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### Recent Advances in Structural Characterization of Materials

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**Materials Performance**

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**Fatigue and Microstructure: A Symposium on Recent Advances**

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**Measurements and Modeling of Advanced Automotive and Structural Materials at Intermediate and High Strain Rates**

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**Periodic Cellular Materials: Current Status and Recent Progress**

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| Alloy Behavior            | 82 D242/243 | X |        |         |           |          |
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### Structural Materials for Aerospace and Defense: Challenges and Prospects

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| Magnesium Alloys            | 135 D242/243 | X |        |         |           |          |
| Methods of Processing and Properties of Alloys | 143 D242/243 | X |         |         |           |          |
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| Recent Development in Oxidation Resistant Refractory Metal Alloys, Composites and Protective Coating Materials I | 35 D241 | X |        |         |           |          |
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#### Environmentally Assisted Cracking of Materials

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- **Green Manufacturing I**: D232, PM
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### Localized Corrosion - Measurement, Mechanisms and Mitigation
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- **One Dimensional Nanomaterials I**: C123, X
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- **Multidisciplinary Research in Nanomaterials**: E170, X
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- **Nanometals I: Deformation Mechanisms in Nanostructured Metals**: E170, X
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<td>Session II</td>
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<td>ACerS Richard M. Fulrath Award Symposium</td>
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<td>C113/114</td>
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<td><strong>Student Career Development</strong></td>
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<td><strong>General Poster Session</strong></td>
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<td>Biomaterial Technology (001-030)</td>
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<td>Ceramic and Glass Materials (031-069)</td>
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<td>Electronic and Magnetic Materials (070-090)</td>
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<td>Environmental and Energy Issues (091-097)</td>
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<td>Fundamentals and Characterization (098-135)</td>
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<td>Iron and Steel (136-149)</td>
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<td>Materials-Environment Interactions (150-163)</td>
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<td>Materials Performance (164-186)</td>
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<td>Nanotechnology (187-217)</td>
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<td>Processing and Product Manufacturing (218-252)</td>
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ACerS Frontiers of Science and Society Rustum Roy Lecture
Sunday PM
October 16, 2011
Room: C113/114
Location: Columbus Con. Center
5:00 PM
Reinventing Manufacturing to Answer New Global Challenges and Market Opportunity: Deborah Wince-Smith; ‘Council on Competitiveness

MS&T’11 Opening Plenary Session: Grasping Excellence: Opportunities for Science and Engineering Research, Education and Workforce Development in the United States
Monday AM
October 17, 2011
Room: Ballroom I & II
Location: Columbus Con. Center
8:30 AM Introductory Comments
8:35 AM Plenary
Innovation Ecosystems: Where do we go from here?: Subra Suresh; ‘Massachusetts Institute of Technology (MIT)
9:15 AM Plenary
Taking a Scientific Approach to Learning and Teaching STEM: Carl E. Wieman; ‘Associate Director for Science, Office of Science and Technology Policy, The White House
10:00 AM Break
10:20 AM Plenary
Responding to Increasing Energy, Environmental, Health and National Security Challenges – Investment, Policy and Talent Issues: Jeffrey Wadsworth; ‘Batelle Memorial Institute
10:55 AM Plenary
Talent Challenges in Aerospace and Defense: Alton Romig; ‘Sandia National Laboratories
11:25 AM Question and Answer Period

ACerS Richard M. Fulrath Award Symposium
Program Organizer: Mityunjay Singh, Ohio Aerospace Institute, NASA Glenn Research Center
Monday PM
October 17, 2011
Room: C113/114
Location: Columbus Con. Center
2:00 PM
Japanese Academic: Improvements in Reliability of Ceramics: Junichi Tatami; ‘Yokohama National University
2:40 PM
Japanese Industrial: Research and Development of Microwave Dielectric with Low Loss and Novel ZnO-Based Ceramic Varistor Material: Eiichi Koga; ‘Panasonic

3:00 PM
American Industrial: Porous Ceramics Materials for Clean Air Technologies: Sujanto Wedjajia; ‘Coming Inc.
3:20 PM Break
3:40 PM
Japanese Industrial 2: Low Thermal Expansion Materials: Atsushi Omote; ‘Panasonic
4:00 PM
American Academic: Two Photon Polymerization of Inorganic-Organic Hybrid Materials for Medical Applications: Roger Narayan; ‘University of North Carolina and North Carolina State University

Additive Manufacturing of Metals: Additive Manufacturing - General Session
Program Organizers: Ian D. Harris, EWI; Ulf Ackelid, Arcam AB; Ola Harrysson, North Carolina State University; Sudarsanam Babu, Ohio State University; Brent Stucker, University of Louisville
Monday PM
Room: D130
October 17, 2011
Location: Columbus Con. Center
Session Chair: Ian Harris, EWI
2:00 PM
Overview, History and Current Processes for Metal Additive Manufacturing: David Bourll; ‘University of Texas
2:40 PM
Additive Manufacturing of Nickel-Base Superalloys: Comparing Electron Beam Melting and Laser Melting: Medina Francisco; Krista Amato; John Wooten; Shane Collins; Larry Murr; Ulf Ackelid; Ryan Wicker; ‘UTEP; ‘CalRAM; ‘Directed Manufacturing Inc; ‘Arcam AB
3:00 PM
Additive Manufacturing/Direct Digital Manufacturing: An Aerospace Perspective and Assessment of the Domestic Supply Base: Stephen Szaraga; Howard Sizek; Kevin Hartke; Larry Dosser; ‘Air Force Research Laboratory; ‘Mound Laser & Photonics Center
3:20 PM Break
3:40 PM
Economic Model and Analysis of Cost Effectiveness of Rapid Manufacturing: Guha Prasanna Manogharan; Ola Harrysson; Richard Wysk; ‘NCSU
4:00 PM
3D-Printing as Manufacturing Method: Thomas Studnitzky; ‘Fraunhofer
4:20 PM
Additive Manufacturing of Metals: A Review: Edward Herderick; ‘EWI
4:40 PM
Microstructure Control and Mechanical Properties Assessment of Additive Manufactured Ti6Al4V by TIG Welding Process: Fude Wang; Stewart Williams; ‘Cranfield University
5:00 PM
Microstructure, Wear and Corrosion Properties of Nickel-Based Carbide-Metal Matrix Composite Coating Formed by Direct Metal Laser Deposition: Samar Kalita; ‘University of North Dakota
Advanced Protective Coatings for Refractory Metals and Alloys: Recent Development in Oxidation Resistant Refractory Metal Alloys, Composites and Protective Coating Materials I

Program Organizers: Ridwan Sakidja, University of Wisconsin-Madison; Brian Cockeram, Bechtel-Bettis

Monday PM Room: D231
October 17, 2011 Location: Columbus Con. Center

Funding support provided by: WARF (Wisconsin Alumni Research Foundation)

Session Chair: Matthew Kramer, Ames National Laboratory

2:00 PM Invited
Balancing the Properties of Structural Mo-Borosilicide Alloys for Ultra-High Temperature Applications: Martin Heilmayer; Manja Krueger; Heinrich Kestler; Steffen Burk; H.J. Christ; 1TU Darmstadt; 2Otto-von-Guericke University Magdeburg; 3Plansee SE; 4Universität Siegen

2:40 PM Invited
Oxidation Resistance of Nb Based Alloys from 700 to 1400°C in Air: Shailendra Varma; 1The University of Texas at El Paso

3:20 PM Break

3:40 PM Invited
Mo-Mo2B-Silicate Composites, Mechanics and Oxidation: Joe Cochran; William Daloz; Peter Marshall; 1Georgia Institute of Technology

4:20 PM Invited
Influence of Minor Element Addition on the Oxidation Performance of Mo-Si-B Alloys: Travis Sossaman; Ridwan Sakidja; John Perepekozo; 1University of Wisconsin-Madison

4:40 PM Low Temperature Oxidation Behavior of Niobium Alloys: Rabindra Mahapatra; M. A. Imam; S. K. Varma; C. E. Feng; C. E. Lei; 1NAVIR; 2Naval Research Laboratory; 3UTEP

5:00 PM Thermal Cycling Behavior of Gd2Zr2O7 Based Thermal Barrier Coatings: Li Wang; Swamy Nandikolla; M. Hamed Habibi; Patrick F. Mensah; Ravinder Diwan; S.M. Guo; 1Louisiana State University and A&M College; 2Southern University and A&M College

Advances in Dielectric Materials and Electronic Devices: Materials Synthesis, Preparation and Processing

Program Organizer: K. M. Nair, E.I.duPont de Nemours & Co, Inc

Monday PM Room: C220
October 17, 2011 Location: Columbus Con. Center

Session Chairs: X Chen, Zhejiang University; D Sinclair, University of Sheffield

2:00 PM Invited
Novel Dielectric Materials through Novel Powder Processing: Marija Kosec; Tadej Rojac; Barbara Malic; Sebastjan Glinscek; 1Jožef Stefan Institute

Advances in Manufacturing Technologies: Materials and Processing

Program Organizer: Muammer Koc, Istanbul Sehir University

Monday PM Room: D144/145
October 17, 2011 Location: Columbus Con. Center

Session Chair: Omer Cora, KTU / VCU

2:00 PM A Study on the Fracture Mechanism of Poly Crystalline Silicon in the Soldering Process of Photovoltaic Module: Lee Sang-ek; Park Tae-dong; Lee Hea-tae; Hur Tae-young; 1Hyundai Heavy Industries

2:20 PM Synthesis and Sintering of Nanopowders: Dragan Uskokovic; 1Institute of Technical Sciences of the Serbian Academy of Sciences and Arts

2:40 PM Dielectric and Ferroelectric Analysis of Nanoparticle/Nanocrystalline Barium Titanate and PLZT: Christopher DiAntonio; Todd Monson; Michael Winter; Alex Roesler; Tom Chavez; Pin Yang; 1Sandia National Laboratories

3:00 PM Ceramic Relaxor Ferroelectrics with Giant Electrocaloric Effect for Dielectric Refrigeration: Zdravko Katusik; Brigitia Rozic; Barbara Malic; Hana Ursic; Janez Hole; Marija Kosec; 1Jožef Stefan Institute

3:20 PM Break

3:40 PM Invited
Novel Material and Application Based on Garnet-Type Single Crystals: Kiyoshi Shimamura; Encarnacion G. Villora; Noboru Ichinose; 1National Institute for Materials Science; 2Waseda University

4:00 PM Synthesis and Properties of Polymer-Derived Amorphous SiBCN Ceramics: Yaohan Chen; Linan An; 1AMPAC-UCF

4:20 PM Evolution of Microstructures Due to Additives and Processing: Naresh Singh; David Knuteson; Andre Berghmans; David Kahler; John Talvacchio; Michael House; Benjamin Schreib; Sean McLaughlin; Brian Wagner; Matthew King; 1Northrop Grumman Corporation

4:40 PM Dielectric Property of Polymer-Derived SiAlCN Ceramics: Gang Shao; Linan An; 2university of central florida

5:00 PM Invited
High Performance Nano BaTiO3 Based Ceramics for Next Generation MLCC Prepared by Chemical Coating Method: Xiaohui Wang; 1Tsinghua University

5:20 PM Freeze Tape-Casting of Dielectric Composites: Edward Gorzkowski; Barry Bender; Ming-Jen Pan; 1US Naval Research Lab

www.matscitech.org
3:00 PM  Break

3:20 PM  Residual Stress and Microstructure Characterisation of Flow Formed Steel: Ceylan Kubilay; Michael Preuss; Martin Tuffs; Wayne Voice; ¹University of Manchester; ²Rolls-Royce plc

3:40 PM  The Effect of Casting Speed on the Microstructure and Mechanical Behavior of AZ31 Magnesium Alloy Produced by Twin-Roll Strip Casting: Jaesin Park; Kiho Yun; Deok Kim; Jae Joong Kim; Woo-jin Park; Dongkyun Choo; ¹RIST

4:00 PM  Study of Al-B-Si Thin Films Deposited over Polymer Substrate via Sputtering: Glorimar Ramos; Oscar Suárez; ¹University of Puerto Rico-Mayaguez Campus

4:40 PM  Technological Challenges of Commercial Aircraft Wheels and Brakes: Charles Parker; ¹Honeywell International Inc

ASM Alpha Sigma Mu Lecture

Monday PM  Room: D131  Location: Columbus Con. Center
October 17, 2011

3:00 PM  Technical Challenges of Commercial Aircraft Wheels and Brakes: Charles Parker; ¹Honeywell International Inc

3:20 PM  Mechanical Reliability Study on Porous Brittle Materials: Xiaofeng Fan; Eldon Case; Fei Ren; Yutian Shu; Melissa Baumann; ¹Michigan State University; ²Oak Ridge National Laboratory

4:00 PM  Microstructure and Mechanical Behavior of Eutectic Fe30Ni20Mn35Al15 Alloy: Fanling Meng; Ian Baker; Yifeng Liao; ¹ dartmouth college; ²Northwestern University

4:20 PM  Nanocantilever Testing of U-10Mo/Zr/Al Interfaces for Fuel Assemblies: Thomas Wynni; Patricia Dickerson; Kester Clarke; David Dombrowski; Nathan Mara; ¹Los Alamos National Laboratory

4:40 PM  Slow Growth of Microcracks in Hydroxyapatite Introduced by Vickers Indentation: Yutian Shu; Eldon Case; Melissa Baumann; ¹Michigan State University

5:00 PM  Measurement of Anisotropic Elastic Constants Using Laser Generated Surface Acoustic Waves: Peng Zhao; Changdong Wei; Ji-Cheng Zhao; ¹Ohio State University

5:20 PM  Concluding Comments

5:30 PM  Cancelled

Beyond Property Measurement -- Mechanical Behavior of Multifunctional Materials Systems: Mechanical Characterization across Multi-Functional Systems

Program Organizer: Andrew Gouldstone, Northeastern University

Monday PM  Room: C122  Location: Columbus Con. Center
October 17, 2011

2:00 PM  Introductory Comments

2:20 PM  An Ultra Strength Multifunctional Nanocomposites Enhanced by Ionic Liquid Functional Carbon Nanotubes: zhe wang; Hansang Kim; Tomas Hahn; ¹UCLA

2:40 PM  Applicability of Scratch Testing in Evaluation of Mechanical Behaviour of Thick WC-Based Thermally Sprayed Coatings: Arash Ghahchi; Kenneth Holmberg; Sanjay Sampath; ¹SUNY, Stony Brook; ²Technical Research Center of Finland(VTT)

3:00 PM  Research on the Mechanism of Damping Attenuation Behavior of Alloys: Shawei Liu; Xiaofeng Hu; Haichang Jiang; Lijian Rong; Yiyi Li; ¹Institute of Metal Research, Chinese Academy Sicences

Ceramic Matrix Composites: CMC Applications

Program Organizers: Narottam Bansal, NASA Glenn Research Center; J. P. Singh, U.S. Army Research Laboratory; Jacques Lamon, CNRS; Sung Choi, Naval Air Systems Command

Monday PM  Room: C122  Location: Columbus Con. Center
October 17, 2011

Session Chairs: Monica Ferraris, Politecnico di Torino; Narottam Bansal, NASA Glenn Research Center

9:00 AM  Invited
Aerospace and Industrial Applications of C/C, C/SiC, SiC/SiC Composites at SPS: Patrick SPRIET; ¹SAFRAN

9:40 AM  Invited
Aircraft Brake Friction Materials: Peter Filip; ¹Southern Illinois University Carbondale

10:20 AM  Invited
Integration and Joining of CMCs: Monica Ferraris; ¹Politecnico di Torino

11:00 AM  Invited
Fibrous Ceramic Materials in UBE: Toshihiro Ishikawa; ¹Ube Industries, Ltd.

5:00 PM  SynFoam Structural Insulators: Brian Doud; ¹Powdermet Inc.
Continuous Improvement of Academic Programs (and Satisfying ABET Along the Way): The Elizabeth Judson Memorial Symposium: The Engineering Accreditation Process
Program Organizer: Jeffrey Fergus, Auburn University

Monday PM  Room: E160A  Location: Columbus Con. Center
October 17, 2011
Session Chairs: Janet Callahan, Boise State University; Jeffrey Fergus, Auburn University

2:00 PM Introductory Comments Jeffrey W. Fergus
2:20 PM Keynote
ABET’s Perspective on CQI, Innovation, and the Accreditation Process: Michael Milligan1; ‘ABET, Inc.
3:00 PM
Engineering Accreditation: Not Such a Mysterious Process after All: Gillian Bond2; ‘New Mexico Tech
3:20 PM Break
3:40 PM Invited
The Role of Societies in the Accreditation Process: Steve Yalisove1; ‘University of Michigan
4:00 PM Invited
International Accreditation of Engineering Programs by ABET: Chester Van Tyne1; ‘Colorado School of Mines
4:20 PM
Program Evaluators – The Key to an Effective and Consistent Accreditation Process: Jeffrey Fergus1; ‘Auburn University
4:40 PM Invited
ABET Visit Preparation from the Perspective of a Program Evaluator: Carl Boehlert1; ‘Michigan State University

Controlled Synthesis, Processing and Applications of Structural and Functional Nanomaterials: Zero Dimension Nanomaterials
Program Organizers: Kathy Lu, Virginia Tech; Xudong Wang, University of Wisconsin - Madison; Eugene Olevsky, San Diego State University; Gurpreet Singh, Kansas State University; Nitin Chopra, The University of Alabama; Pu-Xian Gao, University of Connecticut; Jianyu Liang, Worcester Polytechnic Institute

Monday PM  Room: C123  Location: Columbus Con. Center
October 17, 2011
Session Chair: Eugene Olevsky, San Diego State University

2:00 PM
Heterostructured Powders for Photocatalytic Hydrogen Production: Nanocrystalline TiO2 Shells Surrounding Microcrystalline (Ba, Sr)TiO3 Cores: Li Li1; Paul Salvador1; Gregory Rohrer1; ‘CMU

2:20 PM
Micro- and Nano-Structures of I-III-VI2-Based Materials Prepared via Solvothermal Processes: Balumurugan Karuppannan1; Jacqueline Sturgeon2; Johanna Burnett1; Kristin Bunker1; Karen Harris1; Jennifer Aitken1; ‘Duquesne University; ‘RJ Lee Group

2:40 PM
Nanoparticle Formation Utilizing the Interaction of Femtosecond Laser Pulses with Interfaces: Ryan Murphy1; Michael Aberle1; Ben Torralva1; Steven Yalisove1; ‘University of Michigan

3:00 PM
Structural Analysis on the Quantum Dots (CdSe/ZnS) Using Ab-Initio Calculations: Lan Hee Yang1; Sangil Hyun1; Eunhae Koo1; ‘Korea Institute of Ceramic Engineering & Technology
3:20 PM Break
3:40 PM
Synthesis of Fe3O4/SiO2 Core-shell Structured Microspheres for Biomedical Applications: Zheng Ren1; Puxian Gao1; ‘University of Connecticut
4:00 PM
Synthesis and Surface Energetics of Lithium deficient LiNiO2 Nanoparticles: Ricardo H. R. Castro1; Minghui Zhu1; Beibei Wang1; ‘University of California at Davis
4:20 PM
Effect of Annealing and Transition Metal Doping on Structural, Optical and Magnetic Properties of ZnO Nanomaterial: Navendu Goswami1; ‘Jaypee Institute of Information Technology
4:40 PM
Effect of Material Strain on Embedded Quantum Dot Fluorescence with Application to Strain Sensing: Kyle Ford1; Michael Collins1; Dominick Dowds1; Nassim Ajami1; Kevin Mantey2; Ghassan Al-Chaar1; Jonathan Trovillion1; Munir Nayfeh1; Charles Marsh1; ‘ERDC-CERL; ‘University of Illinois
5:00 PM
Synthesis of Nano Cobalt by Using Liquid Phase Reduction Method and Their Characteristics: Jin ho Lee1; Se Hwan An1; Jin Woo Kim1; Young Do Kim1; ‘Hanyang University

Deformation and Transitions at Grain Boundaries: Boundary Characterization Methodology
Program Organizers: Thomas Bieler, Michigan State University; Douglas Spearot, University of Arkansas; Rozalija Barabash, Oak Ridge National Laboratory; Shen Dillon, University of Illinois at Urbana-Champaign; Jian Luo, Clemson University

Monday PM  Room: C121  Location: Columbus Con. Center
October 17, 2011
Session Chairs: T Ben Britton, University of Oxford; E-Wen Huang, National Central University

2:00 PM Invited
Slip Bands and Grain Boundaries: A High Accuracy EBSD Study: T Ben Britton1; Angus Wilkinson1; ‘Department of Materials, University of Oxford
2:20 PM
Characterization of Geometrically Necessary Dislocations near Grain Boundaries by 3D-XRD: Leyun Wang1; Rozalija Barabash2; Philip Eisenlohr1; Martin Crimp2; Carl Boehlert2; Hongmei Li1; Thomas Bieler1; ‘Michigan State University; ‘Oak Ridge National Laboratory; ‘Max-Planck-Institut für Eisenforschung
2:40 PM Invited
Measuring Gradients of Orientation and Deformation Using High Energy Synchrotron X-Rays: Matthew Miller; Ulrich Lienert; Robert Suter; Joel Bernier; Nathan Barton; Michael Mills; Matthew Brandes; Cornell University; Advanced Photon Source/ANL; Carnegie Mellon University; Lawrence Livermore National Laboratory; The Ohio State University

3:00 PM Invited
Spatially-Resolved Microdiffraction Studies of Local Grains, Strains and Phase Transitions: John Budai; Jonathan Tischler; Alexander Tselev; Andrei Kolmakov; Sergei Kalinin; Oak Ridge National Laboratory; Southern Illinois University

3:20 PM Break

3:40 PM
In-situ Observation of Damage Accumulation in Cu Wire by High Energy X-ray Diffraction Microscopy: S. F. Li; I. Lind; C. Hefferman; R. Pokharel; A. Rollett; U. Lienert; R. Suter; Carnegie Mellon University, Department of Physics; Carnegie Mellon University; Carnegie Mellon University, Department of Material Science and Engineering; Argonne National Lab, Advanced Photon Source

4:00 PM Invited
Study Boundary Deformation between Matrix Grains and Nano Precipitates with Neutron Diffraction and Molecular Dynamic Simulation: E-Wen Huang; Yu-Chieh Lo; Jer-Yi Liao; Yu-Lih Huang; National Central University; National Sun Yat-Sen University

4:20 PM
Neutron Diffraction and Micromechanical Studies of Fatigue Crack Deformation Behavior and Grain Boundary Damage: Yanfei Gao; Lili Zheng; Sooyool Lee; Rozaliya Barabash; Peter Liaw; Univ of Tennessee; Oak Ridge National Laboratory

Emerging Frontiers in Surface Engineering of Biomaterials: Smart Surfaces, Nano Structure and Systems
Program Organizers: Kantesh Balani, Indian Institute of Technology Kanpur; Arvind Agarwal, Florida International University; Sandip Harimkar, Oklahoma State University; Winston Soboyejo, Princeton University

Monday PM Room: C226 Location: Columbus Con. Center

Session Chairs: Arvind Agarwal, Florida International University; Kantesh Balani, Indian Institute of Technology Kanpur

2:00 PM Keynote
Biomimetics: Lessons from Nature: Bharat Bhushan; The Ohio State University

2:40 PM
Wettability Control of Surfaces Using Roll-to-Roll Nanoimprint Lithography (R2RNIL): John Clay; Jeff Ellis; Battelle Memorial Institute

3:00 PM
Surface Constructions of Nano-Micro Nest-Like Structured CaP Biomaterials and Their Biocompatibility: Changjian Lin; Ren Hu; Liwen Lin; Longxiang Lin; Xiamen University

3:20 PM Break

3:40 PM Invited
Hybrid Hydrogel Systems Comprised of Nanoscale Heterostructures as a Multi-Functional Chemical and Biological Platforms: Nitin Chopra; The University of Alabama

4:20 PM
Surface Modification Methods to Hollow Fiber Membranes of Artificial Lung: Layer Wise Heparin-Complex and Albumin-Heparin Coatings: Narayana Garimella; Tao Zhang; Bartley Griffith; Zhongjun Wu; University of Maryland School of Medicine

4:40 PM
Functionally Graded Hydroxyapatite-Alumina-Zirconia: Kantesh Balani; Mohd. Atif Faiz; Pallavi Kesarwani; K. Madhav Reddy; Sushma Kalmodia; Bikramjit Basu; Indian Institute of Technology Kanpur; Visvesvaraya National Institute of Technology Nagpur

5:00 PM Cancelled
In Situ Microvisualization of Shell Growth in Ti6Al4V Substrates: Douglas Hansen; Karolyn Hansen; Luis Garfias-Mesias; University of Dayton Research Institute; University of Dayton; Det Norske Veritas (U.S.A.), Inc.

5:20 PM Concluding Comments

Energy Conversion/Fuel Cells: System, Stack and Component Design
Program Organizers: Matthew Seabaugh, NexTech Materials, Ltd.; Zhenguo “Gary” Yang, Pacific Northwest National Laboratory; Meilin Liu, Georgia Institute of Technology

Monday PM Room: C224 Location: Columbus Con. Center

Session Chair: To Be Announced

2:00 PM
Pressurised Operation of Reversible Solid Oxide Fuel Cells: Stephen Gamble; The University of St Andrews

2:20 PM
CO2 Conversion into C/CO Using ODF Electrodes with SOEC: Bruce Kang; Guang Guo; Gulam Iqbal; Ayyakkanna Manivannan; West Virginia University; National Energy Technology Laboratory

2:40 PM
Status of NexTech’s Solid Oxide Fuel Cell Technology: Michael Day; Scott Swartz; Gene Arkenberg; Michael Jansen; Chad Sellers; Josh Emerick; NexTech Materials, Ltd.

3:20 PM Break

3:40 PM
Flexible Ceramic Ultra-Thin Membranes for Fuel Cells: John Olenick; Kathleen Olenick; Tom Silverblatt; Jeremy Panaanen; Roman Hurny; Chad Melvin; ENrG Incorporated

4:00 PM
Fabrication of LSGMC-Based IT-SOFC Cells Using Aerosol Deposition: Joon-Hwan Choi; Jong-Jin Choi; Dong-Soo Park; Jungho Ryu; Woon-Ha Yoon; Byung-Dong Hahn; Jong-Woo Kim; Cheol-woo Ahn; Korea Institute of Materials Science

4:20 PM
Mechanical Characterization and Modeling of Next-Generation Solid Oxide Fuel Cells and Stacks: Ryan Berke; Mark Walter; The Ohio State University

4:40 PM
Fabrication and Evaluation of Glass-Ceramic Composite Seals for SOFC: Yeong-Woo Kim; RIST

Program Organizers: Zhenguo “Gary” Yang, Pacific Northwest National Laboratory; Terry Holesinger, Los Alamos National Laboratory; Xingbo Liu, West Virginia University; Chun Lu, Siemens Energy, Inc.

Monday PM Room: C223
October 17, 2011 Location: Columbus Con. Center

Session Chair: Xingbo Liu, West Virginia University

2:00 PM Keynote
Energy Storage for Advanced Electric Vehicles: Christopher Johnson1; David Howell2; 1National Energy Technology Laboratory, Department of Energy; 2Office of Energy Efficiency and Renewable, Department of Energy

2:40 PM Invited
Integrating SOC Dependent Material Properties into Li-Ion Battery Failure Modeling: Yue Qi1; 1General Motors R&D

3:20 PM Break

3:40 PM
A Phase Field Study of Intercalation Dynamics in the Storage Electrode Materials of Li-Ion Battery: Saswata Bhattacharya1; Linyun Liang1; Gerbrard Ceder2; Long-Qing Chen3; 1Pennsylvania State University; 2Massachusetts Institute of Technology

4:00 PM
Phase Field Model of Li-Plating in Lithium Ion Battery: Linyun Liang1; Saswata Bhattacharya1; Yue Qi2; Stephen J. Harris2; Long-Qing Chen3; 1The Pennsylvania State University; 2General Motors Research and Development Center

4:20 PM
Electrochemical Charge/Discharge Behavior of Li-Mg Alloy Anodes for High Capacity Lithium Batteries: Madhusudan Jagannathan1; K. S. Ravi Chandran2; 1University of Utah

4:40 PM
Aligned TiO2 Nanotubes as Long Durability Anodes for Lithium-Ion Batteries: Juchuan Li1; Qingliu Wu2; Rutooj Deshpande3; Navaladain Subramanian4; Stephen Rankin5; Fuqian Yang6; Yang-Tse Cheng7; 1University of Kentucky

5:00 PM
Understanding Diffusion-Induced-Stresses in Lithium Ion Battery Electrodes: Rutooj Deshpande3; Yang Cheng4; Mark Verbrugge5; 1University Of Kentucky; 2General Motors Global R&D Center

5:20 PM Cancelled
Nanostructured Metals and Metal Oxides for High Capacity Anodes of Li-Ion Rechargeable Batteries: Ming Au; Thad Adams; 1Savannah River National Laboratory

Environmental Assisted Cracking of Materials: Session I

Program Organizers: Ramgopal Thodup, DNV Columbus; Suresh Divi, TIMET

Monday PM Room: D233
October 17, 2011 Location: Columbus Con. Center

Session Chair: Suresh Divi, TIMET

2:00 PM
Environmental Cracking Resistance of High Nickel Alloys (CRAs) in Hostile Sour Environments: Indranil Roy1; Mauricio Mendez2; Colin Longfield1; Rashmi Bhavsar1; Manuel Mar5a7; Farghali Mohamed1; 1Schlumberger; 2University of California

2:40 PM
Modified 13Cr Tubulars in Sour Oil and Gas Service – Known Unknowns: John Meng1; Brian Chambers2; Mark Yunovich3; 1Honeywell Corrosion Solutions

3:00 PM
Hydrogen-Assisted Fracture of 21Cr-6Ni-9Mn Stable Austenitic Stainless Steel: Chris San Marchi1; Heather Jackson2; Jay Foulk2; Richard Karnesky3; Brian Somerday4; 1Sanda National Laboratories

3:20 PM Break

3:40 PM
Hydrogen Dragging and Transportation by Moving Dislocation in 316L and 304 Stainless Steel: Megumi Kitamura1; Hiroshi Suzuki1; Kenichi Takai1; Yukito Hagihara1; 1Sophia University

4:00 PM
Hydrogen Embrittlement and Lattice Defect Formation Enhanced by Hydrogen and Strain of High-strength Low-alloy Steel: Tomoyuki Nakamoto1; Hiroshi Suzuki1; Kenichi Takai1; Yukito Hagihara1; Koichi Takasawa1; 1Sophia University; 2The Japan Steel Works, Ltd., Muroran Research Laboratory

4:20 PM
Hydrogen Hardening Effect in Heavily Deformed Single Crystal a-Iron: wenbo xie2; Weixing Chen1; Hao Zhang1; 1University of Alberta

4:40 PM
Hydrogen Interactions with Austenite in Pre-Strained TRIP Steel: Joseph Ronevich1; John Speer1; George Krauss2; David Matlock1; 1Colorado School of Mines

5:00 PM
Interpretation of Crack Initiation and Crack Arrest Fracture Threshold Measurements for Steels in High-Pressure Hydrogen Gas: Kevin Nibor1; Brian Somerday2; Petros Sofronis1; Chris San Marchi2; 1,2Hy-Performance Materials Testing, LLC.; 3Sandia National Laboratory; 4University of Illinois at Urbana-Champaign

5:20 PM
On Modeling Hydrogen-Induced Intergranular Cracking under Sustained-Load: Mohsen Dadfarnia1; Petros Sofronis1; Brian Somerday2; D. Balch1; Philip Schenbri1; 1University of Illinois Urbana-Champaign; 2Sandia National Laboratories; 3Los Alamos National Laboratory

www.matscitech.org
Failure Analysis and Prevention: Tools and Techniques
Program Organizers: Andrew Spowage, The University of Nottingham, Malaysia Campus; Tom Ackerson, IMR Metallurgical Services; Larry Hanke, Materials Evaluation and Engineering, Inc
Monday PM Room: D235
October 17, 2011 Location: Columbus Con. Center

Session Chairs: Craig Clauser, Craig Clauser Engineering Consulting, Inc.; Charles White, Kettering University; Chirag Shah, Exova

2:00 PM
Quantitative Elemental Analysis in the SEM with the Silicon Drift Detector (SDD) at the Precision and Accuracy of Wavelength Dispersive Spectrometry (WDS): Dale Newbury; National Institute of Standards and Technology

2:40 PM
The Use of Micro-X-ray Fluorescence in a Scanning Electron Microscope for Failure Analysis Investigations: Daniel DeMiglio; Stork Herron Testing Laboratories

3:00 PM
The VHX-1000 Digital Microscope: Julia Des Chenes; Keyence Corporation

3:20 PM Break

3:40 PM
The Latest Advancements in Industrial 2D Digital X-ray and 3D Computed Tomography: Wes Wren; The Latest Advancements in Industrial 2D Digital X-ray and 3D Computed Tomography

4:00 PM
Image Acquisition Techniques in Optical Microscopy for Failure Analysis: Tom Calahan; Carl Zeiss MicroImaging, LLC

Fatigue and Microstructure: A Symposium on Recent Advances: Damage Accumulation
Program Organizers: Amit Shyam, Oak Ridge National Laboratory; Sushant Jha, Air Force Research Laboratory/Universal Technology Corporation; Michael Caton, US Air Force Research Laboratory
Monday PM Room: D240/241
October 17, 2011 Location: Columbus Con. Center

Session Chairs: Amit Shyam, Oak Ridge National Laboratory; Hael Mughrabi, University of Erlangen-Nürnberg

2:00 PM
Microstructural Fatigue Mechanisms - A Review of Current Work: Hael Mughrabi; University Erlangen-Nuernberg

2:40 PM
Effects of Microstructure in High Temperature Fatigue: Luc REMY; CNRS, Mines ParisTech

3:00 PM
Three-Dimensional Microstructure of Fatigue Cracked Nickel-Base Superalloys: Clayton Stein; Hael Mughrabi; Peter Keneser; S. Li; J. Lind; Recepu Pokharel; Joseph Tucker; Robert Suter; Anthony Rollett; Carnegie Mellon University; Argonne National Laboratory

3:20 PM Break

3:40 PM
Microstructure-Sensitive HCF and VHCF Simulations: Craig Pryzybyla; Nima Salajegheh; William Musinski; David McDowell; AFRL/RXLM; Georgia Institute of Technology

4:20 PM
Non-Planar Deformation as a Dominant Deformation Mechanism following Low Cycle Fatigue of a Ni-Based Superalloy: Patrick Phillips; Libor Kovarik; Raymond Unocic; Dave Mourer; Dan Wei; Michael Mills; Ohio State University; PNNL; ORNL; GE Aviation

4:40 PM
Fatigue Weaklink Density and Strength Distribution: Materials Properties: Tongguang Zhai; University of Kentucky

5:00 PM
A Microstructural Based Understanding of Hydrogen-Enhanced Fatigue of Stainless Steels: May Martin; Ian Robertson; Petros Sofrinis; Yukitaka Murakami; University of Illinois - Urbana-Champaign; Kyushu University

Glass and Optical Materials: Cooper Award Session on Glass Relaxation
Program Organizer: Pierre Lucas, University of Arizona
Monday PM Room: C111
October 17, 2011 Location: Columbus Con. Center

Session Chair: Day Delbert, Missouri University of Science and Technology

2:00 PM Introductory Comments

2:20 PM
Cooper Distinguished Lecture: The Physics of Iso-Structural Viscosity: Prabhat Gupta; The Ohio State University

3:00 PM
Impact of [Al₂O₃]/[SiO₂] on the Structure of Boroaluminosilicate Glasses: Qiuju Zheng; Randall E. Youngman; Carrie L. Hogue; John C. Mauro; Marcel Potazak; Adam J. Ellison; Morten M. Smidskjaer; Yuanzheng Yue; Aalborg University - and - Shandong Polytechnic University

3:20 PM Break

3:40 PM
Cooper Scholar Presentation 1: Enthalpy of Mixing of Mixed Alkali Glasses: Peter J. Lezzi; Rensselaer Polytechnic Institute

4:00 PM
Cooper Scholar Presentation 2: and Structure of Na₂S + P₂S₅ Amorphous Materials Prepared by Mechanical Milling and Melt-Quenching: Seth S. Berbano; Iowa State University

4:20 PM
Automatic and Robust TNM Model Parameter Estimation from Multi-Rate DSC Data: Robert Erdmann; Ellyn King; Pierre Lucas; University of Arizona

5:00 PM
Investigation of Dynamic Processes in Chalcogenide Glasses by Modulated DSC: Pierre Lucas; Ozgur Gulbilen; University of Arizona
Green Technologies for Materials Manufacturing and Processing III: Green Manufacturing I

Program Organizers: Tatsuki Ohji, National Institute of Advanced Industrial Science and Technology (AIST); Mityunjay Singh, Ohio Aerospace Institute, NASA Glenn Research Center; Richard Sisson, Worcester Polytechnic Institute, Center for Heat Treating Excellence; Makio Naito, Osaka University

Monday PM  Room: D232
October 17, 2011  Location: Columbus Con. Center

Session Chairs: Diana Lados, Worcester Polytechnic Institute; Tatsuki Ohji, National Institute of Advanced Industrial Science and Technology (AIST)

2:00 PM  Keynote
Material Recovery and Recycling - Not an Option, But a Prerequisite for a Sustainable Future: Diran Apelian; 'Worcester Polytechnic Institute

2:40 PM  Invited
Innovative and Integrative Materials and Processing: The Key to an Energy-Efficient and Low-Carbon Future: Diana A. Lados; 'Worcester Polytechnic Institute

3:20 PM  Break

3:40 PM  Invited
Smart Powder Processing for Green Technologies: Makio Naito; Hiroya Abe; Akira Kondo; 'Osaka University

4:00 PM  Invited
Polyalkylene Carbonate Polymers - A Sustainable Material Alternative to Traditional Petrochemical Based Plastics: Peter Ferraro; Sugianto Hanggodo; 'Empower Materials

4:20 PM  Invited
Advanced Sustainable Polymeric Materials Derived from Non-Edible Agricultural By-Products: Applications and Life Cycle Analysis: Enrico Ferri; 'Composite Technical Services

4:40 PM  Invited
Reuse and Reproduction of Used Refractories: YU Yanwen; 'BAOSHAN IRON &STEEL CO.LTD. CHINA

5:00 PM  Cancelled
The DHS Advanced and High Performance Materials Database: A Potential Partnership between the Materials Community and the Construction and Infrastructure Industries: Gary Fischman; Drew Rouland; 'Future Strategy Solutions LLC

2:20 PM  Invited
How to Properly Determine Mechanical Properties Using Indentation Test: Xi Chen; 'Columbia University

2:40 PM  Invited
Spherical Nanoindentation and Their Corresponding Stress-Strain Curves: Michel Barsoum; 'Drexel University

3:00 PM  Invited
A FEM Based Elasto–Plastic Contact Model and Some Aspects On The Indentation Response: Minnal Mayuram; 'IIT Madras

3:20 PM  Break

3:40 PM  Invited
Scale and Stochastic Effects on Unstable Initiation of Plasticity in Nanoindentation: Yanfei Gao; Tianlei Li; Hongbin Bei; Easo George; 'Univ of Tennessee; 'Oak Ridge National Laboratory

4:00 PM  Invited
Hardening Rates at Small Contacts: William Gerberich; 'University of Minnesota

4:20 PM  Invited
Hardness Properties across the Multi-Scales of Material Structures: Ronald Armstrong; Wayne Elban; 'University of Maryland; 'Loyola University Maryland

4:40 PM  Invited
Gradient Theory and Micro/Nano Indentation: Elias Aifantis; 'Aristotle U. Thessaloniki, Greece

5:00 PM  Invited
Nanoindentation Shape and Scaling Laws: Nicola Pugno; 'Politecnico di Torino

5:20 PM  Invited
Nano- and Micro-Indentation Investigations of Room Temperature Dislocation Mobility in Ceramics: Ghatu Subhash; Dipankar Ghosh; 'University of Florida

5:40 PM  Invited
Multiscale Approach of Hardness in Aluminum Alloy - Consideration of Rate Dependent Behavior: Costas Charitidis; 'NTUA

Innovative Processing and Synthesis of Ceramics, Glasses and Composites: Advanced Processing and Characterization

Program Organizers: J. P. Singh, U.S. Army Research Laboratory; Narottam Bansal, NASA Glenn Research Center; Takashi Goto, Tohoku University

Monday PM  Room: C110
October 17, 2011  Location: Columbus Con. Center

Session Chair: John Halloran, University of Michigan

2:00 PM  Invited
Direct Digital Manufacturing of Ceramics: John Halloran; Suman Das; Vladislava Tomeckova; Susan Gentry; Ryan Breneman; Raphael Alabi; Dajun Yuan; Paul Cilino; Peng Shao; Andirudh Rundraraju; Tao Wu; Matthew Conrad; 'University of Michigan; 'Georgia Institute of Technology

2:40 PM  Invited
Transparent Armor via Radio Frequency Lamination: Shawn Allan; Inessa Baranova; Morgana Fall; Holly Shulman; 'Ceralink Inc.
Monday PM

3:00 PM
Fabrication of Hierarchical Architectures in Metal Matrix Composites: Yufeng Wu1; Giap-Long Kim2; Can Zhu; 'Iowa State University

3:20 PM
Transformation Kinetics and Microstructure Refinement in Reactively Processed Co-Continuous Ceramic Composites: John DeFouw1; Jonathan Evans2; Glenn Daehn1; 'The Ohio State University

3:40 PM Break

4:00 PM
Synthesis of Carbon-Carbon Composite via Infiltration Process of Pitch in Based-Wood Material: Mohammad Esmaeely1; Alireza Mirhabibi1; Masoud Bodaghi1; 'Industrial University Science and Technology

4:20 PM
Production of Alumina Fibers by Vapor-Liquid-Solid Mechanism from Aluminum Powder and Porous Silica Preforms: Ranran Liu1; Kaiyang Wang1; S.M. Guo2; 'Louisiana State University

4:40 PM An Investigation into Solid-State Expansion of Ceramic Materials: Ariane Erickson1; C. Hank Rawlins2; 'Montana Tech of the University of Montana; 'Montana Process Research

Interfaces, Grain Boundaries and Surfaces from Atomistic and Macroscopic Approaches -- Fundamental and Engineering Issues: Bridging the Gap between Continuum and Atomistic Approaches for Interfaces

Program Organizers: Wayne Kaplan, Technion - Israel Institute of Technology; Paul Wynblatt, Carnegie Mellon University; Dominique Chatain, Centre Interdisciplinaire de Nanoscience de Marseille; Mikel Holcomb, West Virginia University

Monday PM
Room: C120
Location: Columbus Con. Center

Session Chairs: Dominique Chatain, CINaM-CNRS; Wayne Kaplan, Technion - Israel Institute of Technology

2:00 PM Keynote
Grain Boundary Misorientation Instabilities: W. Craig Carter1; 'MIT

2:40 PM Keynote
Atomistic Modeling of Chemically Heterogeneous Solid-Liquid Interfaces: Pablo Palafox-Hernandez1; David Olmsted2; Mark Asta2; Brian Laird3; 'University of Kansas; 'University of California, Berkeley

3:20 PM Break Coffee Break

3:40 PM Keynote
Controversies and Challenges in Interface Thermodynamics: Y. Mishin4; 'George Mason University

4:20 PM Keynote
Probing the Strength of Grain Boundaries and Interfaces with High Spatial Resolution: Gerhard Dehm1; 'University of Leoben, Materials Physics

5:00 PM Critical Issues to Bridge the Gap between Continuum and Atomistic Approaches to Interfaces: Paul Wynblatt1; Hila Metzmann2; 'Carnegie Mellon University; 'Technion - Israel Institute of Technology


Program Organizers: Haiyan Wang, Texas A&M University; Nuggehalli Ravindra, New Jersey Institute of Technology; Alan Ardell, National Science Foundation; Yuntian Zhu, North Carolina State University; Xinghang Zhang, Texas A&M University; Rajiv K. Singh, University of Florida; John Prater, Army Research Office

Monday PM
Room: E170
Location: Columbus Con. Center

Session Chairs: Alan Ardell, National Science Foundation; Haiyan Wang; Texas A&M University

2:00 PM Introductory Comments

2:20 PM Invited
In-Situ TEM Studies of the Response of a Material to an External Stimulus: Ian Robertson1; Josh Kacher1; Grace Liu1; Buyang Cao2; Ben Efthim1; Kelly Nygren1; 'University of Illinois

3:00 PM Invited
The Influential Role of Prof. Jay Narayan on the Evolution of Ion Implantation and Annealing of Silicon and Germanium: Kevin Jones1; 'University of Florida

3:20 PM Invited
Nanostructure-Biomolecule Interactions: Implications for Nanomedicine and New Materials: Richard Siegel1; 'Rensselaer Polytechnic Institute

3:40 PM Break

4:00 PM Invited
Control of Defects in Thin Film Heterostructures: John Prater1; 'Army Research Office

4:20 PM Invited
Microstructural and Strength Changes in Highly Nanotwinned Cu Resulting from Various Modes of Deformation: Julia Weertman1; 'Northwestern University

4:40 PM Invited
Enhancing the Thermal Stability of Nanostructured Metals by Solute Additions: Carl Koch1; Ronald Scattering2; Brian VanLeeuwen1; Kristopher Darling1; Mark Atwater1; Shujit Mula1; Pengchao Kang1; 'North Carolina State University; 'Army Research Laboratory

5:00 PM Invited
Core-Shell Nanowires and Their Application in Fuel Cells: James Li1; 'University of Rochester

5:20 PM Invited
Bio-Inspired Structural Materials: Robert Ritchie1; Antoni Tomsia2; 'University of California Berkeley; 'Lawrence Berkeley National Laboratory

5:40 PM Invited
Retardation of Grain Growth in Nanocrystalline Zirconia by an Electric Field: Hans Conrad1; 'NC State University
International Symposium on Defects, Transport and Related Phenomena: Defects and Transport in Ceramics I

Program Organizers: Sangtae Kim, University of California, Davis; Ruediger Dieckmann, Cornell University; Doreen Edwards, Alfred University; Manfred Martin, RWTH Aachen University; Thomas Mason, Northwestern University

Monday PM Room: C122
October 17, 2011 Location: Columbus Con. Center

Funding support provided by: WCU Hybrid Materials Program, Department of Materials Science and Engineering, Seoul National University, Korea

Session Chairs: Paul Heitjans, Leibniz University Hannover; Joachim Maier, Max-Planck-Institute

2:00 PM Invited
Charge Carrier Chemistry in Nanoscopic Materials: Joachim Maier1; 1Max-Planck-Institute

2:40 PM Invited
Fast Li+ Ion Conductors for Solid State Batteries: Stefan Adams1; Rayavarapu Prasada Rao1; Mao-hua Chen1; 'National University of Singapore

3:00 PM Break

3:40 PM Invited
Ion Dynamics at Interfaces: Nuclear Magnetic Resonance Studies: Paul Heitjans1; Martin Wilkening1; 'Leibniz University Hannover

4:20 PM
Self Diffusion in Alpha-Al2O3: Tsuhasa nakagawa1; Nobuaki Takahashi1; Naoya Shibata1; Yuichi Ikuhara1; James D McGuffinCawley1; Arthur H Heuer1; 'Case Western Reserve University; 'The University of Tokyo

4:40 PM
Orientation, Oxygen Activity and Temperature Dependencies of the Diffusion of Cobalt in Cobalt Orthosilicate, Co5SiO9: Qi Tang1; Ruediger Dieckmann1; 'Cornell University


Program Organizers: Judith Schneider, Mississippi State University; Norman Zhou, Univ. of Waterloo; Leijun Li, Utah State University; Mathieu Brochu, McGill University; Bolan Alexandrov, The Ohio State University; Michael Halbig, U.S. Army Research Laboratory; Akio Hirose, Osaka University; Sammy Tin, Illinois Institute of Technology

Monday PM Room: E161B
October 17, 2011 Location: Columbus Con. Center

Session Chairs: Judy Schneider, Mississippi State University; Yuri Hovanski, Pacific Northwest National Laboratory

2:00 PM
Microstructure and Microhardness of Friction Stir Processed 2219-T6 Al Alloy: Xiuli Feng1; Huijie Liu1; Sadarsanam Babu1; Anil Chaudhary1; Matt Keller1; 'The Ohio State University; 'Harbin Institute of Technology; 'Applied Optimization

2:20 PM
Multiple-Pass Friction Stir Welding and Processing of 2014 T6 Aluminium Alloy: preetam anbukarasu1; geo harrison willfred1; ganapathy subramanian1; 'anna university

2:40 PM
Microstructure and Corrosion Investigation of Friction Stir Welds of Dissimilar Aluminum Alloys: Douglas Larson1; Benjamin Waldera1; CJ Sitter1; Samar Kalita1; 'University of North Dakota

3:00 PM
Using Linear Discriminate Analysis to Determine FSW Quality: Haley Doud1; Ben Ma1; Judy Schneider1; Jenny Du1; 'Mississippi State University

3:20 PM Break

3:40 PM
1D and 2D Friction Stir Welding Heat Generation Models: Jose Morfa1; 'Mississippi State

4:00 PM
Influence of Tool Pin Profile on the Interface Migration of Friction Stir Lap Welds: Li Xing1; Liming Ke1; 'Nanchang Hangkong University

4:20 PM
Deposition of Thick Corrosion Resistant Metallic Coatings on HY80 Steel Using Friction Stir Fabrication: Jeffrey Schultz1; 'Schultz-Creehan, LLC

4:40 PM
Effect of Groove Size on Mechanical Property in Friction Stir Welded Aluminum Alloy/Stainless Steel Lap Joint: Taichi Nishida1; Hidetsukyo Ohmichi1; Takumi Yoshida1; Hidehito Nishida1; 'Kawasaki Heavy Industries, LTD.

5:20 PM
Optimization of Mechanical Performance of Friction Spot Welded Joints in 2198-T8 Aluminium Alloy Sheets: Jorge dos Santos1; Gabriel Pieta1; 'GKSS Forschungszentrum; 'Helmholz-Zentrum Geestacht GmbH

5:00 PM
Interfacial Microstructure and Mechanical Property in Friction Stir Welded Aluminium Alloy/Stainless Steel Dissimilar Lap Joint: Tomo Ogura1; Yuichi Saito1; Hidehito Nishida1; Takumi Yoshida1; Noriko Ohmichi1; Mitsuo Fujimoto1; Akio Hirose1; 'Osaka University; 'Kawasaki Heavy Industries, LTD.

Laser Applications in Materials Technology (II): Laser Materials Processing

Program Organizer: Stephen Copley, Penn State

Monday PM Room: E161A
October 17, 2011 Location: Columbus Con. Center

Session Chair: Stephen Copley, Penn State University/Applied Research Laboratory

2:00 PM
Solid Free Form or Joining by Gas Phase Laser Oxide Deposition: Clayton Weiss1; Harris Marcus1; 'Institute of Materials Science-University of Connecticut

2:20 PM
Microstructural Analysis of Laser Sustained Nitrogen Plasma Interaction with Titanium: Amber Black1; Ravindra Akarapu1; Stephen Copley1; Judith Todd1; 'Penn State

2:40 PM
On CO2 Laser Nitriding of Titanium: Abdalla Nasser1; Ravindra Akarapu1; Stephen Copley1; Judith Todd1; 'Penn State
Monday PM

3:00 PM
Use of Two Photon Polymerization for Additive Fabrication of Small-Scale Medical Devices: Roger Narayan1; Anand Doraiswamy2; Shaun Gittard3; Aleksandr Ovsianikov4; Boris Chichkov3; 1Univ of North Carolina & North Carolina State Univ; 2Advanced Vision Science, Inc.; 3Laser Zentrum Hannover

3:20 PM Break

3:40 PM
Fabrication and Characterization of Porous Aluminum Alloys by Chemical Dealloying: Effect of Concentration and Cooling Rate: Elvin Estremera1; O. Marcelo Suarez1; Arturo Hernandez-Maldonado2; 1University of Puerto Rico

4:00 PM
The Effect of Stress on Localized Corrosion of AA7050: Junfeng Chen1; Gerald Frankel2; Liang Zhen2; Wenzhu Shao1; 1Harbin Institute of Technology; 2Ohio State University

4:20 PM
First-Principles-Based Analysis on the Role of RE Doping on Mg Alloy Corrosion: Hyunwook Kwak1; Santanu Chaudhuri2; 1ISP/Applied Sciences Laboratory, Washington State University

4:40 PM
Surface Corrosion Behavior of Electron-Excited Pure Mg: Keisuke Funatsu1; Rei Takei1; Junko Umeda2; Katsuyoshi Kondoh3; 1Graduate school of osaka university; 2Osaka university

5:00 PM
Aluminum Weld Metal Corrosion: Philip Vormelker1; Adrian Mendez-Torres1; 1Savannah River National Laboratory

5:20 PM
Cancellation of the session

Localized Corrosion -- Measurement, Mechanisms and Mitigation: Light Metals
Program Organizer: Gerald Frankel, Ohio State University

Monday PM
October 17, 2011
Room: D244/245
Location: Columbus Con. Center

Session Chair: Gerald Frankel, The Ohio State University

2:00 PM
Microstructural Aspects That Accompany Localised Corrosion of Sensitised AA5083: Nick Birbilis1; 1Monash University

2:20 PM
Atmospheric Pitting Corrosion of Al Alloys: Sean Morton1; Jinfeng Li2; Gerald Frankel3; 1Ohio State University; 2Central South University

2:40 PM
Understanding the Role of Intermetallic Particles in Localized Corrosion: A Multiscale Modeling Approach: Jie Xiao1; Hyunwook Kwak2; Santanu Chaudhuri2; 1Washington State University

3:00 PM
The Effect of Weak Acids on Localized Corrosion Morphologies in High Strength Aluminum Alloys: Alexandra Neeley1; Rudy Buchheit1; 1OSU

3:20 PM Break

3:40 PM
Effect of He and Heavy Ion Irradiation on Grain Boundaries in Nanostructured Ferritic Steels: Chad Parish1; Philip Edmondson2; Yanwen Zhang3; Anders Hallen1; Michael Miller1; 1Oak Ridge National Laboratory; 2Royal Institute of Technology

4:00 PM
Irradiation Studies on Friction Stir Welded ODS Alloys: Ramprashad Prabhakaran1; J Wang2; Brandon Miller2; Indrajit Charit1; Rajiv Mishra2; 1Idaho National Laboratory; 2Missouri University of Science and Technology; 3University of Idaho

5:00 PM
Phase Field Prediction of Void Behavior in U-Zr Alloys under Radiation: Ximiao Pan1; Yunzhi Wang2; 1OSU
Materials Science Challenges for Nuclear Applications: Ion Irradiation Effects

Program Organizers: Ram Devanathan, Pacific Northwest National Laboratory; Raul Rebak, GE Global Research; Kevin Fox, Savannah River National Laboratory; Andrzei Wojcieszynski, ATI Powder Metals; Ramprashad Prabhakaran, Idaho National Laboratory; Bill Lee, Imperial College London; Lukasz Madej, Akademia Gorniczo Hutnicza in Material Processing: Session I

Monday PM Room: C225 Location: Columbus Con. Center

Session Chairs: Ian Robertson, University of Illinois; Kumar Sridharan, University of Wisconsin

2:00 PM Invited Strategies for Studying High Dose Irradiation Effects in Reactor Components: Gary Was1; Zhijie Jiao1; 1University of Michigan

2:40 PM The Effect of Self-Ion Irradiation on the Indentation Response of Iron and Tungsten: Chris Hardie1; David Armstrong1; T Ben Britton1; Angus Wilkinson1; Steve Roberts1; Department of Materials, University of Oxford

3:00 PM Grain Size Effect on Radiation Induced Defect Distribution in Iron: Greg Vetterick1; Christopher Barr1; Marquis Kirk2; Peter Baldo1; Mitra Taheri1; 1Drexel University; 2Argonne National Laboratory

3:20 PM Break

Multi Scale Modeling of Microstructure Deformation in Material Processing: Session I

Program Organizer: Lukasz Madej, Akademia Gorniczo Hutnicza

Monday PM Room: C211 Location: Columbus Con. Center

Session Chairs: Tonya Stone, Mississippi State University; Javier Llorca, Madrid Institute for Advanced Studies of Materials

2:00 PM Stereology of Synthetic Microstructures Representing Ni-Based Superalloys: Joseph Tucker1; Clayton Stein1; Steve Sintay1; Lisa Chan1; Tony Rollett1; 1Carnegie Mellon University; 2LANL; 3EDAX

2:20 PM Crystal Plasticity Finite Element Modeling and Experimental Characterization of Deformation System Activity in CP-Titanium: Yiyi Yang1; Leyun Wang1; Thomas Bieler1; Philip Eisenlohr1; Martin Crimp1; 1Michigan State University; 2Max-Planck-Institut für Eisenforschung

2:40 PM Multiscale Modelling of Microstructure Evolution during Cold Rolling: Javier Llorca1; Javier Segurado1; Teresa Pérez-Prado1; 1Polytechnic University of Madrid/IMDEA Materials Institute; 2IMDEA Materials Institute

3:00 PM Deformation Modeling of Magnesium Alloys Using Tensor Theory: Krista Kalac1; Rajiv Mishra1; 1Missouri S&T

3:20 PM Break

3:40 PM Variable-Rate Polycrystal Plasticity by Modeling Dislocation Density Rate Behavior: Benjamin Hansen1; Curt Bronkhorst1; Irene Beyerlein1; Darcie Dennis-Koller1; 1Los Alamos National Laboratory

4:00 PM Tools for Generation of Digital Material Representations: Lukasz Madej1; Javier Llorca1; 1Akademia Gorniczo Hutnicza

4:20 PM Deformation Mechanisms in Nanocrystalline Metals: Tonya Stone1; Olufemi Asafa1; Joshua Stone1; Youssef Hamm1; 1Mississippi State University; 2Mississippi School for Math and Science; 3Center for Advanced Vehicular Systems

5:00 PM Molecular Dynamics Study of Frictional Effects on the Compaction of Metal Nanoparticles: Olufemi Asafa1; Tonya Stone1; Mark Tschopp2; Philip Gulliet1; Mark Horstemeier1; 1Mississippi State University; 2Center for Advanced Vehicular Systems

Multifunctional Oxides: Session I

Program Organizer: Xiaoqing Pan, University of Michigan

Monday PM Room: E162A Location: Columbus Con. Center

Session Chairs: Xiaoqing Pan, University of Michigan; quanxi Jia, Los Alamos National Lab

2:00 PM Invited ABF STEM Imaging of Light Elements in Oxides: Yuichi Ikuhara1; Rong Hunag2; Scott Findlay1; Teruyasu Mizoguchi1; Naoya Shibata1; Tsukasa Hirayama1; 1University of Tokyo; 2Japan Fine Ceramics Center

2:40 PM Oxide Nanopillars in Co-Doped BaFe2As2 Films for Vortex Pinning: Yi Zhang1; Chris Nelson1; Sanghan Lee1; Jianyi Jiang1; Eric Hellstrom1; David Larbalestier1; Chang-Beom Eom1; Xiaoqing Pan1; 1University of Michigan; 2University of Wisconsin; 3Florida State University

3:00 PM Insulator-to-Metal Transition Induced by Insulating Layers in A-Site Excess Nonstoichiometric Oxides: Zhongchang Wang1; M Okade1; M Saito1; S Tsukimoto1; A Ohtomo2; M Kawasaki1; Yimei Zhu1; 1WPI-AMR, Tohoku Univ.; 2IMR, Tohoku Univ.

3:20 PM Break

3:40 PM On the Origin of Reduced Thermal Conductivity in Misfit Layered Thermoelectric (Ca2CoO3)0.62CoO2: Lijun Wu1; Qingping Meng1; Christian Jooss1; Qiang Li1; Yimei Zhu1; 1Brookhaven National Laboratory; 2University of Goettingen
**Nano- and Atomic-Scale Fracture: Environmental Effects**

*Program Organizers:* Lawrence Friedman, NIST; Stephen Freiman, NIST

**Monday PM**

**Room:** C125

**Location:** Columbus Con. Center

**Session Chair:** Sheldon Wiederhorn, National Institute of Standards and Technology

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**2:00 PM**

**Multi-Scale Models of Crack Propagation and Their Use in Reliability Predictions for Brittle Materials:** Robert Cook; 'National Institute of Standards and Technology

**2:40 PM**

**Nano-scale Investigation of the Condensation and Diffusion of Water at Crack Tips in Glass:** Laurent Ponson; Gaeï Pallares; Matthieu Georges; Matthieu Ciccotti; Elisabeth Bouchaud; CNRS; Université de Montpellier; ESPCI; CEA

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**3:20 PM Break**

**4:00 PM**

**Surface Stress Relaxation as a Cause of Static Fatigue Limit:** Minoru Tomozawa; Peter Lezzi; Terry Blanchet; RPI

**4:40 PM**

**Water Penetration at the Crack Tip and Its Effect on Strength and Crack Growth in Silica Glass:** Sheldon Wiederhorn; Jean-Pierre Guin; Theo Fett; National Institute of Standards and Technology; University of Rennes 1; Karlsruhe Institute of Technology

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**Next Generation Biomaterials: Ceramic Biomaterials**

*Program Organizers:* Roger Narayan, Univ of North Carolina & North Carolina State Univ; Kalpana Katti, North Dakota State University; Kajal Mallick, University of Warwick; Vilupanur Ravi, California State Polytechnic University, Pomona; Varshini Singh, Louisiana State University

**Monday PM**

**Room:** C215

**Location:** Columbus Con. Center

**Session Chairs:** Kalpana Katti, North Dakota State University; Kajal Mallick, University of Warwick

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**2:00 PM Invited**

**Directed Bone Regeneration to Prevent Fatigue Failure of Osteoceramic Orthopedic Implants:** Thomas McGee; Iowa State University

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**2:20 PM Invited**

**Bioactive Glass in Tissue Engineering:** Mohamed Rahaman; Missouri University of Science and Technology

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**2:40 PM Invited**

**Collagen-Hydroxyapatite Mechanics in Human Bone:** Dinesh Katti; Shashindra Pradhan; Kalpana Katti; North Dakota State University

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**3:00 PM Invited**

**Chain Silicate Glass Ceramics: An Overview of Their Potential for Biomedical Applications:** Ian Reaney; University of Sheffield

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**3:20 PM Break**

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**3:40 PM Invited**

**Accelerated Transformation of Brushite to Octacalcium Phosphate in New Biominalerization Media between 36.5°C and 80°C:** A. Cuneyt Tas; Giray Girisken; Neslihan Temizel; University of Oklahoma; Yeditepe University

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**4:00 PM Invited**

**Resorbable Calcium Phosphate Scaffolds in Bone Tissue Engineering:** Susmita Bose; Washington State University

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**4:20 PM Invited**

**Preparation and Characterization of Nanophasic Hydroxyapatite via Self-Propagating High Temperature Synthesis and Aqueous Precipitation:** Sophie Cox; Kajal Mallick; Warwick University

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**4:40 PM**

**Injectable Bone Mineral Cements: Current and Future Trends:** Solène Tadier; Nadine Le Boly; Sophie Giraud- Fullana; Sophie Cazalbou; Reine Bareille; Christian Rey; Christèle Combès; InPT - CIRIMAT; UPS-CIRIMAT; Inserm U1026 - U of Bordeaux

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**5:00 PM Invited**

**In Situ Mineralization of Hydroxyapatite in Intercalated Nanoclays for Bone Tissue Engineering:** Kalpana Katti; Avinash Ambre; Dinesh Katti; Anurag Sharma; North Dakota State University

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**Novel Sintering Processes and News in Traditional Sintering and Grain Growth: Energetics and Fundaments of NanoSintering**

*Program Organizers:* Ricardo H. R. Castro, University of California at Davis; Douglas Gouveia, Universidade de Sao Paulo

**Monday PM**

**Room:** C222

**Location:** Columbus Con. Center

**Session Chair:** To Be Announced
4:20 PM Invited
The Effect of Dispersion and Particle Size on the Consolidation Behavior of Nanopowders during Spark Plasma Sintering: Olivia Graeve; 1Alfred University

5:00 PM

5:20 PM
Adhesive Contact Formation between Faceted Nanoparticles and Initial Stages of Their Sintering: Dan Mordahai; Leonid Klinger; David Srolovitz; Eugen Rabkin; 1Technion; 2Institute of High Performance Computing

Pb-Free Solders and Next Generation Interconnects: Next Generation Interconnects
Program Organizers: Sehoon Yoo; Korea Institute of Industrial Technology; Andre Lee; Michigan State University; Govindarajan Muralidharan; Oak Ridge National Laboratory; Young-Ho Kim; Hanyang University

Monday PM  Room: E160B  Location: Columbus Con. Center

Session Chair: To Be Announced

2:00 PM Invited
Low-Temperature Sintering of Nanosilver Paste for Lead-Free Chip Attach: Guo-Quan Lu; 1Virginia Tech

2:40 PM
Evaluation of Bondability and Reliability in Metal-to-Metal Bonding Using Ag2O Pastes with Polyethylene Glycols: Tomohiro Yagishita; 1Tomo Ogura; Akio Hirose; 1Osaka university

3:00 PM
Overcoming Substrate-Imposed Thermal Limitations on the Processing of Conductive Ink Interconnects: David Roberson; 1Eric MacDonald; Ryan Wicker; 1The University of Texas at El Paso; 2W.M. Keck Center for 3D Innovation

3:20 PM Break

3:40 PM Invited
Effect of High Temperature Aging on Microstructural Evolution in AuSn Solder Joints: Rui Zhang; 1R. Wayne Johnson; Govindarajan Muralidharan; Tan Zhang; 1David Shaddock; 1Auburn University; 2Oak Ridge National Laboratory; 3GE Global Research Center

4:20 PM
Effect of Flip Chip Bonding Temperature on the Intermetallic Compounds Growth of Au Stud Bumps: Young-Kyu Lee; Yong-Ho Ko; 1Suseo Yoo; 2Chang-Woo Lee; 1University of Science & Technology; 2Korea Institute of Industrial Technology

4:40 PM
Effect of Pad Finish on the Reliability of Cu Bumps Fabricated Using CuSn and ENiG Capping Layers for TSV Applications: Sung Woo Ma; Jeong Hwan Lee; 1Tae Jin Kim; Jin-Young Park; Jin Su Lee; 2Ki Bum Kim; 3Jae Myun Kim; 2Jae Sung Oh; 3Kwang Yoo Byun; 2Young-Ho Kim; 1Hanyang University; 2Hyundai Semiconductor Inc

5:00 PM
Effect of Cr addition on Mechanical Property and Oxidation Resistance of Pure Zn as SiC Die Bonding Material: Sungwon Park; 1Keun-Soo Kim; Katsuaki suganuma; 1Osaka University; 2Hoseo University; 3Institute of Scientific and Industrial Research, Osaka University

Phase Stability, Diffusion, Kinetics and their Applications (PSDK-VI): Phase Stability and Diffusional Processes I
Program Organizers: Jeffrey LaCombe; University of Nevada, Reno; Yongho Sohn; University of Central Florida; John Morral; Ohio State University; Ursula Kattner; National Institute of Standards and Technology; Abhijeet Misra, QuesTek Innovations LLC

Monday PM  Room: C214  Location: Columbus Con. Center

Session Chair: Patrice Turchi, Lawrence Livermore National Laboratory; Abhijeet Misra, QuesTek Innovations LLC

2:00 PM
Are Correlations Important in Diffusion?: Graeme Murch; 1Irina Belova; 2Nagraj Kulkarni; 1The University of Newcastle; 2Oak Ridge National Laboratory

3:00 PM
Phase Field Simulations of Two Type 4 Boundaries in Quaternary Diffusion Couples: Xiaojin Ke; 1Yunzhi Wang; 2John Morral; 1Ohio State University

3:20 PM
Numerical Simulation of Carbon and Nitrogen Profiles Produced by Plasma Carbonitriding: Gary Michal; 1Xiaoting Gu; 2Arthur Heuer; 3Frank Ernst; 1Case Western Reserve Univ.

3:40 PM Break

4:00 PM
Prediction of Weld Microstructure Using Thermodynamic and Kinetic Tools: Xinghua Yu; 1Tapasvi Lolla; 2Sudarsanam Babu; 1Ohio State University

4:40 PM
Thermodynamic Database Validation and the Role Of Ab Initio: Patrice Turchi; 1Alexander Landa; 2Per Söderlind; 1Lawrence Livermore National Laboratory

5:20 PM
Open Calphad – Software and Databases: Ursula Kattner; 1Bo Sundman; 2Mauro Palumbo; 3Suzana Fries; 1National Institute of Standards and Technology; 2INSTN CEA - Saclay; 3Ruhr University Bochum

5:40 PM
Development of 40 vol. % and 20 vol. % (AlN+Mg2Si)/Mg Matrix Composites: Xiaomo Ma; 1Roy Kusuma; 2Salin Kuplin; 3David Johnson; 4Kevin Trumble; 1Purdue University
Professor K. K. Chawla Honorary Symposium on Fibers, Foams and Composites: Science and Engineering: Fibers I
Program Organizers: Nikhilash Chawla, Arizona State University; Aldo Boccaccini, University of Erlangen-Nuremberg; Gary Gladysz, Trelleborg USA; Pedro D. Portella, Federal Institute of Testing and Materials BAM

Monday PM  Room: D234  Location: Columbus Con. Center

Session Chair: Aldo Boccaccini, University of Erlangen-Nuremberg; Kanika Chawla, Cellerant Therapeutics

2:00 PM  Introductory Comments A Brief Overview of Prof. Chawla's Career

2:20 PM  Keynote
Fibers, Foams, and Composites: Where Do We Stand?: Krishan Chawla; 1University of Alabama at Birmingham

3:00 PM  Invited
Core Courses in Materials Science and Engineering: Morris Fine; Kathleen Stair; 1Northwestern University

3:20 PM  Break

3:40 PM  Invited
Biomaterials for Tissue Engineering and Regenerative Medicine: Kathleen Stair; 1Northwestern University

4:20 PM  Invited
Advances in the Development of Composite Porous Structures for Bone Tissue Engineering: Aldo Boccaccini; 1University of Erlangen-Nuremberg

5:00 PM
Processing, Microstructure and Mechanical Properties of Reticulated Titanium Scrolls: Eunjong Hong; Bok Ahn; D Shoji; Jennifer Lewis; David Dunand; 1Kookmin University; 1University of California, Irvine

Semiconductor Heterostructures: Theory, Growth, Characterization and Device Applications: Session I
Program Organizer: John Ayers, University of Connecticut

Monday PM  Room: C221  Location: Columbus Con. Center

Session Chair: John Ayers, University of Connecticut

2:00 PM
Effects of Equi-Biaxial In-Plane Strains on GaN Thin Films and InGaN/GaN Superlattices: Liang Dong; 1S. Pamir Alpay; 1University of Connecticut

2:20 PM
La0.07Ca0.3MnO3/SiO2/n-Si and La0.7Sr0.3MnO3/ SiO2/p-Si MOS Like Heterostructures for Spintronics Application: Tapan Nath; 1S. Chattopadhyay; 1S. Girli; 1Indian Institute of Technology Kharagpur

2:40 PM
Dynamical X-ray Diffraction from Semiconductor Heterostructures with Dislocations: Paul Rago; 1John Ayers; 1University of Connecticut

3:00 PM
Influence of Dimer Tilting on Strain-Dependent Vicinal Ge (1,1,10) Surface Energies from First Principles: Daniele Scopece; Francesco Montalenti; Leo Miglio; Matthew Beck; 1L-NESS and Dept. of Materials Science, University of Milano-Bicocca; 2Dept. of Chemical & Materials Engineering, University of Kentucky

3:20 PM  Break

3:40 PM
Plastic Flow and Threading Dislocations in Semiconductor Heterostructures: Tedi Kujofsa; Sushma Cheruku; Brian Outlaw; Sirjan Xhurst; Francis Obst; 1David Sidoti; Brandon Bertoli; Paul Rago; Ernesto Suarez; Faquir Jain; John Ayers; Xiaoguang Zhang; Peng Li; 1University of Connecticut; 2Veeco TurboDisc; 1East Carolina University

4:00 PM
Gas Sensing Concept of Metal Oxide Gas Sensors: Amir Masoud Soleimanpour; 1Sharif University Of Technology

4:20 PM
Combined Experimental and Phase-Field Simulation Approach to Study Morphology of InGaN Quantum Dots Grown by Selective Area Epitaxy: Larry Aagesen; Leung Lee; Pei-Cheng Ku; Katsuyo Thornton; 1University of Michigan

4:40 PM
Microstructural Studies of Quantum Dots in a ZnSe/ZnTe Heterostructure: Sung Jou Kim; Weiming Wang; Jake Jokisaari; Kui Zhang; Jamie Phillips; Xiaqing Pan; 1Department of Materials Science and Engineering at University of Michigan; 2Department of Electrical Engineering and Computer Science at University of Michigan

5:00 PM
Space- and Time-Resolved Cathodoluminescence to Study ZnO Nanobelts: Pierre Corfdir; Samuel Sonderegger; Mohamed Abidi; Jean-Daniel Ganière; Benoit Deveaud-Plédran; 1EPFL; 2Attolight

Shape Memory Alloys: Advanced Alloys
Program Organizer: Mohammad Elahinia, University of Toledo

Monday PM  Room: D242/243  Location: Columbus Con. Center

Session Chair: Haluk Karaca, University of Kentucky

2:00 PM
Effect of Equal Channel Angular Extrusion (ECAE) Processing on Transition Temperature of Ti-20Ni-30Pd Shape Memory Alloy: Rabindra Mahapatra; Chres Lei; 1NAVAR

2:20 PM
High Temperature Shape Memory Behavior of NiTiHf Poly and Single Crystals: Haluk Karaca; Burak Basaran; Sayed Sighaian; Ronald Noebe; Hans Maier; 1UNIVERSITY OF KENTUCKY; 2NASA; 3University of Paderborn

2:40 PM
Precipitate Phases in Several High Temperature Shape Memory Alloys: Fan Yang; Libor Kovarik; Limie Yang; Ronald Noebe; Michael Mills; 1The Ohio State University; 2Pacific Northwest National Laboratory; 3NASA Glenn Research Center
3:00 PM
Stoichiometry and Aging Effects on the Microstructure and Properties of Nickel Rich NiTiHF Shape Memory Alloys: Daniel Coughlin1; Ronald Noebe2; Glen Bigelow2; Anita Garg3; Michael Mills1; 1Ohio State University; 1NASA Glenn Research Center

3:20 PM Break

3:40 PM
Increased Austenite Content in AHSS through Dual-Stabilization Thermal Processing: Gary Michal5; Hao Qu4; Arthur Heuer3; 1Case Western Reserve Univ.

4:00 PM
Effect of Retained Austenite on Tensile Behavior of AHSS Revisited: Emmanuel De Moor1; John Speer1; David Matlock1; David Hanlon2; 1ASPPRC Colorado School of Mines; 2Tata Steel Research Development & Technology

4:20 PM
Effect of the Strain Rate on the Deformation Mechanism in a 12 pct Mn Austenitic Steel: Song Won Lee1; Seok-Jae Lee2; Bruno C. De Cooman1; 1GIFT, POSTECH

4:20 PM Invited
New Strategies to Control Deformation Response and Flow Behavior of Twinning Induced Plasticity (TWIP) Steels: Alireza Saeed-Akbari3; Wolfgang Bleck1; 1RWTH Aachen University

5:00 PM
Effect of Initial Microstructure and Parameters of Annealing of 4% and 6.7% Mn steels on the Evolution of Microstructure and Mechanical Properties: Hyun Jo Jun1; Oleg Yakubovsky1; Nina Fonstein1; 1ArcelorMittal Global R&D - East Chicago

Student Career Development: Session I
Program Organizers: Jaime George, Missouri University of Science and Technology; David Shahin, Missouri University of Science and Technology

Monday PM Room: C213 Location: Columbus Con. Center

Session Chair: Kevin Strong, University of Washington
Surface Properties of Biomaterials: Drug Delivery
Program Organizers: Susmita Bose, Washington State University; Amit Bandyopadhyay, Washington State University; Thomas Webster, Brown University; Sharmila Mukhopadhyay, Wright State University; Paul Calvert, University of Massachusetts; Mukesh Kumar, Biomet Inc

Monday PM
October 17, 2011
Room: C216
Location: Columbus Con. Center

Session Chairs: Susmita Bose, Washington State University; Ryan Roeder, University of Notre Dame

2:00 PM Invited
Surface Functionalized Nanoparticles for Targeted Delivery and Enhanced X-Ray Contrast: Ryan Ross\(^1\); Matthew Meagher\(^1\); Lisa Cole\(^1\); Ryan Roeder\(^1\); \(^1\)University of Notre Dame

2:40 PM
Plasma Surface Modification of Electrospun Fibers for Adhesion-Based Cancer Cell Sorting: Britani Blackstone\(^1\); James Willard\(^1\); Tyler Nelson\(^1\); Carol Lee\(^1\); John Lannutti\(^1\); Heather Powell\(^1\); \(^1\)The Ohio State University

3:00 PM
Calcium Phosphate System in Drug and Protein Delivery for Bone Tissue Engineering: Susmita Bose\(^1\); Solaiman Tarafder\(^1\); Joe Edgington\(^1\); Amit Bandyopadhyay\(^1\); \(^1\)Washington State University

3:20 PM Break

3:40 PM Invited
Protonated Nanoparticle Surface in Cellular Targeting: S Seal\(^1\); A Vincent\(^2\); W Sel\(^3\); C Reilly\(^3\); S Das\(^3\); \(^1\)UCF; \(^2\)U Alberta; \(^3\)Virginia Tech

4:20 PM
Biological Response of 3D Printed SiO\(_2\) and ZnO Doped \(\beta\)TCP Scaffolds: Gary Fielding\(^1\); Amit Bandyopadhyay\(^1\); Susmita Bose\(^1\); \(^1\)Washington State University

4:40 PM Invited
The Multiple Uses of Carbon Nanotubes in Regenerative Medicine: Thomas Webster\(^1\); \(^1\)Brown University

Surface Protection for Enhanced Materials Performance: Science and Technology: Wear-Resistant and Tribological Coatings
Program Organizers: Rodney Trice, Purdue University; Dongming Zhu, NASA Glenn Research Center; Daniel Mummi, University of California-Irvine; Huai-Tay Lin, Oak Ridge National Laboratory; Pravansu Mohanty, University of Michigan; Yutaka Kagawa, The University of Tokyo; Kang Lee, Rolls Royce; Charles Kay, ASB Industries, Inc.; Luc Pouliot, TECNAR Automation Ltd.

Monday PM
Room: D230
Location: Columbus Con. Center

Session Chairs: Rodney Trice, Purdue University; Douglas Wolfe, Penn State

2:00 PM Invited
Erosion Resistant Coatings for the Suppression of Leading Edge Burr: Modeling and Testing: Douglas Wolfe\(^1\); \(^1\)The Penn State University

2:40 PM
Slurry Erosion Resistance of Overlays Containing Boride Crystals Oriented Perpendicularly to the Wearing Surface: SERGE DALLAIRE\(^1\); \(^1\)SYNTHESARC INC.

3:00 PM
Mechanical and Physical Properties of Carbon S-Phase on Stainless Steel, Produced by Carbon Supersaturation: Ralph Hunger\(^1\); \(^1\)Bodycote Hardiff GmbH

3:20 PM Break

3:40 PM Invited
Wear Resistant Hard Facing and Cutting Assistant Hard Coating in Oil and Gas Drilling Applications: Jing Xu\(^1\); Hendrik John\(^1\); Denis Kopecki\(^1\); \(^1\)Baker Hughes

4:20 PM
Development of Economical Multifunctional Composite Coating for Energy Efficient Sliding Systems: Sudeep Ingole\(^1\); Masatoshi Kuniyoshi\(^1\); Rajeshwari Paluri\(^1\); \(^1\)Texas A&M University

4:40 PM
Diamond Coated Mechanical Seals in Working Conditions: Wear Performance Evaluation: José Santos\(^1\); Victor Neto\(^1\); David Ruch\(^2\); José Grácio\(^1\); \(^1\)Department of Mechanical Engineering, Centre for Mechanical Technology & Automation, University of Aveiro; \(^2\)Department of Advanced Materials and Structures, Centre de Recherche Public Henri Tudor

5:00 PM
Performance of Nanocrystalline Diamond Coated Micromolding Tools: Victor Neto\(^1\); Mónica Oliveira\(^1\); José Grácio\(^1\); \(^1\)University of Aveiro

5:20 PM
Sliding Wear Behavior of Ni-Al Coatings Processed In-Situ by Plasma Transferred Arc: Cristiano Brunetti\(^1\); Felipe Mendes\(^2\); Giuseppe Pintaude\(^2\); Ana Sofia D’Oliveira\(^1\); \(^1\)UFPR - Federal University of Paraná; \(^2\)UTFPR - Technological University of Paraná
ACerS Arthur L. Friedberg Memorial Lecture

Tuesday AM  
October 18, 2011  
Room: C113/114  
Location: Columbus Con. Center

8:00 AM  
Processing Dielectric Oxides—New Opportunities and Challenges: Clive Randall  
¹Penn State University

Additive Manufacturing of Metals: Electron Beam Melting (EBM) I

Program Organizers:  
Ian D. Harris, EWI; Ulf Ackelid, Arcam AB; Ola Harrysson, North Carolina State University; Sudarsanam Babu, Ohio State University; Brent Stucker, University of Louisville

Tuesday AM  
October 18, 2011  
Room: D130  
Location: Columbus Con. Center

Session Chair: Ulf Ackelid, Arcam AB

8:00 AM  
Additive Layer Manufacture of Titanium Components – From Lab to Production: Iain Todd  
¹University of Sheffield

8:40 AM  
Characterization and Comparison of Electron Beam Melting (EBM) Produced Ti-6Al-4V Parts Using Two Different Powder Fractions: Joakim Karlsson  
¹Sanna Fager Franzen  
²Anders Snis  
³Erik Unosson  
⁴Håkan Engqvist  
⁵Jukka Lausmaa  
¹SP Technical Research Institute of Sweden;  
²Arcam AB; ³Uppsala University

9:00 AM  
Characterization of TiAl4V 3D Auxetic Structures Fabricated via the Electron Beam Melting Process: Li Yang  
¹Ola Harrysson  
²Harvey West  
³Denis Cormier  
⁴North Carolina State University;  
⁵Rochester Institute of Technology

9:20 AM Break

9:40 AM  
Design and Customization of a Golf Club Using Electron Beam Melting: Phillip Ray  
¹Gilbert Chahine  
²Radovan Kovačević  
³Pauline Smith  
¹Southern Methodist University RCAM;  
²Army Research Laboratory

10:00 AM  
TiAl Manufacturing Using an Arcam A2 Electron Beam Melting System: Medina Francisco  
¹Jennifer Hernandez  
²Larry Murr  
³Ryan Wicker  
¹UTEP

10:20 AM  
Thermal, Residual Stress and Process Control Simulation of Additive Manufacturing Processes: Anil Chaudhary  
¹Matt Keller  
¹Applied Optimization, Inc.

10:40 AM  
Digital Manufacturing of Gamma-TiAl by Electron Beam Melting: John Porter  
¹John Wooten  
²Ola Harrysson  
³Kyle Knowshon  
¹University of California Santa Barbara;  
²CalRAM Inc.; ³North Carolina State University

11:00 AM  
Metallic Part Fabrication Using Selective Inhibition Sintering (SIS): Berok Khoshnevis  
¹Mahdi Yoozbashizadeh  
²Yong Chen  
¹USC

11:20 AM  
Microstructure and Mechanical Properties Evolution of Biomedical CoCrMoAlloys Produced by EBM Method during Novel Heat Treatments: Shingo Kurosu  
¹Hitoshi Matsumoto  
²Yunping Li  
³Yuichiro Koizumi  
¹Tohoku University

11:40 AM Panel Discussion

12:00 PM Cancelled  
An Experimentally Validated Constitutive Model for EBM Gamma-TiAl: Lorenzo Valdevit  
¹Scott Godfrey  
²John Porter  
³John Wooten  
¹University of California, Irvine;  
²University of California, Santa Barbara; ³CalRAM Inc.

Advanced Protective Coatings for Refractory Metals and Alloys: Recent Development in Oxidation Resistant Refractory Metal Alloys, Composites and Protective Coating Materials II

Program Organizers:  
Ridwan Sakidja, University of Wisconsin-Madison; Brian Cockeram, Bechtel-Bettis

Tuesday AM  
October 18, 2011  
Room: D231  
Location: Columbus Con. Center

Funding support provided by:  
WARF (Wisconsin Alumni Research Foundation)

Session Chair: John Perepezko, University of Wisconsin-Madison

8:00 AM Invited  
The Potential of Nb-Si Alloys for Advanced Turbine Applications: B. P. Bewlay  
¹GE Global Research

8:40 AM Invited  
Phase Stability in the Metal (Me) Rich Region of Me-Si-B Systems (Me = Transition Metal of IVA, VA, VIA Groups): Carlos Angelo Nunes  
¹Gilberto Carvalho Coelho  
²Paulo Atsushi Suzaki  
¹Universidade de São Paulo (USP);  
²Universidade de São Paulo (USP) - and - UniFoa – Centro Universitário de Volta Redonda

9:20 AM  
Effect of Al on the Oxidation Resistance of Alloys from Nb-Si-Cr System: Nydia Esparza  
¹Shailendra Varma  
¹The University of Texas at El Paso

9:40 AM Break

10:00 AM Invited  
Phase Formation and Oxidation Resistance of Mo-Si-B Alloys: Kyounak Yoshimi  
¹Seong-Ho Ha  
²Kouichi Maruyama  
³Naoyuki Nomura  
⁴Shuji Hanada  
⁵Tohoku University; ⁶Tokyo Medical and Dental University

10:40 AM Invited  
Water Vapor Effects on the Volatility of Borides, Silicides and Aluminides for Refractory Alloy Coatings: Elizabeth Opila  
¹University of Virginia

11:20 AM  
Development of Bond Coatings for Titanium Aluminide Intermetallics: Kai Tan  
¹Viola Acoff  
¹The University of Alabama

11:40 AM  
Interaction between CMAS and Mo-Si-B Coatings: Irena Downs  
¹Ridwan Sakidja  
²Travis Sossaman  
³John Perepezko  
¹University of Wisconsin-Madison
Advances in Dielectric Materials and Electronic Devices: Materials Preparation and Properties

Program Organizer: K. M. Nair, E.I.duPont de Nemours & Co, Inc

Tuesday AM
October 18, 2011
Location: Columbus Con. Center

Session Chairs: D Suvorov, Josef stefan Institute; A Bhalla, University of Texas @ San Antonio

8:00 AM
Influence of Preparation Conditions on Distinctive Contributions to Dielectric Behavior of CaCu₃Ti₄O₁₂ Thin Films: Andrea Erště; Barbara Malíč; Brigita Kužnik; Marija Kosec; Vid Bobnar; Jožef Stefan Institute

8:20 AM
Mechanochemical Behavior of BaNd₂Ti₄O₁₂ Powder in Ball Milling for Microwave Applications: Yi Tong Shi; Jin E Mu; Feng Yuan; Tianjin Polytechnic University

8:40 AM Invited
Mn Doping Effect on Electrical Properties of Lead-Free K₀.₅Na₀.₅NbO₃ Thin Films: Wataru Sakamoto; Takumi Matsuda; Yoshifumi Nakashima; Bong-Young Lee; Takashi Ijima; Makoto Moriya; Toshinobu Yogo; Nagoya University; AIST

9:00 AM Invited
Phase Evolution and Microwave Dielectric Properties of MgO–B₂O₃–SiO₂ Based Glass-Ceramics: Danilo Suvorov; Urban Dosler; Marjeta Macek Krzmarč; Jožef Stefan Institute

9:20 AM Invited
Sodium Bismuth Titanate Ceramics Prepared by Magnetic Field and Subsequent Reaction Sintering: Satoshi Tanaka; Yutaka Doshida; Hiroyuki Shimizu; Keizo Uematsu; Nagaoka University of Technology; Taiyo Yuden Co. Ltd.

9:40 AM Break

10:00 AM
Study of the Surface-Modifying Techniques for Localized Erbium Doping into Various Cuts of Lithium Niobate: Pavla Necková; Blanka Svecová; Jakub Cajiř; Anna Mackova; Petr Malinsky; Jiří Vacík; Jiří Oswald; Andreas Kolitsch; Jarmila Spirková; Institute of Chemical Technology Prague; Nuclear Physic Institute, Academy of Sciences of the Czech Republic, v.v.i.; Institute of Physics, Czech Academy of Sciences; Institute of Ion Beam Physics and Materials Research, Forschungszentrum Rossendorf

10:20 AM
Crystal Structure Ordering and Quality Factor on Microwave Dielectrics: Hiitoshi Ohsato; Hoseo University, Nagoya Research Institute and Nagoya Institute of Technology

10:40 AM
Comparison of Donor and Acceptor Doping Effects on the Strain Enhancement of Bi-Peroovskite Lead-Free Ceramics: Jae-Shin Lee; Hyoun-Su Han; Vu Diem Ngoc Tran; Han-Bok Lee; Nam-Binh Do; University of Ulsan

11:00 AM Invited
Crystal Structure and Dielectric Properties of Filled Tungsten Bronze Ceramics: Xiaoli Zhu; Xiaoqiang Liu; Xiangming Chen; Zhejiang University

11:20 AM
Effect of Internal Stresses on the Dielectric Properties of Core/Shell-Grained BaTiO₃: Sang-Chae Jeon; Chul-Seung Lee; Suk-Joong L. Kang; Korea Advanced Institute of Science and Technology; Samsung Electro-Mechanics

11:40 AM
Preparation and Microstructural, Dielectric and Electro-Optical Properties of (1-x)Pb(1-x)Zn(1-x)TiO₃ Transparent Ceramics: Duscni Garcia; José Eiras; Fernando Badillo; Federal University of São Carlos

12:00 PM
The Effect of Spark Plasma Sintering on the Dielectric Behavior of Nanostructured Barium Titanate: Sandararajan Thirumalai; Manisha Vidyavathy; Balasivanandha Prabu; Jothishmani; Arvind Joshua Jayadev; Alagappa Chettiar College of Technology; College of Engineering Guindy

Advances in Manufacturing Technologies: Forming, Shaping and Issues

Program Organizer: Muammer Koc, Istanbul Sehir University

Tuesday AM
October 18, 2011
Location: Columbus Con. Center

Session Chair: Omer Cora, VCU / KTU

8:00 AM
Applications for Applying High Axial Compression Stress to Moving Wires: Alfred Austen; Innovar, Inc.

8:20 AM Cancelled
Experimental Hot Stamping of 4140 Steel Sheet: Mohammad Habibi Parsa; Pedram Samadian; Amir Shakeri; University of Tehran

8:40 AM
Formability of LZ Magnesium-Alloy Sheets: Fuh-Kuo Chen; Chi-Jay Liao; National Taiwan University

9:00 AM
High Strain Rate Shaping of Lightweight Materials Using Die Impact-Geometry Assisted Forming: Timothy Windholz; Glenn Daehn; The Ohio State University

9:20 AM Break

9:40 AM
Investigation on Bulge Forming of Friction Stir Welded Aluminum 7075-O at Elevated Temperatures: Mehmet KARALI; Ömer Cora; Muammer KOC; Vien Nguyen; Dwight Burford; Karabük University; Virginia Commonwealth University; National Institute for Aviation Research, Wichita State University; National Institute for Aviation Research, Wichita State University

10:00 AM
Performance Evaluation of Stamping Die Coatings via Ring-on-Flat Type Wear Tester: Ömer Cora; Ali Ageyazi; Donald Adamski; Jody Hall; Muammer Koc; Virginia Commonwealth University; Karadeniz Technical University; General Motors

10:20 AM
Selective Superplastic Forming of Friction Stir Processed 2014 Al Alloy: preetam anbukarasu; College of Engineering Guindy
Ceramic Matrix Composites: Environmental Effects/Coatings
Program Organizers: Narottam Bansal, NASA Glenn Research Center; J. P. Singh, U.S. Army Research Laboratory; Jacques Lamon, CNRS; Sung Choi, Naval Air Systems Command

Tuesday AM
October 18, 2011
Room: C112
Location: Columbus Con. Center

Session Chair: Marina Ruggles-Wrenn, Air Force Institute of Technology

8:00 AM Invited
Effects of Environment on Mechanical Behavior of an Oxide-Oxide Ceramic Matrix Composite at Elevated Temperature: Marina Ruggles-Wrenn; ‘Air Force Institute of Technology

8:40 AM Invited
Probing Ceramic Composites under Extreme Environments: Frank Zok; ‘University of California, Santa Barbara

9:20 AM
Effects of CMAS Exposure on Ceramic Matrix Composites at Elevated Temperatures: Sung Choi; David Faucett; ‘Naval Air Systems Command

9:40 AM Break

10:00 AM Invited
Stressed-Oxidation of SiC/SiC Ceramic Matrix Composites: Gregory Morscher; ‘University of Akron

10:40 AM
High Temperature Oxidation Behavior of Carbide Based Cermet Composites: Effect of Sintering Temperature and Porosity: Ali OZER; Yahya TÜR; Waltraud KRIVEN; ‘Gebze Institute of Technology; ‘University of Illinois at U-C

11:00 AM

11:20 AM
High-Temperature Oxidation of Spark Plasma Sintered Ti2AlN Ceramics: Bai Cui; Daniel Jayaseelan; Michael Reece; William Lee; ‘Imperial College London; ‘Queen Mary, University of London

11:40 AM
Effect of wt % Boron on the Formation of In-Situ Phases and Mechanical and Surface Properties of Alumina Composites for Energy Efficient Sliding Systems: Rajeshwari Paluri; Sudeep Ingole; ‘Texas A&M University

Characterization and Modeling of the Performance of Advanced Alloys for the Transportation Industry -- Bridging the Data Gap II: Assessing the Technical Challenges with Advanced Lightweight Alloys
Program Organizers: Mark Stoudt, National Institute of Standards and Technology; Adam Creuziger, National Institute of Standards and Technology; John Carsley, General Motors; Michael Miles, BYU; Kip Findley, Colorado School of Mines

Tuesday AM
October 18, 2011
Room: D131
Location: Columbus Con. Center

Session Chair: Mark Stoudt, NIST

8:00 AM Keynote
The Impact of Microstructurally Based Materials Modeling on the Design and Manufacturing of Structural Automotive Components: David Wilkinson; Raj Mishra; ‘McMaster University; ‘General Motors Research and Development Center

8:40 AM Invited

9:20 AM Question and Answer Period

9:40 AM Break

10:00 AM Invited

10:40 AM Invited
From Atoms to Autos: Bridging the Length Scale Gap in Materials Modeling: Louis Hector Jr; Paul Krajewski; ‘GM R&D Center; ‘General Motors

11:20 AM Invited
From Hot to Warm Forming of Light Alloys: How Can We Predict Performance?: Eric Taleff; ‘The University of Texas at Austin

Continuous Improvement of Academic Programs (and Satisfying ABET Along the Way): The Elizabeth Judson Memorial Symposium: Best Practice in Program Improvement
Program Organizer: Jeffrey Fergus, Auburn University

Tuesday AM
October 18, 2011
Room: E160A
Location: Columbus Con. Center

Session Chairs: William Hammeter, Sandia National Laboratory; Ronald Gibala, University of Michigan

8:00 AM Invited
Avoiding Pitfalls Regarding Criteria 2 and 3 in an ABET Visit: Thomas Bieler; ‘Michigan State University

8:40 AM
Continuous Improvement as an Integral Part of a Department’s Work: Amy Moll; ‘Boise State University
9:00 AM
Restructuring a Curriculum in the Spirit of Continuous Improvement: R. Allen Kelm1; Gary L. Messing1; Christopher Muhlstein1; David J. Green1; Venkatraman Gopalan1; James Runt1; Zi-Kui Liu1; 1Penn State University

9:20 AM
Student Input about the Strength of Ceramic Curriculums at Universities Nationwide: Examining Educational Strengths and Weaknesses in Materials Science and Engineering: Erica Marden1; 1American Ceramic Society’s President’s Council of Student Advisors

9:40 AM Break

10:00 AM
ABET: Good or Evil? Your Chance to Bite Back!: Steve Yalisove1; 1University of Michigan

10:40 AM Panel Discussion Individuals involved in the accreditation process, including ABET staff and representatives from the materials community, will discuss current practices for program improvement in materials-related academic programs.

Controlled Synthesis, Processing and Applications of Structural and Functional Nanomaterials: One Dimensional Nanomaterials I
Program Organizers: Kathy Lu, Virginia Tech; Xudong Wang, University of Wisconsin - Madison; Eugene Olevsky, San Diego State University; Gurpreet Singh, Kansas State University; Nitin Chopra, The University of Alabama; Pu-Xian Gao, University of Connecticut; Jianyu Liang, Worcester Polytechnic Institute
Tuesday AM
October 18, 2011
Room: C123
Location: Columbus Con. Center
Session Chair: Gurpreet Singh, Kansas State University

8:00 AM Invited
Effect of Applied Stresses on Thermodynamics of Grain Boundaries: T. Frolov1; Y. Mishin1; 1George Mason University

8:20 AM
Neighbor Grain and Grain Boundary Effects on Deformation Twinning: Rodney McCabe1; Stephen Niezgoda1; Carlos Tome1; 1Los Alamos National Laboratory

8:40 AM
Slip Transfer across the a/b Interface in Equiaxed Ti-5Al-2.5Sn: James Seal1; Martin Crimp1; Thomas Bieler1; Carl Boehlert1; 1Michigan State University

9:00 AM Invited
Deformation Twinning Mechanisms in FCC and HCP Metals: Jian Wang1; 1Los Alamos National Laboratory

9:20 AM
Accumulation of the Geometrically Necessary Dislocations in Bicrystals of Magnesium Alloys with LPSO Structure: Tsuyoshi Mayama1; Tetsuya Ohashi1; 1Kumamoto university; 2Kitami Institute of Technology

9:40 AM Break

10:00 AM
Interfaces in Size-Dependent Crystal Plasticity: Sinisa Mesarovic1; Raghuraman Baskaran1; 1Washington State University

10:20 AM Invited
Interactions of Dislocations and Twin Boundaries in Titanium with First-Principles: Dallas Trinkle1; Maryam Ghazisaeidi1; 1University of Illinois, Urbana-Champaign

10:40 AM
The Effect of Twin Spacing and Grain Size on the Plastic Deformation of Nanocrystalline Copper: Arina Marchenko1; Hao Zhang1; 1University of Alberta

11:00 AM Invited
Microstructure Evolution during Simple Shear Deformation and Dislocation Patterning Induced by Special Grain Boundaries: Pascal Bellon1; Wenjun Cai1; Fuzen Ren1; Armand Beaudoin1; 1Los Alamos National Laboratory

11:20 AM Invited
In Situ Spatially Resolved Strain Measurements within a Twinned Grain during Loading of Magnesium: Donald Brown1; Levente Balogh1; Stephen Niezgoda1; Bjorn Clausen1; Carlos Tome1; Wenjun Liu1; 1Los Alamos National Laboratory
Emerging Frontiers in Surface Engineering of Biomaterials: Biocoatings and Surface Engineering

Program Organizers: Kantesh Balani, Indian Institute of Technology Kanpur; Arvind Agarwal, Florida International University; Sandip Harimkar, Oklahoma State University; Winston Soboyejo, Princeton University

Tuesday AM  Room: C226  Location: Columbus Con. Center

Session Chairs: Sandip Harimkar, Oklahoma State University; Kantesh Balani, Indian Institute of Technology Kanpur

8:00 AM  Session Chair: To Be Announced


Program Organizers: Matthew Seabaugh, NexTech Materials, Ltd.; Zhenguo “Gary” Yang, Pacific Northwest National Laboratory; Meilin Liu, Georgia Institute of Technology

Tuesday AM  Room: C224  Location: Columbus Con. Center

8:00 AM  HeteroFoaM: New Concepts and Tools for Heterogeneous Functional Material Design in SOFCs: Ken Reifsneider1; Fazle Rabbi1; Rassel Raihan1; Prasun Majumdar1; University of South Carolina

8:40 AM  Understanding the Surface of Heterogeneous Porous Electrodes: Modeling, Simulation, and In Situ Characterization: Meilin Liu1; Georgia Institute of Technology

8:20 AM  A Hybrid Unit Based on Solid Oxide Fuel Cells for Electricity and Fuel-Assisted Hydrogen Generation: Anil Virkar1; Greg Tao2; University of Utah; Materials and Systems Research, Inc.

9:00 AM  Laser Deposited Coatings of CoCrMo-Alloy Onto Ti-6Al-4V and SS316 Substrates for Biomedical Application: Nolan Jones1; Jin Li1; Yung Shin2; Purdue University

9:00 AM  Electrochemical Deposition of Strontium-Doped Hydroxyapatite Coatings: Ling Li1; Christopher Weyant1; Stony Brook University

9:00 AM  Synthesis of ZnO Coatings on Titanium by High-Energy Ball Milling: Monica Mohan1; Anantha Subramanian1; Ramaswamy Narayanan1; Peter Angelo1; PSG College of Technology

9:40 AM  Novel SOFC Processing Techniques Employing Printed Materials: Denis Cormier1; Rochester Institute of Technology

10:00 AM  A Novel Electrode Material for Symmetrical Solid Oxide Fuel Cells: Qiang Liu1; Guoliang Xiao1; Daniel Bugarsi1; Hans-Conrad zur Loye1; Fanglin (Frank) Chen1; University of South Carolina

11:00 AM  Qiang Liu1; Guoliang Xiao1; Daniel Bugarsi1; Hans-Conrad zur Loye1; Fanglin (Frank) Chen1; University of South Carolina


Program Organizers: Zhenguo “Gary” Yang, Pacific Northwest National Laboratory; Terry Holesinger, Los Alamos National Laboratory; Xingbo Liu, West Virginia University; Chun Lu, Siemens Energy, Inc.

Tuesday AM  Room: C223  Location: Columbus Con. Center

8:00 AM  Ultrasound Alumina Coated Carbon Nanotubes as Anodes for High Capacity Li-Ion Battery: Indranil Lahiri1; Wonbong Choi2; Florida International University

8:20 AM  Properties of Self-Assembled Polymer Derived C/SiCN Nanocomposites as the Anode in Lithium Ion Batteries: Cheng Li1; Linan An1; University of Central Florida
Tuesday AM

8:00 AM  Introductory Comments

8:20 AM  A Study on the Stress Corrosion Cracking Mechanism of Carbon Steel in Fuel Grade Ethanol: Gong Gui; Narasi Sridhar; John Beavers

8:40 AM  An Environmentally Assisted Cracking Investigation of Wrought Ni-Al and Si-Al Bronze in Seawater and Ammonia Solutions: Michelle Koul; Jennifer Gaies

9:00 AM  Corrosion and Cracking of Carbon Steel in Fuel Grade Ethanol – Using Supporting Electrolyte to Study Cracking Mechanism: Ling Cao; Gerald Frankel; Narasi Sridhar; The Ohio State University; DNV Research & Innovation USA

9:20 AM  Coupled Hydrogen Transport and Deformation of 21Cr-6Ni-9Mn Austenitic Stainless Steel: James Foull; Brian Sommerday; Chris San Marchi; Yuki Ohashi; Dorian Balch; Sandia National Laboratories

9:40 AM  Break

Session: Environmentally Assisted Cracking of Materials: Session II
Program Organizers: Ramgopal Thodla, DNV Columbus; Suresh Divi, TIMET

Tuesday AM  Room: D233
October 18, 2011  Location: Columbus Con. Center

Session Chair: Ramgopal Thodla, DNV Columbus

Failure Analysis and Prevention: Welding, Joining and General Interest
Program Organizers: Andrew Spowage, The University of Nottingham, Malaysia Campus; Tom Ackerson, IMR Metallurgical Services; Larry Hanke, Materials Evaluation and Engineering, Inc

Tuesday AM  Room: D235
October 18, 2011  Location: Columbus Con. Center

Session Chairs: Paul Redmond, Southwest Research Institute; Dennis McGarry, SEA Limited; Lindsay Malloy, Riley Power, Inc.

8:00 AM  Mechanical Properties and Microstructure Evolutions of Ultrafine-Grained Al during Recovery via Annealing: Yonghao Zhao; T.D. Topping; J.F. Bingert; Y. Li; P.L. Sun; E.J. Lavernia; University of California Davis; Los Alamos National Laboratory; Feng Chia University, Taiwan

8:20 AM  Failure Investigation of an Automotive Component: Sudhakar Vadiraja; Montana Tech

8:40 AM  Assessing High Temperature Failures in Components under Constraint: Darren Barborak; George Lai; Bingtao Li; Aquilex WSI
9:00 AM
An Investigation on L605 Cracking during Wire Manufacturing: Song Cai; Larry Kay; Fort Wayne Metals Research Products Corp.

9:20 AM
SEM/EDS Microstructural and Spectroscopic Analysis of Ethylene Furnace Steel Alloy Tubes: Cleophas Loto; Tshweu University of Technology

9:40 AM Break

10:00 AM
Failure Analysis of Duplex Stainless Steel Wet Flue Gas Desulfurization Absorber Vessels: Brett Tossey; DNV USA, Inc.

10:20 AM
A Case Study of Four Fractured Tack-Welded Tied-Rods Supporting an Expansion Joint Bellows: Paul Redmond; Daniel Hopkins; Southwest Research Institute

10:40 AM
Thickness Effects on the Quantification of Thin Film Cohesive and Adhesive Failure Mechanisms during Nano Scratch Testing: Barton Prorok; CSM Instruments; Auburn University

11:00 AM
An Accident Resulting from a False Lock Configuration on a Rear Fly Extension Ladder: Alan Johnson; Randall Storey; Metals Research Inc.; University of Louisville

11:20 AM
Ford Probe Seat Collapse: Richard McSwain; Eric Van Idersteine; William Carden; Mark Hood; McSwain Engineering, Inc.

11:40 AM
Need to Sweat the Small Stuff: Wayne Reitz; Reitz Consulting, Ltd.

Fatigue and Microstructure: A Symposium on Recent Advances: Crack Initiation
Program Organizers: Amit Shyam, Oak Ridge National Laboratory; Sushant Jha, Air Force Research Laboratory/Universal Technology Corporation; Michael Caton, US Air Force Research Laboratory

Tuesday AM Room: D240/241 Location: Columbus Con. Center

Session Chairs: Michael Sangid, University of Illinois at Urbana-Champaign; Luc Remy, Mines ParisTech

8:00 AM
Mitigation of Fatigue Crack Initiation and Growth by Microstructure-Induced Residual Stresses: Kwai Chan; Southwest Research Institute

8:40 AM
A Physically-Based Fatigue Model for Prediction of Crack Initiation from Persistent Slip Bands in Polycrystals: Michael Sangid; Huseyin Sehitoglu; University of Illinois, Urbana-Champaign

9:00 AM
Quantitative Evaluation of Fatigue Life of Aluminium Alloys by Non-Destructive Testing and Parameter Model: Yakub Tijani; Andre Heinrietz; Thomas Bruder; Holger Hanselka; Technical University Darmstadt; Fraunhofer Institute for Structural Durability and System Reliability, LBF

9:20 AM
Fatigue and Corrosion Properties of Mg-Al-Mn Alloy by Super Vacuum Die Cast: Wei Wen; Alan A. Luo; Tongguang Zhai; University of Kentucky; General Motors Corporation

9:40 AM Break

10:00 AM
An Atomistic Energy-Based Model for Fatigue Accounting for Grain Boundary Characters: Huseyin Sehitoglu; Michael Sangid; Hans Maier; University of Illinois; University of Paderborn, Germany

10:40 AM
Strip-Yield Modeling of Creep-Fatigue Crack Nucleation and Growth in Heat-Resistant Steels: Gabriel Potirniche; University of Idaho

11:00 AM
Four-Point Fatigue of High Strength Low Carbon Bainitic Steel: Linghui Du; Xiucheng Li; Wei Wen; Chengjia Shang; Tongguang Zhai; University of Science and Technology Beijing

11:20 AM
Factors Controlling Fatigue Crack Initiation at Particles in High Strength Al Alloys: Xinliang Zang; Wei Wen; Alfonso Ngan; Tongguang Zhai; Yanshan University; University of Kentucky; University of Hong Kong

11:40 AM
Cryogenic S-N Fatigue Behavior of Cast 304 and 316 Stainless Steels: Jaeki Kwon; Kyungjin Cha; Youngju Kim; Sokeul Chung; Sangshik Kim; Korea Institute of Geoscience & Mineral Resources(KIGAM); Gyeongsang National University/Department of Metallurgical and Materials Engineering

Glass and Optical Materials: Optical Materials I
Program Organizer: Pierre Lucas, University of Arizona

Tuesday AM Room: C111 October 18, 2011 Location: Columbus Con. Center

Session Chair: Armani Andrea, University of Southern California

8:00 AM
Glass-Clad Semiconductor Core Optical Fibers: John Ballato; Stephanie Morris; Wade Hawkins; Paul Foy; Colin McMillen; Roger Stolen; Steve Martin; Robert Rice; Clemson University; Iowa State University; Northrop Grumman Space Technology

8:40 AM
Solidification of Silicon Optical Fibers: Brian Scott; Gary Pickrell; Virginia Tech

9:00 AM
Characterizations of a Hot-Pressed Polycrystalline Spinel:Ce Scintillator: Ching-Fong Chen; F. Doty; R. Houk; P. Yang; H. Volz; R. Loufy; LANL; SNLs; MER Corporation

9:20 AM
Development and Characterization of Polymer Nanocomposites with High-UV Shielding Efficiency: Mulayam Gaur; Pranod Singh; Hindustan College of Science and Technology

9:40 AM Break
10:00 AM
Tailoring Glasses for Lasers and Optical Biosensors: Andrea Armani; Heather Hunt; Brian Rose; Simin Mehrabani; Ashley Maker; Kelvin Kao; Rasheeda Hawk; 'University of Southern California

10:40 AM
Association of Defects with Antimony Luminescence Centers in Calcium Fluorapatite Phosphors: Eric Kreidler; 'American Ceramic Society

11:00 AM
Chalcogenide Glasses and Glass-Ceramics for Novel Infrared Technologies: Jean-Luc Adam; Xiang-Hua Zhang; Johann Trolès; Laurent Brilland; Virginie Nazabal; 'Université de Rennes 1 - CNRS; 'PERFOS

11:40 AM Cancelled
Optical Properties of Samarium-Doped Oxfluoride Glasses Containing CaF2, Nanocrystallites: Marcel Dyrbä; Paul-Tiberiu Miclea; Mihail Secu; Jacqueline Johnson; Stefan Schweizer; 'Martin Luther University of Halle-Wittenberg; 'Fraunhofer Center for Silicon Photovoltaics; 'National Institute of Materials Physics; 'University of Tennessee

9:00 AM Invited
Fabrication of Advanced Ceramics Using NanoComposite Particles Prepared by A Dry Mechanical Treatment: Junichi Tatami; Hiromi Nakano; Toru Wakahara; Katsutoshi Komeya; 'Yokohama National University; 'Toyohashi University of Technology

9:40 AM Break

10:00 AM Invited
Particle Motion Directly Observed under Shear Stress Field in Plastic Ceramic Paste: Keizo Uematsu; Yuki takahashi; Satoshi Tanaka; 'Nagaoka University of Technology

10:20 AM
Novomer’s Green Binders Reduce Energy Content of Advanced Ceramics: Jason Anderson; 'Novomer, Inc.

10:40 AM
Effects of Magnetic Flux Density on Structure of Green and Sintered Bodies in SrxBa1-xNb2O6 System Prepared in a Magnetic Field: Takuma Takahashi; Satoshi TANAKA; Keizo UEMATSU; 'Nagaoka University of Technology

11:00 AM
Drying-Induced Forming Coupled with Vibration for Fabrication of Ceramics with Reduced Defects: Sho Masuda; Satoshi Tanaka; Keizo Uematsu; 'Nagaoka University of Technology

11:20 AM
Production of Apatites and Calcium Phosphate from Fish By-Products: Clara Piccirillo; Isabel Braga da Cruz; Rubens Jorge; Robert Pullar; 'Maria Manuela Pintado; Paula Castro; 'Escola Superior Biotecnologia; 'WeDoTech; 'CICECO, Universidade de Aveiro

11:40 AM
Study on the Corrosion Mechanism of Refinery Slag to MgO-CaO Refractories: YU Yanwen; 'BAOSHAN IRON &STEEL CO.LTD. CHINA

Hardness across the Multi-Scales of Structure and Loading Rate: Structural Aspects I
Program Organizers: Ronald Armstrong, University of Maryland; David Bahr, Washington State University; Naresh Thadani, Georgia Institute of Technology; Stephen Wailey, Physics and Chemistry of Solids Cavendish Laboratory

8:00 AM Invited
Exploiting Interactions between Indentation Size and Structure Size Effects: Theory, Experiment and Some Practical Implications: Xiaodong Hou; ‘National Physical Lab, UK

8:20 AM Invited
On the Origin of High Hardness in Iron Alloys: Donald Lesuer; Chol Syu; ‘Oleg Sherby; Jeffrey Wadsworth; ‘Lawrence Livermore National Laboratory; ‘Stanford University; ‘Battelle

8:40 AM Invited
Probing the Plastic Deformation Mechanisms of Ultralfine Grained and Nanocrystalline Metals Using Instrumented Indentation: Qiuming Wei; ‘University of North Carolina at Charlotte

9:00 AM Invited
Size–Dependence of Rate Controlling Deformation Mechanism in Nanotwinned Copper: Lei Lu; ‘Institute of Metal Research, CAS

9:20 AM
Effects of Differently Oriented Twin Boundaries on Mechanical Properties in Nanotwinned Ag Films: Daniel Bufford; Haiyan Wang; Xinghang Zhang; ‘Texas A&M University

Green Technologies for Materials Manufacturing and Processing III: Green Materials Processing I
Program Organizers: Tatsuki Ohji, National Institute of Advanced Industrial Science and Technology (AIST); Mitryunjan Singh, Ohio Aerospace Institute, NASA Glenn Research Center; Richard Siess, Worcester Polytechnic Institute, Center for Heat Treating Excellence; Makio Naito, Osaka University

8:00 AM Invited
Manufacturing Impact: Energy Reduction through Microwave Assist Technology Calcining of Limestone: Morgana Fall; Shawn Allan; Holly Shulman; ‘Ceralink Inc

8:40 AM
Energy Efficient Sintered Reaction-Bonding Process of Silicon Nitride Ceramics: Hideki Hyuga; You Zhou; Hideki Kita; Kiyoshi Hirao; Tatsuki Ohji; ‘National Institute of Advanced Industrial Science and Technology (AIST)

9:00 AM
Enhanced Mechanical Property of Hot-Pressed RBSN Ceramics with Lu2O3-SiO2-La2O3-MgO additives: Jae-Woong Ko; Sea-Hoon Lee; Hai-Doo Kim; ‘Korea Institute of Materials Science

9:20 AM
Fabrication of Advanced Ceramics Using NanoComposite Particles Prepared by A Dry Mechanical Treatment: Junichi Tatami; Hiromi Nakano; Toru Wakahara; Katsutoshi Komeya; ‘Yokohama National University; ‘Toyohashi University of Technology
Innovative Processing and Synthesis of Ceramics, Glasses and Composites: Novel Synthesis and Processing

Program Organizers: J. P. Singh, U.S. Army Research Laboratory; Narottam Bansal, NASA Glenn Research Center; Takashi Goto, Tohoku University

Tuesday AM Room: C110
October 18, 2011 Location: Columbus Con. Center

Session Chairs: Michael Hoffmann, Karlsruhe Institute of Technology; Do Kyung Kim, Korea Advanced Institute of Science and Technology

8:00 AM Invited
Evaluation of Ice-Templated Structure Formation from Particle Suspensions by Unidirectional Freezing: Michael J. Hoffmann1; Thomas Waschkies2; Guenter Schell1; Rainer Oberacker1; Karlsruhe Institute for Technology (KIT)

8:40 AM
Ice-Templated Porous Ceramic Structures with Unidirectionally Aligned Channels: Dong Seok Kim1; Seung Jun Lee1; Young Hoon Seong1; Do Kyung Kim1; Korea Advanced Institute of Science and Technology

9:00 AM
Fabrication of Porous Si-B-C-N Ceramics through a Template Free Method: Jianhua Zou1; Linan An1; University of Central Florida

9:20 AM
Preparation and Characterization of a Zirconia-Spinel Nanoceramic Composite Prepared by a Current-Activated Method: Mahmood Shirooeyeh1; Terence Langdon1; University of Southern California

9:40 AM Break

10:00 AM
SHS Die-Casting (SHS-DC) of Magnesium Metal Matrix Composites (MMCs): Ilguk Jo1; Jacob Nuechterlein1; William Garrett1; Munitz Abraham1; Michael Kaufman1; John Moore1; Ken Young1; Chris Rice2; Makhlouf Makhlouf2; Diran Apelian1; Alex Monroe3; Colorado School of Mines; VForge Inc.; Worcester Polytechnic Institute; North American Die Casting Association

10:20 AM
Die Castable SHS Derived Aluminum-Titanium Carbide Metal Matrix Composites: William Garrett1; Ilguk Jo1; Jacob Nuechterlein1; Michael Kaufman1; John Moore1; Colorado School of Mines

10:40 AM Invited
Facile Synthesis and Electrochemical Characterization of Oxide Nanostructures for Energy Device Applications: Do Kyung Kim1; KAIST

11:20 AM
Low Temperature Synthesis of Carbon-Free Si3N4/SiC Nanopowders Using Silica Fume: Jyothi Suri1; Leon Shaw1; University of Connecticut

11:40 AM
Properties of shock-synthesized rocksalt-aluminium nitride: Kevin Keller1; Thomas Schlothauer1; Marcus Schwarz1; Erica Brendler1; Kristin Galonska1; Gerhard Heide1; Edwin Kroke1; TU Mining Academy Freiberg


Program Organizer: David Furrer, Pratt & Whitney

Tuesday AM Room: C213
October 18, 2011 Location: Columbus Con. Center

Session Chairs: Awadh Pandey, Pratt & Whitney Rocketdyne; Will Marsden, Granta
9:00 AM  Invited
The Effect of NiO on Microstructure and Densification in Several Oxides: Ivar Reimanis; Joshua White; Amy Morrissey; Jianhua Tong; James O’Brien; Colorado School of Mines; Quantum Design

10:20 AM
Effect of Layer Thickness on the Heterophase Interface Character Distribution (HICD) of Accumulative Roll-Bonded Cu-Nb Composites: Jonathan LeDonne; Sukbin Lee; Samuel Lim; Xuan Liu; Amith Darbal; Noel Nuhrer; Nathan Mara; Irene Beyerlein; Katy Barmak; Anthony Rollett; Carnegie Mellon University; Singapore Institute of Manufacturing Technology; Los Alamos National Laboratory

10:40 AM
Abnormal Grain Growth and Grain Boundaries in Strontium and Barium Titanate: Michael Baever; Michael Hoffmann; Karlsruhe Institute of Technology

11:00 AM
An Interface Field Model for Motion of Anisotropic Grain Boundaries: Debasis Kar; Seth Wilson; Jason Gruber; Gregory Rohrer; Anthony Rollett; CARNEGIE MELLON U

11:20 AM
Anisotropic Holey Growth during Solid-State Dewetting of Single Crystal Fe-Au Thin Films: Dor Amram; Leonid Klinger; Eugen Rabkin; Technion

11:40 AM
Solid State Oxidation of Aluminum at the Aluminum-Sapphire Interface: Oxygen Transport Mechanism: Sreya Dutta; Helen Chan; Richard Vinci; Lehigh University

9:40 AM Break

10:40 AM Break
9:40 AM Break

10:00 AM

Introduction and Validation of Cr-Free Consumables

for Welding Stainless Steels: Boian Alexandrov; Matthew Gonser; Brian Gaal; John Lippold; Kathleen Paulson; Franklin Turner; William Newell; 1The Ohio State University; 2Consultant; 3Electrode Engineering Inc.; 4NAVFAC Engineering Service Center; 5Euroweld Ltd

10:20 AM

Characterization of the Heat-Affected Zone in Flux-Cored Arc Welded Heavy Section P91: Andrew Deceuster; Benjamin Griffiths; Leijun Li; 1Utah State University

10:40 AM

Optimization of an SMAW Consumable for Grade 91 Creep Strength Enhanced Ferritic Steel in Power Generation Applications: Daniel Saltzmann; Boian Alexandrov; John Lippold; 1The Ohio State University

11:00 AM

Post-Weld Heat Treatment of Heavy Section P91 Welds: Benjamin Griffiths; Andrew Deceuster; Bishal Silwal; Leijun Li; 1Utah State University

11:20 AM

The Benefits of Using Flux in the Development of New Weld Metals for Use on P91 Steels: Brian Gaal; 1Electrode Engineering

11:40 AM

Investigation of PWHT Response and Phase Transformation Behavior of F22 Steel: Eric Fusner; John Lippold; 1OSU Welding and Joining Metallurgy Group

Laser Applications in Materials Technology (II):
Mechanical Properties of Additive Manufactured Materials and Components

Program Organizer: Stephen Copley, Penn State

Tuesday AM
October 18, 2011
Room: E161A
Location: Columbus Con. Center

Session Chairs: Michael Rigdon, Institute for Defense Analyses; William Frazier, Naval Air Systems Command

8:00 AM Keynote

Transferring Titanium Metal Additive Manufacturing Products to Aerospace Systems: Ricky Martin1; Kevin Slattery2; David Dietrich; 1Boeing

8:40 AM Invited

Overview of Structure and Properties of Metals and Alloys Fabricated by Direct Metal Deposition: Jyotirmoy Mazumder1; Sudip Bhattacharyya1; Bhaskar Dutta1; 1University of Michigan

9:00 AM Invited

Mechanical Property Design Using Laser Engineered Net Shaping (LENS®): John Smugeresky1; David Keicher2; Richard Grylls2; 1Sandia National Laboratories, CA; 2Optomec Design company

9:20 AM Invited

Mechanical Properties of Laser Deposited Ti-6Al-4V for Repair Applications: Shawn Kelly1; 1Applied Research Laboratory, Penn State University

9:40 AM Break

10:00 AM Invited

Mechanical Properties of Lased-Based Additive Manufactured Materials and Parts: David Bourell1; 1University of Texas

10:20 AM Invited

Laser-Based Material Deposition, Consolidation, & Removal Technologies: Road to Adoption: Constance Phillips1; 1NCMS

10:40 AM Invited

Material Property Characterization of Parts Made with a Metal-Based Additive Manufacturing Process: April Cooke1; John Slotwinski2; 1National Institute of Standards and Technology/University of Maryland at College Park; 2National Institute for Standards and Technology and Mitigation: Assorted Effects

11:00 AM Invited

Mechanical Properties of Laser Deposited Ti-6Al-4V Using Recycled Powder: Shawn Kelly1; Michael Policelli; Kenneth Meinert; Binky Sargent; Paul Prichard; 1Applied Research Laboratory, Penn State University; 2Kennametal, Inc.

11:20 AM Invited

Fabrication and Certification of EBF3 Aluminum Components for International Space Station Support: Craig Brice1; Karen Tamingier; Rob Hailey; Mike Waid; Daila Gonzalez; 1NASA Langley Research Center

11:40 AM Invited

On Making Additive Manufacturing a Production Technology: K hershed Cooper1; Ralph Wachtler; 1Naval Research Laboratory; 2Office of Naval Research

12:00 PM Invited

Laser and Electron Beam Sintering of ZrB2-Based Cermets: Mool Gupta1; Tyson Balridge; Chen-Nan Sun; 1UVA

Localized Corrosion -- Measurement, Mechanisms and Mitigation: Assorted Effects

Program Organizer: Gerald Frankel, Ohio State University

Tuesday AM
October 18, 2011
Room: D244/245
Location: Columbus Con. Center

Session Chair: Gerald Frankel, The Ohio State University

8:00 AM

Study of Carbon Steel Corrosion at the Liquid-Air Interface in Simulated Nuclear Waste Solutions: Xiaoji Li1; Feng Gui2; Sean Brossia2; Gerald Frankel1; 1the Ohio State University; 2DNV Columbus, Inc.

8:20 AM

Mitigation of Microbiologically Influenced Corrosion Using High Frequency Ultrasonic Techniques: Hussain Almahamed1; Douglas Meegan1; Brajendra Mishra2; David Olson1; 1Colorado School of Mines

8:40 AM

Pitting Corrosion of Cu in Various Atmospheric Environments with Ozone and UV Radiation: Huang Lin1; Gerald Frankel1; Mark Jaworowski1; 1Fontana Corrosion Center, The Ohio State University; 2United Technologies Research Center

9:00 AM

Electropolishing of Niobium to Obtain Defect Free Surface: Ashwini Chandra1; Gerald Frankel1; Michael Sumption1; 1The Ohio State University
Localized Corrosion -- Measurement, Mechanisms and Mitigation: High Temperature Corrosion
Program Organizer: Gerald Frankel, Ohio State University
Tuesday AM Room: D244/245 Location: Columbus Con. Center
Session Chair: Gerald Frankel, The Ohio State University

10:00 AM
A Review of Experiences with AL-6XN® and ZERON® 100 Alloys in Air Pollution Control Systems: Devin Wachowiak;
'Rolled Alloys

10:20 AM
Effect of Applied Stress, Crystal Orientation, and Phase on Hot Corrosion of CMSX-4 by Sodium Sulfate: Pongrat Lortrakul;
Rodney Trice;
Kevin Trumble;
'Purdue University

10:40 AM
Localized Attack in FGD Air Pollution Control Vessels: Debajyoti Maitra;
Lewis Shoemaker;
Jim Crum;
'Special Metals Corporation

11:00 AM
An Atomistic Study of Oxidation Initiation on Different Kinds of FCC Fe-Cr Binary Alloy Surfaces: Nisikh Das;
Tetsuo Shoji;
'Tohoku University

Magnetoelectric Multiferroic Thin Films and Multilayers: Multiferroic Materials
Program Organizer: Shashank Priya, Virginia Tech
Tuesday AM Room: C221 Location: Columbus Con. Center
Session Chair: Ashok Kumar, University of Puerto Rico

8:00 AM
Patricia Morris;
'The Ohio State University

8:20 AM
BaTiO$_3$ Based Two-Phase Nanorods: Yaodong Yang;
Yanxi Li;
Jie-Fang Li;
D Viehland;
'Virginia Tech

8:40 AM Invited
Converse Magnet-Electric Coupling in Magnetoelectric Hexaferrite: Ashok Kumar;
Ram Katiyar;
'University of Puerto Rico

9:00 AM
Effect of Magnetic Field Annealing on Magnetic and Magnetoelectric Properties of Sol-Gel Derived NiFe$_2$O$_4$ and Pb(Zr$_{0.52}$Ti$_{0.48}$)O$_3$ Thin Film Multilayer Composites: Safoura Seifikar;
Xiaotao Liu;
Frank Hunte;
Yaser Bastani;
Nazanin Bassiri Gharb;
Justin Schwartz;
'North Carolina State University;
'Georgia Institute of technology
Tuesday AM
MS&T’11 • October 16-20, 2011 • Convention Center • Columbus, Ohio

11:20 AM
Phase-Field Modeling of Void Migration in Nuclear Fuels Due to a Temperature Gradient: Liangze Zhang1; Michael Tonks1; Paul Millett1; Bulent Biner1; Yongfeng Zhang1; Karthikkeyan Chockalingam1; Idaho National Laboratory
11:40 AM
Effects of Impurities on the Grain Boundary Penetration of Nickel by Liquid Bismuth: Kaveh Meshinchi Asl1; Jian Luo1; Clemson University

Materials Science Challenges for Nuclear Applications: Simulation of Reactor Materials
Program Organizers: Ram Devanathan, Pacific Northwest National Laboratory; Raul Rebak, GE Global Research; Kevin Fox, Savannah River National Laboratory; Andrzej Wojciezsynski, ATI Powder Metals; Ramprashad Prabhakaran, Idaho National Laboratory; Bill Lee, Imperial College London; Kumar Sridharan, University of Wisconsin; Elizabeth Hoffman, Savannah River National Laboratory; David Forrest, Naval Surface Warfare Center; Aladar Csontos, U.S. Nuclear Regulatory Commission

Tuesday AM
Room: C225
Location: Columbus Con. Center

Session Chairs: Ram Devanathan, Pacific Northwest National Laboratory; Samrat Choudhury, Los Alamos National Laboratory

8:00 AM Invited

8:40 AM
First Principles Calculations of Y2O3, Interface with Ferritic Matrix: Samrat Choudhury1; Christopher Stanek1; Blas Uberuaga1; Los Alamos National Laboratory

9:00 AM
Constitutive Model for Irradiation Creep of HT9 to High Doses: Micah Hacker1; Gary Povirk1; TerraPower, LLC

9:20 AM
Multi-Scale Examination of the Effect of S3 Grain Boundaries on Irradiation-Induced Defects: Christopher Barr1; Greg Vetterick1; Marquis Kirk2; Khalid Hatter1; Mitra Taheri1; Drexel University; Argonne National Laboratory; Sandia National Laboratory

9:40 AM Break

Multi Scale Modeling of Microstructure Deformation in Material Processing: Session II
Program Organizer: Lukasz Madej, Akademia Gorniczo Hutnicza

Tuesday AM
Room: C211
Location: Columbus Con. Center

Session Chair: Mark Tschopp, Center for Advanced Vehicular Systems Mississippi State University

8:00 AM
Simulation of Dynamic Recrystallization for Ultrahigh Strength Steel Using Cellular Automation: Huang Quan1; Yi ping1; School of Mechanical and Electrical Engineering, Central South University

8:20 AM
Statistical Approaches Applied to Failure of Isotropic Materials with Random Cracks: Ozgur Keles1; Edwin Garcia1; Keith Bowman1; Purdue University

8:40 AM
Development of finite element procedures to model the behavior of ultra fine-grained and nanocrystalline grain structures during Equal-Channel Angular Press (ECAP) processing of metals: Kazeem Sanusi1; Gert Oosthuizen1; Pieter Eksteen1; University of Stellenbosch

9:00 AM
Multiscale Modeling of the Deformation Inhomogeneity in the Angular Accumulative Drawing Process: Krzysztof Muszka1; J. Majta1; K. Doniec1; D. Dziadzie1; AGH University of Science and Technology

9:20 AM
Three-Phase Regions with the Reaction Type Changing: Vasily Lutsyk1; Vladimir Savinov2; Buryat State University; Institute of Physical Materials Science

Multifunctional Oxides: Session II
Program Organizer: Xiaqing Pan, University of Michigan

Tuesday AM
Room: E162A
Location: Columbus Con. Center

Session Chairs: Chonglin Chen, University of Texas at San Antonio; Chris Nelson, University of Michigan

8:00 AM Invited
Formation and Switching of Improper Ferroelectric Domains in Epitaxial Polar Ferrimagnetic Oxide Thin Films: Ji Hye Lee1; William Jo1; Ewha Womans University

8:40 AM
Ferroelectric Domains in Textured Polycrystalline Bismuth Sodium Titanate Piezoelectric Ceramics: Jake Jokisaari1; M.B. Katz1; T. Tani2; X.Q. Pan1; University of Michigan; Toyota Technological Institute

9:00 AM Invited
In-Situ Ferroelectric Switching of Multiferroic BiFeO3 Thin Films for Magnetoelectric Applications: Christopher Nelson1; Benjamin Winchester1; Yi Zhang1; Sung-Joo Kim1; Jake Jokisaari1; Alexander Melville1; Carolina Adamo1; Chad Folkman1; Seung-Hyub Baek1; Chang-Beom Eom1; Seung-Hyub Baek1; Darrell Schлом1; Long-Qing Chen1; Xiaoqing Pan1; University of Michigan; Penn State University; University of Wisconsin

9:40 AM Break

10:00 AM
Study of Domain Structures of Lead-Free Na1/2Bi1/2TiO3-BaTiO3 Crystals: Jianjun Yao1; Li Yan1; Wenwei GE1; Jiefang Li1; Dwight Viehland1; Qinhuang Zhang1; Haosuo Luo1; Virginia Tech; Shanghai Institute of Ceramics, Chinese Academy of Sciences

10:20 AM
Real-Time Switching of Multiferroic Lead Zirconate Titanate Thin Films: Peng Guo1; Chris Nelson1; Jake Jokisaari1; Seung-Hyub Baek1; Chang-Beom Eom1; Enge Wang1; Xiaoqing Pan1; University of Michigan; University of Wisconsin-Madison; Peking University

10:40 AM
Mapping and Statistics of BiFeO3 Domain Boundary Angles and Types: Joseph Desmarais1; Alejandro Lluberes1; Linghan Ye1; Jon Ihlefeld1; Bryan Huey1; University of Connecticut; Sandia National Laboratories
Nano- and Atomic-Scale Fracture: Atomistics of Fracture
Program Organizers: Lawrence Friedman, NIST; Stephen Freiman, NIST

Tuesday AM
October 18, 2011
Room: C125
Location: Columbus Con. Center

Session Chair: Steve Freiman, Freiman Consulting

8:00 AM
Atomic-Scale Fracture of Brittle Solids: Michael Marder1; 1UT Austin

8:40 AM
Consistent Embedding: A Multi-Scale Approach to Brittle Fracture: Keith Runge1; Krishna Muralidharan2; Pierre Deymier1; 1University of Florida; 2University of Arizona

9:20 AM
Crack Tip Processes: Does Size Matter?: John Mecholsky1; Stephen Freiman1; 1University of Florida; 2Freiman Consulting

10:40 AM Break

11:00 AM
In-Situ TEM on Nano-Crack Nucleation in Dislocation Free Zone: Scott Mao1; 1University of Pittsburgh

10:20 AM
Fracture in Hybrid Molecular Films: Experiments and Computational Models: Reinhold Dauskardt1; 1Stanford University

11:40 AM
In-Situ Observation of Crack Propagation Behavior of Silicon Nitride Ceramics by Scanning Probe Microscopy: Junichi Tatami1; Masahiro Ohnishi2; Toru Wakihara1; Katsutoshi Komeya1; Takeshi Meguro1; 1Yokohama National University

Next Generation Biomaterials: Tissue Engineering
Program Organizers: Roger Narayan, Univ of North Carolina & North Carolina State Univ; Kalpana Katti, North Dakota State University; Kajal Mallick, University of Warwick; Vilupanur Ravi, California State Polytechnic University, Pomona; Varshini Singh, Louisiana State University

Tuesday AM
October 18, 2011
Room: C215
Location: Columbus Con. Center

Session Chairs: Ulrike Wegst, Dartmouth College; Otto Wilson, Catholic University of America

8:00 AM Invited
Materials Development for Biomimetic Engineered Skin Mechanics: Heather Powell1; 1The Ohio State University

8:20 AM Invited
Fabrication Approaches and Characterization of Porous 3D Bioscaffolds for Hard Tissue Augmentation: Kajal Mallick1; James Winnett1; Gwendolen Reilly2; William van Grunsven1; James Lapworth1; 1University of Warwick; 2University of Sheffield

8:40 AM Invited
Degradation of Tailored Amorphous Multi Porous (TAMP) Bioscaffolds: Di Zhang1; Shojie Wang1; Leena Hupa1; Himanshu Jain2; 1Lehigh University; 2Åbo Akademi

9:00 AM Invited
Biologically Inspired Origami (BIO) Paper for Tissue Engineering Scaffolds: Otto Wilson1; Mallory Vogel1; Patrick Mehl1; Olumide Ojeifo1; 1Catholic University of America

9:20 AM Invited
Hybrid Biomaterials: Ulrike Wegst1; 1Drexel University

9:40 AM Break

10:00 AM
Synthesis and Characterization of Gel Casting and Freeze Casting Derived Porous Bioceramic Scaffolds: Anouska Nithyanandan1; Kajal Mallick1; 1University of Warwick

10:20 AM Invited
Influence of Scaffold Hydration on Fiber Geometry and Extension: Greg Ebersole1; Jackie Ohmura1; Peter Anderson1; Heather Powell1; 1The Ohio State University

10:40 AM
Multi-Scale Porosity in Artificial Bone Scaffolds by Robocasting: Yang Shi1; James Smay1; 1Oklahoma State University

11:00 AM
Mechanical and Microstructural Characterization of 45S5 Bioglass® Scaffolds for Tissue Engineering: Ena Athena Aguilar-Reyes1; Louis-Philippe Lefebvre1; Carlos Alberto León-Patillo1; Benito Jacinto-Diaz1; Erasmo Perdomo-Cervantes1; 1Universidad Michoacana de San Nicolás de Hidalgo; 2National Research Council Canada, Industrial Materials Institute

11:20 AM
Post-Electrospinning Modification of Chitosan Fibers: Marjorie Austero1; Amanda Toth1; Caroline Schauer1; 1Drexel University

11:40 AM
Biodegradable Polymer-Hydroxyapatite Composite Scaffolds: Fabrication and Properties: ARSALAN AHMED1; Mohammad Majahid1; 1Catholic University of America

Novel Sintering Processes and News in Traditional Sintering and Grain Growth: Field Assisted and NanoSintering I
Program Organizers: Ricardo H. R. Castro, University of California at Davis; Douglas Gouveia, Universidade de São Paulo

Tuesday AM
October 18, 2011
Room: C222
Location: Columbus Con. Center

Session Chair: To Be Announced

8:00 AM
Thermal Stability of Cryomilled Al Alloy during Spark Plasma Sintering: Yuhong Xiong1; Dongming Liu1; Ying Li1; Chris Haines1; Joseph Paras1; Darold Martin1; Deepak Kapoor1; Enrique Laverna1; Julie Schoenung1; 1University of California; 2US Army

8:20 AM
Synthesis of Nanostructured (Bi,Sh)Te Alloys by Spark Plasma Sintering: Zhihui Zhang1; Yizhang Zhou1; Enrique Laverna1; Nancy Yang1; Ryan Nishimoto1; Peter Sharma1; 1UC Davis; 2Sandia National Laboratories
8:40 AM
Thermal Stability of Al 5356 Processed by Cryomilling and Spark Plasma Sintering: Bamidele Akinnrindi1; Mathieu Brochu1; Raynald Gauvin1; 1McGill University

9:00 AM Invited
Field Assisted Sintering of Oxide Ceramics: New Mechanisms: Sebastian Schwarz2; Raschid Baraki3; Andrew Thorn3; Klaus van Benthem1; Olivier Guillon1; 1Technische Universitat Darmstadt; 2UC Davis

9:40 AM Break

10:00 AM Invited
New Insights on SPS Sintering Mechanisms: Vincent Garnier1; Yann Aman2; Elisabeth Djurado2; 1Université de Lyon - Insa de Lyon; 2Insa de Lyon; 3INP Grenoble

10:40 AM Invited
Densification and Preservation of the Ceramic Nanocrystalline Character by Spark Plasma Sintering: Rachman Chaim1; Rachel Marder1; Claude Estournes2; Zhijuan Shen1; 1Technion - Israel Institute of Technology; 2CNRS, Institut Carnot Cirimat; 3Stockholm University

11:20 AM
On the Effects of Local Joule Heating during the Electric Field Assisted Sintering of Ionic Ceramics: Troy Holland1; Umberto Anselmi-Tamburini2; Dat Quach3; Tien Tran3; Joanna Groza3; Amiya Mukherjee1; 1University of California, Davis; 2University of Pavia

11:40 AM
On the Local Field Strengths during Early Stage Electric Field Assisted Sintering of Ionic Ceramics: Troy Holland1; Umberto Anselmi-Tamburini2; Dat Quach3; Tien Tran3; Joanna Groza3; Amiya Mukherjee1; 1University of California, Davis; 2University of Pavia

9:20 AM Cancelled
Interplay of Electromigration-Induced Voids and Thermal Cycles on Failure Lifetime in Flip-Chip Solder Joints: Jianyong Meng1; Yunqiang Yang1; Yanfei Gao1; 1Univ of Tennessee; 2Agilent Technologies Inc

9:40 AM Break

10:00 AM
Electromigration Behavior in In-Situ CuSn Reinforced Eutectic SnAg Composite Solder Joints: Xiaoya Wang1; Mengting Han2; Limin Ma3; Guangchen Xu4; Fu Guo5; 1Beijing University of Technology

10:20 AM
Finite Element Analysis of Current-Induced Thermal Stress in a Tin Ball: Ming Liu1; Fuqian Yang1; 1University of Kentucky

10:40 AM
Mechanical Shock Behavior of Pb-Free Solders: Kyle Yazzie1; Huiyang Fei1; Haoning Jiang1; Nikhillesh Chawla1; 2Arizona State University

11:00 AM
Phase Segregation under Reversed Current Stressing in Eutectic Sn-Based Solder Joints: Sihan Liu1; Guangchen Xu1; Fu Guo3; Andre Lee2; K. N. Subramanian1; 1Beijing University of Technology; 2Michigan State University

11:20 AM
In-Situ Synchrotron Characterization of Reflow Behaviors, Crystal Orientation Evolution and Strain Development during Thermal Cycling in Lead-Free Solders: Bete Zhou1; Thomas Bjeler2; Guilin Wu3; Stefan Zaefrér2; Tae-Kyu Lee4; Kuo-Chuan Liu5; 1Michigan State University; 2Max-Planck-Institut für Eisenforschung; 3Cisco Systems, Inc

11:40 AM
Growth Mechanism of Sn Whiskers in a Vacuum and Air with Thermal Cycling: Jung-Lae Jo1; Keun-Soo Kim1; Katsuaki Suganuma1; 1Osaka University; 2Hoseo University

Pb-Free Solders and Next Generation Interconnects: Electromigration and Reliability Issues of Pb-Free Solders

Program Organizers: Sehoon Yoo, Korea Institute of Advanced Technology; Andre Lee, Michigan State University; Govindarajan Muralidharan, Oak Ridge National Laboratory; Young-Ho Kim, Hanyang University

Tuesday AM
October 18, 2011
Room: E160B
Location: Columbus Con. Center

Session Chair: To Be Announced

8:00 AM
Evaluation of Lead-free Solder Reliability on Vibration Environment: Yong-Ho Ko1; Young-Kyu Lee2; Sehoon Yoo1; Chang-Woo Lee1; 1Micro-Joining Center, Korea Institute of Advanced Technology, Incheon, 406-840, Korea; 2Dept. of Electronic Packaging Engineering, University of Science & Technology, Daedeon, 305-333, Korea

8:20 AM
Factors Affecting the Dynamic Bending Reliability of Pb-Free Solder Joints in Board Level BGA and Bare Si-Die Flip Chip Packages: Jae-Won Jang1; A-Mi Yu1; Jong-Hyun Lee1; Mok-Soon Kim1; Jun-Ki Kim1; 1Korea Institute of Industrial Technology; 2Seoul National University of Science & Technology; 3Inha University

8:40 AM Invited
Application of Cu-Zn Alloy Solder Wetting Layer for Pb-Free Solders: Young Min Kim1; Young-Ho Kim1; 1Hanyang University
9:20 AM Break

9:40 AM
Emerging Technologies and Professional in Renewable Hydrogen Production by Solar Energy: Kaan Kalkan1; 'Oklahoma State University

10:00 AM
Organic Photovoltaics: Present and Future Prospects: Sumit Chaudhary1; Kanwar S. Nalwa1; Rakesh C. Mahadevaparam1; John Carr1; Yuqing Chen1; 'Iowa State University

10:20 AM
Solar Power Generation-A Sustainable Alternative Energy Technology: Ramana Reddy1; 'The University of Alabama

10:40 AM
Technical Challenges Associated with the Deployment of CO2 Capture and Conversion Materials: Christopher Matranga1; 'US DOE- NETL

11:00 AM Panel Discussion Discussion of emerging professionals and energy materials research.

Phase Stability, Diffusion, Kinetics and their Applications (PSDK-VI): Session Honoring John W. Cahn, Recipient of ASM’s 2011 J. Williard Gibbs Phase Equilibria Award
Program Organizers: Jeffrey LaCombe, University of Nevada, Reno; Yongho Sohn, University of Central Florida; John Morral, Ohio State University; Ursula Kattner, National Institute of Standards and Technology; Abhijeet Misra, QuesTek Innovations LLC

Session Chairs: Ursula Kattner, National Institute of Standards and Technology; John Morral, The Ohio State University

8:00 AM
Gibbs Lost, Found, Applied and Supplemented (Dedicated to the Memory of Francis Larché): John Cahn1; 'NIST and University of Washington

8:40 AM Question and Answer Period

9:20 AM Break

9:40 AM
Thermodynamics of Interfaces: From Willard Gibbs to John Cahn to Recent Developments: Y. Mishin1; 'George Mason University

10:20 AM
Surface Stress: A Materials Science Perspective: Jürg Weissmüller1; 'Technische Universität Hamburg-Harburg and Helmholtz-Zentrum Geesthacht

11:00 AM
Coherent Precipitation in Ternary Al Alloys: Insights from First-Principles Modeling: Colin Ophus1; Maarten de Jong2; Mark Asta3; Ulrich Dahmen3; Velimir Radmilovic4; 'Lawrence Berkeley National Laboratory; 'University of California, Berkeley

Professor K. K. Chawla Honorary Symposium on Fibers, Foams and Composites: Science and Engineering: Metal Matrix Composites/Ceramic Matrix Composites I
Program Organizers: Nikhil Chawla, Arizona State University; Aldo Boccaccini, University of Erlangen-Nuremberg; Gary Gladysz, Trelleborg USA; Pedro D. Portella, Federal Institute of Testing and Materials BAM

Tuesday AM Room: D234
Location: Columbus Con. Center

Session Chairs: Zhong-Chun Chen, Tottori University; Yu-Lin Shen, University of New Mexico

8:00 AM Invited
Plastic Deformation and Creep of Microcellular Metals: Theory and Experiment: Etienne Combaz1; Sébastien Soubielle1; Randoald Mueller1; Yves Conde1; Frederic Diologent1; Russell Goodall1; Andreas Mortensen1; 'Ecole Polytechnique Fédérale de Lausanne; 'Swiss Federal Institute of Technology-Lausanne

8:40 AM Invited
Prof. K. K. Chawla’s Seminal Contributions to the Field of Metal Matrix Composites: Nikhil Chawla1; 'Arizona State University

9:20 AM
Plastic Deformation Induced by Indentation Unloading: A Viscoplastic Analysis on Multilayered Composites: Yu-Lin Shen1; 'University of New Mexico

9:40 AM Break

10:00 AM Invited
In-Situ X-Ray Studies of Ceramic Matrix Composites and Their Protective Coatings: Katherine Faber1; Jonathan Almer1; Joaquin Ramirez-Rico1; Jules Routbort1; Dileep Singh1; Fabian Stolzenburg1; 'Northwestern University; 'Argonne National Laboratory

10:40 AM Invited
In-Situ Synthesis, Microstructure, and Mechanical Properties of Alumina Matrix Composites: Zhong-Chun Chen1; 'Tottori University

11:20 AM
Overview of Structure and Properties of Continuous Fiber Reinforced Mullite Composites: Angelique Neuman1; Krishan Chawla1; 'Los Alamos National Laboratory; 'University of Alabama at Birmingham

11:40 AM
Fiber Bridging Model for Reinforced-Carbon-Carbon: Kwai Chan1; Yi-Der Lee1; Stephen Hudak1; 'Southwest Research Institute
Tuesday AM

Recent Advances in Structural Characterization of Materials: Tomographic and Imaging Methods
Program Organizers: Chad Parish, Oak Ridge National Laboratory; Roumiana Petrova, New Jersey Institute of Tech; Jacob Jones, University of Florida; Zhonghou Cai, Argonne National Laboratory; Gang Chen, Ohio University

Tuesday AM
October 18, 2011
Room: C212
Location: Columbus Con. Center

Session Chair: Gang Chen, Ohio University

8:00 AM Invited Recent Advances in APT Characterization of Nanoclusters and Nanovoids: Michael Miller1; C. Parish1; P. Edmondson1; 'Oak Ridge National Laboratory
8:40 AM Invited Combining High-Energy X-Ray Tomography and Diffraction Techniques at the APS 1-ID Beamline: Peter Knesel1; Ulrich Lienert1; Jonathan Lind1; Christopher Heffernan1; Frankie Li1; Ali Khounsary1; Reju Pokharel1; Robert Suter1; 'Argonne National Laboratory; 'Carnegie Mellon University
9:20 AM 100 Hz Synchrotron Hard X-Ray Micro-Tomography: Wah-Keat Lee1; Xianghui Xiao1; Kamel Fezzaa1; 'Argonne National Laboratory
9:40 AM Break
10:00 AM Invited Deformation in FCC Copper, Experiment and Simulation: Jon Tischler1; Ben Larson1; Anter El-Azab1; Mamdouh Mohamed1; 'Oak Ridge National Laboratory; 'The Florida State University
10:40 AM High-Energy X-Ray Tomography on 3D Microporous Composite Anode of Lithium-Ion Batteries: Xianghui Xiao1; Fikile Brushett1; Susanna Neuhold1; Lynn Trahey1; John Vaughey1; 'Argonne National Laboratory
11:00 AM Atom-Scale Characterization of the Chemistry and Structure of Material Transfer onto AFM Tips Resulting from Nanoscale Contact and Sliding Experiments: Christopher Tourek1; Sriram Sundararajan1; 'Iowa State University

Shape Memory Alloys: Alloy Development and Behavior
Program Organizer: Mohammad Elahinia, University of Toledo

Tuesday AM
October 18, 2011
Room: D242/243
Location: Columbus Con. Center

Session Chair: Minal Bhadane, University of Toledo

8:00 AM In-Situ Synthesis of Shape Memory Alloy-Nitinol by Laser Direct Deposition and Its Property Characterization: Pratik Halani1; Yong Shin1; 'Purdue University
8:20 AM Modeling the Variation in Performance within Polycrystalline Shape Memory Alloys: Harshad Paranjape1; Sivom Manchiraju1; Peter Anderson1; 'The Ohio State University
8:40 AM Shape Memory Materials for Damage Detection in Metallic Materials: Terryl Wallace1; John Newman1; Stephen Smith1; William Leser1; Patrick Leser1; 'NASA Langley Research Center; 'North Carolina State University
9:00 AM Phase Field Modeling of P-Phase Precipitation in (Ni,Pt)Ti High Temperature Shape Memory Alloys: Yipeng Gao1; Ning Zhou1; Fan Yang1; Ronald Noebe1; Michael Mills1; Yunzhi Wang1; 'The Ohio State University; 'NASA Glenn Research Center
9:20 AM Tension and Flex Bending Fatigue of Supereelastic Nitinol: John Lewandowski1; Brian Benini1; Melissa Young1; John Lewandowski1; 'Case Western Reserve Univ; 'Cleveland Clinic
9:40 AM Break
10:00 AM Investigating the Metamagnetic Shape Memory Behavior of NiMn-Based Alloys: Haluk Karaca1; Burak Basaran1; Ali Turabi1; Peizhen Li1; Parth Parekh1; Bedri Baksan1; 'UNIVERSITY OF KENTUCKY; 'Eskisehir Osmangazi University
10:40 AM Full-Field Mapping of Microstructural Evolution during Superaelastic Deformation of SMAs: Michael Kimiecik1; J. Jones1; Samantha Daly1; 'University of Michigan
11:00 AM Effect of Strain Rate and Cycling in the Superaelastic Deformation of the Shape Memory Alloy Nickel-Titanium: Kyubum Kim1; Samantha Daly2; 'The University of Michigan

Steel Product Metallurgy and Applications: Advanced High Strength Steels II
Program Organizer: Bhaskar Yalamanchili, Gerda Amaristeel.com

Tuesday AM
October 18, 2011
Room: D132
Location: Columbus Con. Center

Session Chair: To Be Announced

8:00 AM Effect of Processing Parameters on Structure Evolution of Advanced High Strength Steels Containing Nb and Ti: Rashmi Mohanty1; Hyun Jun1; Olga Girina1; Nina Fonstein1; Debanshu Bhattacharya1; Steve Jansto1; 'ArcelorMittal; 'Reference Metals Company
8:20 AM Strategies for Producing Dual Phase Steel Using Niobium Microalloying: Hardy Mohrbacher1; 'NiobelCon bvba
8:40 AM Effects of Cold Deformation and Annealing on Mechanical Properties, Microstructure and Precipitation State of a Ti-Nb AHSS: Mehran Tehrani1; Farid Hassani1; 'Virginia Polytechnic Institute and State University; 'ArcelorMittal Global R&D
9:00 AM Investigations on Sheared Edge Damage of Dual Phase 780 Steel: Constantin Chiriac1; Mike Shih1; 'USS Corporation
9:20 AM
Improvement of Hole Expansion Properties in Micro-Alloyed Dual Phase Steels: Jenoong Lee1; Seekjae Lee2; Bruno C. De Cooman3; 1GIFT, POSTECH

9:40 AM Break

10:00 AM
Effect of Bainite on Mechanical Properties of Multiphase Ferrite-Bainite-Martensite Steels: Nina Fonseca1; Hyun Jo Jun1; Gang Huang1; Sriram Sadagopan1; Benda Yan1; 1ArcelorMittal Global R&D - East Chicago

10:20 AM
Effects of Microstructures on the Mechanical Properties of DP980 Steels: Kyoo Sil Choi1; Ayoub Soulami1; Dongsheng Li1; Xin Sun1; 1PNNL

10:40 AM
Effect of Initial Microstructure on Recrystallization and Austenite Formation: Mykola Kalakov1; Warren Poole2; Matthias Militzer3; 1The Centre for Metallurgical Process Engineering, The University of British Columbia

11:00 AM
On the Multi-Phase Microstructure Design of a Low Alloy TRIP-Assisted Steel through Computational and Experimental Methodology: Ruixian Zhu1; Shengyen Li1; Ibrahim Karaman1; Raymundo Arroyave1; 1Texas A&M University

11:20 AM
Quantitative Assessment of the Effect of Microstructure on the Stability of Retained Austenite in Multiphase TRIP Steels: Shenzha Zhang1; Kip Findley1; 1Colorado School of Mines

11:40 AM
Development and Application of Hot Press Forming Steel by Quenching and Partitioning Process: Jinkeun Oh1; Yeciorae Cho1; Jai-Hyun Kwak1; 1POSCO

Surface Properties of Biomaterials: Biopolymers and Surface Modifications

Program Organizers: Susmita Bose, Washington State University; Amit Bandyopadhyay, Washington State University; Thomas Webster, Brown University; Sharmilla Mukhopadhyay, Wright State University; Paul Calvert, University of Massachusetts; Mukesh Kumar, Biomet Inc

Tuesday AM 
October 18, 2011 
Room: C216 
Location: Columbus Con. Center

Session Chairs: Ketul Popat, Colorado State University; Gautam Gupta, Biomet Inc.

8:00 AM Invited
Injectable Biomaterials for Tissue Regeneration and Drug Delivery: lakshmi Nair1; 1University of Connecticut health Center

8:40 AM Invited
Electro-Conductive Polymeric Nanowire Templates Facilitates Neural Stem Cell Adhesion, Proliferation and Differentiation: Ketul Popat1; Samuel Bechara1; Lucas Wadman1; 1Colorado State University

9:20 AM Invited
Using Ice to Make Nature Inspired Hybrid Materials: Antoni Tomsoia1; Eduardo Saiz2; 1Lawrence Berkeley Lab; 2Imperial College London

9:40 AM Break

10:00 AM
BoneMaster™ HA Coating – An In Vivo Assessment: Gautam Gupta1; 1Biomet, Inc.

10:40 AM
TiN Reinforced Ti6Al4V Alloy for Load-Bearing Implants: Vamsi Bal1; Abhimanyu Bhat1; Susmita Bose1; Amit Bandyopadhyay1; 1Washington State University

11:00 AM Invited
Structural Changes in Doped and Undoped Hydroxyapatite on Polarization and Its Influence on Bioactivity: Megen Velten1; Harana Dhal1; Subhadip Bodhak1; Susmita Bose1; Amit Bandyopadhyay1; Pranesh Aswath1; 1University of Texas at Arlington; 1Washington State University

11:20 AM
Inhibition of Low-Temperature Degradation on Surface of Yttria-Stabilized Zirconia by Electric Polarization: Naohiro Horiuchi1; Norio Wada1; Miho Nakamura1; Akiko Nagai1; Kimihiro Yamashita1; 1Tokyo Medical and Dental University

11:40 AM
Detonation Spraying of TiO2-Ag: Controlling the Phase Composition and Microstructure of the Coatings: Dina Dudina1; Sergey Zlobin1; Vladimir Ulianitsky1; Natalia Bulina1; Oleg Lomovskiy1; 1Institute of Solid State Chemistry and Mechanochemistry SB RAS; 2Lavrentiev Institute of Hydrodynamics SB RAS

Surface Protection for Enhanced Materials Performance: Science and Technology: Environmental Coatings

Program Organizers: Rodney Trice, Purdue University; Dongming Zhu, NASA Glenn Research Center; Daniel Mumm, University of California-Irvine; Hua-Tay Lin, Oak Ridge National Laboratory; Pravansu Mohanty, University of Michigan; Yutaka Kagawa, The University of Tokyo; Kang Lee, Rolls Royce; Charles Kay, ASB Industries, Inc.; Luc Pouliot, TECNAR Automation Ltd.

Tuesday AM
Room: D230
Location: Columbus Con. Center

Session Chairs: Dongming Zhu, NASA Glenn; Kang Lee, Rolls-Royce Corporation

8:00 AM Invited
Compositional Factors Affecting the Hot Corrosion of Advanced High-Temperature Coatings: Brian Gleeson1; 1University of Pittsburgh

8:40 AM
Effect of Water Vapor on Non-Ideal Oxide Growth in NiAl-Based TBC Bond Coat Systems: Matthew Sullivan1; Daniel Mumm1; 1University of California, Irvine

9:00 AM
High Temperature Oxidation Studies of NiCoCrAlY and NiCoCrAlY+ HF Bond Coats: Naresh Polasa1; Monica Silva1; Ravinder Diwan1; Patrick Mensah1; Stephen Akwabo1; Shengmin Guo1; 1Southern University and A & M College

9:20 AM
Effect of Aluminide Coating Application on the Creep Properties of Fe and Ni-Based Alloys: Sebastien Dryepondt1; Ying Zhang1; Bruce Pint1; 1ornl; 1TN Tech. Uni.

9:40 AM Break

10:00 AM Invited
Environmental Coatings For Gas Turbine Engine Applications: Ming Fu1; Roger Wustman1; Jeffrey Williams1; Douglas Konitzer1; 1General Electric Aviation

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**Advanced Processing and Environmental Barrier Coating System Development for SiC/SiC Ceramic Matrix Composites**: Dongming Zhu; Bryan Harder; Dennis Fox; ’NASA Glenn Research Center

**Dislocation Density Based Finite Element Modeling of Face Centered Cubic Materials Undergoing Ultrasonic Consolidation**: Bryan Harder; 1University of Louisville

**Electron Beam Surface Modification of Alloy 617 for High Temperature Oxidation Resistance**: Injin Sah; Donghoon Kim; Jahyun Koo; Changheui Jang; ’KAIST

**Additive Manufacturing of Metals: Ultrasonic and Other Solid State Additive Manufacturing**

**Standards for the Additive Manufacturing Industry**: Brent Stucker; 1University of Louisville

**Characterization of Microstructure in Al-3003 Alloy Builds Fabricated by Very High Power Ultrasonic Additive Manufacturing**: Hiromichi Fuji; Sriraman Ramanujam; Sudarsanam Babu; ’Tohoku University; ’The Ohio State University

**Dislocation Density Based Finite Element Modeling of Face Centered Cubic Materials Undergoing Ultrasonic Consolidation**: Deepankar Pal; Brent Stucker; ’University of Louisville

**Solid State Additive Manufacturing of Metals**: Mark Norfolk; Matt Short; ’EWI

**Elastic Constants of Ultrasonic Additive Manufactured Al 3003-H18**: Daniel Foster; Sudarsanam Babu; Marcelo Gapino; ’Welding Engineering OSU; ’Mechanical Engineering OSU

**Thermal Stability of Al3003 Builds Made by Very High Power Ultrasonic Additive Manufacturing**: Kittichai Sojiphan; Sudarsanam Babu; ’Ohio State University

**Characterization of 304L Stainless Steel Builds Produced by Very High Power Ultrasonic Additive Manufacturing**: Sriraman Ramanujam; Hiromichi Fuji; Sudarsanam Babu; Matt Short; ’The Ohio State University; ’The Edison Welding Institute

**Advanced Protective Coatings for Refractory Metals and Alloys: Oxidation Modeling, Synthesis and Performance of Alumina Stabilizing Coatings**

**Formation of MoSi2 and Al Doped MoSi2 Coatings on Molybdenum Base TZM Alloy**: Sanjib Majumdar; ’Bhabha Atomic Research Centre

**Design and Synthesis of Al-Doped MoSiB Coatings**: V Mitic, University of Nis; R Guo, University of Texas@ San Antonio

**BNT-Based Multilayer Device with Large and Temperature Independent Strain**: Denis Schuetz; Werner Krauss; Antonio Feteira; Marco Deluca; Klaus Reichmann; ’Graz university of Technology; ’University of Birmingham; ’University of Mining; Leoben

**Advances in Dielectric Materials and Electronic Devices: Materials and Applications I**

**BNT-Based Multilayer Device with Large and Temperature Independent Strain Development and Characterization of Metal-Oxide Thick Films for Gas Sensor Applications**: Travis Busbee; ’Ohio State University
2:40 PM
Dielectric II-VI and IV-VI Metal Chalcogenide Thin Films in Silver Coated Hollow Glass Waveguides (HGWs) for Infrared Spectroscopy and Laser Delivery: Carlos Bleed; Daniel Kopp; James Harrington; ‘Rutgers, the State University of New Jersey

3:00 PM Break

3:20 PM
Porosification of CaO-B2O3-SiO2 Glass Ceramics by Selective Etching for Super-Low k LTCC: Yi Tong Shi; Feng Yuan; Jin E Mu; Zhi Xin He; Ji Hua Guo; Yi Cao; ‘Tianjin Polytechnic University; ‘Seven Stars Electronics Corporation

3:40 PM Invited
Supercapacitor CCTO for High Energy Density Storage: R. Pandey; William Stapleton; Jitendra Tate; Anup Bandypadhyay; Priyamtha Weerasinghe; Soren Spriessler; Ivan Satanto; Brandon Sammons; Ravi Droopad; Colin Wood; ‘Texas State University

4:00 PM Invited
(Bi, Sb)2(Te,S)3 System for Thermoelectric Applications: Winnie Wong-Ng; Qing Huang; Joshua Martin; Peter Zavalij; Howard Jores; Yonggao Yan; Azzam Mansour; Evan Thomas; Jihui Yang; Martin Green; ‘NIST; ‘University of Maryland; ‘Johns Hopkins University; ‘NSWC; ‘AFRL; ‘General Motors R&D

4:20 PM
Interface Engineered Carbon Nanotube-Based Field Emission Devices: Indranil Lahiri; Wonbong Choi; ‘Florida International University

Advances in Manufacturing Technologies: Machining, Joining and Issues
Program Organizer: Muammer Koc, Istanbul Sehir University

Tuesday PM
Room: D144/145
Location: Columbus Con. Center

Session Chair: To Be Announced

2:00 PM
Direct Metal Laser Deposition of Austenitic Stainless Steel Structures: Processing and Characterization: Samar Kalita; ‘University of North Dakota

2:20 PM
Influencing the Role of MnS Inclusions in Machining of Plain Carbon Steels: Kyle Watson; Andy Simoneau; ‘University of New Brunswick

2:40 PM Cancelled
Joining of Steel to Plastic by Using Fiber Laser and Plasma Arc Discharge: Varsha Maddela; Mehdi Asgharifar; Radovan Kovacevic; ‘Research Center for Advanced Manufacturing, Southern Methodist University

3:20 PM Break

3:40 PM
Laser Machining of Alumina: Experimental and Numerical Approach for Surface Finish: Hitesh Vora; Sameer Patyal; Sandip Harimkar; Sandra Boetcher; Narendra Dahotre; ‘University of North Texas; ‘Oklahoma State University

4:00 PM
Linking Machining Parameters to the Silicon Phase in A356 Aluminum during Orthogonal Metal Cutting: Brad Cowperthwaite; Andy Simoneau; ‘University of New Brunswick

4:20 PM Cancelled
Nanostructured Altisin Coatings For Ball Helical Milling Application Of Austempered Ductile Irons (ADI): David Olvera; Luis Norberto Lopez de Lalalla; Asier Fernandez; Javier Fernandez de Larrinoa; Ionu Azkona; ‘University of the Basque Country UPV/EHU; ‘Metal Estalki
Deformation and Transitions at Grain Boundaries: Anisotropy Effects on Grain Boundaries

Program Organizers: Thomas Beier, Michigan State University; Douglas Spearot, University of Arkansas; Rozaliya Barabash, Oak Ridge National Laboratory; Shen Dillon, University of Illinois at Urbana-Champaign; Jian Luo, Clemson University

Tuesday PM  
Room: C121  
Location: Columbus Con. Center

Session Chairs: Hao Zhang, University of Alberta; David Rowenhorst, Naval Research Lab

2:00 PM Invited
Creep Damage Dependence on Grain Boundary Character in Ferritic-Martensitic Steels: David Field; Zhe Leng; 'Washington State University

2:20 PM Invited
Influence of Grain Boundary Crystallography on the Nucleation Characteristics of Dynamic Failure: Mukul Kumar; Roger Minich; 'Lawrence Livermore National Laboratory

2:40 PM Invited
Crystallographic Anisotropies in Grain Boundary Interface Curvature: David Rowenhorst; Alex Lewis; 'The US Naval Research Laboratory

3:00 PM Break

3:20 PM
The Role of Grain Boundary Structure during Shock Loading: Ellen Cerreta; Alex Perez-Bergquist; Juan-Pablo Escobedo-Diaz; Carl Trujillo; George Gray; Saryu Fensin; Steven Valone; Christian Brandl; Timothy Hermann; 'Los Alamos National Laboratory

3:40 PM
Development of Grain Boundaries during Solidification of Anisotropic Materials: Om Singh; 'K. N. Post Graduate College

4:00 PM Invited
Grain Boundary Sliding in FCC and HCP Metals: Hao Zhang; 'University of Alberta

Emerging Frontiers in Surface Engineering of Biomaterials: Biocoatings and Surface Protection

Program Organizers: Kantesh Balani, Indian Institute of Technology Kanpur; Avind Agarwal, Florida International University; Sandip Harimkar, Oklahoma State University; Winston Soboyejo, Princeton University

Tuesday PM  
Room: C226  
Location: Columbus Con. Center

Session Chairs: Sandip Harimkar, Oklahoma State University; Kantesh Balani, Indian Institute of Technology Kanpur

2:00 PM
Polyvinyl Alcohol-HA Hydrogels Surface Modification through Octacalcium Phosphate by a Biomimetic Route: Avijit Guha; Suprabha Nayyar; 'National Metallurgical Laboratory

2:20 PM
Thermomechanical Properties of Polyimide-Based Block Copolymers Containing Ladder-like Polysilsequioxanes: Linqian Feng; Jude Torch; 'the University of Cincinnati
2:40 PM Invited
Progress on Technology of Redox Flow Battery and Its Application in China: Huamin Zhang1; Dalian Institute of Chemical Physics, Chinese Academy of Sciences

3:20 PM

2:40 PM
A New Redox Flow Battery Using Fe/V Redox Couples in Chloride Supporting Electrolyte: Wei Wang1; Soowhan Kim2; Baowei Chen2; Zimin Nie1; Jianlu Zhang2; Guan-Guang Xia2; Liyu Li1; Zhenguo Yang1; Pacific Northwest National Laboratory; Pacific Northwest National Laboratory

4:20 PM
Powder X-Ray Diffraction Investigation of Cathodic Material in Spent Alkaline Batteries from a Waste Stream in Butler County, Ohio: Chris Burnette1; Heather Barrett1; Alyssa Ferraro1; Amanda Meyer1; Mark Krekeler1; Miami University, Oxford Ohio

5:00 PM
Polyhedration of Multicomponent Energy Storage Systems: Vasily Lutsyk1; Buryat State University

5:40 PM Cancelled
Hierarchically Porous Graphene as a Lithium-Air Battery Electrode: Jie Xiao1; Donghai Mei1; Xiaolin Li1; Wu Xu1; Gordon Graff1; Wendy Bennett1; Zimin Nie1; Laxmikant Saraf1; Ilhan Aksay1; Jun Liu1; Jason Zhang1; Pacific Northwest National Laboratory

Session Chair: To Be Announced

Energy Conversion/Fuel Cells: Electrolyte Materials
Program Organizers: Matthew Seabaugh, NexTech Materials, Ltd.; Zhenguo “Gary” Yang, Pacific Northwest National Laboratory; Melvin Liu, Georgia Institute of Technology

Tuesday PM
Room: C224
Location: Columbus Con. Center

Session Chair: To Be Announced

2:00 PM
Electronic Transport and Thermodynamic Properties of ZrO2- Y2O3 -MnOx Solid Solutions: Manoj Mahapatra1; Atul Verma1; Prabhabak Singh1; University of Connecticut

2:40 PM
Degradation Mechanism of SOFC Cathode Electrolyte Systems Incorporating Doped Lanthanum Gallates: Chuan Zhang1; Anh Duong1; Daniel Mumm1; University of California, Irvine

3:00 PM Break

Energy Storage: Materials, Systems and Applications: Flow, Li-Air, and Other Batteries
Program Organizers: Zhenguo “Gary” Yang, Pacific Northwest National Laboratory; Terry Holmgren, Los Alamos National Laboratory; Xingbo Liu, West Virginia University; Chun Lu, Siemens Energy, Inc.

Tuesday PM
Room: C223
Location: Columbus Con. Center

Session Chairs: Wei Wang, Pacific Northwest National Laboratory; Hui Zhang, West Virginia University

2:00 PM Invited
Advanced Vanadium Redox Flow Batteries with Mixed Acid Supporting Electrolyte: Soowhan Kim1; Liyu Li1; Wei Wang1; Baowei Chen1; Murugesan Vijayakumar1; Birgit Schwenzer1; Zimin Nie1; Zhenguo Yang1; Pacific Northwest National Laboratory

Environmental Assisted Cracking of Materials: Session III
Program Organizers: Ramgopal Thodla, DNV Columbus; Suresh Divi, TIMET

Tuesday PM
Room: D233
Location: Columbus Con. Center

Session Chair: Suresh Divi, TIMET

2:00 PM
Identification of Hydrogen Trapping Sites, Binding Energies, and Occupation Ratios at Vacancy, Dislocation and Grain Boundary in Iron Including Various Carbon Contents: Naruuki Abe1; Hiroshi Suzuki1; Kenichi Takai1; Nobuyuki Ishikawa2; Hitoshi Sueyoshi2; Sophia University; JFE Steel Corporation

2:20 PM
In-Situ Repairs of Oil Industry Pipelines, Tanks and Vessels by Welding Using Metal Arc Welding Under Oil (MAW-UO): Hamad Almstaneer1; Stephen Liu1; David Olson1; Colorado School of Mines

2:40 PM
Inter-Granular Corrosion Susceptibility of Cast Stainless Steels: Deepak Kumar1; Sebastien Dryepondt1; Bruce Pint1; Edgar Lara-Curzio1; Oak Ridge National Laboratory

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Fatigue and Microstructure: A Symposium on Recent Advances: Dual-Mode Fatigue
Program Organizers: Amit Shyam, Oak Ridge National Laboratory; Sushant Jha, Air Force Research Laboratory/Universal Technology Corporation; Michael Caton, US Air Force Research Laboratory
Tuesday PM  Room: D240/241
October 18, 2011  Location: Columbus Con. Center

Session Chair: Sushant Jha, Air Force Research Laboratory/Universal Technology Corporation

2:00 PM
Reducing Uncertainty for Fatigue Life Limits of Turbine Engine Alloys: James Larsen1; Sushant Jha2; Michael Caton1; Reji John1; Andrew Rosenberger1; Dennis Buchanan1; Christopher Szczepanski1; Patrick Golden1; 1Air Force Research Laboratory; 2Universal Technology Corp.; 3University of Dayton Research Institute

2:40 PM
The Fatigue Behavior of High Strength Tool Steel Materials: Amit Shyam1; Peter Blu1; Tyson Jordon1; Nan Yang2; 1Oak Ridge National Laboratory; 2Caterpillar Inc.

3:00 PM Break

3:20 PM
The Complexity of Fatigue Behavior as Determined by Competing Failure Mechanisms in Metallic Materials: K. S. Ravi Chandran1; 1University of Utah

4:00 PM
Probabilistic Prediction of Minimum Fatigue Life of a Shot Peened Titanium Alloy: Reji John1; Sushant Jha2; James Larsen1; 1Air Force Research Laboratory; 2Universal Technology Corporation

Glass and Optical Materials: Glass Modeling and Simulation I
Program Organizer: Pierre Lucas, University of Arizona
Tuesday PM  Room: C111
October 18, 2011  Location: Columbus Con. Center

Session Chair: To be announced

2:00 PM
Elucidating the Structure and Properties of Glasses: Contributions from Recent Computer Simulations: Jincheng Du1; 1University of North Texas

2:40 PM
Temperature Dependence on Borosilicate Glass Structure: A Complementary Approach from NMR and High-Temperature Raman: Frédéric Angélli1; Olivier Villain1; Dominique de Ligny1; Thibault Charpentier1; 1CEA; 2Université Claude Bernard Lyon 1

3:00 PM Break

3:20 PM
Understanding the Structure and Properties of Intermediate Glasses using Computer Simulations: Liping Huang1; 1Rensselaer Polytechnic Institute

4:00 PM
Simulation of Local Structure and Energies of Fe2+ and Fe3+ in Alkaline Earth Silicate Glasses: Hiroaki Inoue1; Atsunobu Masuno1; 1Institute of Industrial Science, The University of Tokyo

Tuesday PM

3:00 PM Break

3:20 PM
Metallurgical Analysis to Evaluate Cracking in a 316L Grade Stainless Steel Spiral Heat Exchanger: Thomas Trabert1; Tim Jur1; 1Engineering Design & Testing

3:40 PM
Stress Corrosion Cracking of Steel In Concentrated Nitrate Environments: Sean Brossia1; Feng Gui1; John Beavers1; Hongbo Cong1; 1DNV

4:00 PM
Reduction of Delayed Fracture Susceptibility through Increased Si Content and Surface-softening of Tempered Martensitic Steel: Yu Matsumoto1; Kenichi Takai1; Mikiyuki Ichiba1; Shigeru Mizoguchi1; Tsukasa Okamura1; 1Sophia University; 2Tokyo Electric Power Company; 3Neturen, Co., Ltd

4:20 PM
Weld Joint Failures of a Water Cooling Jacket: Fahmidah Hassain1; Veda-Anne Ulcickas1; 1Massachusetts Materials Research, Inc.

4:40 PM
Stress Corrosion Cracking of Brass: A Comparative Study on Accelerated Laboratory Testing: Helena Chiang1; Carl Wang1; Edgar Wolff-Klønmær2; 1Underwriters Laboratories Taiwan Co., Ltd.; 2Underwriters Laboratories, Inc.

Tuesday PM

2:00 PM
Fatigue Failure Analysis of Extrusion Press Tie Rods: Kyle Minden1; 1Engineering Design & Testing Corp.

2:20 PM
Failure of a Surgical Rod: Tongguang Zhai1; Wei Wen1; 1University of Kentucky

2:40 PM
Failure Analysis of A Tractor Suspension U-Bolt: Michael Connelly1; 1Casey Products

3:00 PM Break

3:20 PM
Failure Analysis of Blind Rivet in Automotive Application: Yanjun Huang1; 1Key Safety Systems, Inc.

3:40 PM
A Study of a Separation of a Bolted Drive Shaft Coupling: Tim Jur1; Ronald Windham1; 1Engineering Design & Testing Corp

4:00 PM
Fastener Failure Mode Effects Analysis – A Microstructural Approach: Michael Connelly1; Frauke Hogue2; 1Casey Products; 2Hogue Metallography
Green Technologies for Materials Manufacturing and Processing III: Green Manufacturing II

Program Organizers: Tatsuki Ohji, National Institute of Advanced Industrial Science and Technology (AIST); Mritunjay Singh, Ohio Aerospace Institute, NASA Glenn Research Center; Richard Sisson, Worcester Polytechnic Institute, Center for Heat Treating Excellence; Makio Naito, Osaka University

Tuesday PM  Room: D232
October 18, 2011  Location: Columbus Con. Center

Session Chairs: Junichi Tatami, Yokohama National University; Tatsuki Ohji, National Institute of Advanced Industrial Science and Technology (AIST)

2:00 PM
Green Technologies Enhanced by Recent Advances in Fundamental Physics: Juliana Mortenson1; ‘General Resonance, LLC

2:20 PM Invited
Hot Gas Cleaning with Gas-Solid Reactions and Related Materials for Advanced Clean Power Generation from Coal: Hiromi Shirai1; Hisao Makino1; ‘Central Research Institute of Electric Power Industry

2:40 PM
Fuel Use Reduction and Lower Emissions Using Rugged, Verifiable, In-Situ Oxygen Analyzers for Combustion Optimization in High-Temperature Processing for Metals, Ceramics, Process Chemical and Incineration: Yvonne Boltz1; Eric Boltz1; Justin Clark1; ‘Marathon Monitors Inc, Group UPC

3:00 PM Break

3:20 PM

3:40 PM
Intelligent Energy Control System in Hot Strip Mill: Hiroyuki Imanari1; Toshiba Mitsubishi-Electric Industrial Systems Corporation

4:00 PM
Application of the Intelligent Strip Running Monitoring System in Continuous Annealing Line of Automotive Sheet: HE JIANFENG1; Baosteel/Nipponsteel/Arcelor Automotive Steel sheets Co.LTD.

Hardness across the Multi-Scales of Structure and Loading Rate: Loading Rate Aspects

Program Organizers: Ronald Armstrong, University of Maryland; David Bahr, Washington State University; Naresh Thadhani, Georgia Institute of Technology; Stephen Walley, Physics and Chemistry of Solids Cavendish Laboratory

Tuesday PM  Room: C210
October 18, 2011  Location: Columbus Con. Center

Session Chairs: Naresh Thadhani, Georgia Institute of Technology ; Christopher Schuh, Massachusetts Institute of Technology

2:00 PM Invited
Impression and Indentation Creep and Stress Relaxation: James Li1; ‘University of Rochester

2:20 PM Invited
Investigation of the Fatigue Characteristic of the Flat Cylindrical Indenter Test: Zhufeng Yue1; Shi Feng Wen1; ‘Department of Engineering Mechanics, Northwestern Polytechnical University

2:40 PM Invited
Creep Influence on Hardness in Multi-Scale Contact: Andreas Goedecke1; Randolf Mock1; ‘Siemens Corporate Technology

3:00 PM Break

3:20 PM Invited
Understanding the Dynamic Indentation Behaviour of Metallic Materials: Sundararajan G1; ‘ARC1

3:40 PM Invited
Correlating Impact-Related Residual Microstructures through 2D Computer Simulations and Microindentation Hardness Mapping: A Review: L. Murr1; ‘University of Texas at El Paso

4:00 PM
Relationship between Static and Dynamic Indentation Response and Impact-Induced Damage in Transparent Materials: Ghatu Subhash1; ‘University of Florida

Innovative Processing and Synthesis of Ceramics, Glasses and Composites: CVD, Plasma Spray, Inkjet and Laser Processing

Program Organizers: J. P. Singh, U.S. Army Research Laboratory; Narottam Bansal, NASA Glenn Research Center; Takashi Goto, Tohoku University

Tuesday PM  Room: C110
October 18, 2011  Location: Columbus Con. Center

Session Chair: Sanjay Mathur, University of Cologne

2:00 PM Invited
Plasma-Enhanced CVD of Metal Oxide Nanostructure: Growth and Device Applications: Aadesh Singh1; Thomas Rügamer1; Sanjay Mathur1; Nirgul Tosun1; Andreas Mettenboerger1; ‘University of Cologne

2:40 PM
Improved Plasma Spray Solution Precursors By Careful Choice of Precursor Chemistry/Properties and by Use of Suspensions: Eric Jordan1; Maurice Gell1; Jacqueline Garofano1; Jiang Chen1; Chigozie Muoto1; ‘University of Connecticut ; ‘University of Connecticut

3:00 PM Break

3:20 PM
Inkjet Printing Approach to Fabrication of Non-Sintered Ceramic-Polymer Hybrid Films and Their Application to 3D System Integration: Jonghee Kim1; Jihoon Kim1; Youngjoon Yoon1; Hyotae Kim1; ‘Korea Institute of Ceramic Engineering and Technology

3:40 PM
Laser Direct Synthesis of Metal Matrix Composites: Kevin Schoeffel1; Yung Shin1; ‘Purdue University

4:00 PM
Laser Densification of Porous ZrB2-SiC Composites: Quentin Lonné1; Nicolas Glandut1; Pierre Lefort1; ‘University of Limoges
Program Organizer: David Furrer, Pratt & Whitney

Tuesday PM
October 18, 2011
Room: C213
Location: Columbus Con. Center

Session Chair: Rajiv Mishra, Missouri University of Science and Technology

2:00 PM
Solidification Microstructure Characteristics: Benchmark Data Generated by In Situ Synchrotron X-Ray Imaging in Processing of Metallic Alloys: Bernard Billia1; Henri Nguyen-Thi1; Nathalie Mangelinck-Noel1; Guillaume Reinhart1; Nathalie Bergeon2; Aziz Bogn2; Adeline Buffet1; Jose Baruchel1; Thomas Schenk1; 1CNRS; 2Aix-Marseille Universite; 3ESRF

2:20 PM
An Integrated Multi-Scale Model for Microstructure Evolution during Solidification of Multi-Component and Multi-Phase Alloys: Wenda Tan1; Neil Bailey1; Yung Shin1; 1Northeastern university; 2Argonne National Laboratory

2:40 PM
Calibrated Monte Carlo Simulation of Microstructural Evolution with the Impact of Anisotropic Grain Boundary Energy and Mobility: Di Wu1; Liangzhe Zhang2; Mark Lusk1; Timothy Bartel1; 1Northeastern University; 2Colorado School of Mines; 3Sandia National Laboratories

3:00 PM Break

3:20 PM
Computational Fluid Dynamics (CFD) Simulation of Non-Newtonian Behavior of Metal Matrix Alloy in Casting Process: Yaou Wang1; Allen Miller1; Khalil Kabiri-bamoradia1; 1The Ohio State University

3:40 PM
Interface Heat Transfer Effects for Solidification Processes: Pamela Kobryn1; 1AFRL

Interfaces, Grain Boundaries and Surfaces from Atomistic and Macroscopic Approaches -- Fundamental and Engineering Issues: Interface Engineering
Program Organizers: Wayne Kaplan, Technion - Israel Institute of Technology; Paul Wynnblatt, Carnegie Mellon University; Dominique Chatain, Centre Interdisciplinaire de Nanoscience de Marseille; Mikel Holcomb, West Virginia University

Tuesday PM
October 18, 2011
Room: C120
Location: Columbus Con. Center

Session Chair: Mikel Holcomb, West Virginia University

2:00 PM Keynote
Surface Chemistry and Activity of SOFC Cathode Materials as Thin Films: Lu Yan1; Philip Tsang1; Sneha Akhade1; Tim Fister1; Jeffrey Eastman1; Paul Furoso1; John Kitchin2; Paul Salvador3; 1Carnegie Mellon University; 2Argonne National Laboratory

2:40 PM Invited
Engineering New Functionalities in Materials: Large Electromechanical Responses in Highly-Strained BiFeO3 Thin Films: Lane Martin1; 1University of Illinois, Urbana-Champaign

3:00 PM Break

3:20 PM Invited
Distinguishing between Chemical Intermixing and Emerging Properties at Epitaxial Oxide Interfaces: Hans Christen1; Hyunsik Kim2; Maria Varela1; Dae Ho Kim1; 1Oak Ridge National Laboratory; 2University of Warwick; 3Tulane University

3:40 PM Keynote
Ferromagnetic/Antiferromagnetic Interfaces: David Lederman1; 1West Virginia University

International Symposium on Advances in Nanostructured Materials and Applications: The 2011 Acta Materialia Gold Medal Symposium:
Nanostructures I: Deformation Mechanisms in Nanostructured Metals
Program Organizers: Haiyan Wang, Texas A&M University; Nugeghalli Ravindra, New Jersey Institute of Technology; Alan Ardell, National Science Foundation; Yuntian Zhu, North Carolina State University; Xinghang Zhang, Texas A&M University; Rajiv K. Singh, University of Florida; John Prater, Army Research Office

Tuesday PM
Room: E170
October 18, 2011
Location: Columbus Con. Center

Session Chairs: Amit Misra, Los Alamos National Laboratory; Qiuming Wei, University of North Carolina at Charlotte

2:00 PM Invited
Grain Boundary Structural Influences on Nanopolycrystal Strength and Strain Rate Sensitivity: Ronald Armstrong1; 1University of Maryland

2:20 PM Invited
Grain Boundaries and Ultimate Strength in Bulk Nanostructured Metallic Materials: Ruslan Valiev1; Sergey Firstov1; 1Ufa State Aviation Technical University; Frantsevich Institute for Problems of Materials Science

2:40 PM Invited
Microstructural Evolution of Two-Phase Nanocomposites Synthesized by Severe Plastic Deformation Techniques: Irene Beyerlein1; Jian Wang1; Hashem Mourad1; Jason Mayeur1; John Carpenter1; Sven Vogel1; Ruifeng Zhang1; Keonwook Kang1; Ben Hansen1; Curt Bronkhorst1; Nathan Mara1; 1Los Alamos National Laboratory

3:00 PM Break

3:20 PM Invited
Ductility and Strategies for Improving Ductility of Bulk Nanostructured Materials: Yonghao Zhao1; Y.T. Zhu2; E.J. Lavernia3; 1University of California Davis; 2North Carolina State University; 3Tulane University

3:40 PM Invited
Deformation in Nanocrystalline Materials: Requirements and Mechanisms: Farghali Mohamed1; 1University of California, Irvine
4:00 PM Invited

Fabrication and Deformation Mechanisms in Nanocrystalline Mg Alloys: Suveen Mathaudhu; Xiaolei Wu; Khalid Youssef; Carl Koch; Laszlo Keskes; Yuntian Zhu; 1University of Waterloo; Leijun Li, Utah State University; Mathieu Brochu, McGill University; Boian Alexandrov, The Ohio State University; Michael Halbig, U.S. Army Research Laboratory

4:00 PM  Cancelled

Microstructural Evolution of AZ91 Magnesium Alloy: Han-Il Yoo; 1Seoul National University; Thomas Mason, Northwestern University; Thomas Lienert, Los Alamos National Laboratory

4:40 PM Invited

High Strength and Ductile Nanostructured Cu-Al Alloy through Severe Cold Rolling and Annealing: Sitarani Raju Kada; Alexander Kauffmann; Jens Fredundenberger; Vadlamani Subramanya Sarma; Deakin University; IFW Dresden; IIT Madras

5:00 PM Cancelled

Microstructure Evolution of Fine Grained AZ91 Magnesium Alloy: Kristian Mátis; Jeno Gubicza; Zoltán Hegedus; Faculty of Mathematics and Physics, Charles University; Eötvös Loránd University

International Symposium on Defects, Transport and Related Phenomena: Defects and Transport in Ceramics III

Program Organizers: Sangtae Kim, University of California, Davis; Ruediger Dieckmann, Cornell University; Doreen Edwards, Alfred University; Manfred Martin, RWTH Aachen University; Thomas Mason, Northwestern University

Tuesday PM Room: C122 Location: Columbus Con. Center

Funding support provided by: WCU Hybrid Materials Program, Department of Materials Science and Engineering, Seoul National University, Korea

Session Chairs: Thomas Mason, Northwestern University; Han-Il Yoo, Seoul National University

2:00 PM Invited

Effect of Co-Doping of Variable-Valent Acceptors (Mn) and Fixed-Valent Donors (Y) on Electrical Properties and Defect Structure of BaTiO3: Han-Il Yoo; Department of Materials Science and Engineering

2:40 PM

Positron Annihilation Spectroscopy Evidence of Cation Vacancies in Some Oxide Systems: Eric Vance; Paul Gaugliardo; James Williams; Zhaoming Zhang; Joel Davis; ANSTO Materials; Centre for Antimatter-Matter Studies

3:00 PM Break

3:20 PM Invited

Oxygen Diffusion and Surface Exchange in Oxides with Anisotropic Crystal Structures: Michael Schroeder; RWTH Aachen

4:00 PM Invited

Comparison of Structure and Ionic Conductivity in Fractal and Zeolitic Phosphosilicates: Arthur Feldman; John Kieffer; University of Michigan

Joining of Advanced and Specialty Materials (JASM XIII): Welding Metallurgy

Program Organizers: Judith Schneider, Mississippi State University; Norman Zhou, Univ. of Waterloo; Leijun Li, Utah State University; Mathieu Brochu, McGill University; Boian Alexandrov, The Ohio State University; Michael Halbig, U.S. Army Research Laboratory; Akio Hirose, Osaka University; Sammy Tin, Illinois Institute of Technology

Tuesday PM Room: E161B Location: Columbus Con. Center

Session Chairs: Boian Alexandrov, The Ohio State University; Thomas Lienert, Los Alamos National Laboratory

2:00 PM

Continuous Cooling Transformation and Microstructure in the CGHAZ of an HSLA-65 Naval Steel: Xin Yue; John Lippold; Boian Alexandrov; Sudarsanam Babu; The Ohio State University; The Ohio State University

2:20 PM

Microstructural Enablers for Improving Fatigue Performance of Spot Weld Joints in Advanced High Strength Steels: Sampath Vanimisetty; David Sigler; General Motors Company

2:40 PM

Metallurgical Characterization of Armor Alloys for Development and Optimization of Induction Bending Procedures: Nicholas Kullman; Boian Alexandrov; The Ohio State University

3:00 PM Break

3:20 PM

Dissimilar Joining of Magnesium Alloy and Steel by Resistance Spot Welding: Kenji MIYAMOTO; Shigeyuki NAKAGAWA; Hiroki SAKAMOTO; Shingo IWATANI; Shinji HOJO; Takahiro TACHIBANA; Tomo OGURA; Akio HIROSE; Kojiro F. KOBAYASHI; NISSAN MOTOR CO., LTD.; Osaka University; The Wakasa Wan Energy Research Center

3:40 PM

GTAW Dissimilar Metals Joining between Steel/AZ31 Magnesium Alloy by Self-Brazing Technique: Rattana Borrisitthekul; Chawinee Pothong; Suranaree University of Technology

4:00 PM

Effects of Welding Parameters and Consumable on Microstructure and Mechanical Properties of Dissimilar Ferritic Stainless Steel and Low Carbon Steel Joints: Hosam Pouraliakbar; Mahmoud Sarkari Khorrani; Reza Farshadnia; Mohammad Ali Mostafaei; Amir Hossein Kokabi; Sharif University of Technology

4:20 PM

Effects of Pulsed Laser Welding Parameters on Microstructure and Mechanical Properties of a Fe-Ni Alloy Joints: Hosam Pouraliakbar; Reza Farshadnia; Amir Hossein Kokabi; Sharif University of Technology

4:40 PM

Evaluation of Microstructure and Mechanical Properties of Advanced High Strength Steel in Resistance Spot Welding: Chikaei Sawanishi; Tomo Ograa; Koichi Taniguchi; Rinsei Ikeda; Shigeru Endo; Koichi Yasada; Akio Hirose; Osaka University; JFE Steel Corporation
Journal of Undergraduate Materials Research:
Session I
Program Organizer: Shaimaa Abdallah, Virginia Tech
Tuesday PM  Room: E160A
October 18, 2011  Location: Columbus Con. Center
Session Chair: Ivar Reimanis, Colorado School of Mines

2:00 PM
A Combined Numerical and Experimental Approach to Measuring Gap Conductance for Precision Glass Molding: Christopher Ostrouchov, Peiman Mosaddegh, John Ziegert, David Musgraves, Paul Joseph, Dhananjay Joshiand, Peter Wachtel, Kathleen Richardson, Materials Engineering Clemson University, Mechanical Engineering Clemson University

2:20 PM
Characterization of a Shot Blast System: Haley Cherniuk, Alan Druschitz, Carlos Suchicital, Robert Hendricks, Materials Engineering Clemson University, Virginia Tech

Magnetoelectric Multiferroic Thin Films and Multilayers: Magnetoelectric Microstructures and Properties Program Organizer: Shashank Priya, Virginia Tech
Tuesday PM  Room: C221
October 18, 2011  Location: Columbus Con. Center
Session Chair: To Be Announced

2:00 PM
Controlled Growth of Epitaxial BiFeO3 Films Using Self-Assembled BiFeO3-CoFe2O4 Multiferroic Heterostructures as a Seed Layer: Yanxi Li, Yaodong Yang, Jianjun Yao, Ravindranath Viswan, Jiefang Li, Dwight Viehlad, Virginia Tech

2:20 PM
Increased Conductivity of Artificially Created Vortex Cores in Epitaxial BiFeO3 Thin Films: Benjamin Winchester, Nina Balc, Anna Morozovska, Sergei Kalinin, Long-Qing Chen, Pennsylvania State University, Oak Ridge National Laboratory, National Academy of Science of Ukraine

2:40 PM
Magnetoelectric Response in Semi-Monolithic CoFe2O4/Pb(Mg,Nb)O3-PTiO3 Heterostructures: Zhiguang Wang, Jaydip Das, Ravindranath Viswan, Jiefang Li, Dwight Viehlad, Virginia Tech

Materials Science Challenges for Nuclear Applications: Nanostructured Materials Program Organizers: Ram Devanathan, Pacific Northwest National Laboratory, Raul Rebak, GE Global Research, Kevin Fox, Savannah River National Laboratory, Andrzej Wójcieszynski, ATI Powder Metals, Ramprashad Prabhakaran, Idaho National Laboratory, Bill Lee, Imperial College London, Kumar Sridharan, University of Wisconsin, Elizabeth Hoffman, Savannah River National Laboratory, David Forrest, Naval Surface Warfare Center, Aladar Csontos, U.S. Nuclear Regulatory Commission
Tuesday PM  Room: C225
October 18, 2011  Location: Columbus Con. Center
Session Chairs: Kevin Fox, Savannah River National Laboratory, Amit Misra, Los Alamos National Laboratory

3:20 PM Invited Microstructure Stability in Irradiated Materials: Anter El-Azab, Florida State University
4:00 PM Computer Simulation of Swift Heavy Ion Irradiation Effects in Ceramics: Ram Devanathan, Pacific Northwest National Laboratory

Materials Science Challenges for Nuclear Applications: Microstructure Evolution Program Organizers: Ram Devanathan, Pacific Northwest National Laboratory, Raul Rebak, GE Global Research, Kevin Fox, Savannah River National Laboratory, Andrzej Wójcieszynski, ATI Powder Metals, Ramprashad Prabhakaran, Idaho National Laboratory, Bill Lee, Imperial College London, Kumar Sridharan, University of Wisconsin, Elizabeth Hoffman, Savannah River National Laboratory, David Forrest, Naval Surface Warfare Center, Aladar Csontos, U.S. Nuclear Regulatory Commission
Tuesday PM  Room: C225
October 18, 2011  Location: Columbus Con. Center
Session Chairs: Kevin Fox, Savannah River National Laboratory, Amit Misra, Los Alamos National Laboratory


2:00 PM Invited Precursor Derived Nanostructured Si-C-X Materials for Nuclear Applications: Shelly Arreguin, Rajendra Bordia, University of Washington, University of Washington
3:00 PM Break
Multifunctional Oxides: Session III  
Program Organizer: Xiaoqing Pan, University of Michigan

Tuesday PM  
Room: E162A  
October 18, 2011  
Location: Columbus Con. Center  
Session Chair: Chonglin Chen, UTSA

2:00 PM Invited  
Heterostructured Titania/Ferroelectric Catalysts for Water Splitting: Li Li1; Andrew Schultz2; Yiling Zhang1; Paul Salvador3; Gregory Rohrer4; 1Carnegie Mellon University

2:40 PM  
High Frequency Magnetodielectric Properties of Hexagonal Ferrites: Yajie Chen1; Trifon Fitchorov1; Bolin Hu1; Anton Geiler1; Carmine Vittoria1; Vincent Harris1; 1Northeastern University

3:00 PM Break

3:20 PM Invited  
Magnetism and Electronic Structure of Eu3+ Perovskite Oxides: Hirofumi Akamatsu1; 1Kyoto University

4:00 PM  
Anomalous Magnetic Behavior of Cobalt Doped Sm2O3 Thin Films: Nathan Gray1; Ashutosh Tiwari1; 1University of Utah

Nano- and Atomic-Scale Fracture: Nanowires  
Program Organizers: Lawrence Friedman, NIST; Stephen Freiman, NIST

Tuesday PM  
Room: C125  
October 18, 2011  
Location: Columbus Con. Center  
Session Chair: Lawrence Friedman, National Institute of Standards and Technology

2:00 PM Thinning and Breaking of Gold Nanowires: Structural Self-Ordering and Quantized Conductance: Francesca Tavazza1; Lyle Levine1; Anne Chaka1; Douglas Smith1; Jon Pratt1; 1National Institute of Standards and Technology

2:40 PM Mechanical Characteristics of Cracked Gold Nanowires under Torsional Loading: Karan Saini1; Navin Kumar2; 1ITT Ropar

3:00 PM Elongation and Rupture of 1-nm Gold Rods: When Size and Shape Matters: Maureen Lagos1; Fernando Sato2; Douglas Galvão1; Daniel Ugarte1; 1Laboratório Nacional de Luz Síncrono (LNLS); 2Univ. Federal de Juiz de Fora; 3Universidade Estadual de Campinas - UNICAMP

Next Generation Biomaterials: Metallic, Polymeric, and Ceramic Biomaterials  
Program Organizers: Roger Narayan, Univ of North Carolina & North Carolina State Univ; Kalpana Katti, North Dakota State University; Kajal Mallick, University of Warwick; Vilupanur Ravi, California State Polytechnic University, Pomona; Varshni Singh, Louisiana State University

Tuesday PM  
Room: C215  
October 18, 2011  
Location: Columbus Con. Center  
Session Chairs: Vilupanur Ravi, California State Polytechnic University, Pomona; Rajarshi Banerjee, University of North Texas

2:00 PM Invited  
Laser Processed Tantalum: Mechanical, In vitro Wear and Biological Properties: Amit Bandyopadhyay1; Vamsi Balla1; Susmita Bose1; 1Washington State University

2:20 PM Invited  
Stability of Boron-Containing Titanium Alloys in Saline and Related Bioreceptor Studies: Vilupanur Ravi1; Shaun Rogers1; Mehnaz Malek1; Daniel Surmenian1; Isaac Priddy1; Ryan Urak1; Steve Alas1; Suresh Divi1; Sesh Tamirisakandala1; Daniel Miracle1; 1California State Polytechnic University, Pomona; 2Titanium Metals Corporation (TIMET); 3FMW Composite Systems Inc; 4Air Force Research Laboratory

2:40 PM Invited  
Next-Generation Rotary Endodontic Instruments Fabricated from Special NiTi Alloy: William Brantley1; Jie Liu1; William Clark1; Masahiro Iijima1; Libor Kovarik1; Fengyuan Zheng1; Scott Schricker1; Satish Alapati1; John Nusstein1; 1The Ohio State University; 2School of Dentistry, Health Sciences University of Hokkaido; 3University of Illinois at Chicago

3:00 PM Break

3:20 PM Invited  
Surface Engineering Approaches for Beta Titanium Alloys Used in Orthopedic Implants (Invited): Peeyush Sandwana1; Soumya Nag1; Sameer Paial1; Thomas Schurf1; Narendra Dahotre1; Rajarshi Banerjee1; 1University of North Texas

3:40 PM Biomedical Titanium Alloy with Ultralow Elastic Modulus and High Strength: Yulin Hao1; Shujun li1; Rui Yang1; 1Institute of metal research, chinese academy of sciences

4:00 PM Alkoxysilane Mediated Generation of Gold Nanoparticles: Development of Novel Electrocatalytic Materials: Prem Pandey1; Dheeraj Chauhan1; 1Institute of Technology, Banaras Hindu University
Perspectives for Emerging Materials Professionals: Early Strategies for Career Development: Session II
Program Organizers: Greg Oberson, U.S. Nuclear Regulatory Commission; Chirag Shah, Exova
Tuesday PM
Room: B200/201
October 18, 2011
Location: Columbus Con. Center
Session Chairs: Nitin Chopra, University of Alabama; Umesh Patil, Caterpillar, Inc.

2:00 PM
Career Decisions And Their Medium-term Impact: Kirk Rogers1; ‘Lorex Industries
2:20 PM
Small Business and Disruptive Technologies: Greg Engleman1; Joshua Caris1; Anupam Ghildyal1; Andrew Sherman1; ‘MesoCoat
2:40 PM
The Early Stages of a Evolving Lifelong Career: Elizabeth Hoffman1; ‘Savannah River National Laboratory
3:00 PM Break
3:20 PM
Following your Passion while Navigating the Bumps in the Road: Christopher Berndt1; ‘Swinburne University of Technology

Phase Stability, Diffusion, Kinetics and their Applications (PSDK-VI): Diffusion Modeling and Measurement
Program Organizers: Jeffrey LaCombe, University of Nevada, Reno; Yongho Sohn, University of Central Florida; John Morral, Ohio State University; Ursula Kattner, National Institute of Standards and Technology; Abhijeet Misra, QuesTek Innovations LLC
Tuesday PM
Room: C214
October 18, 2011
Location: Columbus Con. Center
Session Chairs: Sudarsanam Babu, The Ohio State University; Carelyn Campbell, National Institute of Standards and Technology

2:00 PM
Extraction of Diffusion Coefficients from Binary Diffusion Profiles: Qiaoju Zhang1; Ji-Cheng Zhao2; ‘The Ohio State University
2:20 PM
Experimental Uncertainty Propagation in Depth-Profiling Diffusion Experiments: Alonso Jaques1; Jeffrey LaCombe2; ‘Universidad Técnica Federico Santa María; ‘University of Nevada, Reno
2:40 PM
Interdiffusion, Intrinsic Diffusion, Atomic Mobility and Vacancy Wind Effect in Uranium-Molybdenum Alloy: Ke Huang1; Dennis Keiser2; Yongho Sohn1; ‘University of Central Florida; ‘Idaho National Laboratory
3:00 PM Break
3:20 PM
Tracer Diffusion Studies in Mg-Al-Zn: Najagaj Kulkarni1; Jerry Hunter2; Yongho Sohn2; Sarah Brennan2; Kevin Coffey2; Balasubramaniam Radhakrishnan3; Peter Todd3; Graeme Murch3; Irma Belova3; ‘Oak Ridge National Laboratory; ‘Virginia Polytechnic Institute and State University; ‘University of Central Florida; ‘The University of Newcastle
3:40 PM  
Investigation on Effects of Zr Allotropic Transformation on Diffusion in the Fe-Zr System: **Ashley Ewh**¹; Judith Dickson²; Bulent Sencer³; J. Kennedy⁴; Yongho Sohn⁵; ¹University of Central Florida; ²Idaho National Laboratory

4:00 PM  
Diffusivity Calculations by First-Principles in AFM Cr and FM Ni: **Chelsey Zacherl**¹; ShunLi Shang¹; Yi Wang¹; Zi-Kui Liu¹; ¹The Pennsylvania State University

4:20 PM  
The Influence of Mass Transfer on the Rate of Interface Reaction under Non-Isothermal Conditions: **guanglei tan**¹; ¹University of Science and Technology Liaoning

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**Professor K. K. Chawla Honorary Symposium on Fibers, Foams and Composites: Science and Engineering: Foams II**

Program Organizers: Nikhilesh Chawla, Arizona State University; Aldo Boccaccini, University of Erlangen-Nuremberg; Gary Gladysz, Trelleborg USA; Pedro D. Portella, Federal Institute of Testing and Materials BAM

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Tuesday PM  
Room:  D234  
Location:  Columbus Con. Center  
Session Chairs:  David Dunand, Northwestern University; Gary Gladysz, Trelleborg USA

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2:00 PM  
A Multiple Partial Unloading Indentation Technique for Elastic-Plastic Mechanical Property Evaluation: Numerical and Experimental Investigation: Kwangsoon Lee¹; Jared Tannenbaum¹; Bruce Kang¹; Mary Anne Alvin²; ¹West Virginia University; ²Department of Energy

2:20 PM  
Crystal Structure and Surface Analysis of Diamond-Like Semiconductor Single Crystals: Kimberly Rosmus¹; Jacilynn Brant¹; Jacqueline Sturgeon¹; Kristin Bunker¹; Karen Harris¹; Jennifer Aitken¹; ¹Duquesnes University; ¹RJ Lee Group

2:40 PM  
Break

3:00 PM  
Stress Partitioning Behavior in BCC/FCC Multilayered Steels Measured by In Situ Neuron Diffraction during Tensile Deformation: Mayumi Ojima¹; Junya Inoue¹; Shoichi Namib¹; Pingguang Xu¹; Koichi Akita¹; Hiroshi Suzuki¹; Toshihiko Koseki¹; ¹The University of Tokyo; ¹Japan Atomic Energy Agency

3:20 PM  
Advanced Characterization of the Helical Growth of Dendritic Structures in Synthetic and Naturally Occurring Magma: S. Knox¹; Michael Chapman¹; Jay Tiley¹; Adam Shiveley¹; Gopal Viswanathan¹; Juila Hammer¹; ¹Southwestern Ohio Council for Higher Education/Air Force Research Laboratory; ¹Air Force Research Laboratory; ¹Universal Technology Corporation; ¹Universal Energy Systems, Inc; ¹University of Hawaii at Manoa

3:40 PM  
Microscopic Surface Mapping of the Thermal Diffusivity by Photothermal Confocal Defocusing: Oscar Martinez¹; Nelida Mingolo¹; Ulises Crossa Archiopoli²; ¹Universidad de Buenos Aires; ²Tolket SRL

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**Recent Advances in Structural Characterization of Materials: Advanced Methods and Applications**

Program Organizers: Chad Parish, Oak Ridge National Laboratory; Roumiana Petrova, New Jersey Institute of Tech; Jacob Jones, University of Florida; Zhongzhou Cai, Argonne National Laboratory; Gang Chen, Ohio University

Tuesday PM  
Room:  C212  
Location:  Columbus Con. Center  
Session Chair:  Gang Chen, Ohio University

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2:00 PM  
Structural Characterization of materials using In-Situ Neutron Diffraction: Mayumi Ojima¹; Junya Inoue¹; Shoichi Namib¹; Pingguang Xu¹; Koichi Akita¹; Hiroshi Suzuki¹; Toshihiko Koseki¹; ¹The University of Tokyo; ¹Japan Atomic Energy Agency

2:20 PM  
Single Crystal Growth of Diamond-Like Semiconductor Single Crystals: Kimberly Rosmus¹; Jacilynn Brant¹; Jacqueline Sturgeon¹; Kristin Bunker¹; Karen Harris¹; Jennifer Aitken¹; ¹Duquesnes University; ¹RJ Lee Group

2:40 PM  
Break

3:00 PM  
Stress Partitioning Behavior in BCC/FCC Multilayered Steels Measured by In Situ Neuron Diffraction during Tensile Deformation: Mayumi Ojima¹; Junya Inoue¹; Shoichi Namib¹; Pingguang Xu¹; Koichi Akita¹; Hiroshi Suzuki¹; Toshihiko Koseki¹; ¹The University of Tokyo; ¹Japan Atomic Energy Agency

3:20 PM  
Advanced Characterization of the Helical Growth of Dendritic Structures in Synthetic and Naturally Occurring Magma: S. Knox¹; Michael Chapman¹; Jay Tiley¹; Adam Shiveley¹; Gopal Viswanathan¹; Juila Hammer¹; ¹Southwestern Ohio Council for Higher Education/Air Force Research Laboratory; ¹Air Force Research Laboratory; ¹Universal Technology Corporation; ¹Universal Energy Systems, Inc; ¹University of Hawaii at Manoa

3:40 PM  
Microscopic Surface Mapping of the Thermal Diffusivity by Photothermal Confocal Defocusing: Oscar Martinez¹; Nelida Mingolo¹; Ulises Crossa Archiopoli²; ¹Universidad de Buenos Aires; ²Tolket SRL

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**Recent Developments in Steel Processing: Session I**

Program Organizer: Bhaskar Yalamanchili, Gerdau Ameristeel.com

Tuesday PM  
Room:  D142/143  
Location:  Columbus Con. Center  
Session Chair:  To Be Announced

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2:00 PM  
Factors Affecting Gauge Uniformity of Flat Cold Rolled AHSS: Artem Marrumel¹; Gwenola Herman¹; Evgueni Poliak¹; Lyudmila Kaputkina¹; ¹ArcelorMittal Global R&D; ¹National University of Science and Technology ”MISIS”

2:20 PM  
Numerical Simulation of Forming of Heat Resistant 1.4922 Steel: Petr Martinek¹; Martin Balcar¹; ¹COMTES FHT; ¹ŽDAS a.s.
2:40 PM
Interstitial Hardening of Austenite Stainless Steels by Low Temperature Gas Phase Nitriding: Dandan Wu1; Hal Kahn1; Gary Michal1; Frank Ernst1; Arthur Heuer1; 1Case Western Reserve University

3:00 PM Break

3:20 PM
Orientation-Dependent Solubility and Diffusion Depth during Low-Temperature Nitriding of Austenitic Stainless Steel: Harold Kahn1; Dandan Wu1; Xiaoting Gu1; Gary Michal1; Frank Ernst1; Arthur Heuer1; 1Case Western Reserve University

3:40 PM
Processing of Hypoeutectoid Steels by Mechanical Alloying: Federico Pulvirenti1; Alex Aning1; 1Virginia Tech

Shape Memory Alloys: Alloy Behavior
Program Organizer: Mohammad Elahinia, University of Toledo

Tuesday PM Room: D242/243 Location: Columbus Con. Center

Session Chair: Walter Anderson, University of Toledo

2:00 PM
Development of Simulation Tools for Analysing the Actuation of Smart Materials: Velaphi Msomi1; Kazeem Sanusi2; Graeme Oliver1; Oscar Philander1; 1Cape Peninsula University of Technology; 2Stellenbosch University

2:20 PM
Mechanical Properties of High Strength NiTiHfPd Shape Memory Alloys: Haluk Karaca1; Burak Basaran1; Emre Acar1; Ronald Noebe2; 1UNIVERSITY OF KENTUCKY; 2NASA

2:40 PM
The Effect of Boundary Condition on the Torsional Profile of the NiTi Superalastic Wires: Zohreh Karbaschi1; Ehsan Izadi1; Mohammad Elahinia1; 1The University of Toledo

Steel Product Metallurgy and Applications: Tubular and Plate Products
Program Organizer: Bhaskar Yalamanchili, Gerdau Ameristeel.com

Tuesday PM Room: D132 Location: Columbus Con. Center

Session Chair: To Be Announced

2:00 PM Cancelled
Batelle Properties for X60 and X65 Steel: Hamid Bayati1; Claire Davis1; 1University of Birmingham

2:20 PM
Tensile Behaviour and Fracture Properties of X80 Linepipe Steel: Michael Gaudet1; Warren Poole1; 1University of British Columbia

2:40 PM
The Effect of Microstructure on the Mechanical Properties of X80 Microalloyed Steel: Katherine Jonsson1; Douglas Ivey1; Hani Henein1; 1University of Alberta

3:00 PM Break

3:20 PM
Influence of C and Nb on Microstructures and Properties of As-Rolled and Heat Treated ULCB Steels: Pasi Suikkanen1; Anthony Deardo2; Pentti Karjalainen1; David Porter1; 1University of Oulu; 2University of Pittsburgh

3:40 PM
Properties of Low Carbon Steel with Various Microalloying Additions after Particular Thermomechanical Processing: Pavel Podany1; Martin Balcar 1; 1COMTES FHT; 2ODAS a.s.

4:00 PM
Improved Casing for Shales: Ezequiel Martinez Mamone1; Gustavo Kissner1; 1Tenaris

Surface Properties of Biomaterials: Bioglass and Cellular Interactions
Program Organizers: Susmita Bose, Washington State University; Amit Bandyopadhyay, Washington State University; Thomas Webster, Brown University; Sharmila Mukhopadhyay, Wright State University; Paul Calvert, University of Massachusetts; Mukesh Kumar, Biomet Inc

Tuesday PM Room: C216 Location: Columbus Con. Center

Session Chairs: Mukesh Kumar, Biomet Inc; Mangal Roy, Washington State University

2:00 PM Invited
Electrophoretic Deposition of Biomaterials: Aldo Boccaccini1; 1University of Erlangen-Nuremberg

2:40 PM
Effect of Surface Roughness of 45S Bioactive Glass on the Response of Bone Cells: Raina Jain1; Jutta Marzillier1; Matthias Falk1; Shaojie Wang1; Hassan Moawad1; Himanshu Jain1; 1Lehigh University

3:00 PM Break

3:20 PM Invited
Influences of Sr and Zn Dopants on Osteoclast Differentiation and Resorption: Mangal Roy1; Gary Fielding2; Amit Bandyopadhyay1; Susmita Bose1; 1Washington State University

4:00 PM Invited
Characterization and Design of the HA-Ti Composite Surface for Ti-Based Implants: Ling Li1; Kyle Crosby1; Monica Sawicki1; Leon Shaw2; Yong Wang1; 1University of Connecticut
Surface Protection for Enhanced Materials Performance: Science and Technology: Thermal Barrier Coatings

Program Organizers: Rodney Trice, Purdue University; Dongming Zhu, NASA Glenn Research Center; Daniel Mumm, University of California-Irvine; Hua-Tay Lin, Oak Ridge National Laboratory; Pravansu Mohanty, University of Michigan; Yutaka Kagawa, The University of Tokyo; Kang Lee, Rolls Royce; Charles Kay, ASB Industries, Inc.; Luc Pouliot, TECNAR Automation Ltd.

Tuesday PM Room: D230
October 18, 2011 Location: Columbus Con. Center

Session Chairs: Yutaka Kagawa, The University of Tokyo; Rodney Trice, Purdue University

2:00 PM Invited
Thermal Barrier Coatings for Resistance Against Attack by Molten Silicate Deposits from CMAS Sand, Volcanic Ash, or Coal Fly Ash Ingested by Gas-Turbine Engines: Nitin Padture1; The Ohio State University

2:40 PM Performance of CMAS Infiltrated EB-PVD GdZr2O7 TBCs in a Thermal Gradient: Elisa Zaleski1; R. Wesley Jackson1; Carlos Levi1; UC Santa Barbara

3:00 PM Break

3:20 PM Change of Stress-Strain Behaviors in EB-PVD TBC Coating Systems with the Progress of Uniaxial Out-of-Phase Thermo-Mechanical Fatigue Process: Rumi Kitazawa1; Yutaka Kagawa1; The University of Tokyo

3:40 PM Evolution of hot corrosion resistance of YSZ and Gd2Zr2O7 thermal barrier coatings in Na2SO4+V2O5 at 1050°C: M.Hamed Habibi1; Li Wang1; Shengmin Guo1; Louisiana State university

4:00 PM Phase Stability and Thermo-Physical Properties of (La1-x Gdx)2Zr2O7 Complex Oxide Systems for Thermal Barrier Coatings (TBCs): Hyung-Tae Kim1; Joo-Hee Son1; Kil-ho Kwak1; Seongwon Kim1; Sung-Min Lee1; Yoon-Suk Oh1; Byung-Koog Jang1; Korea Institute of Ceramic Engineering and Technology; National Institute of Materials Science
Additive Manufacturing of Metals: Laser-Based AM Processes

Program Organizers: Ian D. Harris, EWI; Ulf Ackelid, Arcam AB; Ola Harrisson, North Carolina State University; Sudarsanam Babu, Ohio State University; Brent Stucker, University of Louisville

Wednesday AM
October 19, 2011
Room: D130
Location: Columbus Con. Center

Session Chair: To Be Announced

8:00 AM
Additive Manufacturing of Metallic Components - A Resource Efficient Production Method: Chris Tack1; David Brackett2; Chang Jing Kong1; Marco Simonelli1; Ricky Wildman1; Ian Ashcroft1; Yau Yau Tse1; Richard Hague1; 1Loughborough University

8:40 AM
An Integrated Approach towards Estimation of Build Profile and Thermodynamic Microstructure Modeling of Ti-6Al-4V Using Laser Deposition:
Kurt Makiewicz1; Sudarsanam Babu2; Anil Chaudhary3; Matt Keller1; 1The Ohio State University; 2Penn State University, ARL; 3Optomec Inc.

9:00 AM
Control and Monitoring of Laser Deposition Processes: Richard Grylls1; David Keicher1; James Craig1; 1Optomec Inc.; 2Stratonics, Inc.

9:20 AM
Comparison of Direct and Indirect Laser Sintering of Stainless Steel: Kumaran Chakravarthy1; Phani Vallabhaioysula1; David Bourrell1; Khaled Abdel-Ghany1; 1University of Texas at Austin; 2Central Metallurgical R&D Institute (CMRDI)

9:40 AM Break

10:00 AM
Initial Developments in Monitoring and Modeling of Laser Additive Manufacturing with Titanium: James Craig1; Tom Wakeman1; Shawn Kelly1; Richard Grylls1; 1Stratonics, Inc.; 2Penn State University, ARL; 3Optomec, Inc.

10:20 AM
Thermodynamic Microstructure Modeling of Ti-6Al-4V Using Laser Deposition: Kurt Makiewicz1; Sudarsanam Babu2; Anil Chaudhary3; Matt Keller1; 1The Ohio State University; 2Penn State University, ARL; 3Applied Optimization

10:40 AM
Additive Manufacturing of Fe-17Cr-4Ni-4Cu, Comparing Build Chamber Process Gas with Mechanical Properties: Shane Collins1; Francisco Medina1; Krista Amato1; Larry Murr1; Ryan Wicker1; Richard Alexander1; 1Directed Manufacturing Inc.

11:00 AM
An Integrated Approach towards Estimation of Build Profile and Mechanical Properties in LENS® Deposit of H13 Tool Steel: Yonaya Manvatkar1; Amol Gokhale1; Jagan G Reddy1; Amitava De1; 1IIT Bombay; 2DMRL, Hyderabad

11:20 AM
Mechanical Properties of Direct Laser Sintered Ti6Al4V: Hilda Chikwanda1; Makhalo Ramosoe2; Gerrie Boosyen1; T N Ngonda2; 1Council for Scientific and Industrial Research (CSIR); 2Central University of Technology, Free State (CUT)
**Advanced Protective Coatings for Refractory Metals and Alloys: Strategies, Synthesis and Performance of Silicide Coatings**

*Program Organizers:* Ridwan Sakidja, University of Wisconsin-Madison; Brian Cockeram, Bechtel-Bettis

**Wednesday AM**

**Room:** D231  
**Location:** Columbus Con. Center

**Funding support provided by:** WARF (Wisconsin Alumni Research Foundation)

**Session Chair:** Elizabeth Opila, University of Virginia

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**8:00 AM Invited**

*Coating Strategies to Improve the Oxidation Resistance of Bcc-Mo-Based Mo-Si-B Alloys: Mufit Akinc*; Matthew Kramer; Pratik Ray; Zhihong Tang;  
1Iowa State University

**8:40 AM Invited**

*High Temperature Oxidation Resistant Mo-Si-B Alloys and Coatings: John Perepezko*; Ridwan Sakidja;  
‘University of Wisconsin-Madison

**9:20 AM**

*Deposition of Silicide Based Protective Coatings on C-103 Niobium Alloy with Different Surface Microstructures: Kaiyang Wang; Jandong Liang; Li Wang; S.M. Guo; Shizhong Yang;  
1Louisiana State University; 2Southern University

**9:40 AM Break**

**10:00 AM Invited**

*Structural Formation and Oxidation Resistance of Si-Al-Y Co-Deposition Coatings on Nb-Ti-Si Based Multicomponent Ultrahigh Temperature Alloy: Xiping Guo; Ping Guan;  
‘Northwestern Polytechnical University

**10:40 AM Invited**

*Protective Coatings for Molybdenum – Industrial Processing and Applications: M. Kathrein; M. Sulik; J. Januschewsky; H. Kestler; L.S. Sigl; H. Larcher; R. Holzknecht;  
‘Plansee SE

**11:20 AM**

*Oxidation Resistant Mo-Si-B Coatings on Tungsten for Ultra High Temperature Environmental Protection: Otto Lu-Steffes;  
John Perepezko;  
‘University of Wisconsin-Madison

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**Advances in Dielectric Materials and Electronic Devices: Processing-Property-Microstructure Relationship**

*Program Organizer:* K. M. Nair, E.I.duPont de Nemours & Co, Inc

**Wednesday AM**

**Room:** C220  
**Location:** Columbus Con. Center

**Session Chairs:** W Wong-Ng, NIST; D Uskokovic, Institute of Technical Service of the Serbian Academy of Science & Arts

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**8:00 AM**

*Controlling Microstructure by Influencing the Diffusive Processes during Sintering: Establishing a Tool Kit for Materials Design in PZT: Denis Schuetz; Florian Mittermayr; Klaus Reichmann;  
‘Graz university of Technology

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**8:20 AM**

*Influence of Thermal Stresses on the Dielectric Properties of Strontium Titanate Thin Films: Jialun Zhang; Claire Weiss; S. Pamir Alpay; Melanie Cole;  
‘Institute of Materials Science, University of Connecticut; 3Army Research Laboratory

**8:40 AM Invited**

*Ionic Conductivity of Thin Film Electrolytes for Micro-Solid Oxide Fuel Cells: Enrico Traversa*;  
‘National Institute for Materials Science (NIMS)

**9:00 AM**

*Phase Formation, Texture Evolution and Enhanced Piezoelectric Properties in [001]-Textured SBN61 Piezoelectric Ceramics: Yunfei Chang; Soonil Lee; Gary Messing;  
‘Pennsylvania State University

**9:20 AM Invited**

*Structural Characterization of Apatite-Type Rare-Earth Silicates: Rick Ulic; Lii-Cherng Leu; Sherin Thomas; Mailadil Sebastian; Scott Mixture;  
‘Boise State University; 2National Institute for Interdisciplinary Science and Technology; 3Alfred University

**9:40 AM Break**

**10:00 AM Invited**

*Structure-Property Relationships of a New High Permittivity Perovskite: Ba2Bi1.4Nb0.6O6: Derek Sinclair*; Chao Tan; Ian Reaney;  
‘University of Sheffield

**10:20 AM Invited**

*Structure and Characteristics of LuFeMgO4 and LuFeCuO4 Multiferroic Ceramics: Xiang Ming Chen; Ying Qin; Xiao Qiang Liu;  
‘Hejiang University

**10:40 AM Invited**

*The Microstructure Contact Surfaces Influence on BaTiO3 Dielectric Properties: Vojislav Mitic; Slobodanka Jankovic; Vesna Paunovic; Vladimir Pavlovic; Jelena Purenovic; Lilijana Zivkovic;  
‘University of Niš, Faculty of Electronic Engineering; 2Institute of Mathematical Sciences, Serbian Academy of Sciences and Arts, Belgrade; 3Faculty of Agriculture, University of Belgrade, Belgrade, Serbia

**11:00 AM**

*Analysis of Grain and Grain Boundary Properties in Mn3O4-Doped CuO: Young-Woo Hong; Jae-Ho Lee; Hyo-Soon Shin; Dong-Hun Yeo; Joo-Ho Moon; Jong-Hee Kim;  
‘Korea Institute of Ceramic Engineering & Technology; 2University of Keimyung, Dalseo-Gu, Daeguk, Republic of Korea

**11:40 AM Invited**

*Dielectric Properties of ZnTa2O8 / Polypropylene Composites: Eung Soo Kim*; Chang Jun Jeon;  
‘Kyounggi University

**12:00 PM**

*Effect of Nanocrystalline Diamond Deposition Conditions on Si MOSFET Device Characteristics: Nirmal Govindaraju; Peter Kosel; Raj Singh;  
‘University of Cincinnati
### Advances in Manufacturing Technologies: Advanced Manufacturing Techniques

**Program Organizer:** Muammer Koc, Istanbul Sehir University

**Wednesday AM**

**Session Chair:** Muammer Koc, Istanbul Sehir University

**08:00 AM**

*A Study on Mechanical Properties of Localized Electro-Chemically Deposited (LECD) Structures:* Rehan Arif; Mustafizur Rahman; Mohammad Habib; National University of Singapore; Islamic University of Technology

**08:20 AM**

*HED Processing for Coating Applications:* Greg Engleman; Joshua Caris; Andrew Sherman; Mario Medanic; Mesocoat

**08:40 AM**

*High-Frequency Vibration Assisted Micro/Meso-Scale Metal Forming of Aluminum:* Zhehe Yao; Gap-Yong Kim; LeAnn Faidley; Qingze Zou; Deqing Mei; Zichen Chen; Zhejiang University; Iowa State University; Rutgers University

**09:00 AM**

*Influence of Strain and Strain Rate on Abnormal Grain Growth during Superplasticity of AZ31 Sheets:* Arun Mohan; Rajiv Mishra; Ravi Verma; Missouri University of Science and Technology; General Motors R&D Center

**09:40 AM Break**

**10:00 AM**

*High Performance Product and Process Tracking Techniques:* Edward S. O’Neal; InfoSight Corporation

**10:20 AM**

*Manufacturing Controls for the Fabrication of Tissue Scaffolds with Graded Microstructures:* David Hoelzle; Andrew Alleyne; Amy Wagoner Johnson; University of Illinois at Urbana-Champaign

**10:40 AM**

*Manufacturing Fuel Cell Bipolar Plates by Electromagnetic Forming:* Jianhui Shang; Larry Wilkerson; Steve Hatkevich; American Trim LLC

**11:00 AM**

*Structural Optimization of the Baffle Design inside the Mg Twin Roll Strip Casting Nozzle:* Deok Kim; Jaejin Park; Jae Jong Kim; Dongkyun Choo; RIST(Research Institute of Industrial Science and Technology)

**11:20 AM**

*Investigations of Micro-Scale Surface Interactions and Tribological Size Effect in Microstamping of SS316L Sheets:* Mevlut Peker; Omer Cora; Muammer Koc; Virginia Commonwealth University

**11:40 AM**

*Extrusion of Thin-Wall Multi-Channel Copper Profiles:* Frank Kraft; Ohio University

### Amorphous Materials: Common Issues within Science and Technology: Glass in 21st Century

**Program Organizer:** Pierre Lucas, University of Arizona

**Wednesday AM**

**Session Chair:** Mario Affatigato, Coe College

**08:00 AM**

*Glass and Glass-Ceramic Technologies to Transform The World:* Larry Hench; University of Florida

**08:40 AM**

*The Past, Present, and Future of Chemically Strengthened Glass:* Matthew Dejneka; Corning Incorporated

**09:20 AM**

*New Studies of Ionic Conduction in Glass: The Mixed Glass Former Effect in Sodium Borosilicate Glasses:* Steve W. Martin; Randi Christensen; Garrett Olson; Iowa State University

**09:40 AM Break**

**10:00 AM**

*Rare-Earth Doped Multi-Component Glass Fibers for Fiber Lasers:* Shibin Jiang; AdValue Photonics Inc

**10:40 AM**

*Multi-Scale Processing of Chalcogenides:* S. Sundaram; Brian Riley; Bradley Johnson; Alfred University; Pacific Northwest National Laboratory

**11:20 AM**

*The Effects of Lithia and Alumina on the Viscosity and Strength of Commercial Fiberglass and Glass Compositions:* Frederick Wallenberger; Retired

**12:00 PM**

*Chalcogenide glasses for the 21st Century: a prospective for new mid-infrared medical endoscopy:* Angela Seddon; University of Nottingham

### Ceramic Matrix Composites: Processing/Fabrication

**Program Organizers:** Narottam Bansal, NASA Glenn Research Center; J. P. Singh, U.S. Army Research Laboratory; Jacques Lamon, CNRS; Sung Choi, Naval Air Systems Command

**Wednesday AM**

**Session Chair:** Berhard Heidenreich, DLR

**08:00 AM Invited**

*Manufacture and Applications of C/C-SiC and C/SiC Composites:* Berhard Heidenreich; DLR

**08:40 AM**

*Utilizing Pressure-Induced Transformations for Toughening of Ceramics:* Subramaniam Ramalingam; Corinne Packard; Ivar Reimanim; Colorado School of Mines

**09:00 AM**

*Horizontal Dip-Spin Casting for the Fabrication of Ceramic Composites with Aligned Strengthening Phases:* Manuel Acosta; Rodney Trice; Jeffrey Youngblood; Purdue University School of Materials Engineering
9:20 AM  Break

9:40 AM  Invited
Controlled Volume Fraction Si$_3$N$_4$/SiC Composites from Polymer Derived Ceramics:  Kevin Strong$^1$; Raj Bordia$^1$; 1University of Washington

10:00 AM
Rare Earth Modified Matrices for SiC Matrix Composites:  David Poerschke$^1$; Carlos Levi$^2$; 1University of California Santa Barbara

10:20 AM
Computer Models of T-x-y Diagrams to Design the Ceramic Materials: Vasily Lutsyk$^1$; Ann Zelenaya$^2$; 1Buryat State University; 2Institute of Physical Materials Science

10:40 AM
Comparative Study of Multi-Materials during Microwave and Conventional Sintering: Saunier Sébastien$^1$; François Valdivieso$^1$; Benjamin Desplanques$^1$; Dominique Goeriot$^1$; Daniel Zymelka$^1$; 1Ecole des Mines de Saint-Etienne

11:00 AM
Effect of Particle Size and Temperature on the Sintering Behaviour of Glass Compact:  Adele Garkida$^1$; Jiann-Yang Hwang$^2$; Xiaodong Huang$^2$; Allison Heim$^2$; 1Ahmadu Bello University; 2Michigan Technological University

11:20 AM
Kinetics of Formation of $\zeta$-Ta$_6$C$_6$ by Reaction of Ta and TaC Powders: Michael Sygnatowicz$^1$; Raymond Cutler$^1$; Dinesh Shetty$^1$; 1University of Utah

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**Controlled Synthesis, Processing and Applications of Structural and Functional Nanomaterials: Two Dimensional Nanomaterials**

*Program Organizers:* Kathy Lu, Virginia Tech; Xudong Wang, University of Wisconsin - Madison; Eugene Olevsky, San Diego State University; Gurpreet Singh, Kansas State University; Nitin Chopra, The University of Alabama; Pu-Xian Gao, University of Connecticut; Jianyu Liang, Worcester Polytechnic Institute

**Session Chair:** Pu-xian Gao, University of Connecticut

Wednesday AM  Room:  C123
October 19, 2011  Location:  Columbus Con. Center

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8:00 AM  Invited
Optical Thin Films for Gas Sensing in Advanced Coal Fired Power Plants: Paul Odhnicki$^1$; Thomas Brown$^1$; Congjun Wang$^1$; Christopher Matranga$^1$; 1National Energy Technology Laboratory

8:40 AM
Large-Scale Synthesis of MoS$_2$/ Polymer Derived Ceramic Composite Nanosheets: Lamuel David$^1$; Romit Bhadavat$^1$; Uriel Herrera$^1$; Gurpreet Singh$^1$; 1Kansas State University

9:00 AM
Silicon Nitride Nanowire Papers Synthesized by Silica Nanopowders and Silica Gel:  Kei-Peng Jen$^1$; Sridhar Santhanam$^1$; Jih Guo$^1$; 1Villanova University

9:20 AM
Time-Dependent Springback of Advanced High Strength Steels: Hojun Lim$^1$; Myoung-Gyu Lee$^2$; Ji Hyun Sung$^2$; Ji Hoon Kim$^2$; Robert Wagoner$^2$; 1The Ohio State University; 2Pohang University of Science and Technology; 3Korea Institute of Industrial Technology; 4Korea Institute of Materials Science
11:20 AM
TiO2 Photocatalyst Thin Film Coatings on Polyethylene Terephthalate: 
Huynh Pham; Charles Sorrell; Julian Cox; 1The University of New South Wales

11:40 AM
Magnetic Response and Nano-Structural Variations of Ni, Co, and Fe-Doped Y2O3-Stabilized ZrO2: Amy Morrissey; Josh White; Jianhua Tong; Jim O'Brien; Ivar Reimanis; 1Colorado School of Mines; 1Quantum Design, Inc.

Corrosion Protection through Metallic and Non-Metallic Coatings: Mechanisms and Evaluation
Program Organizers: Narasi Sridhar, DNV; Rudolph Buchheit, Ohio State University

Wednesday AM  Room: D244/245
October 19, 2011  Location: Columbus Con. Center

Session Chair: To Be Announced

8:00 AM
Insight in the Corrosion Mechanism and Designing of Corrosion Protection Coatings for the Replacement of Hexavalent Chromium-Based Surface Treatments for Mg-Y-RE-Zr Alloy: HELENE ARDELEAN; 1ENSCP CNRS UMR7045

8:20 AM
Effects of Surface Treatments on Adhesion Strength of Coated AA2024-T3 Using the Blister Test: Brendy Rincon Troconis; Gerald Frankel; 1The Ohio State University

8:40 AM
Corrosion Protection Mechanisms of Coatings with Rare-Earth Based Inhibitors: William Fahrenholz; Matthew O’Keefe; 1Missouri University of Science and Technology

9:00 AM
Degradation of Coating Adhesion Measured by AFM Scratching: Jinwook Seong; Gerald Frankel; 1Fontana Corrosion Center

9:20 AM
Cr Based Alloy Cr-Y Oxidation Study from First Principles Molecular Dynamics Simulation: Lei Zhao; Shizhong Yang; Ebrahim Khosravi; Shengmin Guo; 1Southern University and A&M College; 1Louisiana State University

9:40 AM Break

10:00 AM
Study on High Temperature Oxidation of Y Doped Nb2AlC (MAX Phase) From Ab Initio Molecular Dynamics Simulation: Shizhong Yang; Lei Zhao; Ebrahim Khosravi; Kiyang Wang; Shengmin Guo; 1Southern University and A&M College; 1Louisiana State University

10:30 AM
Study of the Effect of Hot Corrosion and Role of Coatings in Waste-to-Energy (WTE) Plant Environment: A Review: Harmininder Singh; T.S Sidhu; Sukhmininder Singh Kalsi; 1Guru Nanak Dev University, Regional Campus, Jalandhar, Punjab, India; 1Shaheed Bhagat Singh College of Engineering and Technology, Ferozepur, Punjab, India; 1Amritsar College of Engineering & Technology, Amritsar, Punjab, India

8:00 AM
Multi-Scale Deformation Analysis of Grain Boundary Interactions in Nickel-Based Superalloys: Jennifer Carter; Michael Uchic; Robert Wheeler; Michael Mills; 1The Ohio State University; 1Air Force Research Laboratory, Materials & Manufacturing Directorate, AFRL/RXLM; 1UES, Inc.

8:20 AM
Investigation of the Impact of Size Effects and Confined Plasticity on Stacking Fault Widths Using 3D Phase Field Dislocation Dynamics (PFDD) Simulations: Abigail Hunter; Irene Beyerlein; Timothy Hermann; Marisol Koslowski; 1Los Alamos National Laboratory; 1Purdue University

8:40 AM Invited
Hot Spots and Grain Boundaries: Anthony Rollett; David Field; Francis Wagner; Robert Suter; Ricardo Lebensohn; 1Carnegie Mellon University; 1washington state univ.; 1Metc Univ.; 1Los Alamos National Lab.

9:00 AM
Analysis of Slip and Grain Boundary Activities of Ti-5Al-2.5Sn(wt.%) Deformed In-Situ at Elevated Temperature: Hongmei Li; Carl Boehlert; Thomas Bieler; Martin Crimp; 1Michigan State University

9:20 AM
Study of Microstructure in Cold-Rolled and Recrystallized Al-Si Composites Reinforced with Diboride Particles: Cynthia Mercado; Natalia Cortés; O. Marcelo Suárez; 1University of Puerto Rico

9:40 AM Break

10:00 AM
Invited
Σ Interfaces as Barriers to Motion of Dislocations, Electrons and Recrystallization Fronts: Marek Niewczasz; 1McMaster University

10:20 AM Invited
Studying Grain Boundary Regions in Polycrystalline Materials Using Spherical Nano-Indentation and Orientation Imaging Microscopy: Surya Kalidindi; Siddharth Patakh; Shraddha Vachhani; 1Drexel University; 1California Institute of Technology

10:40 AM Invited
Transition of Lath Martensite to Cell Blocks during Cold-Rolling of Interstitial Free (IF) Steel: Niels Hansen; Xiaoou Huang; Shigekazu Morito; 1Riso National Laboratory for Sustainable Energy, Technical University of Denmark

10:50 AM
Study of the Crystalline Phases on the Oxide Layer of Cerium Conversion Coatings: Ci Lin; William Fahrenholz; Surender Maddela; Matthew O’Keefe; 1Missouri University of Science and Technology

Deformation and Transitions at Grain Boundaries: Deformation Effects at Grain Boundaries
Program Organizers: Thomas Bieler, Michigan State University; Douglas Spearot, University of Arkansas; Rozaila Barabash, Oak Ridge National Laboratory; Shen Dillon, University of Illinois at Urbana-Champaign; Jian Luo, Clemson University

Wednesday AM  Room: C121
October 19, 2011  Location: Columbus Con. Center

Session Chairs: Marek Niewczasz, McMaster University; John Budai, Oak Ridge National Laboratory
Modeling of Experimentally Measured Failure Initiation Using a State-of-the-art FFT Algorithm: Reeju Pokharel; Anthony Rollett; S.F. Li; Jon Lind; Chris Hefferan; Robert Suter; Ulrich Lienert; 'CMU; 'Argonne National Laboratory

A Study on Plastic Deformation and Crack Growth Mechanisms of a Wrought Magnesium Alloy AZ31B: Wei Wu; Soo Yeol Lee; E-Wen Huang; Anna Paradowska; Rozaliya Barabashi; Peter Lian; 'The University of Tennessee; 'The University of British Columbia, National Research Council Canada; 'National Central University; 'Rutherford Appleton Laboratory; 'Oak Ridge Natl Lab, The University of Tennessee

Observation of a Fractured Surface Due to Fully Time Dependent Intergranular Crack Growth Using X-ray Tomography and High Energy X-ray Diffraction Microscopy: J. Linn; S. Li; C. Hefferan; R. Pokharel; A. Rollett; P. Kenesei; U. Lienert; R. Suter; 'Carnegie Mellon University, Department of Physics; 'Carnegie Mellon University, Department of Materials Science & Engineering; 'Argonne National Laboratory, Advanced Photon Source

Energy Conversion/Fuel Cells: Electrode Materials
Program Organizers: Matthew Seabaugh, NexTech Materials, Ltd.; Zhengu “Gary” Yang, Pacific Northwest National Laboratory; Melin Liu, Georgia Institute of Technology

Wednesday AM Room: C224 Location: Columbus Con. Center

Session Chair: To Be Announced

11:00 AM
Modeling of Experimentally Measured Failure Initiation Using a State-of-the-art FFT Algorithm: Reeju Pokharel; Anthony Rollett; S.F. Li; Jon Lind; Chris Hefferan; Robert Suter; Ulrich Lienert; 'CMU; 'Argonne National Laboratory

11:20 AM Invited
A Study on Plastic Deformation and Crack Growth Mechanisms of a Wrought Magnesium Alloy AZ31B: Wei Wu; Soo Yeol Lee; E-Wen Huang; Anna Paradowska; Rozaliya Barabashi; Peter Lian; 'The University of Tennessee; 'The University of British Columbia, National Research Council Canada; 'National Central University; 'Rutherford Appleton Laboratory; 'Oak Ridge Natl Lab, The University of Tennessee

11:40 AM
Observation of a Fractured Surface Due to Fully Time Dependent Intergranular Crack Growth Using X-ray Tomography and High Energy X-ray Diffraction Microscopy: J. Linn; S. Li; C. Hefferan; R. Pokharel; A. Rollett; P. Kenesei; U. Lienert; R. Suter; 'Carnegie Mellon University, Department of Physics; 'Carnegie Mellon University, Department of Materials Science & Engineering; 'Argonne National Laboratory, Advanced Photon Source

Energy Storage: Materials, Systems and Applications: Na-Batteries
Program Organizers: Zhengu “Gary” Yang, Pacific Northwest National Laboratory; Terry Holesinger, Los Alamos National Laboratory; Xingbo Liu, West Virginia University; Chun Lu, Siemens Energy, Inc.

Wednesday AM Room: C223 Location: Columbus Con. Center

Session Chair: Leon Shaw, University of Connecticut; Jeffrey Fergus, Auburn University

8:00 AM
Electrical, Mechanical and Thermal Expansion Characterization of Strontium Titanate-Based Materials for Solid Oxide Fuel Cells: Jong-Won Lee; Beom-Kyeong Park; Seung-Bok Lee; Tak-Hyoun Lim; Seok-Joo Park; Rak-Hyun Song; Dong-Ryul Shin; 'Korea Institute of Energy Research

8:20 AM
PH3 Removal by Means of Prefilter for Ni-YSZ Anode-Supported SOFC: Chunchuan Xu; John Zondlo; Edward Sabolsky; 'West Virginia University

8:40 AM
Study of the Behaviour of LSCM Anode Composites in a Segmented Planar Solid Oxide Fuel Cell: Mark Cassidy; Samir Boulfrad; Patrick Muhl; John Irvine; 'University of St Andrews; 'King Abdullah University of Science and Technology

9:00 AM
First-Principles Prediction of Oxygen States and Transportation in Liquid Ti Anode SOFC: Michael Gao; Michael Widom; Yves Mantz; Kirk Gerdes; James Lill; 'NETL; 'Carnegie Mellon University; 'High Performance Technologies, Inc.

9:20 AM
High-Performance SOFC Anodes Prepared by Infiltration of Strontium Molybdate into Porous YSZ: Michael Gross; Brandon Smith; 'Bucknell University

9:40 AM Break

10:00 AM
Influence of Pore Former Loadings on Anode Microstructures for High Performance SOFCs: Ayhan Sarikaya; Vladimir Petrovsky; Fatih Dogan; 'Missouri University of Science and Technology

10:20 AM
Investigation of the Mechanisms of Air Electrode Delamination in Solid Oxide Electrolysis Cells: Michael Keane; Prabhakar Singh; Atul Verma; 'University of Connecticut

10:40 AM
First Principles Calculations of Oxygen Incorporation into SOFC Cathode Materials: Eugene Kotomin; Rotraut Merkle; Yuri Mastrikov; Majia Kukljia; Joachim Maier; 'Max Planck Institute; 'Max Planck Institute; 'University of Maryland; 'University of Maryland

11:00 AM
Performance and Stability of SOFC Composite Cathodes: Anh Duong; Daniel Mumm; 'UC Irvine

11:20 AM
Phase-Field Modeling of Microstructural Evolution of SOFC Cathode: Qun Li; Long-Qing Chen; 'PSU

11:40 AM
Observations on the Chemical and Structural Modifications in La0.8Sr0.2MnO3 phase (LSM) – 8mol% yttria Stabilized Zirconia (YSZ) Composite during Sintering: Na Li; Manoj Mahapatra; Prabhakar Singh; 'Uconn

9:00 AM Invited
Development of Low-Temperature Molten Na Batteries with NaSICON Ceramics: Chett Boxley; Matthew Robins; Grover Coors; Jeongsoo Kim; Youngshol Kim; Jehyun Chae; 'Ceramatec; 'SK Innovation/ Advanced Battery Development Team

9:40 AM Break

10:00 AM Invited
Development of Sodium-Based Secondary Batteries for Energy Storage: Anil Virkar; Greg Tao; Joonho Koh; Neill Weber; 'University of Utah; 'Materials and Systems Research, Inc.

10:40 AM Invited
The Promise of Low Cost Bulk Energy Storage: Aqueous Electrolyte Asymmetric/Hybrid Electrochemical Devices: Jay Whitacre; 'CMU

11:20 AM
NASICON-Type Electrolytes for Low Temperature Sodium Battery Applications: Hui Zhang; Xingbo Liu; 'West Virginia University
Environmentally Assisted Cracking of Materials:  
Session IV  
Program Organizers: Ramgopal Thodla, DNV Columbus; Suresh Divi, TIMET  
Wednesday AM  
Location: Columbus Con. Center  
Session Chair: Ramgopal Thodla, DNV Columbus  

8:00 AM  
Environmental Conditions Influencing the Hydrogen Embrittlement of Titanium Alloys: Suresh Divi; \textcopyright\ TIMET  

8:20 AM  
Fine Scale Microstructure Evolution of Al-5083 Sensitized at 70C and 100C and Effect on Corrosion Fatigue: Ronald Holtz; Ramasis Goswami; Peter Pao; Robert Bayles; Thomas Longazel; \textcopyright\ Naval Research Laboratory; \textcopyright\ SAIC  

8:40 AM  
The Effect of Zn-Rich Coatings on the Environmentally Assisted Fracture Performance of High Strength Armor Steel: Michelle Kooi; Andrew Sheetz; Pete Ault; John Repp; Angela Whifflet; \textcopyright\ USNA; \textcopyright\ NSWC Carderock Division; \textcopyright\ Elzly Technology Corporation  

9:00 AM  
Environmentally Assisted Cracking of Alloy 7050-T7451 Exposed to Aqueous Chloride Solutions: Reinhold Braun; \textcopyright\ DLR - German Aerospace Center  

9:20 AM  
Environmentally Assisted Cracking of Carbon Steel in High Temperature Geothermal Well: Sigrun Karlsdottir; Ingolfur Thorbjornsson; \textcopyright\ Innovation Center Iceland  

9:40 AM Break  

10:00 AM  
Evaluation of Thiosulfate as a Substitute for H2S in Sour Corrosion Fatigue Studies: mariano kappes; Gerald Frankel; Narasi Sridhar; Ramgopal Thodla; Ricardo Carranza; \textcopyright\ ohio state university; \textcopyright\ DNV Columbus; \textcopyright\ CNEA Argentina  

10:20 AM  
Fatigue Life of Superalloy Haynes 188 in Hydrogen: Tim Gabb; Gregg Ribeiro; Henry Webster; Tim Gorman; John Gayda; \textcopyright\ NASA Glenn Research Center; \textcopyright\ ATK; \textcopyright\ University of Dayton  

10:40 AM  
Gaseous Hydrogen-Assisted Fatigue Crack Growth in X52 Linepipe Steel: Brian Somerday; Chris San Marchi; Kevin Nibur; \textcopyright\ Sandia National Laboratories; \textcopyright\ Hy-Performance Testing  

11:00 AM  
Evaluation of the Susceptibility to Hydrogen Assisted Cracking in Dissimilar Metal Welds: Boian Alexandrov; Shu Shi; Jeffrey Rodelas; John Lippold; \textcopyright\ The Ohio State University; \textcopyright\ Shell Exploration & Production Company  

11:20 AM  
Environmental Effects on Fatigue Crack Growth Rates in Sour Environments: Ramgopal Thodla; Feng Gui; Martin Mueller; David Cole; \textcopyright\ DNV  

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Failure Analysis and Prevention: Aerospace  
Program Organizers: Andrew Spowage, The University of Nottingham, Malaysia Campus; Tom Ackerson, IMR Metallurgical Services; Larry Hanke, Materials Evaluation and Engineering, Inc  
Wednesday AM  
Location: Columbus Con. Center  

8:00 AM  
Fatigue In the Aerospace Industry – Know Your Part: Nicholas Cherolia; \textcopyright\ Rolls-Royce Corporation  

8:20 AM  
Metallurgical Evaluation of Fractured High Pressure Turbine Forward Outer Seal (FOS) from Aircraft Jet Engine: Wesley Pridemore; Ron Duvelius; \textcopyright\ GE-Aviation  

8:40 AM  
Failure Analysis of a Wing Attachment Bolt: Jeff Calcagno; \textcopyright\ Air Force Research Lab  

9:00 AM  
Metallurgical Failure Analysis of Aircraft Structure: Interesting Case Studies from Teardown: Saravanan Arunachalam; \textcopyright\ US Air Force Academy  

9:20 AM  
The Effect of Elevated Temperature Exposure on Cracking of Ti-6Al-2Sn-4Zr-2Mo: Adam Pilchak; W. Porter; Reji John; \textcopyright\ Air Force Research Laboratory; \textcopyright\ University of Dayton Research Institute  

9:40 AM Break  

10:00 AM  
Crash of G-ILGW – Wear of Torsional Vibration Dampers: Cyrille Moore; Harri Kytonmaa; \textcopyright\ Exponent  

10:20 AM  
SEM/EDS Assessment of Fractured Gas Turbine Engine Hot Section Components: Roch Shipley; \textcopyright\ ProAaCI  

10:40 AM  
Turbine Shroud Cracking Investigation and Repair: Tomasz Didenko; Marcin Zak; \textcopyright\ GE Aviation  

11:00 AM  
Unusual Failures of Aero-Derivative Combustion Turbines: Ron Munson; \textcopyright\ M&M Engineering  

11:20 AM  
High Temperature Corrosion Failures in Gas Turbine Components: Edyta Kosieniak; Jakub Kaczorowski; Marco Innocenti; Krzysztof Biesiada; \textcopyright\ Institute of Aviation; \textcopyright\ General Electric, Oil&Gas  

11:40 AM  
Icing Study of Moisture in Jet-A Fuel, Ambient to -40°C: Jean Ray; Mark Thornton; Michael Bentz; \textcopyright\ Boeing
Fatigue and Microstructure: A Symposium on Recent Advances: Fatigue of Advanced Materials

Program Organizers: Amit Shyam, Oak Ridge National Laboratory; Sushant Jha, Air Force Research Laboratory/Universal Technology Corporation; Michael Caton, US Air Force Research Laboratory

Wednesday AM

Session Chairs: Amit Shyam, Oak Ridge National Laboratory; Michael Caton, Air Force Research Laboratory

8:00 AM
Multiaxial Fatigue and Life Prediction in Superalloy Medical Devices: Robert Ritchie1; David Xu1; Amanda Runciman1; Alan Pelton1; 1University of California Berkeley; 2Nitinol Devices & Components, Ltd.

8:40 AM
Effect of Fiber Shot Particles on Fatigue Performance of Hybrid SiCf/Al Metal Matrix Composite: Justin Clark1; Paul Sanders1; 1Michigan Technological University

9:00 AM
Fatigue Damage Evolution in an Ultrafine Grained Al Alloy: Partha De1; Rajiv Mishra1; 1Missouri University of Science and Technology

9:20 AM
Fatigue Resistance of Carbon Nanotube Reinforced Aluminum Composites under Cyclic Tension: Jinzhiliao1; 1Nanyang Technological University

9:40 AM Break

10:00 AM
Fatigue and Fracture in Thin-Film Devices and Hybrid Laminates: Reinhold Dauskardt1; 1Stanford University

10:40 AM
Medical Device Feedthrough Fatigue Characterization: Jacob Popp1; John Taylor1; Joseph Hendrickson1; 1Medtronic Inc.

11:00 AM
Flex Bending Fatigue of Amorphous Al Alloy Ribbons: Chun-Kuo Huang1; John Lewandowski1; 1Case Western Reserve Univ

11:20 AM
Fatigue Properties and Deformation Mechanisms of Nanocrystalline NiFe Alloy under Cyclic Loading: Yongbao Zhao1; S. Cheng1; Y.M. Wang1; Y. Li1; X.-L. Wang1; P.K. Liaw1; E.J. Lavermia1; 1University of California Davis; 2University of Tennessee, Knoxville, USA; 3Lawrence Livermore National Laboratory, Livermore; 4Oak Ridge National Laboratory, Oak Ridge

11:40 AM
Low-Cycle-Fatigue Behavior of Modified and Unmodified Alloy CF8C-Plus at 800C: Deepak Kumar1; Amit Shyam1; Bruce Pint1; Edgar Lara-Curzio1; 1Oak Ridge National Laboratory

Glass and Optical Materials: Glass Modeling and Simulation II

Program Organizer: Pierre Lucas, University of Arizona

Wednesday AM

Session Chair: Jincheng Du, University of North Texas

8:00 AM
Structure and Electronic Properties of Defective Crystalline and Amorphous Graphene: Yuting Li1; Fakhar Inam1; Vitaliy Kapko1; Mike Thorpe1; David Drabold1; 1Ohio University; 2The Abdus Salam ICTP; 3Arizona State University

8:20 AM
Ab-Initio Calculation of Structural and Electrical Properties of Amorphous TiO2: Binay Prasai1; Bin Cai1; David Drabold1; Kylee Underwood1; James Lewis1; 1Ohio University; 2West Virginia University

8:40 AM
Electronic Transport in Amorphous Semiconductors: Mingliang Zhang1; 1Ohio University

9:00 AM
Temperature-Dependent Constraint Theory of Glass: John Mauro1; 1Corning Incorporated

9:40 AM Break

10:00 AM
ZrO2 and SnO2 Solubility in Soda-Lime Glasses: Pauline Gateau1; Carine Petitjean1; Pierre-Jean Panteix1; Christophe Rapin1; Michel Vilasi1; Jean-Luc Underwood1; 1Jean Lamour Institute; 2Ferro France

10:20 AM
Effect of Substituting Al2O3 on the Thermal and Optical Properties of High Refractive Index and Low Dispersion La2O3-Nb2O5 Glass System Prepared by Containerless Processing: Kohei Yoshimoto1; Astunobu Masuno1; Hiroyuki Inoue1; Yasuhiro Watanabe1; 1Institute of Industrial Science The University of Tokyo

10:40 AM
High Refractive Index of La2O3-Nb2O5 Glasses Prepared by Containerless Processing: Astunobu Masuno1; Kohei Yoshimoto1; Hiroyuki Inoue1; Yasuhiro Watanabe1; 1The University of Tokyo

11:00 AM
Effect of Na2O Addition on Tungsten-Tellurite Glasses: Miray Celikbilek1; Ali Ercin Ersundu1; Sihyea Aydin1; 1Istanbul Technical University

11:20 AM
Characterization of Glasses in the TeO2-WO3-CdO System: Ali Ercin Ersundu1; Miray Celikbilek1; Nuri Solak1; Sihyea Aydin1; 1Istanbul Technical University

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11:40 AM
Synthesis and Characterization of New Lead-Free Glasses for the Front Metallization of Solar Cells: Maik Peschel; Jochen Schlüter; Markus Eberstein; Christel Kretzschmar; Jens Krause; Lars Voelkel; Uwe Partsch; Alexander Michaelis; T. Fraunhofer Institute for Ceramic Technologies and Systems; T. Fraunhofer Institute for Ceramic Technologies and Systems; T. Roth&Raa AG

12:00 PM
The Benefits of Polyalkylene Carbonate Binders (QPAC®) for Low Temperature Glass Frit or Powdered Glass in Glass Sealing Applications: Peter Ferraro; T. Empower Materials

Green Technologies for Materials Manufacturing and Processing III: Green Materials Processing II
Program Organizers: Tatsuki Ohji; National Institute of Advanced Industrial Science and Technology (AIST); Mritunjay Singh, Ohio Aerospace Institute, NASA Glenn Research Center; Richard Sisson, Worcester Polytechnic Institute, Center for Heat Treating Excellence; Makio Naito, Osaka University

Wednesday AM Room: D232 Location: Columbus Con. Center

Session Chairs: Makio Naito, Osaka University; Allen Apblett, Oklahoma State University

8:00 AM
Remediation of Semiconductor Waste Using an Iron Sorbant Prepared via a Low Temperature Route: Allen Apblett; Travis Reed; Abdulaziz Bagabas; Oklahoma State University; King Abdullah City for Science and Technology

8:20 AM Invited
Anti-Stain Surface Treatment for Housing Wet Area: Norifumi Isu; LIXIL Corp.

8:40 AM
Mesoporous Materials for Sorption of Actinides: Allen Apblett; Zeid Al Othman; Oklahoma State University; King Saud University

9:00 AM
Fabrication and Properties of Highly Porous Ceramic by the Gelation-Freezing Method: Manabu Fukushima; Tatsuki Ohji; Yu-ichi Yoshizawa; AIST (National Institute of Advanced Industrial Science and Technology)

9:20 AM
Synthesis of ZnO Microtubes by a Simple Wet Process Using Zn Layered Double Hydroxide Precursor: Seiji Yanashita; Takashi Shirai; Masayoshi Fuji; Nagoya Institute of Technology, Ceramics Research Laboratory

9:40 AM Break

10:00 AM
Fabrication of Solid Electrolyte Dendrites through Novel Smart Processing: Sosho Kirihara; Katsuya Noritake; Satoko Tatsuki; Osaka University

10:20 AM
Synthesis of Carbon Nanomaterials via Up-Cycling Several Solid Wastes: Chuanwei Zhuo; Joner Alves; Jorge Tenorio; Yiannis Levendis; Northeastern University; ArcelorMittal Inox Brasil; University of Sao Paulo

10:40 AM
The Effect of Adding Metaokolinite in the Geopolymer Products from Jordan: Hani Khoury; Islam Aldabsheh; Faten Slatyi; Hubert Rahier; Muayad Esaiafan Esaiafan; Jan Wastius; University of Jordan; Dept. Physical Chemistry and polymer Science; Dept. of Mechanics of materials and constructions; Dept. of Mechanics of materials and constructions,

11:00 AM
Microstructural and Mechanical Properties of the Extruded 945-946 Duplex Phase Brass Cu-40Zn-Ti Alloy: Haruhiko Atsumi; Hisashi Imai; Shufeng Li; Katsuyoshi Kondo; Yoshiihara Kousaka; Akimichi Kojima; osaka university; San-etsu Co., Ltd

11:20 AM
Preparation of Biomass Char for Ironmaking and Its Reactivity: Zhengwen Hu; Jianliang Zhang; Xu Zhang; Zhengyun Fan; Jing Li; University of Science and Technology Beijing

11:40 AM Cancelled
Thermal and Mechanical Properties of Metaokolinite Inorganic Polymeric Green Materials: Maricela Lizcano; Miladin Radovic; Karen Lozano; Andres Gonzalez; Texas A&M University; University of Texas Pan American

Hardness across the Multi-Scales of Structure and Loading Rate: Structural Aspects II
Program Organizers: Ronald Armstrong, University of Maryland; David Bahr, Washington State University; Naresh Thadhani, Georgia Institute of Technology; Stephen Walley, Physics and Chemistry of Solids Cavendish Laboratory

Wednesday AM Room: C210 Location: Columbus Con. Center

Session Chairs: James Li, University of Rochester; Katerina Aifantis, Michigan Technological University

8:00 AM Invited
Relating Indentation Behaviour to Crystal Orientation: T Ben Britton; James Harring; David Lloyd; Steve Roberts; Angus Wilkinson; Department of Materials, University of Oxford

8:20 AM
Indentation Methods to Measure Dislocation Nucleation: Experiments and Simulations: David Bahr; Iman Salehinia; Veronica Perez; Marc Weber; Washington State University

8:40 AM Invited
Indentation-Induced Deformation Behavior in the Vicinity of Grain Boundary of Fe Alloys: Takahito Ohmura; National Institute for Materials Science

9:00 AM Invited
Predicting the Hardness of Glass Surfaces: Morten Snedskaer; John Mauro; Yuanzheng Yue; Aalborg University; Corning Incorporated

9:20 AM
Loading Rate Dependent Indentation Hardness: Anomalies in Amorphous Metals and High Strength Ceramics: Ghatu Subhash; University of Florida

9:40 AM Break

10:00 AM Invited
The Quasi-Static Deformation and Shock Response of Single Crystal RDX: Kyle Ramos; Daniel Hooks; David Bahr; Marc Cawkwell; Thomas Sewell; Los Alamos National Laboratory; Washington State University; University of Missouri-Columbia
10:20 AM Invited
Nanoindentation of Molecular Composites to Simulate Deformation and Failure: John Vreag1; Kyle Ramos1; Dan Hooks2; David Bahr2; 1Los Alamos National Laboratory; 2Washington State University

10:40 AM Invited
Investigating the Correlation between Indentation Hardness and Dynamic Properties of Ceramic Powders: Thomas Buchheit1; Tracy Vogler1; 1Sandia National Laboratories

11:00 AM
Using Indentation Footprints to Probe Dislocation Substructure: A Quantized Crystal Plasticity Approach: Lin Li1; Peter Anderson1; Myoung-Gyu Lee2; 1The Ohio State University; 2Pohang University of Science and Technology

11:20 AM
Strain Rate Sensitivity Study of Recovery Across a Clad AA3003/AA6111 Interface by Instrumented Indentation: Alex Penlington1; Brad Diak1; Haijun Jin2; 1Queen’s University; 2Novelis Inc.

Innovative Processing and Synthesis of Ceramics, Glasses and Composites: Bio-and Electro-Ceramics, Films and Coatings
Program Organizers: J. P. Singh, U.S. Army Research Laboratory; Narotam Bansal, NASA Glenn Research Center; Takashi Goto, Tohoku University

Wednesday AM
Room: C110
Location: Columbus Con. Center

Session Chairs: Takashi Goto, Tohoku University; Jane Adams, Army Research Laboratory

8:00 AM Invited
Bio-Ceramic Coatings by Chemical Vapor Deposition Routes: Takashi Goto1; 1Tohoku University

8:40 AM
Synthesis of Bio-Inspired Nanocomposites by Electrophoretic Deposition: P. G. Allison1; P. G. Malone2; C. A. Weiss3; S. Morefield4; R. G. Hidalgo-Hernandez5; M. Q. Chandler6; 1US Army Engineer Research & Development Center; 2US Army Engineer Research & Development Center

9:00 AM
Processing of Multiscale Highly Porous Ceramics for Bioreactor Systems: Anthony Finoli1; Nicole Ostrowski1; Jorg Gerlach1; Ian Nettleship1; 1University of Pittsburgh; 2McGowan Institute for Regenerative Medicine

9:20 AM
Synthesis and Property Evaluations of Silicon Carbide Nanotube Reinforced Ceramic Matrix Composites: Dongming Zhu1; Janet Hurst1; 1NASA Glenn Research Center

9:40 AM Break

10:00 AM Invited
Growing Integration Layer [GIL] Method: Direct Fabrication of Compositonally, Structurally and Functionally Graded Ceramic Films and/or Coatings from Mother Materials in Solution without Firing Processes: Masahiro Toshimura1; Nobuhiro Matsushita2; 1(1) Tokyo Institute of Technology, Japan and - (2) National Cheng Kung University, Taiwan; 2Tokyo Institute of Technology

10:40 AM
Molten-Salt Synthesis of Pure and Doped LaAlO3 Nanoparticles: Esmeralda Mendoza-Mendoza1; Sagrario Montemayor1; Karinjilottu Padmasree2; Antonio Fuentes1; 1Cinvestav del IPN; 2Universidad Autonoma de Coahuila

11:00 AM
Solid State Metathesis Reactions in the Bi(NO3)3-NH4VO3-NaOH System: Room-Temperature Synthesis of BiV Mixed Oxides: Brenda Fuentes-Martinez1; Karinjilottu Padmasree2; Esmeralda Mendoza-Mendoza1; Antonio Fuentes1; 1Instituto Tecnologico de Sالتllo; 2Cinvestav del IPN

11:20 AM
Synthesis and Morphology Control of Templates for Textured Electroceramics: Stephen Poterawa1; Yunfei Chang1; Trevor Clark1; Richard Meyer1; Gary Messing1; 1Pennsylvania State University

11:40 AM
The Synthesis of Mesoporous SiC Ceramics from Block Copolymer Precursors: Xueping Yang1; Linan An1; 1University of Central Florida

Program Organizer: David Furrer, Pratt & Whitney

Wednesday AM
Room: C213
Location: Columbus Con. Center

Session Chairs: Bernard Billia, CNRS; Valery Rudnev, Inductoheat Inc.

8:00 AM
The “Integrator” for ICME Belongs in the World of Materials Information Management: Will Marsden1; 1Granta

8:20 AM
Linking Microstructure to Crystal-Plasticity/Finite Element Simulation by Phase-Field and Analytical Calculation for ICME of Ni-Base Superalloys: Ning Zhou1; Mahendra Samal1; Hallee Deutchman1; Somnath Ghosh1; Michael Mills1; Yunzhi Wang1; 1The Ohio State University; 2Bhabha Atomic Research Centre; 3Johns Hopkins University

8:40 AM
Probabilistic Fatigue Life Prediction: Rajiv Mishra1; Rajeev Kapoor2; Nilesh Kumar1; Partha De3; 1Missouri University of Science and Technology

9:00 AM
Modeling Fatigue Crack Growth: Andrew Rosenberger1; 1USAF

9:20 AM
A Development of Property Prediction Model and Its Applications to the Manufacturing of Steel Plates: SeDon Choo1; 1POSCO

9:40 AM Break

10:00 AM
Experimentally Determined Three-Dimensional Microstructural Data for Use as Initial Information in Simulations and Modeling: David Rowenhurst1; Peter Voorhees1; Ian McKenna1; 1Naval Research Lab; 2Northwestern University; 3University of British Columbia

10:20 AM
Topological Measures of Three-Dimensional Grain Structures from Phase-Field Simulations and the MacPherson-Srolovitz Relation: Kunok Chang1; Carl Krill2; Long-Qing Chen1; 1Penn State; 2Ulm University; 3Penn State
10:40 AM
Application of Novel Techniques to the Three-Dimensional Characterization of Microstructural Features in α+β Titanium Alloys: John Sout1; Santhosh Koduri2; Vikas Dixit1; Peter Collins1; Stephen Nieszgoda3; Surya Kalidindi4; Hamish Fraser5; ‘The Ohio State University; ‘Intel Corp; ‘University of North Texas; ‘Los Alamos National Laboratory; ‘Drexel University

11:00 AM
Models for Microstructure Evolution during TMP of Alpha/Beta Titanium Alloys: Lee Semiatin6; David Furrer7; Sergey Zherebtsov8; Gennady Salishechev9; Chan Hee Park10; Chong Soo Lee11; Gordon Sargent12; ‘US Air Force Research Laboratory; ‘Pratt & Whitney; ‘Belgorod State University; ‘Korea Institute of Materials Science; ‘Pohang University of Science and Technology; ‘UES, Inc.

11:20 AM
Stationary Grain Size Distribution of Three-Dimensional Phase-Field Simulations of Grain Growth: Kunok Chang; Carl Krill; Long-Qing Chen; ‘Penn State; ‘Ulm University; ‘Penn State

11:40 AM
A Phase-Field Study of Microstructure Evolution in Single- and Polycrystalline Titanium Alloy: Tae Wook Heo; Saswata Bhattacharyya; Donald Shih; Long-Qing Chen; ‘The Pennsylvania State University; ‘Boeing Research & Technology

Interfaces, Grain Boundaries and Surfaces from Atomistic and Macroscopic Approaches -- Fundamental and Engineering Issues: Interfaces in Polycrystals
Program Organizers: Wayne Kaplan, Technion - Israel Institute of Technology; Paul Wynblatt, Carnegie Mellon University; Dominique Chatain, Centre Interdisciplinaire de Nanoscience de Marseille; Mikael Holcomb, West Virginia University

Wednesday AM Room: C120
October 19, 2011 Location: Columbus Con. Center

Session Chairs: Paul Wynblatt, Carnegie Mellon University; Helen Chan, Lehigh University

8:00 AM Keynote
The Five Parameter Grain Boundary Energy Distribution: Gregory Rohrer; ‘Carnegie Mellon University

8:40 AM Invited
Computed Grain Boundary Energies: Trends among Elements and Comparisons to Experiment: Stephen Foiles1; Elizabeth Holm1; Gregory Rohrer2; Anthony Rollett3; Jia Li4; David Olmsted5; ‘Sandia National Laboratories; ‘Carnegie Mellon University; ‘University of California, Berkeley

9:00 AM
Very Strong Interactions at Precious-Metal/Oxide Interfaces Studied by Atomic-Resolution Transmission Electron Microscopy: Michael B. Katz; Yingwen Duan; Baihai Li; Hong Liu; Carolina Adamo; Carolina Adamo; Darrell Schom; Liang Chen; George Graham; Xiaoqing Pan; ‘University of Michigan; ‘Cornell University; ‘Ningbo Institute of Materials Technology and Engineering

9:20 AM Invited
The Orientation and Morphology of Pt Precipitates within Sapphire: Melissa Santala; Velimir Radmilovic; Raquel Gianlu; Mark Ridgway; Ronald Gronsky; Andreas Glaeser; ‘Lawrence Livermore National Laboratory; ‘National Center for Electron Microscopy; ‘Australian National University; ‘University of California

9:40 AM Break

10:00 AM Invited
Atomic Imaging and Spectroscopy on Interfaces and Grain Boundaries Using an Aberration Corrected Transmission Electron Microscope: Bert Freitag; Joerg Jinschek; Dmitri Klenov; ‘FEI Company

10:20 AM
Effect of ytterbium on Grain Boundary Structure and Grain Growth in Magnesium Aluminate Spinel: George Ferto; ‘Lehigh University

10:40 AM
Effects of Thermal Cycling and Thermal/Humidity Hold on Texture Evolution of Sn, Sn-Cu, and Sn-Cu-Pb Electroplated Films: Pylin Sarbol; John Koppes; Peng Su; John Blendell; Carol Handwerker; ‘Purdue University; ‘Cisco Systems, Inc.

11:00 AM
Evolution of the Grain Boundary Character Distribution in 3D Grain Coarsening Observed with Non-Destructive High Energy X-ray Diffraction Microscopy: C.M. Heffner; S. Li; J. Lind; A. Rollett; U. Lienert; R. Suter; ‘Carnegie Mellon University, Department of Physics; ‘Carnegie Mellon University, Department of Materials Science and Engineering; ‘Argonne National Laboratory, Advanced Photon Source

11:20 AM
Measuring Grain Boundary Character Distribution (GBCD) in Three-Dimensionally Reconstructed Polycrystalline Materials: Sukbin Lee; Anthony Rollett; Gregory Rohrer; ‘Carnegie Mellon University

11:40 AM
Temperature Dependent Interface Energy and Mobility Anisotropy in Strontium Titanate: Wolfgang Rheinheimer; Michael Bäuerle; Michael Hoffmann; Peter Pfundstein; Dagmar Gerthsen; ‘Karlsruhe Institute of Technology

Program Organizers: Haiyan Wang, Texas A&M University; Nuggesti Ravindra, New Jersey Institute of Technology; Alan Ardell, National Science Foundation; Yantian Zhu, North Carolina State University; Xinghang Zhang, Texas A&M University; Rajiv K. Singh, University of Florida; John Prater, Army Research Office

Wednesday AM Room: E170
October 19, 2011 Location: Columbus Con. Center

Session Chairs: Suveen Mathaudhu, U.S. Army Research Office; Irene Beyerlein, Los Alamos National Lab

8:00 AM Invited
Microstructural Evolution and Mechanical Properties of Ultrafine Grained Metals: Marc Meyers; T. G. Langdon; M. Kawazaki; ‘University of California, San Diego; ‘University of Southern California
8:20 AM Invited
Fatigue Deformation of a Nanocrystalline NiFe Alloy: Peter Liaw1; S. Cheng2; S. Lee3; L. Li4; Y Zhao4; J. Almer5; X.-L. Wang1; E. Lavernia1; Tamás Ungár5; 1Univ of Tennessee; 2Eötvös University Budapest

8:40 AM Invited
Structure and Mechanical Properties of Nanoscale Metal – Metal Nitride Multilayers: Amit Misra1; 1Los Alamos National Laboratory

9:00 AM
The Characteristic Interface of Accumulative Roll Bonding in Cu/Nb Nanolamellar Multilayers: John Carpenter1; Sven Vogel1; Thomas Wynn1; Robert Dickerson2; Weizhong Han1; Rodney McCabe1; Irene Beyerlein1; Nathan Mara1; 1Los Alamos National Laboratory

9:20 AM Invited
Gradients & Nanoscales: Elias Alfantis1; 1Aristotle U. Thessaloniki, Greece

9:40 AM Break

10:00 AM Invited
Uncovering Impurity Effects on Grain Boundaries of Tantalum and Tungsten—from First-Principles Calculations: Zhiliang Pan1; Laszlo Kecskes2; Qiuming Wei1; 1University of North Carolina at Charlotte; 2US ARL

10:20 AM Invited
Thermodynamically Stabilized Nano- and Metastable Materials: Laszlo Kecskes1; K. A. Darling1; 1US Army Research Laboratory

10:40 AM Invited
Effect of Neutron Irradiation on Mechanical Behavior of Nanograin Structured Cu: Korukonda Murty1; Walid Mohamed2; Jacob Eapen1; Doug Porter1; 1North Carolina State University; 2Idaho National Laboratory

11:00 AM Invited
Energetics of Twinning Shear and Shuffle Mechanisms in Metals: Huseyin Sehitoglu1; Tawhid Ezzat1; Hans Maier1; 1University of Illinois; 2University of Paderborn

11:20 AM
Grain-Size Effect on Twinning in Nanostructured FCC Metals: Yuntian Zhu1; Xiaolei Wu1; Xiaozhou Liao1; 1North Carolina State University; 2Institute of Mechanics, Chinese Academy of Sciences; 3The University of Sydney

11:40 AM
Microstructure and Properties of Nanotwinned Metal Films: Xinghang Zhang1; Daniel Bufford1; Haiyan Wang1; Osman Anderoglu2; Nan Li3; Amit Misra1; Jian Wang1; 1Texas A&M University; 2Los Alamos National Laboratory

12:00 PM
Deformation Twinning in Shock Compressed Cu/Nb Nanolaminates: Weizhong Han1; Nathan Mara1; Amit Misra1; Timothy Germann1; Richard Hoagland1; Shengnian Luo1; 1Los Alamos National Lab

International Symposium on Defects, Transport and Related Phenomena: Defects and Transport in Ceramics IV

Program Organizers: Sangtae Kim, University of California, Davis; Ruediger Dieckmann, Cornell University; Doreen Edwards, Alfred University; Manfred Martin, RWTH Aachen University; Thomas Mason, Northwestern University

Wednesday AM
Room: C122
October 19, 2011
Location: Columbus Con. Center

Funding support provided by: WCU Hybrid Materials Program, Department of Materials Science and Engineering, Seoul National University, Korea

Session Chairs: Ruediger Dieckmann, Cornell University; Tatsuya Kawada, Tohoku University

8:00 AM Invited
Combining Rietveld Analysis of X-Ray and Neutron Diffraction Data of Zinc Oxide Transparent Conductors: Gabriela Gonzalez Alvarez1; Rofeideh Mansourian1; Bryan Hardnack1; Anna Wesolik1; Jordan Gardner1; John Okasinski1; 1DePaul University; 2Argonne National Laboratory

8:40 AM
Local and Defect Structures of Amorphous Transparent Conducting Oxide Thin Films: Qimin Zhu1; Diana Profit1; Qing Ma1; D. Buchholz2; Robert Chang3; Michael Bedzyk4; Thomas Mason5; Dept. of Materials Science and Engineering, Northwestern University; DND-CAT, Synchrotron Research Center at the Advanced Photon Source, Northwestern University

9:00 AM
Oxygen Binding and Nonstoichiometry in Cation-Doped Indium Oxide Transparent Conductors: Oliver Warschkow1; 1The University of Sydney

9:20 AM
Defect Mechanisms in In-Ga-Zn-O and In-Zn-O Homologous Phases: Alexander Adler1; E. Mitchell Hopper1; Sung-Hwan Song1; Haowei Peng2; Arthur Freeman1; Julia Medvedeva3; Thomas Mason4; Department of Materials Science, Northwestern University; Department of Physics and Astronomy, Northwestern University; Department of Physics, Missouri University of Science & Technology

9:40 AM Break

10:00 AM Invited
Non-Stoichiometry, Inversion and Cation Migration in MgAl2O4: Robin Grimes1; Samuel Murphy2; 1Imperial College London

10:40 AM
Computational Study of Defect Clustering and Diffusion in Solid Solutions of Aliovalently Doped ThO2: Vitaly Alexandrov1; Niels Gronbech-Jensen1; Alexandra Navrotsky2; Mark Asta3; 1University of California, Davis; 2University of California, Berkeley

11:00 AM
Ab Initio Calculations of Defects in Gallium Oxide: Tobias Zacherle1; Peter Schmidt1; Manfred Martin2; 1RWTH Aachen University; 2RWTH Aachen University; WCU Hybrid Materials Program, Seoul National University

11:20 AM Invited
Relationship between Mechanical and Defect Chemical Properties of Oxide Ceramics: Tatsuya Kawada1; Yuta Kimura1; Takuto Kushi1; Junya Amada1; Sin-ichi Hashimoto1; Koji Amezawa1; 1Tohoku University
**Joining and Sustaining of Superalloys: Joining and Sustaining of Ni-Base Superalloys: Part I**

*Program Organizers: Sammy Tin, Illinois Institute of Technology; Jeffrey Evans, University of Alabama in Huntsville; David Mourer, GE Aviation; Judith Schneider, Mississippi State University; Ji-Cheng Zhao, The Ohio State University*

**Wednesday AM**

**Room: E161A**

**Location: Columbus Con. Center**

**Session Chair: To Be Announced**

8:00 AM Invited

Microstructural and Residual Stress Characterisation of Nickel Base Superalloy Inertia Friction Welds: **Michael Preuss**; Philip Withers; Gavin Baxter; ‘Rolls-Royce plc.

8:40 AM Invited

Microstructural Features of Inertia Friction Welded Powder-Based RR1000 Superalloy: **Zezhen Huang**; Hangyue Li; Gavin Baxter; Simon Bray; Paul Bowen; ‘The University of Birmingham; ‘Rolls-Royce plc.

9:00 AM

Weld Mechanical Properties and Weldability of a Ni-Mo-Cr Alloy: **Jeremy Caron**; S. Krishna Srivastava; Lee Pike; ‘Haynes International, Inc.

9:20 AM Break

9:40 AM Invited

Fricition Stir Welding and Processing of Nickel Based Superalloys: **Bharat Jasthi**; Edward Chen; Christian Widener; Michael West; ‘South Dakota School of Mines and Technology; ‘Transition45 Technologies, Inc

10:20 AM

Weld Solidification Behavior of INCONEL™ Alloy 740H: **David Tung**; John Lippold; ‘The Ohio State University

10:40 AM

Analysis on Laser Cladding Applied for a Ni-Based Single Crystal Alloy: **Sin Ho Kang**; Kui Dong Choi; Chang Keun Roh; Duck Su Kim; Kil Jin Chung; Jeo Ho Park; ‘KEPCO KPS

11:00 AM

Improved Stress Rupture Properties of Transient Liquid Phase Bonded CMSX-4 Single Crystal for Industrial Gas Turbine: **Doo Soo Kim**; Han Sang Lee; Keun-Bong Yoo; Kyu-So Song; ‘KEPCO Research Institute

8:40 AM

Characterization of low temperature bonding with Cu nanoparticles for electronic packaging application: **Yunjian Tan**; Guisheng Zou; Xiaoyu Wang; Fengwen Mu; Hailin Bai; Aiping Wu; Anming Hu; ‘National Tsing Hua University

9:00 AM

An Innovative Method of Adhesive Bonding by Direct Application of Electrical Current to Carbon Nanotube (CNT) Film Infiltrated with Epoxy Adhesives: **Shih-Chin Chang**; Bing-Cheng Sung; ‘National Tsing Hua University

9:20 AM

Low temperature bonding process using mixed Cu-Ag nanoparticles for electronic packaging: **Guisheng Zou**; **Yunjian Tan**; Xiaoyu Wang; Fengwen Mu; Hailin Bai; Aiping Wu; Anming Hu; ‘Y.Norman Zhou; ‘Tsinghua University; ‘University of Waterloo

9:40 AM Break

10:00 AM

Hardening of Aluminum Using Femtosecond Laser-Driven Shock Wave: **Yutaro Isshiki**; Tomokazu Sano; Tomo Ogura; Kazuto Arakawa; Masayuki Okoshi; Narumi Inoue; Kojiro Kobayashi; Akio Hirose; ‘Osaka University; ‘National Defense Academy of Japan; ‘The Wakasa Wan Energy Research Center

10:20 AM


10:40 AM

Femtosecond Laser Nanowelding and Surface Processing of Ag /TiO2 Nanowire Membranes for Solar Photovoltaic Applications: **Anming Hu**; Y. Zhou; ‘University of Waterloo

11:00 AM

Laser Annealing of Silver Nanoparticles Thin Films: **Peng Peng**; Anming Hu; Norm Zhau; ‘University of Waterloo

11:20 AM

Effects of Particle Size and Solvent on Bondability of Metal-to-Metal Bonding Using Silver Nanoparticle Paste: Akio Hirose; Tomo Ogura; Yosuke Konaka; Eichi Ide; Toshiaki Morita; ‘Osaka University; ‘Hitachi Ltd.

11:40 AM

Application of Aluminum-Based Nano-Thermites for Dissimilar Joining of Copper to Glass: **Golnaz Bohlooli-Zanjani**; Anming Hu; John Persic; John Z. Wen; ‘Y. Norman Zhou; ‘University of Waterloo; ‘Microbonds Inc.
Materials Science Challenges for Nuclear Applications: Nuclear Fuels I

Program Organizers: Ram Devanathan, Pacific Northwest National Laboratory; Raul Rebak, GE Global Research; Kevin Fox, Savannah River National Laboratory; Andrzej Wojcieszynski, ATI Powder Metals; Ramprashad Prabhakaran, Idaho National Laboratory; Bill Lee, Imperial College London; Kumar Sridharan, University of Wisconsin; Elizabeth Hoffman, Savannah River National Laboratory; David Forrest, Naval Surface Warfare Center; Aladar Csontos, U.S. Nuclear Regulatory Commission

Wednesday AM  Room: C225  Location: Columbus Con. Center

Session Chair: Bill Lee, Imperial College London

8:00 AM Invited
Thermochemical Behavior of Oxide Nuclear Fuel to High Burnup: Effect of Lanthanides: Theodore Besmann1; Stewart Voit1; Dongwon Shin1; Evan Noon1; Oak Ridge National Laboratory

8:40 AM
Phase-Field Simulation of Intergranular Bubble Growth and Percolation: Paul Millet1; Michael Tonks1; Bulent Diner1; Idaho National Laboratory

9:00 AM
Characterization of ThO2-UO2 Mixed Oxide System Using Atomic Level Simulations: Rakesh Behera1; Chaitanya Deo1; Georgia Institute of Technology

9:20 AM
First Principles Calculations of the Electronic and Atomic Structure of Radiation Defects in PuO2: Eugene Kotomin1; Denis Gryaznov1; Leon Petri1; Axel Svan1; Max Planck Institute; Max Planck Institute; Daresbury Laboratory; Aarhus University

9:40 AM Break

Materials Science Challenges for Nuclear Applications: Nuclear Fuels II

Program Organizers: Ram Devanathan, Pacific Northwest National Laboratory; Raul Rebak, GE Global Research; Kevin Fox, Savannah River National Laboratory; Andrzej Wojcieszynski, ATI Powder Metals; Ramprashad Prabhakaran, Idaho National Laboratory; Bill Lee, Imperial College London; Kumar Sridharan, University of Wisconsin; Elizabeth Hoffman, Savannah River National Laboratory; David Forrest, Naval Surface Warfare Center; Aladar Csontos, U.S. Nuclear Regulatory Commission

Wednesday AM  Room: C225  Location: Columbus Con. Center

Session Chairs: Ramprashad Prabhakaran, Idaho National Laboratory; Dawn Janney, Idaho National Laboratory

10:00 AM
Modeling Nuclear Fuels with a Combined Potts-Phase Field Model: Eric Homer1; Veena Tikare1; Elizabeth Holm1; Sandia National Laboratories

10:40 AM
Uranium Localization in Alpha-Plutonium: Angeline Neuman1; Troy Nothwang1; Fredrick Hampel1; Franz Freibert1; Los Alamos National Laboratory

11:00 AM
Microstructures and Relationships between Rare-Earth Elements and Actinides in U-Pu-Zr-Np-Am Alloys with 8% Rare-Earth Elements: Dawn Janney1; Bulent Sencer1; Robert Marianni1; Roger Kennedy1; Thomas Hartmann1; Leah Squires1; Idaho National Laboratory; University of Nevada, Las Vegas

11:20 AM
Microstructural Characterization of Candidate Burnable Absorber Materials for Application in LEU U-Mo Fuel Plates: Dennis Keiser2; Jan-Fong Jue1; Irina Gligolenko1; Glenn Moore1; Curtis Clark1; Barry Rabin1; Daniel Wachs1; Ashley Ewih1; Yongho Sohn1; Bo Yoo1; Toshio Totev1; Tom Wienecke1; Idaho National Laboratory; Y-12 National Security Complex; University of Idaho

Multifunctional Oxides: Session IV

Program Organizer: Xiaoping Pan, University of Michigan

Wednesday AM  Room: E162A  Location: Columbus Con. Center

Session Chairs: Fumiyasu Oba, Kyoto University; Haiyan Wang, Texas A&M University

8:00 AM Invited
A Size-Dependent Nanoscale Metal Insulator Transition in Random Materials: Application to Resistance Random Access Memory (ReRAM): Xiang Yang1; Albert Chen1; Byungjoon Choi1; I-Wei Chen1; University of Pennsylvania

8:40 AM
Effect of Microstructure and Composition on Electromagnetic Properties of Co2Z Ferrite at >1 GHz: Lang Qin1; Krener Shqu1; Lanlin Zhang1; John Volakis1; Henk Verweij1; Group Inorganic Materials Science, Department of Materials Science & Engineering, Ohio State University; ElectroScience Lab, Ohio State University

9:00 AM Invited
Native Point Defects in Functional Oxides: An Approach from First Principles: Fumiyasu Oba1; Kyoto University

9:40 AM Break

10:00 AM Invited
A Novel Nano-Structured Hybrid-Composite ITO-CNT Transparent Electrode for Enabling Transparent BST-Based Tunable Devices for L-Band Communications Applications: Melanie Cole1; Mat Ivill1; Ryan Toonen1; S. Gary Hirsch1; Eric Ngo1; U.S. Army Research Laboratory, WMRD

10:40 AM
Spatially-Resolved Electronic Transport Measurements of ZnO Thin Films: Kui Zhang1; Jacob Jokisaari1; Tassilo Heeg1; Darrell Schlem1; Xiaqing Pan1; University of Michigan; Cornell University
Nanotechnology for Energy, Healthcare and Industry: Session I
Program Organizers: Gary Pickrell, Virginia Tech; Suveen Mathauch, U.S. Army Research Office; Wolfgang Sigmund, University of Florida; Jud Ready, Georgia Tech; George Wei, Osram Sylvania; Ke Wang, Virginia Tech; Zhiwei Shan, Jiaotong University; Alpesh Shukla, Lawrence Berkeley National Laboratory; Nitin Chopra, The University of Alabama; Sudipta Seal, Univ of Central Florida; Navin Manjooran, Siemens Corporation; Julia Greer, California Institute of Technology

Wednesday AM
October 19, 2011
Room: C125
Location: Columbus Con. Center

Session Chairs: Gary Pickrell, Virginia Tech; Navin Manjooran, Siemens Corporate Technology

8:00 AM
Current Status and Prospects of Nanotechnology in Arab States: Bassam Alfeeli; 1Kuwait Institute for Scientific Research

8:40 AM
Adsorption and Photocatalytic Degradation Kinetics of Pharmaceuticals by TiO2 Nanowire Membranes during Water Treatment: Anming Hu; D. Luong; X. Zhang; P. Peng; K. Oakes; M. Servos; Y. Zhou; 1University of Waterloo

9:00 AM
Copper Micro and Nano Particles Based Low Cost Water Purifier: Rajendran Suruliyandi; 1SARASWATHINARAYANAN COLLEGE

9:20 AM Canceled
Colloid-Chemical Nanoprocesses of Oxyhydrate Systems for Energy and Healthcare: Tatiana Prolubnikova; Yuri Sucharev; Irina Lebedeva; 1Chelyabinsk State University

9:40 AM Break

10:00 AM
Finite Element Modeling for Mode Reduction in Bundled Sapphire Photonic Crystal Fibers: Neal Pfeifferberger; Gary Pickrell; 1Virginia Tech

10:20 AM
Mutant Strains of Mycobacteria Smegmatis with Resistance to Silver Nanoparticles: Curtis Larimer; Ian Nettleship; Anil Ojha; Mohammad Shyful Islam; 1University of Pittsburgh

10:40 AM
Perovskite Nanosheets Produced by Chemical Exfoliation of Aurivillius Phase Bi2CaNaNb3O12: Jian Liu; Victoria Knox; Jianwanjun Shi; Graham King; Sven Vogel; Scott Mixture; 1Alfred University; 2Los Alamos National Lab

11:00 AM
Characterization of Nitrogen Doped Aurivillius Photocatalysts: Victoria Knox; Scott Mixture; 1Alfred University

Next Generation Biomaterials: Advanced Biomaterials
Program Organizers: Roger Narayan, Univ of North Carolina & North Carolina State Univ; Kalpana Katti, North Dakota State University; Kajal Mallick, University of Warwick; Vilupanur Ravi, California State Polytechnic University, Pomona; Varshni Singh, Louisiana State University

Wednesday AM
October 19, 2011
Room: C215
Location: Columbus Con. Center

Session Chairs: Varshni Singh, Louisiana State University; Federico Rosei, INRS

8:00 AM Invited
Probing Molecular Polarization at Interfaces of De Novo Proteins and Electrode Surfaces: Kendra Kathan-Galipeau; Bohdana Discher; 1Dawn Bonnell; 1U Penn

8:20 AM Invited
Aligned Nanofiber Multilayer Plates for Cancer Research: John Lannutti; Jed Johnson; 1The Ohio State University; 2Nanoﬁber Solutions LLC

8:40 AM
An Experiment-Simulation Approach to Determine Electrospun Fiber Properties: Greg Ebersole; Jackie Ohmura; Heather Powell; 1Peter Anderson; 1The Ohio State University

9:00 AM Invited
Iron/Iron Oxide Core/Shell Nanoparticles for Magnetic Hyperthermia Treatment: A. Baker; Katsiaryna Kekalo; 1Dartmouth College

9:20 AM Invited
Nanoscale Modiﬁcation of Biomaterials to Control Cell Growth: Federico Rosei; 1INRS

9:40 AM Break

10:00 AM Invited
Bio-Doped Metal Oxides for High-Throughput Biosensors: Pelagia Gouma; 1SUNY Stony Brook

10:20 AM Invited
BioMEMS Devices and Applications of Parylene Biocompatible Coating: Varshni Singh; Quoc Nguyen; Martina Cihova; Jost Goetert; Todd Monroe; 1Louisiana State University; 2Karlsruhe Institute of Technology

10:40 AM
PCL-Gelatin Nanofibers for Extended Drug Release: Tyler Nelson; Hirshikesh Munj; Carol Lee; Heather Powell; David Tomasko; John Lannutti; 1The Ohio State University

11:00 AM Invited
Application of Polymer-Based Microfluidic Devices for the Selection and Manipulation of Low-Abundant Biological Cells: Malgorzata Witek; Udara Dharmasiri; Samuel Njoroge; Morayo Adebiyi; Joyce Kamande; Mateusz Hupert; Francis Barnay; Steven Soper; 1Louisiana State University; 2Weill Cornell Medical College

11:20 AM
Development of Magnesium-Zinc-Calcium Biodegradable Alloys: Zhigang Xu; Christopher Smith; Jag Sankar; 1NC A&T State University

11:40 AM Invited
Effect of Heat Treatment and Boron Content on the Behavior of Ti Alloys in PBS and 0.9 wt% NaCl Solutions: Vilupanur Ravi; 1California State Polytechnic University, Pomona
Next Generation Biomaterials: Frontiers in Biological and Biomedical Materials

Program Organizers: Roger Narayan, Univ of North Carolina & North Carolina State Univ; Kalpana Katti, North Dakota State University; Kajal Mallick, University of Warwick; Vilunapar Ravi, California State Polytechnic University, Pomona; Varshni Singh, Louisiana State University

Wednesday AM  Room: B200/201
October 19, 2011  Location: Columbus Con. Center

Session Chairs: Leon Bonhomme, Laboratoire de Chimie de la Matière Condensée

8:00 AM
Angiogenic Bioactive Borate Glasses: Steven Jung1; Delbert Day2; Roger Brown2; 1Mo-Sci Corporation; 2Missouri University of Science and Technology

8:20 AM Invited
Biomaterials: From Models to Spectroscopic Characterization: christian bonhomme1; 1UPMC Paris 6

8:40 AM
In-Vivo Evaluation of 13-93 Bioactive Glass Scaffolds Made by Selective Laser Sintering (SLS): Mariano Velez1; Krishna Kolan2; Ming Leu3; Steve Jung4; Delbert Day5; Tien-Min Chu6; 1Mo-Sci Corporation; 2Missouri University of Science and Technology; 3Missouri University of Science and Technology; 4Indiana University

9:00 AM Invited
Low Temperature Sintering of Ti-6Al-4V for Orthopedic Implant Applications: Kyle Crosby1; Leon Shaw1; 1University of Connecticut

9:20 AM Cancelled
Mechanical Properties of Implant Rods Made of Ti-29Nb-13Ta-4.6Zr for Spinal Fixure: Mitsuo Niinomi1; Masaaki Nakai1; Junko Hieda1; Tohoku University

9:40 AM Break

10:00 AM Invited
Next Generation Orthopaedic Implants by Additive Manufacturing Using Electron Beam Melting: L. Murr1; Sara Gaytan1; Edwin Martinez2; Frank Medina3; Ryan Wicker4; 1University of Texas at El Paso; 2W.M. Keck Center for 3D Innovation, University of Texas at El Paso

10:20 AM Invited
Origins of the Fracture Resistance of Bone and Its Biological Degradation: Robert Ritchie1; 1University of California Berkeley

10:40 AM Invited
Scaffolds to Guide Stem Cells for Bone and Dentin Regeneration: Peter Ma1; 1University of Michigan

11:00 AM Invited
Titanium with Designed Elongated Pores for Biomedical Implants: David Dunand1; 1Northwestern University

11:20 AM Invited
Bioprinting of Living Cells for 3D Tissues: Wei Sun1; 1Drexel University

11:40 AM Invited
Predicting Microstructure Evolution in Drug Eluting Coatings: David Saylor1; 1FDA-CDRH-OSEL

Novel Sintering Processes and News in Traditional Sintering and Grain Growth: Field Assisted and NanoSintering III

Program Organizers: Ricardo H. R. Castro, University of California at Davis; Douglas Gouvéa, Universidade de São Paulo

Wednesday AM  Room: C222
October 19, 2011  Location: Columbus Con. Center

Session Chair: To Be Announced

8:00 AM
Effect of High Pressure on the Microstructure and Mechanical Properties of Nanostructured Aluminum Alloy Consolidated by Spark Plasma Sintering: Dongming Liu1; Yuhong Xiong1; Ying Li1; Troy Topping1; Chris Haines1; Joseph Paras2; Darold Martin2; Deepak Kapoor2; Julie Schoenung2; Enrique Lavernia1; 1University of California, Davis; 2US Army, RDECOM-ARDEC

8:20 AM
High-Speed Compaction of Powder Materials at High Voltage Electric Discharge Consolidation: Evgeny Grigoryev1; 1MEPHI

8:40 AM Invited
Field Assisted Sintering of Bulk Nanometric Oxides: Understanding the Basic Mechanisms: Umberto Aesbelmi-Tamburini1; 1University of Pavia

9:20 AM Break

9:40 AM
Numerical Simulation of Microstructural Evolution during Sintering at the Meso-Scale: Veena Tikare1; 1Sandia National Laboratories

10:20 AM
Novel Processing of IR Transparent Nanocrystalline Ceramic Composites by Spark Plasma Sintering: Colby Brunet1; Olivia Graeve1; 1Alfrted University

10:40 AM
Thermal Stability in Sintering of Cryomilled Al-Nb Alloys: David Walker1; William Caley1; Mathieu Brochu1; 1McGill University; 1Dalhousie University

11:00 AM
Modifying the Thermal Stability of Nanocrystalline Tungsten Powders: Brady Butler1; Kristopher Darling1; Micah Gallaher1; Eric Klier1; James Paramore1; Heidi Maupin1; 1U.S. Army Research Laboratory

Particulate Composites: Particulate Composites I

Program Organizers: Ivi Smid, Penn State; James Foley, Los Alamos National Laboratory; Ravi K. Enneti, Global Tungsten and Powders Corporation

Wednesday AM  Room: C115
October 19, 2011  Location: Columbus Con. Center

Session Chair: Ivi Smid, Penn State

10:00 AM
Advanced Powder metallurgical Technologies to Manufacture Metal Matrix Composites: Thomas Weissgaerber1; Thomas Hutche1; Thomas Schubert1; Bernd Kieback1; 1Fraunhofer Institute IFAM Dresden

10:40 AM
The Effects of Sand Size on the Abrasion Resistance of Alloys and Tungsten Carbide-Based MMC Overlays: Gary Fisher1; Tonya Wolfe1; John Wolodko1; 1Alberta Innovates - Technology Futures
11:00 AM
Comparative Evaluation of Tensile Bond Strength & Microleakage of Prime & Bond NT & Gluma Comfort Bond: An In-Vitro Study: Abhishek Kirpal; Rahul Bhole; Sonya Kirpal; Vinod Gujaralli; School of Dentistry; EnviroHealth Research Labs

11:20 AM
Preparation of Octahedral Silver-Copper Alloy Powders: Qunyan Wei; Depeng Zhao; Jienan Qiu; Hong Guo; Yunnan University, School of Chemistry and Science and Technology

11:40 AM Break

Particulate Composites: Particulate Composites II
Program Organizers: Ivi Smid, Penn State; James Foley, Los Alamos National Laboratory; Ravi K. Enneti, Global Tungsten and Powders Corporation

Wednesday AM Room: C115 Location: Columbus Con. Center

Session Chair: Ravi Enneti, Global Tungsten & Powders

8:00 AM
Properties and Performance of High-Pressure High-Temperature Sintered Diamond-SiC Composites: Thomas Easley; Diamond Innovations

8:20 AM
Cold-Sprayed Self-Lubricating Coatings Utilizing Ni-Encapsulated Particulate Composites: Ivi Smid; Lisa Stark; Albert Segall; Tim Eden; Penn State

8:40 AM
Researches Regarding the Structure Investigations on New Materials of the Composite Type: Alexandru Antoniu Cernaianu Stoianovici; COREF

9:00 AM
Highly conductive δ-Bi2O3 pathway in a Bi2O3 ceramic matrix with dispersed 8YSZ spheres: Li-Der Liu; Wen-Cheng Wei; National Taiwan University

Pb-Free Solders and Next Generation Interconnects: Microstructure, Crystallography, and Mechanical Behavior of Pb-free Solders
Program Organizers: Sehoon Yoo, Korea Institute of Industrial Technology; Andre Lee, Michigan State University; Govindarajan Muralidharan, Oak Ridge National Laboratory; Young-Ho Kim, Hanyang University

Wednesday AM Room: E160B Location: Columbus Con. Center

Session Chair: To Be Announced

8:00 AM
Thermal Diffusivity Measurements in Sn-Based Pb-Free Solder Alloys: Ghazal Alipour; Michael Banish; University of Alabama in Huntsville

8:20 AM
Crystal Plasticity Finite Element Modeling of Shear Test in Lead-Free Solder Joints: Payam Darbandi; Bie Zou; Farhang Pourboghrat; Thomas Bieler; Tae Lee; Kuo Liu; Michigan State University

8:40 AM
Preferred Lattice Orientations of Cu6Sn5 Formed on Ni Substrate: W. M. Chen; C. Robert Kao; National Taiwan University

9:00 AM
New method to measure Intermetallic Compound layer thickness and the development of a new equation to predict its growth: Jose Servin; Continental

9:20 AM
Solder Volume Effect on the Growth Behavior of Pd-Ni-Sn Intermetallic Compound in Microelectronic Solder Joints: Cheng-En Ho; Sheng-Wei Lin; Md. Arifur Rahman; Yuan Ze University

9:40 AM Break

10:00 AM
The Effect of Ag and Cu on Sn Nucleation: Gregory Parks; Eric Cotts; Binghamton University

10:20 AM
Effects of Molybdenum Nanoparticles Addition on the Interface between Sn-3.8Ag-0.7Cu Solder and Copper Substrate during Multiple Relfow: Md. Arafat Mahmood; A. S. M. A. Haseeb; Mohd Rafie Johani; University of Malaya

10:40 AM
Effects of Solder Joint Size and Configuration on the Evolution of Mechanical Properties in Aging: Tarig Tashtouchi; Babak Arfaei; Peter Borgesen; State University of New York at Binghamton

11:00 AM
On the Variability of Mechanical Strength in Bi Containing Sn-Ag-Cu Pb-Free Solder Alloys: Mashdalina Matahir; Le Thieng Chin; Kha Sheng Tan; Ayodele Olofinjana; Universiti Brunei Darussalam

11:20 AM
Atlas of Lead-Free Soldering Systems as a Set of Computer Models: Vasily Lutsyk; Vera Vorobjeva; Physical Materials Science Institute

Phase Stability, Diffusion, Kinetics and their Applications (PSDK-VI): Alloy Design and Phase Stability Modeling
Program Organizers: Jeffrey LaCombe, University of Nevada, Reno; Yongho Sohn, University of Central Florida; John Morral, Ohio State University; Ursula Kattner, National Institute of Standards and Technology; Abhijeet Misra, QuesTek Innovations LLC

Wednesday AM Room: C214 Location: Columbus Con. Center

Session Chairs: Yuri Mishin, George Mason University; Alonso Jaques, Universidad Tecnica Federico Santa Maria

8:00 AM
Computationally-Guided Discovery of Efficient Metal-Organic Frameworks for CO2 Capture: Donald Siegel; Hyun Seung Koh; Jinhyung Hwang; University of Michigan

8:40 AM
First-Principles Study of Lattice Dynamics and Thermodynamics of TiO2 Polymorphs: Zhi-Gang Mei; Yi Wang; Shunli Shang; Zi-Kui Liu; Pennsylvania State University

9:00 AM
Modelling the Influence of Cooling Rate on the Precipitate Evolution in Al-Mg-Si (Cu) Alloys: Peter Lang; Ahmad Falahati; Rene Radis; Erwin Povodov-Karadeniz; Mohammad Ahmadi; Piotr Warczok; Ernst Kozeschnik; Vienna University of Technology; Graz University of Technology
9:20 AM
Phase Stability of Ni$_x$Mg$_{1-x}$Al$_2$O$_3$ Spinel under Reducing Conditions and the Influence of Stabilizing Elements: Brenden Hill; Micheline Miller; Scott Misture; Alfred University; Excelerant Ceramics

9:40 AM Break

10:00 AM

10:40 AM
Multi-Scale Modeling on Microstructures and Microstructure-Property Relations of High Temperature Materials for Fossil Energy Applications: Kaisheng Wu; De Nyguo Tafen; Michael Gao; Jeffery Hawk; National Energy Technology Lab; URS Corporation; National Energy Technology Lab

11:00 AM
Atomic Scale Investigation of Classical and Non-Classical Gamma Prime Precipitation in Nickel Base Alloys: Antarshik Singh; Gopal Viswanathan; Soumya Nag; Junyee Hwang; Jainie Tiley; Hamish Fraser; Rajarshi Banerjee; University of North Texas; Air Force Research Laboratory; The Ohio State University

11:20 AM
Thermo-Kinetic Computer Simulation of Precipitation and Age-Hardening Effect in Al-Mg-Si Alloys with Arbitrary Heat Treatment: Ahmad Falahati; Mohammad Ahmadi; Peter Lang; Erwin Povoden-Kardenitz; Piotr Warczok; Ernst Kozeschnik; Vienna University of Technology

11:40 AM
Role of Different Heterogeneous Nucleation Sites on Precipitation of Alpha Platelets in the Beta Matrix of Titanium Alloys: Peeyush Nandwana; Soumya Nag; Arun Devaraj; Rajarshi Banerjee; Hamish Fraser; University of North Texas; The Ohio State University

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Wednesday AM

9:20 AM
High-Temperature Deformation of Powder Metallurgy Si-Al Composites and Their Matrices: Farghalli Mohamed; University of California, Irvine

10:20 AM
Effect of Thermal Cycling on Tensile Creep Behavior of Powder Metallurgy Processed Al-5 Vol.% SiCp Composite Hot-Rolled at 400 or 600 oC: Jishnu Bhattacharyya; Rahul Mitra; Indian Institute of Technology

10:40 AM Invited
Effect of Cure Cycle on Void Distribution and Mechanical Properties of Polymer-Matrix Composites: Javier Llorca; Silvia Hernández; Federico Serrón; Jon M. Molina-Aldareguía; Carlos González; Polytechnic University of Madrid/IMDEA Materials Institute; IMDEA Materials Institute

11:20 AM Invited
Structural Health Monitoring of Wind Turbine Blades: Volker Trappe; Fabian Grasse; Sebastian Thoms; Samir Said; Pedro D. Portella; Federal Institute of Testing and Materials BAM

Recent Advances in Structural Characterization of Materials: Scattering Methods
Program Organizers: Chad Parish, Oak Ridge National Laboratory; Roumiana Petrova, New Jersey Institute of Tech; Jacob Jones, University of Florida; Zhonghau Cai, Argonne National Laboratory; Gang Chen, Ohio University

Wednesday AM Room: C212
October 19, 2011 Location: Columbus Con. Center

Session Chairs: Gang Chen, Ohio University; Chad Parish, Oak Ridge National Labs

8:00 AM Invited
Recent developments in research on disordered materials using high energy x-ray diffraction: Chris Bemmore; Argonne National Laboratory

8:40 AM Invited
In Situ Studies on the Effect of Oxygen Partial Pressure on Ferroelectric Thin Films: Dillon Fong; Chad Folkman; Matthew Highland; Tiffany Santos; Seong Keun Kim; Peter Baldo; Paul Fuoss; Carol Thompson; Jeffrey Eastman; Stephen Streiffer; G Stephenson; Argonne National Laboratory; Northern Illinois University

9:20 AM
Structure of Exfoliated Layered Oxides from Combined Techniques: Scott Misture; Jiawanjun Shi; Alfred University

9:40 AM Break

10:00 AM Invited
Tightly Packaged DNA in a Test Tube and in a Nano-Container: Xiangyun Qiu; George Washington University

10:40 AM
Synchrotron X-Rays Simplified: A Rapid Access Mail-In Powder Service at the Advanced Photon Source: Matthew Suchomel; Lynn Ribaud; Robert Von Dreele; Brian Toby; Argonne National Laboratory

11:00 AM
Rietveld Refinement of an Oil Field Cement Blend: Benjamin Iverson; Christopher Edwards; Ray Loghry; Halliburton
11:20 AM
Study of Correlation between Tensile Properties and Micro-Structure of TWIP Steels with Al Variation by Using In-Situ Neutron Scattering Experiments: Jae-suk Jeong; Yang-Mo Koo; Wan Chuck Woo; Sé-kyun Kwon; ‘POSTECH

Recent Developments in Steel Processing: Session II
Program Organizer: Bhaskar Yalamanchili, GerDau Ameristeel.com
Wednesday AM Room: D142/143 Location: Columbus Con. Center

Session Chair: To Be Announced

8:00 AM
Hot Ductility of Ti Bearing High Strength Steel: Myeonghun Kang; Jae-Sang Lee; YangMo Koo; ‘GIFT, POSTECH

8:20 AM
Modification of Steelmaking Slag by Additions of Salt Cake and KAIF4 from Aluminum Production: Greg Sweet; Georges Kipouros; Stephan Ferency; ‘Steel Dynamics Inc.; ‘Dalhousie University

8:40 AM
Energy Analysis of EAF with Electromagnetic Stirring: Xiaojing Zhang; Cen Zhang; Ola Widlund; Jan-Erik Eriksson; Mohamed Ali Rahmani; Olof Hjortstam; ‘ABB Corporate Research

9:00 AM
Accelerated Carbide Spheroidisation and Refinement (ASR) of Steel AISI 1042: Jaromír Dlouhý; Daniela Hauserová; Zbyšek Nový; Jozef Zrník; ‘COMTES FHT

9:20 AM
Use of Industrial Ink Jet Printers for Controlled Lubrication of Mill Rolls: Steve Liker; ‘Trident Industrial Ink Jet

9:40 AM Break

10:00 AM
Fine Grained Steel Developed through High Strain and Rapid Heat Treatment: Preeti Manjunatha; Vijaya Prasad; Dhanooj Balakrishnan; Ram Natarajan; Palaniyapillai Shannugam; ‘Tube Investments of India Ltd

10:20 AM
Grain Refinement in Dual Phase Plain Low Carbon Steels: Vishnu charan Sangem; Hamid Azizi-Alizamini; Matthias Militzer; ‘UBC

10:40 AM
Dual-Phase Ultrafine Grained Steels Produced by Controlled Rolling Processes: Maria José Quintana; Roberto González; Luis Felipe Verdeja; José Ignacio Verdeja; ‘Universidad Panamericana; ‘Oviedo University

11:00 AM
Evolution of Textures and Microstructures in Low-Reduction Rolled and Annealed Low-Carbon Steels: Kyu Hwan Oh; Yang Mo Koo; Dong Nyang Lee; ‘Graduate Institute of Ferrous Technology, Pohang University of Science and Technology

11:20 AM
Practice and Analysis on Deep Dephosphorization and Desulfurization Pretreatment of Hot Metal by Soda Ash: Zhe Jiang; Jianliang Zhang; Bing Dai; ‘University Science and Technology Beijing

11:40 AM
Study on the Position of Continuous Casting Slab Final Solidifying Point: Lianghua Feng; Miaoyong Zhu; ‘University of Science and Technology Liaoning China

MS&T11
Wednesday AM

Refractory Materials: Refractory Ceramics General Session
Program Organizer: James Hemrick, Oak Ridge National Laboratory; William Headrick, Jr, Missouri Refractories; Dana Goski, Allied Mineral Products; Paul Ormond, AluChem, Inc.; Dave Tucker, CE Minerals; Mike Alexander, Riverside Refractories Inc.
Wednesday AM Room: C226 Location: Columbus Con. Center

Session Chairs: Dana Goski, Allied Mineral Products, Inc.; William Headrick, Missouri Refractories Co. Inc.

8:00 AM
Analysis of Drying Process for Castable Refractories: Satoru Shimizu; Koji Yamaguchi; Yoshihito Kiyota; Hisahiro Matsunaga; ‘JFE Steel Corporation

8:20 AM
New, Higher Purity Homogenized Bauxite and Its Applications: Bill Porter; John Karson; Brooke XF; ‘Overseas Trade Network; ‘Henan Ronggann Thermo-Technical New Materials Co., LTD.

8:40 AM
Advantages of Calcium Hexaluminate in a Corrosive Environment: Dale Zacher; Marion Schnabel; Andreas Buhr; Gunter Buechel; Rainer Kockegey-Lorenz; ‘Almatis, Inc; ‘Almatis GmbH

9:00 AM
Microstructural Characterization of an Alumina Zirconia Silicate (AJS) Refractory Material for Molten Metal Application: Brian Hetzel; Klaus-Markus Peters; James Hemrick; ‘Fireline, Inc.; ‘Oak Ridge National Laboratory

9:20 AM
Non Contact Ultra High Temperature Characterization of UHTC Using Electro-Magnetic Mechanical Apparatus: Sindhura Gangireddy; John Halloran; Zachary Wing; ‘University of Michigan; ‘Advanced Ceramic Manufacturing

9:40 AM Break

10:00 AM

10:20 AM
Materials and Design of Refractory Linings for Use in O2-Enriched Sulfur Recovery Reaction Furnaces: Syed Rahman; ‘ConocoPhillips

10:40 AM
Fabrication of Cost-Effective Mullite from Rice Hulls: Peigen Zhang; Jindong Liang; Kaiyang Wang; Shengmin Guo; ‘LSU

11:00 AM
Molecular Scale Mixing for Determination of Mullite Solid Solution Limits: Thomas McGee; ‘Iowa State University

11:20 AM
Activated Synthesis & Sintering of Complex Spinel Bonded Basic Refractories: Rahul Lodha; Carmen Oprea; Hamidreza Zargar; George Oprea; Tom Troczynski; ‘University of British Columbia
8:00 AM Introductory Comments

8:20 AM
Abnormal Growth of Grains with Cubic Shapes and Singular Grain Boundaries in Sintered Ni; Duk Yong Yoon1; Sang-Hyun Jung2; Suk-Joong Kang2; ‘KAIST & POSTECH; 2KAIST

8:40 AM
Survey of Grain Boundary Motion Mechanisms in FCC Metals: Elizabeth Holme1; Eric Homer1; Stephen Foiles2; David Olmsted2; ‘Sandia National Laboratories; 2University of California Berkeley

9:00 AM
Influence of Grain Boundary Energy on Microstructure Evolution: Herbert Miller1; Gregory Rohrer1; ‘Carnegie Mellon University

9:40 AM Break

10:00 AM
Tuning the Template-Matrix Interface for Templated Grain Growth of Textured Ceramics: Gary Messing1; Stephen Poterala1; Yunfei Chang1; ‘The Pennsylvania State University

10:20 AM
Developing Grain Boundary “Phase” Diagrams as a New Materials Science Tool: Jian Luo1; ‘Clemson University

10:40 AM
Role of Complexions in Heat-Treatment Strategies for Microstructure Control: Martin Harmer1; Shuailei Ma1; ‘Lehigh University

11:00 AM
Energy and Structure of Nanometer-Thick Intergranular Films: Mor Baram1; Dominique Chatain2; Wayne Kaplan3; ‘Technion - Israel Institute of Technology; 3CNRS, Aix-Marseille University

11:20 AM
Proximity Effects for Interfaces: W. Craig Carter1; ‘MIT

Steel Product Metallurgy and Applications: Alloying and Precipitation

Program Organizer: Bhaskar Yalamanchili, Geradu Ameristeel.com

Wednesday AM Room: D132
October 19, 2011 Location: Columbus Con. Center

Session Chair: To Be Announced

8:00 AM
Current Niobium Developments in High Carbon Steel Applications: Steven Jansto1; ‘CBMM-Reference Metals Company

8:20 AM
Modeling the Effect of Nb on the Austenite to Ferrite Transformation Kinetics: Tao Jia1; Matthias Militzer1; Fateh Fazeli1; ‘University of British Columbia

8:40 AM
Direct Observation of the Effect of Solute on Complex HSLA Steel Microstructures via In Situ TEM: Asher Leff1; Michael Grimes1; Matthew Hartshorne1; Christopher Winkler1; Pello Unang1; Mitra Taheri1; ‘Drexel University; 1Lehigh University; ‘CEIT and TECNUN

9:00 AM
Kinetics of Nano Ti Carbides Precipitation: Namhun Kang1; Young-Ho Park1; Yang-Do Kim1; Eunjun Chun1; Sung Ju Kim1; Hyung Hyup Do1; Young Do Park1; ‘Pusan National University; 2Hyundai steels; 3Dong-Eui University

9:20 AM
Study on a New Type Surface Nitriding Steel Micro-Alloyed with Niobium: Ze-min Huang1; Wenjie Hua1; Yang Li1; ‘Baoshan Iron & Steel Co., Ltd., Special Steel Division

9:40 AM Break

10:00 AM
Investigation of Precipitation and Grain Boundaries in Ultra High Strength Steel with TEM and 3D Atom Probe: Matthew Hartshorne1; Paul Novotny2; Michael Schmidt1; Mitra Taheri1; ‘Drexel University; 2Carpenter Technology Corporation

10:20 AM
Effects of Nitrogen on Deformation Behavior of Austenite High Nitrogen Steel: Byoungkoo Kim1; T. T. T. Trang1; Nack J. Kim1; ‘GIFT

10:40 AM
Development and Characterization of ATI 216Cb®8482 Alloy, a Mo-Bearing Lean Austenitic Stainless Steel: David Bergstrom1; ‘ATI Allegheny Ludlum

11:00 AM
Cooling Rate Dependence of Boron Distribution in Low Carbon Steel: Dong Jun Mun1; Yang Mo Koo1; Eun Joo Shin1; Jae Sang Lee1; ‘Pohang University of Science and Technology; ‘Korea Atomic Energy Research Institute

11:20 AM
Model Development and Application of Stainless Steel Ingredient: wei zuang1; ‘baosteel,specialsteel

11:40 AM Cancelled

Effect of Boron Addition on Continuous Cooling Transformation and High Temperature Deformation Behavior of Al-Killed Low Carbon Steel: Nuntawat Chokechaithananan1; Sorachai Pitakkorraras1; Takateru Umeda1; ‘Sahaviriya Steel Industries Public Co., Ltd

Structural Materials for Aerospace and Defense: Challenges and Prospects: Composites and Nanocomposites

Program Organizer: Roumiana Petrova, New Jersey Institute of Tech

Wednesday AM Room: D242/243
October 19, 2011 Location: Columbus Con. Center

Session Chair: Yellapu Murty, Cellular Materials International, Inc

8:00 AM Invited
Lightweight, Multifunctional Composite for Aerospace Applications: Tiffany Miller1; ‘Powdermet, Inc.
8:40 AM
Aluminum SComP for Lightweight Structural and Energy Absorbing Applications: Brian Doud; 1Powdermet Inc.

9:00 AM
Unusual Hot Tearing Resistance Enhancement in Cast A206/Al_{2}O_{3} Nanocomposite: Hongseok Choi; Yi Sun; Hiromi Konishi; Xiaochun Li; 1University of Wisconsin-Madison

9:20 AM
Cast AZ91D/TiB_{2} Nanocomposites with an Automatic Nanoparticle-Feeding System: Hongseok Choi; Yi Sun; Ben Slater; Xiaochun Li; 1University of Wisconsin-Madison

9:40 AM Break

10:00 AM Invited
Ti2AlC-Nanocrystalline Mg-Matrix Composites with Ultrahigh Damping, Stiffnesses and Strengths: Michel Barsouni; Babak Anasori; 1Drexel University

10:40 AM
Development of Ti-TiAl, Metallic-Intermetallic Laminate Composites for Structural, Defense, and Aerospace Applications: Derrick Stokes; Xiuren Bu; Jennifer Conway; Stan Jones; Viola Acoff; 1The University of Alabama; 2Clark Atlanta University

11:00 AM
Current NDE Studies of Impact Damage in Multi-Layered Transparent Panel Structures: William Green; Raymond Brennan; 1U.S. Army Research Laboratory

11:20 AM
Thermo-Mechanical Properties of Epoxy Based Shape Memory Polymers: Haluk Karaca; Burak Basaran; Mohammed Souri; Anil Erol; 1UNIVERSITY OF KENTUCKY

11:40 AM
Novel Ti_{6}AlNb-Based Intermetallic Alloys and Composites: Marat Shagiev; 1Institute for Metals Superplasticity Problems

12:00 PM
Extreme Anelastic Responses in Zn-10Al_{5} Matrix Composite Materials Containing BaTiO_{3} Inclusion: Liang Dong; Donald Stone; Roderick Lakes; 1University of Wisconsin, Madison

12:20 PM Cancelled
Characterization of TiB_{2} and Al_{2}O_{3}/TiB_{2} Composites on the MISSE-6 Mission: Eric Paterson; Kathryn Logan; Sharon Jeffries; 1National Institute of Aerospace - Virginia Tech; 2Virginia Tech; 3NASA Langley Research Center

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**Surface Properties of Biomaterials: Antimicrobial Coatings and Surface Analysis**

**Program Organizers:** Susmita Bose, Washington State University; Amit Bandyopadhyay, Washington State University; Thomas Webster, Brown University; Sharmila Mukhopadhyay, Wright State University; Paul Calvert, University of Massachusetts; Mukesh Kumar, Biomet Inc

**Wednesday AM**

**Room:** C216  
**Location:** Columbus Con. Center

**Session Chairs:** Amit Bandyopadhyay, Washington State University; Pranesh Aswath, University of Texas at Arlington

8:00 AM Invited
Surface Modification of Microneedles Using Pulsed Laser Deposition: Roger Narayan; Shaun Gittard; Nancy Monteiro-Riviere; Aleksandr Ovsianikov; Boris Chichkov; Bret Chisholm; Shane Stafslien; 1University of North Carolina & North Carolina State Univ; 2North Carolina State Univ; 3Laser Zentrum Hannover e.V.; 4North Dakota State University

8:40 AM
Ant-Bacterial and Biological Properties of Plasma Sprayed Silver-Doped Hydroxyapatite Coating: Mangal Roy; Gary Fielding; Amit Bandyopadhyay; Susmita Bose; 1Washington State University

9:00 AM
Improving the Resistance of Ceramic Surfaces to Biofilm Formation: Curtis Larimer; Ian Nettleth; Anil Ojha; 1University of Pittsburgh

9:20 AM
Anti-Bacterial and Biological Properties of Plasma Sprayed Strontium and Silver Doped Hydroxyapatite Coatings: Gary Fielding; Mangal Roy; Amit Bandyopadhyay; Susmita Bose; 1Washington State University

9:40 AM Break

10:00 AM Invited
Nature Inspired Hierarchical Surfaces for Biomedical Devices: Sharmila Mukhopadhyay; Elizabeth Maurer; Adam Malezewsky; Ian Barney; Saber Hussain; 1Wright State University; 2Air Force Research Laboratory

10:20 AM
Antimicrobial Properties of Copper and Its Alloy: David Esezobor; Samuel Fatobul; John Etudor; Solomon Macgregor; 1University of Lagos

10:40 AM
Structure of Trabecular Bone in DMP-1 Deficient Knock Out Mice and Wild Type Mice: Megen Velten; Paul Dechow; Jian Feng; Pranesh Aswath; 1University of Texas at Arlington; 2Baylor College of Dentistry

11:00 AM
The Role of Bacterial Attachment to Metal Substrate and Its Effects on Microbiologically Influenced Corrosion (MIC) in Transporting Hydrocarbon Pipelines: Faisal Al-Abbas; Arshad Bajvani Gavanluei; David Olson; Brajendra Mishra; John Spear; Anthony Kakpopovic; 1Saudi Aramco; 2Colorado School of Mines

11:20 AM
XPS and Cellular Characterization of Surface Anodized Titanium Alloys for Dental Implant Applications: Rahul Bholta; Reed Ayers; Brajendra Mishra; David Olson; Timothy Ohno; 1Colorado School of Mines

11:40 AM Cancelled
Surface Analysis of a Beta-Titanium Biomaterial: Kallen Kallen; Keeley Flooren; K.V. Sudhakar; 1Montana Tech
Surface Protection for Enhanced Materials Performance: Science and Technology: Advanced Processing/Multi-Functional Coatings I

Program Organizers: Rodney Trice, Purdue University; Dongming Zhu, NASA Glenn Research Center; Daniel Mummm, University of California-Irvine; Hua-Tay Lin, Oak Ridge National Laboratory; Pravansu Mohanty, University of Michigan; Yutaka Kagawa, The University of Tokyo; Kang Lee, Rolls Royce; Charles Kay, ASB Industries, Inc.; Luc Pouliot, TECNAR Automation Ltd.

Wednesday AM Room: D230
October 19, 2011 Location: Columbus Con. Center

Session Chairs: Luc Pouliot, TECNAR Automation Ltd.; Charles Kay, ASM Industries

8:00 AM Invited
Upcoming Global Opportunities and Challenges in the Thermal Spray Industry: Mitchell Dorfman 1; Sulzer Metco (US) Inc.

8:40 AM
Doped Solid Oxide Fuel Cell Electrolytes Produced via a Combination of Suspension Plasma Spray and Very Low Pressure Plasma Spray: James Fleetwood 1; Elliott Slamovich 1; Rodney Trice 1; Aaron Hall 1; James McCluskey 1; Purdue University; Sandia National Laboratory

9:00 AM
Composite Powders for Thermal Spray Applications: Greg Engleman 1; Joshua Caris 1; Andrew Sherman 1; Curtis Glasgow 1; John Formica 1; MesoCoat

9:20 AM
Aerospace Coatings via Directed Vapor Deposition: Balvinder Gogia 1; Derek Hass 1; Directed Vapor Technologies Intl.

9:40 AM Break

10:00 AM Invited
Cold Spray Technology: Jegan Karthikeyan 1; ASB Industries

10:40 AM
A Study on Friction Surfaced Coating of Niobium Stabilized Austenitic Stainless Steel on Mild Steel Substrate: Ramesh Pulli 1; Janaki Ram G D 1; IIT Madras

11:00 AM
Low Temperature Plasma Assisted Carburizing of AISI 420 Martensitic Stainless Steel: Influence of Process Parameters on the Treated Surface Properties: Cristiano Scheuer 1; Rodrigo Cardoso 1; Ricardo Pereira 1; Silvio Brunatto 1; Universidade Federal do Paraná - UFPR

11:20 AM
Effect of Al on the Kinetics of Carburizing of a NiCrMo Coating: Karin Graf 1; Ana Sofia D Oliveira 1; UFPR - Federal University of Paraná

11:40 AM
Laser Cladding of Fe Based Amorphous Powder on Steel: A Microstructural and Thermal Modeling Study: Shravana Katakam 1; Sameer Paital 1; Junyeon Hwang 1; Rajarshi Banerjee 1; Narendra Dahotre 1; University of North Texas

ACerS Robert B. Sosman Lecture
Wednesday PM Room: C113/114
October 19, 2011 Location: Columbus Con. Center

1:00 PM
Interface Structure Dependent Microstructural Evolution in Ceramics: Suk-Joong L. Kang 1; KAIST

Additive Manufacturing of Metals: Electron Beam Melting (EBM) II

Program Organizers: Ian D. Harris, EWI; Ulf Ackelid, Arcam AB; Ola Harrysson, North Carolina State University; Sudarsanam Babu, Ohio State University; Brent Stucker, University of Louisville

Wednesday PM Room: D130
October 19, 2011 Location: Columbus Con. Center

Session Chair: Ola Harrysson, University of North Carolina

2:00 PM
Development of EBM Process Parameters for High Purity Copper Applications: Pedro Frigola 1; Ola Harrysson 1; Kyle Knowlson 2; Tim Horn 2; Frank Medina 1; Ryan Wicker 1; Lawrence Murr 1; Diana Ramirez 1; RadiaBeam Technologies; NCSU; UTEP

2:20 PM
Electron Beam Melting: The New Directional Solidification: Edwin Martinez 1; Lawrence Murr 1; Sara Gaytan 1; Diana Ramirez 1; Francisco Medina 1; University of Texas at El Paso

2:40 PM
Influence of Interstitial Elements on the Mechanical Properties of Ti-6Al-4V Produced with Electron Beam Melting: Mattias Svensson 1; Ulf Ackelid 1; Arcam AB

3:00 PM
Process Mapping of Melt Pool Dimension Control in Electron Beam Additive Manufacturing: Jack Beuth 1; Emrecan Soylemez 1; Karen Taminger 1; Bryant Walker 1; Carnegie Mellon University; NASA Langley Research Center; Keystone Synergistic Enterprises

3:20 PM Break

4:00 PM
Control of Melt Pool Dimensions in the Building of Thin-Walled Structures by Electron Beam Additive Manufacturing: Piyapong (Pete) Reeseewat 1; Jack Beuth 1; Karen Taminger 1; Bryant Walker 1; Carnegie Mellon University; NASA Langley Research Center; Keystone Synergistic Enterprises

4:20 PM
Toward Integrated Control of Melt Pool Dimensions and Microstructure in Electron Beam Additive Manufacturing: Joy Davis 1; Jack Beuth 1; Nathan Klingbeil 1; Bryant Walker 1; Karen Taminger 1; Carnegie Mellon University; Wright State University; Keystone Synergistic Enterprises; NASA Langley Research Center

4:40 PM
Transient Melt Pool Response in Electron Beam Additive Manufacturing: Jason Fox 1; Jack Beuth 1; Bryant Walker 1; Karen Taminger 1; Carnegie Mellon University; Keystone Synergistic Enterprises; NASA Langley Research Center
In-Situ Techniques

Program Organizers: Lawrence Allard, Oak Ridge National Laboratory; Velimir Radmilovic, Lawrence Berkeley national Laboratory; Paulo Ferreira, University of Texas at Austin; Daniel Ugarte, Universidade Estadual de Campinas - UNICAMP

Wednesday PM Room: E160A
October 19, 2011 Location: Columbus Con. Center

Session Chair: Jingyue Liu, University of Missouri-St. Louis

2:00 PM
In-Situ TEM Observation of Solid to Vapor Phase Transitions in Silver Nanoparticles: Michael Asoro1; Desiderio Kovar1; Paulo Ferreira1; 1University of Texas at Austin

2:20 PM
In-Situ TEM Study of Sintering of Capped Silver Nanoparticles: Michael Asoro1; Desiderio Kovar1; Paulo Ferreira1; 1University of Texas at Austin

2:40 PM Invited
In Situ TEM Imaging of Functional Nanoparticles in Liquids: Kate Klein1; Ian Anderson1; National Institute of Standards and Technology

3:20 PM Break

4:00 PM Invited
The Versatility of In-Situ Environmental Fluid Cells for Materials Science Research: Raymond Unocic1; Daan Hein Alsen2; Norman Salmon2; Miaofang Chi1; Gabriel Veith1; Leslie Adamczyk1; Nancy Duddy1; Karren More1; 1Oak Ridge National Laboratory; 2Hummingbird Scientific

4:40 PM
Recent Developments in In Situ Studies of Catalytic Materials at Atomic Resolution Using a New Environmental Cell Gas Reaction Technology: Lawrence Allard1; Wilbur Bigelow2; David Nackashi1; John Damiano1; 1Oak Ridge National Laboratory; 2University of Michigan; 3Protochips Inc.

5:00 PM
In Situ Phase Transformation Investigations of FePt Nanoparticles with Z-STEM Imaging: James Wittig1; Larry Allard1; 1Vanderbilt University; 2Oak Ridge National Laboratory

5:20 PM
In Situ HRTEM on Tensile Experiment with Metallic Nanowires: Scott Mao1; He Zheng1; Jianyu Huang1; 1University of Pittsburgh; 2Sandia National Lab

Advances in Dielectric Materials and Electronic Devices: Materials and Applications II
Program Organizer: K. M. Nair, E.I.duPont de Nemours & Co, Inc

Wednesday PM Room: C220
October 19, 2011 Location: Columbus Con. Center

Session Chairs: R Ubic, Boise State University; X Pan, University of Michigan

2:00 PM
Comparison of Electrical Characteristics of AlN-on-Diamond and AlN-on-Si MIS Diodes: Nirmal Govinda raj1; Dibakar Das1; Peter Kose1; Raj Singh1; 1University of Cincinnati

2:20 PM
Development and Optimization of Integrated Piezoelectric PZT/LTCC Micropumps: Wenli Zhang1; Richard Eitel1; 1University of Kentucky

2:40 PM
Evaluation of Electroactive Polymer (EAP) Concept to Enhance Respirator Facial Seal: Mark Susi1k1; Jay Sayre1; Rachel Thurston1; Wes Childers1; Aaron Richardson1; Megan Moore1; Paul Gardner1; 2Battelle; 3Edgewood Chemical Biological Center

3:00 PM Invited
Long-Term and Light Stimulated Evolution of Semiconductor Properties: Sergei Pyshkin1; John Ballato1; Raisa Zhitaru1; George Chumanov2; Donald VanDerveer2; 1Academy of Sciences of Moldova; 2Clemson University

3:20 PM Break

4:00 PM
Thermophysical Properties of Piezocrystal Materials: Adam Heitmann1; Richard Perez-Moyet1; George Rossetti1; 1University of Connecticut

4:20 PM Invited
Time-Resolved Imaging of Ferroelectric Switching: Xiaoping Pan1; Chris Nelson1; Peng Gao1; Benjamin Winchester1; Carolina Adamo1; Chad Folkman1; Chang-Beom Eom1; Darrell Schlom1; Long-Qing Chen1; 1University of Michigan; 2Penn State University; 3Cornell University; 4University of Wisconsin-Madison

4:40 PM
Numerical Simulations for the Effect of the Localized Temperature during a Back Grindig Process for TSV Wafers: Ahmed Abdelnaby1; Gabriel Potirniche1; Fred Barlow1; Aicha Elshabini1; Randy Parker2; 1University of Idaho; 2Micron Technologies Inc.

5:00 PM Cancelled
Long-Time Photoluminescence Decay in Quantum Dot Samples: Karel Kral1; 1Inst. Phys. ASCR, v.v.i.

AIST Adolf Martens Memorial Steel Lecture
Program Organizer: Stephanie Will, The Timken Company

Wednesday PM Room: D131
October 19, 2011 Location: Columbus Con. Center

1:00 PM Invited
A Metallurgical Perspective of the Role of Rail Steel in the Growth of America: Bruce Bramfitt1; 1ArcelorMittal-Steeleton
**Ceramic Matrix Composites: Modeling/Characterization**

Program Organizers: Narottam Bansal, NASA Glenn Research Center; J. P. Singh, U.S. Army Research Laboratory; Jacques Lamon, CNRS; Sung Choi, Naval Air Systems Command

Wednesday PM  
October 19, 2011  
Room: C112  
Location: Columbus Con. Center  
Session Chair: Jacques Lamon, CNRS

2:00 PM Invited  
Multiscale Approach to Lifetime Prediction for Woven Fiber Reinforced Ceramic Matrix Composites: Jacques Lamon; CNRS

2:40 PM  
Effect of Microstructure on Properties of HfB2-SiC: Sylvia Johnson; Matthew Gaseh; Michael Gusman; Margaret Stackpoole; NASA-Ames Research Center; ERC Inc

3:00 PM  
High Temperature Furnace Door Test for Wollastonite Based Chemically Bonded Phosphate Ceramics with Different Reinforcements: H. A. Colorado; J-M Yang; University of California, Los Angeles

3:20 PM Break

4:00 PM  
Processing-Microstructure-Property Relations of Pressureless Sintered ZrB2-SiC Composites: Sabyasachi Roy; Manab Malik; Kalyan Ray; Rahul Mitra; Indian Institute of Technology

4:20 PM  
Stress Wave Management in Alumina (Al2O3) 3D Ceramic Laminated Composite Systems: Christian Espinoza Santos; Waltraud Kriven; Kevin Brittain; Daniel Tortorelli; The University of Illinois at Urbana Champaign

4:40 PM  
Structural and Compositional Investigations of Ceramic-Metallic Composites Produced by Reactive Metal Penetration in Molten Al and Al-Fe Alloy: Anthony Yurcho; Klaus-Markus Peters; Brian Hetzel; Matthias Zeller; Raymond Brennan; Timothy Wagner; Virgil Solomon; Youngstown State University; Fireline TCON, Inc.; U.S. Army Research Laboratory

5:00 PM  
Giant Anelastic Responses in (BaZrO2-ZnO)-BaTiO3 Composite Materials: Liang Dong; Roderic Lakes; Donald Stone; University of Wisconsin, Madison

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**Characterization and Modeling of the Performance of Advanced Alloys for the Transportation Industry -- Bridging the Data Gap II: Evaluating the Performance of Advanced Lightweight Alloys II**

Program Organizers: Mark Stoudt, National Institute of Standards and Technology; Adam Creuziger, National Institute of Standards and Technology; John Carsley, General Motors; Michael Miles, BYU; Kip Findley, Colorado School of Mines

Wednesday PM  
Room: D131  
October 19, 2011  
Location: Columbus Con. Center  
Session Chair: Adam Creuziger, NIST

2:00 PM  
Microstructural Simulation of Magnesium for Engineering Property Prediction: Erin Barker; Dongsheng Li; Xin Sun; Mohammad Khaleel; John Allison; Mei Li; Pacific Northwest National Lab; University of Michigan; Ford Motor Company

2:20 PM  
Microstructural Evolution of Wrought Thixomolded Mg Alloy Sheet: Tracy Berman; William Donlon; Victoria Miller; Raymond Decker; Jack Huang; Tresa Pollock; J. Wayne Jones; University of Michigan; nanoMAG, LLC.; University of California, Santa Barbara

2:40 PM Break

3:20 PM  
An Efficient Test to Reveal the Temperature-Dependence of Deformation Mechanisms: Kun Piao; Robert Wagoner; OSU

3:40 PM  
Creep Behavior of Peak-Aged Mg-11Y-5Gd-2Zn-0.5Zr (wt.%) Alloy for Engine Piston Applications: Dongdi Yin; Qudong Wang; C.J. Boehlert; Shanghai Jiao Tong University; Michigan State University

4:00 PM  
Creep Behaviors of Extruded and Rolled AZ80 Mg Alloy: Jun Qiao; Yu Wang; The University of Science and Technology Liaoning

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**Controlled Synthesis, Processing and Applications of Structural and Functional Nanomaterials: Three Dimensional Nanomaterials I**

Program Organizers: Kathy Lu, Virginia Tech; Xudong Wang, University of Wisconsin - Madison; Eugene Olevsky, San Diego State University; Gurpreet Singh, Kansas State University; Nitin Chopra, The University of Alabama; Pu-Xian Gao, University of Connecticut; Jianyu Liang, Worcester Polytechnic Institute

Wednesday PM  
Room: C123  
October 19, 2011  
Location: Columbus Con. Center  
Session Chair: Xudong Wang, University of Wisconsin-Madison

2:00 PM Invited  
Rational Tailoring of 1-D (Nanowires), 2-D (Graphene) and 3-D (Ceramic/Carbon Nanotubes Composites) Functional and Structural Nanomaterials: Nitin Padture; The Ohio State University

2:40 PM  
3D TiO2 Nanoarchitecture Fabricated by Pulsed Chemical Vapor Deposition: Jian Shi; Xudong Wang; University of Wisconsin-Madison
3:00 PM
A New Multifunctional Covalent-Integrated Epoxy Composites Fabricated by Ionic Liquid Functional Carbon Nanotubes: zhe wang; Hansang Kim1; Tomas Hahn1; ‘UCLA

3:20 PM Break

4:00 PM Invited
Approaching Multimaterial 3D Nanostructured Gas Phase Nanoxerographic Printers: Heiko Jacobs3; ‘University of Minnesota

Direct Synthesis of ZnO Nanorod Field Emitters on Metal Electrodes: Gregory Wrobel; Marcin Piech2; Pu-Xian Gao1; Sameh Dardona1; ‘University of Connecticut; ‘United Technologies Research Center

5:00 PM
A Novel Method for Manufacturing Aluminum-Aluminum Nitride Nanocomposites: Makhlouf Makhlouf1; Cecilia Borgonovo1; ‘WPI

5:20 PM
Quantifying the Kinetic Transition in the Growth of Nanocrystals in Al-Sm Alloys: Seth Inhoff3; John Perepezko1; Paul Evans1; ‘University of Wisconsin-Madison

Corrosion Protection through Metallic and Non-Metallic Coatings: Polymeric and Conversion Coatings
Program Organizers: Narasi Sridhar, DNV; Rudolph Buchheit, Ohio State University

Wednesday PM
Room: D244/245
Location: Columbus Con. Center

Session Chair: To Be Announced

2:00 PM
Corrosion Resistant Coatings Derived from Cooperative Chemical Inhibition by Zn2+ and Vanadates and Inhibitor Delivery by Synthetic Ion Exchange Compounds: Rudolph Buchheit; ‘Ohio State University

2:40 PM
Corrosion Inhibition of AA 2024-T3 by Aqueous Silicate, Molybdate, and Praseodymium Species: Omar Lopez-Garrity; ‘The Ohio State University

3:00 PM
Corrosion Inhibition of a Hybrid Organic/Inorganic Coating by Release on Demand: Nay Win Khin1; Saikat Adhikari1; Yi-Yun Li1; Gerald Frankel1; Brian Bammel1; Thomas Smith2; John McGee1; John Comoford1; John Zimmerman2; Gregory Donaldson1; ‘Ohio State University; ‘Henkel Corp.

3:20 PM
Simulations Guided Design of Anti-Corrosion Coatings for Al Alloys by Selective Targeting of Intermetallic Particles: Jie Xiao1; Hyunwook Kwak1; Thomas Chastek1; Santanu Chaudhuri1; ‘Washington State University

3:40 PM
Study of Corrosion Inhibitors on Aluminum Alloy Al 2024-T3: Jaspreet Singh1; Jude Iroh1; ‘UNIVERSITY OF CINCINNATI

4:00 PM
Conversion Coatings for the Corrosion Protection of Magnesium: Nick Barbi1; X-B. Chen1; T.B. Abbott1; M.A. Easton1; ‘Monash University; ‘Advanced Magnesium Technologies

4:20 PM Break

4:30 PM
Sulfur-Resistant Silicone Conformal Coatings: Barry Hindin1; Steve Risser1; ‘Battelle

4:50 PM
Corrosion Detection, Inspection and Correction of Water Systems Piping: James Lary1; ‘Corrpro Companies, Inc.

5:10 PM
Improvement of Corrosion Behavior of Al-Si Eutectic Alloy by Cerium-Based Conversion Coating: Carlos Castano3; Surender Maddla1; William Fahrenholz1; Matthew O’Keefe1; ‘Missouri University of Science and Technology

Deformation and Transitions at Grain Boundaries: Nanocrystalline Grain Boundary Processes
Program Organizers: Thomas Bieler, Michigan State University; Douglas Spearot, University of Arkansas; Rozalia Barabash, Oak Ridge National Laboratory; Shen Dillon, University of Illinois at Urbana-Champaign; Jian Luo, Clemson University

Wednesday PM
Room: C121
Location: Columbus Con. Center

Session Chairs: Douglas Spearot, University of Arkansas; Dmitri Molodov, RWTH Aachen University

2:00 PM Invited
Grain Boundary Mediated Deformation in Nanocrystalline NiFe Alloys under Dynamic and Cyclic Loading: Yonghao Zhao1; S. Cheng1; Y.Z. Guo1; Y.M. Wang4; Y. Li3; Q.M. Wei3; X.-L. Wang3; P.K. Liaw4; E.J. Lavernia1; ‘University of California Davis; ‘University of Tennessee, Knoxville, USA; ‘University of North Carolina, Charlotte; ‘Lawrence Livermore National Laboratory, Livermore; ‘Oak Ridge National Laboratory, Oak Ridge

2:20 PM Invited
Grain Boundary Relaxation and the Plastic Deformation of Nanocrystalline Alloys: Timothy Rupert1; Christopher Schuh1; ‘MIT

2:40 PM
Grain Boundary–Mediated Plastic Deformation in Nanocrystalline Metals: Scott Miao1; ‘University of Pittsburgh

3:00 PM
Molecular Dynamics Simulations of Plastic Deformation in Dopant-Modified Nanocrystalline Metallic Materials: Douglas Spearot1; Lucas Brown1; ‘University of Arkansas

3:20 PM Break

4:00 PM
Local Deformation Tracking at the Microstructural Level in Coarse and Ultrafine-Grained Metals: Adam Kammers1; Samantha Daly1; ‘The University of Michigan

4:20 PM Invited
Shear-Coupled Stress Driven Grain Boundary Migration: Dmitri Molodov1; Tatiana Gorkaya1; Günter Gottstein1; ‘RWTH Aachen University

4:40 PM
Deformation Twinning in Nanocrystalline Mo-Molecular Dynamics Simulations: Yongfeng Zhang1; Paul Millett1; Michael Tonks1; Bulent Biner1; Liangzhe Zhang1; Karthikeyan Chockalingam1; ‘Idaho National Lab
Energy Conversion/Fuel Cells: Interconnect Coatings

Program Organizers: Matthew Seabaugh, NexTech Materials, Ltd.; Zhengu “Gary” Yang, Pacific Northwest National Laboratory; Meilin Liu, Georgia Institute of Technology

Wednesday PM  Room: C224
October 19, 2011  Location: Columbus Con. Center

Session Chair: To Be Announced

2:00 PM  Experimental Characterization of Manganese Cobalt Oxide (MCO) Coatings on Fuel Cell Interconnects: Sajedur Akanda1; Mark Walter1; The Ohio State University

2:20 PM  Ceramic and Glass Composite Interconnects for Solid Oxide Fuel Cells: Seung-Bok Lee1; Seuk-Hoon Pi1; Jong-Won Lee1; Tak-Hyoun Lim1; Seok-Joo Park1; Rak-Hyun Shin1; Korea Institute of Energy Research

3:00 PM  Manganese Cobalt Spinel Oxide Based Coatings for SOFC Interconnects: Jeffrey Fergus1; Yingjia Liu1; Yu Zhao1; Auburn University

3:20 PM  Break

4:00 PM  The Effect of MnCoO-CeO Spinel Coating Thickness on Electrical Conductivity at Long-Term SOFC Operating Condition: Jung Pyung Cho1; Jeff Stevenson1; Ryan Scott1; Matt Chou1; Pacific Northwest National Laboratory

4:20 PM  Interfacial Interactions of Electrolyte-(La0.8Sr0.2)0.95MnO3-Interconnect Tri-Layer for Solid Oxide Fuel Cells: Kathy Li1; Tongan Jin1; Virginia Tech

4:40 PM  Study on Heteropolycarboxylic/Ti/Zr Mixed in the Inorganic Composites for Fuel Cell Electrolytes: Uma Thanganathan1; Okayama University


Program Organizers: Zhengu “Gary” Yang, Pacific Northwest National Laboratory; Terry Holesinger, Los Alamos National Laboratory; Xingbo Liu, West Virginia University; Chun Lu, Siemens Energy, Inc.

Wednesday PM  Room: C223
October 19, 2011  Location: Columbus Con. Center

Session Chair: Xiaochuan Lu, Pacific Northwest National Laboratory

2:00 PM  Synthesis of LiCoO2 Cathodes for Li-Ion Batteries via Solution Precursor Plasma Process: Raghavender Tummala1; RAMESH K. GUDURU1; PRAVANUS S. MOHANTY1; Univ of Michigan

2:20 PM  Invited  Nanostructured Electrodes for High-Performance Supercapacitors: Min-Kyu Song1; Shuang Cheng1; Wentao Qin1; Meilin Liu1; Georgia Institute of Technology

3:00 PM  Break

3:20 PM  Development of Hybrid Supercapacitors for Portable Power Applications: Elvin Beach1; Steven Risser1; Megan Moore1; Mark Stusik1; Kevin Spahr1; Battelle

3:40 PM  Optimization of Power and Energy Densities in Supercapacitors: David Robinson1; Sandia National Laboratories

4:00 PM  Aniline Coated Carbon Cryogel with Improved Cyclic Stability for Supercapacitor Electrodes: Dawei Liu1; University of Washington

Failure Analysis and Prevention: Composites

Program Organizers: Andrew Spowage, The University of Nottingham, Malaysia Campus; Tom Ackerson, IMR Metallurgical Services; Larry Hanke, Materials Evaluation and Engineering, Inc

Wednesday PM  Room: D235
October 19, 2011  Location: Columbus Con. Center

Session Chairs: Ronald Parrington, IMR Test Labs; Joseph Rakow, Exponent Failure Analysis Associates; William Rossey, GE Aviation

2:00 PM  Composite Failure Analysis: A Step-by-Step Overview: William Pinnell1; University Dayton Research Institute

2:40 PM  An Interactive Case Study in Composite Failure Analysis: Joseph Rakow1; Exponent Failure Analysis Associates

3:00 PM  Failure Analysis of Composites at the NTSB: Matthew Fox1; NTSB

3:20 PM  Break

4:00 PM  Catastrophic Failure of Fiber-Reinforced Polypropylene Lawnmower Wheels: Ronald Parrington1; IMR Test Labs

4:20 PM  Stress Rupture Failure of a Continuous Fiber Composite Water Holding Tank: John DeFranks1; William DeLaurier1; Ronald Parrington1; IMR Test Labs

4:40 PM  Failure of 3D Woven Composites: Brian Justusson1; Mark Pankow1; Anthony Waas1; University of Michigan

5:00 PM  Fracture Study of Polymer and Polymeric Composite Materials Using the Spiral Notch Torsion Test: Fei Ren1; Jy-An Wang1; Ting Tan1; Edgar Lara-Curzio1; Pancasatya Agastra1; John Mandell1; Williams Bertelsen1; Carl LaFrance1; Oak Ridge National Laboratory; Montana State University; Gougeon Brothers, Inc.; Molded Fiber Glass Companies

5:20 PM  Lessons Learned from Aging Studies and Teardown of Composite Structures: LAMIA SALAH1; John Tomblin1; NIAR

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Failure Analysis and Prevention: General Topics in Failure Analysis

Program Organizers: Andrew Spowage, The University of Nottingham, Malaysia Campus; Tom Ackerson, IMR Metallurgical Services; Larry Hanke, Materials Evaluation and Engineering, Inc.

Wednesday PM
October 19, 2011
Room: D232
Location: Columbus Con. Center

Session Chairs: Brett Miller, IMR Metallurgical Services; Larry Hanke, Materials Evaluation and Engineering, Inc.; Dana Medlin, South Dakota School of Mines & Technology

2:00 PM
Failure Analysis of 316L Stainless Steel J-Hooks from a Galvalume Coating Premelt Pot: Amber Dalley1; Erin Sapp1; 1U. S. Steel Corporation

2:20 PM
Analysis of Corrosion Damage in Homes Constructed with Imported Wallboard: Richard Ricker1; David Pitchure1; Rik Khanna2; 1NIIST; 2U.S. Consumer Product Safety Commission

2:40 PM
Failure Analysis of Pressure Relief Valve Spring: Kevin Jones1; 1Packer Engineering, Inc.

3:00 PM
Crash of T-6A Texan II – Residual Strength of Rod Ends: Scott Schroeder1; Cyrilre Moore1; Robert Carnahan1; 1Exponent

3:20 PM Break

4:00 PM
Failure Investigation of Leaking Lube Oil Coolers from a US Navy Littoral Combat Ship: Vincent Zuwiala1; Eric Hakun1; 1Naval Surface Warfare Center, Carderock Division

4:20 PM
Hose Coupling Cam and Pressure Relief Valve Failure: Mark Hood1; 1McSwain Engineering, Inc.

4:40 PM
Hot Dip Galvanizing Cracking: Craig Clauer1; 1CCECI

5:00 PM
Use of Mechanical and Metallurgical Analysis to Evaluate the Cause of Fractures in a Cast 310 Stainless Steel Pintle Chain: Thomas Traubert1; Tim Jur1; 1Engineering Design & Testing

5:20 PM Cancelled

Failure Analysis and Corrosion Mitigation in Silage Unloader Chain Systems Used by the Agriculture Industry: Tom Ackerson1; 1IMR Metallurgical Services

Fatigue and Microstructure: A Symposium on Recent Advances: Fatigue on Small Scales

Program Organizers: Amit Shyam, Oak Ridge National Laboratory; Sushant Jha, Air Force Research Laboratory/Universal Technology Corporation; Michael Caton, US Air Force Research Laboratory

Wednesday PM
Room: D240/241
Location: Columbus Con. Center

Session Chairs: Sushant Jha, Air Force Research Laboratory/Universal Technology Corporation; Christopher Szczepanski, Air Force Research Laboratory

2:00 PM
In-Situ Microscale Fatigue Study to Evaluate the Role of Microstructural Neighborhoods: Christopher Szczepanski1; Sushant Jha1; Paul Shade2; Robert Wheeler3; James Larsen1; 1US Air Force Research Laboratory; 2Universal Technology Corporation; 3UES

2:40 PM
Investigation of Very High Cycle Fatigue Behavior Using Micro-Scale Digital Image Correlation: Jason Geathers1; Martina Zimmermann1; Samantha Daly1; J. Wayne Jones1; 1University of Michigan; 2University of Siegen

3:00 PM
Characterization of Mechanical Properties at Microstructurally-Relevant Length Scales: Kelly Kranjc1; Nicholas Hutchinson1; Katharine Flores1; 1Ohio State University

3:20 PM Break

4:00 PM
Suppressing Persistent Slip in Nanocrystalline Ni Alloys: Brad Boyce1; Henry Padilla1; Blythe Clark1; 1Sandia National Labs

4:40 PM
Relating Strain Localizations to Microstructure in Fatigue Crack Growth: Jay Carroll1; Wael Abuzaid2; Mallory Casperson1; John Lambros1; Huseyin Sehitoglu1; Ravinder Chona1; 1University of Illinois at Urbana-Champaign; 2Air Force Research Laboratory

5:00 PM
Slip Transfer at Grain Boundaries In Hastelloy-X: Wael Abuzaid1; Jay Carroll1; Michael Sangid1; Huseyin Sehitoglu1; John Lambros1; Ravinder Chona1; 1University of Illinois at Urbana-Champaign; 2Air Force Research Laboratory

5:20 PM
Microstructure Evolution from the Free Surface in a Fatigue Haynes 230 Nickel Alloy: Buyang Cao1; Garrett Pataky1; Ian Robertson1; Huseyin Sehitoglu1; 1University of Illinois Urbana Champaign
Hardness across the Multi-Scales of Structure and Loading Rate: Applications I
Program Organizers: Ronald Armstrong, University of Maryland; David Bahr, Washington State University; Naresh Thadhani, Georgia Institute of Technology; Stephen Walley, Physics and Chemistry of Solids Cavendish Laboratory

Wednesday PM Room: C210 October 19, 2011 Location: Columbus Con. Center

Session Chairs: Ronald Armstrong, University of Maryland; Lawrence Murr, University of Texas at El Paso

2:00 PM Invited
A Comparative Nanoindentation Study of the Metal Particles and Thin Films on a Sapphire Substrate: Eugen Rabkin1; Dan Mordehai1; Michael Kazakevich; Julia Deuschle; David Srolovitz; Technion; University of Stuttgart; Institute of High Performance Computing, Singapore

2:20 PM Invited
Mechanical Properties of Sputtered, Highly Textured Cu/Ni Multilayers: Yue Liu1; Daniel Bufford1; Haiyan Wang1; Cheng Sun1; Xinghang Zhang1; Texas A&M University

2:40 PM Invited
Characterization of Indentation-Induced Hydrogen Cracking Using Cohesive Zone Modeling: Akio Yonezu1; Takuma Hara1; Toshiyuki Kondo1; Osaka University

4:40 PM Invited
Effect of an Electric Field on Solute Solubility in Al Alloys Measured by Hardness: Hans Conrad1; Jun Wang1; NC State University

5:00 PM
Nanoindentation of Pure Tin: Effect of Electric Current: Guangfeng Zhao1; Fuqian Yang1; University of Kentucky

5:20 PM Invited
A Mystery of Current Spike: Nanoscale Plasticity Revised: Roman Nowak1; Dariusz Chrobak1; Sijo Nagao1; David Vodnicky1; Michael Berg1; Nordic Hysitron Laboratory, Aalto University; Hysitron Inc.

5:40 PM
Strain Rate Dependence of the Indentation Stress of Heat-Treated AA 6061 Alloy over the Indentation Depth Range from 50 nm to 10.0 μm: Mehran Haghshenas1; Lin Wang1; Robert Klassen1; The University of Western Ontario; Beijing Institute of Technology

6:00 PM Cancelled
Measuring Creep Parameters Using Nanoindentation and Finite Elements: James Dean1; Angela Bradbury1; Bill Clyne1; University of Cambridge, UK

Innovative Processing and Synthesis of Ceramics, Glasses and Composites: Processing and Microstructure-Property Relationships
Program Organizers: J. P. Singh, U.S. Army Research Laboratory; Narottam Bansal, NASA Glenn Research Center; Takashi Goto, Tohoku University

Wednesday PM Room: C110 October 19, 2011 Location: Columbus Con. Center

Session Chair: Waltraud Kriven, University of Illinois

2:00 PM Invited
Production of Spherical Ceramic Beads Using Sodium Alginate Chemistry: Christian Espinoza1; Teng-Sing Wei1; Waltraud Kriven1; Bum Rae Cho1; University of Illinois at Urbana-Champaign; Keimyung University

2:20 PM
Combustion Formation of Ti2AlC MAX Phase by Electro-Plasma Processing: Kaiyang Wang1; Jiandong Liang1; P.G. Zhang1; S.M. Guo1; Louisiana State University

2:40 PM
Properties of Hot-Pressed Ti1AlC2 Obtained by SHS Process: Leszek Chlubny1; Jerzy Lis1; AGH-University of Science and Technology, Faculty of Materials Science and Ceramics

3:00 PM Cancelled
Effect of Sintering Process and Additives on the Properties of Cordierite Based Ceramics: Ingunda Sperberga1; Gaida Sedmale1; Maris Rundans1; Lauma Lindina1; Ints Steins1; Riga Technical University

3:20 PM Break

4:00 PM
Fabricating Complex-Shaped Ceramic Components by Injection Molding Ceramic Suspension Gels at Room Temperature: Valerie Wiesner1; Rodney Trice1; Jeffrey Youngblood1; Purdue University

4:20 PM
Sintering and Characterization of Nano WC-Co Powder — On the Formation of WC Platelets: Yang Zhong1; Teng-Sing Wei1; Bum Rae Cho1; University of Kentucky; Universidad de Extremadura

4:40 PM
Low Temperature Densification and Mechanical Properties of Ultra-Hard Boron Suboxide Ceramics: Robert Pavlacka1; Gary Gilde1; U.S. Army Research Laboratory

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Program Organizer: David Furrer, Pratt & Whitney

Wednesday PM
October 19, 2011
Room: C213
Location: Columbus Con. Center

Session Chair: Pamela Kobryn, AFRL

2:00 PM
Powder Metallurgy Simulations: Press-Sinter, Injection Molding: Randall German1; Seokyoung Ahn1; Suk Hwan Chung1; Seong Taeck Chung1; Seong Jin Park1; Young Sam Kwon1; 1San Diego State University; 1University of Texas Pan American; 1Hyundai Steel Company; 1CetaTech, Inc.; 1Pohang University of Science and Technology

2:20 PM
Integrated Computational Modeling of Welding – Development to Deployment: Sudarsanam Babu1; 1Ohio State University

2:40 PM
Numerical Analysis of Welding Induced Residual Stresses Regarding Dependency of Martensite Start Temperature on Austenite Grain Size: Christoph Heinze1; Christopher Schwenk1; Michael Rethmeier1; Sudarsanam Babu1; 1BAM Federal Institute for Materials Research and Testing; 1The Ohio State University

3:00 PM
Predicting Residual Stress and Dimensional Change Due to Heat Treatment of Steel Parts: Blake Ferguson1; Zhichao Li1; Andrew Freborg1; 1Deformation Control Technology, Inc.

3:20 PM Break

4:00 PM
Simulation of Rotational Welding Operations: Michael Preuss1; Philip Withers1; 1University of Manchester

4:20 PM
Computer Modeling of Induction Heat Treating: Things to be Aware Of, Things to Avoid: Valery Rudnev1; 1Inductoheat Inc.

4:40 PM
Modeling and Simulation of Machining: Christian Fischer1; 1Scientific Forming Technologies Corporation

5:00 PM Stress-Relief Simulation: Dennis Buchanan1; 1UDRI

Interfaces, Grain Boundaries and Surfaces from Atomistic and Macroscopic Approaches -- Fundamental and Engineering Issues: Interfaces, 3-Lines and Wetting
Program Organizers: Wayne Kaplan, Technion - Israel Institute of Technology; Paul Wynblatt, Carnegie Mellon University; Dominique Chatain, Centre Interdisciplinaire de Nanoscience de Marseille; Mikel Holcomb, West Virginia University

Wednesday PM
October 19, 2011
Room: C120
Location: Columbus Con. Center

Session Chairs: Eduardo Saiz, Imperial College; Paul Wynblatt, Carnegie Mellon University

2:00 PM Keynote
Phase Transformations in Nanoscale Si/Au and Ge/Au Systems: Frances Ross1; 1IBM T. J. Watson Research Center

2:40 PM Invited
Experimental methodologies for assessing the surface energy of highly hygroscopic materials: The case of nanocrystalline magnesia: Ricardo H. R. Castro1; Klaus van Bentham1; Tien Tran1; Alexandra Navrotksy1; Shmuel Hayun1; 1University of California at Davis

3:00 PM Invited
Structure and Energy of Equilibrated Ni-Al2O3 and Ni-ZrO2 Interfaces: Hila Meltzman1; Wayne Kaplan1; 1Technion - Israel Institute of Technology

3:20 PM Break

4:00 PM Invited
Grain Boundary and Orientation Effects on the Growth of Tin Whiskers: Aaron Pedigo1; Pylin Sarobol1; Carol Handwerker1; John Blendell1; 1Purdue University

4:20 PM Invited
In Situ TEM Investigations of Wetting-Dewetting Transitions of Ultra-Thin Nickel Films on (100) Silicon Substrates: Andrew Thron1; Klaus van Bentham1; 1University of California, Davis

4:40 PM
Interfacial Free Energies from Data on Coarsening Plus Assessments of Gibbs Free Energies of Mixing in Ni-Base γ' Alloys: Alan Ardell1; 1National Science Foundation

5:00 PM
Surface Tension of Cerium Using the Electrostatic Levitation Process – The Effect of Oxygen: Erik Lord1; David Olson1; Stephen Liu1; 1Colorado School of Mines

Program Organizers: Haiyang Wang, Texas A&M University; Nughemall Ravindra, New Jersey Institute of Technology; Alan Ardell, National Science Foundation; Yunting Zhu, North Carolina State University; Xinghong Zhang, Texas A&M University; Rajiv K. Singh, University of Florida; John Prater, Army Research Office

Wednesday PM Room: E170
October 19, 2011 Location: Columbus Con. Center

Session Chairs: John Prater, Army Research Office; Marc Meyers, University of California, San Diego

2:00 PM Invited
Synchrotron X-Ray Laue Microbeam Studies of Individual Nanostuctures: John Budai1; Jonathan Tischler1; Zhongwei Pan1; Alexander Tslev1; Andrei Kolmakov1; ‘Oak Ridge National Laboratory; ‘University of Georgia; ‘Southern Illinois University

2:20 PM Invited
Critical Challenges in GaN-Based Structures on Silicon for High Power Devices: C.L. Reynolds1; J. Narayan3; ‘North Carolina State University

2:40 PM Invited
Fundamental Problems of Nano Self-Assembly for Manufacturing Semiconductor Products: Rajendra Singh1; Githin Alapatt1; Nishant Gupta1; Kelvin Poole4; ‘Clemson University

3:00 PM Invited
Pulsed Laser Induced Self-Organization of Bilayer Liquids to Nanomanufacture Plasmionic-Ferromagnetic Nanocomposites: Ramki Kalyanaraman1; ‘University of Tennessee

3:20 PM Invited
Nanowire Based Photodetectors: Narsingh Singh1; M King1; S McLaughlin1; D Kahler1; A Berghmans1; B Wagner1; D Knuteson1; M Aziz1; ‘Northrop Grumman Corporation

3:40 PM Break

4:20 PM Invited
The Role of the Nanoscale in the Success of Large-Scale High Temperature Superconductors: Justin Schwartz1; ‘North Carolina State University

4:40 PM Invited
Nano Brushes of Polysaccharides: Materials, Mechanisms and Applications: Ram Singh1; ‘IISER PUNE, INDIA

5:00 PM Invited
Structural Nanoceramics and Nanocomposites: Challenges and Opportunities: Nitin Padture1; ‘The Ohio State University

5:20 PM
Magnetron Sputtered Multi-layered Alumina and Zirconia Thin Films for Thermal Barrier Coating Applications: shengmin guo1; Diane Ho1; Rannan Liu1; ‘Louisiana State University

5:40 PM
Ag Nano Plate for Application of Printable Electronics: Young Jin Kim1; ‘Tokusen USA Inc.

6:00 PM
Unusual Variation in Optical Properties of Undoped Zinc Oxide Nanoparticles: Navendra Goswami1; ‘Jaypee Institute of Information Technology

International Symposium on Defects, Transport and Related Phenomena: Defects and Transport in Materials Related to Fuel Cells I

Program Organizers: Sangtae Kim, University of California, Davis; Ruediger Dieckmann, Cornell University; Doreen Edwards, Alfred University; Manfred Manfr, RWTH Aachen University; Thomas Mason, Northwestern University

Wednesday PM Room: C122
October 19, 2011 Location: Columbus Con. Center

Funding support provided by: WCU Hybrid Materials Program, Department of Materials Science and Engineering, Seoul National University, Korea

Session Chairs: Manfred Martin, RWTH Aachen University; Alastair Cormack, Alfred University

2:00 PM Invited
Defect Characteristics of Solid Oxide Fuel Cell Materials Containing Tetrahedral Moieties: Peter Slater1; ‘University of Birmingham

2:40 PM Invited
Structure and Defects in Ceria Nanoparticles: Alastair Cormack1; Bu Wang1; Samuel Lamphier1; ‘Alfred University

3:20 PM Break

4:00 PM
Local and Average Structure of Lanthanum Tungstate: A Proton Conductor with Fluorite-Type Structure: Anna Magrasso1; Carlos Frontera1; Jesus Canales-Vazquez1; Jonathan Polfus1; ‘Dept. Chemistry, University of Oslo; ‘ICMAB-CSIC; ‘Renewable Energy Research Institute, University of Castilla-la Mancha

4:20 PM Invited
Mixed Oxide Ion and Electron Conduction in Reduced Ceria by Density Functional Study: NAKAYAMA MASANOBU1; HIROMI OSHIMA1; ‘Nagoya Institute of Technology; ‘RWTH Aachen University

5:00 PM
Oxygen Transport Investigation on Infiltrated SOFC Cathode: Yihong Li1; Kirk Gerdes1; Xingbo Liu1; ‘West Virginia University; ‘I. National Energy Technology Laboratory

Joining and Sustaining of Superalloys: Joining and Sustaining of Ni-Base Superalloys: Part II

Program Organizers: Sammy Tin, Illinois Institute of Technology; Jeffrey Evans, University of Alabama in Huntsville; David Mourer, GE Aviation; Judith Schneider, Mississippi State University; Ji-Cheng Zhao, The Ohio State University

Wednesday PM Room: E161A
October 19, 2011 Location: Columbus Con. Center

Session Chair: To Be Announced

2:00 PM Invited
Laser Repair and Cladding of Superalloy Single Crystals: Wilfried Kurz1; ‘EPFL, Swiss Federal Institute of Technology Lausanne

2:20 PM Invited
Superalloy Component Repair by LENS Material Build-Up: Richard Grylls1; David Keicher1; ‘Optomec Inc.
2:40 PM
Weld Mechanical Properties of a Ni-Base Superalloy in Various Pre-Weld Aged Conditions: Jeremy Caron; Greg Hoback; Mark Britton; Lee Pike; 'Haynes International, Inc.

3:00 PM
Effect of Ta/Nb Ratio on the Solidification Behavior and Phase Equilibria of Polycrystalline Gamma/Gamma Prime-Delta Eutectic Ni-Base Superalloy: Mengtao Xie; Randy Helmink; Sammy Tin; 'Illinois Institute of Technology; 'Rolls-Royce Corporation

3:20 PM
Continuous Heating and Cooling Transformation Diagram in Ni-Base Superalloy 282: Boian Alexandrov; Jeffrey Rodelas; Margaret Kittiila; John Lippold; David Metzler; 'The Ohio State University; 'Haynes International

3:40 PM Break

4:00 PM Invited
Understanding the Effect of Microstructure on Deformation Behavior of Ni-Base Disk Superalloys: Characterization, Phase Field Modeling and Crystal Plasticity Modeling: Michael Mills; Halice Deutchman; Patrick Phillips; Ning Zhou; Mahendra Samal; Yunzhi Wang; Somnath Ghosh; Andrew Wessman; David Mourer; Ken Bain; 'The Ohio State University; 'GE Aviation

4:20 PM Invited
Oxidation Influence on Creep Performance of Thin-Walled Structures: Uwe Glatzel; Matthias Bensch; Martin Brunner; Ernst Affeldt; Rainer Völk; 'University Bayreuth

4:40 PM
The Chemistry and Mechanical Properties of Hiped Dual Alloy Compacts: Shaun Holmes; Mark Hardy; Catherine Rae; 'Rolls-Royce plc; 'University of Cambridge

5:00 PM
Effects of Alloying Elements on Shear Deformation and Stacking Fault of FCC Ni: A First-Principles Study: Shun-Li Shang; Yi Wang; Zi-Kui Liu; 'Pennsylvania State University

5:20 PM
Effect of HIP Temperature on Mechanical Properties and Microstructure of GTD-111 Superalloy: Seyed Mohsen Sadat Shekarab; 'K. N. Toosi University

5:40 PM Cancelled
Evaluation of Residual, Post-Service Creep-Rupture Properties of S-816 Buckets: Jonathan Contreras; 'The University of Texas at El Paso

Program Organizer: Elizabeth Hoffman, Savannah River National Laboratory

Wednesday PM
Room: C226
Location: Columbus Con. Center

Session Chair: Alex Cozzi, Savannah River National Laboratory

4:00 PM
Immobilisation of Pyroprocessing Waste Salts: Eric Vance; Joel Davis; Kylie Olufson; Ilkay Chironi; 'ANSTO Materials

4:20 PM
Low-Melting Salt Mixtures Composition Determination for Nuclear Waste Processing: Vasily Lutsyk; Alexandr Zyryanov; 'Russian Academy of Sciences (Siberian Division); 'Buryat State University

4:40 PM
Rare Earth and Plutonium Doping of Apatite: Eric Vance; Yingjie Zhang; Terry McLeod; Ian Farnan; Prashant Selvaratnam; Miodrag Jovanovic; 'ANSTO Materials; 'University of Cambridge

5:00 PM
Evaluation of Mixing Occurring in the SRS Saltstone Transfer Line: Alex Cozzi; Erich Hansen; Tim Jones; Tim Jones; Marissa Reigel; 'Savannah River National Laboratory
Materials for Nuclear Waste Disposal and Environmental Cleanup: Waste Forms for Nuclear Disposition  
*Program Organizer:* Elizabeth Hoffman, Savannah River National Laboratory  
**Wednesday PM**  
**Room:** C226  
**Location:** Columbus Con. Center  
**Session Chair:** Elizabeth Hoffman, Savannah River National Laboratory

2:00 PM Panel Discussion

3:20 PM Break

3:00 PM Question and Answer Period

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Materials Science Challenges for Nuclear Applications: Materials Degradation I  
*Program Organizers:* Ram Devanathan, Pacific Northwest National Laboratory; Raul Rebak, GE Global Research; Kevin Fox, Savannah River National Laboratory; Andrzej Wojcieszynski, ATI Powder Metals; Ramprashad Prabhakaran, Idaho National Laboratory; Bill Lee, Imperial College London; Kumar Sridharan, University of Wisconsin; Elizabeth Hoffman, Savannah River National Laboratory; David Forrest, Naval Surface Warfare Center; Aladar Csontos, U.S. Nuclear Regulatory Commission  
**Wednesday PM**  
**Room:** C225  
**Location:** Columbus Con. Center  
**Session Chairs:** Raul Rebak, GE Global Research; Denise Paraventi, BMPC - Bettis Laboratory

2:00 PM Invited  
*Materials Degradation Issues in Pressurized Water Reactors:* Denise Paraventi

2:40 PM  
*Environmentally Assisted Cracking Resistance of Ferritic Chromium Steels in High Temperature Water:* Peter Andresen; Timothy Jurewicz; Raul Rebak; GE Global Research

3:00 PM  
*Creep Crack Initiation and Crack Growth of Alloy 617 in Impure VHTR Helium and Air at Elevated Temperatures:* Guoping Cao; Paul Pezzi; Graham Fischer; Kumar Sridharan; Todd Allen; Wendy Crone; University of Wisconsin

3:20 PM Break

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Materials Science Challenges for Nuclear Applications: Materials Degradation II  
*Program Organizers:* Ram Devanathan, Pacific Northwest National Laboratory; Raul Rebak, GE Global Research; Kevin Fox, Savannah River National Laboratory; Andrzej Wojcieszynski, ATI Powder Metals; Ramprashad Prabhakaran, Idaho National Laboratory; Bill Lee, Imperial College London; Kumar Sridharan, University of Wisconsin; Elizabeth Hoffman, Savannah River National Laboratory; David Forrest, Naval Surface Warfare Center; Aladar Csontos, U.S. Nuclear Regulatory Commission  
**Wednesday PM**  
**Room:** C225  
**Location:** Columbus Con. Center  
**Session Chairs:** Raul Rebak, GE Global Research; Denise Paraventi, BMPC - Bettis Laboratory

4:00 PM Invited  
*Development of Materials for High Dose Reactor Applications:* Stuart Maloy; Mychailo Tolooczko; Osman Anderoglu; Dave Hoelzer; Thak-Sang Byun; James Cole; Tarik Saleh; Los Alamos National Laboratory; PNNL; ORNL; Idaho National Laboratory

4:40 PM  
*Stress Corrosion Cracking Initiation of Austenitic Alloys in Supercritical Water:* Guoping Cao; Vahid Firozdzor; Todd Allen; University of Wisconsin

5:00 PM  
*A Creep/Fatigue Testing System for Alloys in Impure Helium Environments:* Alfred Okello; Gokce Gulsoy; Chris Torbet; Gary Was; Wayne Jones; University of Michigan; University of California Santa Barbara

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Measuresments and Modeling of Advanced Automotive and Structural Materials at Intermediate and High Strain Rates: Intermediate-to-High-Rate Material Behavior  
*Program Organizer:* Steven P. Mates, National Institute of Standards and Technology  
**Wednesday PM**  
**Room:** D231  
**Location:** Columbus Con. Center  
**Session Chair:** Steven Mates, NIST

2:00 PM Keynote  
*High-Strain-Rate & Shock Response of Lightweight Materials: How Dynamic Properties Influence the Future Design Landscape for Transportation Applications:* George Gray; Los Alamos National Laboratory

2:40 PM  
*Dynamic Response of Magnesium Alloy AZ31B and Aluminum Alloys 7059, 6061, 5083 and 5059: Sasa Perez-Bergquist; George Gray III; Carl Trujillo; Ellen Cerreta; Mike Lopez; Los Alamos National Laboratory*
3:00 PM
Dynamic Tensile Behavior of a TRIP Steel: Oscar Guzman; Weinong Chen; NASA; Purdue University

3:20 PM Break

4:00 PM
Nonlinear Stress Wave Mitigation in Ordered Granular Media: Tommy On; Erheng Wang; John Lambros; University of Illinois at Urbana Champaign

4:20 PM
Strain Rate Effect on Interlaminar Fracture of A Woven Glass Composite: Bo Song; Wei-Yang Lu; Helena Jin; Sandia National Laboratories

4:40 PM
Investigation of Damage Mechanisms for Polymers Tested under High Strain Rate Conditions: David Francis; Mark Horstemeyer; Jean-Luc Bouvard; Mississippi State University

5:00 PM
Adiabatic Shear Sensitivities of TC18 Titanium Alloy Characterized with Forced Shearing Test: Lin Wang; Pu Miao; Xing Cheng; Kun Sun; Shu Li; Beijing Institute of Technology; Chuxiong Normal University

Microwave Processing of Materials: Session I
Program Organizers: Morsi Mahmoud, Karlsruhe Institute of Technology (KIT); Guido Link, Karlsruhe Institute of Technology

Wednesday PM  Room: C221
October 19, 2011  Location: Columbus Con. Center

Session Chair: Morsi Mahmoud, Karlsruhe Institute of Technology

2:00 PM Invited
The MW Technology and Activities in Japan: Motoyasu Sato; Kazuhiro Nagata; Naoki Shinohara; National Institute of Fusion Science (NIFS); Tokyo University of the Arts; Kyoto University

2:20 PM Millimeter-Wave Sintering with Application of External Pressure: Yury Bykov; Sergey Egorov; Anatoly Eremeev; Vladislav Kholotpsiev; Kirill Rybakov; Vladimir Semenov; Russian Academy of Sciences

2:40 PM Effect of Microwave Plasma Process Conditions on Nanocrystalline Diamond Deposition on AlGaN/GaN HEMT and Si Device Metallizations: Nirmal Govindaraju; Raj Singh; University of Cincinnati

3:00 PM Understanding the Effect of Microwave Treatment on the Processing of Mineral Ores: Abubeker Ali; Steven Bradshaw; Stellenbosch University

3:20 PM Break

4:00 PM Investigation on Microstructural Characterization of Microwave Cladding: Dheeraj Gupta; Apurba Kumar Sharma; Indian Institute of Technology Roorkee

4:20 PM A Contactless Method to Monitor Shrinkage and Temperature Distribution during Microwave Sintering: Dominique GOEURIO; Daniel ZY melka; Sébastien SAUNIER; Jérôme MOLIMARD; ENS Mines de Saint-Etienne

4:40 PM Microwave Sintering of Complex-Shape Titanium Powder Compacts: Arne Fliflet; Ashraf Imam; Ralph Bruce; Jerry Feng; Richard Everett; Naval Research Laboratory; Bethel College

5:00 PM Dilatometric Study and In-Situ Resistivity Measurements during Millimeter Wave Sintering of Metal Powder Compacts: Guido Link; Morsi Mahmoud; Manfred Thumm; Karlsruhe Institute of Technology

5:20 PM Concluding Comments

Multifunctional Oxides: Session V
Program Organizer: Xiaoping Pan, University of Michigan

Wednesday PM  Room: E162A
October 19, 2011  Location: Columbus Con. Center

Session Chairs: Cewen Nan, Tsinghua University; Sophie Harrington, University of Cambridge

2:00 PM Invited
Multi-Scale Modeling of the Converse Magnetoelectric Effect in Ferromagnetic/Ferroelectric Layered Heterostructures: Jia-Mian Hu; Guang Sheng; Jingxian Zhang; Long-Qing Chen; CW Nan; Tsinghua University; Pennsylvania State University

2:40 PM Invited
Self-Assembled Oxide Nano-Scaffolds for Enhanced Ferroelectricity in Thick Barium Titanate Films: Sophie Harrington; Judith MacManus-Driscoll; University of Cambridge

3:20 PM Break

4:00 PM First Principles Study of Disorder in Double Perovskites: A Tale of Two Compounds: Rohan Mishra; Oscar Restrepo; Patrick Woodward; Wolfgang Windl; The Ohio State University

4:20 PM Study of Defects in Sputter Deposited Thin Films of Double Perovskites Sr2FeMoO6 and Sr2CrReO6: Manisha Dixit; Robert Williams; Srinivasan Rajagopal; Adam Hauser; Fengyuan Yang; Hamish Fraser; Wolfgang Windl; The Ohio State University; Exxon Mobil Research and Engineering Company

4:40 PM Invited
Novel Low Moment Magnetic Films for Multiferroic Heterostructures with Strong Magneto Electric Coupling: Jing Lou; Ziyao Zhou; Shawn Beguhn; Scott Rand; Xi Yang; Ming Liu; Nian Sun; Northeastern University
Nanotechnology for Energy, Healthcare and Industry : Session II

Program Organizers: Gary Pickrell, Virginia Tech; Suveen Mathaudhu, U.S. Army Research Office; Wolfgang Sigmund, University of Florida; Jud Ready, Georgia Tech; George Wei, Osram Sylvania; Ke Wang, Virginia Tech; Zhwei Shan, Jiaotong University; Alpesh Shukla, Lawrence Berkeley National Laboratory; Nitin Chopra, The University of Alabama; Sudipta Seal, Univ of Central Florida; Navin Manjooran, Siemens Corporation; Julia Greer, California Institute of Technology

Wednesday PM

Location:  Columbus Con. Center

Session Chairs:  Navin Manjooran, Siemens Corporate Technology; Nitin Chopra, The University of Alabama Tuscaloosa

2:00 PM  Multi-Functional Nanoscale Heterostructures Derived from 1-D Nanostructures: Nitin Chopra1; 1The University of Alabama

2:40 PM  Controlling Electron Transport in CNT-Supported Organometallic Catalysts: Yuan Lu1; Bruce Hinds1; Matthew Beck1; 1University of Kentucky

3:00 PM  Anodization of Aluminum-Titanium Alloys for Solar Cell Applications: Neslihan Alpay1; George Demopoulos1; Mathieu Brochu1; 1McGill University

3:20 PM  Break

4:00 PM  Highly Active Porous Catalysts Fabricated by Attachment of Metal Nanoparticles on Hierarchical Carbon Structures: Hema Vijwani1; Sharmila Mukhopadhyay1; 1Wright State University

4:20 PM  Fabrication of P-Type Silicon Optical Fiber: Brian Scott1; Ke Wang1; Gary Pickrell1; 1Virginia Tech

4:40 PM  Nanoscale Carbon in Metals for Energy Applications: David Forrest1; Lourdes Salamanca-Riba1; Lloyd Brown1; Jennifer Wolk1; Peter Joyce1; X. Jie Zhang1; 1Naval Surface Warfare Center; 2University of Maryland; 3United States Naval Academy

5:00 PM  Novel Catalytic Behavior of Ultra-Small Ceria Nanoparticles for Water Splitting through DFT Investigation: Xing Huang1; Matthew Beck1; 1University of Kentucky

Next Generation Biomaterials: Next Generation Biomaterials

Program Organizers: Roger Narayan, Univ of North Carolina & North Carolina State Univ; Kaipan Li, North Dakota State University; Kajal Mallick, University of Warwick; Vilupanur Ravi, California State Polytechnic University, Pomona; Varshni Singh, Louisiana State University

Wednesday PM

Location:  Columbus Con. Center

Session Chairs:  Sarit Bhaduri, The University of Toledo; Eldon Case, Michigan State Univ

2:00 PM  Invited Porosity Dependent Strength and Elastic Modulus of Hydroxyapatite and Other Oxide and Non-Oxide Materials: Eldon Case1; Xiaofeng Fan1; Fei Ren1; Melissa Baumann1; Y Shu1; 1Michigan State Univ; 2Oak Ridge National Laboratory

2:20 PM  Synthesis and Properties of Nano-Calcium Phosphates for Biomedical Applications: Darcy Wagner1; Huan Zhou1; Joseph Lawrence1; Sarit Bhaduri1; 1University of Toledo

2:40 PM  Processing Effects on the Crystallinity, Microstructure, and Mechanical Properties of Hydroxyapatite Reinforced Polyetheretherketone Scaffolds: Timothy Conrad1; David Jaekel1; Steven Kurtz1; Ryan Roeder1; 1University of Notre Dame; 2Drexel University

3:00 PM  Preparing PLA Powders for Powder-Based Processing Using a Solvent-Non-Solvent Mediated Technique: Huan Zhou1; Sarit Bhaduri1; 1University of Toledo

3:20 PM  Break

4:00 PM  Invited Biological Aspects of Chemically Bonded Ca-Aluminate Based Biomaterials: Leif Hermansson1; 1Doxa AB

4:20 PM  Enhancement of Apatite Formation by Oxynitridation of Ti Substrate: Masami Hashimoto1; Kazumi Kashiwagi1; Satoshi Kitaoka1; 1Japan Fine Ceramics Center

4:40 PM  Corrosion Behaviour of Ti-Base Alloys in Biocompatible Solutions: Sailendra Paul1; Smita Sahu1; Manish Roy3; 1VNIT; 2IIT; 3DMRL

5:00 PM  Electrochemical Characterization of the Eastern Oyster Crassostrea Virginica Shell as a Bioceramic Material: Yuhchae Yoon1; Douglas Hansen1; Karolyn Hansen1; Andrew Mount1; 1University of Dayton Research Institute; 2University of Dayton; 3Clemson University
Session Chair: To Be Announced

2:00 PM
Synthesis and Microstructure of Bulk Nanostructred Cu by Spark Plasma Sintering of Cryomilled Powders: Haining Wen1; Yonghao Zhao1; Zhihui Zhang1; Osman Ertorer1; Shaoming Dong2; Enrique Lavernia1; 1University of California Davis; 2University of Connecticut

2:20 PM
Deformation-Induced Ductility in Cryomilled Nanostructured Nickel with Porosity and Grain Boundary Segregation: Yonghao Zhao1; Q. Zhan1; T.D. Topping1; Y. Li1; E.J. Lavernia1; 1University of California Davis; 2University of Connecticut

2:40 PM
Compaction and Sintering of Mechanically Alloyed W-3Ni-1Fe Powder: Alex Aning1; Matthew Hiser1; 1Virginia Tech

3:00 PM Break

3:40 PM
On the Conditions of Forming WC Platelets in WC-Co Hardmetals: Yang Zhong1; Leon Shaw1; 1University of Connecticut

4:00 PM
Effect of Ni Content on the Sintering of Mechanically Alloyed W–Ni Alloys: Andrew Zeagler1; Alex Aning1; 1Virginia Tech

4:20 PM
Effect of Coke Particle Size on Sinter Quality: Nader Tahranpesaran-zadeh-faly1; Ali Heiday1; 1Azad University

4:40 PM Cancelled

Densification and Characterization of Boron Carbide Nanopowders through Field Assisted Sintering (FAST): Lionel Vargas-Gonzalez1; Chris Haines1; Darold Martin1; 1Army Research Laboratory; 2US Army ARDEC

Session Chair: James Foley, Los Alamos National Lab

2:00 PM
Innovative Design and Processing of Gas Atomized Precursor Powders to Generate Nano-Composite Microstructures in Ferritic Stainless Steels: Iver Anderson1; Joel Riek1; Matthew Kramer1; Robert Odette1; Erich Stergar1; 1Ames Laboratory; 2Iowa State University; 3Univ. of California-Santa Barbara

2:40 PM
Fabrication and Wear Behavior of Al-Ni/SiC Functional Gradient Materials: Carlos Leon-Putino1; Ana A. Aguilar-Reyes1; Sergio Menendez-Diaz1; Egberto Bedolla-Becerril1; 1Universidad Michoacana

3:00 PM
Manufacture of Alumina/Aluminum Functionally Graded Material: Numerical Investigation of the Architecture and Evaluation of the Thermal Conductivity: Nabil Ferguen1; Emmanuel Bellenger1; Mohamed Guessasma1; Christine Pêlegris1; Claudia Cogné1; 1IUT - UPJV

3:20 PM Break

4:00 PM
Dry Sliding Behavior of 6061-Al2O3 Composite in Case of Y2O3 Interface Coating: Serdar Altuner1; Ergun Kelesoglu1; 1Yildiz Technical University

4:20 PM
The Effects of Additives on the Corrosion, Microstructure, Mechanical Properties, and Machinability of 316L Stainless Steel: Daudi Waryoba1; Nicholas Carrier1; Jeffrey Johnson1; Mark Kopp1; Keith Rogers1; 1Penn State Dubois

Session Chairs: Yong-Ho Sohn, University of Central Florida; Nagraj Kulkarni, Oak Ridge National Laboratory

2:00 PM
4D Measurements of Interfacial Evolution during Coarsening: J Fife1; L Aagesen1; A Johnson1; M Mikss1; E Lauridsen1; Peter Voorhees1; 1Paul Scherrer Institut; 2Northwestern University; 3RISO

2:40 PM
Nucleation of second-phase near elastic defects in crystalline solids: Christina Bjerkên1; Ali Massih1; 1Malmö University

3:00 PM
Microstructure Stability of Multi-Materials Systems with Adaptive Microstructures: Rongpei Shi1; Richard Cutler1; Ji-Cheng Zhao1; Yuzhi Wang1; 1The Ohio State University

3:20 PM Break

3:40 PM
Expeditied Processing of CIGS Photovoltaic Absorber Materials: Carelyn Campbell1; 1National Institute of Standards and Technology

4:20 PM
Size Induced Transition from Partitioning to Non-Partitioning Local Kinetics in the Precipitation of Carbide Nano-Particles and Subsequent Formation of Transient Bimodal Particle Size Distribution: Qiong Chen1; Gustaf Sterner1; Herrn-Jeng Jou2; Anders Engström1; 1Thermo-Calc Software AB; 2QuesTek Innovations LLC

4:40 PM
Molecular Dynamics Simulations of Reaction, Diffusion and Segregation in Nanoscale Equiatomic Ni-Al Systems: Irina Belova1; Alexander Evteev1; Elena Levchenko1; Graeme Murch1; 1The University of Newcastle
5:00 PM
Thermodynamic Stability and Al Diffusion Mechanism in Al5Fe2: Ridwan Sakidjia1; John Perepezko1; 1University of Wisconsin-Madison

5:20 PM
Accelerated Kinetics of Surface Coating Growth by Diffusion near the Phase Transition Temperature: Mechanism of Growth of Boride Layers on Titanium: Biplab Sarma1; K. S. Ravi Chandran1; 1University of Utah

Processing, Microstructure and Properties of Cast Irons and Cast and Forged Specialty Steels: Forged and Specialty Steels
Program Organizers: Srinath Viswanathan, University of Alabama; Stephanie Will, The Timken Company

Wednesday PM  Room: D142/143
October 19, 2011  Location: Columbus Con. Center
Session Chairs: David Alexander, Los Alamos National Lab; Warren Garrison, Carnegie Mellon University

2:00 PM
The Development of High Toughness, Cobalt Free, Secondary Hardening Steels: Warren Garrison1; 1Carnegie Mellon University

2:20 PM

2:40 PM
Optimization of Molybdenum Alloyed Carburizing Steels by Nb Microalloying for Large Gear Applications: Hardy Mohrbaecher1; Frank Hippenstiel1; 1NiobelCon bvba; 2Buderus Edelstahl GmbH

3:00 PM
Studying the Resistance Against Destruction of Nitrided Steel, through Critical Opening of the Crack: Angel Zumbile1; Nikolay Tonchev1; Ilia Zumbilev1; 1Technical University of Sofia, Plovdiv branch

3:20 PM Break

4:00 PM
Tension-Compression Asymmetry in 21-6-9 High-Manganese Nitrogen-Strengthened Austenitic Stainless Steel: David Alexander1; 1Los Alamos National Laboratory

4:20 PM
Stress Rupture Properties and Carbide Reaction of Heat Resistant Cast Steels for Thin-Walled Castings of Automobile Engine: DOO HYUN KIM1; JUNG SUK LEE1; JONG MYOUNG KIM1; JONG HOON LEE1; 1Korea Institute of Materials Science; 2Hyundai Kia Motors Corp.

4:40 PM Cancelled

The Study on Microstructure and Thermal Fatigue Properties of HSS Rolls: Changsheng Xu1; Dale Sun1; Qiong Wu1; Hongquan Wen1; Heng Zhang1; Hongkui Zhang1; 1Baoshan Iron & Steel Company Limited

5:00 PM
Study on High Temperature Mechanical Properties of 28MnCr5 Steel: Suzhou Wu1; Zhizheng Li1; 1Wuhan University of Science and Technology; 2Beijing University of Science and Technology

Professor K. K. Chawla Honorary Symposium on Fibers, Foams and Composites: Science and Engineering: Fibers
Program Organizers: Nikhil Chawla, Arizona State University; Aldo Boccaccini, University of Erlangen-Nuremberg; Gary Gladysz, Trelleborg USA; Pedro D. Portella, Federal Institute of Testing and Materials BAM

Wednesday PM  Room: D234
October 19, 2011  Location: Columbus Con. Center
Session Chairs: Satish Kumar, Georgia Institute of Technology; Martin Schmucker, German Aerospace Center (DLR)

2:00 PM Invited
Test Methods for the Tensile Evaluation of Ceramic Fibers: Edgar Lara-Curzio1; 1Oak Ridge National Laboratory

2:40 PM Invited
Microstructural Changes of Oxide Fibers at High Temperatures: Martin Schmücker1; 1German Aerospace Center (DLR)

3:20 PM Break

3:40 PM Invited
Polyacrylonitrile/Carbon Nanotube Based Carbon Fibers: Satish Kumar1; 1Georgia Institute of Technology

4:20 PM
Mechanical Behavior of Recycled Polyethylene/Piassaba Fiber Composites: João Miguel Suarez1; Amal Elzubair1; 1Instituto Militar de Engenharia

4:40 PM
Natural Lignocellulosic Fibers as Special Engineering Materials: Sergio Monteiro1; 1State University of the Northern Rio de Janeiro - UENF

5:00 PM
The Study of Mechanical Properties on Cellular Solids Using North American Porcupine Quills: Shih-Feng Chou1; Ruel Overfelt1; 1Auburn University

Recent Advances in Structural Characterization of Materials: Electron Backscatter Diffraction
Program Organizers: Chad Parish, Oak Ridge National Laboratory; Roumiana Petrova, New Jersey Institute of Tech; Jacob Jones, University of Florida; Zhonghou Cai, Argonne National Laboratory; Gang Chen, Ohio University

Wednesday PM  Room: C212
October 19, 2011  Location: Columbus Con. Center
Session Chair: Chad Parish, Oak Ridge National Laboratory

2:00 PM Invited
A Novel Multi-Modal 3D Characterization System to Quantify Grain-Level Microstructural Features in Maero-Scale Volumes: Michael Uchic1; Michael Groebel1; Megna Shah1; Adam Shiveley1; Jonathan Spowart1; 1Air Force Research Laboratory; 2UES, Inc.; 3Universal Technology Corporation

2:40 PM Invited
3:20 PM Break

4:00 PM
3D EBSD-FIB Characterization of Cold Roll Bonding Ti-Al-Nb Multilayer Sheets: Peng Qu1; Hui Xu1; Liming Zhou1; Viola Acoff1; the University of Alabama

4:20 PM Invited
In-Situ Analysis of Deformation and Recrystallization Mechanisms in Magnesium Alloys: Carl Boehlert1; Zhe Chen1; Javier Llorca1; Ivan Gutiérrez-Urrutia1; Teresa Perez-Prado1; Michigan State University; IMDEA; Max Planck Institute for Iron Research

5:00 PM
Full-Speed Simultaneous EBSD and Spectral Image EDS Acquisitions: Patrick Camus1; Thermo Scientific

5:20 PM
Large Scale EBSD Collection and Analysis: Adam Shiveley1; Adam Pilchak2; Paul Shade1; Jay Tiley2; Gopal Viswanathan1; Universal Technology Corporation; Air Force Research Laboratory; Universal Energy Systems, Inc

Session Chair: Song Won Ko, The Pennsylvania State University

Wednesday PM
Room: C111
Location: Columbus Con. Center

Program Organizer: Geoff Brennecka, Sandia National Laboratories

Wednesday PM
Room: C111
Location: Columbus Con. Center

Program Organizer: Bhaskar Yalamanchili, Gerdau Ameristeel.com

Steel Product Metallurgy and Applications: Processing and Performance I

Session Chair: To Be Announced

2:00 PM
Effects of Initial Microstructure of Boron Steel Sheets on Hardenability and Mechanical Property after Hardening: Kazuo Hikita1; Nobusato Kojima1; Sumitomo Metal Industries

2:20 PM
Predicting Formability of Sheared Holes in Advanced High Strength Sheet Steels: Robert Comstock1; Dustin Brown1; Daniel Scherrer1; AK Steel

2:40 PM
High Performance Vacuum Carburizing Steels: Patrick Anderson1; Michael Burnett1; The Timken Company

3:00 PM
In-Situ Observation of Martensitic Transformation in Low Carbon Steel: Naoya Shibata1; Shoichi Nambu1; Kentaro Asakura1; Junya Inoue1; Toshihiko Koseki1; The University of Tokyo

3:20 PM Break

4:00 PM
The Effects of Cooling Rate on Microstructure and Mechanical Properties in Automotive Connecting Rod Steels: Kelly Pitzer1; John Speer1; Colorado School of Mines

4:20 PM
Study of the Ti-Mn-Al-Si-O-S Complex Inclusions Inducing Intragranular Acicular Ferrite: Chengwei Yang1; Wuhan Iron & Steel (Group) Corp.

4:40 PM
Evolution of Morphology, Size and Distribution of MnS Inclusions in Hot Forging Steel by Heat Treatment: Xiao Shao1; Xin Wang1; Min Jiang1; Wan Wang1; Xiang Huang1; University of science and technology beijing

5:00 PM Cancelled
Post Weld Heat Treatment Response and Phase Transformation Behavior of F22 Steel: Eric Fusner1; John Lippold1; OSU Welding and Joining Metallurgy Group
2:00 PM Invited
Damage Study in an AA 2024 T3 Panel Subjected to Explosive Loading: Tomoko Sano; Constantine Fouzoulas; Chian-Fong Yen; Charles Chen; Mark Nansteel; 1US Army Research Laboratory; 2US Department of Homeland Security; 3Batelle Memorial Institute

2:40 PM A Study of the Effects of Minor Alloying Compositions on the Precipitation Hardening of Some Aluminum Alloys: Adebayo Badmos; Akindele Odeshi; 1The Ohio State University; 2Black Hawk College; 3University of Saskatchewan

3:00 PM Microstructure and Corrosion Investigation of a Friction Stir Weld of AA 5083 H116 before and after Diode Laser Surface Treatment: Samar Kalita; Benjamin Waldera; 1Advanced Engineered Materials Center, University of North Dakota

3:20 PM Break

4:00 PM Invited
Optimizing Mechanical Properties of Bulk Nanostructured 7075 Al Alloy: Yonghao Zhao; P.V. Liddicoat; Z.X. Liao; Y.T. Zhu; R. Z. Valiev; E.J. Lavermia; 1University of California Davis; 2University of Sydney, Australia; 3North Carolina State University, Raleigh; 4Ufa State Aviation Technical University, Russia

4:40 PM Determining the Variance and Distribution of Quantified Microstructure in α + β Processed Ti-6Al-4V: Meg Noble; Dan Huber; John Sosa; Santhosh Koduri; Hamish Fraser; 1The Ohio State University

5:00 PM Characterization of Allotriomorphic Alpha in Titanium Alloys: Phkas Dixit; G.B. Viswanathan; W.A.T. Clark; H.L. Fraser; 1The Ohio State University; 2Air Force Research Laboratory

Surface Properties of Biomaterials: Surface Modification
Program Organizers: Susmita Bose, Washington State University; Amit Bandyopadhyay, Washington State University; Thomas Webster, Brown University; Sharmila Mukhopadhyay, Wright State University; Paul Calvert, University of Massachusetts; Mukesh Kumar, Biomet Inc

2:00 PM Corrosion Mechanism of Anodized AZ91D and Its Biological Characterization: Dingchuan Xue; Yeoheung Yun; Mark Schulz; Zhongyun Dong; Zongqing Tan; Vesselin Shanov; 1University of Cincinnati; 2Texas A&M University
Additive Manufacturing of Metals: Additive Manufacturing - An Array of Processes
Program Organizers: Ian D. Harris, EWI; Ulf Ackelid, Arcam AB; Ola Harrysson, North Carolina State University; Sudarsanan Babu, Ohio State University; Brent Stucker, University of Louisville

Thursday AM  Room: D130  Location: Columbus Con. Center
Session Chair: Suresh Babu, The Ohio State University

8:00 AM  Additive Manufacturing of Metals and AMC: Ian Harris
8:40 AM  Fabrication of Precipitation Strengthened Surface Layers via Additive Friction Stir Processing: Jeff Rodelas; John Lippold; 'The Ohio State University
9:00 AM  Gamma Titanium Aluminide with High Niobium Content Produced by Electron Beam Melting: Sara Biamino 1; Mathieu Terner 1; Andrea Pena 1; Ulf Ackelid 2; Silvia Sabbadini 2; Paulo Fino 2; Matteo Pavese 2; Claudio Badini 2; Politecnico di Torino; 'Avioprop 3; Arcam AB; 'Avio SpA
9:20 AM  Optimal Processing of Aluminum Alloys Using the DMLS Technology: Dustin Lindley 1; Ping Wang 1; Steve Rengers 1; 'Morris Aerospace
9:40 AM  Break
10:00 AM  Laser-Assisted Twin-Wire Arc Spray: Ondrej Racek 1; Daniel Sordelet 1; 'Caterpillar, Inc.
10:20 AM  Panel Discussion
10:50 AM  Concluding Comments

Advanced Developments in Electron Microscopy: Advanced Materials Applications
Program Organizers: Lawrence Allard, Oak Ridge National Laboratory; Velimir Radmilovic, Lawrence Berkeley National Laboratory; Paulo Ferreira, University of Texas at Austin; Daniel Ugarte, Universidade Estadual de Campinas - UNICAMP

Thursday AM  Room: E160A  Location: Columbus Con. Center
Session Chair: Velimir Radmilovic, University of Belgrade

8:00 AM  Introductory Comments
8:20 AM  Invited Characterizing Energy Materials in 3-D Using STEM Tomography: Ike Arslan 1; 'University of California, Davis
9:00 AM  Invited Aberration-Corrected Scanning Transmission Electron Microscopy of Nanomaterials for Energy Applications: Jingyue Liu 1; Lawrence Allard 2; 'University of Missouri-St. Louis; 'Oak Ridge National Laboratory

9:40 AM  Break
10:00 AM  "Spongy" Structure in a Pt-Co Fuel Cell Catalyst Characterized by High Angle Annular Dark Field Imaging and Chemical Mapping Based on Electron Energy Loss Spectroscopy: Zhongyi Liu 1; Zhiqiang Yu 1; Junliang Zhang 1; Frederick Wagner 1; Huolin Xin 1; Julia Mundy 2; David Muller 2; 'General Motors; 'Cornell University
10:20 AM  Enhanced Eshsley Twist in 10-nm-Diameter InP Nanowires: Luiz Tizeli 1; Alan Craven 1; Luiz Zagone 1; Marcel Tencé 1; Odile Stephan 1; Thalita Chiaramonte 1; Monica Cotta 1; Daniel Ugarte 1; Universidade Estadual de Campinas - UNICAMP; Université de Glasgow, School of Physics & Astronomy; Laboratório Nacional de Luz Sincrotron (LNLS); Lab. de Physique des Solides, Univ. Paris-Sud
10:40 AM  Characterization of Nanoscale hcp Phase Nickel in a fcc Phase Nickel Thin Film: Shreyas Rajasekhar 1; Kameswaran Ganesh 1; Khalid Hattar 2; James Knapp 2; Paulo Ferreira 1; 'The University of Texas - Austin; 'Sandia National Laboratories
11:00 AM  Characterization of Grain Boundary Type for Resistivity Studies of Nanocrystalline Cu Thin Films: Amith Darbal 1; Kameswaran Ganesh 2; Xuan Liu 1; Katayun Barmak 1; Gregory Rohrer 1; Doo Ho Choi 2; Paulo Ferreira 1; Bo Yao 3; Andrew Warren 3; Tik Sun 3; Kelvin Coffey 3; 'Carnegie Mellon University; 'The University of Texas at Austin; 'University of Central Florida
11:20 AM  A Hollow-Cone Dark Field (HCDF) Transmission Electron Microscopy (TEM) Technique for Studying Fiber Texture in Polycrystalline Films: Patrick Cantwell 1; Eric Stach 1; Matthew Schneider 1; 'Purdue University
11:40 AM  Question and Answer Period

Advances in Zinc-Based Coating Technologies for Steel Sheet: Advances in Processing and Characterization of Zinc-Coated Steel Sheet
Program Organizer: Frank Goodwin, International Zinc Association

Thursday AM  Room: D144/145  Location: Columbus Con. Center
Session Chair: A Chakraborty, McMaster University

8:00 AM  Effect of Dew Point Temperature on Powdering Resistance of Galvannealed Coating on 590 Dual Phase Steel: Heejong Jung 1; Manho Na 1; Man Soon Moon 1; Jongyoul Kim 1; 'Hanyang university; 'HYSCO
8:20 AM  Remote Online Sensing of the Cleanliness of Metal Strips: Ulises Crossa Archipioli 1; Silvio Ludueña 2; Gabriel Cervellin 2; Maria Pagliaricci 2; Oscar Martinez 3; 'TOLKET S.R.L.; 'Ternium Siderar; 'TOLKET S.R.L. / CONICET
8:40 AM  Corrosion Study and Influence of Metallic Additives of Zinc Electrodeposition on Mild Steel in Saline Environment: Fayomi Sunday 1; Popoola Patricia 1; Popoola Olawale 1; 'Tshwane University of Technology, Pretoria; south Africa
Amorphous Materials: Common Issues within Science and Technology: Glass Technology
Program Organizer: Pierre Lucas, University of Arizona

Thursday AM Room: C211
October 20, 2011 Location: Columbus Con. Center

Session Chair: S. Sundaram, Alfred University

11:00 AM
Bioactive Glass Nanoparticles with Negative Zeta Potential: Ali Doostmohammadi; Ahmad Monshi; Mohammad Hossein Fathi; Isfahan University of Technology

11:20 AM
Quantitative Evaluation of Dissolved H₂ Concentration in Silica Glass by Thermal Desorption Spectrometry (TDS) in Ultra-High Vacuum: Yuko Tachibana; Masaaki Takata; Yasuyuki Takimoto; Tsuguhide Isemura; Kiyoshi Yamamoto; Shinya Kikugawa; Asahi Glass Co., Ltd.

11:40 AM
Molecular Dynamics Simulation of the Locations, Atomic Structures and Properties of Rare-Earth Doped Silicon Oxy-Nitride Intergranular Films in Silicon Nitride: Yun Jiang; Stephen Garofalini; Rutgers University

Amorphous Materials: Common Issues within Science and Technology: Mechanical Properties of Glass I
Program Organizer: Pierre Lucas, University of Arizona

Thursday AM Room: C211
October 20, 2011 Location: Columbus Con. Center

Session Chair: Ibrahim Guven, University of Arizona

8:00 AM
Cracks in Glasses: How Do They Behave?: jean-pierre Guin; Sheldon Wiederhorn; Theo Fett; CNRS @ University of Rennes I; NIST; Karlsruhe Institute for Technology

8:40 AM
Compressive Damage Development in Glass: Kathryn Dannemann; Sidney Chocron; Charles Anderson; James Spencer; Southwest Research Institute

9:00 AM
Water Diffusion into Phosphate Glasses and Its Relation to Slow Crack Growth Rate of the Glasses: Takashi Terashima; Minoru Tomozawa; Department of Materials Science and Engineering, Rensselaer Polytechnic Institute

9:20 AM
Mechanical Properties of Glasses for Neutrino Detection: Kameron Chambliss; S.K. Sundaram; William LaCourse; Alfred University

9:40 AM Break

Amorphous Materials: Common Issues within Science and Technology: Mechanical Properties of Glass II
Program Organizer: Pierre Lucas, University of Arizona

Thursday AM Room: C211
October 20, 2011 Location: Columbus Con. Center

Session Chair: Jean Pierre Guin, Universite de Rennes I

10:00 AM
A New Approach to Fracture Modeling of Glass: Peridynamics: Ibrahim Guven; The University of Arizona

10:40 AM
Influence of Ultrahigh Surface Residual Stresses on Indentation Hardness and Impact Damage Propagation in Chemically Strengthened Glasses: Ghatu Subhash; University of Florida

Ceramic Matrix Composites: Mechanical Behavior
Program Organizers: Narottam Bansal, NASA Glenn Research Center, J. P. Singh, U.S. Army Research Laboratory; Jacques Lamon, CNRS; Sung Choi, Naval Air Systems Command

Thursday AM Room: C112
October 20, 2011 Location: Columbus Con. Center

Session Chair: Yutaka Kagawa, The University of Tokyo

8:00 AM Invited
Mechanical Performance of Discontinuous Carbon Fiber-SiC Matrix Composites for Wear Components of High-Speed Train Applications: Yutaka Kagawa; Research Center for Advanced Science and Technology, The University of Tokyo

8:40 AM
Development of a Laser Test Facility for Thermomechanical Characterization of CMCs: Mark Novak; Frank Zok; UC Santa Barbara

9:00 AM
High-Temperature Interlaminar Tension Test Method Development for Ceramic Matrix Composites: Todd Engel; Hyper-Therm High-Temperature Composites, Inc.

9:20 AM
Biaxial Flexure Testing of Advanced C/SiC and SiC/SiC Composites: John Shaw; Michael Rosso; Mark Novak; Frank Zok; University of California, Santa Barbara

9:40 AM Break

10:00 AM
Notch Sensitivity of C/SiC and SiC/SiC Composites: Michael Rosso; John Shaw; Frank Zok; University of California Santa Barbara

10:20 AM
Identification of Damage Modes in Ceramic Matrix Composites Using Acoustic Emission Signal Pattern Recognition: Jacques Lamon; Nathalie Godin; Mohamed R‘Mili; Pascal Reynaud; Gilbert Fantozzi; CNRS; INSA de Lyon/MATEIS Laboratory
Thursday AM

10:40 AM
Staggered Lamination Design for Enhancement of Mechanical Resistance of Ceramic-Metal Composite: Oyayande Igahodaro; Okenwa Okoli; Ben Wang; 1FAMU-FSU College of Engineering, High Performance Materials Institute (HPMI) Florida State University; 2High Performance Materials Institute (HPMI), Florida State University

11:00 AM
Effects of the Mode of Target Support on Foreign Object Damage in MI SiC/SiC and Oxide/Oxide CMCs: David Faucett; Sung Choi; 1NAVAAIR

11:20 AM
Sintering and Mechanical Behavior of Doped Cr3C2±NiCr Cermets: Commercial vs Steric Entrapment Method Produced 3Y-TZPs: Ali OZER1; Yahya TÜR1; Waltraud KRIVEN2; 1Gebze Institute of Technology; 2University of Illinois at Urbana-Champaign

11:40 AM Cancelled
In Situ Deformations Measurement during Multi-Materials Microwaves and Conventional Heating: Saunier Sébastien1; 1Ecole des Mines de Saint-Etienne

Controlled Synthesis, Processing and Applications of Structural and Functional Nanomaterials: Three Dimensional Nanomaterials II

Program Organizers: Kathy Lu, Virginia Tech; Xudong Wang, University of Wisconsin - Madison; Eugene Olevsky, San Diego State University; Gurpreet Singh, Kansas State University; Nitin Chopra, University of Wisconsin - Madison; Eugene Olevsky, San Diego State University

Thursday AM Room: C123 Location: Columbus Con. Center

Session Chair: Kathy Lu, Virginia Tech

8:00 AM Invited
Low Temperature Sintering of Gadolinium-Doped Ceria (GDC) for Solid Oxide Fuel Cell Applications: Leon Shaw1; Pasquale Lavorato1; 1University of Connecticut

8:40 AM
Kaolinite Effects on Sintering of Freeze-Cast Kaolinite-Silica Nanocomposite: Wenle Li1; Kathy Lu1; John Walz2; 1Virginia Tech

9:00 AM
Highly Ordered TiO2 Nanotube Arrays with Novel Arrangements by Focused Ion Beam Guidance: Bo Chen1; Kathy Lu1; 1Virginia Tech

9:20 AM Cancelled
Thermal Characterization and Reaction Product Analysis of Porous Silicon Nanoenergetic Composites: Collin Becker1; Conrad Stoldt2; 1U.S. Army Research Laboratory; 2University of Colorado

9:40 AM Break

10:00 AM Invited
Dynamic Model for Coarsening during Sintering: Randall German1; 1San Diego State University

10:40 AM
The Bottom Up Approach to Processing Ceramics Is Not Always the Best Solution: Richard Laine1; Nathan Taylor1; Andrew Pottebaum1; Veli Uz1; 1University of Michigan

11:00 AM
Kinetics Control towards ZaO 3D Nanostructure: Jian Shi1; Yong Ding1; Xudong Wang2; 1University of Wisconsin-Madison; 2Georgia Institute of Technology

11:20 AM
Nanocomposites by Phase Separation in TiO2/SnO2 System: Fred Dynys1; Marie Helene Berger2; Alp Sehirlioglu2; Ali Sayir3; 1NASA Glenn Research Center; 2Centre des Matériaux Mines Paris; 3Case Western Reserve University

11:40 AM
Ultrahigh, Lightweight Al/Mg Alloys Processed by Severe Plastic Deformation: Nicholas Farkas1; 1Powdermet, Inc.

Corrosion Protection through Metallic and Non-Metallic Coatings: Metallic and Refractory Coatings

Program Organizers: Narasi Sridhar, DNV; Rudolph Buchheit, Ohio State University

Thursday AM Room: D244/245 Location: Columbus Con. Center

Session Chair: To Be Announced

8:00 AM
High-Temperature Oxidation of Low-Temperature Pack Aluminide Coatings on Stainless Steels: Paul Calhoun1; Ridwan Sakidja1; John Perepeczek1; 1University of Wisconsin-Madison

8:20 AM
Investigation of hot corrosion behavior of APS YSZ and Gd2Zr2O7+YSZ composite thermal barrier coatings in Na2SO4+V2O5 at 1050°C: M. Hamed Habibi1; Li Wang1; Shengmin Guo1; 1Louisiana State university

8:40 AM
An Overview of Hot Corrosion in Waste to Energy Boiler Environment and Its Remedies: Sukhmindebr Kalsi1; Tejinder Sidhu1; Harminder Singh1; 1Amritsar college of Engineering & Technology, Amritsar, Punjab; 2Shahedd Bhagat Singh College of Engineering & Technology, Ferozpur; 3Guru Nanak Dev University, Regional Campus, Jalandhar

9:00 AM
High Energy Density Coating Processing for Oil and Gas Applications: Greg Engleman1; Joshua Caris1; Andrew Sherman2; Mario Medanic3; 1MesoCoat

9:20 AM
Electroless Ni-P and Ni-P-Al2O3 Nanocomposite Coatings and Their Corrosion and Wear Resistance: Ajay Singh1; Ankita Parashar2; 1I.I.T.-Roorkee

9:40 AM Break

10:00 AM
Comparative Study of Aluminide Coatings on Mild Steel by Different Aluminizing Techniques: Gaurav Avasthi1; Munjal Mehta1; Dilip Avtani1; Nirav Jamnapara1; Gunjan Gupta1; Narendra Chauhan1; Ghanshyamshinh Jhala1; 1Indus Institute of Technology; 2Institute for Plasma Research; 3Indian Institute of Technology Bombay

10:20 AM
Corrosion Resistance of Diamond-Like Carbon (DLC) Lined Pipe to High Temperature and Pressure Hydrogen Sulfide/Carbon Dioxide Environments: Peter Ellis1; Brian Chambers2; Bill Boardman2; 1Honeywell Corrosion Solutions; 2Sub-One Technology
10:40 AM  
Introduction to Tantalum-Surface Alloy Technology and Review of Performance in High-Temperature Acid Environments: Brian Chambers; Dean Gambale; Honeywell Corrosion Solutions; Tantaline

11:00 AM  
Electrochemical Evaluation of Thermally Sprayed WC-Co/Cr for Hard Chrome Replacement: Ravi Dey; Christopher Weyant; Stony Brook University

11:20 AM  
Characterization of Copper Coatings on ASTM B221 Alloy by Low Pressure Cold Spray Process: Tarun Goyal; T S Sidhu; R S Waila; H.P.S. Sidhu; PEC University of Technology; SBSCET; Shaheed Udham Singh Women Engineering College

Deformation and Transitions at Grain Boundaries: Effects of Defects and Chemistry on Grain Boundaries  
Program Organizers: Thomas Bieler, Michigan State University; Douglas Spearot, University of Arkansas; Rozaliya Barabash, Oak Ridge National Laboratory; Shen Dillon, University of Illinois at Urbana-Champaign; Jian Luo, Clemson University

Thursday AM  
Room: C121  
Location: Columbus Con. Center  
Session Chairs: Shen Dillon, University of Illinois at Urbana-Champaign; Yue Qi, General Motors R&D

8:00 AM Invited  
Grain Boundary Migration during Recrystallization: Dorte Jensen; DTU Risø

8:20 AM Cancelled  
Recovery and Recrystallization of Nb Single Crystals Heated after Unlimited Straining in the Bridgman Anvils: Vladimir Levi; Vitaliy Pilyugin; Lyudmila Voronova; Tatiana Chaschukhina; Alexandr Vasiliev; VITALD LLC; Metal Physics Institute RAS; Kurchatov Institute

8:40 AM Invited  
Atomistic Predictions on Chemical Effects at Grain Boundaries: Yue Qi; General Motors R&D

9:00 AM  
Effect of Grain Boundary Character on the Segregation of Impurities and Point Defects to Grain Boundaries in Fe. Mark Tschopp; Kiran Solanki; Nathan Rhodes; Mark Horstemeyer; Fei Gao; Xin Sun; Moe Khaleel; Mississippi State University; Pacific Northwest National Laboratory

9:20 AM Invited  
Location of La and Lu in Rare-Earth Doped Intergranular Films in Silicon Nitride: Effect of Structure on Properties: Stephen Garofalini; Yun Jiang; Rutgers University

9:40 AM Break

10:00 AM Invited  
Molecular Dynamics Simulation of Grain Boundary Network Stability to Irradiation: James Belak; Bryan Reed; Thomas LaOrange; Vasily Bulatov; Joel Bernier; Ming Tang; Mukul Kumar; Lawrence Livermore National Laboratory

10:20 AM Invited  
Predicting Defect Interactions with Interfaces and Grain Boundaries Using Misfit Dislocation Models: Michael Demkowicz; Aurélien Vattré; Massachusetts Institute of Technology; CEA-DAM IDF

10:40 AM  
Analysis of Variant Selection in a Ti-6Al-4V Ingot: Gordon Sargen; Adam Pitchak; Ayman Salemi; Michael Glavicic; Kacey Kinsel; S Semiatin; Consultant; Materials and Manufacturing Directorate; Rolls-Royce Corporation; Wright State University

11:00 AM Invited  
The Relationship between Grain Boundary Energies and Grain Boundary Complexion Transitions: Shen Dillon; Martin Harmer; Gregory Rohrer; Carnegie Mellon University

11:20 AM  
Application of Phase Field Crystal Modeling to Studying Coupled Grain Boundary Migration and Grain Rotation: Tishal Yadav; Nele Moelans; KU Leuven; Katholieke Universiteit Leuven

11:40 AM Cancelled

Construction of Failure Envelope: A Practical Way for Multi-Scale Modeling of Mechanical Properties in Ceramics and Their Grain Boundaries: Wai-Yim Ching; Sitaram Aryal; Anil Misra; University of Missouri-Kansas City; University of Kansas

Program Organizers: Zhengu “Gary” Yang, Pacific Northwest National Laboratory; Terry Holesinger, Los Alamos National Laboratory; Xingbo Liu, West Virginia University; Chun Lu, Siemens Energy, Inc.

Thursday AM  
Room: C223  
Location: Columbus Con. Center  
Session Chairs: Ji-Cheng Zhao, Ohio State University; Xueyan Song, West Virginia University

8:00 AM Introductory Comments

8:20 AM  
Characterization of the Mechanical Properties of Two N-Type and One P-Type Sb-Based Skutterudite Thermoelectric Compounds: Robert Schmidt; Eldon Case; Jennifer Ni; Jeffrey Sakamoto; Rosa Trejo; Edgar Lara-Curzio; E. Payzant; Melanie Kirkham; Roberta Peascoe-Meisner; Michigan State University; Oak Ridge National Laboratory

8:40 AM  
OpticalIndices of Refraction for Ce0.1Co0.95Pd0.05Te0.05Sb3, Ag0.86Pb19Sb1.0Te20 and (Pb0.95Sn0.05Te)0.92(PbS)0.08 and (Pb0.8Sn1.2Te)0.75(PbS)0.25-0.055% PbI0.055% PbI; Jennifer Ni; Eldon Case; Jeffrey Sakamoto; Edward Timm; Chun-I Wu; Tim Hogan; Benjamin Obers; Gary Blanchard; Michigan State University

9:00 AM  
The Temperature-Dependent Coefficient of Thermal Expansion for (Pb0.8Sn1.2Te)0.75(PbS)0.25-0.055% PbI0.055% PbI Thermoelectric Material: Jennifer Ni; Eldon Case; Ryan Stewart; Chun-I Wu; Tim Hogan; Rosa Trejo; Melanie Kirkham; Andrew Payzant; Edgar Lara-Curzio; Steven Girard; Mercouri Kanatzidis; Michigan State University; Oak Ridge National Laboratory; Northwestern University

9:20 AM  
Synthesis and Characterization of β-Gallia-Rutile Intergrowtgh Structures for Thermoelectric Applications: Michael Saterlie; Raghunath Kanakala; Doreen Edwards; Olivia Gravee; Alford University
Failure Analysis and Prevention: Corrosion and Coatings
Program Organizers: Andrew Spowage, The University of Nottingham, Malaysia Campus; Tom Ackerson, IMR Metallurgical Services; Larry Hanke, Materials Evaluation and Engineering, Inc

Thursday AM  Room: D235
October 20, 2011  Location: Columbus Con. Center

Session Chairs: Greg Quickel, Det Norske Veritas (U.S.A.), Inc.; Brandon Rollins, Det Norske Veritas (U.S.A.), Inc.; John Mickalonis, Savannah River National Laboratory

8:00 AM  Failure Analysis of Two 80 HP Multiport Boilers: Erhan Ulvan1; 1Acuren Group Inc.

8:20 AM  Degradation Evaluation of Heavy Water Drums and Tanks: John Mickalonis1; Philip Vormelker1; 1Savannah River National Laboratory

8:40 AM  The Role of Corrosion and Oxidation in High Temperature Failures: Valuable Witness or Vile Perpetrator?: BRUCE McMORDIE1; 1BGM Coating Advisors LLC

9:00 AM  Detection of Incipient SCC Damage in Primary Loop Piping Using Fiber Optic Strain Gages: Benjamin Jackson1; James Wall1; Mike Cronin1; 1Intertek APTECH; 1Electric Power Research Institute (EPRI)

9:20 AM  Cancelled

9:40 AM  Break

10:00 AM  Application of Internal Corrosion Failure Analysis to Reducing Corporate Risk: Richard Eckert1; 1Det Norske Veritas USA Inc

Fatigue and Microstructure: A Symposium on Recent Advances: Crack Growth and Fracture
Program Organizers: Amit Shyam, Oak Ridge National Laboratory; Sushant Jha, Air Force Research Laboratory/Universal Technology Corporation; Michael Caton, US Air Force Research Laboratory

Thursday AM  Room: D240/241
October 20, 2011  Location: Columbus Con. Center

Session Chairs: Michael Caton, Air Force Research Laboratory; Michael Marx, Saarland University

8:00 AM  The Relationship of Microstructure to Intergranular Crack Growth of a Nickel-Based Superalloy: Hamouda Ghoneim1; 1University of Rhode Island

8:40 AM  Mechanism of Sustained Macroscopic Deflected Fatigue Crack Growth in the Nickel Based Superalloy Udiment 720: Christian Schoettle1; Philippa Reed1; Marco Starink1; Ian Sinclair1; Daniel Child1; Geoff West1; Rachel Thomson1; 1University of Southampton; 1Loughborough University

9:00 AM  Effects of Sensitization on Fracture and Fatigue of 5XXX Al Alloys: Justin Brosi1; John Lewandowski1; 1Case Western Reserve Univ

9:20 AM  Determining Local Crack Growth Rates for Small Cracks in Inhomogeneous Materials: Angelika Brueckner-Font1; Frank Zeismann1; 1University of Kassel

9:40 AM  Break

10:00 AM  Focused Ion Beam Tomography to Quantify the Fatigue Resistance of Grain Boundaries: Michael Marx1; Wolfgang Schaefl1; 1Saarland University

10:40 AM  Microstructural and Environmental Effects on Fatigue Crack Growth in 7075 Aluminum Alloy: Zhe Chen1; Amit Shyam1; Jack Huang1; Ray Decker1; Steve LeBeau1; Carl Bohler1; 1Michigan State University; 1Oak Ridge National Laboratory; 1NanoMAG, LLC.
11:20 AM
A 3-D Quantitative Crystallographic Model for Short Fatigue Crack Propagation through Grain Boundaries in High Strength Al Alloys: Wei Wen1; Tongguang Zhai1; 1University of Kentucky

11:40 AM
Effect of Friction Stir Processing on the Fatigue Performance of a Cast Al-Si Alloy: Saumyadeep Jana1; Rajiv Mishra2; Annalakshmi Bhat2; 1University of Kentucky; 2Missouri University of Science & Technology; 1boeing

Glass and Optical Materials: Structure and Properties Characterization in Glass
Program Organizer: Pierre Lucas, University of Arizona

Thursday AM  Room: C110  Location: Columbus Con. Center
Session Chair: Steve W. Martin, Iowa State University

8:00 AM
Diffusion of Sodium in Sodium Borosilicate Glasses: Xinwei Wu1; Jeremy Moskowitz1; Ruediger Dieckmann1; 1Cornell University

8:20 AM
Formation of Ga-As Nanocrystals in Glasses: Kody Brownstein1; John Rich1; S. Sundaram1; 1Alfred University

8:40 AM
Structure of Liquid and Glassy CaSiO3: A Levitation and Neutron Diffraction with Isotopic Substitution Study: S. Sundaram1; 1Alfred University

9:00 AM
High-Temperature Raman Spectroscopic Investigations of the Two-Alkali Borate Melts: Armenak Osipov1; Leyla Osipova1; 1Institute of Mineralogy IB RAS

9:20 AM
X-Ray Diffraction and IR Investigation of the Structure of Pressurized Silica Glass: Chia-Ying Li1; Jonathan Price2; Minoru Tomozawa1; E. Bruce Watson1; 1Rensselaer Polytechnic Institute; 2Midwestern State University

Hardness across the Multi-Scales of Structure and Loading Rate: Applications II
Program Organizers: Ronald Armstrong, University of Maryland; David Bahr, Washington State University; Naresh Thadhani, Georgia Institute of Technology; Stephen Walley, Physics and Chemistry of Solids Cavendish Laboratory

Thursday AM  Room: C210  Location: Columbus Con. Center
Session Chairs: Stephen Walley, University of Cambridge; Michel Barsoum, Drexel University

8:00 AM Invited
The Effect of Microstructure on the Hardness of Submicron Thin Films and Nanostructured Devices: Steve Bull1; Lisa Sanderson1; Noushin Moharrami1; Adrian Oila1; 1Newcastle University

8:20 AM
The Effect of Interfaces on Hardness in Cu/Nb Nanolamellar Multilayer Composites: John Carpenter1; Sven Vogel1; Thomas Wynn1; Rodney McCabe1; Irene Beyerlein1; Nathan Mara1; 1Los Alamos National Laboratory

8:40 AM Invited
Assessment of Mechanical Behavior of Ti Cold Spray Coatings by Multi-Scale Hardness Testing: Richard Chromik1; Dina Goldbaum1; Jhane Ajaja1; 1McGill University

9:00 AM Invited
Effect of Annealing Treatment on Hardness in Bulk Nanocrystalline Nickel: Anna Torres1; Farghalli Mohamed1; 1University of California, Irvine

9:20 AM
Confocal Laser Scanning Microscopy (CLSM) as a Possible Tool to Measure Indentations and Fracture Surfaces: Jennifer Ni1; Eldon Case1; 1Michigan State University

9:40 AM Break

10:00 AM Invited
Nanindentation Studies of Lithiated Silicon: Lucas Berla1; Seok Woo Lee1; Andrew Jennings1; Julia Greer1; Yi Cui1; William Nix1; 1Stanford University; 2California Institute of Technology

10:20 AM
Using Hardness of Etched Surfaces for Characterization of Degree of Sensitization in Al-Mg Marine Service Alloys: Ronald Holtz1; 1Naval Research Laboratory

10:40 AM
The Indentation Response of the Coarsened Precipitates in a Re-Bearing Superalloy: Bin Gan1; Hideyuki Murakami1; Sammy Tin1; 1Illinois Institute of Technology; 2National Institute for Materials Science

11:00 AM Invited
Surface Dislocation Nucleation by Wedge Indenter Contacts: Jing Zhao1; Lifeng Ma1; Alexander Korsunsky1; Xi’an Jiaotong University; 2Oxford University

11:20 AM Invited
Viscoelasticity and High Buckling Stress of Dense Carbon Nanotube Brushes: Siddhartha Pathak1; William Mook2; Z. Goknar Cambaz1; M.T. Ubieta-Puertolas1; Min Hoon1; J. Gregory Swadener4; Johann Michler1; Surya Kalidindi1; Yuri Gogotsi1; 1Caltech; 2EMPA - Swiss Federal Laboratories for Materials Testing and Research; 3Cankaya University; 4Drexel University; 5Aston University

11:40 AM Invited
Strain-Hardening Coefficient of Aluminum Alloys Determined through Profiles of Spherical Indentation Hardness: Giuseppe Pintaudi1; Alessandro Hoechele1; Gustavo Cipriano1; 1UFPR; 2Petrobras

Program Organizer: David Furrer, Pratt & Whitney

Thursday AM  Room: C213  Location: Columbus Con. Center
Session Chair: Fan Zhang, Penn State University

8:00 AM
An Integrated Framework of Experiments and Simulations for Investigating Elastic-Plastic Deformation of Metallic Polycrystals: Jay Schuren1; Su Leen Wong2; Paul Dawson3; Matthew Miller3; 1AFRL; 2Cornell University; 3boeing

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8:20 AM
Phase Field Modeling of Grain Growth and Recrystallization in Elastoviscoplastic Deformed Polycrystals: Saswata Bhattacharya; Tae Wook Heo; Kunok Chang; Ricardo Lebensohn; Zi-Kui Liu; Suveen Mathaudhu; Long-Qing Chen; The Pennsylvania State University; Los Alamos National Laboratory; Army Research Laboratory

8:40 AM
Elastic Strain Energy Effects on Grain Boundary Segregation and Solute Drag in Grain Boundary Motion: A Phase-Field Study: Tae Wook Heo; Saswata Bhattacharyya; Long-Qing Chen; The Pennsylvania State University

9:00 AM
Three Dimensional Elasto-Plastic Phase Field Simulations of Martensitic Transformation in Fe-C Polycrystalline Alloy: Amer Malik; Gustav Amberg; KTH

9:20 AM
Phase-Field Simulation of Elastic Properties of Polycrystalline Magnesium: Guang Sheng; Saswata Bhattacharya; Hui Zhang; Kunok Chang; Suveen Mathaudhu; Zi-Kui Liu; Long-Qing Chen; The Pennsylvania State University; U.S. Army Research Laboratory

9:40 AM Break

10:00 AM
Precipitation Simulation of Multi-Component Nickel and Aluminum Alloys under the ICME Framework: Weisheng Cao;Fan Zhang; Shuanglin Chen; Chuan Zhang; Y. Austin Chang; CompuTherm LLC; University of Wisconsin - Madison

10:20 AM
Self-Similar Evolution of a Precipitate in Homogeneous Elastic Media: Shoowang Li; Amlan Barua; Xiaofan Li; John Lowengrub; Illinois Institute of Technology; UC-Irvine

10:40 AM
An Integrated Heat Treatment Model for Cast Aluminum Alloys: Chang-Kai Wu; Makhlof Makhlof; Worcester Polytechnic Institute

11:00 AM
Microstructures Design in Three-Component Alloys: Vasily Lutsyk; Edward Nasrulin; Institute of Physical Materials Science; Buryat State University

11:20 AM
Parts Heat Treatment Temperature Monitoring System Using C# Language: Tian Weiwei; Cao Wenzhong; Environmental & Chemical Engineering College of Nanchang University; Environmental & Chemical Engineering College of Nanchang University

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Interfaces, Grain Boundaries and Surfaces from Atomistic and Macroscopic Approaches -- Fundamental and Engineering Issues: Complex Interfaces

Program Organizers: Wayne Kaplan, Technion - Israel Institute of Technology; Paul Wynblatt, Carnegie Mellon University; Dominique Chatain, Centre Interdisciplinaire de Nanoscience de Marseille; Nikolai Holcomb, West Virginia University

Thursday AM  Room: C120  Location: Columbus Con. Center

Session Chairs: Dominique Chatain, CNRS; Wayne Kaplan, Technion - Israel Institute of Technology

8:00 AM Keynote
Atomic Scale Analysis of Nanostructures and Interfaces in Photovoltaic Devices: Christina Scheu; Andreas Wisneta; Markus Thomann; Jonas Weickert; Kevin Musselman; Judith MacManus-Driscoll; Lukas Schmidt-Mende; Ludwig-Maximilians-University of Munich; University of Cambridge

8:40 AM Invited
Effect of Composition and Thickness on the Atomic Structure of Rare-Earth Doped Intergranular Films in Silicon Nitride: Stephen Garofalini; Yun Jiang; Rutgers University

9:00 AM Invited
Uncovering Complexions - The Phase Behavior of Interfaces: Martin Harmer; Lehigh University

9:20 AM Invited
The Unrecognized Role of Grain Boundary “Complexion” in Embrittlement: Jian Luo; Haikai Cheng; Kaveh Meshinchi Asl; Christopher Kiely; Martin Harmer; Clemson University; FEI Company; Lehigh University

9:40 AM Break

10:00 AM Invited
Long Range Interactions and Electrodynamics of Nanoscale Assembly: Carbon Nanotubes: Roger French; Case Western Reserve University

10:20 AM
A Generalized Framework for Quantifying Grain Boundary Structure-Property Relationships at the Nanoscale: Mark Tschopp; Kiran Solanki; Mark Horstemeyer; Mississippi State University

10:40 AM
Au/TiO₂ Interfacial Reconstruction Stability from Ab Initio: Dallas Trinkle; Min Yu; University of Illinois, Urbana-Champaign

11:00 AM
Direct Imaging of Ordered Defect Superstructures at Grain Boundaries: Zhongchang Wang; M. Saito; K. McKenna; L. Gu; S. Tsukimoto; A. Shluger; Y. Ikuhara; WPI-AIMR, Tohoku Univ.

11:20 AM
Geometrical Construction of 90° v Quasi-Periodic Grain Boundaries in Cubic Materials: Mohammad Shamsuzzoha; University of Alabama

11:40 AM
High Resolution TEM and Atomic Simulations of Al₃Mg₂ – Al Interfaces in Al-Mg Alloy: Ronald Holtz; Noam Bernstein; Ramasis Goswami; Naval Research Laboratory; SAIC

Program Organizers: Haiyan Wang, Texas A&M University; Nugegahalli Ravindra, New Jersey Institute of Technology; Alan Ardeell, National Science Foundation; Yuntian Zhu, North Carolina State University; Xinghang Zhang, Texas A&M University; Rajiv K. Singh, University of Florida; John Prater, Army Research Office

Thursday AM Room: E170 Location: Columbus Con. Center

Session Chairs: Ashutosh Tiwari, University of Utah; Haiyan Wang, Texas A&M University

8:00 AM Invited Self-Assembled Nanostructures in Mixed III-V and Group III Nitrides

8:20 AM Invited In Situ Observation on Dislocation Dynamics in Nanocrystalline and Nanosized Metals: Scott Mao; 1University of Pittsburgh

8:40 AM Direct Observation of Deformation Behavior in Ceramic Nanocomposites and Nanolayers via In Situ TEM Nanoindentation Study: Joon Hwan Lee; 1Ickchan Kim; 1Aimi Mukherjee; 1Xinghang Zhang; 1Haiyan Wang; 1Texas A&M University; 1University of California, Davis

9:00 AM Probing Magnetic Structure of Ni Nanocubes Using Multi-Frequency Electron Magnetic Resonance Spectroscopy: Saritha Nellutla; 1Sadakar Nori; 1J. Narayan; 2J. T. Prater; 2Alex Smirnov; 1North Carolina State University; 1Army Research Office

9:20 AM Break

9:40 AM Deterministic Approach to Magnetic Field Assisted Assembly Using Programmable Magnets: Vijay Kasisonmayajula; 1Rene Rivero; 1Anthony T. Fiory; 1Michael Booty; 1N. M. Ravindra; 1New Jersey Institute of Technology

10:00 AM Invited Imaging and Spectroscopy of Chemical and Structural Defects in Graphene: Matthew Chisholm; 1Gerd Duscher; 1Wolfgang Windl; 1Oak Ridge National Laboratory; 1University of Tennessee; 1The Ohio State University

10:20 AM Invited Nanomaterials in the C-B-N System: Raj Singh; 1University of Cincinnati

10:40 AM Invited Micro-and Nanoscale Applications of Nanocrystalline Diamond Films: Ashok Kumar; 1University of South Florida

11:00 AM Invited Fracture of Nanostructure Sn/C Anodes: Katerina Afifontis; 1Aristotle University

11:20 AM Nanostructured Metal Containing Diamond-Like Carbon Films: Varshni Singh; 1Yaroslav Losovsky; 1Louisiana State University

11:40 AM An Ionic-Liquid-Functionalized MWNT/Epoxy Composite: zhe wang; 1Tomas Hahn; 1Hansang Kim; 1UCLA
8:20 AM
Effects of Welding Positions on Droplet Transfer in CO2 Laser-MAG Hybrid Welding: Jiecai Feng; Liqun Li; Chun in Hang; Yanbin Chen; Hao Qi; State Key Laboratory of Advanced Welding and Joining, Harbin Institute of Technology.

8:40 AM
Ground Water Inhibitors of Localized Corrosion in Passivating Alloys: Martin Rodriguez; Ricardo Carranza; Raul Rebak; Atomic Energy Commission of Argentina; GE Global Research

9:00 AM
Effect of Coprecipitation on Batch Melting: Crucible Study: Pavel Hrma; Jose Marcial; Samuel Henager; Jarrett Rice; Pacific Northwest National Laboratory

9:20 AM
Radiation Shielding Simulation for Wollastonite-Based Chemically Bonded Phosphates Ceramics: Jason Pleit; H. A. Colorado; Carlos H Castano; Missouri University of Science and Technology; University of California, Los Angeles

9:40 AM Break

10:00 AM
Influence of Cation Composition and Temperature on the Solubility and Oxidation State of Ce in Apatite Silicates: Peter Slater; University of Birmingham

10:20 AM Cancelled

10:40 AM
Sequestration of Technology Enhanced Naturally Occurring Nuclear Materials (TENORMs) from Drilling of Oil and Gas Wells: John R. Hellmann; Barry E. Scheetz; Paul C. Painter; Bruce G. Miller; Ryan Koseki; Aron Lupinsky; The Pennsylvania State University

11:00 AM
Reactivity of the faying Surface in Al-Mg2Si Metal Matrix Composite Magnesium Alloy Bonds: Mehdi Mazar Atabaki; Andrew Mullis; the Leeds University

11:20 AM
Material Challenges for Nuclear Applications: High Temperature Materials Program Organizers: Ram Devanathan, Pacific Northwest National Laboratory; Raul Rebak, GE Global Research; Kevin Fox, Savannah River National Laboratory; Andrew Wojcieszynski, ATK Powder Metals; Ramprashad Prabhakaran, Idaho National Laboratory; Bill Lee, Imperial College London; Kumar Sridharan, University of Wisconsin; Elizabeth Hoffman, Savannah River National Laboratory; David Forrest, Naval Surface Warfare Center; Aladar Csontos, U.S. Nuclear Regulatory Commission

11:40 AM
Geometrical Modulations of Alloy Phases in Steel Microstructures by Using Spatial Welding: Soshu Kirihara; Satoko Tasaki; Yasunori Uehara; Yousuke Itakura; Osaka University

8:00 AM
Grain Size Dependence of Radiation Response in Silicon Carbide: Laura Janison; Peng Xu; Kumar Sridharan; Todd Allen; University of Wisconsin-Madison

8:20 AM
Ab-Initio Assisted Study of Irradiation Effects on Electronic Properties of 4H-SiC: Ashutosh Kumar; Oscar Restrepo; Wolfgang Windl; The Ohio State University

8:40 AM
Characterization of High Temperature Fracture Strength of CVD-SiC Coating Layer for Nuclear Fuel Particle by Micro Tensile Test: Hyun Min Lee; Kwi-Ill Park; Do Kyung Kim; Korea Advanced Institute of Science and Technology

9:00 AM
The Effect of Deposition Parameters on the Properties of PyC and SiC Layer in TRISO-Coated UO2 Kernel: Yeon ku Kim; Weon Ju Kim; Ji Yeon Park; Moon Sung Cho; Korea Atomic Energy Research Institute
Measurements and Modeling of Advanced Automotive and Structural Materials at Intermediate and High Strain Rates: Intermediate-to-High-Rate Measurement Techniques

Program Organizer: Steven P. Mates, National Institute of Standards and Technology

Thursday AM  Room: D231  Location: Columbus Con. Center

Session Chair: Bo Song, Sandia National Laboratories

8:00 AM  Invited
Compressive Response of Materials at Intermediate and High Rates: Weinong Chen1; 1Purdue University

8:40 AM  Invited
High Strain Rate Characterization of Magnesium Alloys: Yanli Wang1; Donald Erdman1; Vlastimil Kune1; J. Michael Starbuck1; Srdjan Simunovic1; 1Oak Ridge National Laboratory

9:20 AM  Intermediate Strain Rate Testing for Single and Multiple Loading Sequence Testing on Bulk Materials: John Lewandowski1; 1Case Western Reserve Univ

9:40 AM  Break

10:00 AM  Invited
Deformation Measurement of Materials with Digital Image Correlation: From Quasi-Static to High Strain Rates: Louis Hector Jr1; 1GM R&D Center

10:40 AM  Invited
Practical Issues Related to Generating Intermediate and High Rate Data for Advanced Automotive and Structural Materials: Susan Hill1; 1U of Dayton Research Institute

11:20 AM  Efficient Energy Absorbing Element for Crashworthiness Applications in Quasi Static and Impact Loading: R Muralkannan1; Sonaiath Giwatham1; Ramachandran Velmurugan1; 1Indian Institute of Technology Madras

11:40 AM  Fully Instrumented Ring Expansion - A Method for Determining Constituent Materials Properties: Geoffrey Taber1; 1Ohio State University

Microwave Processing of Materials: Session II

Program Organizer: Morsi Mahmoud1, Karlsruhe Institute of Technology (KIT); Guido Link, Karlsruhe Institute of Technology

Thursday AM  Room: C221  Location: Columbus Con. Center

Session Chair: Guido Link, Karlsruhe Institute of Technology

8:00 AM  Microwave Plasma Deposition of Multilayered Nanocrystalline and Microncrystalline Diamond Thin Films for Thermal Management Applications: Nirmal Govindraju1; Chaitanya Kane1; Raj Singh1; 1University of Cincinnati

8:20 AM  Comparative Study of Microwave Welded and TIG Welded Stainless Steel (SS-316) Joints: M Srinath1; Apurbba Sharma1; Pradeep Kumar1; 1IIT Roorkee
8:40 AM
Influence of Substrate Temperature and RF Power on the Formation of ZnO Nanorods for Solar Driven Hydrogen Production: Sudhakar Shet1; Heli Wang1; Yanfa Yan1; Ravindra Nuggehalli1; John Turner1; Mowafak Al-Jassim1; National Renewable Energy Laboratory; 1New Jersey Institute of Technology
9:00 AM
Nanoscale Hierarchical Reinforcement for Robust and Durable Composites: Anil Karumuri1; Sharmila Mukhopadhyay1; 1Wright State University
9:20 AM
Optimization of Parameters for Synthesis of Cobalt Oxide Nanopowders by Gel Combustion Method: Arman Sedghi1; Nastaran noori2; Armita Shahbazkhan1; 1Imam Khomeini International University; 2Niroo Research Institute; 1Islamic Azad University-saveh Unit
9:40 AM Break
10:00 AM
Porous Material Fabrication Using Ice Particles as a Pore Forming Agent: Samantha Smith1; Gary Pickrell1; 1Virginia Tech
10:20 AM
Enhanced Mechanical and Dielectric Properties of Polyurethane/Polyisulfone/ Multi-Walled Carbon Nanotube Hybrid Nanocomposites: Mulayam Gaur1; Rekha Singh1; 1Hindustan College of Science and Technology
10:40 AM
Effect of Surface Nanocrystallization of a Precipitation Hardened Stainless Steel on Corrosion and Environmental Cracking: Indranil Roy1; John Meng2; Brian Chambers2; Colin Longfield2; Rashmi Bhavsar1; Yuntian Zha1; Farghalli Mohamed1; 1Schlumberger; 1Honeywell Corrosion Solutions; 1North Carolina State University; 1University of California
11:00 AM Cancelled
The Nanotechnology Applied in the Companies: The Cosmetics Industry Case: Marcio Canavez1; Walter Shima1; 1UFPR
Next Generation Biomaterials: Biomaterials Science and Technology
Program Organizers: Roger Narayan, Univ of North Carolina & North Carolina State Univ; Kalpana Katti, North Dakota State University; Kajal Mallick, University of Warwick; Vilupanur Ravi, California State Polytechnic University, Pomona; Varshni Singh, Louisiana State University
Thursday AM
Location: Columbus Con. Center
Room: C215
Session Chairs: Rizhi Wang, University of British Columbia ; Mitsuo Niinomi, Tohoku University

8:00 AM
Comparison of Microstructures and Mechanical Properties for CoCrMo Biomedical Implant Prototypes Fabricated by EBM and Failed Implants by Traditional Manufacturing: Sara Gaytan1; L. Murr1; E. Martinez1; F. Medina1; S. Stafford1; U. Ackelid2; R. Wicker1; 1UTEPE; 2Arcem AB
8:20 AM Invited
Electrically Triggered Drug Delivery Using Nanoporous Electrodes: David Robinson1; Shaun Gittard1; Chung-Ann Wu1; Roger Narayan1; 1Sandia National Laboratories; 1North Carolina State University

8:40 AM Invited
Diode Laser Surface Treated Commercially Pure Titanium: Corrosion and Wear Investigation: Samar Kalita1; Joshua Johnson1; Benjamin Waldera1; 1Advanced Engineered Materials Center, University of North Dakota
9:00 AM
Hydrolysis of Monetite/Chitosan Composites in Alpha-MEM & SBF Solutions: Ahmed Touny1; Herbert Dawkins2; Huan Zhou2; Sarit Bhaduri1; 1Helwan University; 1University of toledo
9:20 AM Invited
Local Drug Delivery Techniques for the Prevention of Implant-Associated Infections: Rizhi Wang1; Mehdhi Mehdi Kazemzadeh-Narbat2; Menghan Ma1; Robert Hancock1; 1University of British Columbia
9:40 AM Break
10:00 AM
Third Body Challenges in Total Hip Arthroplasty: Nishant Tikekar1; Anneliese Heiner2; Matt Beal1; Thomas Brown1; John Lannutti1; 1The Ohio State University; 1The University of Iowa
10:20 AM Invited
Young’s Modulus Changeable Biomedical Titanium Alloy for Preventing Stress Shielding and Spring-Back: Mitsuo Niinomi1; Masaaki Nakai1; 1Tohoku University
10:40 AM
Magnesium-Titanium Alloys for Biodegradable Implants: Ilona Hoffmann1; David Puleo1; Yang-Tse Cheng1; 1University of Kentucky
11:00 AM
In-Vitro and In-Vivo Osteocompatibility Assessment for Carbon Nanotube Reinforced Hydroxyapatite Coatings: Debrupa Lahiri1; Ana Paula Benaduce1; Sybille Facca1; Lidia Kos1; Nadia Benkirane-Jessel2; Arvind Agarwal2; 1Florida International University; 1Institut National de la Santé et de la Recherche Médicale (INSERM)
11:20 AM
The Effects of Sn Addition on Mechanical Behavior of Ti-24Nb-4Zr-3Mo (8-12) Sn Alloys: Paul nnamchi1; 1University of sheffield
11:40 AM
Use of Pore Structure to Manipulate the High Temperature Decomposition of Hydroxyapatite: Anthony Finoli1; Jorg Gerlach1; Ian Nettleship1; 1University of Pittsburgh; 1McGowan Institute for Regenerative Medicine

Periodic Cellular Materials: Current Status and Recent Progress: Lattice Truss Structures
Program Organizer: David Alexander, Los Alamos National Laboratory
Thursday AM
Location: Columbus Con. Center
Room: D233
Session Chair: David Alexander, Los Alamos National Laboratory

8:00 AM Invited
Periodic Cellular Structures for Mitigating Dynamic Loading Events: Douglas Queheillalt1; 1Cellular Materials International
8:40 AM Invited
Mechanical Properties of Cast Ti-64 and Ti-6242 Lattice Block Structures: Qizhen Li1; Edward Chen1; Douglas Bice2; David Dunand1; 1University of Nevada, Reno; 1Transition45 Technologies; 1Northwestern University
9:00 AM Invited
Nanocrystalline Metal-Metal Microtruss Hybrids: Glenn Hibbard1; 1University of Toronto

9:40 AM Break

10:00 AM Invited
Multi-Scale Characterization of Nickel Micro-Lattices under Compressive Loads: Lorenzo Valdevit1; Anna Torrents2; Scott Godfrey3; Jie Lian4; Julia Greer5; Tobias Schaelder6; Alan Jacobsen7; William Carter1; 1University of California, Irvine; 2California Institute of Technology; 3HRL Laboratories

10:40 AM
Architectural Design and Performance of a Truss Lattice Structure: Chris Hammett1; Renaud Rinaldi1; Alan Jacobsen1; Frank Zok1; 1University of California at Santa Barbara; 2HRL Laboratories, LLC

11:00 AM
Tailored Periodic Cellular Materials and Structures Fabricated from Interlocking Slotted Strips: David Alexander1; 1Los Alamos National Laboratory

Processing, Microstructure and Properties of Cast Irons and Cast and Forged Specialty Steels: Cast Irons
Program Organizers: Srinath Viswanathan, University of Alabama; Stephanie Will, The Timken Company

Thursday AM
Room: D142/143
Location: Columbus Con. Center

Session Chair: Stephanie Will, The Timken Company

8:00 AM
A Study on the Casting Process Design of the Ductile Cast Iron Cylinder Head for Marine Diesel Engine: TAE-DONG PARK1; SUNG-MO LEE1; JONG-MIN PARK1; DAE-YOUNG KIM1; HYUNDAI HEAVY INDUSTRIES CO., LTD

8:20 AM
Heavy Section Ductile Iron Castings for Use in Wind Turbine Generators: Meghan Haycock1; Paul Sanders1; Pat Quimby1; 1Michigan Technological University

8:40 AM
Fracture and Fatigue Behavior of Austempered Malleable Irons: Kei-Peng Jen1; Sanket Deshmukh1; Villanova University

9:00 AM
Challenges of Accurate Fatigue Analysis of Cast Iron Components Due to Non Homogenous Microstructure: Andre Heinrietz1; Jens Eufinger1; Thomas Bruder1; Holger Hanselka1; 1Fraunhofer Institute of Structural Durability and System Reliability LBF

9:20 AM
Corrosion Behaviour of a Newly Developed 10mm-7cr-5cu Alloy White Iron in Marine Atmosphere: Anil Bhargava1; Chetanya Sharma1; Malaviya National Institute of Technology

9:40 AM Break

10:00 AM
Influence of Boron on the Matrix of Spheroidal Graphite Cast Iron and Its Counteraction Method: Ying Zou1; Motoharu Ogawa1; Hideo Nakae1; Waseda University

10:20 AM
Lubricated Reciprocating Frictional Properties of Marine Cylinder Liner Materials in Boundary and Mixed Lubrication: Toku Itoh1; 1Oita Technical College

10:40 AM
Wear Behavior of Cu Alloyed Austempered Ductile Iron: Uma Batra1; JD Sharma2; Nimish Batra2; 1PEC Univ. of Technology; 2Thapar University of Technology

11:00 AM
Niobium Alloying in Grey Cast Iron for Vehicle Brake Discs: Hardy Mohrbacher1; Qijie Zhai2; 1NiobelCon bvba; 2Shanghai University

11:20 AM
Abrasion Wear Behaviors of Conventional and Two-Step Austempered Ductile Irons: Prapaporn Silawong1; Apichart Panichkul1; Sudsakom Inthidech1; Narong Akkarapattanaagoon1; Usanee Kitambahorn1; 1Suranaree University of Technology; 2Mahasarakham University

11:40 AM Cancelled
Application of SiMo Series of Ductile Iron Materials in Turbocharger and Heat Treatment Process Optimization: Li Xu1; Shouxing Zhu2; 1Honywell Integrated Technology(China) Co., Ltd.

Professor K. K. Chawla Honorary Symposium on Fibers, Foams and Composites: Science and Engineering: Metal Matrix Composites/Ceramic Matrix Composites II
Program Organizers: Niklesh Chawla, Arizona State University; Aldo Boccaccini, University of Erlangen-Nuremberg; Gary Gladysz, Trelleborg USA; Pedro D. Portella, Federal Institute of Testing and Materials BAM

Thursday AM
Room: D234
Location: Columbus Con. Center

Session Chairs: Nik Chawla, Arizona State University; Burton Patterson, University of Florida

8:00 AM Invited
Double Cemented Carbide-Dual Composite: Burton Patterson1; Xin Deng1; Zak Fang1; 1University of Florida; 2Smith International; 3University of Utah

8:40 AM
Determination of Residual Stress in Functionally Graded WC-Co Cerments: Leila Tahvili1; Zhigang Zhang1; K. S. Ravi Chandran1; 1University of Utah

9:00 AM
Hollow Sphere Reinforced Magnesium Alloy Matrix Composites: John DeFoote1; Ben Schultz2; Nikhil Gupta3; Dung Luong4; Pradeep Rohatgi1; 1The Ohio State University; 2University of Wisconsin - Milwaukee; 3Polytechnic Institute of New York University - Brooklyn

9:20 AM
Microstructural and Mechanical Behavior of Al-Mg-Si Alloy Composite Reinforced with Carbon Nanotubes: Katsuyoshi Kondoh1; Hirohiko Fukuda1; Junko Umeda1; Bunshi Fugetsu1; 1Osaka University; 2Hokkaido University

9:40 AM Break

10:00 AM
Compression-Compression Fatigue Investigation of a Pd43Ni10Cu27P20 Metallic-Glass Foam: Gongyao Wang1; M. Demetriou1; J. Schramm1; Peter Lianes; W Johnson1; 1Univ of Tennessee

www.matscitech.org
10:20 AM Invited
High Temperature Stable Geopolymer Composites: Waltraud Kriven1; Timothy Dietz2; 'University of Illinois at Urbana-Champaign

11:00 AM Invited
Implementation Challenges for Sintered Silicon Carbide Fiber Bonded Ceramic Materials for High Temperature Applications: Mrityunjay Singh; 'Ohio Aerospace Institute, NASA Glenn Research Center

11:40 AM
Effect of Age-Hardening on Dry Sliding Wear Behaviour of Mushy State Rolled
In-Situ Al-4.5Cu-5TiB2 Composite
: Krishnan Pavitra1; Rahul Mitra1; 'Indian Institute of Technology

Solution-Based Processing for Ceramic Materials: Solution Deposition, Assembly, and Patterning of Functional Films and Structures
Program Organizer: Geoff Brennecka, Sandia National Laboratories

Thursday AM
Room: C111
October 20, 2011
Location: Columbus Con. Center

Session Chair: Geoff Brennecka, Sandia National Laboratories

8:00 AM Invited
Functional Oxide Thin Films for Energy Efficient Devices by Chemical Solution Deposition: Theodor Schneller1; 'RWTH Aachen

8:20 AM Invited
Low Temperature Ferroelectric Thin Films: The Potential of the Novel Technology of Photochemical Solution Deposition: M.LOURDES CALZADA1; INIGO BRETOS1; RICARDO JIMENEZ1; 'CONSEJO SUPERIOR DE INVESTIGACIONES CIENTIFICAS

8:40 AM Invited
Solution Processing of Perovskite Thin Films for Optimized Functional Properties: Barbara Malic1; Sebastjan Glinsek1; Alja Kupec1; Elena Tchernychova1; Marija Kosec1; 'Jožef Stefan Institute

9:00 AM
Spin Sprayed Nickel Copper Manganite Films for Thermal Imaging: Song Won Ko1; Jia Li1; Myoung-yun Lee1; Thomas Jackson1; Nikolas Podraza1; Elizabeth Dickey1; Susan Trolier-McKinstry1; 'Pennsylvania State University; 'North Carolina State University

9:20 AM
Chemical Solution Deposition of Lead Free (K0.5Na0.5)NbO3 Piezoelectric Thin Films: Alja Kupec1; Elena Tchernychova1; Barbara Malic1; Marija Kosec1; 'Jožef Stefan Institute

9:40 AM Break

10:00 AM
Curing Behavior in Photopolymerizable Ceramic Suspensions: Susan Gentry1; John Halloran1; 'University of Michigan

10:20 AM Invited
Direct Patterning of Nano-Structured Ceramics from Solution: Differences from Conventional Printing and /or Lithographic Methods: Masahiro Yoshimura1; Nobuhiko Matsushita2; '1(1) Tokyo Institute of Technology, Japan and (2) National Cheng Kung University, Taiwan; 'Tokyo Institute of Technology

10:40 AM Invited
Construction of Highly Ordered Nanofilms through Langmuir-Blodgett Deposition of Oxide Nanosheets: Minoru Osada1; Takayoshi Sasaki1; 'National Institute for Materials Science

11:00 AM
Bottom-Up Evolution of BaTiO3 and SrTiO3 Nanocubes in Ordering Structure: Ken-ichi Minuma1; Feng Fang1; Kazumi Kato1; Hiroaki Imai1; Satoshi Wada1; Hajime Haneda1; Makoto Kuwahara1; 'National Institute of Advanced Industrial Science and Technology; 'Keio University; 'University of Yamanashi; 'National Institute for Materials and Science; 'Kyushu University

11:20 AM
Synthesis and Characterization of Phase–Change Nanowires Confined in Periodic Mesoporous Silica: Chandrasiri Ihalawela1; Martin Kordeschi1; Gang Chen1; 'Ohio University
11:40 AM Invited
Microstructural Evolution in Six Fe-Si Alloys under Different Hot and Cold Rolling Conditions: Dagoberto Silva; Martha Patricia Guerrero Mata; Yvan Houbertz; Rafael Colás; Jesus Alejandro Sandoval; Faculty of Ingeniería Mecánica y Eléctrica (FIME) - Universidad Autónoma de Nuevo León (UANL); FIME-UANL.

8:20 AM Effects of Cooling Rate on the Iron Loss and Microstructure of High Silicon Steels: Hee-jong Jung; Manho Na; Sang-Beom Kim; Jongryoul Kim; hanyang university; Korea Electric Power Research Institute.

9:00 AM A New Analytical Technique for Heat Treatment and Electroplating Process Control: GD-OES (Glow Discharge Optical Emission Spectrometry): Philippe Hanault; HORIBA Scientific

9:20 AM Effect of Austenitizing Temperatures on Hardness of Two Chromium Steel Quenched in Sea Water by Unsteady State Computer Simulation: Abdimanam Elmamary; Badrl Omar; University [UTHM], Patu Bahat, Malaysia.

9:40 AM Break

10:00 AM Four-Point Fatigue of Low Carbon Steels with Different Microstructures: Xiucheng Li; Linghui Du; Wei Wen; Chengjia Shang; Tongguang Zhai; University of Science and Technology Beijing.

10:20 AM Effects of Continuous Annealing Process on Microstructures and Properties of C-Mn-Si Bearing Cold-Rolled TRIP Steel: Wang Lihui; Wuhan Iron and Steel(Group)Corp.

10:40 AM The Influence of Modification on Structure and Properties of Rapid Steel: Borys Sereda; Sergey Sheyko; Jurij Belokon; Dmytro Sereda; ZSEA.

11:00 AM Cancelled
Finishing Delivery Temperature Control for Non-Oriented Silicon Steel Strip in 1880mm: zou hongliu; Xu Jiachun; Bao shan Iron & steel Co., Ltd. Shanghai, China.

11:20 AM Cancelled
A Thermodynamic Study on the Mn-Fe-Si-C System: M.K. Paek; Hanyang University.

Structural Materials for Aerospace and Defense: Challenges and Prospects: Magnesium Alloys
Program Organizer: Roumiana Petrova, New Jersey Institute of Tech
Thursday AM Room: D242/243
October 20, 2011 Location: Columbus Con. Center
Session Chair: Andrzej Wojcieszynski, Al Powder Metals

8:00 AM Invited
Mechanical Properties of Sensitive 5083 Al-Mg Structural Alloys: Ronald Hote; Peter Pao; Robert Bayles; Thomas Longazel; Ramasis Goswami; Naval Research Laboratory; SAIC.

8:40 AM Microstructural Influence on Impact Properties of a Friction Stir Processed Mg-Y-RE Alloy: Kumar Kandasamy; Sushanta Panigrahi; Rajiv Mishra; Rick DeLorme; Bruce Davis; Ryan Howell; Kyu Cho; Centre of Friction Stir Processing and Department of Materials science and Engineering Missouri University of Science & Technology, Rolla, MO 65409; Magnesium Elektron North America Inc., Madison, IL 62060; U.S. Army Research Laboratory, Aberdeen Proving Grounds, MD 21005

9:00 AM Effect of Texture on the Formability and Mechanical Anisotropy of Severe Plastically Deformed Magnesium Alloys: Sonia Modarres-Razavi; David Foley; Majid Al-Mahari; Ibrahim Karaman; Karl Hartwig; Texas A&M University; Sultan Qaboos University.

9:20 AM Low-Melting Point Metal Effects in the Ageing Response of Al-Mg-Si Alloys: Manuel Marya; Schummer

9:40 AM Break

Structural Materials for Aerospace and Defense: Challenges and Prospects: Nickel-Based and New Alloys
Program Organizer: Roumiana Petrova, New Jersey Institute of Tech
Thursday AM Room: D242/243
October 20, 2011 Location: Columbus Con. Center
Session Chair: Andrzej Wojcieszynski, Al Powder Metals

10:00 AM The Impact of γ' Precipitate Evolution on the Mechanical Properties of the Low-Solvus-High-Refractory (LSHR) Nickel Base Superalloy: Samuel Kuhn; G.B. Viswanathan; J.S. Tiley; H.L. Fraser; The Ohio State University; Air Force Research Laboratory.

10:20 AM Open-Cellular Co-Base and Ni-Based Superalloys Fabricated by Electron Beam Melting: K. Amato; L.E. Murr; S. J. Li; Y. X. Tian; E. Martinez; F. Medina; University of Texas at El Paso; Institute of Metal Research; W.M. Keck Center for 3D Innovation

10:40 AM Study of Precipitated Phases in an Fe-Ni-Co Base Superalloy: Gabriela González; Fernando González; Martha Patricia Guerrero; Maribel de la Garza; Yvan Houbertz; Universidad Autónoma de Nuevo León; University of Ghent.
Synthesis, Properties and Applications of Noble Metal Nanostructures: Fabrication and Characterization of Noble Metal Nanoparticles

Program Organizers: Ri-ichi Murakami, The University of Tokushima; Xiaoping Song, Xi’an Jiaotong University; Bingjun Ding, Xi’an Jiaotong University; Hong Yang, University of Rochester

Thursday AM  Room: C115
October 20, 2011  Location: Columbus Con. Center

Session Chair: Xiaoping Song, Xi’an Jiaotong University; TaeGyu Kim, Pusan National University

8:00 AM Introductory Comments Prof. Ri-ichi Murakami

8:20 AM Invited Nanoparticle Aggregation-Based Growth of Mesocrystals in Solution: Jixiang Fang1; Xiaoping Song2; Bingjun Ding3; Xi’an Jiaotong University

8:40 AM Untitled: Boris Bokhonov2; Institute of solid state chemistry SB RAS

9:00 AM Nanoporous Ag Prepared by Electrochemical Dealloying of Melt-Spun Cu-Ag-Si Alloys: Guijin Li1; Feifei Lu2; Leping Zhang1; Zhango Sun3; Xiaoping Song4; Bingjun Ding5; Zhimao Yang6; Xi’an Jiaotong University

9:20 AM Thermal Stability of Nanopores in Palladium Alloys for Hydrogen Storage: David Robinson1; Markus Ong2; Benjamin Jacobs3; Ilke Arslan4; Sandia National Laboratories; Protochips; University of California, Davis

9:40 AM Break

10:00 AM Invited Study on Transparent Conductive Properties of ZnO/Ag/ZnO/PET Multilayer Films: Pangpang Wang1; Xiaojing Yu2; Dongyan Zhang3; Xiaoping Song4; Ri-ichi Murakami5; The University of Tokushima; Xi’an Jiaotong University

10:20 AM Surface Structure and Property of Colloidal Metal Nanoparticles: Miao Shi1; Alison Elder2; Hyun Soo Kwon3; Alan Friedman4; Zhenmeng Peng5; Hong Yang6; University of Rochester

10:40 AM Comparison of Characteristics of Nanoparticles by Physical and Chemical Fabrication Techniques: Chun-Hsien Wu1; Mitsuhiro Murayama2; William Reynolds Jr.3; Virginia Tech

11:00 AM Hierarchical Growth of Gold Threefold Mesocrystals: Yunxia Zhang1; Zhimao Yang2; Shaodong Sun3; School of Science, MOE Key Laboratory for Non-Equilibrium Synthesis and Modulation of Condensed Matter, State Key Laboratory for Mechanical Behavior of Materials, Xi’an Jiaotong University

11:20 AM Concluding Comments Prof. TaeGyu Kim

Titanium Processing and Applications: Session I

Program Organizer: Rodney Boyer, Boeing Company

Thursday AM  Room: D232
October 20, 2011  Location: Columbus Con. Center

Session Chair: To Be Announced

8:00 AM A Novel Approach for Fabrication of a Titanium Aerospace Structure by Friction Stir Welding: Christopher Well1; Jay Marshall2; Landon Lucke3; Bharat Jasti4; Michael West5; Damon Fick6; South Dakota School of Mines and Technology; Arbegast Advanced Materials Processing and Joining Laboratory (AMP)

8:20 AM Composite Titanium Powder Coated with Carbon Black Particles Using Wasted Black Ink and Mechanical Properties of Its Extruded Material: Takarani Minoto1; Nozomi Nakanishi2; Nokosode Thrujerirapong3; Junko Umeda4; Katsuyoshi Kondoh5; Osaka University

8:40 AM Development of 946 and 945-946 Titanium Alloys Using a Low Cost TiH2 Powder Feedstock: Vinesh Joshi1; Curt Lavender2; Vladimir Moxon3; Volodymyr Duz4; Eric Nyberg5; Pacific Northwest National Laboratory; ADMA Products, Inc.

9:00 AM The Cold Compaction and Sintering Study of Two Low-Cost Ti and Ti Alloy Powders: Wei Chen1; Yukinori Yamamoto2; Thomas Muth3; William Peter4; Michael Clark5; Sarma Gorti6; Adrian Sabau7; Stephen Nunn8; Jim Kiggans9; Craig Blue10; James Williams11; Brian Fuller12; Kamal Akhtar13; Oak Ridge National Laboratory; Ohio State University; Cristal US, Inc./International Titanium Powder

9:20 AM Static and Fatigue Performance of Friction Stir Welded Titanium I-Beams: Rahul Sharma1; Damon Fick2; Michael West3; Bharat Jasti4; South Dakota School of Mines and Technology; Arbegast Advanced Materials Processing and Joining Laboratory (AMP)

9:40 AM Break

10:00 AM Corrosion and Wear Investigation of Diode Laser Surface Treated Ti6Al4V Alloy: Sanmar Kalita1; Benjamin Waldera2; Advanced Engineered Materials Center, University of North Dakota

10:20 AM Recent Advances in Surface Hardening of Titanium with an Emphasis on Boriding and Its Potential Applications: Biplab Sarma1; K. S. Ravi Chandran2; University of Utah

10:40 AM Development of Low-Melting Ti-Zr-Ni(Cu) Filler Alloys for Brazing of Titanium: Dong-Myoung Lee1; Gerhard Welsch2; Yong-Hwan Kim3; Case Western Reserve University; KITECH

11:00 AM Tribological Behavior of Oxygen Diffusion Treated Ti-6Al-4V with Different Cooling Rates: Dinesh Bansi1; Peter Blau2; Oak Ridge National Laboratory
Amorphous Materials: Common Issues within Science and Technology: Metallic Glass I
Program Organizer: Pierre Lucas, University of Arizona

Thursday PM
Room: C211
October 20, 2011
Location: Columbus Con. Center

Session Chair: Michael Atzmon, University of Michigan

2:00 PM
Medium Range Order in Oxide and Metallic Glasses: Dan Miracle1; Brandon Reese2; John Perkins3; Philip Parilla4; 1AF Research Laboratory; 2National Renewable Energy Laboratory

2:20 PM
Virtual Design of Metallic Glass Alloys: Logan Ward5; Peter Tsai5; Katharine Flores5; Wolfgang Windl5; 1The Ohio State University

2:40 PM
Colloids as a Proxy for Binary Metallic Glasses: Visualizing Real Space Structure: Ryan Kramb1; Katherine Jensen1; Daniel Miracle1; 1Air Force Research Laboratory; 2Harvard University

3:00 PM
Atomistic Modeling of Cu-Zr-Ti Bulk Metallic Glass: Anupriya Agrawal1; Logan Ward1; Katharine Flores1; Wolfgang Windl1; 1The Ohio State University

3:20 PM Break

Amorphous Materials: Common Issues within Science and Technology: Metallic Glass II
Program Organizer: Pierre Lucas, University of Arizona

Thursday PM
Room: C211
October 20, 2011
Location: Columbus Con. Center

Session Chair: Dan Miracle, AF Research Laboratory

3:40 PM
An Atomically Quantized Hierarchy of Shear Transformation Zones in a Metallic Glass: JongDu Joo6; Dongchan Jang7; Michael Atzmon1; 1University of Michigan; 2California Institute of Technology

4:00 PM
Angular Correlations in Coherent Electron Nanodiffraction from a Bulk Metallic Glass: Jinwoo Hwang1; Paul Voyles1; 1University of Wisconsin, Madison

4:20 PM
Simulating the Deformation of Metallic Glasses Using a Mesoscale Kinetic Monte Carlo Model: Pengyang Zhao1; Ju Li1; Yinzhi Wang1; 1The Ohio State University; 2University of Pennsylvania

4:40 PM
Homogeneous Flow in Bulk Metallic Glass at Room Temperature: Hua Guo1; Jingwei Deng1; Manling Su1; 1Shenyang National Laboratory for Materials Science, Institute of Metal Research, Chinese Academy of Sciences; 2Beijing University of Technology

Controlled Synthesis, Processing and Applications of Structural and Functional Nanomaterials: Nanomaterial Applications
Program Organizers: Kathy Lu, Virginia Tech; Xudong Wang, University of Wisconsin - Madison; Eugene Olevsky, San Diego State University; Gurpreet Singh, Kansas State University; Nitin Chopra, The University of Alabama; Pu-Xian Gao, University of Connecticut; Jianyu Liang, Worcester Polytechnic Institute

Thursday PM
Room: C123
October 20, 2011
Location: Columbus Con. Center

Session Chair: Jianyu Liang, Worcester Polytechnic Institute

2:00 PM Invited
The Feasibility of Manufacturing Nanocomposite Materials by Introducing Nano-Sized Titanium Carbide Particles into Molten Aluminum Alloys: A.M. Nabawy1; Makhloof Makhlouf1; 1WPI

2:40 PM
Aerosol Jet® Material Deposition for High Resolution Printed Electronic Applications: Michael O’Reilly1; Michael Renn1; Richard Grylls1; 1Optomec Inc.

3:00 PM
Synthesis of TiO2/SnO2 Bifunctional Nanocomposites: Huaming Yang1; Chengli Huo1; 1Central South University

Failure Analysis and Prevention: Fatigue and Fracture
Program Organizers: Andrew Spowage, The University of Nottingham, Malaysia Campus; Tom Ackerson, IMR Metallurgical Services; Larry Hanke, Materials Evaluation and Engineering, Inc

Thursday PM
Room: D235
October 20, 2011
Location: Columbus Con. Center

Session Chairs: Nick Cherosil, Rolls-Royce Corporation; Daniel Benac, Baker Engineering and Risk Consultants, Inc.; Erhan Ulvan, Acreun Group Inc.

2:00 PM
Fatigue in the Aerospace Industry - Is it HCF or LCF?: Nicholas Cherosil1; 1Rolls-Royce Corporation

2:20 PM
Failure Analysis of Ruptured CNG Cylinder: RAM PRASAD1; 1IIT BOMBAY

2:40 PM
Reverse Engineered Forging Fatigue Failure: Edward Vojcak1; 1A. Finkl & Sons

3:00 PM
Architectural Failure of an Historical False Ceiling in a High School Building: Giovanni Barla1; Pier Giorgio Debernardi1; Donato Firrao1; Paolo Matteis1; 1Politecnico di Torino
Fatigue and Microstructure: A Symposium on Recent Advances: Very High Cycle Fatigue

Program Organizers: Amit Shyam, Oak Ridge National Laboratory; Sushant Jha, Air Force Research Laboratory/Universal Technology Corporation; Michael Caton, US Air Force Research Laboratory

Thursday PM  Room: D240/241  October 20, 2011  Location: Columbus Con. Center

Session Chairs: Claude Bathias, Paris X Nanterre University; Martina Zimmermann, Universität Siegen

2:00 PM  Assessing the Role of Microstructure Variability in the Very High Cycle Fatigue Behavior of Structural Alloys: J. Wayne Jones1; 1University of Michigan

2:40 PM  Characterization and Simulation of the Damage Accumulation in the Very High Cycle Fatigue (VHCF) Regime in a Metastable Austenitic Stainless Steel Based on the Resonant Behavior: Andrei Grigorescu1; Philipp Hilgendorff2; Martin Kuebbeler1; Martina Zimmermann1; Claus-Peter Fritzzen1; Hans-Juergen Christ1; 1Universitas Siegen

3:00 PM  Evolution of Cyclic Plastic Deformation in Steel, up to Initiation at 109 Cycles: Claude Bathias1; 1University Paris Pουest

3:20 PM  Break

3:40 PM  Influence of Microstructure on VHCF Lifetime under Constant and Variable Amplitude Loading Condition: Herwig Mayer1; 1BOKU

4:20 PM  Localization of crack initiation sites during fatigue of an austenitic-ferritic duplex steel in the high and very high cycle fatigue (HCF/VHCF) regime: Benjamin Doenges1; Helge Knobbe1; Philipp Koester1; Claus-Peter Fritzzen1; Hans-Juergen Christ1; Ulrich Krupp1; 1Universitas Siegen; 2Hochschule Osnabruce

4:40 PM  Effect of Microstructure Evolution on the High Temperature, High Cycle Fatigue Properties of Two Ni-Based Superalloys: Govindarajan Muralidharan1; Rick Battiste1; Edward Kenik1; James Bentley1; 1Oak Ridge National Laboratory

5:00 PM  Very High Cycle Fatigue (VHCF) Behavior of Notched Ultrasonic Fatigue Samples from Precipitation-Hardened Aluminum Alloys and Welded Joints: Martina Zimmermann1; Martin Cremer1; Hans-Juergen Christ1; 1Universitas Siegen

Session Chair: Mikhail Holcomb, West Virginia University

Interfaces, Grain Boundaries and Surfaces from Atomistic and Macroscopic Approaches -- Fundamental and Engineering Issues: Interfaces and Charge Storage

Program Organizers: Wayne Kaplan, Technion - Israel Institute of Technology; Paul Wynnblatt, Carnegie Mellon University; Dominique Chatain, Centre Interdisciplinaire de Nanoscience de Marseille; Mikhail Holcomb, West Virginia University

Thursday PM  Room: C120  October 20, 2011  Location: Columbus Con. Center

2:00 PM  Invited
Robust Isothermal Electric Control of Exchange Bias Aat Room Temperature: Christian Binek1; Xi He1; Ning Wu1; A. Wysocki1; T. Komesu1; U. Lanke1; A. Caruso1; E. Vescovo2; K. Belashchenko1; P. Dowben1; 1University of Nebraska-Lincoln; 2Canadian Light Source Inc.; 3University of Missouri; 4Brookhaven National Laboratory

2:20 PM  Invited
Stabilizing Novel Ground States at Complex Oxide Interfaces: Yuri Suzuki1; Franklin Wong2; Chunyong He3; Seung-Hyub Baek1; Ho Wan Jang3; Chang Beom Eom1; 1UC Berkeley & LBNL; 2UC Berkeley; 3University of Wisconsin, Madison

2:40 PM  Molecular Dynamics Study of Thermal Transport at Copper Phthalocyanine-Metal Interface: Chen Shao4; Yansha Jin1; Max Shtein1; Kevin Pipe1; John Kieffer1; 1University of Michigan

3:00 PM  Invited
Linear Dichroism Dependence on Ferroelectric Polarization: Srinivas Polisetty1; Jinling Zhou1; Disheng Chen1; Lane Martin1; Andreas Scholl1; Mikhail Holcomb1; 1West Virginia University; 2University of Illinois at Urbana-Champaign, Urbana; 3Advanced Light Source

3:20 PM  Break

3:40 PM  Invited
Materials by Design: A Magnetization Graded Multiferroic Composite for Ultra Sensitive Magnetic Field Sensors: Sanjay Mandal1; Gollapudi Sreenivasulu1; Vladimir Petrov2; Gopalan Srinivasan3; 1Oakland University

4:00 PM  Stability and Interfacial Reactions in Pt Catalysts Based on BaCeO3 Perovskite Oxide Supports: Minhao Fang1; Michael Katz1; Shuyi Zhang1; Hongjie Wang1; Mingjie Xu1; George Graham1; Xiaoqing Pan1; 1University of Michigan

4:20 PM  Preparation of High Coercive Nd-Fe-B Sintered Magnet with High Magnetic and Mechanical Properties by Optimizing Grain Boundary Structure: Jin Woo Kim1; Se Hoon Kim1; Sun Yong Song1; Young Do Kim1; 1Hanyang University
2:00 PM Invited
Mechanical Properties of Bulk Nanostructured 7075 Al Alloy Prepared by Severe Plastic Deformation: Yonghao Zhao1; Ying Li1; Xianzhao Liao1; Troy Topping1; Ruslan Z. Valiev2; Yuntian Zhu4; Enrique J. Lavernia3; 1University of Florida; 2Institute of Solid State Physics, Russian Academy of Sciences; 3University of Idaho; 4North Carolina State University

2:20 PM Invited
The Role of Crystallography and Nanostructures on Friction in FCC Metals: Somuri Prasad1; Joseph Michael1; Corbett Battaile1; Paul Kotula1; Bhaskar Majumdar1; Sandia National Laboratories; New Mexico Institute of Mining and Technology

2:40 PM
Microstructure and Texture Evolution in Metals and Alloys during Intense Plastic Deformation: Terry McNelley2; Alexander Zhilyaev2; Oscar Ruano3; Srinivasan Swaminathan3; Naval Postgraduate School; CENIM-CSIC and IMSP, RAS; GE Global Research

3:00 PM
Accelerated Diffusion and Phase Transformations Driven by the Severe Plastic Deformation: Boris Straumal1; Brigitte Baretszky2; Andrei Mazilkin3; Svetlana Protasova1; Eugen Rabkin2; Sergei Dobatkin4; Ruslan Valiev5; 1Karpov Institute of Metallurgy and Materials Science, Russian Academy of Sciences; 2Institute of Solid State Physics, Russian Academy of Sciences; 3Department of Materials Engineering, TECHNION – Israel Institute of Technology; 4A.A. Baikov Institute of Metallurgy and Materials Science, Russian Academy of Sciences; 5Ufa State Aviation Technical University

3:20 PM
High Strength Ductile Glassy NanoMaterial Microwires: Alla Sergeeva1; Jason Walleser1; Brian Meacham1; Daniel Branagan1; The Nanosteel Co

3:40 PM Break

4:00 PM
Synthesis, Structure and Mechanical Properties of FCC Based Nanostructured Alloys: Koteswararao Rajulapati1; Sreedevi Varam1; Sreelatha K1; Chandra Shekar P1; B. S. Murty1; Bhanu Sankara Rao K1; 1School of Engineering Sciences and Technology, University of Hyderabad; Hyderabadab 500046 INDIA; 2Department of Metallurgical and Materials Engineering, IIT Madras, Chennai 600036 INDIA

4:20 PM
Harnessing Bulk Nano-Materials for High Pressure High Temperature (HPHT) Hostile Downhole Environments: Indranil Roy1; Colin Longfield2; Rashmi Bhavsar3; Andrezej Anderko3; Enrique Lavernia4; Yuntian Zhu5; Farghali Mohamed5; Schlumberger; 2University of California; North Carolina State University

4:40 PM
Structures and Properties of Higher Pressure Combustion Driven Compacted Nanocomposite Cryomilled Aluminum Alloy 7090 with Carbon Nanotubes: Karthik Nagarathnam1; Dennis Massey1; Charles Le2; Rabindra Mahapatra3; Robert Taylor4; UTRON Kinetics LLC; NAVAIR

5:00 PM
Aluminum MComP a Lightweight High Stiffness Alternative to AlBeMet: Brian Doud1; Powdermet Inc.

5:20 PM
Influence of the Subsequent Annealing on Nanostructured Steel Fabricated by Equal Channel Angular Pressing: Maria Borisova1; Sofia Yakovleva1; Sussana Makharova1; Institute of physical-technical problems of materials science, INP RAS; 2Russian Academy of Sciences; 3ursulastrummetals; 4Karlsruhe Institute of Technology (KIT), Institute for Advanced Materials, Karlsruhe; 5Dayalbagh Educational Institute

Materials Degradation in Alternative Energy Systems: Session I

Thursday PM
Room: C223
Location: Columbus Con. Center

Session Chair: Sean Brossia, DNV Columbus

2:00 PM Introductory Comments

2:20 PM
Creep Studies of Modified 9Cr-1Mo Steel for Very High Temperature Reactor Pressure Vessels: Zachary Wuthrich1; Triratna Shrestha1; Indrajit Chari1; Karl Rink1; Mehdi Basirat1; Gabriel Potirniche1; University of Idaho

2:40 PM
Effect of Day/Night Cycle on the Oxidation Behavior of Fe and Ni-Based Alloys: Sebastien Dryepondt1; Bruce Pint1; oornl

3:00 PM
Effect of Environment on the Oxidation Behavior of ODS FeCrAl Alloy at 1100°C: Emmanuel Essuman1; Kinga Unocic1; Sebastien Dryepondt1; oornl

3:20 PM Break

3:40 PM
Long-Term Environmental Degradation of a Thin Foil Primary Surface Recuperator Alloy: Wendy Matthews1; Karren More2; Capstone Turbine Corporation; Oak Ridge National Laboratory
4:00 PM  Synthesis and Characterization of Spinel-Supported Nanoparticulate Metal Catalysts:  Katelyn Glass1; Brenden Hill1; Scott Mistle; Scott Miture1; 1Alfred University

4:20 PM  Embrittlement of Pipeline Steels by Gaseous and Cathodic Hydrogen:  Richard Ricker1; David Pitchure1; Andrew Sifika1; Nicholas Nanninga1; David McColskey1; R. Condon1; 2NIST

4:40 PM  Return On Investment of Structural Health Monitoring Systems for Wind Turbine Blades:  Davion Hill1; 1Det Norske Veritas

5:00 PM  Concluding Comments

Materials for Nuclear Waste Disposal and Environmental Cleanup: Vitrification and Glass Characterization for Nuclear Materials Disposal
Program Organizer: Elizabeth Hoffman, Savannah River National Laboratory

Thursday PM  Room: C226  Location: Columbus Con. Center

Session Chairs:  Kevin Fox, Savannah River National Laboratory; Fabienne Johnson, Savannah River National Laboratory

2:00 PM  Effect of Moisture on the Self-Healing of Vitreous Silica Under Irradiation: Glenn Lockwood1; Stephen Garofalini1; 1Rutgers, the State University of New Jersey

2:20 PM  Nepheline Crystallization in Nuclear Waste Glasses: Progress toward Acceptance of High-Alumina Formulations:  John McClay1; Carmen Rodriguez1; Mike Schweiger1; Pavel Hrma1; John Vienna1; 1Battelle Pacific Northwest National Laboratory

2:40 PM  Vitrification of DOE Problematic Wastes Using Iron Phosphate Glasses:  C.W. Kim1; D.E. Day1; C.L. Schwartz1; K. Barr1; T.E. Day1; R.K. Brow1; C.S. Ray1; 1MO-SCI Corporation; 2Missouri University of Science and Technology

3:00 PM  Molybdenum Oxide Behavior in French HLW Nuclear Glass: Current State of Knowledge:  Sophie Schuller1; Dominique de Ligny1; Scott Kroecker1; Bruno Penelon1; Jacques Rogetz2; Magali Magnin3; Ian Farnan1; 1CEA/DEN/SECM/LDMC; 2Laboratoire de Physico Chimie des Matériaux Luminescents; 3Department of Chemistry; 1CNRS - Laboratoire IM2NP, Université Paul Cézanne Aix Marseille III; 2CEA/DEN/ SECM/LMPA; 3Department of Earth Sciences

3:20 PM  Break

3:40 PM  Analysis of Small-Scale Melter Run Samples from the DOE-EM Phosphate Glass Development and Demonstration Task:  Fabienne Johnson1; 1Savannah River National Laboratory

4:00 PM  Empirical Model for Formulation of Crystal-Tolerant HLW Glasses:  Josef Matyas1; John Vienna1; Alyssa Arrigoni1; Carmen Rogriquez1; 1Pacific Northwest National Laboratory

4:20 PM  Incorporation of High TiO2 Concentrations in High Level Nuclear Waste Glasses:  Kevin Fox1; Fabienne Johnson1; Thomas Edwards1; 1Savannah River National Laboratory

4:40 PM  Modeling and Predicting Nepheline Crystallization in Nuclear Waste Glasses: Jake Amoroo1; 1Savannah River National Laboratory

5:00 PM  Cancelled

Sulfate Retention in High Level Nuclear Waste Glasses: Amanda Billings1; Kevin Fox1; 1Savannah River National Laboratory

Measurements and Modeling of Advanced Automotive and Structural Materials at Intermediate and High Strain Rates: Intermediate-to-High Rate Modeling and Measurement
Program Organizer: Steven P. Mates, National Institute of Standards and Technology

Thursday PM  Room: D231  Location: Columbus Con. Center

Session Chair:  Steven Mates, NIST

2:00 PM  Invited Development of A Plasticity Model Using Generic Yield Surface Approach:  Cing-Dao (Steve) Kau1; Paul DuBois1; Kivanc Sengoz2; 1The George Washington University

2:40 PM  Invited Measurements and Modeling of Advanced Automotive and Structural Materials at Intermediate and High Strain Rates: Amos Gilat1; 1Ohio State University

3:20 PM  Break

3:40 PM  Comparison of Constitutive Model Parameters of Al 6061-T6 for Numerical Simulation of Electromagnetic Tube Compression:  Jianhui Shang1; Larry Wilkerson1; Steve Hatkevich1; 1American Trim LLC

4:00 PM  High Plasticity and Substantial Deformation in Nanocrystalline NiFe Alloys under Dynamic Loading:  Yonghao Zhao1; S. Cheng1; Y.Z. Guo1; Q.M. Wei1; X.-L. Wang1; Y. Ren1; P.K. Liaw1; E.J. Lavernia1; 1University of California Davis; 2University of Tennessee, Knoxville, USA; 3University of North Carolina, Charlotte; 4Oak Ridge National Laboratory, Oak Ridge; 5Argonne National Laboratory, Argonne

4:20 PM  Dynamic Fracture Characterizations of AHSS Beams with Notches under Impact Loading:  Hong Zhu1; Benda Yan1; Bui-Van Antoine1; Gang Huang1; Jayanth Chintamani1; 1ArcelorMittal

4:40 PM  The Strain Rate Effect on Tensile Properties and Fracture Strain of Advanced High Strength Steels:  Gang Huang1; Benda Yan1; Hong Zhu1; Jayanth Chintamani1; 1ArcelorMittal USA LLC

5:00 PM  Compression Behavior and Energy Absorption of Aluminum Alloys for Automotive Application:  Simbachalam Bade1; Natarajan R2; LakshmanaRao C1; 1Indian Institute of Technology-Madras; 2Tube Investments of India
Microwave Processing of Materials: Microwave Technology

Program Organizers: Morsi Mahmoud, Karlsruhe Institute of Technology (KIT); Guido Link, Karlsruhe Institute of Technology

Thursday PM Room: C221 Location: Columbus Con. Center

Session Chairs: Guido Link, Karlsruhe Institute of Technology; Morsi Mahmoud, Karlsruhe Institute of Technology

2:00 PM
Continuous Microwave Furnaces for Industrial-Scale Sintering, Calcinating and Drying Applications: Karvella (Karl) Cherian; Michael Kirksey; Henry Frese; Milton Mathis; Spheric Technologies Inc.; M-Wave Consulting

2:20 PM
Microwave Furnace for Pyrolysis of Electronic Components Finalized to Precious Metals Recovery Completed with Treatment for Smoke Emission: mauro coluccii; consultant

2:40 PM
Industrial-Scale Microwave Sintering of Zirconia Based Dental Restorations: Karvella (Karl) Cherian; Michael Kirksey; Sandip Dey; Spheric Technologies Inc.; Arizona State University

Nanotechnology for Energy, Healthcare and Industry: Session IV

Program Organizers: Gary Pickrell, Virginia Tech; Suveen Mathaudhu, U.S. Army Research Office; Wolfgang Sigmund, University of Florida; Jud Ready, Georgia Tech; George Wei, Osram Sylvania; Ke Wang, Virginia Tech; Zhiwei Shan, Jiaotong University; Alpesh Shukla, Lawrence Berkeley National Laboratory; Nitin Chopra, The University of Alabama; Sudipta Seal, Univ of Central Florida; Navin Manjouran, Siemens Corporation; Julia Greer, California Institute of Technology

Thursday PM Room: C125 Location: Columbus Con. Center

Session Chair: Alpesh Shukla, Lawrence Berkeley National Laboratory

2:00 PM
Nanotechnology: A Business Perspective: Scott Livingston; Livingston Group of Companies LLC and Livingston Securities LLC

2:40 PM
Random-Hole Optical Fiber Sensors for Industrial Applications: Ke Wang; Gary Pickrell; Virginia Tech

3:00 PM
Nickel Oxide Nanoplates for Lithium Ion Batteries: A Study of Conversion Reactions Using Electron Energy Loss Spectroscopy: Alpesh Shukla; Jordi Cabana; Lawrence Berkeley National Laboratory

3:20 PM Canceled

Exploiting Interfacial Synergy: Energy Applications & Nanomaterials: Randy Vander Wal; Penn State University

3:40 PM Break

4:00 PM
Stabilization of Nanoparticles under Biological Conditions Using Peptoid Oligomers: David Robinson; George Buffelen; Mary Langham; Ronald Zuckerman; Sandia National Laboratories; Lawrence Berkeley National Laboratory

4:20 PM
Surfactant Effects on Dispersion Characteristics of Copper-Based Nanofluids for Thermal Transfer Applications: Michael Saterlie; Huseyin Sahin; Barkan Kavlicoglu; Yanning Liu; Olivia Graeve; Alfred University; Advanced Materials and Devices, Inc.

4:40 PM
Nanomaterials: Innovation (R&T&I) Roadmaps - 2020 Keynote Lecture: Marcel van de Voorde; University of Technology DELFT NL

5:00 PM
Dye-Sensitized Solar Cells Based on SnO2-Doped TiO2Photoelectrodes: Seok-Min Yong; Do Kyung Kim; Korea Advanced Institute of Science and Technology

Next Generation Biomaterials: Biomaterials Engineering

Program Organizers: Roger Narayan, Univ of North Carolina & North Carolina State Univ; Kaipana Katti, North Dakota State University; Kajal Mallick, University of Warwick; Vilupanur Ravi, California State Polytechnic University; Pomena; Varshni Singh, Louisiana State University

Thursday PM Room: C215 Location: Columbus Con. Center

Session Chair: Lucille Giannuzzi, L.A. Giannuzzi & Associates LLC

2:00 PM Invited
Multi-Signal FIB/SEM Tomography of Bone on Dental Implants: Lucille Giannuzzi; L.A. Giannuzzi & Associates LLC

2:20 PM Invited
PLGA Nanoparticles: A Versatile Platform for Drug Delivery: Cristina Sabliva; Carlos Astete; Nipur Patel; Kenneth Damann; LSU

2:40 PM
Fatigue Behavior of Open-Cellular Ti-6Al-4V Biomedical Prototypes Fabricated by Electron Beam Melting: Seojun Il; Yuxing Tian; Xuying Cheng; Yulin Hao; Rui Yang; Lawrence E. Murr; F. Medina; Institute of metal research, chinese academy of sciences; University of Texas at El Paso

3:00 PM
Deposition & Characterization of Electrochemically Induced Hydroxy-Apatite Coating: Gautam Gupta; Varshni Singh; Mukesh Kumar; Biomet Inc.; Louisiana State University; Biomet Inc.,

3:20 PM Break

3:40 PM
Human Fetal Liver Cell Culturing in Porous Hydroxyapatite/Hyaluronic Acid Composites: Anthony Finoli; Patrick Over; Eva Schmelzer; Jorg Gerlach; Ian Netteship; University of Pittsburgh; McGowan Institute for Regenerative Medicine

4:00 PM
Developing Specific Fluorescent Chemo-Sensors for Detecting Nitric Oxide: Eunhae Koo; Dong-sup Lee; Lan-Hee Yang; Ji Hye Lee; Sangil Hyun; Korea Institute of Ceramic Engineering & Technology

4:20 PM
Electrochemically Controlled Switching Properties in Bioinspired Polymer Nanocomposites: Aysegul Aygun; Larry Stephenson; Tom Mahle; Andrew Gewirth; U.S. Army Corps of Engineers; University of Illinois at Urbana
Thursday PM

4:40 PM
Fatigue Life of Hydroxyapatite Whisker Reinforced Polyaryletherketones: Timothy Conrad; Gabriel Converse; Ryan Roeder; University of Notre Dame

5:00 PM
Corrosion Resistance and Cytotoxicity of Degradable Metallic Implants for Orthopedic Applications: Puneet Gill; Norman Munroe; Amit Datye; Rupak Dua; Sharan Ramaswamy; 1Florida International University; 2University of Tennessee Knoxville

5:20 PM Canceled
Extruded Starch as Novel Shape-Memory Bioresorbable Device: Laurent CHAUNIER; Denis LOURDIN; Frédéric CHAUBET; Didier LETOURNEUR; Anne MEDDAHI-PELLE; INRA; INSERM

Periodic Cellular Materials: Current Status and Recent Progress: Gasarites, Foams, and Other Materials
Program Organizer: David Alexander, Los Alamos National Laboratory

Thursday PM Room: D233 Location: Columbus Con. Center

Session Chair: David Alexander, Los Alamos National Laboratory

2:00 PM
Fabrication of Porous Materials with Ordered Crystalline-Porous Structure by Gas-Eutectic Solidification: Lyudmyla Boyko; Acuren Group Inc.

2:20 PM
Bubble Growth, Detachment, and Encapsulation in a Solidifying Metal Matrix: Patrick Bowen; Joe Licavoli; Douglas Swenson; Michigan Technological University

2:40 PM
Process Variable Influences on Microstructures in Electroplated Copper/Graphite Composites: Amanda Sall; Anthony Tan; Northwestern University

3:00 PM Break

3:20 PM
Deformation Mechanisms in a Polymeric Cellular Composite with Porosity on Multiple Length-Scales: Juliana Bernal Ostos; Renaud Rinaldi; Galen Stucky; Frank Zok; University of California, Santa Barbara

3:40 PM
Compressive Properties of Low Relative Density Materials, Both Engineered and Random Structures: Carl Cadby; Edward Kober; Dana Dattelbaum; Chris Hammetter; Frank Zok; Los Alamos National Laboratory; UCSB

4:00 PM
Effect of Al2O3 Addition on Compressive Properties of Al Matrix Composite Foams: Morteza Mirzaei; Mostafa Alizadeh; Department of Materials Science and Engineering, International Center for Science, High Technology & Environmental Sciences

4:20 PM
Optimal Design of Periodic Cellular Stents Using Numerical Simulations: Sangil Hyun; Soojung Kim; Chang-Yeoul Kim; Korea Institute of Ceramic Engineering & Technology

Processing, Microstructure and Properties of Cast Irons and Cast and Forged Specialty Steels: Cast and Rolled Steels
Program Organizers: Srinath Viswanathan, University of Alabama; Stephanie Will, The Timken Company

Thursday PM Room: D142/143 Location: Columbus Con. Center

Session Chair: Stephanie Will, The Timken Company

2:00 PM
Examining Hot Tear Initiation in Steel Casting with Trial Validation and Process Simulation: Bob Puhakka; Sam Scott; Adi Sholapurwalla; Jianzheng Guo; Alloy Casting Inc.; ESI North America; ESI US R&D

2:20 PM
Researches Concerning Continuous Casting of Steels with Controlled Aluminium Content in Square Billets: Ilie Butnariu; Dana Butnariu; Ioana Butnariu; University POLITEHNICA Bucharest

2:40 PM
Microtexture Analysis of a Hot Rolled Silicon Electric Steel: Jesús Sandoval; Dagoberto Silva; Adriana Salas; Martha Guerrero; Rafael Colás; Yvan Houbaert; Universidad Autónoma de Nuevo León; Université Gent

3:00 PM Break

3:20 PM
Investigation on s Phase Precipitation of a Cast Duplex Stainless Steel: Tian Liang; Xiuhong Kang; Xiaojing Hui; Dianzhong Li; Yiyi Li; Institute of Metal Research, Chinese Academy of Sciences

3:40 PM
Effect of Austenitization Temperature on the Microstructure and Mechanical Properties of a UHS Steel with Mixed Bainite-Martensite Structures: Fateme Yekkalam Tash; Shahram Kheirandish; School of Science and Technology of Iran

Solution-Based Processing for Ceramic Materials: Electric Field-Assisted Fabrication and Assembly
Program Organizer: Geoff Brennecka, Sandia National Laboratories

Thursday PM Room: C111 Location: Columbus Con. Center

Session Chair: To Be Announced

2:00 PM Invited
Electrophoretic Deposition of Ceramic Coatings on Metal Substrates: Fangwei Guo; Xiaotang Lu; Ian Shapiro; Ping Xiao; University of Manchester

2:20 PM
Electrochemical Deposition of Nano Tuberous TiO2 and Their Application: Dewei Chu; Kazumi Kato; National Institute of Advanced Industrial Science and Technology

2:40 PM
Flexible Ceramic Nanofibermats for High Efficiency Particulate Air Filtration in Lunar Missions: Apratim Biswas; Wolfgang Sigmund; Department of Materials Science and Engineering, University of Florida
Session Chair: Stacey Kerwien, US Army ARDEC

2:00 PM Invited
Evaluation of Alternate Manufacturing Methods: Joanna Frederick1; Ion Tirpak2; 1U.S. Army ARDEC, Benet Laboratories; 2Advanced Technology Institute

2:40 PM
Novel TiAl Open Cellular Structures Fabricated by Electron Beam Melting: J. Hernandez1; L.E. Murr3; S.M. Gaytan3; E. Martinez3; S.J. Li4; X.Y. Cheng5; F. Medina6; R.B. Wicker7; 1University of Texas at El Paso; 2Institute of Metals Research; 3W. M. Keck Center for 3D Innovation

3:00 PM
The Phase Transformation of Al2O3/Mg Nanocomposite Powders during High Energy Ball Milling: Jinling Liu1; Chengying Xu1; Linan An1; 1University of Central Florida

3:20 PM Break

3:40 PM
Doping Effects on the Densification of Mo-Si-B Alloys via Reactive Sintering: Jae-II Jung1; Jian Luo1; 1Clemson University

4:00 PM
Mechanical and Functional Properties of Gas-Eutectic Materials: Lyudmyla Boyko1; 1Acuren Group Inc.

4:20 PM
Processing-Mechanical Property Relationships in Direct Digitally Manufactured Polycarbonate: Chanman Park1; Luke Brewer1; Yong Kwon1; Rudolf Panholzer1; Daniel Sakoda1; 1Naval Postgraduate School

4:40 PM
Concluding Comments Prof. Bingjun Ding

Session Chair: To Be Announced

Titanium Processing and Applications: Session II
Program Organizer: Rodney Boyer, Boeing Company

Thursday PM Room: D232 October 20, 2011 Location: Columbus Con. Center

Session Chair: Bingjun Ding, Xi’an Jiaotong University; Hong Yang, University of Rochester

2:00 PM
Performance of Palladium Coatings on Titanium Grade 2: Kavitha Tummalapalli; Sean Brossia1; Sharon Rad2; 1DNV USA; 2Ben-Gurion University of the Negev

2:20 PM
Micro-Texture Evolution of Ti in Multilayer Sheets Processed by Accumulative Roll Bonding: Liming Zhou1; Viola Acoff1; 1The University of Alabama

2:40 PM
Titanium for Capacitive Energy Storage: Gerhard Welsch1; 1CWRU

3:00 PM
Mechanical Properties and Deformation in Multi-Scale Nanostructured Cu and Ti: Yonghao Zhao1; Y. Li1; Troy Topping1; Y.T. Zhu1; R. Z. Valiev1; E.J. Lavernia1; 1University of California Davis; 2North Carolina State University; 3Institute of Physics of Advanced Materials, Ufa State Aviation Technical University, 12 K. Markska str., Ufa 450000, Russia

3:20 PM Break

3:40 PM
Characterization of “Check-Mark” Alpha Precipitate in Titanium Alloys Using 2D and 3D Characterization Techniques: Travis Presley1; Daniel Huber1; John Sosa1; Brian Welk1; Yufeng Zheng1; Hamish Fraser1; 1The Ohio State University
4:00 PM
High-Resolution SEM/(S)TEM Microstructural Characterization of Ti-6Al-4V Alloyed with Fe: Daniel Huber\(^1\); Brian Welk\(^1\); Travis Presley\(^1\); John Sosa\(^1\); Hamish Fraser\(^1\); \(^1\)The Ohio State University

4:20 PM
Investigation and Characterization of Second Phase Precipitation during Tempering of Martensitic Ti-6Al-2Mo-2Cr-2Sn-2Zr-S by SEM and (S)TEM: Jonathan Orsborn\(^1\); Hamish Fraser\(^1\); Robert Williams\(^1\); Daniel Huber\(^1\); Yufeng Zheng\(^1\); \(^1\)The Ohio State University

4:40 PM
Microstructure Evolution during Controlled Dynamic Spheroidization of Ti-6Al-4V: Chan Hee Park\(^1\); Chong Soo Lee\(^2\); \(^1\)Korea Institute of Materials Science; \(^2\)Pohang University of Science and Technology

5:00 PM
Phase Transformation Identification in Beta Titanium Alloys Using ETMT and SSDTA: Yufeng Zheng\(^1\); Robert Williams\(^1\); Boian Alexandrov\(^1\); Hamish Fraser\(^1\); \(^1\)The Ohio State University

5:20 PM
The Technological features of Titanium Aluminides Retrieving by SHS-compacting: Borys Sereda\(^1\); Aleksandr Zherebtsov\(^1\); Dmytro Sereda\(^1\); \(^1\)ZSEA
001 A Novel Protocol for Synthesis of Pd/TiO2/SiO2 Nanocomposite Following Sol-Gel Process: Arvind Prakash1; Prem Pandey1; ‘Institute of Technology, Banaras Hindu University

002 A Quantitative Method to Assess Free Iron Removal after Passivation: Sophie Yang1; Lakshmi Sharma1; Bernice Aboud1; ‘DePuy Orthopaedics, Inc

003 Biocompatibility of TiO2 nanotubes on titanium via anodic oxidation and heat treatment: Il Song Park1; Yu Kyoung Kim1; Ki Hyun Yu1; Hyeoung Ho Park1; Sung Mo Yang1; Tae Sung Bae1; Min Ho Lee1; ‘Chonbuk National University; ‘Jeonbuk Technopark; ‘BS. COREM Co., Ltd

004 Calculation Study of Synthesized Nano Hydroxyapatite Using Cationic and Non Ionic Surfactants: Tahira Siddique1; Shahid Amin1; Mohammad Mujahid1; Syed Shah1; ‘QAU; ‘Pinstech; ‘NUST; ‘Hazara University

005 Calcium Phosphates for Drug Carrier: Adsorption and Release Kinetics of Drugs and Growth Factors: Solaiman Tarafder1; Amit Bandyopadhyay1; Susmita Bose1; ‘Washington State University

006 Corrosion Susceptibility of Magnesium Based Biodegradable Alloys in Simulated Physiological Solutions: Puneet Gill1; Norman Munroe1; Amit Datye1; ‘Florida International University; ‘University of Tennessee Knoxville

007 Direct Cytotoxicity Evaluation of 63s Bioactive Glass Nanoparticles Using Yeast Model and Human Chondrocyte Cells by Microcalorimetry: Ali Doostmohammadi1; Ahmad Monshi1; Mohammad Hossein Fathi1; ‘Isfahan University of Technology

008 Effect of Crystallinity on Dissolution Properties of Plasma Sprayed Hydroxyapatite Coatings: Mangal Roy1; Amit Bandyopadhyay1; Susmita Bose1; ‘Washington State University

009 Effect of Different Type of Kenaf Fiber Composite on the Mechanical Properties: Mohamad Nor Berhan1; ZURAIADH SALLEH1; NOR FAZLI ADULL MANAN1; YAKUB MD TAIB1; ‘UNIVERSITI TEKNOLOGI MARA; ‘SWANSEA UNIVERSITY

010 Effect of the Sintering Temperature on Microstructural Properties of a Bioceramic Bone Scaffold: Juan Vivanco1; Aldo Araned1a; Heidi Ploeg1; ‘The University of Wisconsin, Madison; ‘Universidad Tecnica Federico Santa Maria

011 Effects of Bioabsorbable Mg Alloys on Endothelialization: Puneet Gill1; Norman Munroe1; Ebony Daniels1; ‘Florida International University

012 Electrochemical Synthesis of Polyaniline over Prussian Blue Encapsulated Ormosil Electrodes and Its Application in the Electrochemical Oxidation of Cysteine: Dheeraj Chauhan1; Prem Pandey1; ‘Institute of Technology, Banaras Hindu University

013 Gelatin Stabilized Gold Nanoparticles Supported Titania Nanotubes: A Novel Platform for Medical Implants: YUKYOUNG KIM1; Madhav Prasad Neupane1; Myong Hun Kang1; Il Hyun Kong1; Il Song Park1; Hyeoung Ho Park1; Min Ho Lee1; ‘Institute of Oral Bioscience and BK 21 Program; ‘BS. COREM Co., Ltd

014 Heat Treatment Effect on Different Type of Kenaf Fiber Composite: ZURAIADH SALLEH1; MOHAMAD NOR BERHAN1; YAKUB MD TAIB1; ‘UNIVERSITI TEKNOLOGI MARA; ‘SWANSEA UNIVERSITY

015 Highly Sensitive Determination of Ascorbic Acid over Polyaniline Synthesized Electrochemically within Nanostructured Network of Sol-Gel Matrix: Vandana Singh1; Richa Singh1; Prem Pandey1; ‘Institute of Technology, Banaras Hindu University

016 Impact Strength and Post Impact Tensile Strength of Kenaf Powder/PP (with and without MAPP) with Different Powder Percentage and Sizes: NOR AMALINA NORDIN1; YAKUB MD TAIB1; ZURAIADH SALLEH1; MOHAMAD NOR BERHAN1; ‘UNIVERSITI TEKNOLOGI MARA

017 In Vivo Evaluation of the Spark Plasma Sintered Al2O3-ZrO2- CeO2 Composites: Gultekin Goller1; Ipek Ak1; Simona Cavalur1; Viorica Simon1; ‘Istanbul Technical University; ‘University of Oradea; ‘Babes-Bolyai University

018 Nanofiber-Based Sensors for Oxygen Determination: Ruipeng Xue1; Alex Roth1; Mariano Viapiano1; Dave Farson1; Andre Palmer1; ‘John Lannutti1; ‘The Ohio State University

019 Post Impact Tensile on Kenaf Powder Fiberglass Laminate: NOR FAZLI ADULL MANAN1; ZURAIADH SALLEH1; YAKUB MD TAIB1; MOHAMAD NOR BERHAN1; FADHLUL WAFI KEYA NORDIN1; ‘UNIVERSITI TEKNOLOGI MARA

020 Post-Impact Fatigue of Short Kenaf Fibre Metal Laminates: YAKUB MD TAIB1; ZURAIADH SALLEH1; SYARIFAH YUNUS1; MOHD HAFEEZ MOHD AINI1; ‘UNIVERSITI TEKNOLOGI MARA

021 Radiation Interactions in Biologically Important Materials: Pravina Pawar1; Govind Bichile1; ‘Dept of Physics

022 Sintering and Bioactivities of Hydroxyapatite: Monica Sawicki1; Kyle Crosby1; Ling Li1; Leon Shaw1; Yong Wang1; ‘University of Connecticut

023 SiO2, and SrO Doped 946-TCP: Influence of Dopants on Mechanical and Biological Properties: Gary Fielding1; Johanna Feuerstein1; Amit Bandyopadhyay1; Susmita Bose1; ‘Washington State University

024 Sr/Mg Doped 3D Interconnected Porous b-Tricalcium Phosphate Ceramic Scaffolds for Bone Tissue Engineering: In Vivo Evaluation in Rat and Rabbit Model: Solaiman Tarafder1; William Derrill1; Neal Davies1; Amit Bandyopadhyay1; Susmita Bose1; ‘Washington State University

025 Structural Analysis and Characterization of Zn-Substituted Nano Hydroxyapatite: Uma Batra1; Seema Kapoor1; ‘PEC Univ. of Technology; ‘University Institute of Chemical Engineering &Technology, Panjab University

026 Synthesis and Enhanced Cytotoxicity of Pure and Ni-Doped ZnS@ZnSe Quantum Dots: Melissa Cruz1; Sonia Bailon1; ‘University of Puerto Rico at Mayaguez

027 Synthesis of Prussian Blue/Palladium Nanocomposite and Its Application in the Electrocatalytic Determination of Hydrogen Peroxide: Ashish Pandey1; Dheeraj Chauhan1; Prem Pandey1; ‘Institute of Technology, Banaras Hindu University

028 The Deposition of Chitosan-Vancomycin-Gelatin-Calcium Phosphate Composite on Post Bio-Ceramics Coated Ti6Al4V: Ming-Jia Wang1; Jung-Yi Lo1; Chi-Chum Yang1; Shiou-Kang Yen1; ‘National Chung-Hsing University
031 Alumina-Based Composites Reinforced with Titanium Nanoparticles: Enrique Rocha1; José A. Rodriguez-Garcia2; Sergio Mundo-Solis3; Juliana G. Gutierrez-Paredes4; Elizbeth Refugio-Garcia5; Universidad Politécnica de Victoria; 1ESIME-IPN; 2Universidad Autónoma Metropolitana

032 Analysis of Load-Displacement Curve by Hertzian Indentation for Thermal Barrier Coating Durability: Kee Sung Lee1; Dong Heon Lee2; Yeon-Gil Jung3; Kookmin University, South Korea; Changwon University, South Korea

033 Characterization of Ceramic Powders during Compaction Using Electrical Measurements: Timothy Pruyen1; Rosario Gerhardt2; Georgia Tech

034 Colloidal Processing of Diamond Particles for Diamond Film Fabrication on Graphene and Silicon Substrates: Brian Babcox1; David Snyder2; James Adair3; The Pennsylvania State University

035 Copper (I) and (II) Containing Waveguiding Layers in Novel Silicate Glass: Hana Malichova1; Jarmila Spirkova1; Martin Mika1; Stanislava Stara1; ICT Prague

036 Correlation between Structure and Electronic Properties in Y1-xPbxBa1.95Sr0.1Cu3O7-d High Tc Superconductors: Muna Abbas1; Baghdad University

037 Critical analysis of experimental methods for reliable oxidation rate measurements of ultra-high temperature ceramics using thermal gravimetric analysis up to 1600°C: Mela Miller-Oana1; Luke Walker2; William Pine3; Erica Corral4; University of Arizona

038 Design and Development of Dichroic Glasses: Julie Dalbey1; S.K. Sundaram2; John Rich3; Alfred University

039 Effect of % Boron on the Tribological Performance of Alumina Matrix Multifunctional Composites for Energy Efficient Sliding Systems: Rajeshwari Paluri1; Sudeep Ingleo1; Texas A&M University

040 Effect of Neutrons on the Microstructure Properties of Hg1-x-yTl_xPb_yBa2Cu2O_x+y and (0≤x≤0.4) and (0≤y≤0.4) System: Ghazala Hermie1; Maysoon Alias2; Bushra Aljuranri2; Rose Aljuranri2; Baghdad university-college of science

041 Effect of Spark Plasma Sintering to the Structure and Some Properties Development for Mullite-Zro2 Ceramics: Guida Sedmale1; Ingunda Spergerga1; Iints Steins2; Riga Technical University, Institute of Silicate Materials

042 Effect of Temperature on the Hydration of Activated Granulated Blast Furnace Slag: Enrique Rocha1; M. Juana Martinez-Alvarado1; Manuela Diaz-Cruz1; Universidad Politecnica de Victoria; 1ESIQIE-IPN

043 Fabrication and Corrosion Behavior of Ti-Based Bulk Metallic Glass Composites Containing Carbon Nanotubes: Pee-Yew Lee1; National Taiwan Ocean University

044 Fabrication of ZrO2-SiC Composites from Natural Zircon Ore by Carbothermal Reduction: Youguo Xu1; ZhaoHui Huang2; Yan-gai Liu3; Minghao Fang4; Xin Ouyang5; Li Yin6; China University of Geosciences (Beijing)

045 Fracture Toughness Properties of WC-10Co Cemented Carbide Containing VC or (Ta, Nb)C Additives: Amir Masoud Soleimanpour1; Sharif University of Technology

046 Gelcasting Process of Fused Silica-Boron Nitride Composite Ceramics: Lizhong Zhou1; Dechang Jia2; The Chinese Ceramic Society; 1Institute for Advanced Ceramics, Harbin Institute of Technology

047 Glass-Ceramic Composites for High Energy Density Capacitors: Venkata Pilli1; Ashok Kumar2; Reji Thomas3; Douglas Chrissey4; Minoru Tomazawa5; Ram Katiyar6; University of Puerto Rico; Rensselaer Polytechnic Institute

048 Improving PZT Thin Film Texture through Pt Metallization and Seed Layers: Lee Sanchez1; Daniel Potrepka1; Glen Fox2; Ichiro Takeuchi3; Ronald Polcawich4; Army Research Laboratory; 1Fox Materials Consulting LLC; 2University of Maryland

049 Investigation of Effective Parameters in Production of Al356/TiB2p Composite using of TiB2p/CMC/PPS Mortar: Mohammad Hizmorb1; S.M.H. Mirbagheri1; Azam Rezaei2; Reza Abdideh3; khouzestan oxin steel co.; Amirkabir University of Technology; Islamic Azad University

050 Investigation of ZnO: and ZnO:(AlN) Films for Solar Driven Hydrogen Production: Sudhakar Shet1; Yanfa Yan2; Nuggehalli Ravindra2; Heli Wang3; John Turner4; Mowafak Al-Jassim1; National Renewable Energy Laboratory; 1New Jersey Institute of Technology

051 Manufacture and Mechanical Characterization of Polymer-Composites Reinforced with Natural Fibers: Enrique Rocha1; Ernesto Benavides-Hernandez2; Jose A. Rodriguez-Garcia3; Alejandro Altamirano-Torres4; Y. Gabriela Torres-Hernandez5; Francisco Sandoval-Perez6; Universidad Politécnica de Victoria; 1Universidad Autónoma Metropolitana

052 Microstructure and Properties of Al2O3 Ceramic Composite Toughened by Different Grain Sizes of LiTaO3: Yan-gai Liu1; Minghao Fang2; ZhaoHui Huang2; Shaoping Huang2; Qinghua Huang2; China University of Geosciences (Beijing); Luoyang Precondar Heat-resistant Testing Equipment Co.Ltd.

053 Polymer-Derived Mesoporous SiOC/ZnO Nanocomposite for Water Decontamination: Mirhabbs Hojamberdiev1; Ravi Prasad2; Koji Morita3; Ralf Riedel4; Technische Universitaet Darmstadt

054 Processing and Mechanical Properties of Bulk and Multilayer ZrB2 Using Tape Casting and Spark Plasma Sintering: David Pham1; William Pine2; Luke Walker3; Erica Corral4; University of Arizona

055 Processing of Alumina-Rich Spinel Nanopowders Made by Liquid Feed Flame Spray Pyrolysis (LF-FSP) to Fine-Grained Ceramic Composites: Andrew Pottebaum1; Richard Laine2; University Of Michigan
056 Processing–Electronic Property Relations for Y1-xPrx Ba2Cu3O7-d High TC Superconductors: Muna Abbas; 1Baghdad University

057 Properties and Fabrication of Carbon Nanotube Dispersed Al2O3 Composites by Spark Plasma Sintering: Byung-Koog Jang; 2Yoshiho Sakka; 1Hideyuki Murakami; 1Seiji Kuroda; 2Kee-Sung Lee; 1National Institute for Materials Science; 2School of Mechanical Engineering, Kookmin University

058 Properties Optimization of Refractory Mineral Resources in China: Zhaohui Huang; 1Minghao Fang; 1Jin-gai Liu; 2Juntong Huang; 2Saifang Huang; 1Wanzheng Zhu; 1China University of Geosciences (Beijing); 2Beijing Weirunda Metallurgical Materials Co. Ltd.

059 Raman Scattering as a Tool to Characterize the Changes of the Silicate Glass Structure after Ion Implantation: Blanka Svecová; 1Pavla Nekvindová; 2Anna Mackova; 2Petr Malinsky; 2Vladimir Machovic; 2Milos Jancek; 3Josef Pesicka; 3Jarmila Spirkova; 3Institute of Chemical Technology Prague; 2Academy of Sciences of the Czech Republic, v.v.i.; 3Charles University

060 Structural Investigations on Yttria /Scandia Doped Ceria – Low Yttria Doped 945 - Alumina Composites, a New Electrolyte for IT-SOFC: Nicoletta Popescu-Pogron; 1Ionei Mercioniu; 1Serban Constantinescu; 1Jesus Tartaj; 2The National Institute of Materials Physics; 2The Institute of Ceramics and Glass (ICV)

061 Study on Reaction between Refractories and Flux with slagging-Composites by Spark Plasma Sintering: Hideyuki Murakami; 1Kohichiro KATAOKA; 2Taijiro MATSUI; 2Jesus Tartaj; 2The National Institute of Materials Physics; 2The Institute of Ceramics and Glass (ICV)

062 Substitution Grade Effect on the Synthesis and Magnetic Properties of Cu(Co,Zn)Fe2O4 Powders: Mokpo National University; 2Hwan Jung; 1Young Min Han; 2Sang Jin Lee; 2Jin Sung Jang; 1KAERI; 1By Using a Solution Combustion Synthesis in an Air Atmosphere

063 Synthesis and Characterization of New Lead-Free Low Melt Sealing Glasses: Maik Peschel; 1Jochen Schilm; 1Alexander Michaelis; 1Fraunhofer Institute for Ceramic Technologies and Systems

064 Synthesis and Study of the Chemical Interaction of Strontium Sulfoaluminate Sr4Al6O12SO4 with Molten Aluminum Alloys: Jose Rodriguez-Garcia; 1Enrique Rocha; 1Jose Diaz-Rodriguez; 1Jesús Torres-Torres; 1Jose Almanza-Robles; 1University Politecnica de Victoria; 1CINVESTAV, Unidad Saltillo

065 Synthesis of Ni and NiCo-Y2O3 Nano Powders by Using a Solution Combustion Synthesis in an Air Atmosphere: Choong-Hwan Jung; 1Young Min Han; 2Sang Jin Lee; 2Jin Sung Jang; 1KAERI; 1Mokpo National University

066 Synthesis, Shaped and Mechanical Properties of Hydroxyapatite–Anatase Biomaterials: Roberto Nava-Miranda; 1Enrique Rocha; 2Lucia Tellez-Jurado; 1ESIQIE-IPN; 2University Politecnica de Victoria

067 Thermal Behavior and Kinetics of Glass Transition in B2O3-Containing Tungsten-Tellurite Glasses: Miray Çelikbilek; 1Ali Erciœn Ersundu; 1Duygu Yardımcı; 2Süheyl Aydin; 1Istanbul Technical University

068 Thermostatic Extrusion of YAG Tubes: Nathan Taylor; 1Richard Laine; 1University of Michigan

069 Zinc Oxide (ZnO) and Bandgap Engineering for Photoelectrochemical Splitting of Water to Produce Hydrogen: Sadhkar Shet; 1Yanfa Yan; 1Heli Wang; 2Nuggehalli Ravindra; 1John Turner; 1Mosafak Al-Lassim; 1National Renewable Energy Laboratory; 1New Jersey Institute of Technology

070 A Phenomenological Thermodynamic Potential of CaTiO3, Single Crystals: Yiija Gu; 1Venkataraman Gopalani; 2Karin Rabe; 1Long-Qing Chen; 1The Pennsylvania State University; 2Rutgers University

071 An LTCC Clark-Type Oxygen Sensor: Jin Luo; 1Richard Eitel; 2University of Kentucky

072 Dependence of Dielectric Properties on Ceramic Fillers of Polytetrafluoroethylene-Matrix Composites: Chang Jun Jeon; 1Dong Hyoek Im; 1Eung Soo Kim; 1Kyonggi University

073 Dielectric Properties in PMN-PT/CFO Particulate Magnetoelectric Composites: Fabio Zabotto; 1José Eiras; 2Ducinei Garcia; 1Federal University of São Carlos

074 Dielectric Properties of Chemically Bonded Phosphate Ceramics Fabricated with Wollastonite Powders: H. A. Colorado; 1Jenn M. Yang; 1University of California, Los Angeles

075 Electronic Transport Studies of Bulk HgCdTe Based on an Ensemble Monte Carlo Calculation Including Three-Valley Band Structure Model: Hichem Tahiri; 1Abu-Bakr Belkaid University - Tlemcen, Faculty of Technology

076 Ferroic and Structural Investigations in Rare Earth Modified TbMnO3 Ceramics: Ivair Santos; 1Gustavo Dias; 1Ricardo Gotardo; 1Luiz Cótica; 1Ducinei Garcia; 1José Eiras; 2Adelino Coelho; 1Universidade Estadual de Maringá; 2Universidade Federal de São Carlos; 1Universidade Estadual de Campinas

077 Ferroic Properties Of Batio3 Nanoporticles: Luiz Cótica; 1Marcos Alves; 1Gustavo Dias; 1Valdirlei Freitas; 1Ricardo Gotardo; 1Ivair Santos; 1Universidade Estadual de Maringá

078 HR-TEM Investigations in BiFeO3-PbTiO3 Multifunctional Ceramics: Ivair Santos; 1Valdirlei Freitas; 1Flávia Estrada; 1Luiz Cótica; 1Ducinei Garcia; 1José Eiras; 1Universidade Estadual de Maringá; 2Universidade Federal de São Carlos

079 Lab Scale Non-Destructive Compositional Analysis of PZT RF Sputtered Thin Films: Ron Varghese; 1Greg Prihbi; 1Shashank Priya; 1Virginia Polytechnic Institute and State University; 1J.A. Woolam.Co

080 Low Temperature Specific Heat of BiO(X=Cl, Br and I) Single Crystals: Viktor Bunda; 1Transcarpathian State University

081 New Methodology of Improving the Etching Factor by Correlating between Microstructure and Residual Stress of Copper Pattern in Electronic Packages: Hyeok Im; 1KITECH

082 Phase-Field Simulation of Electric-Field-Induced Magnetic Domain Switching in Magnetic/Ferroelectric Heterostructures: Kamran Hu; 1Guang Sheng; 2Jin Luo; 1Ceramic Institute of Victoria

083 Phase-Field Simulations of Ferroelectrics Domain Structures of PbZrxTi1-xO3 Bilayers: Fei Xue; 1Valanoor Nagarajan; 2Long-Qing Chen; 2Penn State University; 2University of New South Wales
**084** Piezoelectric Properties of Ta Substituted-(K0.5Na0.5)NbO3 Films: Sun Young Lee; Chang Won Ahn; Ili Won Kim; 'Materials Research Institute; 'Department of Physics

**085** S-Graded Buffer Layers for Semiconductor Devices: Sirjan Xhurxhi; Francis Obst; David Sidoti; Brandon Bertoli; Tedi Kujofsa; Sushma Cheruku; Juan Correa; Paul Rago; Ernesto Suarez; Faquir Jain; John Ayers; 'University of Connecticut

**086** Some Electrical Properties of Soluble Conducting Polymer Polyhexylthiophene (PHT) Prepared by Electrochemical Polymerization: Kareema Ziadan; 'Basrah University

**087** Synthesis and Ferroic Properties Studies in FeAlO3-Based Multifunctional Ceramics: Cheruku1; Juan Correa 1; Paul Rago 1; In-Mok Jeon 1; Ji Yeon Park2; Young Do Kim1; 1University of Nis, Faculty of Electronic Engineering; 2Laboratory for Electron Microscopy, University of Nis, Serbia

**088** The Chemicalisorption of Cobalt Atom on Noble Metal Surface: jenan Al-Mukh; 'Basrah University

**089** The Electrical Properties of Soluble Conducting Polymer PolyMethalMethacrylate as Conducting Polymers Alloys (PAni/PMMA): Paunovic1; Jelena Purenovic 1; Miroslav Miljkovic 2

**090** The Influence of Consolidation Parameters on Statistics Calculations Grain Contact Surfaces BaTiO3-Ceramics: Vojislav Mitic; Vesna Paunovic; Jelena Purenovic; Miroslav Miljkovic; Jelena Nediri; 'University of Nis, Faculty of Electronic Engineering; 3Laboratory for Electron Microscopy, University of Nis, Serbia

**091** October 18, 2011 Tuesday AM Energy Issues MS&T’11 Poster Session: Environmental and Technology

**092** Decarburization of Alloy 617 during Aging at Various High Temperatures: Tae Sun Jo; In-Mok Jeon; Ji Yeon Park; Young Do Kim; 'Hanyang University; 'Korea Atomic Energy Research Institute

**093** Fabrication of LiMnFe$_2$PO$_4$ Glass and Glass-Ceramics for Lithium Ion Battery: Tsuyoshi Homma; Takayuki Komatsu; 'Nagaoaka University of Technology

**094** Isotopic Enrichment Studies to Determine Elemental Diffusion Profiles Through an Established Alteration Layer: Pacific Northwest National Lab

**095** LiAlO$_2$ Solubility Measurement in (Li-K) Carbonate Melt: Kailash Pandi; Prabhakar Singh; 'University of Connecticut

**096** Structure Characterization and Electrochemical Performance of LiFePO4/Carbon Hybrid for Li-Battery Cathode Materials: Yuki Matsuda; Masahiko Miyahara; Hirokazu Sasaki; Atsushi Nemoto; Maki Moriya; Hiroshi Okamura; Shingo Katayama; Yuji Akimoto; Shin-ich Hirano; 'SHOEI CHEMICAL INC.; 'National Institution for Academic Degrees and University Evaluation

**097** Ultra-Low Mass Planar SOFC Design: Jacqueline Brown; Michael Badding; William Bouton; Lanrik Kester; Scott Pollard; Cameron Tanner; Patrick Tepesch; 'Coming Inc.
140 Kinetic Process of Nozzle Clogging during Continuous Casting of Lower Carbon Al-Killed Steel: Suzhou Wu; 1Wuhan University of Science and Technology

141 Numerical Simulation on Influence of Parameters of RH on Decarburization Process for IF Steel: Yanyu Zhao; Jiongming Zhang; 1University of Science and Technology in Beijing

142 Optimization of Secondary Cooling Parameters in Continuous Casting Using CAFÉ Model: JING Caillang; Wang Xinhua; Xu Zhigang; Wang Wanjun; Yin Na; 1School of Metallurgical and Ecological Engineering, University of Science and Technology Beijing

143 Research of Iron Slag Appearance of Blast Furnace Hearth: Qi Chonglin; Zhang Jianliang; Liu Qinyuan; 1University of Science and Technology Beijing

144 Retained Austenite Characteristics and Tensile Properties in TRIP Assisted Steel: SANG-WOOK LEE; 1HYSCO

145 Study on the Combustion Process of Pulverized Coal and Carbonaceous Matter Dust in BF: Bacin SU; Jianliang ZHANG; Qinyuan Liu; Xiaomei CHE; Yuandi FU; Jiaqi JIN; 1University of Science and Technology Beijing

146 The Influence of Geometrical Factors of the Deformation Zone on Changing for Deformation Shift Degree for the Axial Zone of Rolled High Bars: Boris Sereda; Anton Kovalenko; Dmytro Sereda; Tatjana Vasilchenko; 1ZSEA

147 The Variations of Compressive Strength of Containing Carbon Pellets Preheated under Reducing Atmosphere: bing dai; zhe jiang; 1university of science and technology

148 Thermodynamics Analysis and Control of TiN Precipitation during Solidification of Q345EN Steel: Yanzhao Luo; Jiongming Zhang; Chao Xiao; Zhiming Liu; 1university of science and technology beijing

149 Three Dimensional Modeling of Raceway of Dissected Blast Furnace: yang guangqing; zhang jianliang; shao jiugang; chen weiwei; guo hongwei; 1University of Science and Technology Beijing

150 Analysis of Hi-Ta Alloys for Oxidation Protection in Ultra High Temperature Environments: Otto Lu-Steffes; Elizabeth Colon; Ridwan Sakidja; 1University of Wisconsin-Madison

151 Characterization of the Oxidation Behavior of Nb-20Si-20Cr Alloys: Daniel Vogleweide; Shailendra Varma; 1The University of Texas El Paso

152 Comparative Analysis of NiAl Alloys Used as Resistant Coating at High Temperatures Deposited by Powder Flame Spraying and HVOF Process: Lucas Aguiar; Emilmyn Trevisani; André Capra; Helio Padilha; Gustavo Sucharski; Ramón Paredes; 1Federal University of Paraná; 1Lactec

153 Comparative Study of the Deposition of NiCoCrAl Alloys Used as Bond Coat Deposited by HVOF and Air Plasma Spray Processes: Lucas Aguiar; Gustavo Sucharski; Émilmyn Trevisani; André Chicoski; André Capra; Ramón Paredes; 1Federal University of Paraná; 1Lactec

154 Comparison of Oxidation Behavior of Nb-20Si-20Cr-5Al and Nb-20Si-20Cr-5Al Alloys: Brenda Areliano; Amanda Gutierrez; Alma Vasquez; David Alvarez; Shailendra Varma; 1The University of Texas at El Paso

155 Environmental Degradation of Coated Metals: severine cambier; 1Fontana Corruption Center

156 Environmentally Friendly Tin Oxide Coating through Aqueous Solution Process: Yoshitake Masuda; Tatsuki Ohji; Kazumi Kato; 1National Institute of Advanced Industrial Science and Technology (AIST)

157 Examination of the Machining Affected Zone in Gamma Titanium Aluminide Machining: sajjad kolahdzic; 1Amirkabir university of technology

158 How Coagulant Changes with Corrosion Inhibitors Help Reduce Costly Water Main Breaks: Glenn Terrell; Jason Heberling; Patricia Barron; 1Birmingham Water Works Board

159 Oxide Scale Development in Select Alloys from the Nb-Mo-Cr-Si-B System: Eduardo Soto; Katherine Thomas; Benedict Portillo; Shailendra Varma; 1The University of Texas at El Paso

160 Protective Coatings for Molybdenum Alloys: Travis Sossaman; Ridwan Sakidja; John Perepezko; 1University of Wisconsin-Madison

161 Synthesis and Performance of PGM Modified IN1Al Coatings: Kevin Severs; Pratik Ray; Travis Brammer; Matthew Kramer; Mufti Akine; 1Ames Laboratory

162 The Characteristics of High Strength and Lead-Free Machinable α-β Duplex Phase Brass Cu-40Zn-Cr-Fe-Sn-Bi Alloy: Haruhiko Atsumi; Hisashi Imai; Shufeng Li; Katsuyoshi Kondoh; Yoshiharu Kousaka; Akimichi Kojima; 1osaka university; 1San-etsu Co., Ltd.

163 The Mechanism of Metallic Iron Aggregation and Effect of Addition Agent on the Aggregation of Metallic Iron during the Self-Reduction of High Basicity Coal Mixed Briquettes: zhaorong-nan; xuezheng-liang; 1china

MS&T'11 Poster Session: Materials Performance

Tuesday AM, October 18, 2011, Room: Exhibit Hall C, Location: Columbus Con. Center
170 Effects of Addition of SiC and TiB2 Particles on Structural and Mechanical Properties of PM Al-Si Foams: Mohsen Seifi; Yousef Tabatabaei; S.M.H. Mirbagheri; R. Tafteh; 'Department of Materials Engineering, Amirkabir University of Technology

171 Elaboration and Characterization of Particulate Reinforced Titanium Metal Matrix Composite Using TiH2 as the Matrix Powder: Saunier Sébastien; Jean-Baptiste Fruauf; Christophe Desrayaud; 'Ecole des Mines de Saint-Etienne

172 Evaluation of the Corrosion Behavior of Laser Welded and GTAW Welded Austenitic Stainless Steel 316L in Lithium Bromide and Comparing on the Inhibition Effect of Chromate, Bromate and Molybdate on the Corrosion Behavior of Austenitic Stainless Steel 316L in Lithium Bromide: Ahmed Abdel Aziz; Ahmad Montaz; Ali Al-Warraky; 'German University in Cairo (GUC)

173 Failure Analysis and Improvement of Low Temperature Impact Energy of Q345D Heavy Plates: Xian-ying XUE; Feng-jia LIU; Wei-zhao Song; Xin-cheng Wang; Jun Qin; Hu Zhao; 'Baosteel Group Xinjiang Bayi Iron&Steel Co., Ltd.

174 Failure Analysis of Cobalt-Based Seal Pins from Gas Turbines: Joanna Siejka-Kulczyk; Marco Innocenti;Jakub Kaczorowski; 'Warsaw Institute of Aviation; General Electric Oil&Gas

175 Fatigue Failures in Threaded Steel Fasteners: Mahesh Darji; 'Square D-Schneider Electric

176 High-Temperature Oxidation of Ti-48Al-2Cr-2Nb-(0~1%)W Alloys in Air: Min Jung Kim; Dong Bok Lee; Sung June Bong; 'Sungkyunkwan University

177 Influence of Plasma Species on the Surface Properties of Titanium Treated Thermochromically by Plasma N2-Ar: Danilo Braz; Júlio Barbosa; Nassier Vitoriano; Thiago Victor Medeiros; Arlindo Nascimento Neto; Clodomiro Alves Junior; 'Universidade Federal do Rio grande do Norte

178 Influence of Present Species into N2 – Ar – CH4 Plasma Mixture on Pieces Made of Ti: Júlio Barbosa; Danilo Braz; Antonio Nunes Filho; Ricardo Rocha; Clodomiro Alves Jr.; 'UFRRN

179 Structural Characterization of Open-Cell Aluminum Foams by a Sintering-Dissolution Process: Carlos Leon-Patinio; Ena A. Aguilar-Reyes; Jose M. Tapia-Sanchez; Miguel A. Garcia-Monje; 'Universidad Michoacana de San Nicolás de Hidalgo

180 Study of the Quality of Calcined Petroleum Coke and Its Influence on the Reduction Process: José Sabero; 'CVG Venalum

181 Tailored Chemistry of Composites Sintered by Field Assisted Sintering Technology (FAST) for Heat Sink Applications: Aaron Rape; Jogender Singh; Anil Kulkarni; 'Applied Research Lab/Penn State University; Penn State University

182 The Effect of Strain Rate and Rolling Direction on Tensile Properties of AZ 31 Magnesium Alloy: Ildong Choi; Jhyun Jang; Jiho Kim; Hyungjin Bang; Sihoon Kim; 'Korea Maritime University

183 The Fabrication and Characterization of Carbon Nanotube Sponge with Controllable Pore Size: Shih-Chin Chang; Chia-Chi Hsieh; 'National Tsing Hua University

184 The Processing of Aluminum Gasarite Structures through Thermal Decomposition of Titanium Hydride: Joseph Lizzolv; Paul Sanders; Douglas Swenson; Patrick Bowien; 'Michigan Technological University

185 Wear Behavior of Al-Si / SiCp Metal Matrix Composites: Mona Abbas; 'Dept. of Production Engg.

186 Wireline Failures in Oil & Gas Wells - Case Studies: Daryoush Masouri; Mehdi Askari; 'Pars Oil & Gas Co.(POGC)

MS&T'11 Poster Session: Nanotechnology

Tuesday AM  Room: Exhibit Hall C  Location: Columbus Con. Center

187 A Comparative Study of Electroless Deposition Route Involving Zn and Cu+ or Cu2+: Chuncai Kong; Shaodong Sun; Zhima Yang; 'School of Science, MOE Key Laboratory for Non-Equilibrium Synthesis and Modulation of Condensed Matter, Xi’an Jiaotong University

188 A Simple Method for the Synthesis of Pt-Ag-Au Alloy Nanoparticles: Haidong Zhao; Shengchun Yang; Shengwu Guo; 'Xi’an Jiaotong University

189 Adsorption Thermodynamics of PAA on Ceria Nanoparticles and Its Biocompatibility: Shashank Saraf; Amit Kumar; Soumen Das; Ajay Karakoti; Sudipta Seal; 'AMPAC, NSTC, MMAE, University of Central Florida; 'EMSL, PNRL

190 Analysis of the Key Factors Controlling Sintering of LSM/CGO Multilayer Laminates: Vincenzo Esposito; Henrik Frandsen; Rasmus Bjork; Soren Foghmoes; Kjeld Andersen; Eugene Olevsky; Nini Prysts; 'Fuel cell and Solid State Chemistry division, Risoe DTU; 'San Diego State University

191 Carbon Nanotube-Assisted Formation of Aluminum Nanoparticles: Hye Yun Jeong; Kang Pyo So; Eun Sun Kim; Young Hee Lee; 'sungkyunkwan University

192 Catalyst-Assisted Low Temperature Synthesis of Zinc Oxide Nanostructures by Vapor Phase Transport: Michael Marshall; Tarek Trad; 'University of Texas at Brownsville

193 Deformation Mechanism of Nanocrystalline Copper Films during Uniaxial Relaxation Test at Room Temperature: Saethavath Krasenapibal; Shoichi Nambu; Junya Inoue; Toshikose Kosuki; 'The University of Tokyo

194 Effect of Equal Channel Angular Pressing on the Thermal Stability, Microstructure and Mechanical Properties of ETP Copper Films and Its Effect on PEC Response for Solar Driven Hydrogen Production: Sudipta Seal; Jussier Vitoriano 1; Christophe Desrayaud 2; 'ESM, PNNL

195 Finite Element Modelling of Copper by Equal Channel Angular Extrusion: Arkanth Krishnaiah; K Kamaran; Uday Chakkalingal; 'Osmania University; 'Indian Institute of Technology Madras

196 Hydrothermal Synthesis of Ga4Ti4O11n-4: Brittany Biggus; Doreen Edwards; 'Alfred University

197 Improving the Wettability of Aluminum on Carbon Nanotubes: Kang Pyo So; Il Ha Lee; Dinh Loc Duong; Tae Hyung Kim; Kay Hyoek An; Young Hee Lee; Seong Chu Lim; Eun Sun Kim; 'sungkyunkwan University; 'Chonju machinery research center

198 Influence of Growth Condition on Ga and N Co-Doped Zinc Oxide Films and Its Effect on PEC Response for Solar Driven Hydrogen Production: Sudhakar Shet; Yanya Yan; Njugahalli Ravindra; John Turner; Mowafak Al-Jassim; 'National Renewable Energy Laboratory; 'New Jersey Institute of Technology

199 Influence of Pressing Temperature on Microstructure Evolution and Mechanical Behavior of Ultrafine-Grained Cu Processed by Equal-Channel Angular Pressing: Haiming Wen; Yonghao Zhao; Troy Topping; Dustin Ashford; Roberto Figueredo; Cheng Xu; Terence Langdon; Enrique Lavernia; 'University of California, Davis; 'Universidade Federal de Minas Gerais; 'Ningbo Institute of Materials Technology and Engineering, Chinese Academy of Sciences; 'University of Southern California, University of Southampton
200 Investigation of the Formation and Extraordinary Thermal Stability of Mg Nano-Grains in TiAlC-Mg Composites: Babak Anasori1; Michel Barsoum1; 1Drexel University

201 MgO Tunnel Barrier for Room Temperature Spin Injection and Detection in Semiconductors: Nathan Gray2; Ashutosh Tiwari1; 1University of Utah

202 Microstructure Exploration of High Strength High Ductility Iron-Based Glassy NanoMaterials: Sheng Cheng1; Alla Sergueeva1; Brian Meacham1; Daniel Branagan1; 1The Nanosteel Co

203 Multiwalled Carbon Nanotubes Decorated with Va and Ni by Gamma Irradiation: Vivek Rao1; Jessika Rojas1; Carlos Castano1; Muthanna Al-Dahan1; 1Missouri University of Science and Technology

204 Plasma Sprayed Titanium Oxide-Carbon Nanotube Composite Coating for Dye Sensitized Solar Cells: Cheng Zhang1; Anup Kumar Keshri1; Arvind Agarwal1; 1Florida International University

205 Reversible Ferromagnetic Switching in Undoped and Doped (Co and Mn) ZnO Thin Films: Siddhartha Mal1; Sudhakar Nayi1; John Prater1; Jagdish Narayan1; 1North Carolina State University; 2Army Research Office

206 Siloxane Polymer Microspheres Compositing with Nano Silver-Copper Alloy Colloid: Qunyan Wei1; Depeng Zhao1; Shixiong Wang1; Xiangjun Yang1; 1Yunnan university; School of Chemistry Science and Technology

207 Site-Specific Texture Analysis of High Pressure Torsion Processed BCC Metals Using Synchrotron Radiation: Jonathan Ligda1; Brian Schuster1; Ruslan Valiev1; Zenji Horita1; Qiming Wei1; 1UNC Charlotte; 2Army Research Laboratory; 3Institute of Physics of Advanced Materials; 4Kyushu University

208 Structure of Carbon Nanotubes Grown by Arc-Discharge Technique under Argon, N2 and O2 Atmosphere at Different Conditions: Ghazala Hermez1; Izzat Al-Essa1; Ghuson Mohammed1; 1Baghdad university-college of science

209 Synthesis and Characterization of Cobalt Aluminate and Fe2O3 Nanocomposite Electrode for Solar Driven Water Splitting to Produce Hydrogen: Sudhakar Shet1; Kwang-Soon Ahn1; Yanfa Yan1; Heli Wang1; Nuggehalli Ravindra1; John Turner1; Mowafak Al-Jassim1; 1National Renewable Energy Laboratory; 2New Jersey Institute of Technology

210 Synthesis and Polymer Morphology of TiO2-SnO2 Nanoparticles Prepared by Pechini Method: Douglas Gravina1; Joice Miagava1; Annick Rubbens1; Pascal Roussel1; 1Univesidade de Sao Paulo; 2Ecole Nationale Superieure de Chimie de Lille

211 Synthesis and Size Distribution Narrowing of Naked Noble Metals Nanoparticles Made in Imidazolium Ionic Liquid: Miao Shi1; Yong Wang1; Whitney Shook1; Hong Yang1; 1University of Rochester

212 Tailoring the Relative Si3N4 and SiC Contents in Si3N4/SiC Nanopowders through Carbothermic Reduction and Nitridation of Silica Fume: Jyothi Suri1; Leon Shaw1; 1University of Connecticut

213 Thiol-Dependent Cytotoxicity of Zn-Based Quantum Dots: Sonia Balion1; Oscar Perales-Perez1; 1UPRM

214 Transport Mechanism of Offactory Information Using Terpene Sensing Properties of Nanostructured MIP: Sung Pil Lee1; Jaehun Jung1; 1Kyungnam University

215 Uniform Elongation of Ultra-Fine Grained Steels Evaluated by Micro-Compression Tests: Takashi Nagoshi1; Akinobu Shibata1; Masato Sone1; Yoshikazu Todaka1; 1Tokyo institute of technology; 2Kyoto university; 3Toyohashi university of technology

216 Using Nanoindentation to Study Residual Stress State and Constitutive Properties in A/B Metallic Multilayer Thin Films: Michael Grant1; Nikolaos Antolini1; Peter Anderson1; 1Ohio State University

217 ZnO:Ga Thin Films for Photoelectrochemical Water Splitting Application: Sudhakar Shet1; Yanfa Yan1; Heli Wang1; Nuggehalli Ravindra1; John Turner1; Mowafak Al-Jassim1; 1National Renewable Energy Laboratory; 2New Jersey Institute of Technology

MS&T’11 Poster Session: Processing and Product Manufacturing

Tuesday AM
Room: Exhibit Hall C
Location: Columbus Con. Center

218 AION Ceramics Prepared by Reactive Spark Plasma Sintering: Halide Ersu Kanbur1; Burcu Apak1; Filiz Cinar Sahin1; 1Istanbul Technical University

219 Alumina/Silicon Carbide Nanocomposites: Microwave Sintering: Argos Colletti1; Ruth Kiminami1; Guido Link1; 1Universidade Federal de Sao Carlos; 2Karlsruhe Institute of Technology

220 Automatic Controlled Electro-Chemical Machining: Selis Önel1; Gözde Ergin1; Mirzahan Hizal1; 1Hacettepe University; 2Middle East Technical University

221 Crack Formation Behavior of Chemically Strengthened Soda Lime Glass: Shisaku Akiba1; Akio Koike1; Kazutaka Hayashi1; Setsuro Ito1; 1ASahi Glass Co., LTD.; 2Tokyo Institute of Technology

222 Dissimilar Joining of Steels and Aluminum Alloy Pipes for Automobile Applications: Sungwook Kim1; 1RIST

223 Effects of Rolling Direction on the Limiting Strains in Mg AZ31B Sheets: John Curtin1; Nicholas Snyder1; Fadi Abu-Farha1; 1Penn State Erie

224 Erosion and Corrosion Resistance of TaIN/TiN Nanomultilayer and TiAlN/Si3N4 Nanocomposite Coatings in Molten Aluminum Alloy: Farhad Fazlatipour1; Farzad Charani1; Nader Shakib1; Malahat Niki Nushari1; 1Iran Radiator

225 Evaluation of Mechanical Properties of 8090 Al-Li Alloy by Equal Channel Angular Pressing Process: Mohammad Tahmasebi1; Mahmood Meratian1; Mehrdad Shayan1; 1Isfahan University of Technology

226 Formation of Aluminum Oxides on Carbon Nanotube Surface via Al2O3-Carbon Covalent Bonds: Eun Sun Kim1; Kang Pyo So1; Hye Yun Jeong1; Young Hee Lee1; 1Sungkyunkwan University

227 Glass transition behavior (ΔTg and ΔCp) of carbohydrate mixtures: Matt Sillick1; C.M. Gregson1; V. Normand1; 1Firmenich
228 Gradient Testing and Thermo-Mechanical Lifetime Modeling of Fly-Ash Infiltrated Thermal Barrier Coatings for Power-Generating Gas Turbines: Andrew Gledhill; Julie Drexler; Kentaro Shinoda; Sanjay Sampath; Nitin Padture; 'The Ohio State University; 'Stony Brook University

229 Hot Extrudability of Semi Solid AM100A Alloy Fabricated by Cooling Plate: Dae-Hwan Kim; Hee-Kyeong Kim; Seung-Hwa Choi; Su-Gun Lim; 'i-Cube Center, Engineering Research Institute, Gyeongsang National University

230 Improving Pump Efficiency and Lowering Life Cycle Cost through Enhanced Ceramic Coatings: Doug Klingensmith; 'Unconventional Solutions Inc.

231 Influence of Nanostructural Coatings on Aluminum Soldering/Adhesion Resistance of H13 Hot Work Tool Steel: Farhad Fazlalipour; Farzad Charani; Nader Shakib; Malahat Niki Nushari; 'Iran Radiator

232 In-Situ Processing of Alumina Layers by PTA: Fabiano Drozda; Sidnei Pianaro; Ana Sofia D' Oliveira; 'PG-Mec/UFPR; 'UEPG; 'UFPR - Federal University of Paraná

233 Investigating the Post-Forming Properties of the AZ31B Magnesium Alloy Following Biaxial Stretching: Daniel Lowe; Eric Orton; Fadi Abu-Farha; 'Penn State Erie

234 Investigation on Si₃N₄ Ceramic Foams: Yang Jinlong; Yu Juanli; Huang Yong; 'Tsinghua University; 'Tsinghua University

235 Investigation on Si₃N₄ Ceramic Foams: Yang Jinlong; 'Tsinghua University

236 Mechanical Behavior of Pure Aluminum Fabricated by Equal Channel Angular Pressing: Mohammad Tahmasehi; Mahmood Meratian; Mehrdad Shayan; Mohammad Khaleghifar; 'Isfahan University of Technology

237 Mechanical Properties and Oxidation Behavior of Spark Plasma Sintered ZrB₂-ZrC-SiC Composites: Ipek Akin; Filiz Sahin; Onuralp Yucel; Gultekin Goller; 'Istanbul Technical University

238 Mechanical Properties in Laser-FSW Hybrid Welded Inconel 718 Alloy: Kik Hyun Song; Kazuhiro Nakata; 'Korea Institute of Industrial Technology; 'Joining and Welding Research Institute

239 Mechanical Properties of Amorphous Carbon Nitride Films According to Deposition Conditions and Post Process: Sung Pil Lee; Jaehun Kang; Choong Won Chang; 'Kyungnam University

240 Microwave Sintering of PZT / Fe-Co Nanocomposite Obtained by In Situ Sol-Gel Synthesis: Claudia Perdomo; Ducinei Garcia; Ruth Kaminami; 'Universidade Federal de São Carlos

241 Microwave-Assisted Synthesis of B₄C by Direct H₃BO₃ Carboreduction: Rodolfo Klein Gunnewiek; Pollyane Souto; Ruth Kaminami; 'Federal University of São Carlos - UFSCar; 'Technological Federal University of Paraná - Campus Londrina

242 Microwave-Assisted Synthesis of TiC by Carbothermal Reduction: Rodolfo Klein Gunnewiek; Pollyane Souto; Ruth Kaminami; 'Federal University of São Carlos - UFSCar; 'Technological Federal University of Paraná - Campus Londrina

243 Multicomponent Saturing of Titan Alloys by SHS: Borys Sereda; Yulja Bondarenko; Dmytro Sereda; 'ZSEA

244 Optically Visible Alumina via Spark Plasma Sintering: Burcu Apak; Halide Esra Kanbur; Esra Ozkan Zayim; Filiz Cinar Sahin; 'Istanbul Technical University

245 Oxidation Behaviors of Silica Coated Mo-Si-B Alloys: Joon Park; Young Song; Jeong Min Kim; Seonghoon Yi; 'Hanbat National University; 'Kyungpook National University

246 Preparation of Metallic Glass/Metallic Glass Composites Powder by Mechanical Alloying: Pee-Yew Lee; 'National Taiwan Ocean University

247 Some Investigations into Ultrasonic Machining of Alumina-Zirconia Ceramic Composite: Shrikrushna Bhosale; Raju Pawade; 'SVERT's College of Engineering

248 Synthesis and Characterization of Pure and Cu-Doped SnO₂ Nanoparticles: Fermin Aragón; Jose Coaquira; Paulo Morais; Luciana Guilherme; 'University of Brasilia; 'Universidade Estadual de Goiás

249 The Effect of Postweld Heat Treatment on the Mechanical Properties Microstructures of X70 HSLA Steel: M. Hadji; R. Otmani; Tahar Sahraoui; Mostfa Yahia; 'Universite de Blida; 'Welding and Control Research Center

250 The Researching of Deformational Parameters at Copper Alloys Rolling with Protective Coatings: Borys Sereda; Dmytro Krygljak; Irina Krugljak; Dmytro Sereda; 'ZSEA

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