegie Mellon University

Boron, Boron Coatings, Boron Compounds and Boron Nanomaterials: Structure, Properties, Processing, and Applications – Theory of Bulk Systems

Program Organizers: Jens Kunstmann, TU Dresden; Roumiana Petrova, New Jersey Institute of Tech; Scott Beckman, Washington State University

Tuesday PM  
October 10, 2017  
Room: 330  
Location: DLL Convention Center

Session Chair: Nevill Gonzalez Szwacki, University of Warsaw

2:00 PM Invited
Boron Carbide at High Temperature: Michael Widom1; 1Carnegie Mellon University

2:40 PM Invited
Using First-principles Calculations with Materials Informatics Methods to Understand the Structure Property Relationships in the XYB14 Crystal Family: Irmak Sargin1; Bo Xu1; Scott Beckman1; 1Washington State University

3:20 PM Question and Answer Period

Ceramic-based Optical Materials and Advanced Processing – Session I

Program Organizers: Yiquan Wu, Alfred University; Jas Sanghera, Naval Research Laboratory; Michael Squillante, RMD, Inc; Akio Ikesue, World-Lab. Co., Ltd

Tuesday PM  
October 10, 2017  
Room: 311  
Location: DLL Convention Center

Session Chair: Yiquan Wu, Alfred University

2:00 PM Invited

2:20 PM Invited
Effect of Minor Impurities on the Fabrication of Transparent Ceramics: Koji Morita1; Byung-Nam Kim1; Hidehiro Yoshida1; Keijiro Hiraga1; Yoshio Sakka1; 1National Institute for Materials Science

2:40 PM Invited
IR Optical Materials: Woohong (Rick) Kim1; Colin Baker1; Guillermo Villalobos1; Jesse Frantz1; Brandon Shaw1; Bryan Sadowski1; Shyam Bayya1; Jason Myers1; Darryl Boyd1; Lynda Busse1; Ishwar Aggarwal1; Jasbinder Sanghera1; Vihn Nguyen1; 1Naval Research Laboratory

3:00 PM Invited
Spark Plasma Sintering of Transparent YAG Ceramics: Takashi Goto1; Ying Li1; Hirokazu Katsui1; 1Tohoku University

3:20 PM
Observations in Fracture Toughness Testing of Glasses and Optical Ceramics: Jonathan Salem1; 1NASA
Correlation between Cr3+ Luminescence and Oxygen Vacancy Disorder in SrTiO3 under MeV Ion Irradiation: Miguel Crespillo Almenara; J. Graham; Fernando Aguilló-López; Yanwen Zhang; William Weber; 1The University of Tennessee; 2Missouri University of Science and Technology; 3Centro de Microanálisis de Materiales; 4Oak Ridge National Laboratory

Current Progress on Solid-state Single Crystal Growth in Sr5(PO4)3F: Yin Liu; Yiquan Wu; 1Alfred University

Effect of Dopants on the Microstructure Evolution and Sintering Kinetics of PMN-PT Ceramics: Xuan Chen; Shi Chen; Romain Gaume; 1University of Central Florida

Controlled Synthesis, Processing, and Applications of Structural and Functional Nanomaterials – Controlled Synthesis, Processing, and Applications of Structural and Functional Nanomaterials-I
Program Organizers: Gurpreet Singh, Kansas State University; Kathy Lu, Virginia Tech; Sanjay Mathur, University of Cologne; Edward Gorzkowski, Naval Research Laboratory; Haitao Zhang, UNC Charlotte; Kejie Zhao, Purdue University; Hidehiro Kamiya, Tokyo University of Agriculture and Technology

Funding support provided by: MilliporeSigma

Session Chairs: Gurpreet Singh, Kansas State University; Kathy Lu, Virginia Tech

2:00 PM Invited
Ultrathin Nanosheets of Functional Oxide Materials: Xudong Wang; 1University of Wisconsin - Madison
Data and Tools for Materials Discovery and Design – Uncertainty in Materials Design and Development
Program Organizers: Zi-Kui Liu, The Pennsylvania State University; David McDowell, Georgia Institute of Technology; Carenlyn Campbell, National Institute of Standards and Technology; Laura Bartolo, Northwestern University; Bryce Meredig, Citrine Informatics; Mark Tschopp, Army Research Laboratory; Dane Morgan, University of Wisconsin - Madison; Afina Lupulescu, ASM International

Tuesday PM  Room:  323
October 10, 2017  Location:  DLL Convention Center

Session Chairs: Marius Stan, ANL; Richard Otis, JPL

2:00 PM Keynote
Optimal Experimental Design Using Uncertainties: Turab Lookman1; 1Los Alamos National Laboratory

2:40 PM Invited
A Data-driven Stochastic Multiscale Analysis Framework for Design of Microstructural Material Systems: Wei Chen1; Ramin Bostanabad2; 1Northwestern University

3:00 PM Invited
Thermodynamic Modeling with Uncertainty Quantification and Its Implications for Additive Manufacturing: Richard Otis1; Zi-Kui Liu2; 1Jet Propulsion Laboratory; 2Pennsylvania State University

3:20 PM Invited
Design Optimization of Fractal Metamaterials with Distributed Gaussian Process: Anh Tran1; Yan Wang2; 1Georgia Institute of Technology

3:40 PM Invited
Quality of Material Property Models: Marius Stan1; 1Argonne National Laboratory

4:00 PM Invited
Microstructural Variability Constrained Uncertainty Propagation in the Hierarchical Multiscale Modeling of Cartridge Brass: Aaron Tallman1; Joseph Bishop2; Laura Swiler3; Yan Wang4; David McDowell5; 1Georgia Institute of Technology; 2Sandia National Laboratories

4:20 PM
Comparison of Single-sensor Differential Thermal Analysis (SSDTA) and Dilatometry in CCT Development in Grade 22 Steel: Jeffrey Stewart1; Boian Alexandrov2; 1The Ohio State University

Design, Processing, and Development of Structural Materials – Mesoscale Microstructure: Simulations and Experiments
Program Organizers: Tomoko Sano, U.S. Army Research Laboratory; Mitra Taheri, Drexel University

Tuesday PM  Room:  328
October 10, 2017  Location:  DLL Convention Center

Session Chairs: Jeffrey Lloyd, U.S. Army Research Laboratory; Jonathan Ligda, U.S. Army Research Laboratory

2:00 PM Invited
Using Mesoscale Simulation to Help Design and Interpret Experimental Investigations of Material Behavior: Michael Tonks1; Mitra Taheri2; Melissa Teague3; 1Pennsylvania State University; 2Drexel University; 3Sandia National Laboratory

2:40 PM
Two- and Three-dimensional Analysis of Pore Evolution Kinetics during Final Stage Sintering Using a Diffusion-controlled Monte Carlo Potts Model: Hyesoo Chung1; Gaeun Son1; Minji Kim1; Sukbin Lee1; 1Ulsan National Institute of Science and Technology

3:00 PM
In-situ SEM Serial Sectioning by Femtosecond Laser Machining: Jonathan Ligda1; Philip Goins1; Tomoko Sano1; Brian Schuster1; 1Army Research Laboratory

3:20 PM
Dislocation-based Model for Twin Propagation within and across Grain Boundaries: Jeffrey Lloyd1; 1US Army Research Laboratory

3:40 PM
The Micromechanical Response of the Two-phase System Using a Fast Fourier Transform Based Viscoplasticity: Youngkyun Son1; Sihwa Sung1; Myeongjin Lee1; Sukbin Lee1; 1Ulsan National Institute of Science and Technology (UNIST)

4:00 PM
Austenite Grain Coarsening Behavior in V-Ti Microalloyed Steels during Reheating Process: The Zhou1; Hatem Zurob2; Mike Fox1; 1Stelco Inc.; 2McMaster University; 3Gerdau Long Steel North America

4:20 PM
Dynamic Recrystallization Behavior of a 0.04 pct Nb-microalloyed Steel during Austenite Hot Compression: Mei Zhang1; 1Shanghai University
Diversity in STEM and Best Practices to Improve It
Program Organizers: Kinga Unocic, Oak Ridge National Laboratory; Megan Cordill, Erich Schmid Institute of Materials Science; Amy Clarke, Colorado School of Mines; Somayeh Pasebani, Oregon State University

Tuesday PM  Room:  403
October 10, 2017  Location:  DLL Convention Center

Session Chairs: Kinga Unocic, Oak Ridge National Laboratory; Amy Clarke, Colorado School of Mines; Megan Cordill, Erich Schmid Institute of Materials Science; Somayeh Pasebani, Oregon State University

2:00 PM Invited
Building Research Leaders: A Pathway to Equity: Mary Juhas1; Nicole Nieto1; 1The Ohio State University

2:20 PM Invited
Sustainability of Best Practices for STEM Education and Research: Viola Acoff1; 1The University of Alabama

2:40 PM Invited
Diversity and Mentoring in the Academy: Ernest Brothers1; 1University of Tennessee, Knoxville

3:00 PM Invited
Diversity and Inclusion: One Perspective from a National Laboratory: Ellen Cerreta1; 1Los Alamos National Laboratory

3:20 PM Invited
Diversity in STEM: Measures, Means and a Path Forward: Jonathan Madison1; 1Sandia National Laboratories

3:40 PM Invited
Leadership Training and Group Mentoring in the E-LEAD project at Alfred University: Doreen Edwards1; Emilie Carney2; Steven Tidrow2; 1Rochester Institute of Technology; 2Alfred University

4:00 PM Invited
To be Announced: Mitra Taheri1; 1Drexel University

Emerging Multifunctional Materials for Bio, EO, RF and Radiation Sensors – Emerging Multifunctional Materials for Bio, EO, RF and Radiation Sensors III
Program Organizers: Narsingh Singh, University of Maryland, Baltimore County; Dimitra Stratis-Cullum, Army Research Laboratory; Ravindra Nuggehalli, NJIT

Tuesday PM  Room:  331
October 10, 2017  Location:  DLL Convention Center

Session Chairs: Walter Duval, NASA Glenn Research Center; Kamdeo Mandal, IIT, Banaras Hindu University; Francesca Deganello, Consiglio Nazionale delle Ricerche(CNR)

2:00 PM Invited
Tungsten/Molybdenum Thin Films as Electrodes for High Temperature SAW Sensors: Gayatri Rane1; Wenjing Ren1; Marietta Seifert1; Siegfried Menzel1; Thomas Gemming2; 1Leibniz Institute for Solid State and Materials Research (IFW)

2:20 PM Invited
Solidification and Morphological Evolution of Al-Si Eutectics in Convecto-diffusive Conditions: Narsingh Singh1; Ching Hua Su1; Walter Duval1; Fow-Sen Choa1; Bradley Arnold1; Narayan Singh1; Kamdeo Mandal1; 1University of Maryland, Baltimore County

2:40 PM
Manipulation of the Electrical and Structural Transitions in the VOx Thin Films through Strain Engineering: Adele Moatti1; Jagdish Narayan1; John Prater1; Ritesh Sachan1; 1NCSU

3:00 PM
Morphological Breakdown in a Wide Bandgap Dielectric Material: Jayati Bhave1; Christopher Cooper1; Stacey Sova1; Bradley Arnold1; Fow-Sen Choa1; Narayan Singh1; Kamdeo Mandal1; Lisa Kelly1; Narsingh Singh1; 1University of Maryland, Baltimore County

3:20 PM
p-Si Based Microbolometer - Optical Properties: Asahel Banobre1; Sita Rajyalaxmi Marthi1; Nuggehalli Ravindra1; 1New Jersey Institute of Technology

3:40 PM Invited
Synthesis And Optical Studies on Binary Organic Materials of Citric Acid with o-phenylenediamine and 4-Methyl-o-phenylenediamine: Ramanand Rai1; 1Banaras Hindu University

4:00 PM Invited
Growth of Organic Crystals: Solidification Behavior of Anisotropic Dendritic Materials: Uma Rai1; Om Singh1; Kamdeo Mandal1; Narsingh Singh1; 1University of Maryland, Baltimore County

Failure Analysis and Prevention – Composites & Non-Metallics
Program Organizers: Andrew Havics, pH2, LLC; Pierre Dupont, Schaeffler Belgium Sprt/Bvba; Burak Akyuz, ATS, Inc.

Tuesday PM  Room:  407
October 10, 2017  Location:  DLL Convention Center

Session Chairs: Ronald Parrington, ESI; Tim Jur, Engineering Design & Testing Corporation; Thomas Kozina, NTN Bearing Co.; Dennis McGarry, SEA Limited

2:00 PM
Nylon Distributor Gear Failures in Two Magnetos from the Same Engine: Matthew Fox1; 1National Transportation Safety Board

2:20 PM
Examination of a Helicopter Tail Rotor Blade with a Translaminar Crack in the Composite Skin: Aaron Slager1; 1Bell Helicopter

2:40 PM
Fractography of HDPE Fusion Joints with Incomplete Fusion in Natural Gas Distribution Pipe: Michael Budinski1; Frank Zakar1; 1National Transportation Safety Board

3:00 PM
ESC Failure of Amorphous Polymer Materials: Chris Lyons1; Fazzana Ansari1; Suresh Donthu1; Steven MacLean1; 1Exponent
3:20 PM
Investigative Failure Analysis of Rope: Tanzim Nasir1; Erhan Ulvan1; 1Acuren Group Inc.

3:40 PM
Tire Analysis Tools and Techniques: William Carden1; Amy Meyers-Wells1; 1McSwain Engineering, Inc.

4:00 PM
A Case of Waterproofing Failure: Andrew Havics1; ‘pH2, LLC

4:20 PM
Failure Analysis of Sapphire Solar Concentrators: Jonathan Salem1; George Quinn2; 1NASA; 2NIST

Failure Analysis and Prevention – Petrochemical & Piping
Program Organizers: Andrew Havics, pH2, LLC; Pierre Dupont, Schaeffler Belgium Sprl/Bvba; Burak Akyuz, ATS, Inc.

Tuesday PM  Room: 408
Location: DLL Convention Center

Session Chairs: Thomas Traubert, EDT Engineering; Erhan Ulvan, Acuren Group Inc.; Francisco Rumiche, Pontificia Universidad Catolica Del Peru; Courtney Pape, DNV GL; Greg Morris, Kiefner & Associates

2:00 PM
Root Cause Failure Analysis of Low Carbon Steel (P110): Muhammad Hassan1; Danish Hussain1; 1Dawood University of Engineering & Technology, Karachi

2:20 PM
Failure Analysis of Reformer Inlet Manifold: Abdulmohsen Al-Sabli1; Gys Van Zyl1; Abdulaziz Al-Meshari1; 1SABIC

2:40 PM
Failure Investigation of UNS N07718 (Inconel 718) Bolts under Cathodic Protection for Subsea Oil & Gas Operations: Adam Dyer1; Herman Amaya2; 1OneSubsea, A Schlumberger Company; 2Schlumberger

3:00 PM
Implosion of Large Diameter Ductwork: Thomas Traubert1; 1Engineering Design & Testing

3:20 PM
Case Study: When Stable Defects Ultimately Leak: Courtney Pape1; 1DNV GL

3:40 PM
Alkaline Carbonate SCC Failures at a Refinery: Ryan Haase1; Larry Hanke1; 1Materials Evaluation and Engineering

4:00 PM
Frozen? Mothballs on Ice: Porter Ritchie1; 1DNV GL

4:20 PM
Investigations and Recommendations on Dented Petroleum Pipelines: Erik Mueller1; 1National Transportation Safety Board

Fifty Years of Metallography and Materials Characterization – Fifty Years of Metallography and Materials Characterization I
Program Organizers: Ryan Deacon, United Technologies Research Center; Daniel Dennies, Consulting Metallurgical Engineer; George Vander Voort, Consultant - Struers Inc

Tuesday PM  Room: 409
Location: DLL Convention Center

Session Chair: To Be Announced

2:00 PM Invited
How Microscopy Can Help to Save Energy, Save Lives, Create Jobs and Improve Our Health: Colin Humphreys1; 1University of Cambridge

3:00 PM
Advanced Analytical Microscopy: Metallographic Characterization for the Next Fifty Years: Andrew Holwell1; 1Carl Zeiss Microscopy

3:20 PM
Characterization of Transition-iron-carbide Precipitates: Steven Thompson1; 1Colorado School of Mines

3:40 PM
Applying In Situ S/TEM Microscopy to Structural Materials Using MEMS-based Closed-cell Gas-reactions – Challenges and Prospects: Kinga Unocic1; Harry Meyer III1; Dale Hensley1; Wilbur Bigelow1; Lawrence Allard1; 1Oak Ridge National Laboratory

4:00 PM
Delving into the World of Grain Boundaries with Electron Microscopy: Christopher Marvel1; 1Lehigh University

4:20 PM
Quantitative Microstructure Analysis by TriBeam Tomography: William Lenthe1; McLean Echlin1; Jean Charles Stinville1; Andrew Polonsky1; Tresa Pollock1; 1University of California Santa Barbara

Glass, Amorphous, and Optical Materials: Common Issues within Science & Technology – ACerS Alfred R. Cooper Scholar Lecture and Award Presentation
Program Organizers: Gang Chen, Ohio University; Steve Martin, Iowa State University

Tuesday PM  Room: 310
Location: DLL Convention Center

Session Chairs: Steve Martin, Iowa State University; Martin Wilding, University College London

2:00 PM Invited
The Ultimate Fate of Glass: Edgar Zanotto1; 1Federal University of Sao Carlos

2:40 PM Invited
Glass Relaxation is Controlled by the Topology of the Atomic Network: Yishu Hu1; Tobias Bechgaard1; Morten Smidskaar1; Mathieu Bauchy1; 1University of California, Los Angeles; 1Aalborg University
Hybrid Organic-Inorganic Materials for Alternative Energy – Electrochemistry II
Program Organizers: Andrei Jitianu, Lehman College, City University of New York; Lisa Klein, Rutgers University; Lia Stanciu, Purdue University; Mihaela Jitianu, William Paterson University
Tuesday PM  Room: 402  Location: DLL Convention Center
Session Chairs: Quentin Picard, Lehman College - City University of New York; Andrei Jitianu, Lehman College - City University of New York

2:00 PM Invited
Nanomembrane Assembly and Printing Processes: Kevin Turner1; 1University of Pennsylvania

2:30 PM Invited
Macroscopic Photoinduced Bending of Polymer Nanofibrous Mats: Jeffrey Rack1; 1University of New Mexico

3:00 PM Invited
Photo-Electrochemical CO Reduction to Acetate on Iron–copper Oxide Catalysts: Robert Baker1; 1The Ohio State University

3:30 PM Invited
Seeking Hybrid Organic/Inorganic Materials with Improved Optical Characteristics for Chemical Sensor Applications: Yi Pang1; 1The University of Akron

4:00 PM Invited
Two-dimensional Metal-organic Framework Nanosheets for Electrochemical and Photoelectrochemical Water Oxidation: Zhenmeng Peng1; 1University of Akron

4:30 PM
Electrodeposition of Hybrid Sol-gel Glass Coatings on 304 Stainless Steel for Corrosion Protection: Quentin Picard1; Grant Akalonu2; Jaida Mosa2; Mario Aparicio2; Lisa Klein2; Andrei Jitianu1; 1Lehman College; 2Instituto de Cerámica y Vidrio, Consejo Superior de Investigaciones Científicas (CSIC); 3Department of Materials Science and Engineering, Rutgers University

Interfaces, Grain Boundaries and Surfaces from Atomistic and Macroscopic Approaches – Surface Phenomena
Program Organizers: Dominique Chatain, CNRS, Aix-Marseille University; John Blendell, Purdue University; Wayne Kaplan, Technion - Israel Institute of Technology
Tuesday PM  Room: 410  Location: DLL Convention Center
Session Chairs: John Blendell, Purdue University; Klaus van Benthem, University of California

2:00 PM Keynote
Nanostructure Stabilization by Grain Boundary Segregation: Challenges and Opportunities in Theory and Experiment: Christopher Schuh1; 1MIT

2:40 PM Keynote
Nanoporous Metals: Tailor-made Nanostructures with Bulk Properties Controlled by Interfaces: Nadiia Mameka1; 1Helmholtz-Zentrum Geesthacht

3:20 PM Invited
Spontaneous Nano-patterning of Zirconia Surfaces: Suliman Dregia1; Haris Ansari2; Zhiyuan Niu1; Sheikh Akbar1; 1Ohio State University; 2National University of Sciences and Technologies (NUST)

3:40 PM Invited
Wetting and Spreading at the Nanoscale: Emily Brooke1; Anna Regoutz1; Catriona McGilvery1; Eduardo Saiz1; David Payne1; 1Imperial College

4:00 PM Invited
Nanoscale Functional Properties for Piezoelectrics, Ferroelectrics, and Multiferroics at Surfaces and Buried Interfaces: James Steffes1; Zachary Thatcher1; Ryan Cordier1; Thomas Moran1; Justin Luria1; Bryan Huey1; 1University of Connecticut

4:20 PM
The Effect of Crystallographic Orientation on the Jump to Contact Behavior: A Molecular Dynamics Study: Mihad Khajehvand1; Panthea Sepehrband1; 1Santa Clara University

Joining of Advanced and Specialty Materials (JASM XIX) – Friction Stir Welding
Program Organizers: Bolian Alexandrov, The Ohio State University; Mathieu Brochu, McGill University; Anning Hu, University of Tennessee; Darren Barborak, A2Z WSI; Akio Hirose, Osaka University; PENG He, Harbin Institute of Technology; Zhiyong Gu, University of Massachusetts Lowell; Vikas Patel, ArcelorMittal USA
Tuesday PM  Room: 326  Location: DLL Convention Center
Session Chair: Judy Schneider, University of Alabama at Huntsville

2:00 PM
Joining of Dissimilar Materials by Friction Bit Joining and Friction Self-pierce Riveting: Yong Chae Lim1; Michael Miles1; Xun Liu1; Yongbing Li1; Zhiyi Feng1; 1Oak Ridge National Laboratory; 2Brigham Young University; 3University of Michigan; 4Shanghai Jiao Tong University
Light Metals Alliance: Light Metals Technology 2017 – Light Metals Technology: Invited

Program Organizers: Diran Apelian, Worcester Polytechnic Institute; Kumar Sadayappan, Canmet MATERIALS; Frank Czerwinski, CanmetMATERIALS; Brajendra Mishra, CanmetMATERIALS; Michael Bermingham, The University of Queensland; Wenjiang Ding, Shanghai Jiao Tong University; Zongyuan Fan, Brunel University; Gonasagren Govender, The Council for Scientific and Industrial Research (CSIR); Karl Kainer, Helmholtz-Zentrum Geesthacht; Andreas Kraly, LKR Leichtmetallkompetenzzentrum Ranshofen GmbH; Salem Seifeddin, Jönköping University; Jinyoung Sun, Korea Institute of Materials Science.

Tuesday PM
Room: 414
Location: DLL Convention Center

Session Chairs: Kumar Sadayappan, Canmet MATERIALS; Diran Apelian, Worcester Polytechnic Institute

Aluminum Intensive Ultra-lightweight Automotive Door Structure: Randy Beals; Tim Skszek; Miguel Merino; Tim Reaburn; Marc Hellman; Magna International

Materials for Nuclear Energy Applications – Accident Tolerant Fuels

Program Organizers: Kumar Sridharan, University of Wisconsin; Jake Amoroso, Savannah River National Laboratory; Aladar Csongos, Nuclear Regulatory Commission; Kevin Fox, Savannah River National Laboratory; Yutai Katoh, Oak Ridge National Laboratory; Bill Lee, Imperial College of London; Josef Matyas, Pacific Northwest National Laboratory; Raul Rebak, GE Global Research; Cory Trivelpiece, Savannah River National Laboratory.

Tuesday PM
Room: 401
Location: DLL Convention Center

Session Chairs: Kumar Sridharan, University of Wisconsin; Meimei Li, Argonne National Lab

2:00 PM Invited
Westinghouse Accident Tolerant Fuel Materials: Frank Boylan; Peng Xu; Javier Romero; Ed Lahoda; Westinghouse Electric Company.

2:20 PM Invited
Increasing Nuclear Power Plant Safety with FeCrAl Cladding in Advanced Technology Fuel: Raul Rebak; Kurt Terrani; Nick Satterlee; William Gassmann; GE Global Research; Oak Ridge National Laboratory; Global Nuclear Fuels; Southern Nuclear; Exelon Generation

2:40 PM Invited
Dislocation Loop Dynamics in Irradiated FeCrAl Alloys: Kevin Field; Jack Haley; Samuel Briggs; Kumar Sridharan; Sergio Lozano-Perez; Steve Roberts; Oak Ridge National Laboratory; University of Oxford; University of Wisconsin - Madison.
3:00 PM Invited
Properties of Small Diameter SiC/SiC Composite Tubes for ATF Cladding Modeling and Design: Tiatat Kotob1; Takaaki Koyanagi1; Gyanender Singh1; Caen Ang1; Kurt Terrani1; Oak Ridge National Laboratory

3:20 PM
Thermochemical Modeling of Candidate Accident Tolerant Fuel Systems: Emily Moore1; Mallikharjuna Bogala1; Tashiema Wilson1; Theodore Besmann1; University of South Carolina

3:40 PM
Radiation Effects on SiC/SiC Composites for Advanced Accident Tolerant Fuel Cladding Tubes: Shradha Agarwal1; William Weber1; University of Tennessee

4:00 PM
Advanced ODS FeCrAlYZr Alloys for Accident-tolerant Fuel Cladding: Sebastien Dryepondt1; Caleb Massey1; Philip Edmondson1; Oak Ridge National Laboratory

4:20 PM
Effects of Increasing Neutron Dose on Stability of MAX Phase Ti3SiC2: Chunghao Shih1; Philip Edmondson1; Yutai Katoh1; Oak Ridge National Laboratory; University of Tennessee, Knoxville; General Atomics, San Diego

Materials Property Understanding through Characterization – Novel Tech III
Program Organizers: Indrajit Dutta, Corning Incorporated; Nicholas Smith, Corning Incorporated

Tuesday PM Room: 412 Location: DLL Convention Center

Session Chair: Chongmin Wang, Pacific Northwest National Laboratory

2:00 PM

2:20 PM
Glow Discharge Spectrometry and Metallographic Measurements: Complementary Techniques for Surface Characterization: Andrew Storey1; Diane Goodman1; Kim Marshall1; David Coulston1; Gregory Schilling1; LECO Corporation

2:40 PM
An Information System for Human-directed Material Property Understanding by Supporting the Characterization of Data: John Parker1; Najib Baig1; Stephen Warde1; John Twerdok1; Will Marsden1; Granta Design Limited

3:00 PM
Facile Experimental Measurements of Elastic Constants as a Function of Composition without Using Single Crystals: Xinpeng Du1; Ji-Cheng Zhao1; Ohio State University

3:20 PM
Pahted Surface Two-Liquid-Phase Contact Angle Method for Orientation-dependent Surface Energy Characterization: Michael Van Order1; Alison Flatau1; University of Maryland

3:40 PM
Extraction of Demagnetization Field of Magnetic Nanoparticles Using a Model Based Iterative Reconstruction Technique from TEM Images: KC Prabhav1; Marc De Graef1; Charles Bouman1; K. Aditya Mohan1; Carnegie Mellon University; Purdue University

4:00 PM
Characterization of Inclusions in Nickel Titanium Using Synchrotron X-ray Computed Microtomography: Shivram Kashyap Sridhar1; Anthony Rollett1; Carnegie Mellon University

4:20 PM
Rapid Characterization of Local Shape Memory Properties through Indentation: Peizhen Li1; Haluk Karaca1; Yang-Tse Cheng1; University of Kentucky

4:40 PM
Fast Characterization of NM Thin to Thick Coatings Using Pulsed-Rf Glow Discharge Optical Emission Spectrometry: Philippe Hunault1; Matthieu Chausseau1; Kayvon Savadkouei1; Patrick Chapon1; Sofia Gaiaschi1; HORIBA Instruments; HORIBA France

Materials Selection and Surface Analyses for Corrosion Prevention and Detection – Steels and Advanced Materials
Program Organizers: Matthew Asmussen, Pacific Northwest National Laboratory; Ajit Mishra, Haynes International; Sudhakar Mahajanam, PinnacleART; Eric Schindelholz, Sandia National Laboratory; Xueyuan Zhang, Gamry Instruments; Guang-Ling Song, Xiamen University; Luis Garfrais, Wood Group Kenny; Raul Rebak, General Electric

Tuesday PM Room: 405 Location: DLL Convention Center

Session Chair: Matthew Asmussen, Pacific Northwest National Laboratory

2:00 PM
Corrosion Properties of Powder Bed Fusion Additively Manufactured Stainless Steels: Rebecca Schaller1; Jason Taylor1; Jeffrey Rodelas1; Ajit Mishra2; Eric Schindelholz2; Sandia National Laboratories; Haynes International

2:20 PM
Environmental Effects on Stress Corrosion Cracking of Austenitic Stainless Steels: David Sapiro1; Bryan Webler1; Carnegie Mellon University

2:40 PM
Dynamic Strain Aging in Oil and Gas Production: Sudhakar Mahajanam1; Michael Joosten1; Pinnacle Advanced Reliability Technologies; Corrosion Integrity Solutions

3:00 PM
Corrosion Performance of High Strength Low Alloy Steels in Aerated and CO2 Saturated Lyman and Fleming Solutions: Lawrence Onyeji1; Girish Kale1; University of Leeds

3:20 PM
Electrochemical Corrosion of Stainless Steel in CO2-saturated Brine Solutions: Ruishu Feng1; David Sapiro1; Bryan Webler1; Margaret Ziomek-Moro2; Paul Ohodnicki1; National Energy Technology Laboratory; Carnegie Mellon University
3:40 PM Invited
Corrosion Behavior of Nickel-based Alloys in High pH Aqueous Media: Ajit Mishra; Haynes International

Mechanochemical Synthesis and Reactions in Materials Science II – Session I
Program Organizers: Antonio Fuentes, Cinvestav del IPN; Laszlo Takacs, University of Maryland Baltimore County; Challapalli Suryanarayana, University of Central Florida; Jacques Huot, Universite du Quebec a Trois-Rivieres

Tuesday PM Room: 327
October 10, 2017 Location: DLL Convention Center

Session Chair: Laszlo Takacs, University of Baltimore Maryland County

2:00 PM Invited
Phase Selection in Mechanical Alloying: Challapalli Suryanarayana; University of Central Florida

2:40 PM Invited
Synthesis and Photoluminescence of Single-crystal Silicon Nitride Nanowires via Nitriding of Cryomilled Nanocrystalline Silicon Powder: Fei Chen; Zhifeng Huang; Qiang Shen; Linnamm Zhang; Enrique Lavernia; Wuhan University of Technology; University of California at Irvine

3:20 PM Invited
Real-time Observations of Impact-induced Melting and Adhesion: Mostafa Hassani-Gangaraj; David Veyset; Keith Nelson; Christopher Schuh; Massachusetts Institute of Technology

4:00 PM
Surface Mechanical Alloying for Specialized Heterogeneity (SMASH): Heather Murdoch; Joseph Labukas; Chad Hornbuckle; Army Research Lab

4:20 PM
A Study on High Energy Ball Milling and Spark Plasma Sintering of Fe-9Cr Model Alloys: Arnab Kunda; Indrjit Charit; University of Idaho

Metal and Polymer Matrix Composites III – Composites: Imaging and Characterization
Program Organizers: Nikhil Gupta, New York University; Tomoko Sano, U.S. Army Research Laboratory

Tuesday PM Room: 319
October 10, 2017 Location: DLL Convention Center

Session Chairs: Nikhil Gupta, New York University; Nikhilash Chawla, Arizona State University

2:00 PM Invited
Anisotropy and Thermal History Effects on the Tensile Behavior of a 3D Printed Polymer Matrix Composite via In Situ Synchrotron X-ray Tomography: Nikhilash Chawla; Arizona State University

2:40 PM Invited
Recent Developments in Self-healing Metallic Materials and Mechanics of Self-healing Composites: Nathan Salovitz; Volkan Kilicli; Xiaojun Yan; Pradeep Rohatgi; University of Wisconsin-Milwaukee; University of Wisconsin-Milwaukee; Gazi University; University of Wisconsin-Milwaukee; Dalian University

3:20 PM Invited
Quantitative Evaluation of Composite Materials Using In Situ Microscopy: Mitra Taheri; Drexel University

4:00 PM
Composite Fiber Orientation Analysis Utilizing X-ray Micro-Computed Tomography: Jennifer Sietins; Army Research Laboratory

4:40 PM
Prediction of Modulus of Polymers and Composites at Different Strain Rates by Integral Transform of DMA Data: Steven Zeltmann; Keerthana Prakash; Nikhil Gupta; New York University

4:20 PM
Instrumented Depth-sensing Nanoidentation of a Magnesium Metal-matrix Nanocomposite (AZ31-0.33wt% CNT): Meysam Haghshenas; Robert Klassen; Sathish Kannan; Amin Ismail; Manoj Gupta; University of North Dakota; Western University; American University of Sharjah; National University of Singapore

Multifunctional Oxides – Multifunctional Metal Oxide Thin Films
Program Organizers: Xiaoqing Pan, University of California, Irvine; Chonglin Chen, University of Texas at San Antonio; Quanxi Jia, The State University of New York; Judith Driscoll, University of Cambridge

Tuesday PM Room: 312
October 10, 2017 Location: DLL Convention Center

Session Chairs: Aiping Chen, Los Alamos National Laboratory; Thomas Ward, Oak Ridge National Laboratory

2:00 PM Invited
Emergent Structures and Properties in Ferroelectric Thin Films: Lane Martin; University of California, Berkeley

2:20 PM Invited
Exchange Coupling in Oxide Heterostructures Driven by Hidden Interface: Aiping Chen; Qiang Wang; Michael Fitzsimmons; Erik Enriquez; Marcus Weigand; Zach Harrell; Brian McFarland; Xujie Li; Paul Dowden; Judith MacManus-Driscoll; Dmitry Yarotski; Quanxi Jia; Los Alamos National Laboratory; Argonne National Laboratory & West Virginia University; Oak Ridge National Laboratory & University of Tennessee; University of Cambridge; University of Buffalo - The State University of New York

2:40 PM Invited
Polar Surface Domains on Non-polar Surfaces: Paul Salvador; Gregory Rohrer; Carnegie Mellon University

3:20 PM
Chemical Solution Deposition of Ferroelectric Oxide Thin Films and Nanocomposites: Mads Christiansen; Trygve Ræder; Mari-Ann Einarsrud; Tor Grande; Norwegian University of Science and Technology
TUESDAY PM

3:40 PM Invited
Strain Doping in Multifunctional Oxides: Thomas Ward¹; ¹Oak Ridge National Laboratory

4:00 PM
Black Titania by pp-MOCVD: Nanostructured Carbon-sensitised Titania; Films with Visible Light Activity: Catherine Bishop²; Aleksandra Gardecka³; Andreas Kafizas²; Raphael Boichot³; Susan Krumdieck³; ¹University of Canterbury; ²Imperial College London; ³Institut Polytechnique de Grenoble

Next Generation Biomaterials – Metallic Biomaterials
Program Organizers: Roger Narayan, UNC/NCSU Joint Department of Biomedical Engineering; Jie Huang, University College London; Vipul Davé, Johnson & Johnson; Sanjiv Lalwani, Lynntech, Inc.; Marc in het Panhuis, University of Wollongong; Mohan Edirisinghe, University College London

Tuesday PM
October 10, 2017
Location: DLL Convention Center
Session Chairs: Celaletdin Ergun, Istanbul Technical University; Rajarshi Banerjee, University of North Texas

2:00 PM Invited
Additive Manufacturing of Low Modulus Titanium Alloys for Biomedical Devices: Srinivas Aditya Mantri¹; Trina Majumder¹; Vishal Soni¹; Calvin Mikler¹; Tyler Torgerson¹; Eugene Ivanov¹; Nick Birbilis¹; Thomas Scharf¹; Rajarshi Banerjee¹; ¹University of North Texas; ²Monash University; ³Tosoh SMD Inc.

2:20 PM
Adhesion and Entry of Gold Nano Particles into Breast Cancer Cells: Vanessa Uzonwanne¹; John Obayemi¹; Jingjie Hu¹; Stella Dozie-Nwachukwu¹; Karen Malatesta¹; Nicolas Anuku¹; Winston Soboyejo¹; ¹Worcester Polytechnic Institute; ²Princeton University; ³Australian University of Science and Engineering; ⁴Bronx Community College

2:40 PM
LHRH-conjugated PEG-coated Magnetic Nanoparticles for Specific Targeting of Triple Negative Breast Cancer Cells: The Role of Receptor-mediated Endocytosis: Jingjie Hu¹; John Obayemi¹; Karen Malatesta¹; Andrej Košmajl¹; Winston Soboyejo¹; ¹Princeton University; ²Worcester Polytechnic Institute (WPI)

3:00 PM Invited
Investigation of the Corrosion Behaviour of AZ31, AZ 91 and ZK 60 Magnesium Alloys: Waseem Haider¹; Usman Riaz¹; Umair Shah¹; Hassnain Asgar¹; ¹Central Michigan University

3:20 PM
Design for Advanced Biomaterial of Mg Alloy: Duc Hyun Cho¹; Ik Min Park¹; Kyung Mox Cho¹; ¹Pusan National University

3:40 PM
Biodegradation and Biological Response of Magnesium-based Alloys for Orthopedic Applications: Process-Structure-Functional Property Relationship: Krishna Chattanya Nune¹; P Trivedi¹; S Patil¹; RDK Misra¹; ¹University of Texas at El Paso

4:00 PM The Effect of Rapid Solidification on Physical Properties of Advanced Biomaterial Co-Cr-Mo-C Alloy: Hamid-Reza Erfanian-Naziftoosi¹; Hugo López¹; ¹University of Wisconsin Milwaukee

4:20 PM Invited
The Effect of Core Size and Coating Layers on the Hyperthermia Performance of Iron Oxide, Manganese Ferrite, Magnesium Ferrite and Strontium Ferrite Superparamagnetic Nano Particles: Celaletdin Ergun¹; Esra Durucu¹; Mona Nejatpour¹; Elvan Aydin¹; ¹Istanbul Technical University

Phase Stability, Diffusion Kinetics, and Their Applications (PSDK-XII) – Session III: J. Willard Gibbs Phase Equilibria Award - Computational Thermodynamics
Program Organizers: Wei Xiong, University of Pittsburgh; Raymundo Arroyave, Texas A & M University; Ji-Cheng Zhao, The Ohio State University; Arthur Pelton, Ecole Polytechnique

Tuesday PM
October 10, 2017
Location: DLL Convention Center
Session Chairs: Arthur Pelton, Ecole Polytechnique; Stephan Petersen, GTT Technologies

2:00 PM Invited
Gibbs-energy Minimization in FactSage: Gunnar Eriksson¹; ¹GTT-Technologies

2:20 PM Invited
Australian Impact of SOLGASMIX: Michael Wadsley¹; ¹Consultant

2:40 PM Invited
FactSage and Phase Stability: Christopher Bale¹; Gunnar Eriksson²; Arthur Pelton³; ¹Ecole Polytechnique; ²GTT-Technologies

3:00 PM Invited
Thermochemical Modeling in the Development of Advanced Nuclear Fuels: Theodore Besmann¹; Mark Noordoosthoek¹; Tashiema Wilson¹; Emily Moore¹; Jacob McMurray¹; Elizabeth Wood¹; Andrew Nelson¹; Simon Middleburgh¹; Edward Lahoda¹; Peng Xu¹; ¹University of South Carolina; ²Oak Ridge National Laboratory; ³Los Alamos National Laboratory; ⁴Westinghouse Vasteras; ⁵Westinghouse Electric Company, LLC

3:20 PM Invited
Scheil-Gulliver Constituent Diagrams: Arthur Pelton¹; Gunnar Eriksson¹; Christopher Bale¹; ¹Ecole Polytechnique

3:40 PM Invited

4:00 PM Invited
Search for New Rare Earth-based Alloys: Patrice Turchi¹; Aurélien Perron¹; Vincenzo Lordi¹; Orlando Rios¹; ¹Lawrence Livermore National Laboratory; ²Oak Ridge National Laboratory
TUESDAY PM

Recent Advances in Computer-aided Materials Design – Emerging Approaches of Material Design
Program Organizers: Huan Tran, University of Connecticut; Ghanshyam Pilania, Los Alamos National Laboratory; Alexey Kolmogorov, Binghamton University, State University of New York; Mina Yoon, Oak Ridge National Laboratory; Son Hoang, University of Connecticut

Tuesday PM Room: 324
October 10, 2017 Location: DLL Convention Center

Session Chair: Huan Tran, University of Connecticut

3:00 PM Introductory Comments

2:45 PM Classification of Scientific Journal Articles to Support Automated Data Extraction and Curation: Amar Krishna1; Alden Dima2; Alok Choudhary; Akrit Agrawal; 1Institute of Standards and Technology;

2:40 PM Panel Discussion Panel II - Future of the REE Industry
Panelists include: Jack Lifton, Jack Lifton LLC (Panel Lead); Eric Nyrez, Neo Materials; Jinfang Liu, Electron Energy Corporation; and Steve Constantinides, Magnetics & Materials LLC

2:40 PM Panel Discussion Panel I - Current Status of the REE Industry
Panelists include: Gareth Hatch, Innovation Metals Corp.(Panel Lead); Michael McKittrick, U.S. Department of Energy; David Weiss, Eck Industries; and John P de Neufville, Eutectics, LLC

2:00 PM Keynote

Current Status and Future Challenges Facing Rare Earth Materials Industry: Jack Lifton1; 1Jack Lifton LLC

2:00 PM Keynote

The Materials Genome Initiative: The Centrality of Computation: James Warren1; 1National Institute of Standards and Technology

2:00 PM Invited

Grain Refinement of Ni-based Superalloy under Magnetic-thermal Coordinated Control: Yingjiu Li1; 1Institute of Metal Research, Chinese Academy of Sciences

2:20 PM Invited

Room Temperature Magnetic Processing of Advanced Ceramics: Victoria Blair1; Nicholas Ku1; Michael Kornecki1; Selva Raju1; Jennifer Elward2; Berend Rinderspacher3; Raymond Brennan1; 1Army Research Laboratory; 2ORISE; 3SURVICE Engineering; 3ORAU

2:40 PM Invited

Effects of Elastic Waves at Several Frequencies on Biofilm Formation in Circulating Laboratory Biofilm Reactors: Hideyuki Kanematsu1; Shogo Maeda2; Senshin Umekii1; Kazuyuki Tohii1; Nobumitsu Hira1; Akiko Ogawa2; Takeshi Kougo1; 1Suzuka National College of Technology; 2National Institute of Technology, Suzuka College; 3Tohoku University

3:00 PM

In Situ Study of Lattice Expansion during Flash Sintering: Harry Charalampos1; Shikhar Jha1; Thomas Tsakalakos1; 1Rutgers University

3:20 PM

Structure and Properties of Microwave-consolidated Magnesium Powders: R Sadangi1; D Kapoor1; R Rowland2; T Zahrab3; M Imam3; 1Armament Research Development Engineering Center; 2MATSYS, Inc; 3George Washington University

3:40 PM

Sinter-forging and Spark Plasma Sintering of WC-Co for Enhanced Mechanical Properties: Zhao Ding1; Weiliang Yao1; Leon Shaw1; Elisa Torresani1; Eugene Olevsky2; Claude Estournes1; 1Illinois Institute of Technology; 2San Diego State University; 3Carnot Institute

4:00 PM

Observations on the Effect of Electric Field on Mullite Formation in Porcelains: Wirat Lerdprom1; Eugenio Zapata-Solvas1; Doni Jayaseelan1; William Lee2; 1Imperial College London

4:20 PM

Influence of Applied Magnetic Fields on Rare-earth & Transition Metal Dopants in α-Al2O3: Selva Venkata Raju1; Michael Kornecki1; Raymond Brennan1; Victoria Blair1; Nicholas Ku1; 1USARL, WMRD

Rare Earth Metals, Compounds, and Alloys: Synthesis, Processing, Emerging Applications, Recent Advances, Future Challenges – REE Panel
Program Organizers: Yellali Murty, MC Technologies LLC; Eric Klier, U.S.Army Research Laboratory; Jack Lifton, Jack Lifton LLC

Tuesday PM Room: 325
October 10, 2017 Location: DLL Convention Center

Session Chair: Jack Lifton, Jack Lifton LLC

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3:45 PM Invited
High Quality Data and Their Applications for Materials Design: Zi-Kui Liu;  
1The Pennsylvania State University

4:15 PM Invited
Informatics Guided Multiscale Design of Materials: Krishna Rajan;  
1University at Buffalo: SUNY

4:45 PM
Accelerated Discovery of High Entropy Alloys through Constraint Satisfaction Algorithms: Raymundo Arroyave; Anas Abu-Odeh; Tanner Kirk; Edgar Galvan; Richard Malak; 1Texas A & M University

Shaping & Forming of Advanced High Strength Steels II – Shaping & Forming of Advanced High Strength Steels: Performance

Tuesday PM  Room:  320
Location:  DLL Convention Center

Session Chair:  Kester Clarke, Colorado School of Mines

2:00 PM Invited
Bridging the Gap between Advanced Sheet Steel Product Development and Successful Implementation of These Products in Automotive Body Structures: Sriram Sadagopan; 1ArcelorMittal/Global R&D

2:20 PM Invited
Periodic Gold Nanoparticle Array/Functional Hydrogel Composites and Their Strong Optical Response for Sensing Applications: Yue Li; 1Institute of Solid State Physics, Chinese Academy of Sciences

2:40 PM Invited

3:00 PM
Facile Synthesis of PdNi Hollow Nanocrystals with Enhanced Electrocatalytic Activities toward Ethanol Oxidation: Zelin Chen; Jinfeng Zhang; Yuan Zhang; Yunwei Liu; Xiaopeng Han; Cheng Zhong; Wenbin Hu; Yida Deng; 1Tianjin University

3:20 PM
Enhancing Energy Efficiency in Saccharide-HMF Conversion with Core/shell Structured Microwave Responsive Catalysts: Jiao Li; Liwen Mu; Jiahua Zhu; 1University of Akron

4:00 PM
Al Doping Induced Room Temperature Ferromagnetism in ZnO Synthesized under Pulsed Magnetic Field: Ying Li; Zhongyi Wu; Muhammad Tariq; Wenxian Li; Yemin Hu; Mingyuan Zhu; Hongming Jin; Kang Deng; 1Shanghai University

4:00 PM
Data-driven Approaches for Predicting Fatigue Strength of Steels: Ankit Agrawal; Alok Choudhary; 1Northwestern University

3:45 PM Invited
High Quality Data and Their Applications for Materials Design: Zi-Kui Liu;  
1The Pennsylvania State University

4:15 PM Invited
Informatics Guided Multiscale Design of Materials: Krishna Rajan;  
1University at Buffalo: SUNY

4:45 PM
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Shaping & Forming of Advanced High Strength Steels II – Shaping & Forming of Advanced High Strength Steels: Performance

Tuesday PM  Room:  320
Location:  DLL Convention Center

Session Chair:  Kester Clarke, Colorado School of Mines

2:00 PM Invited
Bridging the Gap between Advanced Sheet Steel Product Development and Successful Implementation of These Products in Automotive Body Structures: Sriram Sadagopan; 1ArcelorMittal/Global R&D

2:20 PM Invited
Periodic Gold Nanoparticle Array/Functional Hydrogel Composites and Their Strong Optical Response for Sensing Applications: Yue Li; 1Institute of Solid State Physics, Chinese Academy of Sciences

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3:00 PM
Facile Synthesis of PdNi Hollow Nanocrystals with Enhanced Electrocatalytic Activities toward Ethanol Oxidation: Zelin Chen; Jinfeng Zhang; Yuan Zhang; Yunwei Liu; Xiaopeng Han; Cheng Zhong; Wenbin Hu; Yida Deng; 1Tianjin University

3:20 PM
Enhancing Energy Efficiency in Saccharide-HMF Conversion with Core/shell Structured Microwave Responsive Catalysts: Jiao Li; Liwen Mu; Jiahua Zhu; 1University of Akron

4:00 PM
Al Doping Induced Room Temperature Ferromagnetism in ZnO Synthesized under Pulsed Magnetic Field: Ying Li; Zhongyi Wu; Muhammad Tariq; Wenxian Li; Yemin Hu; Mingyuan Zhu; Hongming Jin; Kang Deng; 1Shanghai University

4:00 PM
Data-driven Approaches for Predicting Fatigue Strength of Steels: Ankit Agrawal; Alok Choudhary; 1Northwestern University
Special Session on Emerging Technologies to Develop and Commercially Adopt Innovative Materials – Special Session on Emerging Technologies to Develop and Commercially Adopt Innovative Materials

Program Organizers: Ron Radzilowski, AK Steel Corp.; Amber Black, PTR - Precision Technologies, Inc.; David Forrest, Department of Energy; Manish Mehta, M-TECH International LLC; Elizabeth Hoffman, Savannah River National Laboratory; Judith Schneider, University of Alabama at Huntsville

Tuesday PM  October 10, 2017  Room: 329  Location: DLL Convention Center

Session Chair: David Forrest, U.S. Dept. of Energy

2:00 PM  Introductory Comments: David R. Forrest and Amber Black

2:10 PM  Invited
Advanced Manufacturing Research Activities in the Commercial Scaling of Additive, Battery, Carbon Fiber, and Composites Fabrication: William Peter1; 1Oak Ridge National Laboratory

2:30 PM  Invited
Accelerated Design and Deployment of New Materials Using L.C.M.E. Strategies: Aziz Asphahani1; 1QuesTek Innovations LLC

2:50 PM  Invited
Emerging Applications for Rare Earths: Josh Collins1; 1Intelligent Material Solutions, Inc.

3:10 PM  Invited
Covetic Nanomaterials for Energy Applications: David Forrest1; 1Department of Energy

3:30 PM  Panel Discussion Moderator: David R. Forrest, Panelists: William Hutchinson Peter, Aziz Asphahani, Josh Collins

4:10 PM  Concluding Comments: David R. Forrest

Surface Properties of Biomaterials – Surface Properties of Biomaterials: Bearing Materials and Tribological Properties

Program Organizers: Jason Langhorn, DePuy Synthes Joint Reconstruction; Susmita Bose, Washington State University; Amit Bandopadhyay, Washington State University; Mangal Roy, Indian Institute of Technology; Venu Varanasi, Texas A & M Health Science Center

Tuesday PM  October 10, 2017  Room: 335  Location: DLL Convention Center

Session Chairs: Venu Varanasi, Texas A&M University; Jason Langhorn, DePuy Synthes

2:00 PM  Cost Effective Wet Blast Textured CoCrMo with Improved Polyethylene Wear in a Pin-on-Disc Test: Jason Langhorn1; Elizabeth Hippensteel1; Daniel Schmidt1; 1DePuy Synthes Joint Reconstruction

2:20 PM  Improved Polyethylene Wear Performance with Laser Textured CoCrMo in a Pin-on-Disc Test: Jason Langhorn1; Elizabeth Hippensteel1; Daniel Schmidt1; Alireza Borjali1; Bart Raeymaekers1; 1DePuy Synthes Joint Reconstruction

2:40 PM  Processes of Biomaterials: Bearing Materials and Tribological Properties

Program Organizers: Jason Langhorn, DePuy Synthes Joint Reconstruction; Susmita Bose, Washington State University; Amit Bandopadhyay, Washington State University; Mangal Roy, Indian Institute of Technology; Venu Varanasi, Texas A & M Health Science Center

Tuesday PM  October 10, 2017  Room: 333  Location: DLL Convention Center

Session Chairs: Emmanuel Boakye, UES; Dongming Zhu, NASA Glenn Research Center

2:00 PM  Powder-Suspension Hybrid Axial Plasma Spraying of Triballoy 400® Chromium Carbide Coatings: Processing, Characteristics and Wear Behaviour: G. Karthik Narayan1; Stefan Björklund1; Nicholas Curry2; Shrikant Joshi3; 1University West; 2Treibacher Industrie AG

2:40 PM  Ultra High-temperature Ceramic Material Coatings for C-C Composites: Emmanuel Boakye4; Clifford Leslie5; David Olson5; 1UES Inc.; 2National Research Council; 3US Navy
3:00 PM
Tribological Performance and Characteristics of an Ultra-durable B4C/Cr Coating with Pre-UNSM Treatment: Zhencheng Ren1; Haifeng Qin1; Brandon Strahan1; Yalin Dong1; Chang Ye1; Gary Doll1; 1University of Akron

3:20 PM
Synthesis of Heat Resistant Cermet Coatings on Ti6Al4V Titanium Alloy Using Ultra High Temperature Ceramics: Gabriel Faustode1; Patricia Popoola1; Sisa Pityana1; 1Tshwane University of Technology, Pretoria, South Africa; 2Council of Scientific and Industrial Research Centre

3:40 PM
Characterization of Laser Cladded 200 µm Thin Sheets: Tobias Gabriel2; Florian Scherm1; Marek Gorywoda1; Uwe Glatzel1; 1University Bayreuth; 2University of Applied Sciences Hof

4:00 PM
The Sustaining Effect of Remaining Cementite and the Restraining Effect of Alloy Elements on Corrosion Acceleration of Ferrite-Pearlite Steel in an Acidic Chloride Solution: Junhua Dong1; Xuehui Hao1; Jie Wei1; Wei Ke1; 1Institute of Metal Research, CAS

The 9th International Symposium on Green and Sustainable Technologies for Materials Manufacturing and Processing – Next Generation Green Technologies 1
Program Organizers: Surojit Gupta, University of North Dakota; Jun-ichi Tatami, Yokohama National University; Tatsuki Ohji, National Institute of Advanced Industrial Science and Technology (AIST); Mrityunjay Singh, Ohio Aerospace Institute, NASA Glenn Research Center; Marsha Bischel, Armstrong World Industries, Inc., PA; Makio Naito, Osaka University, Japan; Hisayuki Suematsu, Nagaoaka University of Technology, Japan; Yiquan Wu, Alfred University, NY

Tuesday PM  Room: 317
October 10, 2017  Location: DLL Convention Center

Session Chairs: Enrico Bernardo, University of Padova; Babak Anasori, Drexel University

2:00 PM Invited
2D Metal Carbides and Nitrides (MXenes) for Green Technologies: Babak Anasori1; Yury Gogotsi2; 1Drexel University

2:40 PM Invited
Understanding the Spark Plasma Sintering Behaviour of Ti-6Al-4V Reinforced with Nanosized TiN: Oluwasegun Falodun1; Mosima Maja1; Babatunde Obadele1; Samuel Oke1; Oladeji Ige1; Peter Olubam1; 1University of Johannesburg

3:20 PM
Understanding the Unique Microstructural Evolution and Mechanical Properties of Hydrogen Sintered/Processed Titanium Alloys: James Paramore1; Brady Butler1; Jonathan Ligda1; Z. Zak Fang2; Matt Dunstan2; 1United States Army Research Laboratory; 2University of Utah
Ultra High Performance Metals, Metal Alloys, Intermetallics, and Metal Matrix Composites for Aerospace, Defense, and Automotive Applications – High Temperature Materials / Composites / Hybrid / Graded Materials

Program Organizers: Ali Yousefiani, Boeing Research and Technology; Troy Topping, California State University, Sacramento; Robert Dillon, Jet Propulsion Laboratory

Tuesday PM  Room: 307
October 10, 2017  Location: DLL Convention Center

Session Chair: Ali Yousefiani, Boeing Research & Technology

2:00 PM
Ni3Al-based Strips and Foils for Structural or Functional Applications: Pawel Jozwik1; Zbigniew Bojar1; Tomasz Durejko1; 1Military University of Technology

2:20 PM
Precipitation Characteristics of Gamma Prime Precipitate in Rene 65: Christina - Maria Katsari1; Hanqing Che1; Benjamin Turner1; Andrew Wessman2; Stephen Yue1; 1McGill University; 2GE Aviation,US

2:40 PM
Microstructural Analysis and High Temperature Creep Testing of Mo-9Si-8B-xAl-yGe Alloys: Peter Kellner1; Rainer Völkl1; Uwe Glatzel1; 1University Bayreuth

3:00 PM
Characteristic on Nanostructured Multicomponent Coating Layer Using Direct Current Sputtering: Young Seok Kim1; Hae Jin Park1; Young Hoon Lee1; Ki Buem Kim1; 1Sejong University

3:20 PM
Enhancement of Fracture Toughness Utilizing the Material Inhomogeneity Effect: Roland Kasberger1; Masoud Sistaninia2; Bruno Buchmayr3; Otmar Kolednik2; 1Eirich Schmid Institute of Materials Science; 2Materials Center Leoben Forschung GmbH; 3Chair of Metal Forming, Montanuniversität

3:40 PM
Oxidation Behavior of Laser Clad Ti-SiC-ZrB2 Cermet Coatings of Titanium Alloy: Gabriel Farotade1; Patricia Popoola2; 1Tshwane University of Technology, Pretoria, South Africa

ACerS Robert B. Sosman Award Symposium: Tailoring Ceramic Microstructures: Understanding and Tuning of Materials Performance – Robert B. Sosman Award Symposium I: Tailoring Ceramic Microstructures: Understanding and Tuning of Materials Performance

Program Organizer: Wolfgang Rheinheimer, Karlsruhe Institute of Technology

Wednesday AM  Room: 315
October 11, 2017  Location: DLL Convention Center

Session Chair: Wolfgang Rheinheimer, Karlsruhe Institute of Technology

8:40 AM Invited
Anisotropic Grain Growth in Polycrystalline Ceramics: Accepted Concepts and New Paradigms: Carol Handwerker1; John Blendell1; Wolfgang Rheinheimer2; Jean Taylor3; 1Purdue University; 2Karlsruhe Institute of Technology; 3Courant Institute of Mathematics

9:20 AM Invited
Properties of Grain Boundaries in SrTiO3 and their Influence on Grain Growth: Madeleine Kelly1; Xiaoting Zhong1; Wolfgang Rheinheimer2; Michael Hoffmann1; Gregory Rohrer1; 1Carnegie Mellon University; 2Karlsruhe Institute of Technology

10:00 AM Break

10:20 AM Invited
Tenth Anniversary of Grain Boundary Complexions Research: Martin Harmer1; Andrea Harmer2; Amanda Krause1; Christopher Marvel1; 1Lehigh University; 2Kutztown University

11:00 AM Invited
Room Temperature Sintering of Alkali Halide Salts: Gary Messing1; Elizabeth Kupp1; Julie Anderson1; Nuerxida Pulati1; 1The Pennsylvania State University

Additive Manufacturing of Metals: Fatigue and Fracture – Session I

Program Organizers: Nikolas Hrabe, National Institute of Standards and Technology; Nicholas Barbosa, National Institute of Standards and Technology; Richard Ricker, National Institute of Standards and Technology; Steve Daniewicz, University of Alabama; Nima Shamsaei, Auburn University; Mohsen Seifi, Case Western Reserve University/ASTM International

Wednesday AM  Room: 304
October 11, 2017  Location: DLL Convention Center

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

8:00 AM Invited
Issues in Mechanical Behavior of Additively Manufactured Metallic Alloys: John Lewandowski1; Mohsen Seifi2; 1Case Western Reserve University

8:40 AM
Investigating Defect Formation Mechanisms in Powder-bed Metal Additive Manufacturing Using Synchrotron-based High-Speed X-ray Radiography and Microtomography: Ross Cunningham1; Cang Zhao2; Tao Sun2; Anthony Rollett1; 1Carnegie Mellon University; 2Argonne National Laboratory
9:00 AM Assessing the Tensile and Fatigue Properties of Alloy 718 and Ti-6Al-4V Produced from Powder Bed Fusion Additive Manufacturing: Brian Hayes1; John Porter1; Mike Veler1; Tim Hal1; Ken Davis1; 1UES, Inc.; 2Faraday Technology, Inc.; 3CalRAM, Inc.

9:20 AM Microstructural Evolution around Pores in Additively Manufactured 316L SS under Cyclic Loading: Rachel Lim1; Christopher Kantzos1; Yufeng Shen1; He Liu1; Robert Suter1; Anthony Rollett1; 1Carnegie Mellon University

9:40 AM Size Effects on Fracture and Fatigue Behavior of Additively Manufactured Alloys: Mohsen Sefli1; Jan Dźugan1; John Lewandowski1; 1Case Western Reserve University; 2COMTES FHT

10:00 AM Break


11:00 AM Effects of Powder Oxidation on Impact Toughness of EBM Ti-6Al-4V Produced from Powder Bed Fusion Additive Manufacturing: Brian Hayes1; John Porter1; Mike Veler1; Tim Hal1; Ken Davis1; 1UES, Inc.; 2Faraday Technology, Inc.; 3CalRAM, Inc.

11:20 AM A Predictive Model for Competing Fatigue Crack Initiation Mechanisms in Porous Metals: Matt Dunstan1; James Paramore2; Z. Zak Fang1; 1University of Utah; 2United States Army Research Laboratory

11:40 AM Residual Stresses and Fatigue Behavior in Additive Repairs of AA7075 and AA2024 Produced by Cold Spray Deposition: Luke Brewer1; William Story1; Benjamin White1; James Jordan1; Jeffrey Bunn1; E. Payzant1; 1University of Alabama

10:00 AM Break

10:20 AM Effect of Build Parameters on Microstructure of Stainless Steel Laser Additive Manufactured Components: Penn Rawn1; Steven Keckler1; Ronda Coguill1; K.V. Sudhakar1; Bruce Madigan1; 1Montana Tech

11:00 AM Additively Manufactured Heat Exchanger: Paul Korinko1; Matthew Van Swol1; Alexander Hollingshad1; Haley McKee2; Frederick List1; Keith Carver2; 1Savannah River National Laboratory; 2Kansas City National Security Campus; 3Oak Ridge National Laboratory

8:00 AM Characterisation of Additively Manufactured 316L Stainless Steel Crystal Structure: Maija Nyström1; Jorma Roine1; Hannu Heikkinen1; Antti Pörhönen1; Olli Nyrhilä1; 1Electro Optical Systems Finland; 2University of Turku

8:20 AM Characterization of Additively Manufactured 316L Stainless Steel for Naval Applications: Lily Nguyen1; Richard Fonda2; David Rowenhurst1; 1National Research Council / Naval Research Laboratory; 2Naval Research Laboratory
9:20 AM
Compositional and Processing Effects in Ti-alloys for Additive Manufacturing Technologies: Michael Mendoza; Peyman Samimi; Matthew Rolchigo; Richard Lesar; Peter Collins; Iowa State University

9:40 AM
Optimized Isotropic Properties in Ti-6Al-4V Parts via Additive Manufacturing: John Barnes; Christopher Aldridge; Heath Walker; Arconic; 1Iowa State University

10:00 AM Break

10:20 AM

10:40 AM
Statistical Analysis of Correlation between Part and Test Sample Properties: Lisa Deibler; Jay Carroll; Heather Boldt; Clint Holtry; Sandia National Laboratories

11:00 AM
Ultimate Functionalities in 3D-cellular Mesh Structures: Optimization of Structure-mechanical Property Relationship via Unit Cell Design: Krishna Chattanya Nune; RDK Misra; SJ Li; YI Hao; University of Texas at El Paso

11:20 AM
Build Rate Improvement for Powder Bed Fusion: Ming Tang; Petrus Pistorius; Carnegie Mellon University

11:40 AM
Spatial and Temporal Laser Modulation for Microstructural Control during Laser Additive Manufacturing of Metals: Tien Roehling; Sheldon Wu; Saad Khairallah; John Roehling; Michael Crumb; Gabe Guss; Manyalibo Matthews; University of the Pacific; Lawrence Livermore National Laboratory

Advanced Coatings for Wear and Corrosion Protection – Advanced Coatings for Wear and Corrosion Protection II
Program Organizers: Evelina Vogli, LiquidMetal Group Holdings, Inc.; Fei Tang, DNV GL; Emad Omrani, University of Wisconsin - Milwaukee; Afsaneh Dorri Moghadam, University of Wisconsin-Milwaukee; Pradeep Menezes, University of Nevada Reno; Pradeep Rohatgi, University of Wisconsin-Milwaukee

Wednesday AM Room: 338 Location: DLL Convention Center

8:00 AM Invited
Status of In-situ Process Monitoring in the Electron Beam Melting Process: Michael Kirka; Ryan Dehoff; Jacob Raplee; Alex Plotlowski; Vincent Paquit; Sean Yoder; Peyush Nadwanna; Oak Ridge National Laboratory; University of Tennessee

8:40 AM
Titanium Powder Smoke during EB-PBF: Decoupling Charge and Heat Deposition at Different Beam Energies: Paul Carriere; Stephen Yue; McGill University

9:00 AM
Development and Deployment of a Wire Arc Additive Manufacturing Capability: Paul Korinke; Anthony Reynolds; Anna d’Entremont; Andrew Duncan; Poh-Sang Lam; John Bobbitt; Eric Kriikku; Derek Gobin; Matthew Folsom; Savannah River National Laboratory; University of South Carolina

9:20 AM
In Situ Real Time Defect Detection of 3D Printed Parts: Xiaodong Li; Oliver Hammond; University of Virginia

9:40 AM
Supersonic Impact for Additive Manufacturing: An In-situ Study: Mostafa Hassani-Gangaraj; David Veysset; Keith Nelson; Christopher Schuh; Massachusetts Institute of Technology

10:00 AM Break

10:20 AM
Exploring Deposition at Elevated Temperatures for Laser Powder Bed Ti64: Brian Fisher; Jack Beuth; Carnegie Mellon University

10:40 AM
In Process Monitoring in Metal Powder Bed Fusion Processes Using Optical Coherence Tomography: Philip DePond; Gabe Guss; Sonny Ly; David Deane; Manyalibo Matthews; Lawrence Livermore National Laboratory

11:00 AM
In Situ Quality Monitoring in AM Using Acoustic Emission: A Machine Learning Approach: Kilian Wasmer; Christoph Kenel; Christian Leinenbach; Sergey A. Shevchik; Empa - Swiss Federal Laboratories for Materials Science and Technology

Wednesday AM Room: 303 Location: DLL Convention Center

Session Chair: Ola Harrysson, North Carolina State University
8:40 AM
Coating Wear Performance of REACH Compliant Trivalent Chromium
Hard Chrome: Timothy Hall1; George Bokisa2; Maria Inman3; Rajeswaran Radhakrishnan4; Jing Xu4; E Taylor4; Stephen Snyder4; Mark Feathers4; Faraday Technology Inc.; Coventya; US Army Aviation and Missle Command
9:00 AM
Corrosion and Wear Resistance Amorphous Thermal Sprayed Coatings: Evelina Vogli5; John Kang5; Ricardo Salas5; LiquidMetal Group Holdings, Inc.
9:20 AM
Investigating Gas Foil Bearing Coating Behavior in Environments Relevant to S-CO2 Power System Turbo-machinery: Matthew Walker6; Alan Kruijzena7; Darryn Fleming7; Sandia National Laboratories (Livermore); Sandia National Laboratories (Albuquerque)
9:40 AM
Electrodeposited Inconel and Stellite like Coatings for Improved Corrosion Resistance in Biocombustors: Timothy Hall8; Santosh Vijaup9; E Taylor10; Maria Inman11; Michael Brady12; Faraday Technology Inc.; ORNL
10:00 AM Break
10:20 AM
Influence of Rapid Solidification on the Thermophysical Properties and Surface Analyses of Laser Deposited Al-Sn-Si Coatings on Ti-6Al-4V Alloy: Olawale Fatoba13; Elisabeth Makhattha14; Esther Akilab15; University of Johannesburg
10:40 AM
Life Extension of RA602CA by Aluminizing in a Gas Carburizing Furnace: Anbo Wang16; Haixuan Yu17; Richard Sisson, Jr.18; Worcester Polytechnic Institute
11:00 AM
Tribology of Nanostructured Metals: Connecting Transitions in Surface Structure and Wear Rate: Timothy Rapert19; University of California, Irvine
11:20 AM
Quantification of the Interaction between Metal Substrates and Protective Coatings Systems under Ambient and Exposed Conditions: Kevin Sylvester20; Mark McMullen21; Tianna Iba22; Kar Tean Tan23; Peter Votruba-Drzal24; Justin Martin25; PPG

Advanced Steel Metallurgy: Products and Processing – Session IV
Program Organizers: Emmanuel De Moor, Colorado School of Mines; Amar De, ArcelorMittal Global R&D; Kester Clarke, Colorado School of Mines; Alla Sergeeva, The NanoSteel Company; Charles Enloe, General Motors; Daniel Branagan, The NanoSteel Company; Matthew Kiser, Caterpillar Inc.
Wednesday AM Room: 406 Location: DLL Convention Center
Session Chairs: Whitney Poling, National Institute of Standards and Technology; Singon Kang, POSTECH
8:00 AM
Mechanical and Microstructural Characterization of Spiral Submerged Arc Welded X-80 Line Pipes: Ashish Singhi26; Pushpendra Mahida27; Welspun Tubular LLC
8:20 AM New FCAW Electrodes for Producing Ultra-clean Welds in High Strength Low Alloy Steel: Susan Fiore28; Hobart Brothers Company
8:40 AM Tempering Response of Isothermally Transformed Bainitic Microstructures: Igor Vieira29; Don Williamson30; Emmanuel De Moor31; Colorado School of Mines
9:00 AM The Effects of Cr and Ni Contents and Heat Treatment on Mechanical Properties of a Medium Carbon Secondary Hardening Steel: In Liu32; Zheng Wu33; Justin Kim34; Warren Garrison35; Carnegie Mellon University
9:20 AM Understanding Loss of High Strength Steel during Tempering: A Process of Recovery: Bij-Na Kim36; David San Martin37; Pedro Rivera-Diaz-del-Castillo38; TU Delft; CENIM-CSIC; University of Cambridge
9:40 AM The Effects of Heating Rates on the Tempering of 4140 Steel: Xiaoping Cai39; Richard Sisson40; Worcester Polytechnic Institute
10:00 AM Break
10:20 AM Development of Mechanistic Long-term Creep Models for P91 Steels: Jifeng Zhao41; Jiadong Gong42; Greg Olson43; Abhinav Saboo44; QuestTek Innovations LLC
10:40 AM Effect of TMCP Steel Microalloying on Weld Metal Toughness: Nate McFiver45; Badri Narayan46; Lincoln Electric
11:00 AM A Novel Gradient Temperature Rolling Technique for Heavy/Ultra Heavy Steel Plate with High Strength: Baosheng Xie47; Qingsu Cai48; Yang Yuan49; Xu Chen50; University of Science and Technology Beijing
11:20 AM Significant Influence of Carbon and Niobium on the Precipitation Behavior and Microstructural Evolution and their Consequent Impact on Mechanical Properties in Microalloyed Steels: YY Natarajan51; VSA Challa52; Devesh Misra53; DM Sidorenko54; MD Mullholland55; M Manohar56; JE Hartmann57; University of Texas at El Paso; ArcelorMittal Global R&D Center

Advancements in In-situ Electron Microscopy Characterization II – Composites and Simulations
Program Organizers: Yue Liu, Shanghai Jiao Tong University; Nan Li, Los Alamos National Laboratory; Khalid Hattar, Sandia National Laboratories; T. John Balk, University of Kentucky; Josh Kacher, Georgia Tech
Wednesday AM Room: 408 Location: DLL Convention Center
Session Chairs: Yue Liu, Shanghai Jiao Tong University; Jie Jian, Purdue University
8:00 AM Invited In Situ TEM Nanoindentation Studies on Plastic Behaviors of Ceramics: Jie Juan58; Joon Hwan Lee59; Yue Liu60; Amiya Mukherjee61; Xinhang Zhang62; Haiyan Wang63; Purdue University; Texas A&M University; Shanghai Jiao Tong University; University of California, Davis
8:30 AM Invited
Transformations of Dislocation Structures at Nodes in Semi-coherent Interfaces: Shuai Shao1; Firas Akashbeh1; Jan Wang1; 1Louisiana State University; 2Tuskegee University; 1University of Nebraska-Lincoln
9:00 AM
Lorentz TEM Simulation of Evolving Dzyaloshinskii Domain Wall Structure under In-Plane Magnetic Fields: Maxwell Li1; Marc De Graef1; Vincent Sokalski1; 1Carnegie Mellon University
9:20 AM
Analysis of Phase Identification and Strain Measurement of TRIP-aided Multiphase Steel Using In-Situ EBSD Tensile Test: Kyung Il Kim1; Yeonju Oh1; Joo-Hee Kang2; Sungil Kim2; Seok Jong Seo2; Kyuwhan Oh2; Heung Nam Han2; 1Seoul National University; 2Korea Institute of Material Science; 1POSCO
9:40 AM
Single and Cyclic Deformation Responses in Nano-laminate Crystalline/Glassy Metal Composites: Qiang Guo1; Christopher Barr2; Khalid Hattar2; Gregory Thompson2; 1The University of Alabama; 2Sandia National Laboratories

Advances in Dielectric Materials and Electronic Devices – Piezoelectrics/Ferroelectrics
Program Organizers: Amar Bhalla, The University of Texas at San Antonio; Ruyan Guo, University of Texas at San Antonio; K. M. Nair, E.I.duPont de Nemours & Co, Inc; Danilo Suvorov, Jožef Stefan Institute; Rick Ubic, Boise State University
Wednesday AM Room: 331
October 11, 2017 Location: DLL Convention Center
Session Chairs: Amar Bhalla, The University of Texas at San Antonio; Rick Ubic, Iowa State Univ

8:40 AM Invited
Topochemical Conversion under Hydrothermal Conditions as a Route for the Preparation of Anisotropic Perovskite Particles: Danilo Suvorov1; Marjeta Macek Krzmadec1; Alja Contala1; Hana Ursic1; 1Jožef Stefan Institute
9:00 AM
Relaxor Ferroelectric and Antiferroelectric Materials as Dielectric Coolants: Bouchra Ashani1; Brigita Rozic2; Hana Ursic2; Minouin El Marssi1; Rasa Pirc2; Jurij Koruza; Barbara Malic2; Zdravko Kutnjak2; 1University of Picardie Jules Verne; 2Jožef Stefan Institute
9:20 AM
Crystal Structure, Ferroelectricity and Polar Order in Ba4R2Zr4Nb6O30 (R=La, Nd, Sm) Tetragonal Tungsten Bronze New System: Xiaodai Zhu1; Wen Bin Feng1; Xiao Qiang Liu1; Xiang Ming Chen1; 1Zhejiang University
9:40 AM
Construction of Different Shaped Ferroelectric Filler and Its Effect on Dielectric Properties of Composite Materials: Jing Fu1; Yu dong Hou1; Mupeng Zheng1; 1College of Materials Science and Engineering, Beijing University of Technology
10:00 AM Break

Boron, Boron Coatings, Boron Compounds and Boron Nanomaterials: Structure, Properties, Processing, and Applications – Novel Synthesis & Coatings
Program Organizers: Jens Kunstmann, TU Dresden; Roumiana Petrova, New Jersey Institute of Tech; Scott Beckman, Washington State University
Wednesday AM Room: 330
October 11, 2017 Location: DLL Convention Center
Session Chair: Scott Beckman, Washington State University

8:00 AM Invited
Borohydrides as Fundamental Precursors for Boride Materials: Mark Roll1; Lillian Malloy1; 1University of Idaho
8:40 AM Invited
Understanding Crystal Growth in Lanthanum Hexaboride: Tracy Mattox1; Jeffrey Urban2; 1Lawrence Berkeley National Laboratory
9:20 AM Invited
Metal Hexaboride Restructuring via Lithiation Chemistry: Tina Salguero1; Roshini Ramachandran1; 1The University of Georgia
10:00 AM Break
10:20 AM
Boron Nitride – Based Coatings Obtained through Thermal Diffusion Process: Eugene Medvedovski1; 1Endurance Technologies Inc.
10:40 AM Invited
Plasma Electrolytic Boronitriding and Nitriding of Steel: Linxin Zhu1; Roumiana Petrova2; 1New Jersey Institute of Technology
11:00 AM
Establishment of the Relationship between the Microstructure Characteristics and the Heat Resistance of Silicate Coatings Obtained under SHS Conditions: Borys Sereda1; Dmytro Sereda1; 1DSTU; 2Zaporizhzhya State Engineering Academy

Ceramic-based Optical Materials and Advanced Processing – Session II
Program Organizers: Yiquan Wu, Alfred University; Jas Sanghera, Naval Research Laboratory; Michael Squillante, RMD, Inc; Akio Ikeseue, World-Lab. Co., Ltd
Wednesday AM Room: 311
October 11, 2017 Location: DLL Convention Center
Session Chairs: Jonathan Salem, NASA; Javier Garay, University of California, San Diego

8:00 AM Invited
Advanced Functional Fibers: Guang-Ming (Derek) Tao1; 1University of Central Florida
8:20 AM Invited
Advanced Nanocomposite Ceramics for IR Solid State Lasers: A Series of Unfortunate Trade-offs: Victoria Blair1; Zackery Fleischman1; Nicholas Ku2; 1Army Research Laboratory; 2ORISE
8:40 AM
Designing Transparent Ceramics for Electro-optic and Magneto-optic Light Manipulation: Javier Garay; 1University of California San Diego

9:00 AM
Effect of SiO2 and MgO on the Sintering of High Density Bulk YIG Ceramics: Matthew Julian; Clay French; Romain Gaume; 1University of Central Florida

9:20 AM
Microstructure Evolution of Europium Doped Magnesium Aluminate Spinel: Amanda Krause; Carlen Donahue; Animesh Kundu; Richard Vinci; Martin Harmer; 1Lehigh University

9:40 AM
High Transparency Cr, Nd:LuAG Ceramics Prepared with MgO Additive: Pande Zhang; Benxue Jiang; Long Zhang; 1Shanghai Institute of Optics and Fine Mechanics

10:00 AM Break

10:20 AM
Transparent Nanocomposite Ceramics for Eye-safe Lasers and Phosphor Hosts: Ho Jin Ma; Wook Ki Jung; Youngtae Park; Do Kyung Kim; 1Korea Advanced Institute of Science and Technology (KAIST)

10:40 AM Toward the Fabrication of Ba(Zr0.25Mg0.25Ta0.5)O3 Ceramics by Oxygen Controlled Sintering: Xianqiang Chen; Yin Liu; Yiqian Wu; 1Alfred University

11:00 AM Role of Atomic-level Defects and Electronic Energy Loss on Amorphization in LiNO3 Single Crystals: Neila Sellami; Miguel Crespiello; Haizhou Xue; Yanwen Zhang; William Weber; 1Materials Science and Technology Division, Oak Ridge National Laboratory; 2Department of Materials Science and Engineering, University of Tennessee

11:20 AM Microstructure, Optical, and Scintillation Properties of Ce:Gd2YAl2Ga3O12 Transparent Ceramics: Benxue Jiang; 1Shanghai Institute of Optics and Fine Mechanics

10:00 AM Break

10:20 AM Invited
Ferret: an Open-source Code for Simulating Thermodynamical Evolution and Phase Transformations in Complex Materials Systems at Mesoscale: Serge Nakhmanson; 1University of Connecticut

9:00 AM Activation Energy for Crystallization of Nanocrystalline Exchange Coupled Alloys: Jonathan Healy; Bowen Dong; Maria Daniil; Matthew Willard; 1Case Western Reserve University; 2Bard Early College High School

9:20 AM Centrifuge-aided Micromolding of Micron- and Submicron-sized Patterns: Hongfei Ju; Kaijie Ning; Kathy Lu; 1Virginia Tech

9:40 AM Invited
Integration of Dissimilar Nanophase Materials in 3D Nanocomposites: Applications in Magnetism: Javier Garay; 1University of California San Diego

10:20 AM Break

10:40 AM Imprint Lithography of ZnO-PMMA Hybrids: Kathy Lu; Michelle Gervasio; 1Virginia Tech

11:00 AM Magnetic and Structural Properties of Ball-milled Nanocrystalline Fe77Co5.5Ni5.5Zr7B4Cu1 Soft Magnetic Powders: Anthony Martone; Bowen Dong; Som Thomas; Donglu Shi; Matthew Willard; 1Case Western Reserve University; 2The University of Cincinnati

11:20 AM in-situ Synthesized CdS Nanowire Photosensor for Chemiluminescence Biosensors: Jae-Chul Pyun; Hong-Rae Kim; 1Yonsei University

11:40 AM Nanoporous Silicon Oxycarbide Fibers: Poroshat Taheri; Peter Kroll; 1University of Texas Arlington
**Data and Tools for Materials Discovery and Design – Data Science Methods in Materials Discovery and Development**

*Program Organizers:* Zi-Kui Liu, The Pennsylvania State University; David McDowell, Georgia Institute of Technology; Carelyn Campbell, National Institute of Standards and Technology; Laura Bartolo, Northwestern University; Bryce Meredig, Citrine Informatics; Mark Tschopp, Army Research Laboratory; Dane Morgan, University of Wisconsin - Madison; Afina Lupulescu, ASM International

**Wednesday AM**

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<tr>
<th>Time</th>
<th>Session Title</th>
<th>Speaker/Institution</th>
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<tbody>
<tr>
<td>8:00 AM</td>
<td>Keynote</td>
<td>Bryce Meredig; Citrine Informatics</td>
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<tr>
<td>8:40 AM</td>
<td>Invited Bellerophon Environment for Analysis of Materials (BEAM), A High Performance Computing Link to Understanding Material Properties</td>
<td>Alex Bellaminov; Eric Lingerfelt; Stephen Jesse; Oak Ridge National Laboratory</td>
</tr>
<tr>
<td>9:00 AM</td>
<td>Invited Facilitating Discovery of Materials Resources with NIST’s Federated Registry System</td>
<td>Laura Bartolo; Chandler Becker; Benjamin Blaiszik; Northwestern University; National Institute of Standards and Technology; University of Chicago/Argonne National Laboratory; Argonne National Laboratory/University of Chicago</td>
</tr>
<tr>
<td>9:40 AM</td>
<td>Invited NIST Alloys Thermophysical Property Data Development</td>
<td>Erik Pfeif; Boris Willhan; Vladimir Diky; Scott Townsend; Andrei Kazakov; Kroenlein Kenneth; NIST</td>
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<td>10:00 AM</td>
<td>Break</td>
<td>--------------------------------------------------------------------------------------</td>
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<tr>
<td>10:20 AM</td>
<td>Invited Data Analytics for Mining Process-Structure-property Linkages for Hierarchical Materials</td>
<td>Surya Kalidindi; Georgia Institute of Technology</td>
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<tr>
<td>10:40 AM</td>
<td>Efficient Protocols for Ranking the Transition Fatigue Performance of Polycrystalline Materials</td>
<td>Noah Paulson; Matthew Priddy; David McDowell; Surya Kalidindi; Georgia Institute of Technology; Mississippi State University</td>
</tr>
<tr>
<td>11:00 AM</td>
<td>An Analytical Micromechanical Model Solution for Twin Nucleation in Hexagonal Close-packed Metals</td>
<td>Yub Raj Paudel; Christopher Barrett; Mark Tschopp; Kaan Inal; Haitham El Kadiri; Mississippi State University; Army Research Laboratory; University of Waterloo</td>
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**Design, Processing, and Development of Structural Materials – Alloys for Power and Energy**

*Program Organizers:* Tomoko Sano, U.S. Army Research Laboratory; Mitra Taheri, Drexel University

**Wednesday AM**

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<tr>
<th>Time</th>
<th>Session Title</th>
<th>Speaker/Institution</th>
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<tr>
<td>8:00 AM</td>
<td>Invited Achieving Superior Performance in the Oil and Gas Industry Using Innovative Materials Solutions</td>
<td>Neeraj Thirumalai; Srinivasan Rajagopalan; Howie Jin; ExxonMobil Research and Engineering Company</td>
</tr>
<tr>
<td>8:40 AM</td>
<td>Effect of Carbon Content in Cast IN740 for Advanced Power Generation Applications</td>
<td>Kyle Rozman; Martin Detrosi; Paul Jablonski; Jeffery Hawk; NETL</td>
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<tr>
<td>9:00 AM</td>
<td>The Impact of Dynamic Normal Grain Growth on Texture Development in an Interstitial-free Steel</td>
<td>Ryann Rupp; Eric Taleff; The University of Texas at Austin</td>
</tr>
<tr>
<td>9:20 AM</td>
<td>Some Effects of V/(V+Ti) in TRIP and BH Steels</td>
<td>Lin Li; Hu Jiang; Yan Lin; Mei Zhang; Shanghai University</td>
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<tr>
<td>9:40 AM</td>
<td>The Fundamental Thermodynamic Investigation on the Grade 91 Alloy</td>
<td>Andrew Smith; Wei Zhang; Yu Zhong; Florida International University</td>
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<tr>
<td>10:00 AM</td>
<td>Break</td>
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<td>10:20 AM</td>
<td>Invited Decorating Defects with Segregating Dopants to Tailor Mechanical Properties</td>
<td>Timothy Rupert; University of California, Irvine</td>
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<tr>
<td>10:40 AM</td>
<td>Relating Sink Efficiency to Interface Properties in Irradiated Materials</td>
<td>Blas Uberuaga; Los Alamos National Laboratory</td>
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<tr>
<td>11:20 AM</td>
<td>A Comprehensive Study of Hydrogen Behaviors at Grain Boundaries of Al</td>
<td>William Yi Wang; Chengxiong Zou; Deye Lin; Liang Zhang; Jijun Ma; Quanmei Guan; Jing Sun; Jianying Hou; Ying Zhang; Bin Tang; Jun Wang; Hongchao Kou; Jinshen Li; Northwestern Polytechnical University; Institute of Applied Physics and Computational Mathematics; Shanghai Research Institute of Materials; CRRC Tangshan Co., Ltd.</td>
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<tr>
<td>11:40 AM</td>
<td>The Role of Pipe Diffusion in the Stability of Low Angle Grain Boundaries</td>
<td>Yejun Gu; Yang Xiang; David Srolovitz; Jaafar El-Awady; Johns Hopkins University</td>
</tr>
</tbody>
</table>
Emerging Interconnect and Pb-free Materials for Advanced Packaging Technology – Session I
Program Organizers: Albert T. Wu, National Central University; Carol Handwerker, Purdue University; Fiqiri Hodaj, Grenoble Institute of Technology

Wednesday AM Room: 336 Location: DLL Convention Center

Session Chairs: Albert T Wu, National Central University; Carol Handwerker, Purdue University

8:00 AM Invited Development of Pb-Free Solders and Other Joining Materials to Replace High-Pb Hierarchical Solders: Iver Anderson1; Stephanie Choquette2; Kathlene Reeves3; Carol Handwerker3; 1Ames Laboratory, Iowa State University; 2Iowa State University; 3Purdue University

8:40 AM Sintering Properties of Ag Pastes on Various Electroplated Au Substrates: Hao Zhang1; Taikun Fan2; Hao Zhang1; Caifu Li1; Jianxin Wang2; Shijo Nagao1; Katsuaki Suganuma1; 1The Institute of Scientific and Industrial Research (ISIR) Osaka University; 2Jiangsu University of Science and Technology

9:00 AM Model Construction for Predicting Effects of Microstructural Morphologies in Sintered Ag Layer on the Joint Strength: Kohei Nakanishi1; Adrian Lis1; TomokiMatsuda1; TomokazuSano1; AkioHirose2; HiroakiTatsumi2; YoshihiroKashiba2; ‘Osaka University; ‘Mitsubishi Electric Corporation

9:20 AM Enhancing Bonding Property of Cu Particles Paste by Adding Organic Acid: Yue Gao1; Jinting Jiu1; Chuantong Chen1; Toshiyuki Ishina1; Tohru Sugahara1; Shijo Nagao1; Katsuaki Suganuma1; ‘Osaka university Institute of Scientific and Industrial Research; ‘Senjia Metal Co., Ltd.

9:40 AM Phase separation of Cu(Ti) bonds for chip-level 3D IC packaging: Albert T. Wu; Po Chen Lin1; ‘National Central University

10:00 AM Mechanical Properties Of A Cu-Ni/Sn High Temperature Pb-Free Composite Solder Paste: Stephanie Choquette1; Iver Anderson1; ‘Ames Lab

Failure Analysis and Prevention – Tools & Techniques
Program Organizers: Andrew Havics, pH2, LLC; Pierre Dupont, Schaeffler Belgium Srl/Bvba; Burak Akyuz, ATS, Inc.

Wednesday AM Room: 407 Location: DLL Convention Center

Session Chairs: Aaron Tanzer, Exova; Jonathan Trenkle, Exponent Inc; Aaron Slager, Bell Helicopter Textron; Andrew Havics, pH2, LLC

8:00 AM Engineering Analysis of Failure: A Determination of Cause Method: Mark Russell2; Tim Jur1; ‘Engineering Design & Testing Corp

8:20 AM Lessons Learned in Engineering Design, Manufacturing, and Construction from 50 Years of Failure Experience: Bill O’Donnell2; ‘O’Donnell Consulting Engineers

8:40 AM From Products Development to Service—Failure Analysis at Parker Hannifin Corporation: Yindong Ge1; Jacob Napolitan1; Douglas Delean1; 1Parker Hannifin Corp.

9:00 AM It’s Elemental: Misuse and Pitfalls of EDS Analysis: Aaron Tanzer1; Jacek Zlamaniec1; ‘Exova

9:20 AM Three-dimensional Surface Imaging with a Dual Beam Microscope: David Schoen1; Nathan Bailey2; ‘Exponent, Inc.

9:40 AM Non-Traditional Techniques in Materials Failure Analysis: Michael Budinski1; ‘National Transportation Safety Board

10:00 AM Break

10:20 AM Failure Assessment of a Resistance Weld Electrode: Paul Korinko1; Anthony McWilliams1; Matthew Van Swol1; ‘Savannah River National Laboratory

10:40 AM In-situ Fatigue Life Analysis of Steel Using Modal Acoustic Emission and Electrical Resistivity Techniques: Sulochana Shrestha1; Manigandan Kannan1; Michael Presby1; Yogesh Singh1; Gregory Morscher1; 1The University of Akron

11:00 AM Remaining Life Assessment of Long Term Service Exposed Boiler Component: Dwarka Sat1; ‘O.P.Jindal Institute of Technology

11:20 AM Quantification of Optical Functionality Loss Due to Mechanical Damage: Simon Lockyer-Brattor1; David Schoen1; Erwin Lau1; Lucas Berla1; Evan Brown1; ‘Exponent

11:40 AM Materials For Advanced UltraSuperCritical Steam Turbine Applications: Philip Maziasz1; ‘Oak Ridge National Laboratory

Fifty Years of Metallography and Materials Characterization – Fifty Years of Metallography and Materials Characterization II
Program Organizers: Ryan Deacon, United Technologies Research Center; Daniel Dennies, Consulting Metallurgical Engineer; George Vander Voort, Consultant - Struers Inc

Wednesday AM Room: 409 Location: DLL Convention Center

Session Chair: To Be Announced

8:00 AM A Metallographic Study on the Diffusion Behavior and Microstructural Transformations in Silicon-containing Powder Metallurgy Steels: Thomas Murphy1; Christopher Schade2; ‘Hoeganaes Corporation
8:20 AM
Oxidation Behavior of Tungsten Carbide-6% Cobalt Cemented Carbide: Chris Bagnall1; Jerry Cape2; Walter Moorhead2; 1MCS Associates, Inc.; 2Product Evaluation Systems, Inc.

9:00 AM
Microanalysis of Microscopy Evaluation of Mechanical Property Changes due to Low Temperature Thermal Treatment of a Steel: Daniel Dennies1; 1DMS, Inc.

9:20 AM
Next Step in Complex Microstructure Classification – How to Replace Subjective Expert Bias by 3D Information and Autonomous Procedures?: Frank Muecklich1; Dominik Britz2; Jessica Pauly2; 1Saarland University; 2Materials Engineering Center Saarland

10:00 AM Break

10:20 AM
Proclamation, Publication and Progress: Mac Louthan1; 1Savannah River National Laboratories

11:00 AM
Failure of a Reformer Furnace by “Surge”: Iain Le May1; Mario Nascimento2; Luiz Henrique de Almeida3; Tito da Silveira4; 1Consultant; 2COOPE/UFRJ; 3UFRJ; 4UFRJ/TSEC

11:40 AM
Precipitation of Ti-C-N Particles in Austenite during Cooling Process of High-Ti Microalloyed Steel: Xueliang Zhang1; Shufeng Yang1; Weihua Zhang1; Jingshe Li1; Shuo Zhang1; 1University of Science and Technology Beijing

11:00 AM
Identification of the Important Material and Process Parameters that Control Distortion and Residual Stress in Heat Treatment: Haiyun Yu1; Yuan Lu1; Richard Sisson1; 1Worcester Polytechnic Institute

Gas/Metal Reactions, Diffusion and Phase Transformation during Heat Treatment of Steel – Session I

Program Organizers: Liang He, Air Products and Chemicals Inc.; Xuekun Li, Tsinghua University; Daniel Baker, General Motors

Wednesday AM Room: 310
October 11, 2017 Location: DLL Convention Center

Session Chair: Lei Zhang, Worcester Polytechnic Institute

8:00 AM Invited
High Performance of Ceramics and Manufacturing Process Innovation: Yoshio Sakka1; 1NIMS

8:40 AM Invited
Eutectic Ceramic Composite by Directional Solidification: Takashi Goto1; Kishin Morita1; Hirokazu Katsui1; 1Tohoku University

9:20 AM
Infiltration of Precursors into Fiber Beds for PIP-derived CMCs: Natalie Larson1; Frank Zok1; 1University of California, Santa Barbara

9:40 AM
In-situ XCT of Crack Evolution during Pyrolysis of PIP-derived CMCs: Natalie Larson1; Frank Zok1; 1University of California, Santa Barbara

10:00 AM Break

10:20 AM
Precipitation of Ti-C-N Particles in Austenite during Cooling Process of High-Ti Microalloyed Steel: Lintao Gui1; Dengfu Chen1; Peng Liu1; Hengsong Yu1; Tao Liu1; Mujun Long1; Huamei Duan1; Junsheng Cao1; 1Chongqing University

10:40 AM
Reaction between MnO-SiO2-FeO Inclusion and Steel Matrix Deoxidized by Si and Mn at Different Heat Treatment Temperatures: Junsheng Cao1; Shufeng Yang1; Weihua Zhang1; Jingshe Li1; Shuo Zhang1; 1University of Science and Technology Beijing

11:00 AM
Infiltration of Precursors into Fiber Beds for PIP-derived CMCs: Natalie Larson1; Frank Zok1; 1University of California, Santa Barbara

11:40 AM
Synthesis of and Size Effects in Dense Truly Nanocrystalline Ceramics with Grain Sizes Well Below 50nm: James Willmershauser1; Boris Feigelson1; Heonjune Ryu1; John Drazin1; Edward Gorzkowski1; Kathyrn Wahl1; 1U.S. Naval Research Laboratory; 2ASEE at U.S. Naval Research Laboratory

11:00 AM
Additive Manufacture of Ceramics Using Direct Coagulation: Tucker Hensen1; Troy Holland1; 1Colorado State University
Interfaces, Grain Boundaries and Surfaces from Atomistic and Macroscopic Approaches – Interfaces and Polycrystals; Interface Kinetics I
Program Organizers: Dominique Chatain, CNRS, Aix-Marseille University; John Blendell, Purdue University; Wayne Kaplan, Technion - Israel Institute of Technology

Wednesday AM  Room: 410  Location: DLL Convention Center

Session Chairs: Douglas Medlin, Sandia National Laboratories; David McComb, Ohio State University; Yuri Mishin, George Mason University; Bryan Huey, University of Connecticut

8:00 AM Keynote
Evolution in Grain Shapes and Sizes in Polycrystalline Ni during Grain Growth: Aditi Bhattacharya1; Christopher Hefferan1; Shiu Fai Li1; Jonathan Lind1; Robert Suter1; Gregory Rohrer1; ‘Carnegie Mellon University

8:40 AM Invited
The Role of Surfaces and Interfaces in Yttrium-doped Barium Zirconate with Nickel: Ivar Reimanis1; ‘Colorado School of Mines

9:00 AM
3D Non-destructive Shape and Orientation Resolved Grain Mapping in Polycrystalline Silicon Using Laboratory Diffraction Contrast Tomography: Ashwin Shahani1; Hrishikesh Bale2; Nicolas Gueninchault2; Arno Merkle3; Erik Lauridsen3; ‘University of Michigan, Ann Arbor; ‘Carl Zeiss Microscopy Inc.; ‘Xnovo Technology ApS

9:20 AM Invited
Low Annealing Twin Fractions in 3D Printed Metals: Anthony Rollett1; Samiksha Subedi1; Shuehen Cong1; ‘Carnegie Mellon University

9:40 AM Invited
Grain Growth in Electric Field in Perovskites: Defects, Space Charge and Their Impact on Boundary Migration: Wolfgang Rheinheimer1; Jan Preusker1; Jana Karras2; Roger de Souza2; Michael Hoffmann2; ‘Karlsruhe Institute of Technology; ‘RWTH Aachen University

10:00 AM Break

10:20 AM Keynote
Atomistic Simulations on Grain Boundary Migration: Sherri Hadian1; Blazej Grabowski1; Christopher Race2; Jörg Neugebauer2; ‘Max-Planck-Institut für Eisenforschung; ‘University of Manchester

10:40 AM Invited
Kinetics of Phase Boundary Migration in Intercalation Compounds: Ming Tang1; ‘Rice University

11:00 AM
Trends in Grain Boundary Mobility with Varied Stress State: Derek Lontine1; Oliver Johnson2; ‘Brigham Young University, US Synthetic Corp; ‘Brigham Young University

11:20 AM
The Role of Disconnections at General Grain Boundaries in Grain Boundary Motion: Hadas Sternlicht1; Wolfgang Rheinheimer2; Alex Mehlmann2; Avner Rothchild1; Michael Hoffmann3; Wayne Kaplan1; ‘Technion; ‘Karlsruhe Institute of Technology

International Symposium on Ceramic Matrix Composites – CMC I
Program Organizers: Narottam Bansal, NASA Glenn Research Center; Jitendra Singh, Retired, U.S. Army Research Laboratory; Jacques Lamon, CNRS; Sung Choi, Naval Air Systems Command

Wednesday AM  Room: 316  Location: DLL Convention Center

Session Chairs: Frank Zok, University of California, Santa Barbara; Marina Ruggles-Wrenn, Air Force Institute of Technology

8:00 AM Invited
Exploiting the Full Potential of SiC Fibers: Processing, Protection and Performance of CMCs: Frank Zok1; ‘University of California, Santa Barbara

8:40 AM Invited
Damage and Failure of SiC Fiber Tows during Environment Activated Slow Crack Growth: Residual Behavior and Strength-probability-time Diagrams: Jacques Lamon1; Mohamed R’Mili2; ‘CNRS; ‘University of Lyon

9:20 AM Invited
SiC Fiber Oxidation in Si(OH)4 Saturated Steam: Randall Hay1; ‘Air Force Research Laboratory

10:00 AM Break

10:20 AM Invited
Fatigue of Three Advanced SiC/SiC Ceramic Matrix Composites at 1200°C Air and in Steam: Marina Ruggles-Wrenn1; ‘Air Force Institute of Technology

11:00 AM
Life Limiting Behavior in Ceramic Matrix Composites (CMCs) Under Interlaminar Shear: Luis Sanchez1; Nesredin Kedir1; David Faucett1; Cajer Gong1; Sung Choi1; ‘NAVAIR

11:20 AM
High Temperature Creep of HfB2-based UHTCs: Eugenio Zapata-Solvas1; Diego Gomez-Garcia2; Arturo Dominguez-Rodriguez2; Bill Lee1; ‘Imperial College London; ‘Universidad de Sevilla
International Symposium on Defects, Transport and Related Phenomena – Anion Transport

Program Organizers: Tatsuya Kawada, Tohoku University; Manfred Martin, RWTH Aachen University; Sangtae Kim, University of California, Davis

Wednesday AM
October 11, 2017
Location: DLL Convention Center

Session Chairs: Han-Ill Yoo, Seoul National University; Hitoshi Takamura, Tohoku University

8:00 AM Invited
Defect Ordering Phenomena in Bi₁₋ₓSrₓFeO₃₋ₓ/₂: Yuto Tomura¹; Itaru Oikawa¹; Hitoshi Takamura¹; ¹Tohoku University

8:40 AM Invited
Five Decades of Research in Oxide Ion Conductors in Fluorite Structure: What Can We Conclude?: Thuy Linh Pham²; Tai-Joo Chung³; Martin Lerch³; Jong Kook Lee⁴; Ji-Won Son⁵; Jong-Ho Lee⁴; Ji Haeng Yu⁴; Jong-Soon Lee⁴; ²Chonnam National University; ³Technische Universität Berlin; ⁴Chosun University; ⁵Korea Institute of Science and Technology; ⁶Korea Institute of Energy Research

9:20 AM Invited
Limits to the Rate of Oxygen Transport in Mixed-conducting Oxides: Roger De Souza¹; ¹RWTH Aachen University

10:00 AM Break

10:20 AM Invited
A Novel Method to Measure the Chemical Diffusivity of a Mixed-conducting Compound: Han-Ill Yoo¹; ¹Seoul National University

11:00 AM
Nonstoichiometric BaBiO₃₋ₓ Ceramics: Phase Transition and Conduction Mechanism Revealed by AC Response: Dang Thanh Nguyen¹; Hung Tai Nguyen¹; Jong-Soon Lee¹; ¹Chonnam National University

11:20 AM
Redox Behavior of Acceptor-doped TiO₂ Thin Films Prepared by Pulsed Laser Deposition: Akihiro Ishii¹; Itaru Oikawa¹; Hitoshi Takamura¹; ¹Tohoku university

Joining of Advanced and Specialty Materials (JASM XIX) – Welding Metallurgy

Program Organizers: Boian Alexandrov, The Ohio State University; Mathieu Brochu, McGill University; Anming Hu, University of Tennessee; Darren Barborak, AZZ WSI; Akio Hirose, Osaka University; Peng He, Harbin Institute of Technology; Zhiyong Gu, University of Massachusetts Lowell; Vikas Patel, ArcelorMittal USA

Wednesday AM
October 11, 2017
Location: DLL Convention Center

Session Chairs: Carolin Fink, The Ohio State University; Doris Ivette Villalobos-Vera, Instituto Tecnológico de Veracruz

8:00 AM
Numerical Simulation of Hydrogen Distribution during Multi-pass Welding for Reduced Activation Ferritic/martensitic Steel F82H: Hiroaki Mori¹; Kohei Hatoya²; Kento Kawauchi³; Taichiro Kato³; Takamori Hirose²; Hiroyasu Tanigawa³; ¹Osaka University; ²National Institute for Quantum and Radiological Science and Technology

8:20 AM
Microstructure, Toughness and Cold Cracking Tendency of 1100 MPa Weld Metal: Jun Peng¹; Xingna Peng¹; Zhiling Tian¹; ¹China Iron & Steel Research Institute Group

8:40 AM
Liquid Metal Embrittlement of Zn Coated Advanced High Strength Steel Welds: Andrew Macwan¹; Elliot Biro²; Y. Norman Zhou¹; ¹University of Waterloo; ²Arcelor Mittal Dofasco

9:00 AM
Influence of Titanium on Microstructures and Toughness in Simulated Coarse Grain Heat Affected Zone for Titanium Micro-alloyed Steel with Different Heat Inputs: Jiansheng Cao¹; Majun Long¹; Wenjie He¹; Tao Liu¹; Lintao Gui¹; Dengfu Chen¹; Huamei Duan¹; Xinhong Du¹; ¹Chongqing University

9:20 AM
Femtosecond Laser Peening without a Sacrificial Overlay under Atmospheric Conditions for Improving Fatigue Properties of Laser-welded and FSWed 2024 Aluminum Alloys: Tomokazu Sano¹; Takayuki Oida¹; Akio Hirose¹; Seiichiho Tsutsumi¹; Yousuke Kawahito¹; Seiji Katayama¹; Kazuto Arawaka¹; Hisashi Hori¹; Kiyotaka Masaki¹; Ayumi Shiroy¹; Takahisa Shobu¹; ²Osaka University; ³Shimane University; ⁴Nippon Light Metal Company, Ltd.; ⁵National Institute of Technology, Okinawa College; ⁶QST; ⁷Japan Atomic Energy Agency

9:40 AM
Numerical Prediction of Penetration Shapes in MIG Welding of Aluminum Alloy Joints: Hisashi Serizawa¹; Shingo Sato¹; Fumikazu Miyakawa¹; ¹Osaka University

10:00 AM Break

10:20 AM
Characterization of Cracking in Nickel-based Alloy Overlays: Samuel Luther¹; Boian Alexandrov¹; ¹The Ohio State University

10:40 AM
Evaluation of Ductility-dip Cracking Susceptibility in Alloy 690 Laser Multipass Weld Metal by Cross-bead Longitudinal-Varestraint test: Tomo Ogura¹; Yusuoka Morikawa¹; Kazuyoshi Saida¹; ¹Osaka University
11:00 AM
Effect of Selective Element Vaporization on the Solidification and Cracking Response of 304L Stainless Steel Alloys with Controlled Levels of Manganese: Jason Berger1; Jeff Rodelas1; João Oliveira2; Antonio Ramirez2; Sandia National Laboratories; The Ohio State University

11:20 AM
Effect of Secondary Phases on the Corrosion Resistance of Hyperduplex Stainless Steel: Doris Ivette Villalobos Vera1; Instituto Tecnológico de Veracruz

11:40 AM
Effect of Alloying Elements on the Weldability of Austenitic Stainless Steel SA 240 Type 304L: Muhammad Kamran1; Ayyaze Asham1; Tahir Ahmad1; Muhammad Manzoor1; Fahad Riaz2; Faraz Hussain1; University of the Punjab

**Light Metals Alliance: Light Metals Technology 2017 – Light Metals Technology: Aluminum - Product Development**

Program Organizers: Diran Apelian, Worcester Polytechnic Institute; Kumar Sadayappan, Canmet MATERIALS; Frank Czerwinski, CanmetMATERIALS; Brajendra Mishra, Worcester Polytechnic Institute; Michael Bermingham, The University of Queensland; Wenjiang Ding, Shanghai Jiao Tong University; Zhongyun Fan, Brunel University; Gonasaagren Govender, The Council for Scientific and Industrial Research (CSIR); Frank Czerwinski, Diran Apelian, Worcester Polytechnic Institute; Program Organizers: Light Metals Technology: Titanium – Light Metals Technology: Aluminum

Wednesday AM Room: 415

Session Chairs: Karl Kainer, Helmholtz-Zentrum Geesthacht; Bong Sun You, Korea Institute of Materials Science

**8:00 AM**
Effect of Co and Ni-Additions on the Microstructure and Mechanical Properties at Room and Elevated Temperature of an Al-7%Si Alloy: Toni Bogdanoff1; Arne Dähle1; Salem Seifeddine1; Jönköpings University

**8:20 AM**
Effect of Titanium Levels on the Castability and Abnormal Grain Growth after Heat Treatment of Al-Zn-Mg-Cu Alloys: Xiaochun Zeng1; Kumar Sadayappan2; Cassandra Ferguson1; Sumanth Shankar1; LMCRC - McMaster University; CanmetMaterials - Natural Resources Canada

**8:40 AM**
Heat Treatment of Steel-Aluminum Hybrid Components: Sebastian Herbst1; Florian Nürnberg1; Institut für Werkstoffkunde, Leibniz Universität Hannover

**9:00 AM**
Joining Automotive Steel and Aluminum Alloys with Vaporizing Foil Actuator Welding: Anupam Vivek1; Bert Liu1; Yu Mao1; Glenn Daehn1; The Ohio State University

**9:20 AM**
Lightweight Aluminum Foams – Tailoring Compressive Property through Relative Density Variation: Prashant Chakravarthy Shunmugasamy1; Bilal Mansoor1; Texas A&M University at Qatar

**9:40 AM**
Process Model for Hardness Prediction in Friction Stir Aluminum Welds: Olga Gopkalo1; Brad Diak1; Michael Booth2; Adrian Gerlich2; Queen’s University; University of Waterloo

**10:00 AM** Break

**10:20 AM**
Manufacturing Challenges for Aluminum Sheet in the Automotive Industry: Susan Hartfield-Wunsch1; General Motors

**10:40 AM**
Warm Temperature (170-280°C) Uniaxial Compression of SiC Reinforced 2124-Al MMCs: Zizo Gxowa1; Lesley Chown1; Gonasaagren Govender1; Council for Scientific and Industrial Research (CSIR); University of the Witwatersrand

**11:00 AM**
Understanding Grain Refinement of Aluminum: Xiaoming Wang1; Purdue University

**11:20 AM**
Ultrathin-Nano-laminated Structure Improving Mechanical Properties in an Al-Mg Alloy: Yaojun Liu1; Zhibo Liu1; Zhigang Yan1; Wuhan University of Technology; Yanshan University

**Light Metals Alliance: Light Metals Technology 2017 – Light Metals Technology: Titanium**

Program Organizers: Diran Apelian, Worcester Polytechnic Institute; Kumar Sadayappan, Canmet MATERIALS; Frank Czerwinski, CanmetMATERIALS; Brajendra Mishra, Worcester Polytechnic Institute; Michael Bermingham, The University of Queensland; Wenjiang Ding, Shanghai Jiao Tong University; Zhongyun Fan, Brunel University; Gonasaagren Govender, The Council for Scientific and Industrial Research (CSIR); Frank Czerwinski, Diran Apelian, Worcester Polytechnic Institute; Program Organizers: Light Metals Technology: Aluminum

Wednesday AM Room: 414

Session Chairs: Michael Bermingham, The University of Queensland; Wenjiang Ding, Shanghai Jiao Tong University

**8:00 AM**
Alloying Effects on the Microstructure and Mechanical Properties of Ti-Fe-Al Based Lower Cost Cast Titanium Alloys: Jiashi Miao1; Zhi Liang1; Anil K. Sachdev1; Alan A. Luo1; James C. Williams1; The Ohio State University; General Motors

**8:20 AM**
Boon for the Injured and Elderly: Optimization of Laser Processing Parameters to Improve Bio-Wettability of Ti-6Al-4V Alloys: Ashwin Kumar1; University of North Texas

**8:40 AM**
Constitutive Response of a Near-alpha Titanium Alloy as a Function of Temperature and Strain Rate: Brian Gockel1; Anthony Rollett1; AFRL; Carnegie Mellon University

**9:00 AM**
Metal Injection Moulding of Ti6Al7Nb Using a CSIR Custom Feedstock: Ronald Machaka1; Council for Scientific and Industrial Research
9:20 AM
Solid Silver Embrittlement of Ti-6Al-2Sn-4Zr-2Mo Alloy: Jingjing Qing\textsuperscript{1}; Mario Buchely\textsuperscript{2}; David Van Aken\textsuperscript{1}; Michael Walker\textsuperscript{2}; Royle Juusola\textsuperscript{1}; John Goethe\textsuperscript{2}; \textsuperscript{1}Missouri University of Science and Technology; \textsuperscript{2}Spirit Aerosystems

9:40 AM
Strain Hardening in Beta Annealed Ti-6Al-4V Alloy: Stephen Masete\textsuperscript{1}; Kalenda Mutombo\textsuperscript{1}; Roelf Mostert\textsuperscript{1}; Charles Siyasiya\textsuperscript{1}; \textsuperscript{1}CSIR

10:00 AM Break

10:20 AM
Tensile Behavior and Microstructural Characteristics of Friction Stir Welded Butt Joints of Titanium Alloys: Laxminarayana Pappula\textsuperscript{1}; Kapil Gangwara\textsuperscript{1}; Ashok Kumar Uppari\textsuperscript{2}; Ramulu M\textsuperscript{3}; \textsuperscript{1}Osmania University

10:40 AM
Effects of Heat-Treatment on the Microstructure of TiAl-Nb Produced with Laser Metal Deposition Technique: Monnamme Tlotleng\textsuperscript{1}; Thabo Lengopeng\textsuperscript{1}; Mandy Seerane\textsuperscript{1}; Sisa Pityana\textsuperscript{1}; \textsuperscript{1}Council for Scientific and Industrial Research

11:00 AM
Microstructural and Physical Properties of Laser Cladding of Ti-Al Coatings on Ti6Al4V: Kehinde Sobiyi\textsuperscript{1}; Esther Akinlabi\textsuperscript{1}; \textsuperscript{1}University of Johannesburg

Materials for Nuclear Energy Applications – Characterization Methods and Reactor Fuels

Program Organizers: Kumar Sridharan, University of Wisconsin; Jake Amoroso, Savannah River National Laboratory; Aladar Csontos, Nuclear Regulatory Commission; Kevin Fox, Savannah River National Laboratory; Yutai Katoh, Oak Ridge National Laboratory; Bill Lee, Imperial College of London; Josef Matyas, Pacific Northwest National Laboratory; Raul Rebak, GE Global Research; Cory Trivelpiece, Savannah River National Laboratory

Wednesday AM  Room: 401  Location: DLL Convention Center

Session Chairs: James Cole, Idaho National Laboratory; Andrew Nelson, Los Alamos National Laboratory

8:00 AM Invited
In-situ High-Energy X-ray Characterization of Nuclear Reactor Materials: Mee Me Li\textsuperscript{1}; Xuan Zhang\textsuperscript{1}; Chi Xu\textsuperscript{1}; Jonathan Almer\textsuperscript{2}; Jun-Sang Park\textsuperscript{2}; Peter Kessa\textsuperscript{2}; Don Brown\textsuperscript{3}; \textsuperscript{1}Argonne National Laboratory; \textsuperscript{2}University of Florida; \textsuperscript{3}LANL

8:20 AM Invited
Advanced Characterization of Highly Irradiated Nuclear Fuel from a Commercial LWR: Philip Edmondson\textsuperscript{1}; Chad Parish\textsuperscript{1}; Tyler Gerczak\textsuperscript{1}; Kurt Terrani\textsuperscript{1}; \textsuperscript{1}Oak Ridge National Laboratory

8:40 AM
Atom Probe Tomography and Transmission Electron Microscopy Investigations of Nano-precipitate Nucleation in ODS FeCrAl Alloys: Caleb Massey\textsuperscript{1}; Philip Edmondson\textsuperscript{1}; Sebastien Dryepondt\textsuperscript{1}; Kurt Terrani\textsuperscript{1}; Steven Zinkle\textsuperscript{1}; \textsuperscript{1}University of Tennessee; \textsuperscript{1}Oak Ridge National Laboratory

9:00 AM
Effect of Cascade Mixing on a’ Precipitation in Irradiated Fe-Cr Alloys: Jiahong Ke\textsuperscript{1}; Mukesh Bachhuv\textsuperscript{1}; Elaina Anderson\textsuperscript{2}; Emmanuelle A. Marquis\textsuperscript{2}; G. Robert Odette\textsuperscript{2}; Dane Morgan\textsuperscript{2}; \textsuperscript{1}University of Wisconsin-Madison; \textsuperscript{2}University of Michigan, Ann Arbor; \textsuperscript{2}University of California, Santa Barbara

9:20 AM
Determination of Phase Transformations and Microstructure Evolution of Zr-based Alloys during Thermal Processing: Clinique L. Brundidge\textsuperscript{1}; John Seidensticker\textsuperscript{1}; Tyler Tenku\textsuperscript{1}; Linda Rishel\textsuperscript{1}; Richard Smith\textsuperscript{1}; \textsuperscript{1}Naval Nuclear Laboratory

9:40 AM Invited
Development and Qualification of a New Plate-type Low-enriched Uranium-molybdenum Fuel for High Power Research Reactors: James Cole\textsuperscript{1}; Mitchell Meyer\textsuperscript{2}; Barry Rabin\textsuperscript{2}; Irina Gigolenko\textsuperscript{2}; Warren Jones\textsuperscript{2}; Jan-Fong Jue\textsuperscript{2}; Dennis Keiser\textsuperscript{2}; Carla Miller\textsuperscript{2}; Glenn Moore\textsuperscript{2}; Hakan Ozaltun\textsuperscript{2}; Francine Rice\textsuperscript{2}; Adam Robinson\textsuperscript{2}; James Smith\textsuperscript{2}; Daniel Wachs\textsuperscript{2}; Walter Williams\textsuperscript{2}; Nicholas Woolstenhulme\textsuperscript{2}; \textsuperscript{1}Idaho National Laboratory

10:00 AM Break

10:20 AM
U3Si2 Instability in Both Oxidizing and Reducing Atmospheres: Elizabeth Sooey Wood\textsuperscript{1}; Joshua White\textsuperscript{1}; Sarah Hernandez\textsuperscript{1}; Andrew Nelson\textsuperscript{1}; \textsuperscript{1}Los Alamos National Laboratory

10:40 AM
Review of Technologies for Ocean Mining of Uranium: Allen Apblett\textsuperscript{1}; Cory Perkins\textsuperscript{1}; \textsuperscript{1}Oklahoma State University; \textsuperscript{1}Oregon State University

11:00 AM
Powder Ageing and Sintering Of High Uranium Density Nuclear Fuels for Light Water Reactor Applications: Josh White\textsuperscript{1}; Scott Parker\textsuperscript{1}; Andrew Nelson\textsuperscript{1}; \textsuperscript{1}Los Alamos National Laboratory

11:20 AM
Microstructure Studies of U3Si2 Fuel Pellets Sintered in Argon vs. Vacuum Environment: Rita Hoggan\textsuperscript{1}; Jason Harp\textsuperscript{1}; Lingfeng He\textsuperscript{1}; \textsuperscript{1}Idaho National Laboratory

Materials Issues in Nuclear Waste Management – Nuclear Waste Management Strategies

Program Organizers: Jake Amoroso, Savannah River National Laboratory; Aladar Csontos, Nuclear Regulatory Commission; Kevin Fox, Savannah River National Laboratory; Tongan Jin, Pacific Northwest National Laboratory; Cory Trivelpiece, Savannah River National Laboratory; Yutai Katoh, Oak Ridge National Laboratory; Bill Lee, Imperial College of London; Josef Matyas, Pacific Northwest National Laboratory; Nathan Mellot, Michigan State University; Kumar Sridharan, University of Wisconsin Madison; S.K. Sundaram, Alfred University

Wednesday AM  Room: 402  Location: DLL Convention Center

Session Chair: Cory Trivelpiece, Savannah River National Laboratory

8:00 AM Invited
A Brief History of the Contributions of D.T. Rankin and the D.T. Rankin Award Winners: Alex Cozzi\textsuperscript{1}; \textsuperscript{1}Savannah River National Laboratory
8:20 AM Efforts to Address Species of Concern in Nuclear Waste Management: Elizabeth Hoffman; Bill Wilmarth; Savannah River National Laboratory

8:40 AM Effect of Reducing Agents on Rhenium Retention and Feed Reactions during Melting of Low-activity Waste Glasses: Jaime George; Dongsang Kim; Michael Schweiger; Albert Kruger; Pacific Northwest National Laboratory; Department of Energy Office of Nuclear Protection

9:00 AM Invited Enhanced Waste Glass Effort: Producing Desired Properties from a Broader Spectrum of Compositions: Albert Kruger; David Peeler; US Department of Energy; Pacific Northwest National Laboratory

9:40 AM Sulfur Incorporation into Sodium Borosilicate Glasses: Jason Lonergan; John McCloy; Washington State University

10:00 AM Break

10:20 AM Invited Vitrification HLW Containing A High Concentration of Molybdenum: Nick Gribble; UK National Nuclear Laboratory

11:00 AM Invited Stabilization and Solidification of Low Activity Waste and Secondary Wastes Arising from Treatment of Nuclear Fuel Reprocessing Wastes: David Swanberg; WRPS Chief Technology Office

Materials Property Understanding through Characterization – Non-metals
Program Organizers: Indrajit Dutta, Corning Incorporated; Nicholas Smith, Corning Incorporated

Wednesday AM Room: 412 Location: DLL Convention Center
Session Chair: Nicholas Smith, Corning Incorporated

8:00 AM Nanostructure as a Paradigm for Describing Carbon Structure, Interpreting Its Reactivity and Quantifying Its Transformations: Randy Vander Wal; Joseph Abrahamson; Penn State University

8:20 AM Invited Comprehensive Characterization of Silicate Glass Surfaces Using XPS, SR-IR, ATR-IR and SFG Spectroscopies: Seong Kim; Pennsylvania State University

9:00 AM Invited Spectroscopic Studies of Borate and Phosphate Glasses: The Effects of Structure on Aqueous Durability: Richard Brow; Missouri S&T

9:40 AM Structural and Thermal Characterization of the MgxCosCuxNi2O3-SiO2 Ternary: Entropy Stabilized Oxide: Christina Root; Jeffrey Braun; Ashutosh Giri; Jon-Paul Maria; Patrick Hopkins; University of Virginia; North Carolina State University

10:00 AM Break

10:20 AM Influence of Stress States during Amorphization of Single Crystal Boron Carbide: Jonathan Lidga; Kris Behler; Vladislav Domnich; Jerry LaSalvia; Brian Schuster; Army Research Laboratory; Rutgers University

10:40 AM Relationships between Elastic Properties and Reaction Kinetics of an Epoxy Resin Polymer during Cure Relaxation: Manon Heili; Andrew Bielawski; John Kieffer; University of Michigan; University of Michigan

11:00 AM Quantitative Analysis of Multi-Scale Heterogeneities in SOFC Electrode Microstructures: Rubayyat Mahbub; Tim Hsu; Mingzhen Feng; William K Eppling; Ross Cunningham; Gregory A Hackett; Harry Abernathy; Anthony D Rollett; Shawn Lister; Paul A Salvador; DOE National Energy Technology Laboratory, Carnegie Mellon University; U.S. DOE National Energy Technology Laboratory, Carnegie Mellon University; U.S. DOE National Energy Technology Laboratory; Oak Ridge Institute for Science and Education; U.S. DOE National Energy Technology Laboratory; U.S. DOE National Energy Technology Laboratory; AECOM

11:20 AM XRD and SEM Analysis on Reduction Behavior of CaO-Fe2O3-SiO2 Ternary System: Chengyi Ding; Xuewei Lv; Gang Li; Senwei Xuan; Kai Tang; Wei Lv; Chongqing University

11:40 AM Mechanical Properties of Aluminum Titanate Doped Solid Oxide Fuel Cell Anodes through Multi-dimensional Characterization: Madisen Mccleary; Roberta Amendola; Montana State University

Materials Selection and Surface Analyses for Corrosion Prevention and Detection – Lightweight Materials
Program Organizers: Matthew Asmussen, Pacific Northwest National Laboratory; Aijit Mishra, Haynes International; Sudhaker Mahajanam, PinnacleART; Eric Schindelholz, Sandia National Laboratory; Xuexuan Zhang, Gamry Instruments; Guang-Ling Song, Xiamen University; Luis Garfrais, Wood Group Kenny; Raul Rebak, General Electric

Wednesday AM Room: 405 Location: DLL Convention Center
Session Chair: Matthew Asmussen, Pacific Northwest National Laboratory

8:00 AM Invited Localized Filament Corrosion Behavior of Mg Alloys: Joseph Kish; Joseph McDermid; Geraint Williams; Michael Brady; McMaster University; Swansea University; Oak Ridge National Laboratory

8:40 AM Suppression of Samson Phase Formation in Al-Mg Alloys by Boron Addition: Ramasai Goswami; S Qadir; Naval Research Laboratory

9:00 AM Microscale Corrosion Investigation of Strained Al-Li Alloys by In-situ Atomic Force Microscopy: Ellen Wright; Michael Kaufman; Gary Weber; ESI; Colorado School of Mines; Boeing
9:20 AM
Development of Corrosion Resistant Aluminum Alloys: Rajeev Gupta; The University of Akron

9:40 AM
Corrosion of High Strength Nanostructure Al 6061 Investigated by Local Electrochemical Techniques and Surface Characterizations: Ramatou Ly; Ivan Karayan; Homero Castaneda-Lopez; Karl T. Hartwig; Texas A&M University

10:00 AM
Corrosion Behavior of DP590 Steel Joined with Carbon Fiber Reinforced Polymer: Chi Zhang; Dajiang Zheng; Guang-Ling Song; Yang Guo; Ming Liu; Hamid Kia; Xiamen University; GM R&D Shanghai; GM R&D Warren

**Mechanochemical Synthesis and Reactions in Materials Science II – Session II**

*Program Organizers: Antonio Fuentes, Cinvestav del IPN; Laszlo Takacs, University of Maryland Baltimore County; Challapalli Suryanarayana, University of Central Florida; Jacques Huot, Universite du Quebec a Trois-Rivieres*

**Wednesday AM**

Room: 327
Location: DLL Convention Center

**Session Chairs:** Challapalli Suryanarayana, University of Central Florida; Jacques Huot, Universite du Quebec a Trois-Rivieres

8:00 AM Invited
Developing a Better Understanding of Mechanochemical Reactions: James Mack; Kendra Leaby; Rebecca Haley; Joel Andersen; University of Cincinnati

8:40 AM Invited
Mechanochemical Approaches to Lignocellulosic Biomass and Its Isolated Polymers: Michael Wolcost; Jinwan Zhang; Jinwu Wang; Mohammadali Azadfar; Jinxue Jiang; Yalan Liu; Washington State University; US Forest Products Laboratory

9:20 AM Invited
From Molecules to Hybrid Materials by Ball-milling: Andrea Porcheddu; Delogu Francesco; Clarence Charnay; Evelina Colacino; Università degli Studi di Cagliari; Université de Montpellier

9:40 AM
Mechanochemical Nitration of Toluene: Oleg Lagoviyer; Mirko Schoenitz; Edward Dreizin; New Jersey Institute of Technology

10:00 AM Break

10:20 AM Invited
Multiscale Theory for Mechanochemistry and Its Applications: Valery Levitas; Iowa State University

11:00 AM Invited
Forced Mixing and Nanostructuration in Metallic Alloys Subjected to Severe Plastic Deformation: Pascal Bellon; Robert Averback; Nisha Verma; John Beach; Nirab Pant; Qun Li; Xuekun Shang; Julia Ivanisenko; University of Illinois

11:40 AM
Information on the Mechanism of Mechanochemical Reactions Based on Detailed Studies of the Reaction Kinetics: Francesco Delogu; Laszlo Takacs; Università degli Studi di Cagliari; University of Maryland Baltimore County


*Program Organizers: Jing Zhang, Indiana University - Purdue University Indianapolis; Lei Chen, Mississippi State University; Li Ma, National Institute of Standards and Technology; Xinghua Yu, Oak Ridge National Laboratory; Yeon-Gil Jung, Changwon National University; Yanzhou Ji, The Pennsylvania State University, University Park; Long Qing Chen, Penn State University*

**Wednesday AM**

Room: 306
Location: DLL Convention Center

**Session Chairs:** Jing Zhang, Indiana University - Purdue University Indianapolis; Lei Chen, Mississippi State University

8:00 AM Invited
Investigation on Grain Structure Development of Ti-6Al-4V during Additive Manufacturing: An Integrated Phase-field and Finite-element Modelling: Pengwei Liu; Yanzhou Ji; Alphans A. Antonyosamy; Long-Qing Chen; Lei Chen; Mississippi State University; Pennsylvania State University; Additive Manufacturing R&D Centre

8:20 AM
Accessing and Managing Materials and Process Data for Additive Manufacturing (AM) Simulations and Managing AM Process Life Cycle Data: Najib Baig; Stephen Ward; John Tweddel; Will Marsden; Granta Design

8:40 AM
Quantitative Texture Prediction of Epitaxial Columnar Grains in Additive Manufacturing: Jian Liu; Qian Chen; Yunhao Zhao; Wei Xiong; Albert C. To; University of Pittsburgh

9:00 AM
Compression Behavior of 3D Printed Polymer Lattice Structures: Mohammed Al Rifai; Sagar Sangle; Ahsan Mian; Raghavan Srinivasan; Wright State University

9:20 AM
Computational Simulation of Additively Manufactured Marine Structures: Charles Fisher; Caroline Scheck; Naval Surface Warfare Center

9:40 AM
Distortion Analysis and Reduction for Layerwise Additive Manufacturing Processing by a Laminated Layerwise Analytical Model and Tool: Jinquan Cheng; CS3DM

10:00 AM Break

10:20 AM Invited
Multi-scale Physics-based Modeling Framework for Additive Manufacturing of Metallic Components: Yi Zhang; Weng Lee; Yeon-Gil Jung; Jing Zhang; University of Illinois - Purdue University Indianapolis; Changwon National University
10:00 AM
Experimental Validation of Phase-field Predictions for Rapidly Solidified Microstructures of Metallic Alloys: John Roehling; Aurelien Perron; Jean-Luc Fattebert; Patrice Turchi; Joseph McKeown; 'Lawrence Livermore National Laboratory

11:00 AM
Prediction of Powder Bed Fusion Micro Structures: Christoph Beetz; Salem Moshah; Mustafa Megahed; 'ESI Group; 'Think Solidification, LLC

Multiscale Modeling of Microstructure Deformation in Material Processing – Multi scale Modeling of Microstructure Deformation in Material Processing: Part I
Program Organizers: Lukasz Madej, AGH University of Science and Technology; Krzysztof Muszka, AGH University of Science and Technology; Danuta Szelaiga, AGH University of Science and Technology

Wednesday AM Room: 403 October 11, 2017 Location: DLL Convention Center

Session Chairs: Lukasz Madej, AGH University of Science and Technology; Konstantin Redkin, Whemco

8:00 AM
A Quantitative Characterization of Texture Evolution in Pure Zirconium: Slip Systems and Strength Evolution: Weining Chen; Rulin Chen; Vahid Tari; Jonathan Lind; Robert Suter; Anthony Rollett; 'Carnegie Mellon University; 'Lawrence Livermore National Laboratory

8:20 AM
Using High Energy Diffraction Microscopy (HEDM) to Validate Micromechanical Fields Calculated by FFT Based Method: Vahid Tari; Ricardo A. Lebensohn; Rejju Pokharel; Anthony D. Rollett; 'Carnegie Mellon University; 'Los Alamos National Laboratory

8:40 AM
Evaluating Surface Morphologies as Stress Concentrations through Micromechanical Modeling: Christopher Kanzus; Ross Cunningham; Anthony Rollett; 'Carnegie Mellon University

9:00 AM
Effect of Microstructure on the Elasto-viscoplastic Deformation of Dual Phase Titanium Structures: Tugce Ozturk; Anthony Rollett; 'Carnegie Mellon University

9:20 AM
Predicting Stress Hotspots Using Graph Based Microstructural Features: Ankita Mangal; Elizabeth Holm; 'Carnegie Mellon University

9:40 AM
An Efficient Fast Fourier Transform-based Formulation to Simulate Large Strain Behavior of Polycrystalline Materials: Jaspreet Nagra; Abhijit Brahme; Ricardo Lebensohn; Raja Mishra; Kaan Inal; 'University of Waterloo; 'Los Alamos National Laboratory; 'General Motors

10:00 AM Break

10:20 AM
Accelerating Coupled FEM - Kinetic Monte Carlo Models, with Applications in Metallic Glass and Shape Memory Materials: Thomas Hardin; Christopher Schuh; 'Massachusetts Institute of Technology

10:40 AM
A Computational Study of High Speed Impaction of Ag Nanoparticles and Its Comparison with Experiments: Tushar Chittrakar; Guillaume Noiseau; John Keto; Michael Becker; Desiderio Kovar; 'The University of Texas at Austin

11:00 AM
Microstructure Evolution and Deformation Behavior in Powder Materials during Spark Plasma Sintering: Sudipta Biswas; Vikas Tomar; 'Purdue University

11:20 AM
Three Dimensional Microstructure Modeling of Particulate Composites Using Statistical Synthetic Structure and Its Thermomechanical Finite Element Analysis: Hyong Seop Kim; Hyung Keun Park; Jaimyun Jung; 'POSTECH

11:40 AM
Influence of Grain Orientation Spreads on Tensile Twinning Activation in Magnesium under Simple Compression and Plane Strain Compression: Crystal Plasticity Simulations: Hamad Alharbi; 'King Saud University

Program Organizers: Navin Manjooran, Siemens AG; Gary Pickrell, Virginia Tech

Wednesday AM Room: 319 October 11, 2017 Location: DLL Convention Center

Session Chairs: Gary Pickrell, Virginia Tech; Navin Manjooran, Vice President, Siemens AG

8:00 AM Invited
Structural Characterization of Enzymes Necessary to Degrade Hemicellulose for Microbial Fermentation: Jason Hurlbert; 'Winthrop University

8:40 AM
Development of Nanocarbon-infused High-performance Conductors: U. (Balu) Balachandran; Behai Ma; Stephen Dorris; Tae Lee; Rachel Koritala; David Forrest; 'Argonne National Laboratory; 'U.S. Department of Energy

9:00 AM
Development of Graphene Coated Magnetite Nanocomposite for the Removal of Toxic Ions and Bacteria from Water: Syed Ahmed; Ali Nemati; Waseem Haider; Zia Rahman; 'Central Michigan University

9:20 AM
Effect of Thermal Treatment Temperature on the Catalytic Activity of SiO2 and CeO2 Supported CuO Catalysts: Shaikh Tofazzel Hossain; Yazeed Almesned; Elizabeth Zell; Ruigang Wang; 'Youngstown State University; 'Department of Energy

9:40 AM
Evaluation of Photo-catalytic Behavior Titanium Dioxide Nano-tubular Structure: Waseem Haider; Hassenain Asgar; Ziaur Rahman; 'Central Michigan University

10:00 AM Break
10:00 AM Break

10:10 AM
Morphology Modifications of AuNPs to Enhance the Performance of Aptasensor: Nitesh Sara¢; Sushant Singh1; Alicia Brown1; Bradley Willenberg1; Sudipta Seal1; ‘University of Central Florida

10:30 AM
Extremely High OSC Designed in Fluorite-type Ceria-zirconia: Yusuke Hidaka1; Tomoharu Itoh1; Shingo Katayama1; Masasuke Yamada1; ‘Nippon Denko Co., Ltd.

10:50 AM
Highly Stable, Thermally-processable Polymer Matrices for Semiconductor Nanocrystal (Quantum Dots) Encapsulation and Dispersion: Hunaid Nuhwala1; Xu Zhou1; Matt Bootman1; Lianhua Qu1; ‘Liquid Ion Solutions LLC; ‘Crystal Plex Corporation

11:10 AM
Combinatorial Development of Bulk Metallic Glasses with Potential Applications for Next-generation Intracoronary Drug-eluting Stents: Muhammad Mudasser Khan1; Wasem Haider1; ‘Central Michigan University

Next Generation Biomaterials – Ceramic Biomaterials and Novel Biomaterials

Program Organizers: Roger Narayan, UNC/NCSU Joint Department of Biomedical Engineering; Jie Huang, University College London; Vipul Davé, Johnson & Johnson; Sanjiv Lalwani, Lynntech, Inc.; Marc in het Panhuis, University of Wollongong; Mohan Edirisinghe, University College London

Wednesday AM Room: 334 Location: DLL Convention Center

Session Chairs: Venu Varanasi, Texas A & M University; Mohamed Rahaman, Missouri University of Science and Technology

8:00 AM Invited
Bioactive Glass Composites for Bone Tissue Engineering: Mohamed Rahaman1; ‘Missouri University of Science and Technology

8:20 AM Invited
Fabrication Aspects of Porous Biomaterials in Orthopedic Applications: A Review: Elham Babaeie1; Sarit Bhaduri1; ‘University of Toledo

8:40 AM
Controlled Delivery of Anticancer Drugs to Tumor Cells Using Ternary Complexes of Single-wall Carbon Nanotubes: Piyumi Wijesekara1; Patrick Boyer1; Mohammad Islam1; Kris Dahl1; ‘Carnegie Mellon University

9:00 AM Invited
Synthesis, Processing and Characterization of Titanium Doped SiO2-CaO-Na2O-P2O5 Glasses to Form Mechanically Stable Glass Scaffolds: Anthony Wren1; Simon Chon1; Lindsay Piraino1; ‘Alfred University

9:20 AM
Molecular Motor-powered Shuttles along Multi-walled Carbon Nanotube Tracks: Aurélien Sikora1; Javier Ramón-Azcon1; Kyongwan Kim1; Kelley Reaves1; Winfried Teizer1; ‘AIMR Tohoku University; ‘Lynntech, Inc.; ‘Texas A&M University, AIMR Tohoku University

9:40 AM Invited
Comparison of Gelatin-And Chitosan-nanosilicate Scaffolds on Their Effect on Endothelial Cell and Osteoprogenitor Marker Expression for Non-load Bearing Bone Healing: Vena Varanasi1; ‘Texas A & M University

10:00 AM Break

10:20 AM
Soft Polymer-based Artificial Photoreceptor Layer: Jared Mike1; ‘Lynntech

10:40 AM Invited
Ag-doped Bioactive Glass-ceramic Particles for Combating Bacteria and Promoting Tissue Regeneration in Dental and Orthopedic Applications: Xanthippe Chatzistavrou1; N. Pajares Chamorro1; P. Papagerakis2; C.J. Fenno2; N. Hammer1; S. Badyak3; K.D. Hankenson4; ‘Michigan State University; ‘University of Michigan; ‘University of Pittsburgh

11:00 AM Invited
Novel Antimicrobial Protective Burn Wound Dressings: Joel Gil1; Sanjiv Lalwani1; Stephen Davis1; Richard Sanchez2; ‘University of Miami; ‘Lynntech, Inc.

11:20 AM
Influence of Thermomechanical Process Condition on In Vitro Corrosion of Fine Resoloy® Wire: Adam Griebel1; Jeremy Schaffer1; Roman Menze2; Kai Leymann1; Michael Steker3; Benjamin Bittner3; Clemens Meyer-Kobbe3; ‘Fort Wayne Metals; ‘MeKo

11:40 AM Invited
Multifunctional Biomaterial Surfaces for Antimicrobial Infection: Christopher Siedlecki1; Li-Chong Xu1; Harry Alcock1; Mark Meyerhoff2; ‘Pennsylvania State University; ‘University of Michigan

Non Beam-based Additive Manufacturing Approaches for Metallic Parts – Session I

Program Organizer: Olaf Andersen, Fraunhofer IFAM

Wednesday AM Room: 305 Location: DLL Convention Center

Session Chair: Olaf Andersen, Fraunhofer IFAM

8:00 AM Invited
Direct Molten Metal Write of Structurally Significant Materials: William Carter1; Zachary Sims1; Max Neveau1; Lonnie Love1; Brian Post1; Randall Lind1; Michael Kesler1; Mark Jaster2; David Weiss3; Orlando Rios4; ‘Oak Ridge National Laboratory; ‘PrintSpace 3D; ‘Eck Industries

8:40 AM
3D Inkjet Powder Printing of Implantable Biomaterials and Biomedical Device Prototypes: Bikramjit Basu1; Srimanta Barui1; Sourav Mandal1; ‘Indian Institute of Science

9:00 AM
Additive Manufacturing of High-performance Copper Heat Exchangers via 3D Screen Printing: Kay Reuter1; Olaf Andersen1; Thomas Stüdtlitzky1; Bernd Kieback1; ‘Fraunhofer Institute for Manufacturing Technology and Advanced Materials IFAM
9:00 AM
Grain Growth And Densification Behavior Of 316L Stainless Steel Metallic Components Produced via Binder Jet-powder Printing (3-D) System Using Water Atomized Powders: Hsiang-Ling Juan1; Yu Zhou1; Christopher Schade2; Calixto Garcia1;1 University of Pittsburgh; 2Hoeganaes Corporation

9:40 AM
Extrusion-based 3D-printing and Sintering of Ni-Mn-Ga and NiTi-Nb Shape Memory Alloys: Shannon Taylor1; Amaka Ibe1; Ramille Shah1; David Dunand1;1 Northwestern University

10:00 AM Break

10:20 AM
Integrated Process Line for Fused Filament Fabrication of Metallic Parts Using Metal Powder Loaded Filaments: Sebastian Riecker1; Olaf Andersen1; Sebastian Hein1; Thomas Studnitzky1; Bernd Kieback1;1 Fraunhofer IFAM; 2Technical University of Dresden

10:40 AM
Slumping during the Sintering of Cantilevered Beams: Experiments and Theory: Zachary Cordero1; Derek Siddel1; Ralph Dinwiddie1; Amelia Elliott1;1 Rice University; 2Oak Ridge National Laboratory

11:00 AM
Roadmap for Metal Hybrids Net-Shaped via Binder Jet Additive Manufacturing: Amy Elliott1; Peeyush Nandwana1; Cameron Shackelford1; Cindy Waters1;1 Oak Ridge National Laboratory; 2North Carolina A&T University

11:20 AM Invited
Binder Jetting 3D Printing: Improving Printer Capabilities and Expanding Available Materials: Andrew Klein1;1 ExOne

Phase Stability, Diffusion Kinetics, and Their Applications (PSDK-XII) – Session IV: J. Willard Gibbs Phase Equilibria Award - Theory, Modelling and Database Development
Program Organizers: Wei Xiong, University of Pittsburgh; Raymundo Arroyave, Texas A & M University; Ji-Cheng Zhao, The Ohio State University; Arthur Pelton, Ecole Polytechnique

Wednesday AM 
Room: 413 
Location: DLL Convention Center

Session Chairs: Sergei Decterov, Ecole Polytechnique; Daniel Lindberg, Åbo Akademi University

8:00 AM Invited
Influence of Thermodynamics and Diffusion on Reaction Mechanisms during Gas/Solid Reactions: Peter Hayes1;1 University of Queensland

8:20 AM Invited
High Entropy Alloys and the Search for 3-phase Miscibility Gaps: John Morral1; Shuanglin Chen1;1 The Ohio State University; 2CompuTherm

8:40 AM Invited
A Thermodynamic Model for Carbonaceous Electrodes: Patrice Chartrand1; Philippe Ouzilleau1; Aimen Gheribi1;1 Polytechnique Montreal

9:00 AM Invited
Thermodynamic Optimization of the Na2O-B2O3-SiO2 System: Evgenii Nekhoroshev1; Sergei Decterov1;1 CRCT

9:20 AM Invited
Constrained Gibbs Energy Models for Rate-controlled and Partitionless Phase Transformation Systems: Pertti Koukkuri1; Risto Pajanne1;1 VTT

9:40 AM Invited
Beyond Traditional CALPHAD Databases: Ursula Kattner1;1 National Institute of Standards and Technology

10:00 AM Break

10:20 AM Invited
Large-scale Comparison between ab Initio and CalPhad Phase Stabilities: Moritz to Baben1; Klaus Hack1;1 GTT-Technologies

10:40 AM Invited
Development of a Thermodynamic Database for Refractory Boride, Carbide, Nitride and Silicide Systems: Philip Spencer1;1 The Spencer Group

11:00 AM Invited
Integrated Experimental and Modelling Approach to the Thermodynamic Database Development for Multi-component Metallurgical and Recycling Systems: Evgenii Jak1;1 PYROSEARCH, The University of Queensland

Phase Transformations and Microstructural Evolution in Ti and Its Alloys - Experiments
Program Organizers: Carl Boehlert, Michigan State University; Yufeng Zheng, Ohio State University; Vahid Khademi, Michigan State University

Wednesday AM 
Room: 307 
Location: DLL Convention Center

Session Chairs: Carl Boehlert, Michigan State University; Yufeng Zheng, Ohio State University

8:00 AM Invited
Development of Various Fine Scale Alpha Microstructures in Titanium Alloys: Yufeng Zheng1; Rongpei Shi1; Talukder Alam1; Rajarshi Banerjee1; Yunzhi Wang1; Hamish Fraser1;1 The Ohio State University; 2University of North Texas

8:20 AM Invited
The Evolution of Microstructure in Titanium Alloys: Dipankar Banerjee1;1 Indian Institute of Science

8:40 AM Invited
The Evolution of Omega and Its Effect on the Formation of Alpha in High Misfit Beta Titanium Alloys: Deep Choudhuri1; Yufeng Zheng1; Rongpei Shi1; Talukder Alam1; Vishal Soni1; Srinivas Aditya Mantri1; Yunzhi Wang1; Srinivasan Srivilliputhur1; Hamish Fraser1;1 Rajarshi Banerjee1;1 University of North Texas; 2The Ohio State University

9:00 AM Thermomechanically-induced Phase Transformations in Beta Titanium Alloys Based on Ti-13Cr(wt.%): Vahid Khademi1; Carl Boehlert1; Masahiko Ikeda1;1 Michigan State University; 2Kansai University

9:20 AM In-situ Experiments to Capture the Rapid Evolution of Microstructure during Phase Transformation of Titanium under Dynamic Loading: Benjamin Morrow1; David Jones1; Paulo Rigg1; Ellen Cerreta1;1 Los Alamos National Laboratory; 2Washington State University
9:40 AM
Deformation Induced Phase Transformation in Ti2448: Characterization on the Nanoscale Using Transmission Kikuchi Diffraction: Patrick Trimby; Chuanyong Liu; Xianghai An; Oxford Instruments Nanosanalysis; The University of Sydney

10:00 AM Break

10:20 AM Invited
Controlling Ferroelastic Phase Transformation in Rare-earth Ortho-niobates: Pankaj Sarin; Daniel Lowery; Oklahoma State University

10:40 AM
High Temperature Behavior in Entropy Stabilized Oxide (Mg0.2Co0.2Ni0.2Cu0.2Zn0.2)O: Kuo-pin Tseng; Scott McCormack; Waltraud Kriven; University of Illinois at Urbana-Champaign

11:00 AM Invited
Grain Boundary Phase-like Transformations and Their Roles in Activated Sintering and Beyond: Jian Luo; University of California, San Diego

10:00 AM Break

10:40 AM Invited
Investigation of Single-mode Microwave Coupling in SiC-TiB Microspheres: Xiaolong Lin; Zhizhong Li; Lei Ye; Huimin Tang; Yuanbo Zhang; Guanghui Li; Tao Jiang; Shanghai University; Central South University

11:00 AM Invited
Effect of Plastic Deformation on L10 Chemical Ordering and Microstructure of Equiatomic FePd: Ana Maria Montes-Arango; Amirali Zangiabadi; Katayun Barmak; Laura Lewis; Northeastern University; Columbia University

11:20 AM
Resilient Graphitic Carbons from Electro-thermal Fluidized Bed Reactor: Soeren Koester; Eric Salmon; Carsten Wehling; Superior Graphite

9:40 AM

Program Organizers: Moris Mahmoud, King Fahd University of Petroleum and Minerals (KFUPM) & City for Scientific Research and Technological Applications (SRTA City); Dinesh Agrawal, Pennsylvania State University; Guido Link, Karlsruhe Institute of Technology; Motoyasu Sato, Chubu University; Rishi Raj, University of Colorado at Boulder

Wednesday AM Room: 318
October 11, 2017 Location: DLL Convention Center

Session Chairs: B. Rejaa Janey, Carnegie Mellon University; Zhiwei Peng, Central South University

8:00 AM
Effect of Plastic Deformation on L10 Chemical Ordering and Microstructure of Equiatomic FePd: Ana Maria Montes-Arango; Amirali Zangiabadi; Katayun Barmak; Laura Lewis; Northeastern University, Columbia University

8:20 AM
Microwave Pyrolysis of Pine Sawdust for Preparation of Highly Porous Biochar: Zhiwei Peng; Xiaolong Lin; Zhizhong Li; Lei Ye; Huimin Tang; Yuanbo Zhang; Guanghui Li; Tao Jiang; Central South University

8:40 AM
Observation of Re-entrant Spin Reorientation in TbFe1-xMnxO3: Jincang Zhang; Wenlai Lu; Fei Chen; Yifei Fang; Shanghai University

9:00 AM
Ultrasonic Energy Enabled Dynamic Recovery in Aluminium during Micro Forming and Its Effects on Stress and Microstructure Evolution: Anagh Deshpande; Keng Hsu; Arizona State University

9:20 AM
Investigation of Single-mode Microwave Coupling in SiC-TiB, Materials: Michael Kornecki; Selva Vennila Raju; Victoria Blair; Nicholas Ku; Raymond Brennan; U.S. Army Research Laboratory
10:00 AM  Break

10:20 AM  Electric Field-assisted Pressureless Sintering Zirconia-Scandia-Ceria Solid Electrolytes: Reginaldo Muccillo1; Eliana Muccillo2; 1IPEN/Federal University of ABC; 2IPEN

10:40 AM  Invited
2.45 GHz Hybrid Microwave Crystallization of LAGP Solid-state Electrolyte: Morsi Mahmoud1; King Fahd University of Petroleum and Minerals (KFUPM) & City for Scientific Research and Technological Applications (SRTA City)

11:00 AM  A Study of Heavy Clay Body Properties for Hybrid Microwave Firing: Garth Taylor1; Mike Anderson2; Mike Hamlyn3; 1Acme Brick Company; 2Staffordshire University

Program Organizers: Yellapu Murty, MC Technologies LLC; Eric Klier, U.S. Army Research Laboratory; Jack Lifton, Jack Lifton LLC

Wednesday AM  Room: 325  Location: DLL Convention Center

Session Chair: Michael Mckittrick, US Department of Energy

8:00 AM  Keynote
Defense Logistics Agency – Strategic Materials (DLA-SM): Possible Actions Towards Mitigating the Risk of Rare Earths Shortfall: Vaibhav Jain1; Brian Gabriel1; Defense Logistics Agency- Strategic Materials

9:10 AM  Invited
Advances in REE Metal Making Technologies – A Review: Patrick Taylor1; Matt Earlam2; Fangyu Liu3; 1Colorado School of Mines; 2Infinium

9:40 AM  Invited
Molecular Recognition Technology: A Green Chemistry, Economical Process for Separation and Recovery of Individual Rare Earth Metals: Steven Izatt1; Ronald Bruening2; Neil Izatt3; Reed Izatt4; 1IBC Advanced Technologies, Inc.

10:00 AM  Break

10:30 PM  Invited
A Look at Where We Stand on Addressing Technology Needs for Diversifying the Supply of Critical Materials for Clean Energy: Bruce Moyer1; 1Oak Ridge National Laboratory

11:00 AM  Invited
Processing Recycled Rare Earth Magnet Alloys: John de Neufville1; David Murphy1; Randall Ice1; 1Eutechix, LLC

11:30 AM  Invited
Experimental Characterization of Discarded Electronic Batteries: Otavio Fortini1; Christian Mutale1; Igor Kolomytsein1; 1UMD

12:00 PM  Invited
Synthetic Methods for Establishing a Reliable Thermochemical Databank: Richard Roman1; Zhichao Hu1; Paul Kim1; Daniel Kopp1; Ali Eslamimanehs1; Gaurav Das2; Andrzej Anderko2; Radha Shivaramaiah3; Lili Wu2; Alexandra Navrotsky3; 1Rutgers University; 2OLI Systems, Inc.; 3University of California-Davis

Recent Advances in Computer-aided Materials Design – Method Development in Material Design
Program Organizers: Huan Tran, University of Connecticut; Ghanshyam Pilania, Los Alamos National Laboratory; Alexey Kolmogorov, Binghamton University, State University of New York; Mina Yoon, Oak Ridge National Laboratory; Son Hoang, University of Connecticut

Wednesday AM  Room: 324  Location: DLL Convention Center

Session Chair: Son Hoang, University of Connecticut

8:00 AM  Keynote
Rational Computation-guided Design of Polymer Dielectrics: Rampi Ramprasad1; 1University of Connecticut

8:40 AM  Invited
Big, Deep, and Smart Data in Materials Research: Atomic View on Materials Functionality: S. V. Kalinin1; 1Oak Ridge National Laboratory

9:40 AM  Invited
Tree Search Approach to Designing Kinematically Active Molecular Materials: Charles Manion1; Laura de Sousa Oliveira2; Matthew Campbell1; Alex Greaney3; 1Oregon State University; 2University of California, Riverside

10:00 AM  Break

10:20 PM  Invited
Structure Predictions with the Minima Hopping Method: Stefan Goedecker1; Max Amstler2; 1UNI Basel; 2Cornell University

11:00 AM  Invited
Multi-Cell Monte Carlo Method for Predicting Phase Stability of Alloys: Wolfgang Windl1; Changming Niu1; Christian Oberdorfer1; Maryam Ghazisaeidi1; 1Ohio State University

11:40 AM  Invited
Elucidating Multi-physics Interactions in Suspensions for the Design of Polymeric Dispersants: A Hierarchical Machine Learning Approach: Newell Washburn1; Aditya Menon1; Kun Zhang1; Barnabas Poczos1; 1Carnegie Mellon University
Responsive Functional Nanomaterials – Session IV
Program Organizers: Ziqi Sun, Queensland University of Technology; Jiahua Zhu, The University of Akron; Wenxian Li, Shanghai University; Dawei Wang, University of New South Wales; Wenping Sun, University of Wollongong; Liangzhi Kou, Queensland University of Technology; Wenzhuo Wu, Purdue University
Wednesday AM Room: 320 October 11, 2017 Location: DLL Convention Center
Session Chairs: Ting Liao, Queensland University of Technology; Xiaobo Chen, RMIT

8:00 AM Invited
Ultrafast and Cycle-stable Lithium Storage in Sn-based Nanocomposite Anodes: Yinzhu Jiang1; Zhejiang University

8:20 AM Invited
Silicon-based Core-shell Architectures: From Structural Design to Charge-discharge Process Study: Jianping Yang1; Donghua University

8:40 AM Invited
Interesting And Effective Strategies for Developing Advanced Electrode Materials of Li/Na-ion Batteries: Xing-Long Wu1; Northeast Normal University

9:00 AM Invited
Designed Nanoarchitectures of Vanadium and Phosphate-based Cathodes for Li(Na)-ion Batteries: Xianhong Rui1; Anhui University of Technology

9:20 AM Invited
Designed Copper Selenide Nanotubes as Counter Electrodes of Quantum-dot-sensitized Solar Cells: Xinqi Chen1; Jianping Yang2; Ming Xiao1; Wei Dai1; Hubei University of Education; Donghua University

9:40 AM Invited
Mechanically-assisted Electrochemical Production of Graphene Oxide: Yu Lin Zhong1; Griffith University

10:00 AM Break

10:20 AM Invited
Nanocarbon for Thermal Management: Zhen Liu1; Tucker Witt1; Jacob Lichtenberg1; Stacey Acheampong1; Frostburg State University

10:40 AM Invited
Carbon Materials from Petroleum Heavy Oil: Mingbo Wu1; China University of Petroleum
Surface Protection for Enhanced Materials Performance: Science, Technology, and Application – Corrosion and Functional Coatings

Program Organizers: Kang Lee, NASA Glenn Research Center; Yutaka Kagawa, University of Tokyo; Dongming Zhu, NASA Glenn Research Center; Rodney Trice, Purdue University; Daniel Mumm, University of California, Irvine; Mitch Dorfman, Oerlikon Metco (US); Christian Moreau, Concordia University; Emmanuel Boakye, UES Inc.

Wednesday AM Room: 333
October 11, 2017 Location: DLL Convention Center

Session Chairs: Daniel Mumm, University of California, Irvine; Kang Lee, NASA Glenn Research Center

8:00 AM Corrosion Behavior of Graphene Oxide Coatings on AZ31B Magnesium Alloy: Mohsin Ali Raza1; Faizan Ali Ghauri1; Akhlaq Ahmad2; Muhammad Omer Yousaf2; Asad Ali1; 1University of Punjab; 2UET, Lahore, Pakistan

8:20 AM Evaluation of Surface Applied Corrosion Inhibitor Effectiveness on Reinforced Concrete Structures Based on Electrochemical Techniques vs. ASTM G109: Ahmad Karayan1; Yenny Cubides1; Ange Nzihou1; Claire White1; Winston Soboyejo1; 1Ecole Polytechnique Fédérale de Lausanne (EPFL);

8:40 AM Passive and Active Micro Surfaces and Actuators for Aerodynamic Drag Reduction: Allison Arnold1; Wade Huebsch1; Patrick Browning1; Justin Schrout1; Edward Sabolsky1; 1West Virginia University

9:00 AM The Effect of Chemical Vapor Deposition Grown Polymer Coatings on the Performance of Cathode Material for Lithium Ion Battery: Latino Su1; B. Reeea Jaya1; 1Carnegie Mellon University

Synthesis, Characterization, Properties and Applications of Functional Porous Materials – Porous Material Applications in Environmental and Sustainable Fields

Program Organizers: Lan Li, Boise State University; Kevin Huang, University of South Carolina; Winnie Wong-Ng, National Institute of Standards and Technology

Wednesday AM Room: 329
October 11, 2017 Location: DLL Convention Center

Session Chair: Lan Li, Boise State University

8:00 AM Invited
CO2 Capture Using Sorbent Suspensions: Jeffrey Culp1; Lei Hong2; Robert Thompson1; Fan Shi2; Nicholas Siefert2; McMahan Gray3; David Hopkinson1; 1National Energy Technology Laboratory

8:20 AM Invited
Porous Materials for Carbon Dioxide Capture and Storage: Izaak Williamson1; Winnie Wong-Ng2; Lan Li1; 1Boise State University; 2National Institute Of Standards and Technology

10:00 AM Break

10:20 AM Invited

10:40 AM Flexible Metal Organic Framework (MOF) ([Ni(dpblz][Ni(CN)4]) with an Unusual Ni-N Bond: Winnie Wong-Ng1; Jeffrey Culp; Yu-Sheng Chen2; Jeffrey Deschamps1; Anne Marti1; Izaak Williamson1; Lan Li1; 1National Institute of Standards and Technology; 2NETL, University of Pittsburgh

11:00 AM Role of Sorbent Structure and Phase Balance in Enhanced CO2 Capture Using Mixed Matrix Membranes for Post-combustion CO2 Capture: David Hopkinson1; Surendar Venna1; Anne Marti1; Janice Steckel1; Samir Budhathoki1; Christopher Wilmer2; 1National Energy Technology Lab; 2University of Pittsburgh

11:20 AM Applications of Porous Composites in Heavy Metal Extraction from Contaminated Water: Daniel Sun1; Li Peng1; Sandrine Chuard1; Emad Oveisi1; 1Faraday Technology, Inc.; 2National Institute of Standards and Technology

11:40 AM Design of a Self-forming Dual-phase Membrane to DPF Substrate, which Leads to the DPF Premature Failure: Kun Yang1; John Fox2; Robert Hunsicker1; 1Lehigh University; 2Hunsicker Emission Services (HES), LLC
The 9th International Symposium on Green and Sustainable Technologies for Materials Manufacturing and Processing – Novel Green Technologies for Designing Porous Materials/Green Technologies in Biomaterials and Computational Materials

Program Organizers: Surojit Gupta, University of North Dakota; Jun-ichi Tatami, Yokohama National University; Tatsuki Ohji, National Institute of Advanced Industrial Science and Technology (AIST); Mrityunjay Singh, Ohio Aerospace Institute, NASA Glenn Research Center; Marsha Bischel, Armstrong World Industries, Inc., PA; Makio Naito, Osaka University, Japan; Hisayuki Suematsu, Nagaoka University of Technology, Japan; Yiquan Wu, Alfred University, NY

Wednesday AM  Room: 317
October 11, 2017  Location: DLL Convention Center

Session Chairs: Manabu Fukushima, National Institute of Advanced Industrial Science and Technology; Lan Li, Boise State University; Jingyang Wang, Shenyang National Laboratory for Materials Science

8:00 AM Invited
Mesoporous Materials for Desulfurization Technologies: Fabrication and Enzyme Immobilization: Olivia Graeve1; Seongcheol Choi1; 1University of California, San Diego

8:40 AM
Bioactive Glass-ceramic Foams from Alkali Activation and Sinter-crystallization: Hamada Elsayed1; Acacio Rincon Romero 1; Barbara Zavan 1; Enrico Bernardo 1; 1University of Padova

9:00 AM Invited
Base Metal Oxide Catalyst Supported on Corning’s High Porosity Honeycomb Substrate for Room Temperature Catalytic Decomposition of Airborne Formaldehyde: Benedict Johnson1; 1Corning Incorporated

9:40 AM
Microstructure and Mechanical Response of Ceramic Insulators Prepared by Gelation Freezing Route: Manabu Fukushima1; Hideki Hyuga1; Chika Matsunaga1; Tatsuki Ohji1; Yu-ichi Yoshizawa1; 1National Institute of Advanced Industrial Science and Technology (AIST)

10:00 AM Break

10:20 AM Invited
Materials-by-design for Energy and Sustainability Applications: Lan Li1; 1Boise State University

11:00 AM Invited
Use of Nanoclays for Biomaterials Design: Reducing Environmental Footprint: Kalpana Katti1; Dinesh Katti1; 1North Dakota State University

11:40 AM
Phonon Engineering for RE-silicate EBC Candidates: Challenges and Opportunities: Jingyang Wang1; 1Shenyang National Laboratory for Materials Science, Institute of Metal Research, Chinese Academy of Sciences

ACerS Robert B. Bosman Award Symposium: Tailoring Ceramic Microstructures: Understanding and Tuning of Materials Performance – Robert B. Bosman Award Symposium II: Tailoring Ceramic Microstructures: Understanding and Tuning of Materials Performance

Program Organizer: Wolfgang Rheinheimer, Karlsruhe Institute of Technology

Wednesday PM  Room: 315
October 11, 2017  Location: DLL Convention Center

Session Chair: Wolfgang Rheinheimer, Karlsruhe Institute of Technology

1:00 PM Invited
Grain Growth in Perovskite-based Ceramics: Michael J. Hoffmann1; 1Karlsruhe Institute for Technology (KIT)

ACerS Robert B. Bosman Award Symposium: Tailoring Ceramic Microstructures: Understanding and Tuning of Materials Performance – ACerS Basic Science Division Robert B. Bosman Lecture

Program Organizer: Wolfgang Rheinheimer, Karlsruhe Institute of Technology

Wednesday PM  Room: 315
October 11, 2017  Location: DLL Convention Center

Session Chair: Wolfgang Rheinheimer, Karlsruhe Institute of Technology

2:00 PM Invited
Tailoring Lead-free Piezoceramic Composites: Juergen Roedel1; 1TU Darmstadt

2:40 PM Invited
GB Chemistry of Silicon Nitride Based Ceramics – Implications to the Ceramics Properties: Pavol Sajgalik1; Zoltán Lenèéš1; 1Slovak Academy of Sciences

3:20 PM Break

3:40 PM Invited
Tailoring Microstructures for Better Mechanical Properties of Engineering Ceramics: Tatsuki Ohji1; 1National Institute of Advanced Industrial Science and Technology (AIST)

4:00 PM Invited
Toward Seashells under Stress: “Novel Concepts to Design Tough Layered Ceramic Composites”: Raul Bermejo1; Yunfei Chang1; Gary Messing1; 1The Pennsylvania State University
Additive Manufacturing of Metals: Fatigue and Fracture – Session II

Program Organizers: Nikolas Hrabe, National Institute of Standards and Technology; Nicholas Barbosa, National Institute of Standards and Technology; Richard Ricker, National Institute of Standards and Technology; Steve Daniewicz, University of Alabama; Nima Shamsaei, Auburn University; Mohsen Seifi, Case Western Reserve University

ASTM International

Wednesday PM Room: 304
October 11, 2017 Location: DLL Convention Center

Session Chair: Mohsen Seifi, Case Western Reserve University

2:00 PM Invited Paper
Low Cycle Fatigue Behavior of Inconel 718 Fabricated through Electron Beam Melting: Michael Kirs 1; Charles Hawkins 1; Duncan Greely 1; Ryan Dehoff 1, Oak Ridge National Laboratory

2:40 PM
Fatigue Life of Stainless Steel Laser Additive Manufactured Components Using Various Build Parameters: Steven Keckler 1; Penn Rawn 1; Bruce Madigan 1; K.V. Sudhakar 1; Ronda Coguill 1, Montana Tech

3:00 PM
Fatigue Behavior of Electron Beam Melted Ti-6Al-4V: Sources of Scatter and Path Forward: Andrew Chern 1; Peeyush Nandwana 1; Sarah Foster 1; Robert McNadd 1; Ryan Dehoff 1; Peter Liaw 1; Robert Tryon 1; Chad Duty 1, University of Tennessee-Knoxville; Oak Ridge National Laboratory

2:20 PM
Using Fracture Mechanics Methods to Characterize the Adhesion Strength of Cold Spray Additive Repairs: Benjamin White 1; William Story 1; Brian Jordan 1; Luke Brewer 1, University of Alabama

3:40 PM Break

4:00 PM
Surface Treatment of Powder Bed Fusion Additive Manufactured Metals for Improved Fatigue Life: David Witkin 1; Dhruv Patel 1; Henry Helvajian 1; Agustin Diaz 1, The Aerospace Corporation; REM Surface Engineering

4:20 PM
Effect of Surface Roughness on Fatigue Life of Additively Manufactured IN 718: Bo Whip 1; Joy Gockel 1; Luke Sheridan 1; Eric Tatman 1, Wright State University

4:40 PM
Effect of Surface Roughness on the Low- and High-cycle Fatigue Behavior of Binder Jet Printed Nickel-based Alloy 625: Amir Mostafaei 1; Jakub Toman 1; Erica Stevens 1; Markus Chmielu 1, University of Pittsburgh

5:00 PM
Influence of Varying Build Orientation on the Fatigue Performance of AISI10Mg Parts Produced Using Selective Laser Melting: Edward Stu gelmayer 1; Bryce Abstetar 1; K.V. Sudhakar 1; Ronda Coguill 1; Bruce Madigan 1, Montana Tech of the University of Montana

Additive Manufacturing of Metals: Microstructure and Material Properties – AM Processing of Aluminum and Non-ferrous Alloys

Program Organizers: Andrzej Wojcieszynski, ATI Powder Metals; Ulf Ackelid, Freemelt AB; Ola Harrysson, North Carolina State University; Sudarsanam Babu, The University of Tennessee, Knoxville

Wednesday PM Room: 301 Location: DLL Convention Center

Session Chair: Ryan Dehoff, ORNL

2:00 PM
Influence of Arcam EBM Parameters on Properties in Aluminum Alloy 2024: Chris Rock 1; Maria Withrow 1; Tim Horn 1; Harvey West 1, Center for Additive Manufacturing and Logistics

2:20 PM
Microstructure Control in Additive Manufacturing of Aluminum Alloys: Hunter Martin 1; Brennan Yahata 1; Eric Clough 1; Jacob Hundle 1; Tobias Schaad 1; Tresa Pollock 1, University of California, Santa Barbara

2:40 PM
The Microstructure and Mechanical Performance of an Additively Manufactured Aluminum Alloy: Joe Croteau 1; Davaadorj Bayansan 1; Seth Griffiths 1; Christian Leinenbach 1; Nhon Vo 1; David Dunand 1; David Seidman 1, NanoAl LLC; Empa Materials Science and Technology

3:00 PM
Microstructural Evolution of Rapidly Solidified Al-Si and Al-Ge Alloys: Adam Stokes 1; John Roehling 1; Joseph McKeown 1; Daniel Coughlin 1; Amy Clarke 1, Colorado School of Mines; Lawrence Livermore National Laboratory; Los Alamos National Laboratory

3:20 PM
Solidification and Microstructure Mapping of Rapidly Solidified Hypoeutectic Al-Si Alloys: William Hearn 1; Hani Henein 1; Aboud-Aziz Bogno 1; Jonas Valloton 1; Mark Gallerneault 1, University of Alberta; Alceroco

3:40 PM Break

4:00 PM
Microstructures and Mechanical Properties of TiAl Alloys Fabricated by Electron Beam Melting: Ken Cho 1; Ryota Kobayashi 1; Naohide Morita 1; Masahiro Sakata 1; Hironori Yasuda 1; Mitsuharu Todai 1; Takayoshi Nakano 1; Ayako Ikeda 1; Daiuske Kondo 1; Yuto Nagamachi 1; Minoru Ueda 1; Masao Takeyama 1, Osaka University; National Institute for Materials Science; Metal Technology Co. Ltd.; Tokyo Institute of Technology

4:20 PM
Processing-microstructure-mechanical Property Correlation in AlSi10Mg Parts Produced Using Selective Laser Melting: Edward Stuegelmayer 1; Bryce Abstetar 1; K.V. Sudhakar 1; Ronda Coguill 1; Bruce Madigan 1, Montana Tech of the University of Montana

4:40 PM
Selective Laser Melting of Cu10Ni Alloys Using Gas Atomized Powders: Saraj Jadav 1; Pierre Van Cauwenbergh 1; Karel Lietaert 1; Jan Van Humbeeck 1; Jean-Pierre Kruth 1; Sasan Dadbakhsh 1; Aljaz Ivekovic 1; Kim Vanmeensel 1, KU Leuven
Additive Manufacturing of Metals: Microstructure and Material Properties – Phase Formation and Stresses
Program Organizers: Andrzej Wojcieszynski, ATI Powder Metals; Ulf Ackelid, Freemelt AB; Ola Harrysson, North Carolina State University; Sudarsanam Babu, The University of Tennessee, Knoxville

Wednesday PM
Room: 302
Location: DLL Convention Center

Session Chair: Jack Beuth, Carnegie Mellon University

2:00 PM
Effects of Argon-nitrogen Shielding Gas Mixtures on Ferrite-austenite Phase Balance of Additively Manufactured 2205 Duplex Stainless Steel: Andrew Iams; Todd Palmer; Applied Research Laboratory, Pennsylvania State University

2:20 PM
Study of Oxide Inclusion Evolution in AM Stainless Steels: Fuyao Yan; Wei Xiong; Gregory Olson; Northwestern University; University of Pittsburgh

2:40 PM
Oxidation of Ni-based Alloys Fabricated by Additive Manufacturing: Sebastien Dryepondt; Mike Kirka; Oak Ridge National Laboratory

3:00 PM
Reducing Oxygen Content during the Manufacturing of OFHC Copper Using Electron Beam Melting: John Ledford; Harvey West; Diana Ganzina; N. C. Luhmann; Ilbey Karakurt; Liwei Lin; Tim Horn; CAMAL; SLAC National Accelerator Laboratory; University of California, Davis; University of California, Berkeley

3:20 PM Break

3:40 PM
Determination of Residual Stresses in Additively Manufactured Parts Using Deep Hole Drilling, X-ray Diffraction and Synchrotron Diffraction: Florian Brenne; Arnaud Magnier; Sebastian Degener; Behzad Aminforoughi; Wolfgang Zinn; Manuela Klaus; Christoph Genzel; Thomas Niendorf; University of Kassel; Helmholtz-Zentrum Berlin für Materialien und Energie GmbH

4:00 PM
Mechanical Property and Microstructural Comparison of Additively Manufactured Titanium (Ti64) Lattices and Bulk Material: Michael Brand; Chris Chen; Robin Pacheco; Cameron Knapp; Dustin Cummings; Matthew Tucker; Los Alamos National Laboratory

4:20 PM
Wire + Arc Additive Manufacture for Maraging Steels: Xiangfang Xu; Jialuo Ding; Supriyo Ganguly; Chenglei Diao; Stewart Williams; Cranfield University

Additive Manufacturing: In-situ Process Monitoring and Control – Session II
Program Organizers: Ulf Ackelid, Freemelt AB; Andrzej Wojcieszynski, ATI Powder Metals; Sudarsanam Babu, The University of Tennessee, Knoxville; Ola Harrysson, North Carolina State University

Wednesday PM
Room: 303
Location: DLL Convention Center

Session Chair: Anthony Rollett, Carnegie Mellon University

2:00 PM
In-situ Inspection of Laser-based Directed Energy Deposition Processes Using Laser Ultrasonomics: Marissa Brennan; Todd Palmer; Maxwell Wiedmann; Marvin Klein; The Pennsylvania State University; Intelligent Optical Systems (IOS)

2:20 PM
In-situ Thermal Imaging and Ex-situ Surface Topology Measurements for Control of Laser Powder Bed Build Properties: Sarah Foster; Keith Carver; Ralph Dinwiddie; Alexander Plotkowski; Anil Chaudhary; Sudarsanam Babu; University of Tennessee, Knoxville; Oak Ridge National Laboratory; Applied Optimization, Inc.

2:40 PM

3:00 PM
Assessing Surface Porosity Using Physics-based Surrogate Models for Selective Laser Melting: Alexander Wolfer; Umberto Scipioni Bertoli; Dogan Timucin; Kevin Wheeler; Saad Khairallah; Andy Anderson; Manyalibo Matthews; Rose McCallen; Julie Schoenung; Jean-Pierre Delplanque; University of California, Davis; University of California, Irvine; NASA Ames Research Center; Lawrence Livermore National Laboratory

3:20 PM
Automated Laser Track Trace Identification and Defect Characterization in SLM Processes Using Laser Profilometer Data: Subhadeep Chakraborty; Anil Chaudhary; Sudarsanam Babu; University of Tennessee; Applied Optimization

3:40 PM Break

4:00 PM
Dynamics of Droplet Ejection from Metal Powder Bed Layer in Laser Additive Manufacturing as Probed by High Speed Imaging: Sonny Ly; Alexander Rubenchik; Saad Khairallah; Guss Gabe; Manyalibo Matthews; Lawrence Livermore National Laboratory

4:20 PM
High Speed, High Resolution In Situ Monitoring of Spatter during Laser Powder Bed Fusion: Christopher Barrett; Jason Walker; Rodrigo Enriquez Gutierrez; Eric MacDonald; Brett Conner; Youngstown State University; America Makes

4:40 PM
In-situ Laser Modification and Characterization of Materials in the TEM: Patrick Price; Kahlid Hattar; LaRico Treadwell; Tim Boyle; Sandia National Laboratories
5:00 PM
Melt Pool and Build Layer Monitoring on the NIST Additive Manufacturing Metrology Testbed (AMMT)  
Brandon Lane; Jason Fox; Ho Yeung; National Institute of Standards and Technology

5:20 PM
X-ray Vision of Laser Powder Bed Fusion Process: Cang Zhao; Kamel Fezzaa; Ross Cunningham; Haidan Wen; Francesco Carlo; Lianyi Chen; Anthony Rollert; Tao Sun; Argonne National Laboratory; Carnegie Mellon University; Missouri University of Science and Technology

Advanced Coatings for Wear and Corrosion Protection – Advanced Coatings for Wear and Corrosion Protection III

Program Organizers: Evelina Vogli, LiquidMetal Group Holdings, Inc.;  
Fei Tang, DNV GL; Emad Omrani, University of Wisconsin - Milwaukee; Afsaneh Dorri Moghadam, University of Wisconsin-Milwaukee; Pradeep Menezes, University of Nevada Reno; Pradeep Rohatgi, University of Wisconsin-Milwaukee

Wednesday PM  
Room: 338  
Location: DLL Convention Center

Session Chairs: Pradeep Menezes, University of Nevada Reno; Pradeep Rohatgi, University of Wisconsin-Milwaukee

2:00 PM
Influence of Cerium Oxide on the Hardness and Wear Resistance of Ni-based Coatings on Ti6Al4V Alloy: Phala Mookenane; Abimbola Popoola; TMonnannme; Olavale Fatoba; Tswane University of Technology; Centre for Scientific and Industrial Research-National Laser Centre

2:20 PM
Properties and Process Development of Vacuum Plasma Sprayed (VPS) Zirconium on SiC: Caen Ang; Scott O’Dell; Kurt Terrani; Lance Snead; Yutai Katoh; Oak Ridge National Laboratory; Plasma Processes; Massachusetts Institute of Technology

2:40 PM
Studies of Corrosion Resistance of Aluminized Coatings in Metal Dusting Environments: Eugene Medvedovski; Jianyu Ma; Xiaoyang Guo; Estelle Vanhaecke; Hilde Venvlikt; Endurance Technologies Inc.; Norwegian University of Science and Technology

3:00 PM
Amin Rabiei Baboukani; Afsaneh Dorri; Pradeep Menezes, University of Nevada Reno

3:20 PM
Comparative Oxidation Behaviour of Additive Manufactured, Drawn and Forged In-718ic Superalloy: Fernando Pedraza; C. Julliet; J. Balmain; X. Feaugas; A. Oudriss; Université de La Rochelle

3:40 PM
Corrosion Mechanisms of Pure Chromium in Multi-oxidant Environments at Elevated Temperatures: Satia Solantanatt; Cecile Bonifacio; Pawel Nowakowski; Brian Gleeson; Paul Fischione; University of Pittsburgh; Fischione Instruments, Inc.

4:00 PM
Flexible Laminar Polymer-ceramic Composite Material for Harsh Environment Robotic Tactile Sensor Application: Kevin Sivamani Varadarajan Idhaim; Edward Sabolisky; Thomas Evans; David Devallance; West Virginia University

4:20 PM
Corrosion Behavior and Passivity of AA5038 Nanostructured Aluminum Alloy Produced by Accumulative Roll-bonding: Amin Rabiei Baboukani; Ahmad Saatchi; Mohammad Asadikyia; Shadi Darvish; Paniz Foroughi; Florida International University; University of Wisconsin Madison

4:40 PM
Localized Corrosion of 0-phase Al2Cu and S-phase Al2CuMg Alloys: Thiago da Silva; Corey Ewaf; Mike Hurley; Lan Li; Boise State University

5:00 PM
Corrosion Inhibition and Adsorption Properties of Antibiotics for Al-alloy in Acidic Environment: Omotayo Sanni; O S Fatoba; Abimbola Popoola; Tswane University of Technology, Pretoria, South Africa

Advanced Materials and Sensors for Harsh Environments – Advanced Materials and Sensors for Harsh Environments I

Program Organizers: Gary Pickrell, Virginia Tech; Navin Manjooran, Siemens AG

Wednesday PM  
Room: 333  
Location: DLL Convention Center

Session Chairs: Gary Pickrell, Virginia Tech; Navin Manjooran, Vice President, Siemens AG

2:00 PM Introductory Comments

2:40 PM
Comparative Oxidation Behaviour of Additive Manufactured, Drawn and Forged In-718ic Superalloy: Fernando Pedraza; C. Julliet; J. Balmain; X. Feaugas; A. Oudriss; Université de La Rochelle

3:00 PM
Corrosion Mechanisms of Pure Chromium in Multi-oxidant Environments at Elevated Temperatures: Satia Solantanatt; Cecile Bonifacio; Pawel Nowakowski; Brian Gleeson; Paul Fischione; University of Pittsburgh; Fischione Instruments, Inc.

3:20 PM
Flexible Laminar Polymer-ceramic Composite Material for Harsh Environment Robotic Tactile Sensor Application: Kevin Sivamani Varadarajan Idhaim; Edward Sabolisky; Thomas Evans; David Devallance; West Virginia University

3:40 PM Break

4:00 PM
High-resolution, Temperature and Strain Sensors for SiC-SiC Ceramic Matrix Composites: Kevin Rivera; Otto Gregory; University of Rhode Island

4:20 PM
Mechanical Understanding of the Impact of SO2 Content and Temperature on the Hot Corrosion of a Second Generation Nickel-based Superalloy: Emily Kistler; Brian Gleeson; Michael Task; University of Pittsburgh; Pratt & Whitney

4:40 PM
Metal Silicide-refractory Oxide Electroconductive Ceramic Composites for High-temperature and Harsh-environment Sensing Applications: Gunes Takaboylu; Rajalekshmi Chockalingam; Katarzyna Sabolisky; Edward Sabolisky; West Virginia University
Advanced Steel Metallurgy: Products and Processing – Session V
Program Organizers: Emmanuel De Moor, Colorado School of Mines; Amar De, ArcelorMittal Global R&D; Kester Clarke, Colorado School of Mines; Alla Sergueeva, The NanoSteel Company; Charles Enloe, General Motors; Daniel Branagan, The NanoSteel Company; Matthew Kiser, Caterpillar Inc

Wednesday PM
October 11, 2017
Location: DLL Convention Center

Session Chairs: Daniel Branagan, The NanoSteel Company; Kester Clarke, Colorado School of Mines

2:00 PM
3rd Generation AHSS: High Strain Rate Tensile Testing: Sarah Kuhlman1; T. Machrowicz2; C. Parsons2; A. Sergueeva2; A. Frerichs2; B. Meacham2; S. Cheng2; D. Branagan2; 1UDRI; 2The NanoSteel Company, Inc.

2:20 PM
Effects of Martempering on the Strength and Toughness of Medium Carbon Stainless Steels: Warren Garrison1; Justin Kim1; Yu Lin1; Ziheng Wu1; 1Carnegie Mellon University

2:40 PM
Heat Transfer during Bottom Jet Impingement Cooling of a Stationary Steel Plate: Debanga Kashyap1; Vladan Prodanovic1; Matthias Militzer1; 1University of British Columbia

3:00 PM
Relationship of Grain Size and Deformation Mechanism to the Fracture Behavior in High Strength–high Ductility Nanostructured Austenitic Stainless Steel: Y Injeti1; Devesh Misra1; 1University of Texas at El Paso

3:20 PM Break

3:40 PM
Structure - Mechanical Property Relationship in Laser Welded T-250 Maraging Steel Joint: K Li1; Devesh Misra1; 1University of Texas at El Paso

4:00 PM
Tailoring Comprehensive Properties of High Nitrogen Stainless Steel via Friction Stir Processing: Z.Y. Ma1; H. Zhang1; D. Wang1; 1Institute of Metal Research, Chinese Academy of Sciences

4:20 PM
Development of Compacted Vermicular Cast Iron Cylinder Liner for Large Bore Marine Diesel Engine: Ji Haeng Heo1; Seung-Hyouk Nam1; Tae Young Hur1; Jin Guk Kim1; Jong-Hyun Hwang1; Hyundai Heavy Industries, Co. Ltd.

4:40 PM
Effect of Feeding Amount of Calcium on Non-metallic Inclusions of X80 Pipeline Steel: Shusen Li1; Hao Zhou1; Lifeng Zhang1; Ying Ren1; Wen Yang1; 1University of Science and Technology Beijing

5:00 PM
Investigation on the Impurity Absorptivity of Tundish Fluxes: Limei Cheng1; Lifeng Zhang1; 1University of Science and Technology Beijing

Advances in Dielectric Materials and Electronic Devices – Dielectrics I/Dielectrics II
Program Organizers: Amar Bhalla, The University of Texas at San Antonio; Ruyan Guo, The University of Texas at San Antonio; K. M. Nair, E.I.duPont de Nemours & Co, Inc; Danilo Suvorov, Josef Stefan Institute; Rick Ubic, Boise State University

Wednesday PM
Room: 331
October 11, 2017
Location: DLL Convention Center

Session Chairs: Danilo Suvorov, Josef Stefan Institute; Ruyan Guo, The University of Texas at San Antonio

2:00 PM Invited
Enhanced Quality Factor of MgTiO3-based Ceramics at Microwave Frequencies: Eung Soo Kim1; 1Kyonggi University

2:20 PM Invited
Indialite/Cordierite Glass Ceramics Applied for LTCC: Hitoshi Ohsato1; Jobin Varghese2; Timo Vahera2; Heli Jantunen2; Makoto Iwata3; 1Nagoya Industrial Science Research Institute; 2University of Oulu; 3Nagoya Institute of Technology

2:40 PM Effect of Polymer Phase on Freeze-cast High Temperature Dielectric Composites: Edward Gorzkowski1; Eric Patterson2; 1Naval Research Laboratory; 2ASEE

3:00 PM Invited
BaTiO3 Ceramics Porosity Fractal Structured Approach: Vojislav Mitic1; Ljubisa Kocic1; Vesna Paunovic1; 1University of Nis, Faculty of Electronic Engineering

3:20 PM Break

3:40 PM
Interfacing Oxides with Silicon Using Pulsed Laser Deposition: Matjaz Spreitzer1; Daniel Diaz Fernandez1; Tjaša Parkelj1; Danilo Suvorov1; 1Jožef Stefan Institute

4:00 PM
A Broadband, High Frequency Characterization Approach for Combinatorial Dielectric Thin-films: Eric Marksz1; Nathan Orloff2; Christian Long1; James Booth1; Ichiro Takeuchi1; 1University of Maryland; 2National Institute for Standards and Technology

4:20 PM Engineering the Dielectric and Mechanical Properties of Parylene-C Columnar Microfibrous Thin Films by Controlling the Deposition Angle: Ibrahim Khatib1; Chandraprakash Chindam1; Osama Awadelkarim1; Akhlesh Lakhtakia1; 1Pennsylvania State University

4:40 PM
Volume and Polarization Induced Structural Phase Transitions of Pm3m Perovskites: Vignaswaran Kaliyaperumal Veerapandiyan1; YuHuLin Liao1; Walter Schulze1; Scott Mixture1; Steven Pilgrim1; Steven Tidrow1; 1Alfred University
Ceramic-based Optical Materials and Advanced Processing – Session III

Program Organizers: Yiquan Wu, Alfred University; Jas Sanghera, Naval Research Laboratory; Michael Squillante, RMD, Inc; Akio Ikesue, World-Lab. Co., Ltd

Wednesday PM
October 11, 2017
Location: DLL Convention Center

Session Chair: Woohong (Rick) Kim, Naval Research Laboratory

2:00 PM Invited
Novel Powder Synthesis/Consolidation Processing and Characterization of Yttria-based Transparent Optical Ceramics: Do Kyung Kim1; 1KAIST

Theoretical Study on Transparent Spinel Solid Solutions through First-principles Calculation: Hao Wang1; Bingtian Tu1; Lu Ren1; Weimin Wang1; Zhengyi Fu1; 1Wuhan University of Technology

2:40 PM Invited
Effects of Surface Roughness on Optical Characteristics of Ho-doped Polycrystalline YAG Fibers: Hyunjun Kim1; Randall Hay1; Sean McDaniel1; Gary Cook2; Nicholas Usechak1; Augustine Urbas1; Kathleen Shugart1; Ali Kadhim1; HeeDong Lee1; Benjamin Griffin1; Dean Brown1; Randall Corns1; 1UES, Inc.; 2Air Force Research Laboratory; 3Leidos, Inc.

Improvement of Optical Transparency of Non-cubic Ceramic Polycrystals by Grain Orientation under Magnetic Field: Ying Shi1; Lincong Fan1; Debao Lin1; Lei Zhang1; Jianjun Xie1; Fang Lei1; 1Shanghai University

3:00 PM Invited
Tailoring of Rutile&Anatase Hybrid Structure by Supersaturated Precursor Solution: Do Kyung Kim1; Junghyun Cho1; 1SUNY-Binghamton University

3:20 PM Invited
Magnetic Properties and Phase Evolution of Iron Powders after High-temperature Nitridation: Song Law1; Zhiyao Feng1; Parivash Moradifar1; Frank Ernst1; David Matthias1; Matthew Willard1; 1Case Western Reserve University

3:40 PM Break

4:00 PM Invited
Identification of Structural Motifs in Disordered Materials: Jason Maldoniti; 1Virginia Tech; 2North Carolina State University

4:20 PM Invited
Development of Nanocrystalline Magnetic Material for High Current Inductors: Anthony Martone1; Bowen Dong1; Song Law1; Matthew Willard1; 1Case Western Reserve University

4:40 PM Invited
In-situ Characterization of Growth and Performance of Nanostructured Materials for Energy Conversion and Storage: Shen Dillion1; 1University of Illinois at Urbana-Champaign

Controlled Synthesis, Processing, and Applications of Structural and Functional Nanomaterials – Controlled Synthesis, Processing, and Applications of Structural and Functional Nanomaterials III

Program Organizers: Gurpreet Singh, Kansas State University; Kathy Lu, Virginia Tech; Sanjay Mathur, University of Cologne; Edward Gorzkowski, Naval Research Laboratory; Haifao Zhang, UNC Charlotte; Kejie Zhao, Purdue University; Hidehiro Kamiya, Tokyo University of Agriculture and Technology

Wednesday PM
October 11, 2017
Room: 321
Location: DLL Convention Center

Funding Chair provided by: MilliporeSigma

Session Chair: Kejie Zhao, Purdue University

Data and Tools for Materials Discovery and Design: Data Science Methods in Materials Discovery and Development II

Program Organizers: Zi-Kui Liu, The Pennsylvania State University; David McDowell, Georgia Institute of Technology; Carelyn Campbell, National Institute of Standards and Technology; Laura Bartolo, Northwestern University; Bryce Meredig, Citrine Informatics; Mark Tschopp, Army Research Laboratory; Dane Morgan, University of Wisconsin - Madison; Alina Lupulescu, ASM International

Wednesday PM
Room: 323
October 11, 2017
Location: DLL Convention Center

Session Chairs: Tim Mueller, JHU; Elizabeth Holm, CMU

2:00 PM Invited
Applications of Data Science and Machine Learning in Computational Materials Science: Elizabeth Holm1; Brian DeCost1; Ankita Mangal1; 1Carnegie Mellon University

2:20 PM Invited
Identifying Structural Motifs in Disordered Materials: Jason Maldoniti; 1Virginia Tech; 2North Carolina State University

2:40 PM Invited
Development of Nanocrystalline Magnetic Material for High Current Inductors: Anthony Martone1; Bowen Dong1; Song Law1; Matthew Willard1; 1Case Western Reserve University

3:00 PM Invited
Magnetic Properties and Phase Evolution of Iron Powders after High-temperature Nitridation: Song Law1; Zhiyao Feng1; Parivash Moradifar1; Frank Ernst1; David Matthias1; Matthew Willard1; 1Case Western Reserve University

3:20 PM Invited
Mist Deposition and Lift-off Patterning of Nanocrystalline Quantum Dots Films: Ali Sabeeh1; Jared Price1; Jerzy Ruzyllo1; 1The Pennsylvania State University, Taibah University, Saudi Arabia; 2The Pennsylvania State University

3:40 PM Break

4:00 PM Invited
Synthesis of Nanomaterials in Extreme Environments: William Fahrenholtz1; Catherine Johnson1; Vadym Mochalin1; Martin Langenderfer1; Sergei Chertopalo1; 1Missouri University of Science and Technology

4:40 PM Invited
Identifying Structural Motifs in Disordered Materials: Jason Maldoniti; 1Virginia Tech; 2North Carolina State University

5:00 PM Invited
Low Temperature Conventional Sintering of Nanograined Ceramics via High Green Density Processing: John Drazin1; Edward Gorzkowski1; 1ASEE Postdoc at US Naval Research Laboratory; 2NRL

5:20 PM Invited
Process Dependent Morphologies of Nano-particle Superstructures: Kazuhik Sridhar Vadari Venkata1; Nicole Ray1; William Petuskey1; 1Arizona State University
Analyzing Trends and Correlations in Structure-property Relationships Using Canonical Correlation Analysis: Sudipto Mandal; Jacky Lao; Vahid Tari; Anthony Rollett; Carnegie Mellon University

Prediction of Microstructure Evolution in Phase-field Simulations Through Data Analytics and Time Series: yokel Yabansu; Linyun Liang; Long-Qing Chen; Surya Kalidindi; Georgia Institute of Technology; Argonne National Laboratory; The Pennsylvania State University

Prediction of Microstructure Evolution in Phase-field Simulations Through Data Analytics and Time Series: yokel Yabansu; Linyun Liang; Long-Qing Chen; Surya Kalidindi; Georgia Institute of Technology; Argonne National Laboratory; The Pennsylvania State University

Prediction of Microstructure Evolution in Phase-field Simulations Through Data Analytics and Time Series: yokel Yabansu; Linyun Liang; Long-Qing Chen; Surya Kalidindi; Georgia Institute of Technology; Argonne National Laboratory; The Pennsylvania State University

Prediction of Microstructure Evolution in Phase-field Simulations Through Data Analytics and Time Series: yokel Yabansu; Linyun Liang; Long-Qing Chen; Surya Kalidindi; Georgia Institute of Technology; Argonne National Laboratory; The Pennsylvania State University

The Effective Use of Data in Materials Research: Tim Mueller; Johns Hopkins University

Application of Data Science to the Study and Design of 9-12% Cr Steel: Amit Verma; Jeffrey Hawk; Laura Bruckman; Vyacheslav Romanov; Roger French; Jennifer Carter; Case Western Reserve University; NETL Albany; NETL Pittsburgh

Materials Informatics and Big Data: Realization of 4th Paradigm of Science in Materials Science: Ankit Agrawal; Alok Choudhary; Northwestern University

Influence of 0.75 wt% Ta₂O₅ and Nb₂O₅ Doping on the Properties of Zirconia-toughened alumina (ZTA) Composites: Salma Naga; Ahmed Hassan; Mohamed Awaad; National Research Center; Zagazig University

Evidence of Tribchemical Reactions in a Dynamically-impacted Boron Carbide: Jerry LaSalvia; Vladislav Donnich; Brian Schuster; Brady Aydelotte; Anit Giri; Christopher Marvel; Martin Harmer; U.S. Army Research Laboratory; Rutgers University; Lehigh University

Ideal Flows in Pressure – Dependent Plasticity: Sergei Alexandrov; Institute for Problems in Mechanics

Contribution of Stacking Faults on Strengthening of Biomedical Co-Cr-Mo Alloys Studied by X-ray Diffraction Line-profile Analysis: Kenta Yamanaka; Manami Mori; Shigeo Sato; Akihiko Chiba; Tohoku University; National Institute of Technology, Sendai College; Ibaraki University

Further Insights into the Role of Intermetallic Compounds on the Nucleation Phenomena in Sn-Cu-Ag Alloys during Reflow Process: Oleksii Liashenko; Grenoble Institute of Technology

Early Stage of Grain Boundary Nucleation as a Stress Relaxation Response during Thermal Cycling of Pure Tin Films: Congying Wang; Carol Handwerker; John Blended; Purdue University

Effects of Anisotropic Properties on Electromigration in Tin Solder Interconnects: Zachary Morgan; Yongmei Jin; Vahid Attari; Raymundo Arroyave; Michigan Technological University; Texas A&M University

Study of Tin Whisker Growth under Polyurethane Based Conformal Coatings: Fei Dong; Junghyun Cho; Stephan Meschter; Binghamton University, SUNY; BAE Systems

Nucleation of Sn Films on Single Crystal Ge and Si Substrates: Kathlene Reeve; Carol Handwerker; Purdue University
Formation and evolution of tin surface defects during cyclic bending: Xi Chen; Purdue University.

Failure Analysis and Prevention – Steel & Heat Treatment
Program Organizers: Andrew Havics, pH2, LLC; Pierre Dupont, Schaeffler Belgium Sprl/Bvba; Burak Akyuz, ATS, Inc.

Wednesday PM    Room: 407
October 11, 2017   Location: DLL Convention Center

Session Chairs: Erik Mueller, National Transportation Safety Board; Christopher Misorski, Mercury Marine; Craig Clauser , Craig Clauser Engineering Consulting

2:00 PM Invited
Cracking of Ladle Spreader Beams at the U. S. Steel Mon Valley Works Edgar Thomson Plant. Steven Bianculli; United States Steel

2:20 PM
Ausferrite and Bainite - Tough Problems, Tough Solutions: John Keough; Kathy Hayrynen; Applied Process Inc.

2:40 PM Invited
Heat Treat Related Failures: Arvid Casler; Aerospace Mfg Consultant

3:00 PM Invited
Failure Analysis of M48 X 625mm High Strength Bolts: Michael Connelly; Casey Products

3:20 PM Break

3:40 PM Invited
Metallurgical Evaluation of a Fractured 4-inch Flexible Bleed Hose From a Combustion Test Cell: William Rossey; GE Aviation

4:00 PM
Metallurgical Evaluation of a 4340 Low Alloy Steel Fixture Used for Aircraft Engine Component Testing: Jonathan Morales; GE Aviation

4:20 PM
The Benefits of Doing Nothing as the First Step in a Failure Analysis: Some Surprising EDS Results with Oxford AZtec EDS on Rusty Uncleaned Specimens: Diane Boone; Debbie Aliya; T. K. Holdings; Aliya Analytical, Inc.

4:40 PM
Failures Caused by Heat Treating: Craig Clauser; CCECI

5:00 PM
Characterization of Steel Continuous Sucker Rods Before and After Heat Treatment: Majid Al-Maharbi; Abdullah Al-Shabibi; Sultan Qaboos University

Failure Analysis and Prevention – Wear & Tribology
Program Organizers: Andrew Havics, pH2, LLC; Pierre Dupont, Schaeffler Belgium Sprl/Bvba; Burak Akyuz, ATS, Inc.

Wednesday PM    Room: 408
October 11, 2017   Location: DLL Convention Center

Session Chairs: Jake Auliff, DANFOSS; Michael Budinski, NTSB; Veronique Vitry, UMONS; Mark Hineman, Engineering Systems Incorporated; Mark Russell, Engineering Design & Testing Corporation

2:00 PM Invited
Wear, Friction and Tribology Failure Analysis: Steve Shaffer; Bruker TSOM

2:40 PM Invited
Wear Failure, the Crash of Alaska Airlines Flight 261: Joe Epperson; NTSB

3:00 PM
Tribological Performances, Issues & Utilization of Testing to Improve Functionality: Mark Hineman; Frederick Schmidt; Engineering Systems Inc.

3:30 PM Break

3:40 PM
Modern Tribological Trends in the Rolling-elements Bearing’s Industry in Terms of Materials, Heat Treatments & Coatings: Pierre Dupont; Schaeffler Belgium Sprl/Bvba

4:00 PM
Common ... Let’s Slide Again! A Plain Bearings Story!: Pierre Dupont; Schaeffler Belgium Sprl/Bvba

4:20 PM
Thermally Sprayed Coatings as Substitute for Lead-containing Bronze in Axial Sliding Bearing Applications: Mareike Hesebeck; Galina Haidarschin; Lutz Fassl; Marc Diesselberg; Danfoss Power Solutions; Oerlikon Metco

4:40 PM
Determine Cause of Damage to Differential Gear Box: Kyle Minden; EDT

5:00 PM
Powder Coating for Wear Product Elimination: Mark Russell; Engineering Design & Testing

Fifty Years of Metallography and Materials Characterization – Fifty Years of Metallography and Materials Characterization III
Program Organizers: Ryan Deacon, United Technologies Research Center; Daniel Dennies, Consulting Metallurgical Engineer; George Vander Voort, Consultant - Struers Inc

Wednesday PM    Room: 409
October 11, 2017   Location: DLL Convention Center

Session Chair: To Be Announced

2:00 PM
Improving the Precision of Microindentation Hardness Data: George Vander Voort; Consultant - Struers Inc.
2:40 PM  Invited
Characterization of Microalloyed Wrought Armor Steels Manufactured in Small Scale: Cody Dyar; William Williams; Haley Doude; Wilburn Whittington; Andrew Oppedal; Mark Tschopp; Hongjoo Rhee; 'Center for Advanced Vehicular Systems - Mississippi State University; 'Army Research Laboratory

2:40 PM  Invited
Microstructural Developments in Dual-phase and Advanced High Strength Steels: David Matlock; Emmanuel De Moor; John Speer; 'Colorado School of Mines

3:20 PM  Invited
Variant Selection in Primary and Secondary Nucleation of Bainite in Steels with Various Carbon Contents: Shoichi Nambu; Ryosuke Hattori; Mayumi Ojima; Toshihiko Koseki; 'The University of Tokyo

Glass Composites – Applications
Program Organizers: Guang-Ming (Derek) Tao, University of Central Florida; Huanyu Cheng, The Pennsylvania State University; Xin Zhang, Pacific Northwest National Laboratory; Jie Song, Emory University and Georgia Institute of Technology

Wednesday PM  Room: 318
October 11, 2017  Location: DLL Convention Center

Session Chairs: Huanyu Cheng, The Pennsylvania State University; Guang-Ming (Derek) Tao, University of Central Florida; Hui Chen, National Energy Technology Laboratory

2:00 PM  Invited
Photoelectric Properties of Nano-crystallized Chalcogenide Glass-ceramics: Xianghua Zhang; Ilia Korolkov; Michel Cathelinaud; Hongli Ma; Laurent Calvez; Jean-Luc Adam; 'CNRS/University of Rennes

2:40 PM  Invited
Microstructure Effects on the Dynamic Tensile (Spall) Strength of Titanium-variants of Near-alpha: Shoichi Nambu; Ryosuke Hattori; Chikaharu Nakamura; 'The University of Tokyo

4:00 PM  Invited
Microstructure on Mechanical Properties: Raul Bermejo; Robert Danzer; 'The Pennsylvania State University; 'Montanuniversitaet Leoben; 'EPCOS OHG

3:20 PM  Invited
Effects of Microstructure on the Corrosion Behavior of Borosilicate Glass-ceramics for Waste Vitrification: Nicholas Roberts; Richard Brow; Jarrod Crum; Paul Porter; 'Missouri S&T; 'Pacific Northwest National Laboratories

3:40 PM  Break

4:00 PM  Invited
Crystallization Kinetics and Microstructural Development in a Complex Borosilicate Glass-ceramic for Waste Vitrification: Paul Porter; Nicholas Roberts; Richard Brow; Jarrod Crum; 'Missouri University of Science and Technology; 'Pacific Northwest National Laboratory

4:40 PM  Invited
Nano crystal-glass Composite Electrolytes with Superior Ionic Conductivity and Stability for Na-Ion Batteries: Ruilin Zheng; Hanqing Dai; Wei Wei; 'Nanjing University of Posts & Telecommunications

5:00 PM  Invited
Crystallization Kinetics of Glasses with Various Compositions: Shen Li; Wei Wei; 'Nanjing University of Posts & Telecommunications

4:40 PM  Invited
Microstructure Effects on the Dynamic Tensile (Spall) Strength of Titanium-based Bulk Metallic Glass In-situ formed Composites: Naresh Thadhani; Wei Wei; 'Georgia Institute of Technology

4:40 PM  Invited
Nano crystal-glass Composite Electrolytes with Superior Ionic Conductivity and Stability for Na-Ion Batteries: Ruilin Zheng; Hanqing Dai; Wei Wei; 'Nanjing University of Posts & Telecommunications
Luminescence Properties of Rare Earth Doped Chalcogenide Glass Ceramics and Quantum Dots/Chalcogenide Glass Composite: Jihong Zhang1; Lingchao Meng2; Chao Liu2; Xiujian Zhao1; Jong Heo2; Wuhan University of Science and Technology; Pohang University of Science and Technology (POSTECH)

Innovative Processing and Synthesis of Ceramics, Glasses and Composites – Ceramic Processing II
Program Organizers: Narottam Bansal, NASA Glenn Research Center; Jitendra Singh, Retired, U.S. Army Research Laboratory; Takashi Goto, Tohoku University
Wednesday PM Room: 310 Location: DLL Convention Center
Session Chairs: Teichi Kimura, Japan Fine Ceramics Center(JFCC); K. S. Ravi Chandran, University of Utah

2:00 PM Invited
Laser Sintering of Ceramics for Additive Manufacturing: Teichi Kimura1; Japan Fine Ceramics Center

2:40 PM
Advances in Flame Assisted Flash Sintering: Amir Tavakoli2; Stephen Johnson1; Andrew Hunt1; nGimat LLC

3:00 PM
Mechanism and Kinetics of In Situ Formation of Titanium Boride (TiB) in the Electrical-field-assisted Sintering Process: Jun Du1; K. S. Ravi Chandran2; University of Utah

3:20 PM
Densification and Temperature Profile in Spark Plasma Sintered Fe – based Amorphous Alloy Matrix Composites: Tanaji Paul1; Sandip Harimkar2; Oklahoma State University

3:40 PM Break

4:00 PM
Sintering of Glass Frit: Aubrey Fry1; Hyojin Lee1; William Carty1; Alfred University

4:20 PM
Internal Solid State Displacement Reactions in Non-oxide Ceramics Proceeding through Gaseous Intermediates: Ryan Dempsey1; David Lipke2; Alfred University

4:40 PM
Fabrication of Nano Yttria by the Application of Electric Current Pulse during Precipitation Process: Wenbin Dai1; Chuanzhi Xu1; Xinli Wang1; Xiang Zhao1; Jingkun Yu2; Northeastern University

5:00 PM
Low Temperature Joining of Borosilicate Glass: Eric Maskovin1; William Fahrenholtz2; Richard Brow1; Jessica Buckner1; Missouri University of Science and Technology; Applied Technology Associates

Interfaces, Grain Boundaries and Surfaces from Atomistic and Macroscopic Approaches – Interface Kinetics II
Program Organizers: Dominique Chatain, CNRS, Aix-Marseille University; John Blendell, Purdue University; Wayne Kaplan, Technion - Israel Institute of Technology
Wednesday PM Room: 410 Location: DLL Convention Center
Session Chairs: Ming Tang, Rice University; Rachel Zucker, University of California

2:00 PM
Generalized Interfacial Fault Energies: Christopher Barrett1; Haitham El Kadiri2; Robert Moser; Mississippi State University; 3US Army Corps of Engineers - ERDC

2:20 PM
Local Defect Ordering and Interface Evolution during Electrical Degradation of Barium Titanate: Nicole Creange1; Matthew Cabral2; Gyung Hyun Ryu1; Elizabeth Dickey1; North Carolina State University

2:40 PM
Influence of Chemical Interface Structure on Thin Film Stress Evolution: Tyler Kau1; David Jacobson2; Gregory Thompson3; University of Alabama; University of Arkansas

3:00 PM
Thermodynamics of Grain Boundary Desegregation in Nanocrystalline Alloys: Arvind Kalidindi1; Christopher Schuh1; Massachusetts Institute of Technology

3:20 PM Break

3:40 PM
Thermally Induced Grain Coarsening in Alpha Iron: Yu-Feng Shen1; Robert Suter2; Siddharth Maddali3; Gregory Rohrer4; Aditi Bhattacharya2; Xingting Zhong5; Carnegie Mellon University; Argonne National Laboratory

4:00 PM
Phase Separation and Phase Transformation in Nanocrystalline Fe Alloys: Thermal Stability and Densification Behavior: Dor Amram1; Christopher Schuh1; Massachusetts Institute of Technology

4:20 PM
Exploring the Interactions between Grain Boundaries and Precipitates in Ni-Al Using Molecular Dynamics: Rachel Morrison1; Jennifer Carter1; Saryu Fensin1; Case Western Reserve University; MST-8, Los Alamos National Laboratory

4:40 PM
Anti-thermal Grain Growth in Strontium Titanate: Amanda Krause1; Christopher Marvel1; Wolfgang Rheinheimer2; Michael Hoffmann2; Gregory Rohrer3; Martin Harmer1; Lehigh University; Karlsruhe Institute of Technology; Carnegie Mellon University

5:00 PM
Changes in Local Interface Chemistry during Resistance Degradation of SrTiO3: Daniel Long1; Elizabeth Dickey1; North Carolina State University
International Symposium on Ceramic Matrix Composites – CMC II

**Program Organizers:** Narottam Bansal, NASA Glenn Research Center; Jitendra Singh, Retired, U.S. Army Research Laboratory; Jacques Lamon, CNRS; Sung Choi, Naval Air Systems Command

**Wednesday PM**

**Session Chairs:** Narottam Bansal, NASA Glenn Research Center; Sung Choi, Naval Air Systems Command

2:00 PM Invited

**Overview of Erosion in Ceramic Matrix Composites:** Sung Choi1; 1Naval Air Systems Command

2:40 PM Characterization of the Erosion Behavior of an MI SiC/SiC Ceramic Matrix Composite: Cajer Gong1; Nesredin Kedir1; Calvin Faucett1; Luis Sanchez1; Sung Choi1; 1Naval Air Systems Command

3:00 PM Invited

**Effects of Boron on Oxidation of SiC/BN/SiC Composites:** Bohuslava McFarland1; Megan Wilson1; Elizabeth Opila1; 1University of Virginia

3:40 PM Break

4:00 PM Characterization and Analysis of Foreign Object Damage Behavior of an MI SiC/SiC Ceramic Matrix Composite at Ambient Temperature at Full Support Configuration: David Faucett1; Luis Sanchez1; Nesredin Kedir1; Cajer Gong1; Sung Choi1; 1Naval Air Warfare Center Air Division (NAV AIR)

4:20 PM High-temperature Oxidation of BN-coated SiC Sylramic Fibers in Dry and Wet Atmospheres: Valentina Angelici Avincola1; Elizabeth Opila1; 1University of Virginia

4:40 PM Degradation of SiC Fibers at Elevated Temperatures: Evan Callaway1; Frank Zok1; 1University of California, Santa Barbara

International Symposium on Defects, Transport and Related Phenomena – Chemo-Mechanical Coupling

**Program Organizers:** Tatsuya Kawada, Tohoku University; Manfred Martin, RWTH Aachen University; Sangtae Kim, University of California, Davis

**Wednesday PM**

**Session Chairs:** Igor Lubomirsky, The Weizmann Institute of Science; Nicola Perry, Massachusetts Institute of Technology

2:00 PM Invited

**Defect Analysis of Material by Replica Technique:** Muhammad Hassan1; 1Dawood University of Engineering & Technology, Karachi

2:20 PM The Effect of Hydrogen on Plastic Deformation as Predicted from Discrete Dislocation Dynamic Simulations: Yejun Gu1; Jaafar El-Awady1; 1Johns Hopkins University

2:40 PM Invited

Understanding Stoichiometry-related Chemical Expansion in Mixed Conducting Oxides: Nicola Perry1; Dario Marrocchelli1; Chang Sub Kim1; Sean Bishop1; Harry Fuller1; 1I2CNER, Kyushu University & MIT; 2MIT; 3Redox Power Systems, LLC

3:20 PM Break

3:40 PM Invited

Point Defects and Aneelasticity in Pure and Gd-doped Ceria: Olga Kravnis1; Ellen Wachtel1; Anatoly Frenkel1; Igor Lubomirsky1; 1Weizmann Institute of Science; 2Stony Brook University

4:20 PM Invited

Strain Effects on Oxygen Point Defect Formation and Migration in Perovskite and Ruddlesden-Popper Phases: Dane Morgan1; Tam Mayeshiba1; Zhenzhen Yu1; Ryan Jacobs1; Wei Xie1; Yueh-Lin Lee1; Yang Shao-Horn1; 1University of Wisconsin - Madison; 2University of California, Berkeley; 3National Energy Technology Laboratory; 4Massachusetts Institute of Technology

5:00 PM

Characterization of Defect Microstructure in GeXSi1-x/Si Epitaxial Structures Using Electron Channeling Contrast Imaging: Joseph Tessmer1; Yoosuf Picard1; 1Carnegie Mellon University

Joining of Advanced and Specialty Materials (JASM XIX) – Dissimilar Metal Welds

**Program Organizers:** Boian Alexandrov, The Ohio State University; Mathieu Brochu, McGill University; Anming Hu, University of Tennessee; Darren Barborak, AZZ WSI; Akio Hirose, Osaka University; Peng He, Harbin Institute of Technology; Zhiyong Gu, University of Massachusetts Lowell; Vikas Patel, ArcelorMittal USA

**Wednesday PM**

**Session Chairs:** Zhenzhen Yu, Colorado School of Mines; Ivan Mendoza, Tecnológico Nacional de Mexico

2:00 PM Technologies for Joining Titanium to Steel: Overview and New Development: Yu-Ping Tang1; Jerry Gould1; Bradley Fingland1; 1EWI; 2Tenneco

2:20 PM Characterization of Explosively Clad Steel-titanium and Steel-titanium Systems: M.J. Perricone1; C.M. Hefferan1; K.E. Wagner1; M.S. Potter1; B.R. Bandli1; 1R.J. Lee Group

2:40 PM Simulation Model for Laser Beam Welding of Steel-aluminum Lap Joints: Anton Evdokimov1; Katrin Springer1; Nikolay Doynov1; Ralf Ossenbrink1; Vesselin Michailov1; 1Brandenburg University of Technology

3:00 PM Characterization of the Solidification Process in Dissimilar Welds: Ivan Mendoza-Bravo1; 1Instituto Tecnologico de Veracruz
3:20 PM  Break

3:40 PM  Characterization of Dissimilar Metal Welds between Grade F65 Steel and Low Alloy Steel Overlays Using Alloy 625 Filler Wire: Ryan Buntain1; Boian Alexandrov2; ‘The Ohio State University

4:00 PM  Effect of Post Weld Heat Treatment Temperature on Hydrogen Assisted Cracking of Heat Resistant Stainless Steel Dissimilar Metal Welds: James Rule1; Boian Alexandrov2; ‘The Ohio State University

4:20 PM  Effects of Supercritical CO2 on the Mechanical Behavior of Dissimilar Metal-weld: Sajedur Akanda1; M. Kapoor1; K. Rozman1; O. Dogan2; ‘National Energy Technology Laboratory

4:40 PM  Optimizing Dissimilar Metal Welds via Pillar Compression and TEM Analysis: Daniel Sorensen1; Jason Myers2; Bernard Li3; Wei Zhang1; Eric Hintsala1; Douglas Stauffer4; Antonio Ramirez1; ‘Medtronic PLC; University of Minnesota Characterization; ‘Ohio State University; ‘Bruker Nano Surfaces

5:00 PM  Effects of Pinned and Clamped Loading Conditions on Fatigue Test Results of Similar and Dissimilar Welds in Lap-shear Specimens: Shin-Jang Sung1; Jwo Pan1; ‘University of Michigan

Light Metals Alliance: Light Metals Technology 2017 – Light Metals Technology: Characterization

Program Organizers: Diran Apelian, Worcester Polytechnic Institute; Kumar Sadayyappan, Canmet MATERIALS; Frank Czerwinski, CanmetMATERIALS; Brajendra Mishra, Worcester Polytechnic Institute; Michael Bermingham, The University of Queensland; Wenjiang Ding, Shanghai Jiao Tong University; Zhongyun Fan, Brunel University; Gonasaqren Govender, The Council for Scientific and Industrial Research (CSIR); Karl Kainer, Helmholtz-Zentrum Geesthacht; Andreas Kraly, LKR Leichtmetallkompetenzzentrum Ranshofen GmbH; Salem Seifeddine, Jönköping University; Bong Sun You, Korea Institute of Materials Science

Wednesday PM  Room: 415
October 11, 2017  Location: D/L Convention Center

Session Chairs: Andreas Kraly, LKR Leichtmetallkompetenzzentrum Ranshofen GmbH; Salem Seifeddine, Jönköping University

2:00 PM  Effect of Heat Treatment and Artificial Ageing on Al-5Mg-2Zn: Levy Chauke1; ‘CSIR

2:20 PM  Understanding Homogenous Nucleation Mechanisms in Solidification of Aluminum by Million-atom Molecular Dynamics Simulations: Avik Mahata1; Mohsen Asle Zaeem1; Michael Baskes2; ‘Missouri University of Science and Technology; ‘University of California, San Diego

2:40 PM  Effect of Isothermal Holding at Elevated Temperature on Metallurgically Bonded Bimetallic Castings: Carl Soderhjem1; Diran Apelian1; ‘Worcester Polytechnic Institute

3:00 PM  Comparison of Microstructure and Tensile Property of Silafont-36 and Mercal 367 in a Rear Cross Member Prototype Casting Using HPDC: Kumar Sadayyappan1; Gabriel Birsan1; Xiaochn Zeng2; Sumanth Shankar2; ‘CanmetMaterials - Natural Resources Canada; ‘LMCRC - McMaster University

3:20 PM  Effect of Heat Treatment Conditions on Microstructural, Mechanical Properties and Residual Stress in a Die-cast Al-Si Alloy: Eunkyung Lee1; Brajendra Mishra1; ‘Worcester Polytechnic Institute

3:40 PM  Break

4:00 PM  Optimization of Thermal Balance of HPDC Tooling by Lubro-refrigeration and Quality Improvement of Castings: Mario Rosso1; Ildiko Peter1; ‘Politecnico di Torino

4:20 PM  Investigating Effect of Thermal Parameters on Properties of Al-4%Cu Alloy Squeeze Cast under a High Applied Pressure: Khawaja Haider1; ‘University

4:40 PM  Enhancing Aluminum Scrap Recycling through the Implementation of Optoelectronic Sorting Technologies: Sean Kelly1; Diran Apelian1; ‘Worcester Polytechnic Institute

5:00 PM  Study on Microstructure and Properties of Low Concentration Al-V Alloy: Yihan Liu1; ‘Northeastern University

5:20 PM  Revisit of Al-Si–Mg (Cu) Cast Alloys for Gravity Casting and High Pressure Die Casting: Microstructure and Mechanical Properties: Shouxun Ji1; Xixi Dong1; Zhongyun Fan1; ‘Brunel University

Light Metals Alliance: Light Metals Technology 2017 – Light Metals Technology: Magnesium & General Presentations

Program Organizers: Diran Apelian, Worcester Polytechnic Institute; Kumar Sadayyappan, Canmet MATERIALS; Frank Czerwinski, CanmetMATERIALS; Brajendra Mishra, Worcester Polytechnic Institute; Michael Bermingham, The University of Queensland; Wenjiang Ding, Shanghai Jiao Tong University; Zhongyun Fan, Brunel University; Gonasaqren Govender, The Council for Scientific and Industrial Research (CSIR); Karl Kainer, Helmholtz-Zentrum Geesthacht; Andreas Kraly, LKR Leichtmetallkompetenzzentrum Ranshofen GmbH; Salem Seifeddine, Jönköping University; Bong Sun You, Korea Institute of Materials Science

Wednesday PM  Room: 414
October 11, 2017  Location: DLL Convention Center

Session Chairs: Gonasaqren Govender, The Council for Scientific and Industrial Research (CSIR); Ronald Machaka, Council for Scientific and Industrial Research

2:00 PM  Structure and Properties of Consolidated Gas-atomized Magnesium Alloy Powders: R Sadangi1; D Kapoor1; T Zahrah2; ‘Armament Research Development Engineering Center; ‘MATSYS, Inc
2:20 PM  
Solution Heat Treatment on Mechanical Properties and Corrosion of Extruded Mg5Gd Compared To Pure Mg: Petra Maier1; Maximilian Bechly1; Norbert Hort1; 1University of Applied Sciences Stralsund; 2Helmholtz-Zentrum Geesthacht

2:40 PM  
Development of the Multi-purpose High Shear Mixing Technology for Continuous Processing of Al and Mg Alloys: Jayesh Patel1; Yijie Zhang1; Jaime Nebreda1; Zhongyun Fan1; 1BCAST

3:00 PM  
Microalloyed Magnesium Alloys with High Complex of Properties: Sergei Belikov1; Vadim Shalomeev1; Eduard Tsivirko1; Nikita Akin1; Sergei Shemyko1; 1Zaporozhye National Technical University

3:20 PM  
The Role of Zn Additions on the Microstructure and Mechanical Properties of Mg-Nd-Zn Alloys: Sergei Gavras1; Domonkos Tolnai1; Tungky Subroto1; Ricardo Buzolin1; Norbert Hort1; 1Helmholtz Zentrum Geesthacht

3:40 PM  
Break

4:00 PM  
Hot Deformation Behavior, Microstructure and Mechanical Properties of Mg-8Zn-1Al-0.5Cu-0.5Ma Alloy: Juansheng Yang1; Shaozhen Zhu1; Tianjiao Luo1; 1Institute of Metal Research, Chinese Academy of Sciences

4:20 PM  
Post-forming Mechanical Properties of Double-sided Incrementally Formed Sheet Alloys: Ravi Verma1; Eric Thomas1; Brian Martinek1; Alan Gillard1; Vijitha Kiridena1; 1Boeing

4:40 PM  
X-Ray Computed Tomography – An Enabling Tool for Casting Process Cognition Development and Improvement: Ning Sun1; Chen Dai1; Vijay Alreja1; Diran Apelian1; 1Worcester Polytechnic Institute; 2VJC Technologies Inc.

5:00 PM  
Computational Study of Competing Icosahedral Approximants in RS8009: Joseph Jankowski1; Jonathan Miorelli1; Michael Kaufman1; Amy Clarke1; Mark Eberhart1; Krish Krishnamurthy1; Vladan Stevanovic1; 1Colorado School of Mines; 2Honeywell

5:20 PM  
Complexities in the Assessment of Melt Quality: Martin Riestra1; Anton Bjurenstedt1; Toni Bogdanoff1; Ehsan Ghasemali1; Salem Seifeddine1; 1Jönköping University

Program Organizers: Jake Amoroso, Savannah River National Laboratory; Aladar Csontos, Nuclear Regulatory Commission; Kevin Fox, Savannah River National Laboratory; Tongan Jin, Pacific Northwest National Laboratory; Cory Trivelpiece, Savannah River National Laboratory; Yutai Katoh, Oak Ridge National Laboratory; Bill Lee, Imperial College of London; Josef Matyas, Pacific Northwest National Laboratory; Nathan Mellot, Michigan State University; Kumar Sriraman, University of Wisconsin Madison; S.K. Sundaram, Alfred University

Wednesday PM
October 11, 2017
Location: DLL Convention Center

Session Chairs: Jake Amoroso, Savannah River National Laboratory; Jason Lonergan, Washington State University

2:00 PM
An Empirical Model of Thermodynamic Sulfur Solubility in Nuclear Waste Glasses: Tongan Jin1; Dongsang Kim1; Kevin Fox1; Madison Caldwell1; John Vienna1; Brigitte Weese1; Michael Schweiger1; Renee Russell1; Albert Kruger1; 1Pacific Northwest National Laboratory; 2Savannah River National Laboratory; 3U.S. Department of Energy Office of River Protection

2:20 PM
Application of Evolved Gas Analysis to Nuclear Waste Feed Melting: Miroslava Hajova1; Richard Pokorny1; Jaroslav Klouzek2; Seungmin Lee2; Joseph Traverso1; Michael Schweiger1; Albert Kruger1; Pavlo Hrma1; 1University of Chemistry and Technology Prague; 2Pacific Northwest National Laboratory; 3Office of River Protection, DOE

2:40 PM
Invited
Atomic Computer Simulations of Nuclear Waste Materials: Jincheng Du1; 1University of North Texas

3:00 PM
Effect of Foaming on Heat Flux to the Cold Cap In the High-alumina HLW Melter Feed: SeungMin Lee1; Pavlo Hrma1; Richard Pokorny1; Jaroslav Klouzek2; Michael Schweiger1; Albert Kruger1; 1Pacific Northwest National Laboratory; 2Laboratory of Inorganic Materials, Joint Workplace of the Institute of Chemical Technology Prague and the Institute of Rock Structure and Mechanics of the ASCR; 3U.S. Department of Energy, Office of River Protection

3:20 PM
Enhanced Vitrification Processing Models for High TiO2 Containing Glasses: Carol Jantzen1; Cory Trivelpiece1; Tommy Edwards1; 1Savannah River National Laboratory

3:40 PM
Break

4:00 PM
Invited
Savannah River National Laboratory Strategies for Waste Treatment Processing: Connie Herman1; 1Savannah River National Laboratory

4:40 PM
Structures and Properties of Spinel MgAl2O4/Glass Interfaces from Molecular Dynamics Computer Simulations: Wei Sun1; Menggao Ren1; Lu Deng1; Jincheng Du1; 1University of North Texas

5:00 PM
Predictive Modeling of Crystal Accumulation in the HLW Glass Melters Processing Radioactive Waste: Josef Matyas1; Vivianaluxa Gervasio1; Sulaiman Sannoh1; Albert Kruger1; 1Pacific Northwest National Laboratory; 2U.S. Department of Energy, Office of River Protection

5:20 PM
MD Simulations of the Bulk and Surface Structures of Nuclear Waste Glasses: La Deng1; Jincheng Du1; 1University of North Texas

Materials Property Understanding through Characterization – Metals I

Program Organizers: Indrajit Dutta, Corning Incorporated; Nicholas Smith, Corning Incorporated

Wednesday PM
October 11, 2017
Location: DLL Convention Center

Session Chair: Scott Misture, Alfred University

2:00 PM
Innovative SEM/EDS Characterization of Steel Facilitated by a Silicon Drift Detector: John Konopka1; 1Thermo Fisher Scientific

2:20 PM
Stable Core-shell Particles in Nanocrystalline Cu-Ta: Christopher Marvel1; B. Hornbuckle1; Kristopher Darling2; Martin Hamer1; 1Lehigh University; 2Army Research Laboratory

2:40 PM
Microstructure-property Relations in Mn-Al-base Ferro-magnet Alloys Obtained by High-Strain-Rate Severe Plastic Deformation Processing: JaeHyuk Jo1; Sahar Farjami1; Ravi Shankar1; Hasso Weiland1; Jorg Wiezorek1; 1University of Pittsburgh; 2Arconic, Inc.

3:00 PM
Experimental Determination of the Mueller Matrix Components for Uniaxial Alpha-titanium from Computational Polarized Light Microscopy: Ke-Wei Jin1; Marc De Graef1; 1Carnegie Mellon University

3:20 PM
Break

3:40 PM
Effect of Nanoprecipitation on Magnetic Properties of Fe-P based Alloy: Sundararajan Govindan1; Ravi Gautham1; D Prabhu1; Raghavan Gopalan1; 1Indian Institute of Technology Madras; 2ARCI

4:00 PM
Microstructural Evolution of Ti-7Al under Cyclic Loading: Rachel Lim1; Yufeng Shen1; Tugez Ortuk1; Joel Bernier1; Christopher Kantzos1; He Liu1; Paul Shade1; Robert Suter1; Anthony Rollett1; 1Carnegie Mellon University; 2Lawrence Livermore National Laboratory; 3U.S. Air Force Research Laboratory

4:20 PM
A New View of the Grain Coarsening Behavior of Austenite and the Role of High Mobility Boundaries in Ti-microalloyed Low-carbon Steels: Victor Blancas-Garcia1; Enrique Garcia2; C. Isaac Garcia2; 1Tenaris / University of Pittsburgh; 2Tenaris; 3University of Pittsburgh

4:40 PM
High Strain Rate Testing of Wrought Super Alloy to Address the Structural Integrity Requirements of Gas Turbine Engine Casings: Anuradha Majila1; 1Gas Turbine Research Establishment
Materials Selection and Surface Analyses for Corrosion Prevention and Detection – Coatings and Protection/Corrosion Technologies
Program Organizers: Matthew Asmussen, Pacific Northwest National Laboratory; Ajit Mishra, Haynes International; Sudhakar Mahajanam, PinnacleART; Eric Schindelholz, Sandia National Laboratory; Xueyuan Zhang, Gamry Instruments; Guang-Ling Song, Xiamen University; Luis Garfrais, Wood Group Kenny; Raul Rebak, General Electric

Wednesday PM
Room: 405
October 11, 2017
Location: DLL Convention Center

Session Chairs: Xueyuan Zhang, Gamry; Ajit Mishra, Haynes International

2:00 PM
Advances in Zinc Phosphate Activator Technology: Mark McMillen1; PPG Industries Inc

2:20 PM
Evaluation of Coating Performance on AA6XXX via Standard Corrosion Cabinet Testing: Mary Lyn Lim1; Brian Okerberg1; Peter Votruba-Drazil1; PPG

2:40 PM
Corrosion Mechanism of Cathodic Protected Transmission Pipeline Steel with Damaged Enamel Coatings: Liang Fan1; Genda Chen1; Signo T. Reis1; Mike Koenigstein1; Missouri University of Science and Technology; Perma Engineered Coatings, Roesch Inc.

3:00 PM
Electrochemically Accelerated Degradation of Organic Coating: Dajiang Zheng1; Qi Gui1; Guang-Ling Song1; Xiamen University

3:20 PM Break

3:40 PM
Co-localization of Complementary Characterization Tools to Investigate Corrosion Performance: Corey Eflau1; Thiago da Silva1; Elton Graungnard1; Paul Davis1; Lan Li1; Mike Hurley1; Boise State University

4:00 PM
Application of Frequency and Amplitude Modulation Instrumentation in Corrosion: Xueyuan Zhang1; Gamry Instruments

4:20 PM
Study on Time-variant Characteristics of Metal/Electrolyte Interface under AC Interference: Yanzia Du1; Minxia Lu1; Yingwu Xiao1; Dezhi Tang1; University of Science and Technology Beijing/University of Pittsburgh

4:40 PM
Study on Corrosion Mechanism of MnS Inclusions with Different Size in Steel: Qing Liu1; Weiming Shi1; Shufeng Yang1; Weihua Zhang1; Jingshe Li1; Xueliang Zhang1; University of Science and Technology Beijing

Mechanochemical Synthesis and Reactions in Materials Science II – Session III
Program Organizers: Antonio Fuentes, Cinvestav del IPN; Laszlo Takacs, University of Maryland Baltimore County; Challapalli Suryanarayana, University of Central Florida; Jacques Huot, Universite du Quebec a Trois-Rivieres

Wednesday PM
Room: 327
October 11, 2017
Location: DLL Convention Center

Session Chairs: Antonio Fuentes, Cinvestav del IPN; Francisco Gotor, Instituto de Ciencia de Materiales de Sevilla

2:00 PM Invited
Mechanochemistry under Hydrogen Gas: Synthesis of Efficient Materials for Hydrogen Storage and Electrochemical Applications: Fermin Cuevas1; Junxian Zhang1; Michel Latroche1; CNRS-UPEC/ICMPE/FRance

2:40 PM
Effect of Ball Milling on the Hydrogen Storage Properties of TiFe Alloy Doped with 4wt.% ZrMn2 Additive: Gabriela Romero1; Peng Lv2; Jacques Huot2; Instituto Tecnologico y de Estudios Superiores de Monterrey (ITESM); UQTR

3:00 PM
Alane by Mechanochemical Metathesis: Reaction Control by Inert Solids, Liquids and Gases: Shalabh Gupta1; Ihor Hlova1; Takeshi Kobayashi1; Jennifer Goldston1; Marek Pruski1; Vitalij Pecharsky1; Ames Laboratory

3:20 PM Break

3:40 PM
Defect-laden 2D Materials for Enhanced Mechanocatalysis: Richard Blair1; University of Central Florida

4:00 PM
Magnesiothermic MASHS of Zirconium and Hafnium Diborides: Sergio Cordova1; Evgeny Shafirovich1; The University of Texas at El Paso

4:20 PM
SMACS: Surface Mechanical Attrition of Cold Spray Composite Coatings: Heather Murdock1; Blake Barnett1; Jonathan Ligda1; Army Research Lab

4:40 PM
The Energy Consumed in Ball Mills: Oavio Fortini1; UMD

Metal and Polymer Matrix Composites III – Metal Matrix Composites
Program Organizers: Nikhil Gupta, New York University; Tomoko Sano, U.S. Army Research Laboratory

Wednesday PM
Room: 330
October 11, 2017
Location: DLL Convention Center

Session Chairs: Tomoko Sano, U.S. Army Research Laboratory; Jennifer Sietins, U.S. Army Research Laboratory

2:00 PM Invited
Lightweight Self-lubricating Aluminum Matrix Composites Reinforced by Graphene: Emad Omrani1; Afshaneh Dorri Moghadam1; Pradeep Rohatgi1; University of Wisconsin, Milwaukee
2:40 PM
Boron Nitride Nanotube Reinforced Aluminum Composite via Solidification Processing: Pranjal Nastiya; Benjamin Boesl; Arvind Agarwal; Florida International University

3:00 PM
Advances on Fabrication of Al-based Nanocomposites Assisted by Ultrasonic and Electromagnetic Processing: Laurentiu Nastac; Yang Xuan; University of the Alabama

3:20 PM Break

3:40 PM
Electrical and Mechanical Properties of Copper Metal Matrix Composite Containing Polydopamine Derived Nanocarbon: Yao Zhao; Bosen Qian; Haoqi Li; Dmitriy Dikin; Fei Ren; Temple University

4:00 PM

4:20 PM
The Development and Mechanical Characterization of Aluminium Copper-carbon Fiber Metal Matrix Hybrid Composite: Muhammad Manzoor; Muhammad Feroz; Tahir Ahmad; Muhammad Kamran; Rafiq Ahmad; Muhammad Butt; University of the Punjab

4:40 PM
Thermomechanical Analysis of Hot Cracking in Non-weldable Ni-based Superalloy: Yousub Lee; Mike Kirka; Naren Ragavhan; Alex Plotkowski; Alfredo Okello; Ryan Dekoff; Oak Ridge National Laboratory; University of Tennessee, Knoxville

5:00 PM
Microstructure Modeling of Selective Laser Melting of Inconel 718: Kubra Karayagiz; Thien Duong; Tahide Attar; Luke Johnson; Brian Franco; Gustavo Tapia; Ji Ma; Alaa Elwany; Ibrahim Karaman; Raymund Arroyave; Texas A&M University

5:20 PM
Mean-field Process-microstructure Modeling for Additive Manufacturing of High-quality Parts: Yunhao Zhao; Qian Chen; Jian Liu; Albert To; Wei Xiong; University of Pittsburgh

5:40 PM
Modeling of Laser Heat Input for Laser Powder Bed Fusion: Toshi-Taka Ikeshoji; Makiko Yonehara; Kazuya Nakamura; Masakazu Araki; Hideki Kyoogoku; Kindai University

6:00 PM
Modeling of Phase Transformation and Transport Phenomena in the LENS Process via the Lattice Boltzmann-Cellular Automata Method: Matthew Rolchigo; Michael Mendoza; Richard LeSar; Peter Collins; Iowa State University

6:20 PM
Multiscale Modeling of Microstructure Deformation in Material Processing – Multi scale Modeling of Microstructure Deformation in Material Processing: Part II
Program Organizers: Lukasz Madej, AGH University of Science and Technology; Krzysztof Muszka, AGH University of Science and Technology; Danuta Szeliga, AGH University of Science and Technology

6:40 PM
Review of Highly Alloyed Tool Steel and Cast Irons Used for Hot-Cold Rolling Mill Applications: Konstantin Redkin; Christopher Hriz; Isaac Calixto Garcia; WHEMCO Inc; University of Pittsburgh

7:00 PM
Experiments and Simulations of Double Side Shot Peened Aluminum: Siavash Ghanbari; David Bahr; Purdue University
2:40 PM  Prediction of Strain Inhomogeneity during Cyclic Plastometric Tests Based on Digital Material Representation Approach: Krzysztof Muszka1; Paulina Graca1; Janusz Majta1; Łukasz Madej1; AGH Univeristy of Science and Technology

3:00 PM  The Effect of Strain Rate and Microstructure Parameters on The Mechanical Behavior of Dual Phase Steels in Different Conditions: Parametric Study and Optimization: Tarek Belgasam1; Hussein Zbib1; Washington State University

3:20 PM  Break

3:40 PM  First Principle Study of Plastic Deformation Mechanisms of fcc High Entropy Alloys: Mohsen Beyramali Kivy1; Mohsen Asle Zaeem1; Missouri University of Science and Technology

4:00 PM  Representativeness Aspects of Digital Material Representation Model of Dual Phase Steels: Łukasz Madej1; Aneta Muzyk1; Konrad Perzynski1; Jiangting Wang1; AGH University of Science and Technology; Deakin University

4:20 PM  Modeling of Potential Distribution of Automotive Aluminum Structures Using Organic Coating: Arash Shadravan1; Mahdi Mohajeri1; Reservoirfocus LLC; Texas A&M University

4:40 PM  A Molecular Dynamics Study of Grain Boundary Motion during Plastic Deformation in fcc Metals: Maosheng Li1; Chan Gao1; Hua Liang1; Institute of Applied Physics and Computational Mathematics; Institute of Nuclear Physics and Chemistry

5:00 PM  Modeling of Mechanical Behavior of Materials with Gradient Microstructure: Effect of Grain Boundary Sliding and Dislocation Density: Mehdi Hamid1; Hussein Zbib1; Washington State University

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2:00 PM  Invited
Synthesis and Characterization of Aerosol Deposited Materials: Andrew Vackel1; Sandia National Laboratories

2:40 PM  Solar-induced Photothermal Effect of FeO Nanoparticles and Thin Films for Energy Efficient Materials: Donglu Shu1; Lucas Zhao1; Andrew Dunn1; University of Cincinnati

3:00 PM  Lead-free SnTe-based Thermoelectrics: Enhancement of Thermoelectric Performance by Doping with Gd/Ag: Lijuan Zhang1; University of Wollongong

3:20 PM  Morphology Dependent Charge Storage in Cerium Oxides Nanostructures: Audityya Jeyaranjan1; Tamil Selvan Sakthivel1; Sudipta Seal1; University of Central Florida

3:40 PM  Break

3:50 PM  Nanomaterials by Flame Synthesis in Energy Applications: Randy Vander Wal1; Penn State University

4:10 PM  Nanosensors for Detecting Pollutants in Water: Shobhan Paul1; Zetanostics Inc

4:30 PM  Nanomaterials by Flame Synthesis in Energy Applications: Randy Vander Wal1; Penn State University

4:50 PM  Nanosensors for Detecting Pollutants in Water: Shobhan Paul1; Zetanostics Inc

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Next Generation Biomaterials – Next Generation Biomaterials II
Program Organizers: Roger Narayan, UNC/NCSU Joint Department of Biomedical Engineering; Jie Huang, University College London; Vipul Davé, Johnson & Johnson; Sanjiv Laliwani, Lynntech, Inc.; Marc in het Panhuis, University of Wollongong; Mohan Edirisinghe, University College London

Wednesday PM  Room: 334
October 11, 2017  Location: DLL Convention Center

Session Chairs: Matthew Korey, Purdue University; John Obayemi, Worcester Polytechnic Institute; Sahar Mokhtari, Alfred University

2:00 PM  Chemically Anchoring Tannic Acid to a Polymeric Backbone - A Novel Solution for Next-generation Burn Wound Treatment: Matthew Korey1; Caitlyn Clarkson1; John Howarter1; Purdue University

2:20 PM  Ligand-conjugated Biosynthesized Magnetite Nanoparticles for Specific Targeting of Breast Cancer: The Role of Adhesion: John Obayemi1; Jingjie Hu1; Vanessa Uzonwanne1; Olushola O dusanya1; Karen Malatesta1; Sina Youssefian1; Winston Soboyejo1; Worcester Polytechnic Institute; Princeton University; Sheda Science and Technology Complex (SHESTCO)

2:40 PM  Evaluation of Stress Assisted Degradation of Absorbable Medical Sutures: Joseph Prati1; Dong Kim1; M. Matthewson1; Rutgers University
3:00 PM  
Length-dependent Intracellular Bundling of Single-wall Carbon Nanotubes Influences Retention in Macrophages: Sumin Jin; Patrick Boyer; Piyumi Wijesekara-Kankanange; Kris Dahl; Mohammad Islam; 1Carnegie Mellon University

3:20 PM  Break

3:40 PM  
Single Phase Newberyite Coatings on Ti6Al4V implants by Rapid Microwave Irradiation Technique: Prabaha Sikder; Yufu Ren; Sarit Bhaduri; 1The University of Toledo

4:00 PM  
Synthesis of Bifunctional Coatings on Ti6Al4V Implants by Rapid Microwave Irradiation Technique: Prabaha Sikder; Yufu Ren; Sarit Bhaduri; 1The University of Toledo

4:20 PM  
Copper Based Glass Polyalkenoate Bone Cements: Effect of Copper Substitution on Physical, Mechanical, and Antibacterial Properties: Sahar Mokhtar; Anthony Wren; 1Alfred University

4:40 PM  
Biocompatibility and Nanomechanical Properties of Novel Intermetallic Coatings on Orthopedic Implant Material: Muhammad Atif Makhdoom; Tahir Ahmad; Muhammad Kamran; Fahad Riaz; 1University of the Punjab

5:00 PM  Invited  
Calcium Oxalate Derived Materials: New Insights: Christian Bonhomme; 1Université Pierre et Marie Curie

Non Beam-based Additive Manufacturing Approaches for Metallic Parts – Session II  
Program Organizer: Olaf Andersen, Fraunhofer IFAM

Wednesday PM  
Room: 305  
Location: DLL Convention Center

Session Chair: Mark Norfolk, Fabrisonic

2:00 PM  Invited  
Ultrasonic Additive Manufacturing State-of-the-Art: Adam Hehr; Justin Wenning; Mark Norfolk; 1Fabrisonic LLC

2:40 PM  
Metal Additive Manufacturing through Friction Stir-facilitated Deposition: Hang Yu; Nanci Hardwick; 1Virginia Tech; 2Aeroprobe Corporation

3:00 PM  
Large Scale Layered Object Manufacturing – Boundary Conditions for the Joining Process Diffusion Bonding: Simon Jahn; 1iifw Jena

3:20 PM  
Additive Manufacturing Technology Based on Stationary Shoulder Friction Stir Welding for Aluminum Alloy: Li Xing; Liming Ke; Bin Huang; 1NanChang HangKong University

Phase Stability, Diffusion Kinetics, and Their Applications (PSDK-XII) – Session V: J. Willard Gibbs  
Phase Equilibria Award - Applications of Computational Thermodynamics  
Program Organizers: Wei Xiong, University of Pittsburgh; Raymundo Arroyave, Texas A & M University; Ji-Cheng Zhao, The Ohio State University; Arthur Pelton, Ecole Polytechnique

Wednesday PM  
Room: 413  
Location: DLL Convention Center

October 11, 2017

Session Chairs: Chris Bale, Ecole Polytechnique; Philip Spencer, The Spencer Group

2:00 PM  Invited  
FACTSAGE Modeling Of Mineralogical Composition of Steelmaking Slags and the Coupling to the Use of Slags for Construction Purposes: Bo Björkman; 1Luleå University of Technology

2:20 PM  Invited  
Reaction between High Al Steel and Mold Flux during Continuous Casting: Experiment and Kinetic Simulation Using Thermodynamic Database: Min-Su Kim; Youn-Bae Kang; 1Korea Institute of Industrial Technology; 2Pohang University of Science and Technology

2:40 PM  Invited  
The Transformation of Bubbles in Glass Melts: Susan Schiefelbein; 1Corning Research & Development Corporation

3:00 PM  Invited  
Application Examples of Thermochemical Process Simulation Using Simusage - Introducing Current Projects from Metallurgy and Combustion Technology: Stephan Petersen; Klaus Hack; Peter Monheim; Piotr R. Scheller; Michael Müller; Matthias Dohm; Sabrine Khadhraoui; 1GTT-Technologies; 2Prof. em. (TU Bergakademie Freiberg); 3Forschungszentrum Jülich GmbH; 4SMS Group GmbH

3:20 PM  Break

3:40 PM  Invited  
Exsolution of Solutes from Particles Formed by High-temperature Gas-to-Particle Conversion Processes: R. Diemer; 1University of Delaware

4:00 PM  Invited  
Experimental Studies and Thermodynamic Modeling of the Phase Equilibria of Corrosive Alkali-lead Halides in Combustion of Waste-derived Fuels: Daniel Lindberg; Jonne Niemi; Markus Engblom; Mikko Hupa; 1Åbo Akademi

4:20 PM  Invited  
Ash Behavior in Biomass Combustion and Global Thermodynamic Equilibrium Analysis: Mikko Hupa; 1Åbo Akademi

4:40 PM  Invited  
Calphad Study of Earth’s Multicomponent Core: Surendra Saxena; 1FIU
Phase Transformations in Ceramics: Science and Applications – Experimental Studies in Phase Transformations II

Program Organizers: Waltraud Kriven, University of Illinois at Urbana-Champaign; Pankaj Sarin, Oklahoma State University; Ricardo Castro, University of California, Davis; Yu Zhong, Florida International University

Wednesday PM  Room:  312
October 11, 2017  Location:  DLL Convention Center

Session Chairs: Pankaj Sarin, Oklahoma State University; Randall Hay, Air Force Research Laboratory

2:00 PM Invited
Thermodynamic Investigation on the Stoichiometry of PMN-PT Single Crystals: Hooman Sabarou1; Dehua Huang2; Yu Zhong3; 1Florida International University; 2Navy Undersea Warfare Center

2:40 PM Invited
Martensitic Transformation in Granular Shape Memory Ceramic Packings: Hang Yu1; Hunter Rauch1; Mostafa Hassani-Gangaraj2; Zehui Du3; Chee Lip Gan3; Christopher Schuh4; 1Virginia Tech; 2MIT; 3Nanyang Technological University

3:20 PM Break

3:40 PM Invited
Phase Equilibrium in the 30% Al2O3 Plane of the Quaternary CaO-SiO2-MgO-Al2O3 System: Lifeng Sun1; Junjie Shi1; Jiyu Qiu1; Maofa Jiang1; Qing Zhao2; 1Key Laboratory for Ecological Metallurgy of Multimetallic Ores (Ministry of Education), School of Metallurgy, Northeastern University of China; 2Northeastern University of China

4:00 PM
Magnesium Oxychloride: Formation Kinetics Formation and Water Stability Enhancement: Roque Gochez1; Christopher Kitchens1; 1Clemson University

4:20 PM Invited
Phase and Microstructural Evolution of Yttrium Disilicate in High-temperature High-velocity Water Vapor: Robert Golden1; Elizabeth Opila1; 1University of Virginia

5:00 PM
Novel Microstructures and Innovative Processing in Cobalt Titanate: Kevin Anderson1; Anit Giri2; Richard Vinci1; Helen Chan1; 1Lehigh University; 2U.S. Army Research Laboratory
Rare Earth Metals, Compounds, and Alloys: Synthesis, Processing, Emerging Applications, Recent Advances, Future Challenges – Current Production Status, Availability, and Economics of REE/REM

Program Organizers: Yellapu Murty, MC Technologies LLC; Eric Klier, U.S. Army Research Laboratory; Jack Lifton, Jack Lifton LLC

Wednesday PM Room: 325
Location: DLL Convention Center

Session Chair: Yellapu Murty, MC Technologies

2:00 PM Keynote
Rare-Earth Permanent Magnets without Heavy Rare Earth Elements: Recent Developments and Applications: Yutaka Yoshida1; Atsushi Hattori2; Minoru Aizaki2; Takahiko Iriyama3; 1Daido Steel (America) Inc.; 2Daido Electronics Co., Ltd.; 3Daido Steel Co., Ltd.

2:40 PM Invited
Production Status and Forecast for the Availability of Rare Earth Materials: Steve Constantinides1; 1Magnetics and Materials LLC

3:10 PM Invited
Prospects for New Rare-earth Mines Outside of China: What Happened to the 400 Exploration Projects?: Roderick Eggert1; 1Colorado School of Mines

3:40 PM Break

4:00 PM Invited
Economics of Rare Earth Projects: Ian Chalmers1; 1Alkane Resources Ltd

4:30 PM Invited
Beneficiation of Rare Earth Minerals: Corby Anderson1; 1Colorado School of Mines

5:00 PM Invited
Investigation of Al-Sc Alloy for Lightweight Armor: Eric Klier1; Nhon Vu2; Denver Gallardy2; Kevin Doherty2; David Seidman3; David Dunand4; Matthew Burkins5; 1Army Research Laboratory; 2NanoAl LLC; 3U. S. Army Research Laboratory; 4Northwestern University

5:30 PM Concluding Comments Yellapu Murty

Recent Advances in Computer-aided Materials Design – Computational-experimental Synergy in Materials Discovery I

Program Organizers: Huan Tran, University of Connecticut; Ghanshyam Pilania, Los Alamos National Laboratory; Alexey Kolmogorov, Binghamton University; State University of New York; Mina Yoon, Oak Ridge National Laboratory; Son Hoang, University of Connecticut

Wednesday PM Room: 324
Location: DLL Convention Center

Session Chair: Anand Chandrasekaran, University of Connecticut

2:00 PM Invited
High-throughput Experiments Driven by Active Learning: Ichiro Takeuchi1; 1University of Maryland

2:30 PM Invited
Multiscale Solid Interface Engineering: Shuai Shao1; Jian Wang2; 1Louisiana State University; 2University of Nebraska - Lincoln

3:00 PM
Anisotropic Thermal Transport Behavior in New 2D Material NaSn2As2: Jixian Wang1; Wolfgang Windl2; 1The Ohio State University

3:20 PM Break

3:40 PM Invited
Understanding the Amorphization Resistance of Complex Oxides via Machine Learning: Ghanshyam Pilania1; Karl Whittle2; Chao Jiang2; Robin Grimes2; Christopher Stanek2; Kurt Sickafus2; Blas Uberuaga2; 1Los Alamos National Laboratory; 2University of Liverpool; 3Idaho National Laboratory; 4Imperial College London; 5University of Tennessee

4:10 PM Invited
Materials Design and Engineering Using Machine Learning Approaches: Tu Le1; 1RMIT University

4:40 PM
Application of Computational Modeling to Trial and Error Minimization for Alloy Property Optimization: Derek Tsaknopoulos1; Danielle Cote1; Richard Sisson1; Victor Champagne1; 1Worcester Polytechnic Institute; 2US Army Research Laboratory

5:00 PM
Modeling and Simulation of High-entropy Alloys: Yong Zhang1; 1University of Science and Technology Beijing

Responsive Functional Nanomaterials – Session V

Program Organizers: Ziqi Sun, Queensland University of Technology; Jiahua Zhu, The University of Akron; Wenxian Li, Shanghai University; Dawei Wang, University of New South Wales; Wenping Wu, University of Wollongong; Liangzhi Kou, Queensland University of Technology; Wenzhuo Wu, Purdue University

Wednesday PM Room: 320
Location: DLL Convention Center

Session Chairs: Jianping Yang, Donghua University; Yu Lin Zhong, Griffith University

2:00 PM Invited
Electronic-mechanical-magnetic Coupling in 2D Materials: Liangzhi Kou1; 1Queensland University of Technology

2:20 PM Invited
Physical Chemical Properties of Blue Phosphorus and Its Derivatives from Computational Studies: Chuan Tang1; 1University of Nevada Las Vegas

2:40 PM Invited
Atom-functionalized Carbon-based Nanomaterials in Energy Applications: Ting Liao1; 1Queensland University of Technology

3:00 PM Invited
Mechanical Response of Titanium and Magnesium under Shock Loading – Twinning Mode Revealed by High-throughput Simulations: Gang Zhou1; Yan He1; Hao Wang1; Dongsheng Xu1; Rui Yang1; 1Institute of Metal Research, Chinese Academy of Sciences
3:20 PM  Break

3:40 PM  Invited
Osteoanabolic Implant Materials for Orthopedic Treatments:  *Xiaobo Chen*; 1RMIT

4:00 PM  Invited
Structural Refinement in Ti-0.5Fe by Combining Phase Transformation and Plastic Deformation:  *Guanyu Deng*; 1Tilak Bhattacharjee; 2Yan Chong; 2Wu Gong; 2Yuan Zhang; 2Yu Bai; 1Akinobu Shibata; 1Nobuhiro Tsujj; 1Department of Materials Science and Engineering, Kyoto University; 2Department of Materials Science and Engineering, Kyoto University; Elements Strategy Initiative for Structural Materials (ESISM), Kyoto University; 3Department of Materials Science and Engineering, Kyoto University

4:20 PM  Invited
The Mechanical Behavior Dependence on the TiB Whisker Realignment during Hot-working in Titanium Matrix Composites:  *Fengcang Ma*; 1University of Shanghai for Science and Technology

4:40 PM  Invited
Bio-inspired Superhydrophobic and Superhydrophilic Surfaces:  *Ziqi Sun*; 1Queensland University of Technology

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**Program Organizers:** Lan Li, Boise State University; Kevin Huang, University of South Carolina; Winnie Wong-Ng, National Institute of Standards and Technology

**Wednesday PM  Room: 329  Location:  DLL Convention Center**

**Session Chair:** Winnie Wong-Ng, National Institute of Standards and Technology

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2:00 PM  Invited
Gradient Metal-organic Frameworks:  *Nathaniel Rosi*; 1University of Pittsburgh

2:20 PM  Invited
Porphyrins as Microporous Multifunctional Materials:  *Lawrence Cook*; 1Greg Brewer; 2Winnie Wong-Ng; 1The Catholic University of America; 2The National Institute of Standards and Technology

2:40 PM  Invited
Connecting the In-operando Reduction Kinetics of Porous Nickel Oxide and Copper Oxide in Dilute H2 from the Molecular- To Micron-Scales for Clean Energy Generation:  *Greeshma Gadikota*; 1Princeton University

3:00 PM
Highly Compressible Carbon Properties and Potential Applications:  Changjun Zhou; 1Soeren Koester; 1Superior Graphite Co

3:20 PM  Break

3:40 PM  Invited
Sorbet Materials Applications in the Remote Sensing of CO2 and CH4:  *Jeffrey Culp*; 1Ki-Joong Kim; 2Jagannath Devkota; 1Paul Ohodnicki; 2National Energy Technology Laboratory

4:00 PM  Invited
Porosity and Strength Relationship in Carbonated Wollastonite (20 CaSiO3):  *Daniel Kopp*; 1Richard Riman; 1Ryan Anderson; 1Kevin Blinn; 1Rutgers, The State University of New Jersey; 2RRTC, Inc.

4:20 PM
Mechanical Performance of Graded Auxetic Polyurethane Foam Designs:  *Yamusa Balogun*; 1Shelby Mullen; 1Nathan Durcholz; 1Crane Division, Naval Surface Warfare Center

4:40 PM
Evaluation of Materials for Gas Blowing Device in Molten Steel:  *Akifumi Takeuchi*; 1Tatsuya Oouchi; 1Katsumi Morikawa; 1Hatsuo Taira; 1Krosaki Harima Corporation

5:00 PM
Porous Metals by Intraparticle Expansion: Opportunities for New Applications:  *Laura Guerara*; 1Joseph Wright; 1Erika Zurita-Torres; 1Roger Welsh; 1Samuel Brennan; 1Mark Atwater; 1Millersville University

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**The 9th International Symposium on Green and Sustainable Technologies for Materials Manufacturing and Processing – Novel Utilization of Waste Materials/ Next Generation Green Technologies II**

**Program Organizers:** Surojit Gupta, University of North Dakota; Jun-ichi Tatami, Yokohama National University; Tatsuki Ohji, National Institute of Advanced Industrial Science and Technology (AIST); Mrityunjay Singh, Ohio Aerospace Institute, NASA Glenn Research Center; Marsha Bischel, Armstrong World Industries, Inc., PA; Makio Naito, Osaka University, Japan; Hisayuki Suematsu, Nagaoka University of Technology, Japan; Yiquan Wu, Alfred University, NY

**Wednesday PM  Room: 317  Location:  DLL Convention Center**

**Session Chairs:** Luca Masi, Granta Design; Martha L. Mecartney, University of California, Irvine; Edward Gorzkowski, Naval Research Laboratory

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2:00 PM
Investigation on the Properties of Lump Ores in Corex 3000 Iron Making Process:  *Xiaoqin Liu*; 1Chengsong Liu; 1Fei Ye; 1Zhongliang Wang; 1Wuhan University of Science and Technology

2:20 PM
Effect of Unmelted Lime on the Element Migration Behavior in CaO-SiO2-MgO-Al2O3-FeO-(Cr2O3) Slag:  *Qing Zhao*; 1Chengjun Liu; 1Longhu Cao; 1Baokuan Li; 1Maofa Jiang; 1Northeastern University

2:40 PM
Pyrolysis of Agricultural Waste to Form Nano-structures of Carbides, Nitrides, and Silicates:  *Edward Gorzkowski*; 1Syed Qadri; 1Bhakta Rath; 1Naval Research Laboratory

3:00 PM
Reduction Behavior of Ludwigtite Iron Concentrates by Gas-based Direct Reduction:  *Luxing Feng*; 1Shenwu Group Environment & Energy Technology Co., Ltd.
Additive Manufacturing of Metals: Fatigue and Fracture – Session III

Program Organizers: Nicholas Hrabe, National Institute of Standards and Technology; Richard Ricker, National Institute of Standards and Technology; Steve Daniewicz, University of Alabama; Nima Shamsaei, Auburn University; Mohsen Seifi, Case Western Reserve University/ASTM International

Thursday AM
Room: 304
October 12, 2017
Location: DLL Convention Center

Session Chair: Amber Andreaco, GE Additive

8:00 AM Invited
Understanding the Influence of Powder Bed Fusion Processing on the Shape Memory Alloy, Uranium-6 Wt. Pct. Plutonium: Amanda Wu1; John Elmer1; Donald Brown2; Bjorn Clausen3; Gilbert Gallegos1; Lawrence Livermore National Laboratory; Los Alamos National Laboratory

8:40 AM
Modelling Melt Pool Residual Stresses in Powder Bed Fusion Processes: Mustafa Megahed1; Joerg Willems1; ESI Group

9:00 AM
Evolution of Crack Patterns During Direct Laser Metal Deposition of Inconel 738 Superalloy: Abhishek Ramakrishnan1; Amrinder Singh1; Guru Dinda1; Wayne State University

9:20 AM
Direct Laser Metal Sintered (DMLS) of Aermet 100 Steel Powder: Michael Hesper1; Elias Jelis1; Matthew Clemente1; Rajendra Sadangi1; Fernando Echavarria-Hidalgo1; U.S. Army, ARDEC, Picatinny Arsenal

9:40 AM
Influence of Post Processing on Direct Metal Laser Sintered Ti6Al4V Using In-situ Micro-computed Tomography: Andelle Kudzal1; Timothy Walter1; Clara Hofmeister1; Brandon McWilliams1; Jianyu Liang1; Worcester Polytechnic Institute; US Army Research Laboratory; Oak Ridge Institute for Science and Education

10:00 AM Break

10:20 AM
Static and Fatigue Performance of Ti-6Al-4V ELI Solid Structures Fabricated via Selective Laser Melting: Oscar Quintana1; Andrew Rosenberger1; Weidong Tong1; DePuy Synthes Joint Reconstruction

10:40 AM
Towards Development of Design Rules for Selecting Optimum Process Parameters for Manufacturing Components with Complex Geometries in Electron Beam Melting Additive Manufacturing: Michael Massey1; Sean Yoder1; Alex Plotkowski1; Michael Kirka1; Saresh Babu1; University of Tennessee; Oak Ridge National Labs

11:00 AM
Impact of AM Processing Parameters on High-temperature Creep Behavior of IN718: David Newell1; Ryan O’Hara1; USAF

11:20 AM
Relating Component Poroisty Distributions to Fatigue Failure in Additively Manufactured Inconel 718: Luke Sheridan1; Joy Gockel1; Onome Scott-Emuakpor1; University of Texas at El Paso

Advanced Materials and Sensors for Harsh Environments – Advanced Materials and Sensors for Harsh Environments II

Program Organizers: Gary Pickrell, Virginia Tech; Navin Manjooran, Siemens AG

Thursday AM
Room: 333
October 12, 2017
Location: DLL Convention Center

Session Chairs: Gary Pickrell, Virginia Tech; Navin Manjooran, Vice President, Siemens AG

8:00 AM Introductory Comments

8:40 AM
Enabling Surface Acoustic Wave (SAW) Devices for Gas Sensing in Harsh Environments: Robert Fryer1; Paul Ohodnicki1; U.S. DOE - National Energy Technology Laboratory

9:00 AM
Role of Silicides and Laves Phases on the Stability of Bulk and Powder Nb-20Cr-XSi Alloys during High Temperature Oxidation: Paola Barruza1; Shailendra Varma1; University of Texas at El Paso

9:20 AM
The Effect of Surface Modification by Aluminizing and Halogen Enrichment on the High-temperature Degradation Behavior of a Commercial Three-phase TiAl Alloy: Matthew Kovalchuk1; Brian Gleeson1; University of Pittsburgh

9:40 AM
Thermal Alteration and Characterization of Exemplar Space Shuttle Alloy Systems: Arlene Smith1; University of Texas at El Paso
10:00 AM  Break

10:20 AM
Thick Film Ceramic Sensors Fabricated by Direct-writing for Temperature and Health Monitoring in Harsh-environments: Nandhini Ranganathan1; Katarzyna Sabolsky1; Joshua Ingersoll1; Michael Comnarretto2; Daryl Reynolds1; Costas Sterros1; Edward Sabolsky1; 1Department of Mechanical and Aerospace Engineering, West Virginia University; 2Lane Department of Computer Science and Electrical Engineering, West Virginia University

Advanced Steel Metallurgy: Products and Manufacturing – Session VI

Program Organizers: Emmanuel De Moor, Colorado School of Mines; Amar De, ArcelorMittal Global R&D; Kester Clarke, Colorado School of Mines; Alla Sergueeva, The NanoSteel Company; Charles Entoe, General Motors; Daniel Branagan, The NanoSteel Company; Matthew Kiser, Caterpillar Inc

Thursday AM  Room:  406
October 12, 2017  Location:  DLL Convention Center

Session Chairs: Alla Sergueeva, The NanoSteel Company; Cem Tasan, Massachusetts Institute of Technology

8:00 AM
Designing Healable Steels with Excellent Reusability: Cem Tasan1; Menglei Jiang1; Meimei Wang1; 1MIT

8:20 AM
Development of New Pretreatment Process with BOF in East Japan Works (Keihin), JFE Steel: Masashi Funahashi1; Takahiko Maeda1; Takeshi Ishii1; Takashi Takaoka1; 1JFE Steel Corporation

8:40 AM
Effect of Hood Pressure on Nitrogen Pick-up in the LD Steel Making Process: Anand Babu G1; Balakrishnan V1; Virendra K Bari1; M K Singh1; Siddhartha Misra1; 1Tata Steel India

9:00 AM
Effect of Scale Formation on Copper Enrichment in Continuously Cast Slab: Caihuan Huang1; 1Northeastern University

9:20 AM
Estimation of Slag in Ferrochromium: Robert Koziell1; George Wrightson1; 1Andrew S. McCreath & Son, Inc.

9:40 AM
Improvement of Titanium Yield in High C and Si Killed Steels Injecting Wire Highly Compacted Ferrotitanium: Fernando Velazquez1; Luis Arqueros1; 1Ingot Alloys Mexico; 1Compañía Siderúrgica de Huachipato CAP Acero

10:00 AM  Break

10:20 AM
Semi-molten State Reduction Behavior of Panzhihua Ilmenite Concentrate with Additive: Wei Lv1; Xueming Lv1; Junyi Xiang1; Xuewei Lv1; Yingyi Zhang1; Chengyi Ding1; 1Chongqing University

10:40 AM
Study on Modification of Inclusions in Aluminum Deoxidized Steel by Carbonate: Bing Ni1; Tonglu Yao1; 1Central Iron and Steel Research Institute

11:00 AM
Characterization of Inclusions during Calcium Treatment: Yang Liu1; Lifeng Zhang1; 1University of Science and Technology Beijing

11:20 AM
Modeling of the Agglomeration of Al2O3 Inclusions in Molten Steel: Haojian Duan1; Lifeng Zhang1; 1University of Science and Technology Beijing

11:40 AM
The Effects of Milling Energy and Carbon Concentration on the Microstructural Evolution of Ultra High-carbon Fe-C Alloys: Ibrahim Khafailah1; Alex Aning1; 1Virginia Tech

Advances in Dielectric Materials and Electronic Devices – Multiferroics and Devices

Program Organizers: Amar Bhalla, The University of Texas at San Antonio; Ruyan Guo, The University of Texas at San Antonio; K. M. Nair, E.I.duPont de Nemours & Co, Inc; Danilo Suvarov, Jožef Stefan Institute; Rick Ubic, Boise State University

Thursday AM  Room:  331
October 12, 2017  Location:  DLL Convention Center

Session Chairs: Steven Tidrow, Alfred University; Vojislav Mitic, University of Nis, Faculty of Electronic Engineering

8:00 AM
Cyclic Azasilanes as Volatile and Reactive Precursors for Atomic and Molecular Layer Deposition: Nicholas Strandwitz1; 1Lehigh University

8:20 AM
Functional Properties of Some Rare Earth Based Double Perovskite Oxides for Future Application: Dev Mahato1; 1National Institute of Technology Patna

8:40 AM
Effect of Processing Conditions on Electromagnetic (EM) Response Properties of Polymer-derived SiC Ceramics: Cheryl Xu1; 1Florida State University

9:00 AM
The Effects of Metal Work Function, Doping, and Source-drain Underlap Variation on I_d-V_g Characteristics of a Highly Scaled InAs Hetero Structure Field Effect Transistor: Ahmed Sharif1; Abir Sha’dman1; 1Bangladesh University of Engineering and Technology

9:20 AM
Ferroics and Multiferroics for Terahertz-device Design: Moumita Dutta1; Souvik Betal1; Xomalin Peralta1; Amar Bhalla1; Ruyan Guo1; 1University of Texas at San Antonio

9:40 AM
Magnetoelectric Nanorobots for Remotely Controlled Dynamic Cell Manipulation: Souvik Betal1; Moumita Dutta1; Amar Bhalla1; Ruyan Guo1; 1University of Texas at San Antonio
Controlled Synthesis, Processing, and Applications of Structural and Functional Nanomaterials – Controlled Synthesis, Processing, and Applications of Structural and Functional Nanomaterials IV

Program Organizers: Gurpreet Singh, Kansas State University; Kathy Lu, Virginia Tech; Sanjay Mathur, University of Cologne; Edward Gorzkowski, Naval Research Laboratory; Haitao Zhang, UNC Charlotte; Kejie Zhao, Purdue University; Hidehiro Kamiya, Tokyo University of Agriculture and Technology

Thursday AM Room: 321
October 12, 2017 Location: DLL Convention Center

Funding support provided by: MilliporeSigma

Session Chair: Haitao Zhang, UNC Charlotte

8:00 AM Coercivity Model for (Co, Ni)-based Soft Nanocomposite Magnets: Jonathan Healy1; Bowen Dong 1; Song Lan 1; Billy Hornbuckle2; Gregory Thompson 2; Maria Daniil3; Matthew Willard1; 1Case Western Reserve University; 2University of Alabama; 3Bard Early College High School

8:20 AM Invited Phase Change Nanoparticles for Biosensing, Barcoding and Enhanced Cooling: Ming Su1; Sichao Hou1; 1Northeastern University

9:00 AM Dislocation Aided Orientation Alignment during Initial Stages of Crystal Growth: Amit Samanta1; Andrew Lange1; Tammy Olson1; Selim Elhadj1; 1Lawrence Livermore National Laboratory

9:20 AM Thermodynamic Stabilization of Nano-scale Nickel Catalysts for Energy Conversion: Stephen Sofie1; David Driscoll1; 1Montana State University; 2Glacigen Materials Inc.

9:40 AM Reaction Intermediate Induced Vapor-Liquid-Solid Growth of Amorphous Silicon Oxide Nanowires: Joseph Huson1; Tao Sheng1; Haitao Zhang1; 1UNC Charlotte

10:00 AM Break

10:20 AM Porous Silicon Oxycarbide (SiOC) Materials and Environmental Applications: Sasana Aguirre-Medel1; Jared Enriquez1; Peter Kroll1; 1University of Texas at Arlington

10:40 AM Growth Direction Control of ZnO Nanorods on the Edge of the Patterned ITO/AZO Bi-layers: Ching-Han Liao1; Cheng-Yi Liu1; 1National Central University

11:00 AM Synthesis of Nanocrystalline Ultrahigh Temperature Ceramic Powders via Rapid Single-step High Temperature Spray Pyrolysis: Zhe Cheng1; Junheng Xing1; Paniz Foroughi1; Andres Behrens1; 1Florida International University

12:20 AM Nanostructured TiO2 - Hydrotalcite Composites for Vanillin Photocatalytic Decomposition: Andrei Jitianu1; Anhay Hernandez-Mujica2; Naphati O’Connor1; Ravnit Kaur-Bhatia1; Nicoleta Apostol1; Mihaela Jitianu2; 1Lehman College, City University of New York; 2William Paterson University; 3National Institute of Materials Physics

11:40 AM Nanocrystalline Metal Grain Stabilization by Carbon Nanotube Aerogel Cages: Siyuan Liu1; Yeon Joo Jeong1; Mohammad Islam1; 1Carnegie Mellon University

Emerging Interconnect and Pb-free Materials for Advanced Packaging Technology – Session III

Program Organizers: Albert T. Wu, National Central University; Carol Handwerker, Purdue University; Fiqiri Hodaj, Grenoble Institute of Technology

Thursday AM Room: 336
October 12, 2017 Location: DLL Convention Center

Session Chairs: Chengyi Liu, National Central University; Fiqiri Hodaj, Grenoble Institute of Technology

8:00 AM Invited Effect of Ag additive in Sn on Cu dissolution into Sn3.5Ag solder: Cheng-Yi Liu1; Erh-Ju Lin1; Yue-Kai Tang1; Yi-chun Hsu1; Yu-Jin Hu1; 1Department of Chemical and Materials Engineering of NCU

8:40 AM Sinter Joining of GaN Die on DBA/DBC Substrates and Their Thermal Stability: Chanyang Choe1; Chuantong Chen1; Aiji Suetake1; Noriko Kagami1; Shijo Nagao1; Toshiyuki Ishina1; Ichihito Narita2; Seigo Kurosaka2; Katsuaki Suganuma1; 1Osaka University; 2Osaka Kyoiku University; 3Uyemura & Co., Ltd.

9:00 AM Improving the Power Handling of Flexible and Printed Electrical Interconnects for High Pulsed Current Applications: Roberto Aga1; Eric Kreit1; Steven Dooley2; Carrie Bartsch2; Emily Heckman2; 1KBR/Wyle/AFRL; 2Air Force Research Lab

9:20 AM Processing and Reliability of Metal Sintering Die-attach for Wide-bandgap Power Devices: Shijo Nagao1; Hao Zhang1; Chuantong Chen1; Akio Shimoyama1; Katsuaki Suganuma1; 1Osaka University

9:40 AM Micromechanism of Recrystallization in Lead-free Solder Joints: Limin Ma1; Fu Guo1; Jing Han1; 1Beijing University of Technology
### Failure Analysis and Prevention – Unusual and Complex Cases

**Program Organizers:** Andrew Havics, pH2, LLC; Pierre Dupont, Schaeffler Belgium Sprl/Bvba; Burak Akyuz, ATS, Inc.

**Thursday AM**

**Room:** 407  
**Location:** DLL Convention Center

**Session Chairs:** Joseph Lemberg, Exponent; Pierre Dupont, Schaeffler Belgium Sprl/Bvba; Burak Akyuz, Applied Technical Services Inc; William Carden, McSwain Engineering

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<td>8:00 AM</td>
<td>An Artificial Intelligence Driven Post-test Failure Analysis Technique:</td>
<td>Adyota Gupta¹; Robert Ritchie¹; University of California, Berkeley</td>
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<tr>
<td>8:20 AM</td>
<td>Example Use of Failure Assessment and Tolerable Flaw Diagrams in the</td>
<td>David Bosko¹; 1Engineering Design &amp; Testing Corp.</td>
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<td>8:40 AM</td>
<td>Simple Failure Analysis, Complex Root Cause Determination:</td>
<td>Dennis McGarry¹; Tom Easley¹; SEA Ltd</td>
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<tr>
<td>9:00 AM</td>
<td>Metallurgical Application in Forensic Fire Investigation:</td>
<td>Raymond Thompson¹; Dustin Nolen¹; Vista Engineering</td>
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<td>9:20 AM</td>
<td>Selected Failure Investigations from the ASMI Eisenman Materials Camp:</td>
<td>Daniel Dennies²; DMS, Inc.</td>
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<td>9:40 AM</td>
<td>On the GHISLENGHIEN's Disaster, Belgium, July 2004 : A Dramatic Pipeline's</td>
<td>Pierre Dupont¹; Schaeffler Belgium Sprl/Bvba</td>
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<tr>
<td>10:00 AM</td>
<td>Unusual Propeller Failure, Lead Poisoning:</td>
<td>Joe Epperson¹; NTSB</td>
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<tr>
<td>10:20 AM</td>
<td>Complex Failure of a Residential Heating and Air Conditioning System:</td>
<td>William Carden¹; McSwain Engineering, Inc.</td>
</tr>
<tr>
<td>10:40 AM</td>
<td>Failure Analysis of a Diesel Generator Connecting Rod:</td>
<td>Francisco Rumiche¹; Carlos Juarez¹; Aníbal Rozas¹; Julio Cuisano¹; Paul Lean¹; Pontificia Universidad Católica del Peru</td>
</tr>
<tr>
<td>11:00 AM</td>
<td>Root Cause of Damage to Mixing Tanks:</td>
<td>Kenneth Marshall²; Engineering Design &amp; Testing Corp.</td>
</tr>
<tr>
<td>11:20 AM</td>
<td>Failure of a Helicopter Rotor Pinion:</td>
<td>Véronique Vitry¹; Victor Ioan Stanici¹; Schaeffler Belgium</td>
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### Glass Composites – Structure and Properties

**Program Organizers:** Guang-Ming (Derek) Tao, University of Central Florida; Huanyu Cheng, The Pennsylvania State University; Xin Zhang, Pacific Northwest National Laboratory; Jie Song, Emory University and Georgia Institute of Technology

**Thursday AM**

**Room:** 318  
**Location:** DLL Convention Center

**Session Chairs:** Cheng Zhang, NIST; Hui Chen, National Energy Technology Laboratory

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<td>Invited Glass-ceramic Composite for Wavelength Tunable Light Source:</td>
<td>Shifeng Zhou¹; South China University of Technology</td>
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<tr>
<td>8:40 AM</td>
<td>Invited HBQ100 – A Novel Silicon-silica Composite:</td>
<td>Frank Wessely¹; Dennis Braeunhaus¹; Gerrit Scheich¹; Nils Christian Nielsen¹; Heraeus Quarzglas GmbH &amp; Co. KG</td>
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<td>9:00 AM</td>
<td>Comparison of Hot Pressing and Spark Plasma Sintering in the Densification</td>
<td>Qi Zhang¹; Wei Wei¹; Nanjing University of Posts &amp; Telecommunications</td>
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<td>9:20 AM</td>
<td>Broadband Tunable Emission of Glasses for Single-phase Multi-Chromatic/White</td>
<td>Ruilin Zheng¹; Weiwei¹; Alfred University</td>
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<td>10:00 AM</td>
<td>Improved Characterization of Cell Phone Glass by SEM/EDS with an</td>
<td>John Konopka¹; Thermo Fisher Scientific</td>
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<td>10:20 AM</td>
<td>Vector Soliton Polarization Dynamics in Anisotropic Silica Glass Optical</td>
<td>Chengbo Mou¹; Sergey Sergeyev¹; Raz Arip¹; Aleksey Rozhin¹; Shanghai University; Aston University; University of Sulaimani</td>
</tr>
<tr>
<td>10:40 AM</td>
<td>Recent Development of China Nuclear Waste Vitrification:</td>
<td>Kai Xu¹; Guangxuan Zhang¹; Wuhan University of Technology</td>
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<tr>
<td>11:00 AM</td>
<td>Sintering Behavior and Phase Transition of ZnS-CaLa2S4 Composites:</td>
<td>Yiyu Li¹; Qiyuan Wu¹; Alfred University</td>
</tr>
</tbody>
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¹University of California, Berkeley  
²Pilkington PLC
Innovative Processing and Synthesis of Ceramics, Glasses and Composites – Ceramic Processing III
Program Organizers: Narottam Bansal, NASA Glenn Research Center; Jitendra Singh, Retired, U.S. Army Research Laboratory; Takashi Goto, Tohoku University

Thursday AM
October 12, 2017
Location: 310

Session Chair: Dipankar Ghosh, Old Dominion University

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<tr>
<td>8:00 AM</td>
<td>Effect of Processing on the Properties and Morphology of MWCNT Segregated Networks: Morgan Watt; Rosario Gerhardt; 1 Georgia Institute of Technology</td>
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<td>8:20 AM</td>
<td>Single-step Anode-Supported SOFC Electrode Infiltration Using Bio-adhesive Catechol Surfactants: Ozcan Ozmen; Shiwoo Lee; Gregory Hackett; Harry Abernathy; Edward Sabolsky; 1 West Virginia University; 2AECOM/GES; 3US DOE-National Energy Technology Laboratory</td>
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<tr>
<td>8:40 AM</td>
<td>Clay/Biochar Ceramics for Thermal Energy Storage: Pierre-Marie Nguyen; Ange Nzihou; Claire White; Winston Soboyejo; 1 Worcester Polytechnic Institute; 2Mines Albi; 3Princeton University</td>
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<td>9:00 AM</td>
<td>Nanostructured SnO2 Thin Films via Hydrothermal Method: Behnam Garakani; Jong Hyun Shim; Junghyun Cho; 1Binghamton University</td>
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<tr>
<td>9:20 AM</td>
<td>Ice-templated Ceramic Scaffolds: Developing Structure-Property (Mechanical) Relationships through Deliberate Microstructural Modifications: Dipankar Ghosh; Mahesh Banda; Hyungsu Kang; Valere Kamaha; 1Old Dominion University</td>
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<tr>
<td>9:40 AM</td>
<td>Flexural Strength of Nanostructured Titanium Boride (TiB) Ceramic as Affected by the Leftover Ductile Metallic Phase: Jun Du; 1K. S. Ravi Chandran; 1University of Utah</td>
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<tr>
<td>10:00 AM</td>
<td>Break</td>
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<tr>
<td>10:20 AM</td>
<td>Novel Processing and Mechanical Characterization of Cu-Al2O3 Layered Nanocomposite: Kevin Anderson; Richard Vinci; Helen Chan; 1Lehigh University</td>
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<td>10:40 AM</td>
<td>Synthesis of Carbide Ceramics through the Carburization of Adsorbed Anions on an Activated Carbon Matrix: Grant Wallace; Jerome Downey; Jannette Chorney; Katie Schumacher; Alaina Mallard; 1Montana Tech of the Univ of MT</td>
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<td>11:00 AM</td>
<td>Determination of Ceramic Retention in Composite Cold Spray: A Finite-element Study: Rohan Chakraborty; Jun Song; 1McGill University</td>
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<td>11:20 AM</td>
<td>Numerical Investigation of Heat Transfer and Reaction Kinetics during the Self-propagating High-temperature Synthesis of Silicon Nitride: Venkata Doddapaneni; Sibney Lin; 1Lamar University</td>
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<td>1:00 PM</td>
<td>Two-phase Solid-liquid Coexistence of Al-Cu Binary Alloys by Molecular Dynamics Simulations Using the Modified Embedded-atom Method: Avik Mahata; Mohsen Asle Zaeem; Michael Baskes; 1Missouri University of Science and Technology; 2University of California, San Diego</td>
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Interfaces, Grain Boundaries and Surfaces from Atomistic and Macroscopic Approaches – Interface Properties
Program Organizers: Dominique Chatain, CNRS, Aix-Marseille University; John Blendell, Purdue University; Wayne Kaplan, Technion - Israel Institute of Technology

Thursday AM
October 12, 2017
Location: 410

Session Chairs: John Blendell, Purdue University; Dominique Chatain, CNRS, Aix-Marseille University

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<td>8:00 AM</td>
<td>The Role of Grain Boundary Structure on Defect Accommodation and Damage Tolerance: Garritt Tucker; Dan Foley; 1Colorado School of Mines; 2Drexel University</td>
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<td>8:20 AM</td>
<td>Analysis of Dislocations Generated from Nanoindentation in Single and Bicrystal Ta: Bret Dunlap; Martin Crimp; 1Michigan State University</td>
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<tr>
<td>8:40 AM</td>
<td>Investigation of the Effect of Interface Character on Bulk Mechanical Properties of Nanocrystalline FCC Metals: Jacob Gruber; Garritt Tucker; 1Drexel University</td>
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<td>9:00 AM</td>
<td>Incompatibilities in the Shock Responses of Grain Boundaries and Voids in Bicrystals: Steven Valone; Saryu Fensin; Richard Hoagland; 1Los Alamos National Laboratory</td>
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<td>9:20 AM</td>
<td>Investigating Specimen- and Grain-size Effects on Plastic Deformation and Strength of Polycrystalline Yttria-stabilized Tetragonal Zirconia Nanopillars: Ning Zhang; Mohsen Asle Zaeem; 1Missouri University of Science and Technology</td>
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<td>9:40 AM</td>
<td>ECCI Analysis of Dislocation Slip Transferring Across Grain Boundaries in Commercially Pure Titanium: Songyung Han; Martin Crimp; 1Michigan State University</td>
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<td>10:00 AM</td>
<td>Break</td>
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<td>10:20 AM</td>
<td>Simulation-informed Image Processing of Polycrystals: Jeffrey Rickman; Amirkoushyar Ziaabadi; Charles Bouman; Jeff Simmons; 1Lehigh University; 2Purdue University; 3Air Force Research Laboratory</td>
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<td>10:40 AM</td>
<td>Impact of Impurities and Transition Metal Dopants on the Stability and Strength of Grain Boundaries via First-principles Calculations: Zhifeng Huang; Timothy Rupert; 1University of California, Irvine</td>
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<tr>
<td>11:00 AM</td>
<td>Two-phase Solid-liquid Coexistence of Al-Cu Binary Alloys by Molecular Dynamics Simulations Using the Modified Embedded-atom Method: Avik Mahata; Mohsen Asle Zaeem; Michael Baskes; 1Missouri University of Science and Technology; 2University of California, San Diego</td>
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11:20 AM
Grain Boundary Characterization of Boron Suboxide with Silica Additives: Christopher Marvel1; Kristopher Behler2; Jerry LaSalvia3; Martin Harmer4; 1Lehigh University; 2Army Research Laboratory

International Symposium on Ceramic Matrix Composites – CMC III
Program Organizers: Narottam Bansal, NASA Glenn Research Center; Jitendra Singh, Retired, U.S. Army Research Laboratory; Jacques Lamon, CNRS; Sung Choi, Naval Air Systems Command
Thursday AM  Room: 316
October 12, 2017  Location: DLL Convention Center
Session Chairs: Jacques Lamon, LMT ENS Cachan; Gregory Morscher, University of Akron

8:00 AM Invited
ZrC/ZrB, Based Ultra High Temperature Ceramic Matrix Composites Derived from RMI Technique: Shaoming Dong1; Xiaowu Chen1; Dewei Ni1; Shanghai Institute of Ceramics, Chinese Academy of Sciences
8:40 AM
Processing and Characterization of Graded CMCs with through Thickness Thermal Conductivity Control: Derek King1; Ming Cher2; Ray Ko1; Michael Cuniberti1; 1UES Inc; 2Air Force Research Laboratory; 3University of Dayton Research Institute
9:00 AM
CMC Sandwich Structures Incorporating Additively Manufactured Ceramic Cores: Tiffany Stewart1; Christine Lihn1; Zak Eckel1; Tobias Schaedler1; Jake Hundle1; 1HRL Laboratories LLC
9:20 AM
SiC Ceramic Matrix Composites with Robustly Hot Corrosion Resistant Matrixes: Xiuhua Zhang1; Jianhui Hu1; Shaoming Dong1; Jinsong Yang1; Liz Gao1; Haijun Zhou1; 1Shanghai Institute of Ceramics, Chinese Academy of Sciences
9:40 AM
Self-lubricated Structural Ceramics Served in Extreme Environments: Yongsheng Zhang1; Litian Hu1; 1State Key Laboratory of Solid Lubrication, Lanzhou Institute of Chemical Physics of the Chinese Academy of Sciences
10:00 AM Break
10:20 AM Invited
Use of Electrical Resistance and Acoustic Emission to Monitor Crack Growth in Advanced Ceramic Composites: Gregory Morscher1; Ryan Maxwell1; Rabih Mansour1; 1University of Akron
11:00 AM
Modeling the Effect of Damage on the Electrical Resistivity of SiC/SiC Composites: Roy Sullivan1; Eric Baker1; Craig Smith1; Gregory Morscher1; 1NASA/Glenn Research Center; 2Connecticut Reserve Technologies, Inc.; 3University of Akron
11:20 AM
Matrix Cracking and Fiber Breaks in SiC/SiC CMCs Using In Situ Tomography Techniques: Ashley Hilmas1; Anjali Singh1; Ying Zhou1; Greg Wilson1; Yan Gao1; Dula Parkinson1; Harold Barnard1; Emmanuel Maillet1; 1University of Michigan; 2GE Global Research, 3GE Aviation; 4Lawrence Berkeley National Laboratory

11:40 AM
Three-dimensional Damage in Ceramic Matrix Composites: Insight from Volumetric Digital Image Correlation: Brendan Croom1; Peng Xu2; Edward Lahoda1; Christian Deck1; Xiaodong Li1; 1University of Virginia; 2Westinghouse Electric Company; 3General Atomics

International Symposium on Defects, Transport and Related Phenomena – Transport at Interfaces
Program Organizers: Tatsuya Kawada, Tohoku University; Manfred Martin, RWTH Aachen University; Sangdae Kim, University of California, Davis
Thursday AM  Room: 411
October 12, 2017  Location: DLL Convention Center
Session Chairs: Shu Yamaguchi, The University of Tokyo; Bilge Yildiz, Massachusetts Institute of Technology

8:00 AM Invited
Beyond Electrostatic Effects at Oxide Hetero-interfaces: Electrochemical Phase Change, Strong Electric Fields, and Elastic Strain: Bilge Yildiz1; 1Massachusetts Institute of Technology
8:40 AM Invited
Effect of Spin Order on Oxygen Reduction Reaction at NiO Surface: Shu Yamaguchi1; 1The University of Tokyo
9:20 AM Invited
Mechanism of Reaction and Degradation of SOFC MIEC Cathodes Investigated by Using Patterned Thin Film Model Electrode: Koji Amezawa1; Yoshinobu Fujimaki1; Yusuke Shindo1; Keita Mizuno1; Takashi Nakamura1; Yuta Kimura1; Kiyofumi Nitta1; Yasuko Terada1; Fumitada Iguuchi1; Keiji Yashiro1; Hiroo Yugami1; Tatsuya Kawada1; 1Tohoku University; 2JASRI
10:00 AM Break
10:20 AM
Resistance Degradation of Bicrystal Strontium Titanate Utilizing Impedance Spectroscopy and Thermally Stimulated Depolarization Current: Jared Carter1; Thorsten Bayer1; Clive Randall1; 1The Pennsylvania State University
10:40 AM
Microstructural-based “Multiphysics” Simulations of Coupled Transport and Electrochemistry in Three Phase SOFC Cathodes: Quantifying Performance Distributions: Tim (Yu-Ting) Hsu1; Rubayyat Mahbub1; William Epting1; Harry Abernathy1; Gregory Hackett1; Anthony Rollett1; Shawn Litster1; Paul Salvador1; 1U.S. DOE National Energy Technology Laboratory
11:00 AM
Oxygen Exchange Reaction on Dense and Porous Lanthanum Cobaltite Based Perovskites: Tatsuya Kawada1; Keiji Yashiro1; Shin-ichi Hashimoto1; Koji Amezawa1; Shogo Miyoshi1; Jun Kubota1; Katsuhiko Yamaji1; Toshiaki Matsui1; 1Tohoku University; 2NIMS; 3Fukuoka University; 4AIST; 5Kyoto University
Joining of Advanced and Specialty Materials (JASM XIX) – Welding Processes
Program Organizers: Boian Alexandrov, The Ohio State University; Mathieu Brochu, McGill University; Anming Hu, University of Tennessee; Darren Barborkak, A2Z WSI; Akio Hirose, Osaka University; Peng He, Harbin Institute of Technology; Zhiyong Gu, University of Massachusetts Lowell; Vikas Patel, ArcelorMittal USA

Thursday AM
Room: 326
Location: DLL Convention Center

Session Chair: Boian Alexandrov, The Ohio State University

8:00 AM
Solid State Joining of Steel to Aluminum with Refractory Metal Tools: Martin McDonnell1; Ashish Dasgupta2; ‘US Army-TARDEC; ‘Focus: HOPE, Inc.

8:20 AM
Numerical Simulation and Experimental Investigation on Impulse Friction Stir Welding of 6082-T6 Aluminum Alloy: Jurij Golubev1; Iulia Morozova1; Anton Naumov1; Cord Hantelmann1; Nikolay Doynov1; Vesselin Michailov1; Brandenburg University of Technology (BTU) Cottbus – Senftenberg; ‘Peter the Great Saint-Petersburg Polytechnic University

8:40 AM
Utilizing Site Specific Shear Punch Testing to Evaluate Friction Stir Welded Al-2139 T8 Plate: B. Hornbuckle1; Jordan the Gleeble 3500 to Study Phase Transformations in Zr-2.5Nb: Ember Sikorski1; Eric Nelson1; Iurii Golubev1; Iuliia Morozova1; Anton Naumov1; Cord Hantelmann1; Nikolay Doynov1; Vesselin Michailov1; ‘Brandenburg University of Technology (BTU) Cottbus – Senftenberg; ‘Peter the Great Saint-Petersburg Polytechnic University

9:00 AM
Manufacturing of Assembled Aluminium-steel Gearwheels by Lateral Extrusion: Robert Meissner1; Mathias Liewald1; ‘Institute for Metal Forming Technology

9:20 AM
Computational Modeling for Optimization of Temperbead Welding: Matt Forquer1; Boian Alexandrov1; ‘The Ohio State University

9:40 AM
Experimental Investigations on Electron Beam Welding of SAE 15B41 Steel: Sandeep Thakare1; ‘Bharat Forge Limited

10:00 AM
Break

10:20 AM
Effect of Electrode Material on Dissimilar Joints between Grade 70 SA-516 and Grade B SA-517 Carbon Steels: Fahad Riaz1; Muhammad Kamran1; Atif Makhdoom1; Faraz Hussain1; Faran Bilal1; ‘University of the Punjab Lahore

10:40 AM
Characterization of Fiber Laser Welded TC4/SS 304 Joints Using Cu Interlayer: Seyed Reza Elmi Hosseini1; Zhugou Li1; ‘Shanghai Jiaotong University

11:00 AM
HDPE High-density Polyethylene Pipe Systems Welding Process: Marai Khulife1; ‘Libyan Welding Center

11:20 AM
Ceramic-metal Joining with Transient Porous Nickel Interlayer Enabled Silver Brazing: Quan Zhou1; Thomas Bieler1; Jason Nicholas1; ‘Michigan State University

Materials for Nuclear Energy Applications – Structural Materials, Fuels, and Irradiation Effects
Program Organizers: Kumar Sridharan, University of Wisconsin; Jake Amoroso, Savannah River National Laboratory; Aladar Csontos, Nuclear Regulatory Commission; Kevin Fox, Savannah River National Laboratory; Yutai Katoh, Oak Ridge National Laboratory; Bill Lee, Imperial College of London; Josef Matyas, Pacific Northwest National Laboratory; Raul Rebak, GE Global Research; Cory Trivelpiece, Savannah River National Laboratory

Thursday AM
Room: 401
Location: DLL Convention Center

Session Chairs: Philip Edmondson, Oak Ridge National Laboratory; Samuel Briggs, Sandia National Laboratories

8:00 AM Invited
High Temperature Creep Behavior of Alloy 709: Martin Taylor1; Harrison Puglisi1; Jose Ramirez Ruiz2; Indrajit Charit3; Gabriel Potirniche1; Robert Stephens4; Michael Glazoff5; ‘University of Idaho; ‘Idaho National Laboratory

8:20 AM
Axial Temperature Uniformity and Diametrical Dilatometry Testing in the Gleeble 3500 to Study Phase Transformations in Zr-2.5Nb: Catherine Jordan1; Don Redmond1; Jeremy Vosburgh1; John Seidensticker1; Ashley Lucente1; ‘BMPC

8:40 AM
Structural, Chemical and Thermal Property Changes of Zirconium Diboride under Ion Beam Irradiation: Joseph Graham1; Miguel Crespillo2; ‘Missouri University of Science and Technology; ‘The University of Tennessee, Knoxville

9:00 AM
Thermodynamic Modeling and Compatibility of UN Fuel-FeCrAlY Cladding Materials: Mallikharjuna Bogala1; Mark Noordhoek1; Emily Moore1; Tashaime Wilson1; Theodore Besmann1; ‘University of South Carolina

9:20 AM
Computational Studies of UO2, UN and Zr Materials for Pellet-cladding Interactions: Ember Sikorski1; Eric Nelson1; Lan Li1; ‘Boise State University

9:40 AM
On the 650°C Thermostability of 9-12Cr Heat Resistant Steels Containing Different Precipitates: Yiyan Shao1; Hai Wang1; Wei Yan1; ‘Institute of Metal Research, Chinese Academy of Sciences

10:00 AM
Break

10:20 AM
Chemically-biased Defect Diffusion in Concentrated-solid-solution Alloys: Shijun Zhao1; Yuri Osetsky1; Yanwen Zhang1; ‘Oak Ridge National Laboratory

10:40 AM
Tuning MoO3 Nanostructures Using Low Energy High Flux He+ Ion Irradiation: Jitendra Tripathi1; Theodore Novakowski1; Arvind Sundaram1; Antony Damico1; Tatyana Sizyuk1; Ahmed Hassanein1; ‘Purdue University
Materials Issues in Nuclear Waste Management – Fundamental Issues in Nuclear Waste Management

Program Organizers: Jake Amoroso, Savannah River National Laboratory; Aladar Csontos, Nuclear Regulatory Commission; Kevin Fox, Savannah River National Laboratory; Tongan Jin, Pacific Northwest National Laboratory; Cory Trivelpiece, Savannah River National Laboratory; Yutai Katoh, Oak Ridge National Laboratory; Bill Lee, Imperial College of London; Josef Matyas, Pacific Northwest National Laboratory; Nathan Mellot, Michigan State University; Kumar Sridharan, University of Wisconsin Madison; S.K. Sundaram, Alfred University

Thursday AM Room: 402 October 12, 2017 Location: DLL Convention Center

Session Chairs: Josef Matyas, Pacific Northwest National Laboratory; Devon McClane, Savannah River National Laboratory

8:00 AM Invited
Advanced Characterization of Model Multiphase Ceramic Waste Forms: Kyle Brinkman1; Wilson Chi2; Jake Amoroso1; ’Clemson University; ’University of Connecticut; ’Savannah River National Laboratory

8:20 AM Potential Impacts of Spinel Crystallization in High Level Nuclear Waste Glasses: Devon McClane1; Jake Amoroso1; ’Savannah River National Laboratory; Albert Kruger2; ’US Department of Energy Office of River Protection

8:40 AM Understanding the Influence of Melt Chemistry on Nucleation and Growth of Spinel in High-level Nuclear Waste Glasses: Harishkesh Kamat1; Mohamed Naji2; Steven Cheng3; Donna Guillen4; Paul Bingham1; Ashutosh Goel1; ’Rutgers University; ’Idaho National Laboratory; ’Sheffield Hallam University

9:00 AM Strong Base [SB] Weak Acid [WA] Impacts on HLW and LAW Glass Dissolution: Carol Jantzen1; Cory Trivelpiece1; ’Savannah River National Laboratory

9:20 AM Nepheline Crystal Growth in High Level Nuclear Waste Glasses: Jake Amoroso1; Devon McClane1; Kevin Fox1; Albert Kruger2; ’Savannah River National Laboratory; ’US Department of Energy Office of River Protection

9:40 AM Invited
Applications of Ancient Roman Cementitious Systems to Long Term Nuclear Waste Performance: Marie Jackson1; ’University of Utah

10:20 AM Break

10:40 AM Multicomponent Glass Surfaces: Composition, Structure, and Reactions: Stephen Garofalini1; Ming Tai Ha1; Joelyn Urraca1; ’Rutgers University

11:00 AM Effects of Silica Saturation on ISG Corrosion in Alkaline Solutions: Cory Trivelpiece1; Carlo Pantano2; Jarrett Rice2; ’Savannah River National Laboratory; ’The Pennsylvania State University

11:20 AM Sintering Behavior of Glass Binders for the Immobilization of High-Level Waste Salt: Levi Gardner1; Manish Wasnik1; Michael Simpson1; Krista Carlson2; ’University of Utah

Materials Property Understanding through Characterization – Metals II

Program Organizers: Indrajit Dutta, Corning Incorporated; Nicholas Smith, Corning Incorporated

Thursday AM Room: 412 October 12, 2017 Location: DLL Convention Center

Session Chair: Yoosuf Picard, Carnegie Mellon University

8:00 AM Evolution of Al-Zn-TM (TM = Zr, Ni) Precipitates Morphologies and Structures due to Age Hardening: Oladeji Fadayomi1; Gregory Odegard2; Paul Sanders3; ’Michigan Tech University

8:20 AM Precipitate Shape and Creep Resistance in Single Crystal Nickel-base Superalloys: Ryan Harrison1; Patrick Callahan1; Tresa Pollock2; Marc De Graef3; ’Carnegie Mellon University; ’University of California, Santa Barbara

8:40 AM Hot Rolling Effect upon the High Temperature Johnson-Cook Strength and Failure Models for a 15V38 Grade Steel: Mario Buchely1; David Van Aken2; Ronald O’Malley3; K. Chandrashekhara4; Simon Lekakh5; ’Missouri University of S&T

9:00 AM The Role of Tungsten in Retarding Crystallization of Amorphous Ni80P20: Xia Zhang1; Pei Zhang2; Paul Voyles3; Xinyu Liu4; Rohan Akolkar5; Frank Ernst1; ’Case Western Reserve University; ’University of Wisconsin, Madison

9:20 AM Understanding the Microstructural Factors Responsible for the Low-toughness Performance of Seamless-pipe Steel through Advanced Microstructural Characterization and NDT-EMAT Analysis: Gregorio Solis Bravo1; C. Isaac Garcia1; ’University of Pittsburgh

9:40 AM Effect Of Batch And Continuous Annealing Processes on Crystallographic Texture and Formability of an IF Steel: Gozde Aldikacti1; Umran Baskaya2; Kemal Davut3; ’ERDEMIR R&D Department; ’Atilim University Metal Forming Center of Excellence/Atilim University Department of Metallurgical and Materials Engineering

10:00 AM Break

10:20 AM Testing Prior Grain Size Dependence of Toughness in Steel Using Austenite Quenching, Partitioning and Tempering of Experimental Steel: Mohammad Hassan1; M. Inam2; Muhammad Mughal1; Hafiza Ulfat Javaid1; Yasim Imtiaz2; Arisha Nasik2; Warda Qureshi3; ’University of the Punjab; ’New Shalimar Steel

10:40 AM Testing Prior Grain Size Dependence of Toughness in Steel Using Austenite Reconstruction: Chasen Ranger1; Anthony Rollett2; Vahid Tari1; ’Carnegie Mellon University

10:40 AM Quenching, Partitioning and Tempering of Experimental Steel: Muhammad Hassan1; M. Inam2; Muhammad Mughal1; Hafiza Ulfat Javaid1; Yasim Imtiaz2; Arisha Nasik2; Warda Qureshi3; ’University of the Punjab; ’New Shalimar Steel
Mechanochemical Synthesis and Reactions in Materials Science II – Session IV

Program Organizers: Antonio Fuentes, Cinvestav del IPN; Laszlo Takacs, University of Maryland Baltimore County; Challapalli Suryanarayana, University of Central Florida; Jacques Huot, Universite du Quebec a Trois-Rivieres

Thursday AM  Room: 327  Location: DLL Convention Center

Session Chairs: Richard Blair, University of Central Florida; Fermin Cuevas, INSTITUT DE CHIMIE ET DES MATERIAUX PARIS-EST

8:00 AM
Mechanochemical Synthesis and Characterization of Digenite, Cu₁₈S₈: Matej Baláž; Anna Zorkovská; Nina Daneu; Erika Dutková; Jaroslav Briancin; Mária Kanuchová; Zdenka Bujnáková; Peter Baláž; 1 Institute of Geotechnics, Slovak Academy of Sciences, Košice, Slovakia; 2 Department of Nanostructured Materials, Jožef Stefan Institute, Ljubljana, Slovenia; 3 Faculty of Mining, Ecology, Process Control and Geotechnologies, Technical University, Košice, Slovakia

8:20 AM
Kesterite Cu₂ZnSnS₄: Mechanochemical Synthesis of Solar Cell Absorber in Scalable Amounts: Peter Baláž; Matej Baláž; Marcela Achimovicová; Michal Hegedüs; Matej Tešinsky; Nina Daneu; Erika Dutková; Mária Kanuchová; 1 Institute of Geotechnics, Slovak Academy of Sciences, Košice, Slovakia; 2 Faculty of Natural Sciences, P.J.Šafárik University, Košice, Slovakia; 3 Jožef Stefan Institute, Ljubljana, Slovenia; 4 Faculty of Mining, Ecology, Process Control and Geotechnologies, Technical University, Košice, Slovakia

8:40 AM
Magnetic Behavior of Nanostructured Oxides Prepared by Mechanochemical Synthesis: Vladimir Sepešák; 1 Karlsruhe Institute of Technology

9:00 AM
Surface Characterization of Activated Chalcopyrite Particles via the FLSmidth ROL Process. Part 2: Surface Spectroscopy Investigations: Adam Karcz; Anne Juul Damø; Jytte Boll Illerup; Sara Rocks; Kim Dam-Johansen; David Chaiko; 1 Technical University of Denmark; 2 FLSmidth

9:20 AM
Mechanochemical Synthesis of Lanthanide Hafnates: Influence of Different Cation Substitutions on the Structural Characteristics and Electrical Properties of Gd₂Hf₂O₇: Nayeli Cepeda-Sánchez; José Díaz-Guillén; Miroslaw Maczka; Ulises Amador; Antonio Fuentes; 1 Cinvestav del IPN; 2 Instituto Tecnológico de Sáttillo; 3 Institute of Low Temperature and Structure Research; 4 Universidad San Pablo CEU

9:40 AM
Phase Evolution during the Synthesis of Manganese Germanides: Vamsi MMeka; Tanjore Jayaraman; 1 University of Michigan, Dearborn

Metal and Polymer Matrix Composites III – Polymer Matrix Composites

Program Organizers: Nikhil Gupta, New York University; Tomoko Sano, U.S. Army Research Laboratory

Thursday AM  Room: 330  Location: DLL Convention Center

Session Chairs: Arvind Agarwal, Florida International University; Emad Omrani, University of Wisconsin - Milwaukee

8:00 AM Invited Particle Brush Materials – Building Blocks for Multifunctional Nanocomposites With Engineered Properties: Michael Bockstaller; 1 Carnegie Mellon University

8:40 AM
Synthesis and Characterization of Biomimetic Composites for Dental Applications: Rashmi Mallu; Isabel Lloyd; Yang Yang; Karan Mohan; Ayush Thapa; Joe Marchese; Kai-wen Chang; 1 University of Maryland, College Park

9:00 AM
Cellulose Nanocrystals for Lightweight Sheet Molding Compounds Composites: Amir Asadi; Robert Moon; Kyriaki Kalaitzidou; 1 Georgia Institute of Technology; 2 US Forest Service

9:20 AM
Nano-damping Behavior of 3D Graphene Foam Reinforced Polyurethane Composites: Adeyinka Idowu; Laiza Fontoura; Marcus Herndon; Pranjal Nautiyal; Archana Loganathan; Benjamin Boesl; Arvind Agarwal; 1 Florida International University

9:40 AM
Structural Modification of Polyethylene Using Dialium Guineense Particles: Joshon Johnson Agunsoye; 1 University of Lagos

10:00 AM
Effect of Melon Shell Particles on the Microstructure and Mechanical Properties of Epoxy/Melon Shell Particulate Bio-composites: Suleiman Hassan; Victor Aigbodion; C U Atuanya; 1 University of Lagos; 2 University of Nigeria; 3 Nnamdi Azikiwe University

Program Organizers: Jing Zhang, Indiana University - Purdue University Indianapolis; Lei Chen, Mississippi State University; Li Ma, National Institute of Standards and Technology; Xinghua Yu, Oak Ridge National Laboratory; Yeon-Gil Jung, Changwon National University; Yanzhou Ji, The Pennsylvania State University, University Park; Long Qing Chen, Penn State University

Thursday AM
Room: 306
October 12, 2017
Location: DLL Convention Center

Session Chairs: Jing Zhang, Indiana University - Purdue University Indianapolis; Lei Chen, Mississippi State University

8:00 AM Invited
Thermal and Elastic Properties of δ-γ”, and γ-Ni3Nb at Finite Temperature and Interfacial Energy between Precipitates and Matrix from First-principles Calculations: Yi Wang1; Kevin McNamara1; Yanzhou Ji1; Zi-Kui Liu1; Rich Martukanitz1; Long-Qing Chen1; 1The Pennsylvania State University

8:20 AM
Rapid Alloy Screening: Tailoring Aluminum Alloy Composition for Additive Manufacturing: Joe Croteau1; Davood Bayansani1; Nhon Vo1; David Dunand1; David Seidman1; 1NanoAl LLC

8:40 AM
Optimization of Metal Additive Manufacturing Process Using a Computational Sequential Minimum Energy Design Approach: Kai Wong1; Kelvin Leung1; Azadeh Keshtgar1; Nicole Apetre1; Nagaraja Iyyer1; 1Technical Data Analysis Inc.

9:00 AM
Powderless Alloy Development Approach for Titanium Alloy Tailored for Additive Manufacturing: Yining He1; Bryan Webler1; 1Carnegie Mellon University

9:20 AM Invited
Fast Finite Element Predictions of Distortion, Residual Stresses, and Strength of Additively Manufactured Ti-6Al-4V: Ayman Salem1; Daniel Satko1; Joshua Shaffer1; Luke Wuerterberger1; 1Materials Resources LLC

9:40 AM
Multivariate Statistical Calibration of a FEM Thermal Simulation Model for Selective Laser Melting of Ti6Al4V: Mohamad Mahmoudi1; Gustavo Tapia1; Kuba Karayagiz1; Brian Franco1; Luke Johnson1; Ji Ma1; Raymundo Arroyave1; Ibrahim Karaman1; Alaa Elwany1; 1Texas A&M University

10:00 AM
Thermophysical and Thermochemical Property Measurement and Simulation of Liquid Metal Alloys for Additive Manufacturing Simulation and Materials Design: Jonathan Rusch1; Sanjeev Tulasige1; Brian Novak1; Shengmin Guo1; Wenjin Meng1; Dorel Moldovan1; Michael Sansoucie1; 1University of Louisiana at Lafayette; 2Louisiana State University; 3NASA Marshall Space Flight Center

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Multiscale Modeling of Microstructure Deformation in Material Processing – Multi-scale Modeling of Microstructure Deformation in Material Processing: Part III

Program Organizers: Lukasz Madej, AGH University of Science and Technology; Krzysztof Muszka, AGH University of Science and Technology; Danuta Szeliga, AGH University of Science and Technology

Thursday AM
Room: 403
October 12, 2017
Location: DLL Convention Center

Session Chair: Krzysztof Muszka, AGH University of Science and Technology

8:00 AM Invited
3D Mapping Grain Morphology and Grain Orientations by Laboratory Diffraction Contrast Tomography: Leah Lavery1; Nicolas Gueninchault2; Florian Buchmann1; Christian Holzner1; Hrishikesh Bale1; Erik Lauridsen1; Carl Zeiss X-ray Microscopy; 1Xnovo Technology ApS

8:40 AM
Developing a Crystal Plasticity Model Based on the Discrete Element Method: Agnieszka Truszkowska1; Qin Yu1; T. Matthew Evans1; Alex Greaney2; Jamie Kruzic3; 1Oregon State University; 2University of California, Riverside; 3University of New South Wales

9:00 AM
Interoperability of Crystal Plasticity and Finite Element Codes Using Crystal Tracking in Microstructure-informed Cloud Computing: Ayman Salem1; Joshua Shaffer1; Luke Wuerterberger1; Adam Pilchak2; 1Materials Resources LLC; 2Air Force Research Laboratory

9:20 AM
Physics Based-crystal Plasticity Modeling of Single Crystal Niobium: Tias Maiti1; Aritra Chakraborty1; Philip Eisenlohr1; Di Kang1; Thomas Bieler1; 1Michigan State University

9:40 AM
Modeling Viscoplastic Deformation of Synthetic Welded Microstructures: Efrain Hernandez-Rivera1; Theron Rodgers2; Philip Goins1; Mark Tschopp1; 1U.S. Army Research Laboratory; 2Sandia National Laboratories

10:00 AM Break

10:20 AM
Nanoprecipitates as Templates for Martensite in High Temperature NiTiHf Shape Memory Alloys: Kathryn Esham1; Harshad Paranjape1; Peter Anderson1; Mike Mills1; Lee Casalena2; Yuzhhi Wang1; Yipeng Gao1; 1Ohio State University; 2Colorado School of Mines

10:40 AM
Atomic-scale Prediction of Thermodynamic Forces Using Molecular Dynamics: Mulaine Shih1; Michael Mills1; Maryam Ghaizaseidi1; Peter Anderson1; 1Ohio State University
Program Organizers: Navin Manjooran, Siemens AG; Gary Pickrell, Virginia Tech

Thursday AM
October 12, 2017
Room: 319
Location: DLL Convention Center

Session Chairs: Gary Pickrell, Virginia Tech; Navin Manjooran, Vice President, Siemens AG

8:00 AM Invited
Nanoscale Performance Mapping through the Thickness of Polycrystalline Thin Film Solar Cells: Bryan Huey1; 1University of Connecticut

8:30 AM
Solar-thermal Conversion Behavior of Microencapsulated Phase Change Material with Solar-absorbing Metamaterial Based Shells: Alan Tong1; 1Neaqua Valley High School

8:50 AM
Structure-activity Relationships of CuOx/CeO2 Catalysts: Elizabeth Zell1; Shaikh Hossain1; Ruigang Wang2; 1Youngstown State University; 2The University of Alabama

9:10 AM
Superparamagnetic Iron Oxide Core/Shell Nanostructures for Targeted Drug Delivery: Zia Ur Rahman1; Nabeel Ahmed1; Waseem Haider1; Ali Nemati1; 1Central Michigan University

9:30 AM
The Effect of Local Charge in TiO2 Nanorods on Light Harvesting and Hysteresis in Halide Perovskite Solar Cells: Fangda Yu1; Jung-Kun Lee1; 1University of Pittsburgh

9:50 AM
The Structural, Optical and Electrical Properties of SnO2 Nanowires for Resistive Gas Sensors: Mohamud Al-Hashem1; Priyanka Karnati1; 1The Ohio State University

10:10 AM Break

10:30 AM
TiO2 Functionalized Multiwalled Carbon Nanotubes by Atomic Layer Deposition for Highly Sensitive Gas Sensors: Liliana Stan1; Michela Sainato2; Ralu Divan1; Yuzi Liu1; Igor Paprotny1; 1Argonne National Laboratory; 2University of Illinois at Chicago

10:50 AM Invited
Tomographic AFM of Solar Cells for 3-d Photovoltaic Mapping at the Nanoscale: Justin Luria1; Katherine Atamanuk1; Alexandra Longacre1; James Steffes1; Bryan Huey1; 1University of Connecticut

11:10 AM
Tuning the Lattice Parameter of InxZnyP for Highly Luminescent Quantum Dots: Yuyang Su1; 1Industrial Technology Research Institute

11:30 AM
Two-dimensional Nanocomposites of MoS2 in a Poly (Vinyl Alcohol) Matrix: Celeste Robert1; Karen Supan1; Joshua Maurer2; Michael Miller2; Stephen Bartolucci2; 1Norwich University; 2U.S. Army Armaments Research Development and Engineering Center – Benét Laboratories

Non Beam-based Additive Manufacturing Approaches for Metallic Parts – Session III
Program Organizer: Olaf Andersen, Fraunhofer IFAM

Thursday AM
October 12, 2017
Room: 305
Location: DLL Convention Center

Session Chair: Olaf Andersen, Fraunhofer IFAM

8:00 AM
Additive Manufacturing Evaporative Casting: Sarah Jordan1; Mark DeBruin1; 1Skuld LLC

8:20 AM
Assessment of Environmental Contamination in Ti-6Al-4V Parts Fabricated from the Laser Hot Wire Process: Michael Kottman1; Paul Denney1; James McGuffin-Cawley1; Badri Narayanan1; 1Lincoln Electric; 2Case Western Reserve University

8:40 AM
Densification and Sintering of Metallic Struts within Micro-trusses 3D-printed from Powder-based Liquid Inks: Christoph Kenel1; Ramille Shah1; David Dunand1; 1Northwestern University

9:00 AM
Mechanisms for Deformation and Film Formation from High Speed Aerosol Deposition of Ag: Tushar Chitrakar1; Jeremiah McCallister1; Michael Becker1; John Kato1; Desiderio Kovar1; 1University of Texas at Austin

9:20 AM
Neutron Diffraction Mapping of Residual Stresses in Large-scale Wire-fed Additively Manufactured Components: Jeff Bunn1; Niyanth Sridharan1; Srdjan Simunovic1; Andrzej Nycez1; 1Oak Ridge National Laboratory
Phase Stability, Diffusion Kinetics, and Their Applications (PSDK-XII) – Session VI: Application of Thermodynamics and Diffusion

Program Organizers: Wei Xiong, University of Pittsburgh; Raymundo Arroyave, Texas A & M University; Ji-Cheng Zhao, The Ohio State University; Arthur Pelton, Ecole Polytechnique

Thursday AM Room: 413 Location: DLL Convention Center

Session Chairs: Peisheng Wang, National Institute of Standards and Technology; Zhangqi Chen, The Ohio State University

8:00 AM
Structure Evolution, Thermodynamic and Kinetic Properties of Liquid Ni-Al: An ab Initio Molecular Dynamics StudyStructure Evolution, Thermodynamic and Kinetic Properties of Liquid Ni-Al: An ab Initio Molecular Dynamics Study: William Yi Wang1; Jian Tang2; Jian Wang1; Bin Tang1; Hongchao Kou1; Jinshan Li1; Shun-Li Shang2; Irina V. Belova3; Greame E. Murch1; Zi-Kui Liu1; 1Northwestern Polytechnical University; 2The Pennsylvania State University; 3The University of Newcastle

8:20 AM
Modelling of Prismatic Grain Growth in Cemented Carbides: Manon Bovale1; Joakim Odqvist1; Annika Borgenstam1; John Ågren2; 1KTH - Royal Institute of Technology

8:40 AM
Thermodynamic Simulation on the Chemical Stability of (La0.8Sr0.2)0.98Cr0.9Fe1-xO3±d: Thermo-simulation on the Chemical Stability of (La0.8Sr0.2)0.98Cr0.9Fe1-xO3±d: Hooman Sabarou1; Shadi Darvish1; Yu Shadi2; 1Florida International University

9:00 AM
Binder Removal Modeling: Utilizing Thermogravimetric Analysis (TGA) for Kinetic Parameter Determination: Joseph Prati1; M. Matthewson2; Jay Martin3; Richard Haber4; 1Rutgers University; 2Lafayette College

9:20 AM
In Situ Synchrotron Studies and Modelling of Austenitisation Kinetics during Continuous Heating in Hypereutectoid Steels: Bij-Na Kim1; Jit Sietsma2; Maria Santofimia3; 1TU Delft

9:40 AM
Thermodynamics of (La0.8Sr0.2)0.98Cr0.9Fe1-xO3±d: Hooman Sabarou1; Shadi Darvish1; Yu Shadi2; 1Florida International University

8:00 AM
Phase Transformations and Microstructural Evolution in Ti and Its Alloys – Experiment and Simulations

Program Organizers: Carl Boehlert, Michigan State University; Yufeng Zheng, Ohio State University; Vahid Khademi, Michigan State University

Thursday AM Room: 307 Location: DLL Convention Center

Session Chairs: Dong Wang, Xi’an Jiaotong University; Hao Wang, Institute of Metal Research

11:00 AM
Understanding and Control of Phase Separation in Synthesis of Nanocrystalline TaxHf1-xC Powders: Panji Foroughi1; Cheng Zhang1; Arvind Agarwal1; Zhe Cheng1; 1Florida International University

11:20 AM
Characterization of the Metatectic Reaction in the Iron-boron System: Kara Liutjohan1; Matthew Krane2; Volkan Ortalan3; David Johnson4; 1Purdue University

11:40 AM
Thermodynamic Analyzing the Effect of Intermetallic Compounds on Thermal Diffusivity of Mg-La-Zr Alloys: WenFei Zhu1; Qun Luo1; Shuanglin Chen1; Jie Yu Zhang1; Qian Li1; 1Shanghai University; 2Shanghai University; 3Shanghai Institute of Materials Genome

10:00 AM
Microstructural Evolution during Precipitation Hardening of Al-Cu Alloys with Phase-field Crystal Model: Ahmad Nourian-Avval1; Ebrahim Asadi2; 1University of Memphis

10:20 AM
Recrystallization in Ti-4Al-4V Alloys and Comparison with Experiment: Arvind Agarwal1; N. Ganesan1; V. Pratihar2; M. Johnson1; 1Florida International University

10:40 AM
Quantitative Defect Chemistry Analysis and Electronic Conductivity Prediction Of (La0.8Ca0.2)0.95FeO3±dPerovskite: Shadi Darvish1; Yu Zhong1; 1Florida International University
10:00 AM Break

10:20 AM Invited
Computational Phase Equilibria and Design of Metal Matrix Composites in Ti-B-Fe System: Ahmed Degnha; Vikas Jindal; K. S. Ravi Chandran; 1University of Utah

10:40 AM Empirical Modelling of the Dynamic Spheroidization of the a-phase during Isothermal Compression of Ti6Al4V: Kalenda Matumbo; 2CSIR

11:00 AM Developing the System of Self-consistent Governing Equations in Microstructure Evolution Prediction of Two-Phase Titanium Alloys. Integrated Computational Materials Engineering (ICME) on the Base of Deform 2D/3D Software: Anton Ektov; J.H. Kim; 2VSMPO-AVISMA Corporation; 3Hanbat National University

11:20 AM Investigation of Phase Field Modeling as a Method for Predicting a Lath Width in Ti-5111: Daniel Bechetti; Charles Fisher; Jennifer Wolk; 1Naval Surface Warfare Center; Office of Naval Research

Phase Transformations in Ceramics: Science and Applications – Theoretical Modeling of Phase Transformations and Phase Equilibria
Program Organizers: Waltraud Kriven, University of Illinois at Urbana-Champaign; Pankaj Sarin, Oklahoma State University; Ricardo Castro, University of California, Davis; Yu Zhong, Florida International University

Thursday AM Room: 312 Location: DLL Convention Center

Session Chairs: Helen Chan, Lehigh University; Yu Zhong, Worcester Polytechnic Institute

8:00 AM Invited
In Situ Determination of Phase Equilibria, Thermal Expansion and Phase Transformations in the Ternary Hafnia-Tantalita-Titania System: Scott McCormack; 1Waltraud Kriven; 2Sergey Ushakov; 3Alexandra Navrotsky; 4Richard Webber; 1University of Illinois at Urbana-Champaign; 2University of California, Davis

8:20 AM High-pressure Phase Transformation to Monazite Structure in Xenotime Rare-earth Orthophosphates: Matthew Musselman; Taylor Wilkinson; Bianca Habel; Corinne Packard; Colorado School of Mines; 1Oak Ridge National Lab

8:40 AM Invited
Prediction of Diffusionless Phase Transformations in Complex Materials: Randall Hay; Pavel Mogilevsky; Emmanuel Bouky; 1Air Force Research Laboratory

9:20 AM Directions of Zero Thermal Expansion in Anisotropic Oxides: Scott McCormack; William Wheeler; Waltraud Kriven; 1University of Illinois Urbana-Champaign

9:40 AM Coexistence and Domain Dynamics of Ferroelectric Phases in Vicinity of the MPB: Oscar Torres; Edwin Garcia; Catherine Bishop; 1University of Canterbury; 2Purdue University

10:00 AM Break

10:20 AM Invited
Simulation and Experiments of Template-directed Eutectic Solidification for Nanophotonic Metamaterials: Erik Hanson; Julia Kohaneck; Ashish Kulkarni; Runyu Zhang; Katsumo Thornton; Paul Braun; 1University of Michigan-Ann Arbor; 2University of Illinois at Urbana-Champaign

10:40 AM Invited
First-principles Phase Diagram Calculations for the Rocksalt-structure Quasibinary Systems TiN-ZrN, TiN-HfN and ZrN-HfN: Zhi Liu; Benjamin Burton; Sanjay Khare; Daniel Gall; 1University of Toledo; 2NIST; 3Rensselaer Polytechnic Institute

11:20 AM Effects of Crystallographic Orientation and Pre-existing Defect on Mechanical Properties of Polycrystalline Yttria-stabilized Tetragonal Zirconia: Ning Zhang; Mohsen Asle Zaeemi; Missouri University of Science and Technology

Recent Advances in Computer-aided Materials Design – Computational-experimental Synergy in Materials
Discovery II
Program Organizers: Huan Tran, University of Connecticut; Ghanshyam Pilania, Los Alamos National Laboratory; Alexey Kolmogorov, Binghamton University, State University of New York; Mina Yoon, Oak Ridge National Laboratory; Son Hoang, University of Connecticut

Thursday AM Room: 324 Location: DLL Convention Center

Session Chair: Aleksey Kolmogorov, Binghamton University

8:00 AM Invited
Understanding and Design of Graphene-based Materials for Supercapacitors: Gyeong Huang; 1University of Texas at Austin

8:40 AM Invited
Theory-informed Design of Functional Materials: Bobby Sumpter; 1Oak Ridge National Laboratory

9:20 AM Rational Design of Heterocycle Polymers Using First Principles Computations and Machine Learning: Anand Chandrasekaran; Deepak Kamal; Rampi Ramprasad; Arun Mannodi-Kanakkithodi; 1University of Connecticut

9:40 AM Computer-aided Designing and Screening of High-performance Solid Sorbents for CO2 Capture Technology: Tuhua Duan; 1National Energy Technology Laboratory

10:00 AM Break

10:20 AM Invited
Nanocomposites of Polymers and Carbon-based Nanofillers: Enhancing Mechanical Properties through Synergistic Modular Fabrication and Computational Design: SonBinh Nguyen; 1Northwestern University

11:00 AM Design Principles for Solid-state Sodium Superionic Conductors via First-principles Calculations and Experimental Verifications: Shun-Li Shang; Zhaoxin Yu; Yi Wang; Donghai Wang; Zi-Kui Liu; 1Pennsylvania State University
11:20 AM  Magnetic Fields and Thermal Gradients: Simulated Engineering of Three-dimensional Microstructure through Thermomagnetic Manipulation: Philip Goins¹; Efrain Hernandez-Riviera¹; Mark Tschopp¹; ¹Army Research Laboratory

11:40 AM  Thermodynamic Stability Maps for the La0.6Sr0.4Co0.2Fe0.8O3–δ–SO2–O2 System for Application in Solid Oxide Fuel Cells: Shadi Darvish¹; Yu Zhong¹; ¹Florida International University

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**Program Organizers:** Lan Li, Boise State University; Kevin Huang, University of South Carolina; Winnie Wong-Ng, National Institute of Standards and Technology

**Thursday AM**
Room: 329  Location: DLL Convention Center

**Session Chair:** Kevin Huang, University of South Carolina

**8:00 AM**
A Facile Preparation of Methyltriethoxysilane Based Transparent Silica Xerogel Monoliths: Xuan Cheng¹; Ziwei Niu¹; Xiaoyong He¹; Bicheng Tang¹; Liuying Huang¹; Ying Zhang¹; ¹Xiamen University

**8:20 AM**
A Hybrid Porous Spherical Structure for Enhanced Energy Absorption: Baoxing Xu¹; ¹University of Virginia

**8:40 AM**
CAD-integrated Modelling of Lattice Structures for Additive Manufacturing and Property Evaluation of Generated Specimens: Richard Kordass¹; Peter Koch¹; Thomas Toeppel¹; Hannes Kom¹; Christine Schöne¹; Bernhard Mueller¹; Ralph Stelzer¹; ¹Fraunhofer Institute for Machine Tools and Forming Technology IWU; ¹Technische Universität Dresden

**9:00 AM**
Creating High Surface Area SiOC Materials Using Different Additives: Kathy Liu¹; Donald Erb¹; ¹Virginia Tech

**9:20 AM**
Fabrication of Engineered Aerogel with Micro-Scale Interconnected Porosity for Volatile Halide Capture: Bonan Wang¹; Krista Carlson¹; Benjamin Boesl¹; Arvind Agarwal¹; ¹Florida International University

**9:40 AM**
Fabrication of Ni-based Metallic Scaffolds with Dual Level Porosity: Arun Bhattacharjee¹; Haozhi Zhang¹; Ajith Achuthankutty¹; Aditya Patibandla¹; Ashley Paz y Puente¹; ¹University of Cincinnati

**10:00 AM** Break

**10:20 AM**
Porosity Characterization of Solution-processed ITO Films by Neutron Reflectometry: Ning Xia¹; Valeria Lauter¹; Rosario Gerhardt¹; ¹Georgia Institute of Technology; ²Oak Ridge National Laboratory

**10:40 AM**
Synthesis and Characterization of Aluminosilicate Network Structures with Controllable Porosity: Applications as Light-weight Mechanically Robust Thermal Insulators: Pratish Rao¹; Moe Momayeza¹; Krishna Muralidharan¹; Keith Runge¹; Douglas Loy¹; ¹University of Arizona
Additive Manufacturing of Composites and Complex Materials II – Poster Session
Program Organizers: Dirk Lehmhus, ISIS Sensorial Materials Scientific Centre; Jonathan Spowart, Air Force Research Laboratory; Nikhil Gupta, New York University

Tuesday AM
October 10, 2017
Room: Exhibition Hall
Location: DLL Convention Center

A-1: 3D Printing of Hierarchical Porous Thermoplastic Polyurethane Foam with Tuned Piezoresistivity Behavior: Qiyi Chen; ‘Case Western Reserve University
A-2: Additive Manufacturing of Clay Modified with Primary Battery Waste: Edisson Ordóñez; Henry Colorado; ‘Universidad de Antioquia
A-4: Development of SiC Ceramics with Complicated Shape Using the FDM Type 3D Printer: Hisaya Masuda; Yoshio Ohita; Mikito Kitayama; ‘Fukuoka Institute of Technology
A-5: Surface Morphology of Additive Manufactured Metal Matrix Composites: Cindy Waters; Bernard Ilogebe; Mohammad Khan; Any Elliott; ‘NCA&T State University; ‘Manufacturing Demonstration Facility - Oak Ridge National Laboratory

Additive Manufacturing of Metals: Fatigue and Fracture – Poster Session
Program Organizers: Nikolas Hrabe, National Institute of Standards and Technology; Nicholas Barbosa, National Institute of Standards and Technology; Richard Rickor, National Institute of Standards and Technology; Steve Daniewicz, University of Alabama; Nima Shamsaei, Auburn University; Mohsen Seifi, Case Western Reserve University/ASTM International

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

A-6: Characterization of Surface Roughness at Several Downward Facing Angles in Additive Manufacturing: Eric Tatman; Joy Gockel; Luke Sheridan; Bo Whip; ‘Wright State University

Additive Manufacturing of Metals: Microstructure and Material Properties – Poster Session
Program Organizers: Andrzej Wojcieszynski, ATI Powder Metals; Ulf Ackelid, Freemelt AB; Ola Harrysson, North Carolina State University; Sudarsanam Babu, The University of Tennessee, Knoxville

Tuesday AM
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A-8: Experimental Research on Solidification of Duplex Stainless Steel Refined by Complex-nucleus with TiN: Zongxu Pang; Rong Zhu; Tu Kailu; ‘University Of Science and Technology Beijing
A-9: Manufacturing of Titanium Porous Layers by LENS Method: Tomasz Durejko; Magdalena Lazinska; Justyna Aniszewska; Paweł Jóźwik; ‘Military University of Technology
A-10: On the Microstructure of Alloy 625 Produced by Laser AM: Cilene Medeiro; André Luiz Pinto; M.Grace Burke; Guillermo Solórzano; ‘Department of Chemical and Materials Engineering, PUC-Rio, Rio de Janeiro, Brazil; ‘Brazilian Center of Research in Physics, Rio de Janeiro, Brazil; ‘Materials Performance Centre, University of Manchester; ‘Department of Chemical and Materials Engineering, PUC-Rio, Rio de Janeiro, Brazil
Additive Manufacturing of Metals: Post Processing – Poster Session
Program Organizers: Ola Harrysson, North Carolina State University; Andrzej Wojcieszynski, ATI Powder Metals; Ulf Ackelid, Freemelt AB; Sudarsanam Babu, The University of Tennessee, Knoxville
Tuesday AM Room: Exhibition Hall October 10, 2017 Location: DLL Convention Center

A-12: Development of a Stress Relief Treatment for SLM UNS N07718 API for Use in Oil and Gas Applications: Madison Burns1; Florian Hengsbach2; Christoph Wangenheim2; Kay-Peter Hoyer2; Mirko Schaper2; 1Paderborn University, Lehrstuhl für Werkstoffkunde; 2Paderborn University, Lehrstuhl für Werkstoffkunde; 3Baker Hughes INTEQ GmbH
A-13: Application of Hydrogen Sintering and Phase Transformation for Post Treatment of Gas Dynamic Cold Spray Deposits of Titanium Alloys: Gehn Ferguson1; James Paramore1; Brady Butler1; Blake Barnett1; 1U.S. Army Research Laboratory

Advanced Coatings for Wear and Corrosion Protection – Poster Session
Program Organizers: Evelina Vogli, LiquidMetal Group Holdings, Inc.; Fei Tang, DNV GL; Emad Omran, University of Wisconsin - Milwaukee; Afsaneh Dorri Moghadam, University of Wisconsin- Milwaukee; Pradeep Menezes, University of Nevada Reno; Pradeep Rohatgi, University of Wisconsin-Milwaukee
Tuesday AM Room: Exhibition Hall October 10, 2017 Location: DLL Convention Center Session Chair: Evelina Vogli, LiquidMetal Group Holdings

H-1: Air Plasma Spray Preparation of HfO2/Mullite/Mo(Si,Al)2 Environmental Barrier Coatings: Hao Lan1; Chuanging Huang; Weigang Zhang1; 1Institute of Process Engineering, Chinese Academy of Sciences
H-2: Development of a New Synthesized Organic Pigment for Coatings and Its Evaluation: Weixiu Zeng1; Qixin Zhou1; 1The University of Akron
H-3: Electrodeposited Sn-Ni-graphene Oxide Composite Coatings for Improved Corrosion Resistance of Mild Steel in 3.5% NaCl: Anshul Kamboj1; 1Indian Institute of Technology, Roorkee, India
H-4: Friction and Wear Behaviour of Ceramic-composites Integrated Structure and Lubricating Function: Litian Hu2; Hengzhong Fan3; Junjie Song1; Yunfeng Su1; Yongsheng Zhang1; 1Lanzhou Institute of Chemical Physics of the Chinese Academy of Sciences
H-5: Establishment of the Relationship between the Microstructure Characteristics and the Heat Resistance of Silicate Coatings Obtained under SHS Conditions: Borys Sereda1; Dmytro Sereda2; 1DSTU; 2Zaporizhzhya State Engineering Academy
H-6: Natural Product as Corrosion Inhibitor for Stainless Steel in Acidic Medium: Omotayo Sanni1; Abimbola Popoola1; 1Tshwane University of Technology
H-7: Obtaining of Wear-resistant Carbide Coatings on High-carbon Steels under SHS Conditions: Borys Sereda1; Dmytro Sereda2; 1DSTU; 2Zaporizhzhya State Engineering Academy
H-8: Production of Highly Effective SHS Coatings Operating in Oxidizing and Corrosive Environments: Borys Sereda1; Dmytro Sereda2; 1DSTU; 2Zaporizhzhya State Engineering Academy

Advanced Manufacturing, Processing, Characterization and Modeling of Functional Materials – Poster Session
Program Organizers: Markus Chmielus, University of Pittsburgh; Mohammad Elahinia, University of Toledo; Reginald Hamilton, The Pennsylvania State University; Haluk Karaca, University of Kentucky; Reza Mirzaei, Virginia Tech
Tuesday AM Room: Exhibition Hall October 10, 2017 Location: DLL Convention Center

J-1: Characterization of Direct Laser Deposited Magnetocaloric Ni-Co-Mn-Sn: Erica Stevens1; Katerina Kimes1; Anna Wojcik2; Wojciech Maziarz2; Jakub Toman1; Markus Chmielus1; Volodymyr Chernenko2; 1University of Pittsburgh; 2Polish Academy of Science; 3BCMaterials & University of Basque Country; Ikerbasque, Basque Foundation for Science
J-2: Isotropic Negative Thermal Expansion Metamaterials: Lingling Wu1; Bo Li1; Ji Zhou1; 1Tsinghua University

Advanced Materials for Oil and Gas Applications - Performance and Degradation – Poster Session
Program Organizers: Yellapu Murty, MC Technologies LLC; Paal Bratland, OneSubsea; Andrzej Wojcieszynski, ATI Powder Metals; Maria Sawford, ATI; Xi Shan, GE Oil & Gas
Tuesday AM Room: Exhibition Hall October 10, 2017 Location: DLL Convention Center

H-9: Influence of Thermomechanical Schedules on the Crystallographic Texture and Impact Toughness Anisotropy in API X70 Steel: Pavel Glukhov1; Alexandr Kononov1; Nikolay Kolbasnikov1; Oleg Sychev2; 1Peter the Great St. Petersburg Polytechnic University; 2PISC Severstal
G-1: Characterization of Inclusions in Slab of Grain-oriented Silicon Steel: Ming Li; Qiang Ren; Jiayi Wang; Lifeng Zhang; 1University of Science and Technology Beijing

G-2: Influences of Zinc on the Erosion of Blast Furnace Hearth Refractories: Qiangjian Song; Xiaojun Ning; Jianliang Zhang; Kexin Jiao; Cui Wang; Yang Liu; 1The University of Science and Technology Beijing

G-3: Control of Non-metallic Inclusions in High Quality Saw Wires: Min Jiang; Xinhua Wang; Kun-Peng Wang; 1University of Science and Technology Beijing

G-4: Correlation of Microstructure and Mechanical Properties in Welded Joints of 12MnNiVRF Pressure Vessel Steel Subjected to High Heat Input Electrogas Welding: Yang Shen; Cong Wang; 1Northeastern University

G-5: Development of Steel Suitable for Two-side Enameling: Mohamed Safa; Tarek Khalefa; Mohamed Aboud; 1EZDK; 2Cairo University

G-6: Distribution of Non-metallic Inclusions along the Thickness of Q345D/E Steel Slab: Xincheng Wang; Wen Yang; Lifeng Zhang; Ying Wang; 1University of Science and Technology Beijing

G-7: Double Slag Modification Method for Reducing Slag Oxidation of IF Steel: Yanzhao Luo; 1Shougang Research Institute of Technology

G-8: Granulation of FeSi Alloy by Rotary Multi-nozzles Cup Atomizer: Wenchoa He; Xuweii Lv; Xueqin Li; Jie Qiu; 1Chongqing University

G-9: Evolution Behavior and Refinement Mechanism of Inclusion by Magnesium Treatment in Al-killed Steel: Chengjun Liu; Zhe Yu; Qing Zhao; 1Northeastern University

G-10: Experimental Investigation on Inclusions in Hot Rolled Axle Steel by the Mold Casting: Yanbin Yin; Jiongming Zhang; Jinhao Han; Mingzhi Zhai; 1State Key Laboratory of Advanced Metallurgy, University of Science and Technology Beijing

G-11: Experimental Study on MnS Inclusion in Continuously Cast Bloom of Rail Steel: Sen Luo; Bingyu Wang; Weiling Wang; Miaoyong Zhu; 1Northeastern University

G-12: Improving Burnt Edge Defects in Boron-alloyed Steel: Mohamed Safa; 1EZDK

G-13: Increasing the Lifetime of Large Forging Dies by Repairwelding: Michal Ducheck; Martina Koukolikova; 1COMTES FHT

G-14: Influences of Cooling Rates on Precipitation Behavior and Austenite Phase Transformation in High Ti Microalloyed Steel: Tao Liu; Dengfu Chen; Mujun Long; Junsheng Cao; Lintao Gui; Huamei Du; 1Chongqing University

G-15: Microstructural Evolution and Mechanical Properties of a Prototype 0.2C-6Mn-1Si-1Al Third Generation Steel: Vivek Patel; Joseph McDermid; 1University of Science and Technology Beijing

G-16: Migration Behavior of Inclusions in Molten Steel under the Treatment of Electric Current Pulse: Wenbin Dai; Xinhui Wang; Danbin Jia; Xiang Zhao; Jingkun Yu; 1Northeastern University

G-17: Modification of Oxide Inclusions in Q345D Steel: Yi Wang; Lifeng Zhang; Wen Yang; Qiang Ren; Dongteng Pan; Xincheng Wang; Libin Sun; 1University of Science and Technology Beijing

G-18: Nano-sized Carboide Precipitates in High-strength Low-alloy Steels: Kaiping Du; Yueguang Yu; Shuting Zhang; Ji Shi; 1Beijing General Research Institute of Mining and Metallurgy

G-19: Non Equilibrium Thermodynamics of Quench and Partition Steels: Amit Behera; Gregory Olson; 1Northwestern University

G-20: Numerical Analysis on Effect of Additional Gas Injection on Characteristics around Raceway in Melter Gasifier: Kaiping Du; Shengli Wu; Zhekai Zhang; 1Beijing General Research Institute of Mining and Metallurgy; 2School of Metallurgical and Ecological Engineering, University of Science and Technology Beijing

G-21: Numerical Study of Nail Board Experiments to Determine the Characteristics of the Surface in the CC Mold: Wei Liu; Shufeng Yang; Weihua Zhang; Jingshe Li; Xueliang Zhang; 1University of Science and Technology Beijing; Hesteel Group Tangsteel Company; 2Shougang Jingtang United Iron & Steel Co. Ltd.

G-22: Numerical Study of Steel Flow and Inclusion Removal during RH Degassing Process: Wei Liu; Shufeng Yang; Weihua Zhang; Jingshe Li; Xueliang Zhang; 1University of Science and Technology Beijing

G-23: Prediction of Precipitation Strengthening of l-carboide in Austenite-based Low-density Steel: Jaesun Lee; Siwook Park; Hwangsun Kim; Seong-Jun Park; Phanair Madakashira; Heung Nam Han; 1Seoul National University; 2Korea Institute of Materials Science

G-24: Research of CO2−O2 Mixed Injection Steelmaking in 300T Converter: Xueliang Wang; Rong Zhu; Binglong Zhang; Jiming Bian; Yiqiang Zhu; Wenhe Wu; 1University of Science and Technology Beijing; 2Shougang Jingtang United Iron & Steel Co. Ltd.

G-25: Simulation and Application of the Coherent Oxygen Supplying Technology with Low Calorific Value Fuel Gas in EAF Steelmaking Process: Wei Guangsheng; Dong Kai; Liu Runzao; Wu Xuebao; 1University of Science and Technology Beijing

G-26: Simulations and Modeling of Metallurgical Phenomena Produced on Pressing in SHS-conditions: Borya Sereda; Dmytro Sereda; Irina Kryglyak; 1DSTU; 2Zaporizhzhya State Engineering Academy

G-27: Study on the Reducing Reaction Characteristics of the Iron Oxide Briquettes under H2 and CO Mixtures: Xiaowei Wang; Jian Liang Zhang; Zhenjian Liu; Xingle Liu; 1University of Science and Technology Beijing; 2University of Science and Technology Beijing

G-28: Study on the Effect of Unburned Pulverized Coal on the Gasification Reaction Performance of Coke: Kaishi Wang; Yifan Chai; Jianliang Zhang; Xiaoyue Fan; Guangwei Wang; 1University of Science and Technology Beijing

G-29: Study on the Reacting Behavior of Reactant and Slag in the Molten Steel: Liwu Zhan; 1University of Science and Technology Beijing

G-30: Study on the Reducing Reaction Characteristics of the Iron Oxide Briquettes under H2 and CO Mixtures: Xiaowei Wang; Jian Liang Zhang; Zhenjian Liu; Xingle Liu; 1University of Science and Technology Beijing; 2University of Science and Technology Beijing
G-31: The Influence Factors about Exacting Thickness Tolerance of Cold Rolled Strength Steel in Hot Rolling: Jiachun Xu1; Baosteel

G-32: The Influence of Chemistry and Process Parameters on the Microstructure and Mechanical Property of DP78: Mingsheng Xiu1; Hongbo Zhang1; Lin Zhang1; Guilan Li1; HBIS Tangsteel

G-34: The Temperature Measurement and Simulation Analysis for Mold Cu-tube of High Speed Billet Caster: Yang Chen1; Fu-shuai Li1; Jiong-ming Zhang1; Sai-zhen Ning1; Liang Qian1; State Key Laboratory of Advanced Metallurgy, University of Science and Technology Beijing; CCTEC Engineering Co., Ltd

G-40: The Effect of Microstructure on the Properties of Ultra High-carbon Steel Produced by Mechanical Alloying and Spark Plasma Sintering: Ibrahim Khalfallah; Alex Aning1; Virginia Tech

Advances in Dielectric Materials and Electronic Devices – Poster Session
Program Organizers: Amar Bhalla, The University of Texas at San Antonio; Ruyan Guo, The University of Texas at San Antonio; K. M. Nair, E.I. du Pont de Nemours & Co, Inc; Danilo Suvorov, Jožef Stefan Institute; Rick Ubic, Boise State University

Tuesday AM
Location: DLL Convention Center

D-1: Applications of Magnetoelectric Gradiometer and Its Vibration Rejection Enhancement Based on H-Field Modulation Technique: Junran Xu1; Xin Zhang1; Chung Ming Leung1; Jie-Fang Li1; Dwight Viehland1; Virginia Tech

D-2: Effect of Different Methods of Oxygen Treatment on Structure and Dielectric Properties of Mn-doped Ca6Sr80TiO3 Ceramics: Lin Zhang1; Michael Lanagan1; Juan Xie2; Qi Xu1; Zhonghua Yao1; Hua Hao2; Hanxing Liu1; The Pennsylvania State University; State Key Laboratory of Advanced Technology for Materials Synthesis and Processing, Wuhan University of Technology

D-3: Fixing the Navy’s Railgun: Raising the Glass Transition Temperature of PEN: Seth Kreider1; Daniel Miranda1; Penn State University

D-4: Observation of Ti-Ti Bonding in Ti/Cu/Pt-supported Rutile TiO2(110) Surface: Ab Initio Calculations: Lei Li1; Wenshi Li1; Han Qin2; Jianfeng Yang3; Canyan Zhu1; Lingfeng Mao2; University of Alberta; Soochow University

D-5: Study Broadband Dielectric Spectroscopy of (Ba,Sr)TiO3 at Different Temperatures: Maryam Sarkarat1; Michael Lanagan1; Penn State University

D-6: Effect of Pb(Zn1/3Nb2/3)O3 Addition on the Phase Transition and Ferroelectric Behavior for Pb(Zr0.95Ti0.05)O3 Ceramics: Mapeng Zheng1; Yudong Hou1; Mankang Zhu1; Beijing University of Technology

D-7: Preparation and Characterization of Aurivillius Phase Na0.5Bi2.5Nb2O9 by an Economical Aqueous Sol-Gel Technique: Yu Dong Hou1; Mu Peng Zheng2; Jing Yang Rong2; Man Kang Zhu1; Beijing University of Technology

Advances in Zinc-coated Sheet Steel Processing and Properties – Poster Session
Program Organizers: Frank Goodwin, International Zinc Association; Joseph McDermid, McMaster University

Tuesday AM
Location: DLL Convention Center

G-35: Electrochemical Properties of Continuous Galvanized Coatings on Direct Hot Pressed Steels: Caitlin Dever1; Joseph Kish1; Joseph McDermid1; McMaster University

G-36: Reactive Wetting of Advanced High Strength Steels by a Zn-Al-Mg Bath: Daniëlle De Rango1; Joseph McDermid2; McMaster University

Ceramic-based Optical Materials and Advanced Processing – Poster Session
Program Organizers: Yi-Quan Wu, Alfred University; Jas Sanghera, Naval Research Laboratory; Michael Squillante, RMD, Inc; Akio Ikuesue, World-Lab. Co., Ltd

Tuesday AM
Location: DLL Convention Center

C-1: Effects of Sintering Temperature on Structure and Photoluminescence of Eu-activated-Mg-doped Silicon Oxynitride Phosphors: Ying Zhang1; Jialin Qu1; Yuqian Zhou1; Xuan Cheng1; Jingyu Sun1; Xiamen University

C-2: Preparation of Zirconia-strengthened Alumina by Polymeric Preceramic Method: Yuanchao Li1; Zhaiyi Yang1; Wenfeng Qiu1; Tunable Materials

Construction and Building Materials for a Better Environment – Poster Session
Program Organizers: Henry Colorado, Universidad de Antioquia; Dileep Singh, Argonne National Laboratory; Flavio Silva, Pontificia Universidade Católica do Rio de Janeiro (PUC-Rio)

Tuesday AM
Location: DLL Convention Center

J-3: C4H11NO Performance on Steel-rebar Corrosion in Industrial/Microbial Simulating Environment: Joshua Okeniyi1; Abimbola Popoola2; Covenant University, Ota, Nigeria; Tshwane University of Technology, Pretoria, South Africa

J-4: Corrosion Behaviour of Steel-reinforcement in C3H7NO2S-admixed Concrete Immersed in Saline/Marine Simulating-environment: Joshua Okeniyi1; Abimbola Popoola2; Olugbenga Omotosho1; Cleophas Loto1; Elizabeth Okeniyi1; Samuel Ogbiye1; Covenant University, Ota, Nigeria; Tshwane University of Technology, Pretoria

J-5: Developing Heat Conduction Pathways through Short Polymer Chains in a Hydrogen Bonded Polymer System: Nitin Mehra1; Mu Liwen1; Jiahua Zhu1; The University of Akron
J-6: Effect of Coconut Fibers in Asphalt Properties: Yailuth Loaiza Lopera1; Edwin Garcia1; Henry Colorado1; ‘Universidad de Antioquia
J-7: Fabrication by Additive Manufacturing of Clay with Electric Arc Furnace Steel Dust (EAF Dust): Edisson Ordóñez1; Henry Colorado1; ‘Universidad de Antioquia
J-8: Physical and Mechanical Properties of Sintered Bricks Produced with Red Mud: Chen Shichao1; Bian Miaoian1; Ma Dongyang1; Sun Hui1; ‘Beijing Shenwu Environment & Energy Technology Co., Ltd.
J-10: Tannic Acid - A New Bio-based, Environmentally-friendly Hardener for Epoxy Resins: Matthew Korey1; John Howarter1; ‘Purdue University

Controlled Synthesis, Processing, and Applications of Structural and Functional Nanomaterials – Poster Session
Program Organizers: Gurpreet Singh, Kansas State University; Kathy Lu, Virginia Tech; Sanjay Mathur, University of Cologne; Edward Gorzkowski, Naval Research Laboratory; Hai Tao Zhang, UNC Charlotte; Kejie Zhao, Purdue University; Hidehiro Kamiya, Tokyo University of Agriculture and Technology
Tuesday AM Room: Exhibition Hall Location: DLL Convention Center

Funding support provided by: MilliporeSigma

I-1: Bulk Monolithic Carbon Nanofibers: Tailoring Geometry, Properties and Hybrid Structures: Mark Awater1; Roger Welsh1; Benjamin Stone1; Aif Joy1; Laura Guevara1; ‘Millersville University
I-2: Multi-Scale Mechanics and Electrical Transport in a Free-Standing 3D Architecture of Graphene and Carbon Nanotubes Fabricated by Pressure Assisted Welding: Pranjal Nautiyal1; Leslie Embrey1; Benjamin Boesl1; Arvind Agarwal1; ‘Florida International University
I-4: Carboxymethyl Cellulose and Bile Salt Network Formation with Aqueous Graphene Solution: Julie Muretta1; Katherine Kent1; Stephen Sofie1; Joseph Seymour1; ‘Montana State University
I-5: Thermal Diffusivity of Cu-Cu/RGO Composites: Hyo-Soo Lee1; Jae-Ha Kim1; Tae-Hoon Park1; ‘KITECH

Design, Processing, and Development of Structural Materials – Poster Session
Program Organizers: Tomoko Sano, U.S. Army Research Laboratory; Mitra Taheri, Drexel University
Tuesday AM Room: Exhibition Hall Location: DLL Convention Center

J-11: An Analysis of Correlation between Intergranular Fracture and Plastic Deformation in Tungsten Using Nanoindentation: Yeonjoo Oh1; Keunho Lee1; Hyun-Min Sung1; Nojun Kwak1; Heung Nam Han1; ‘Seoul National University; 2LG Production engineering Research Institute
J-12: Microstructure and Mechanical Properties of Ta Particulate Dispersed Cu-based Bulk Metallic Glass Composite by Spark Plasma Sintering: Jong Hwa Lin1; Dong Sun Seo1; Jin Kyu Lee1; ‘Kongju National University

Emerging Interconnect and Pb-free Materials for Advanced Packaging Technology – Poster Session
Program Organizers: Albert T. Wu, National Central University; Carol Handwerker, Purdue University; Fiqiri Hodaj, Grenoble Institute of Technology
Tuesday AM Room: Exhibition Hall Location: DLL Convention Center

D-8: Thermal Aging Property of Sn-(x)wt%Sb Solder for Automotive Power Module: Junhyuk Sun1; Minkyung Kim1; Dong-Yurl Yu1; Young-Bae Park2; Junghwan Bang1; ‘KITECH/MicroJoining Center; 2Andong National University /Materials Science and Engineering
D-9: Thermal Shock Reliability of Nanocomposite Sn-Ag-Cu Solder: Kyoung-Ho Kim1; Jongsuk Yoon1; Songhee Yim1; Bum-Gyu Baek1; Sehoon Yoo1; ‘Korea Institute of Industrial Technology; ‘KD One
D-10: Interfacial Reaction Mechanism Between Sn-Ag-Bi-In-(Co) Solder and Polycrystalline Copper Pad: Guo Fu1; Jing Han1; Shihai Tan1; Yu Tian1; ‘Beijing University of Technology

Failure Analysis and Prevention – Poster Session
Program Organizers: Andrew Havics, pH2, LLC; Pierre Dupont, Schaeffler Belgium Spr/Bvba; Burak Akyuz, ATS, Inc.
Tuesday AM Room: Exhibition Hall Location: DLL Convention Center

Session Chair: Andrew Havics, pH2, LLC

K-1: Failure Analysis of Ultrasonic Spot Welds of Aluminum Cables to Brass Terminals Using Analytical Electron Microscopy: C. Virgil Solomon1; Brandon Hart1; ‘Youngstown State University

Fifty Years of Metallography and Materials Characterization – Poster Session
Program Organizers: Ryan Deacon, United Technologies Research Center; Daniel Dennies, Consulting Metallurgical Engineer; George Vander Voort, Consultant - Struers Inc
Tuesday AM Room: Exhibition Hall Location: DLL Convention Center

K-3: Automated Optical Microstructural Characterization of Thermal Spray Coatings: Veeraraghavan Sundar1; Elizabeth Jenkins1; ‘UES Inc.
K-4: Advances in Automated Optical 3D Materials Characterization: Veeraraghavan Sundar1; Satya Ganti1; Bryan Turner1; ‘UES Inc.
Gas/Metal Reactions, Diffusion and Phase Transformation during Heat Treatment of Steel – Poster Session
Program Organizers: Liang He, Air Products and Chemicals Inc.; Xuekun Li, Tsinghua University; Daniel Baker, General Motors

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G-37: Influence of Different Cooling Microstructure on Surface Cracks of HSLA Steel Plate by DHCR: Banggun Wang1; Fengleng Wang2; Xiebin Zhu3; 1Anhui Polytechnic University

G-38: Study on the Precipitation Behavior of Maraging Stainless Steel: Gaitie Wu1; Gang Wang1; Shaopeng Wei1; Junying Yang1; Yiming Rong2; 1Institute of Manufacturing Engineering, Tsinghua University; 2South University of Science and Technology of China

Glass, Amorphous, and Optical Materials: Common Issues within Science & Technology – Poster Session
Program Organizers: Gang Chen, Ohio University; Steve Martin, Iowa State University

Tuesday AM
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Room: Exhibition Hall
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C-3: Crystallization Mechanism of Li2O/K2O Modified Sodium-phosphate Glasses as Solid Electrolyte: Parmajit Jha1; O. P. Pandey1; K. Singh1; 1Chandigarh University, Gharuan, Mohali; 2Thapar University, Patiala

C-4: Structures of Aluminosilicate Oxyfluoride Glasses from Molecular Dynamics Simulations: Junjie Zhao1; Xiaotong Chen1; Jinchun Du1; Qian Xu3; Zhou Luo1; Xusheng Qiao1; Xianping Fan1; 1University of North Texas; 2Massachusetts Institute of Technology

C-5: The Structure and Properties of Glasses in the Li2O-ZnO-P2O5 System: Han Zhang1; 1MST

Hybrid Organic-Inorganic Materials for Alternative Energy – Poster Session
Program Organizers: Andrei Jitianu, Lehman College, City University of New York; Lisa Klein, Rutgers University; Lia Stanciu, Purdue University; Mihaela Jitianu, William Paterson University

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E-1: Polymer-batteries for the Supply in Safe and Environment-friendly Energy: Atomistic Approach via the Ab-initio Methods: Asif Iqbal Bhatti1; 1Grenoble INP Phelma

E-2: Sr2+7+Ca2+4La2+2Fe2+3/CoyO2+d Intergrowth Oxides as Cathodes for Intermediate-temperature Solid Oxide Fuel Cells: Padmasree Padmadas1; Ke-Yu Lai2; Antonio Fuentes3; Arumugam Manthiram4; 1Cinvestav Saltillo; 2The University of Texas at Austin

E-3: The Effects of Ni-doping and Hydrogenation of TiO2 Nanotubes on Water Splitting: Yu-Ting Huang1; Chien-Cheng Lin2; Kun-Lin Lin2; Yi-Ching Huang3; 1Department of Materials Science and Engineering, National Chiao Tung University; 2National Nano Device Laboratories, National Applied Research Laboratories

E-4: Synthesis and Characterization of SnO2 Nanowire Based High Performance MnOx-NiO Supercapacitors: Lingtao Jiang1; Salim Caliskan2; Jung Kun Lee1; 1University of Pittsburgh

In-situ Characterization of Energy Materials – Poster Session
Program Organizers: Scott Speakman, PANalytical; Prashant Kumta, University of Pittsburgh

Tuesday AM
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E-5: Characterization of Lithium-ion Batteries by In-situ Electrochemical Impedance Spectroscopy: Xueyuan Zhang1; 1Gamry Instruments

E-6: Data-driven Approaches for Predicting Thermoelectric Properties: A’ona Fumanchuk1; Ankur Agrawal2; Alok Choudhary2; 1Northwestern University

E-7: In Situ Raman Characterization of CZTS Phase Formation from Sulfurization of Sol-gel Oxide Precursors in ppm-level H2S-Containing Atmosphere: Osaka Awasadallah1; Zhe Cheng2; 1Florida International University

Innovative Processing and Synthesis of Ceramics, Glasses and Composites – Poster Session
Program Organizers: Narottam Bansal, NASA Glenn Research Center; Jitendra Singh, Retired, U.S. Army Research Laboratory; Takashi Goto, Tohoku University

Tuesday AM
October 10, 2017
Room: Exhibition Hall
Location: DLL Convention Center
Session Chair: Narottam Bansal, NASA Glenn Research Center

C-6: Growth of One-dimensional BaTiO3 Nanoparticles by Hydrothermal Reaction: Yongtae Park1; Ji Eun Wang1; Changyoun Baek1; Kumjin Park2; Do Kyung Kim3; 1KAIST; 2Samsung Electro-Mechanics

C-7: Kinetic Investigations of Phaseformation Processes in the Ba(Ca,Sr)O-Al2O3-SiO2 System which Contains BaO,CaO,SrO,Al2O3-SiO2 Were Carried Out Combustor of MHD Generator: Iyoukha Nickolai1; 1Academic Ceramic Center

C-8: Researches Regarding the Structure Investigations on New Materials of the Composite Type: Alexandru Antoniu Cernaianu Stoianovici1; 1COREF

C-9: Synthesis of C Axis Oriented ZnO Nanostructured Thin Films by Laser Enhanced Electrospay-CVD: Satoshi Suehiro1; Teichi Kimura2; Seiji Takahashi3; 1Japan Fine Ceramics Center
Interfaces, Grain Boundaries and Surfaces from Atomistic and Macroscopic Approaches – Poster Session

Program Organizers: Dominique Chatain, CNRS, Aix-Marseille University; John Blended, Purdue University; Wayne Kaplan, Technion - Israel Institute of Technology

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F-8: The Largest Database of Elemental Crystal Surface Energies from High-throughput Density Functional Theory: Richard Tran1; Zihan Xu1; Balachandran Radhakrishnan1; Joseph Montoya; Wenhai Sun; Donald Winston; Kristin Persson2; Shyue Ong1; 1Department of Nanoengineering, University of California, San Diego; 2Energy Technologies Area, Lawrence Berkeley National Laboratory; 1Department of Materials Science and Engineering, Massachusetts Institute of Technology

F-9: Application of a Grain Boundary-aware Crystal Plasticity Model to Bicrystal Nanoindentation and Polycrystalline Uniaxial Tensile Deformation: Yang Su1; Philip Eisenlohr1; Thomas Bieler1; Martin Crimp1; 1Michigan State University

F-10: Cation Disorder at Interfaces in Pyrochlores: Matthew Janish1; Terry Holesinger1; Cortney Kreller1; James Valdez1; Yongqiang Wang1; Blas Uberuaga1; 1Los Alamos National Laboratory

F-11: Hollowing of Al-Au Nanoparticles by Reactive Interdiffusion: Nimrod Gazi1; Andriy Gusak1; Leonid Klinger1; Eugen Rabkin1; 1Technion - Israel Institute of Technology; 1Cherkasy National University

F-12: Inferring Mesoscale Grain Boundary Structure-property Models from the Macroscopic Properties of Polycrystals via Inverse Problem Theory: Oliver Johnson1; Christian Kurniawan1; 1UNIST(Ulsan National Institute of Science and Technology)

F-13: Microstructure Evolution in Ni Materials: Annealing-Detwinning due to Thermal Fluctuation of Incoherent Twin Boundary: Chandra Singh1; Hao Sun1; 1University of Toronto

F-15: The Effect of Grain Boundary Curvature of a Three-dimensional Polycrystalline Material: Elastic Stress and strain Field Distribution under Thermal Loading: Myeongin Lee1; Youngkjun Son1; Sihwa Sung1; Sukbin Lee1; 1UNIST(Ulsan National Institute of Science and Technology)

F-16: Thermodynamic Modelling of Precipitate Stabilization through Interface Solute Segregation: Sourabh Kadambi1; Srikanth Patala1; 1North Carolina State University

F-17: Two- and Three-dimensional Simulation of Two-phase Microstructure during Coarsening with Diffusion-controlled Monte Carlo Model: Gaewun Son1; Hyesoo Chung1; Minji Kim1; Sukbin Lee1; 1Ulsan National Institute of Science and Technology

F-18: Anti-Thermal Motion Mechanisms of Ψ(31 3) Grain Boundaries in FCC Metals: Ian Chesser1; Jonathan Humbleton1; Elizabeth Holm1; 1Carnegie Mellon University

F-19: An Atomic Approach to Dopant Segregation and Embrittlement at the Grain Boundaries of Molybdenum and its Alloys: Hui Zheng1; Richard Tran1; Balachandran Radhakrishnan1; Shyue Ong1; 1Department of Nanoengineering, University of California, San Diego

F-20: Identifying Interatomic Potentials for the Accurate Modeling of Interfacial Segregation and Structural Transitions: Yang Hu1; Jennifer Schuler1; Timothy Rupert1; 1UCI

F-21: Measuring Grain Boundary Mobility Using a Microfabricated Sun-Bauer Style Bicrystal: Xiaoting Zhong1; Amanda Krause1; Christopher Marvel1; Martin Harmer1; Gregory Rohrer1; 1Carnegie Mellon University; 2Lehigh University

International Symposium on Ceramic Matrix Composites – Poster Session

Program Organizers: Narottam Bansal, NASA Glenn Research Center; Jitendra Singh, Retired, U.S. Army Research Laboratory; Jacques Lamont, CNRS; Sung Choe, Naval Air Systems Command

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C-10: Effect of TiO2 Addition on the Slag Corrosion Resistance of MgAl2O4-CaAl4O7-CaAl12O19 Composite: Lei Xu1; Min Chen1; Nan Wang1; 1School of Materials and Metallurgy, Northeastern University

C-11: Joining of W-25Re Alloy to C/C Composite Using Titanium Interlayer and its Stability under High Temperature: Jung Hoon Koo1; Joo-Hyung Kim1; Dong Seok Kim1; Seong Taek Lim1; Do Kyung Kim1; 1KAIST; 2Agency for Defense Development

C-12: Study on Preparation and Microstructure of ZrB2 Composite Coating: Lijuan Zhou1; Chuncheng Wei1; Tianqi Wang1; Yunxia Zhao1; 1Shandong University of Technology

C-13: Study on the Sintering Process of Nickel Ferrite Spinel Based Ceramic: Yihan Liu1; 1Northeastern University

Joining of Advanced and Specialty Materials (JASM XIX) – Poster Session

Program Organizers: Boian Alexandrov, The Ohio State University; Mathieu Brochu, McGill University; Anming Hu, University of Tennessee; Darren Barbarak, A2Z WSI; Akio Hirose, Osaka University; Peng He, Harbin Institute of Technology; Zhiyong Gu, University of Massachusetts Lowell; Vikas Patel, ArcelorMittal USA

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J-13: Development of Laser Welding Process for Parts of Orthodontics: Jong-O Kine1; Jae-Hoon Lee1; Seung-Woo Lee1; 1Korea Institute of Machinery & Materials

J-14: Interfacial Characterization of Brazed Hexagonal Boron Nitride (h-BN): Maricco Rosales1; Conrado Afonso1; 1UFSCar

J-15: High Cr-Ni Superalloy Welded Joints Microstructure Evolution Submitted to Heat-treatment: Julio Spadotto1; Ivan Guillermo Solórzano1; 1PUC-Rio
J-28: Strain State Effects of Sensitization-induced β Precipitates in AA5456: Daniel Foley1; Mitra Taheri1; 1Drexel University
J-29: Study of Constant and Variable Blank Holding Force Techniques in Hydroforming of Cryorolled Al-Mg Alloy Sheets by FE Simulation: Fitsum Feyissa1; Ravi Digavalli1; 1Indian Institute of Technology Delhi
J-30: Study on Refinement and Homogenization of Microstructures of Aluminum Alloys Billet by Pulse and Magnetic Treatment: Kyungyun Kim1; Myokla Slazhniev1; Hyunsuk Sim1; Sewon Kim1; 1Dongsan Tech
J-31: Ultrasonic Vibration Assisted Laser Surface Melting Of Al 2024 Alloys and Its Influence on Microstructural Evolution: Sourabh Biswas1; Seyyed Habib Alavi1; Sanidip Harinkar1; 1Oklahoma State University
J-32: Vertical Section Phase Diagram of Mg (1-X) Sr0.5 ZnX Alloy Using Solidification Cooling Curves: Vignesh Nallasivam1; Ravi K R2; 1PSG College of Technology; 2PSG Institute of Advanced Studies
J-33: Auto-AL Recycling: A Grave-to-gate Analysis: Sean Kelly1; Diran Apelian1; 1Worcester Polytechnic Institute
J-34: Crack Propagation from a Notched Hole under Uni-axial Fatigue Loading of AA7075-T6 Sheet: Malika Khodja1; Hamida Fekirini1; Ulyane Carle1; Gary Corderley1; Grega Sodnik1; 1University of Ljubljana; 2University of Ljubljana; 3University of Ljubljana
J-35: Effect of Casting Porosity on Compressive Mechanical Property of as-Cast Magnesium Alloys: Hua Qian1; Arup Dutta1; Amit Arora1; Yijie Makhopadhyay1; 1IIT Gandhinagar
J-36: Effect of Stress State on the Fracture Behavior of Commercial Diecast Magnesium Alloys: Huayan Yang1; Xiaofeng Yang1; Wenfeng Zhao1; Xuemin Fan1; Zhiwei Huang1; 1Central South University
J-37: Effect of Strain Rate on the Mechanical Behaviour of Commercial Diecast Magnesium Alloys: Huayan Yang1; Xiaofeng Yang1; Wenfeng Zhao1; Xuemin Fan1; Zhiwei Huang1; 1Central South University
J-38: Formability of Tailor Welded Blanks Made by Friction Stir Welding: Effect of Flow Rate and Flow Profile: Ronit Dey1; Amit Arora1; Yijie Makhopadhyay1; 1IIT Gandhinagar
J-39: Fracture and Fatigue Crack Growth Behavior of As-cast vs. Forged Ti-4Al-4Nb-1Mo: Matthew Dahar1; Sesh Tamirisakandala1; John Lewandowski1; 1Case Western Reserve University
J-40: Hot Deformation/Forging and Mechanical Behaviour of 3rd Generation Al-Li Alloy: Henry Neilson1; David Schwam1; John Lewandowski1; 1Case Western Reserve University
J-41: In-situ Manufacturing Techniques for Aluminum Matrix Nanocomposites: Ifigo Anza1; Jeremy Fedors1; Eunkyung Lee1; Brajendra Mishra1; 1Worcester Polytechnic Institute
J-42: Low Temperature Thermal Conductivity of Pure Mg and Binary Magnesium Alloys: Tao Yang1; Hang Chi1; Mingyi Zheng1; Zitong Li1; Citrad Uher1; 1Shanghai Jiao Tong University; 2University of Michigan; 3Harbin Institute of Technology
J-43: Influence of Metallic Coatings on the Microstructural Development of the Metallurgical Bond for Cast-in Ferrous Inserts: Carl Soderholm1; Chiara Bertuccelli1; Lorella Ceschini1; Diran Apelian1; 1Worcester Polytechnic Institute; 2University of Bologna
J-44: Shear Band Corrosion Susceptibility in Al 6061 Extruded by Equal Channel Angular Extrusion (ECAP): Ramaitou Ly1; 1Texas A&M University
Materials Selection and Surface Analyses for 
Corrosion Prevention and Detection – Poster Session
Program Organizers: Matthew Asmussen, Pacific Northwest National Laboratory; Ajit Mishra, Haynes International; Sudhakar Mahajanam, PinnacleART; Eric Schindelholz, Sandia National Laboratory; Xueyuan Zhang, Gamry Instruments; Guang-Ling Song, Xiamen University; Luis Garfrais, Wood Group Kenny; Raul Rebak, General Electric

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Session Chairs: Ajit Mishra, Haynes International; Matthew Asmussen, Pacific Northwest National Laboratory

Mechanochemical Synthesis and Reactions in 
Materials Science II – Poster Session
Program Organizers: Antonio Fuentes, Cinvestav del IPN; Laszlo Takacs, University of Maryland Baltimore County; Challapalli Suryanarayana, University of Central Florida; Jacques Huot, Universite du Quebec a Trois-Rivieres

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Session Chair: Jing Zhang, Indiana University - Purdue University Indianapolis

Modeling and Simulation in Additive Manufacturing: 
Materials Design, Property Prediction, and Process Control – Poster Session
Program Organizers: Jing Zhang, Indiana University - Purdue University Indianapolis; Lei Chen, Mississippi State University; Li Ma, National Institute of Standards and Technology; Xinghua Yu, Oak Ridge National Laboratory; Yeon-Gil Jung, Changwon National University; Yanzhou Ji, The Pennsylvania State University; Long Qing Chen, Penn State University

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Session Chair: Jing Zhang, Indiana University - Purdue University Indianapolis

A-14: A Computer Vision Approach to Defect Analysis in Additive Manufacturing Build Components: Andrew Kitashara; Brian DeCost; Elizabeth Holm; Carnegie Mellon University

A-15: Research on Structure Optimization of Cooling Channel of Copper Staves: Fengguang Li; Hubei University of Automotive Technology
Multifunctional Oxides – Poster Session

Program Organizers: Xiaqing Pan, University of California, Irvine; Chonglin Chen, University of Texas at San Antonio; Quanxi Jia, University at Buffalo – The State University of New York; Judith Driscoll, University of Cambridge

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C-14: Multiferroic Behaviour and Magnetolectric Coupling in Fe/Ni codoped Bi3.15Nd0.85Ti3O12 Ceramics: Sumit Bhardwaj1; Sanjev Kumar2; R. K. Kotnala3; 1PEC University of Technology, Chandigarh; 2National Physical Laboratory

C-15: Optimization of Properties of Al2O3-spinel Castables for RH Snorkel Working Lining: Hongjia Guo1; 1China’s Shanghai Baoshan Iron and Steel Co., Ltd.

Multiscale Modeling of Microstructure Deformation in Material Processing – Poster Session

Program Organizers: Lukasz Madej, AGH University of Science and Technology; Krzysztof Muszka, AGH University of Science and Technology; Danuta Szelaiga, AGH University of Science and Technology

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F-31: A Continuum Model of Deformation in API X70 Steel Coated with Nanolamate Metallic Systems for High Energy Environments: Mohammed Anazi1; Hussein Zhibi1; 1Washington State University

F-32: Analysis of the Stress-strain State of the Reactors In The Process of Titanium Tetrachloride Reduction: Oleksandr Bagriichuk1; Volodymyr Khupovka1; 1PEC University of Technology, Chandigarh; 2National Physical Laboratory

F-33: Development of a Shape Memory Actuator for Aircraft Engine Turbine Blades: Richard Blocher1; Luis Bravo2; Anindya Ghoshal1; Muthuvel Murugan2; Peter Anderson1; 1The Ohio State University; 2Army Research Laboratory

F-34: Simulating and Representing the 3D Geometrically Necessary Dislocations (GNDs) Structure Evolution during Plane Deformation for Commercial Al-Alloys: Khaled Adam1; David Field1; 1Washington State University

Next Generation Biomaterials – Poster Session

Program Organizers: Roger Narayan, UNC/NCSU Joint Department of Biomedical Engineering; Jie Huang, University College London; Vidul Davé, Johnson & Johnson; Sanjiv Lwalani, Lynntech, Inc.; Marc in het Panhuis, University of Wollongong; Mohan Edirisinghe, University College London

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B-1: Comparison of Characterization Techniques for Inclusions in Fine, Superelastic Nitinol Wire: Janet Ghur1; John Pepper2; John Lewandowski1; 1Case Western Reserve University; 2ASM International

B-2: Dual Delivery of Biomacromolecules and Drug from Nanofibrous Tissue Engineering Scaffolds: Yu Zhou1; Min Wang2; 1The University of Hong Kong

B-3: Hydroxyapatite Paste Doped with Drug Encapsulated Calcium Phosphosilicate Nanoparticles for Enhanced Osteogenic Activity in Bone Tissue Engineering: Christopher Gigliotti1; Andrea Mastro1; Lauren Zarzar1; James Adair1; 1Pennsylvania State University

B-4: Magnetic Heating Behavior of Multi-component Ferrite NPs and its FEM Simulation: Celal Edip Ergun1; Oguz Soydas1; Elvan Aydin1; 1Istanbul Technical University

B-5: Synthesis Characterization of SiO2-TiO2-CaO-SrO-Na2O-P2O5 Glasses for Coating Titanium Metallic Implants: Kiel Skelly1; Anthony Weir1; 1Alfred University

B-6: Fabrication of Hydrogel Hybrid Membranes Using Bijeis Approach: Haoran Sun1; Min Wang1; 1The University of Hong Kong

B-7: Antibacterial Efficacy of Silver, Silicon Co Substituted Apatite Against Pseudomonas Aeruginosa: Poon Nian Lim1; Bow Ho2; Eng San Thian3; 1National University of Singapore; 2Singapore Precision Medical Centre Pte Ltd

B-8: Physical Anisotropy of Biomaterials to Modulate Cell Morphogenesis In Vivo for Tendon Regeneration: Zayong Wang1; Bryan Koh2; Won Jae Lee3; Wilson Wang3; Minghui Hong1; Poon Nian Lim2; Lisa Park2; Michael Kim3; Eng San Thian3; 1Hong Kong University; 2National University of Singapore; 3PWG Genetics Pte Ltd

B-9: Structural Investigations of Transition Metal Doped Apatites and Potential for Biomedical Applications: Arjak Bhattacharjee1; Tom Baikie1; Timothy White1; Indranil Manna1; Kantes Balani1; 1Indian Institute of Technology; 2Nanyang Technological University; 3Indian Institute of Technology

Non Beam-based Additive Manufacturing Approaches for Metallic Parts – Poster Session

Program Organizer: Olaf Andersen, Fraunhofer IFAM

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A-16: Binder Jet Printing of Partial Denture Metal Framework from Metal Powder: Amir Mostafaei1; Erica Stevens1; John Ference1; David Schmidt1; Markus Chmielus1; 1University of Pittsburgh
A-17: Detailed Microstructural and Electrochemical investigation of 3D Printed and Arc Melted 316L Stainless Steel: Muhammad Jahangir Khan Lodhi1; Waseem Haider1; Kashif Mairaj Deen2; Ameeq Farooq3; 1Central Michigan University; 2University of British Columbia; 3University of the Punjab

A-18: High Velocity Hybrid Thermal Spray Systems for 3-D Coatings: Dale Moody1; Peter Foy1; 1Plasma Powders and Systems Inc.

A-19: Large-scale Additive Manufacturing of Steel Structures: Michael Kottman1; Bryce Mikol1; Paul Denney1; Badri Narayanan1; 1Lincoln Electric

Phase Transformations and Microstructural Evolution in Ti and Its Alloys – Poster Session
Program Organizers: Carl Boehlert, Michigan State University; Yufeng Zheng, Ohio State University; Vahid Khademi, Michigan State University

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F-36: Mechanical Properties of Ti-Mn-Fe-Al beta Type Alloys: Masahiko Ikeda1; Masato Ueda1; 1Kansai University

Phase Transformations in Ceramics: Science and Applications – Poster Session
Program Organizers: Waltraud Kriven, University of Illinois at Urbana-Champaign; Pankaj Sarin, Oklahoma State University; Ricardo Castro, University of California, Davis; Yu Zhong, Florida International University

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C-16: Effect of Silicon on Microstructure Development between Al2O3/ SiO2/ZrO2 at 1450°C: Yu-Hsiang Chen1; Kun-Lin Lin1; Chien-Cheng Lin1; 1Department of Materials Science and Engineering, National Chiao Tung University; 2National Nano Device Laboratories, National Applied Research Laboratories

C-17: Lamp Furnace for In-situ Diffraction and Total Scattering Studies in Controlled Atmospheres: Pankaj Sarin1; Daniel Lowry1; Sanjat Ghose2; 1Oklahoma State University; 2Brookhaven National Laboratory

J-54: Microstructure and Texture of Electromagnetic Formed OFHC Copper and Glidcop Al-15: Kurt Diehl1; Daudi Waryoba1; 1Penn State University, DuBois

Rare Earth Metals, Compounds, and Alloys: Synthesis, Processing, Emerging Applications, Recent Advances, Future Challenges – Poster Session
Program Organizers: Yellapu Murty, MC Technologies LLC; Eric Klier, U.S.Army Research Laboratory; Jack Lifton, Jack Lifton LLC

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J-55: Effect of Processing Method on Thermal Conductivity of Mg-Ce-Zn-Zr Alloy: Lingfei Hu1; Guangxin Wu1; Jieyu Zhang1; 1Shanghai University

Recent Advances in Computer-aided Materials Design – Poster Session
Program Organizers: Huan Tran, University of Connecticut; Ghanshyam Pilania, Los Alamos National Laboratory; Alexey Kolmogorov, Binghamton University, State University of New York; Mina Yoon, Oak Ridge National Laboratory; Son Hoang, University of Connecticut

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F-37: Computational Investigation of High-coercivity Low-dysprosium Nd-Fe-B Magnets: Catherine Galligan1; Matthew Tianen1; Yongmei Jin1; 1Michigan Technological University

F-38: Data Visualization Tools For Microstructure Discovery in the ASM Microstructure Library: Junrong Huang1; Brian DeCost1; Elizabeth Holm1; 1Carnegie Mellon University

F-39: Formation Energy and Migration Behavior of Complex Point Defect in 0-Ga2O3: Yvette Anguiano1; Sung Cho1; Rohan Mishra1; 1Washington University in St. Louis
F-40: HyperStructure: A Semi-automated Tool for Microstructure Informatics. Toby Francis¹; Brian DeCost¹; Elizabeth Holm¹; 'Carnegie Mellon University

F-41: Investigating the Thermal Conductivity of BAs Using Ab Initio Molecular Dynamics. Szu-Chia Chien¹; Wolfgang Windl¹; 'The Ohio State University

Responsive Functional Nanomaterials – Poster Session

Program Organizers: Ziqi Sun, Queensland University of Technology; Jiahua Zhu, The University of Akron; Wexian Li, Shanghai University; Dawei Wang, University of New South Wales; Wenping Sun, University of Wollongong; Liangzhi Kou, Queensland University of Technology; Wenzhuo Wu, Purdue University

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I-7: Preparation and Characterization of LiFePO4/C Composite for Lithium-ion Battery Cathode. Yemin Hu¹; 'Shanghai University

Semiconductor Heterostructures: Theory, Growth, Characterization, and Device Applications – Poster Session

Program Organizer: John Ayers, University of Connecticut

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D-11: Application of the Electric Circuit Model (ECM) for Strained Epitaxy to Continuously-graded Layers with Exponential Profiles. Tedi Kujofsa¹; John Ayers¹; 'University of Connecticut

D-12: Characterization of Phase Relationships and Crystallinity in Cu2ZnSnS4 and Related Materials. Elizabeth Pogue¹; Angus Rockett²; 'University of Illinois; 'Colorado School of Mines

D-13: Raman Study on Growth of Cu2ZnSnS4 Thin Films from Non-hydrazine Solutions. Indu Gupta¹; Bhaskar Mohanty¹; 'Thapar University

D-14: Thermal Cycle Annealing and Its Effect on the Threading Dislocation Density in GaAs/Si (001). Tedi Kujofsa¹; John Ayers¹; 'University of Connecticut

D-15: X-ray Dynamical Diffraction Analysis of an Al(0.6)Ga(0.6)/As/GaAs/In(0.15)Ga(0.85)As Separate Confinement Heterostructure (SCH) Laser Grown on a GaAs (001) Substrate. Fahad Althowibi¹; John Ayers¹; 'University of Connecticut

Shaping & Forming of Advanced High Strength Steels II – Poster Session

Program Organizers: Kester Clarke, Colorado School of Mines; Tyson Brown, General Motors Corporation; Myoung-Gyu Lee, Korea University; Amy Clarke, Colorado School of Mines; Kip Findley, Colorado School of Mines; Mark Stoudt, National Institute of Standards and Technology

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G-39: Constitutive Study and Modelling of High Temperature Flow Stress for YQ450NQR1 High Strength Micro-alloyed Steel Containing Vanadium. Kun Dou¹; Qiaoyun Li¹; 'State Key Laboratory of Advanced Metallurgy, University of Science and Technology Beijing

Surface Properties of Biomaterials – Poster Session

Program Organizers: Jason Langhorn, DePuy Synthes Joint Reconstruction; Susmita Bose, Washington State University; Amit Bandyopadhyay, Washington State University; Mangal Roy, Indian Institute of Technology; Venu Varanasi, Texas A & M Health Science Center

Session Chair: Amit Bandyopadhyay, Washington State University

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B-10: Mechanical Properties and In Vivo Biocompatibility Characterization of Laser Processed Ti6Al4V – Calcium Phosphate Composites. Jose Avila¹; Kevin Stenberg¹; Susmita Bose¹; Amit Bandyopadhyay¹; 'Washington State University

B-11: Surface Modification of Ti Implants by Ag-doped HA Coating for Load-bearing Bone Tissue Engineering Scaffold. Naboneeta Sarkar¹; Sam Robertson¹; Amit Bandyopadhyay¹; Susmita Bose¹; 'Washington State University

B-12: Surface Properties of Antimicrobial Copper and Its Alloys. Monika Wiałkowicz¹; Piotr Ouch¹; Beata Smyrak¹; Andrzej Mamala¹; Tadeusz Knych¹; Anna Rozanska¹; Dorota Romaniszyn¹; Agnieszka Chmielarczyk¹; Małgorzata Bulanda¹; 'AGH University of Science and Technology; 'Jagiellonian University Medical College

B-13: Titanium-Tantalum Alloy Implants for Surface Modified Load-bearing Application. Indranath Mitra¹; Kevin Stenberg¹; Susmita Bose¹; Amit Bandyopadhyay¹; 'Washington State University

B-14: Tricalcium Phosphate Scaffolds with Controlled Release of Vitamin D3 for Bone Tissue Engineering Applications. Ashley Vu¹; Naboneeta Sarkar¹; Susmita Bose¹; 'Washington State University
H-13: Ceramic Coated Metal Bioimplants by Flame Assisted Flash Sintering: Amir Tavakoli1; Kirk Norasak1; Andrew Hunt2; 1Gimat LLC

H-14: Properties of Self-lubricating and Wear-resistant Coatings at Elevated Temperatures: Chaunbing Huang; Hao Lan; Shige Fang; Tianian Zhang; Weigang Zhang; 1Institute of Process Engineering, Chinese Academy of Sciences; 2Institute of Process Engineering, Chinese Academy of Sciences

Synthesis, Characterization, Properties and Applications of Functional Porous Materials – Poster Session
Program Organizers: Lan Li, Boise State University; Kevin Huang, University of South Carolina; Winnie Wong-Ng, National Institute of Standards and Technology

J-56: Infiltration Studies in Porous Aluminum Formed via Space Holder Method: Cindy Waters1; Daryll Scott; Amy Elliott; 1NCA&T State University; 2Manufacturing Demonstration Facility - Oak Ridge National Laboratory

J-57: Lower Dielectric Constant and Low Loss Insulating Films: Huayang Su; 1Industrial Technology Research Institute

The 9th International Symposium on Green and Sustainable Technologies for Materials Manufacturing and Processing – Poster Session
Program Organizers: Surojit Gupta, University of North Dakota; Jun-ichi Tatami, Yokohama National University; Tatsuki Kagawa, National Institute of Advanced Industrial Science and Technology (AIST); Mituyuajy Singh, Ohio Aerospace Institute, NASA Glenn Research Center; Marsha Bischel, Armstrong World Industries, Inc., PA; Makio Naito, Osaka University, Japan; Hisayuki Suematsu, Nagasaki University of Technology, Japan; Yiquan Wu, Alfred University, NY

J-58: Development of Fiber-reinforced Ceramic Shell for Investment Casting: Rui Guo; 1Hubei University of Automotive Technology

J-59: Effect of Post Process Heat Treatment on Microstructure and Mechanical Properties of Friction-stir-processed Cu-Be Alloy: Yeongseok Lim1; Kwangjin Lee2; 1Chonbuk national university, Korea; 2Korea institute of industrial technology

J-60: Extension of the ‘Inorganic Gel Casting’ Process to the Manufacturing of Borosilicate Glass Foams: Acacio Rincon Romero1; Michele Secco1; Sergio Tamburini1; Enrico Bernardo1; 1University of Padova; 2National Research Council (CNR-IERI)

J-61: Mechanism of Solvent-free Cannizzaro Reaction of Benzaldehydes in Presence of Calcium Hydroxide: Yuri Matsumoto1; Yoshinara Mitoma1; 1Prefectural University of Hiroshima

J-62: Novel ‘Inorganic Gel Casting’ Process for the Manufacturing of Soda-lime Glass Foams: Acacio Rincon Romero1; Enrico Bernardo1; 1University of Padova

J-63: Study on Energy Utilization of High Phosphorus Oolitic Hematite by Different Ironmaking Technologies: Hui San1; 1Beijing Shenuwu Environment & Energy Technology Co., Ltd.

Thermal Protection Materials and Systems – Poster Session
Program Organizers: Sylvia Johnson, NASA Ames Research Center; Jeff DeMange, University of Toledo; Thomas Reimer, German Aerospace Center; Wolfgang Fischer, Airbus Safran Launchers GmbH; Erica Corral, The University of Arizona

H-15: Plasmatron Tests of the ZURAM Carbon-phenolic Ablator: Thomas Reimer1; Christian Zuber1; Alessandro Turchi2; Bernd Helber1; Thierry Magin2; 1DLR; 2VKI

Titanium Powder Metallurgy – Poster Session
Program Organizers: Gnanavinthan Thavanyagam, The University of Waikato; M. Ashraf Imam, George Washington University; Susan Akbowitz, Alcoa Titanium & Engineered Products, Powder Materials Operations; James Paramore, United States Army Research Laboratory

J-65: Effect of the Alumina Content on the Interfacial Reactions between Titanium and Calcium/Zirconia/Alumina Composites: Meng-Wei Lu; Kun-Lin Lin1; Chien-Cheng Lin1; 1Department of Materials Science and Engineering, National Chiao Tung University; 2National Nano Device Laboratories, National Applied Research Laboratories

J-66: Interfacial Reactions between Titanium and Titanium Dioxide/Calcium Oxide/Yttria Composites: Kuan-Ting Lin1; Kun-Lin Lin1; Chien-Cheng Lin1; 1Department of Materials Science and Engineering, National Chiao Tung University; 2National Nano Device Laboratories, National Applied Research Laboratories
Ultra High Performance Metals, Metal Alloys, Intermetallics, and Metal Matrix Composites for Aerospace, Defense, and Automotive Applications – Poster Session

Program Organizers: Ali Yousefiani, Boeing Research and Technology; Troy Topping, California State University, Sacramento; Robert Dillon, Jet Propulsion Laboratory

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J-67: Effect of Reinforcing Particles on Local Mechanical Property and Nanoscratch Induced Deformation Behavior in an Ultrafine Grained Precipitation Hardened Al Composite: Blake Fullenwider; Kaka Ma;
1Colorado State University

J-68: First-principles Calculations of Stacking Fault Energies in Quinary High-entropy Alloy Systems: Alexandra Scheer; Joshua Strother; Chelsey Hargather; 1New Mexico Institute of Mining and Technology
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