TECH PROGRAM COVER

	Day	Time	Room	Page
Iron and Steel (Ferrous Alloys)				
Advanced Steel Metallurgy: Products and Processing				
Stainless Steel and High Alloy Steels I	MON	PM	408	44
Steel Making and Casting I	MON	PM	407	45
Advanced High Strength Steels I	TUE	AM	409	63
Stainless Steel and High Alloy Steels II	TUE	AM	408	64
Steel Making and Casting II	TUE	AM	407	64
Advanced Steel Coatings	TUE	PM	408	84
Pipe and Tube	TUE	PM	409	84
Advanced High Strength Steels II	WED	AM	408	99
Steel Making and Casting III	WED	AM	407	99
Cold Rolling/Annealing	WED	PM	407	118
Advanced High Strength Steels III	WED	PM	408	117
Studies of Steel Applications	THUR	AM	407	135
Advanced High Strength Steels IV	THUR	AM	408	134
Ferrous Metallurgy: From Past to Present				
Session I	MON	AM	409	37
Session II	MON	PM	409	50
Fifth Symposium on Railroad Tank Cars				
Session I	MON	AM	411	37
Session II	MON	PM	411	50
Structural Characteristics for High-toughness Steels				
Structural Characteristics for High-toughness Steels	THUR	AM	410	144
Vanadium Microalloyed Steels: A Symposium in Memory of Michael Korchynsky				
Vanadium: The Versatile Microalloying Element	MON	AM	410	43
Metallurgical Roles of Vanadium / Vanadium Microallying in Welded Applications	MON	PM	410	62
Processing of Vanadium Steel	TUE	AM	410	82
Vanadium Strengthening Mechanisms in Steel	TUE	PM	410	97
Vanadium Applications in Advanced Steels	WED	AM	410	114
Materials-Environment Interactions				
Advanced Materials for Harsh Environments				
Session I	TUE	PM	405	83
Session II	WED	AM	405	98
Session III	WED	PM	405	116
Session IV	THU	AM	405	134
Corrosion Monitoring and Control				
Corrosion Characterization and Measurement	WED	PM	412	120

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Alloys and Composites I	TUE	PM	329	82
Metal-matrix Composites	WED	AM	329	97
New Materials II	WED	PM	329	115
Alloys and Composites II	THU	AM	329	133
Advanced Manufacturing Technologies				
Advanced Manufacturing I: Surfaces and Removal Processes	TUE	PM	324	83
Advanced Manufacturing II: Deformation Processes	WED	AM	324	98
Advanced Manufacturing III: Newer Methods and Applications	WED	PM	324	116
Advanced Manufacturing IV: Materials and Characterization	THU	AM	324	134
Advanced Solution and Colloidal Processing for Ceramics				
Battery Materials	TUE	PM	334	83
Assembly of Functional Materials	WED	AM	334	99
Synthesis and Fabrication	WED	PM	334	117
Advances in Metal Casting Technologies				
Material Properties & Characterization	TUE	PM	331	85
Modeling/Simulation	WED	AM	331	100
Process Control	WED	PM	331	119
Advances in Titanium Manufacturing: Powder Processing, Powder Metallurgy and Additive/Emerging Manufacturing Techniques				
Additive Manufacturing and 3D Printing	MON	AM	325	36
Structure, Properties and Modeling of Titanium Powder and Alloys	MON	PM	325	46
Titanium PM Additive Manufacturing and Sintering	TUE	AM	325	65
Titanium Powder Production	TUE	PM	325	85
PM Titanium Biomaterials	WED	AM	325	101
Fatigue of Materials III				
Aluminum	MON	AM	336	37
Ferrous Materials I	MON	PM	336	50
Ferrous Materials II	TUE	AM	336	69
Composites	TUE	PM	336	88
Advanced Materials	WED	AM	336	104
Modeling	WED	PM	336	122
Friction Stir Processing				
Friction Stir Processing	TUE	AM	338	69
Joining of Advanced and Specialty Materials (JASM XVI)				
Welding Metallurgy I	MON	AM	330	39
Welding of Lightweight Metals	MON	PM	330	53
Welding Metallurgy II	TUE	AM	330	72
Weld Overlaying	TUE	PM	330	90
Welding Metallurgy III	WED	AM	330	106

	Day	Time	Room	Page
Performance of Advanced Coatings in Industrial Environments	THU	AM	321	133
Advances in Smart and Functional Coatings and Thin Films				
Functional Coatings and Thin Film	MON	AM	321	35
Surface Protection for Enhanced Materials Performance: Science, Technology, and Application				
High Temperature Oxidation-Corrosion Resistant Coatings	MON	AM	323	43
Environmental Barrier Coatings	MON	PM	323	61
Thermal Barrier Coatings	TUE	AM	323	81
Multifunctional and Tribological Coatings	TUE	PM	323	95
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Multifunctional, Wear and Corrosion Resistant Coatings II	WED	PM	323	132
Special Topics				
Continuous Improvement of Academic Programs (and Satisfying ABET Along the Way): The Elizabeth Judson Memorial Symposium				
Session I	TUE	AM	318	67
Session II	TUE	PM	318	86
Innovation in Processing of Light Metals for Transportation Industries: A Symposium in Honor of C. Ravi Ravindran				
Innovative Materials Processing I	MON	AM	333	38
Innovative Materials Processing II/Advances in Casting Technologies	MON	PM	333	52
Microstructure-Property Correlations	TUE	AM	333	71
Microstructural Modification	TUE	PM	333	89
Issues in the Processing of Light Alloys	WED	AM	333	105
High Strength Al Alloys and Composites	WED	PM	333	123
Panel Discussion: Light Alloys: Prospects and Challenges	WED	PM	333	123
Perspectives for Emerging Materials Professionals				
Career Perspectives for Emerging Materials Professionals: Career Opportunities and Experiences in Materials Science and Engineering I	TUE	AM	321	77
Career Perspectives for Emerging Materials Professionals: Career Opportunities and Experiences in Materials Science and Engineering II	TUE	PM	321	93
Robert B. Sosman Award Symposium: Opportunities for Enhancement of Nanomechanical Properties of Materials				
Session I	WED	AM	316	112
Session II	WED	PM	316	131
Rustum Roy Symposium on Processing and Performance of Materials using Microwaves, Electric and Magnetic Fields, Ultrasound, Lasers, and Mechanical Work				
Session I	MON	AM	317	42
Session II	MON	PM	317	60
Session III	TUE	AM	317	79
Session IV	TUE	PM	317	94
Session V	WED	AM	317	112
Session VI	WED	PM	317	131

ACerS Frontiers of Science and Society Rustum Roy Lecture — ACerS Frontiers of Science and Society Rustum Roy Lecture

Sunday PM
October 12, 2014
Room: Room 406
Location: David L. Lawrence Convention Center

Session Chair: David Green, The Pennsylvania State University

5:00 PM Invited
Ceramics for Innovation and Sustainability: *Wolfgang Rossner*[1]; [1]Siemens AG

MS&T'14 Plenary Session — Drivers for Advanced Manufacturing: Energy, Sustainability and Economics

Monday AM
October 13, 2014
Room: Spirit of Pittsburgh Ballroom B-C
Location: David L. Lawrence Convention Center

Session Chairs: Sunniva Collins, CWRU; Kip Findley, Colorado School of Mines; Patrice Turchi, Lawrence Livermore National Laboratory; Kathleen Richardson, University of Central Florida

8:00 AM Introductory Comments
Sunniva Collins, Case Western Reserve University

8:10 AM Invited
Materials Issues in Energy Future: Emerging Architectured Materials: *Yves Brechet*[1]; [1]Grenoble-INP

8:40 AM Invited
Critical Materials: *Alexander King*[1]; [1]The Ames Laboratory

9:10 AM Invited
Advanced Manufacturing of Lightweight Materials for Transportation Applications: Technology Challenges and Opportunities: *Alan Taub*[1]; [1]University of Michigan

9:40 AM Panel Discussion

Advanced Spintronic Materials — Spin-Orbitronics I

Program Organizers: Vincent Sokalski, Carnegie Mellon University; David Laughlin, Carnegie Mellon University; Jian-Gang Zhu, Carnegie Mellon University

Monday AM
October 13, 2014
Room: Room 305
Location: David L. Lawrence Convention Center

Session Chairs: Daniel Worledge, IBM Research; Vincent Sokalski, Carnegie Mellon University

10:20 AM Invited
Highly Efficient Current Induced Domain Wall Motion in Synthetic Antiferromagnetic Racetracks: *Stuart Parkin*[1]; [1]IBM Research

11:00 AM Invited
The Spin Hall Effect, Spin Currents and Spin Orbit Torques in Ferromagnetic/Normal Metal Nanostructures: *Robert Buhrman*[1]; [1]Cornell University

11:40 AM
Micromagnetic Simulation Study of Domain Wall Behaviors in Patterned Magnetic Nanowires: *Liwei Geng*[1]; Yongmei Jin[1]; [1]Michigan Technological University

Advances in Dielectric Materials and Electronic Devices — Ferroics and Related Materials I

Program Organizers: Amar Bhalla, The University of Texas at San Antonio; Ruyan Guo, The University of Texas at San Antonio; K. M. Nair, E.I.duPont de Nemours & Co, Inc; Danilo Suvorov, Jožef Stefan Institute; Rick Ubic, Boise State University

Monday AM
October 13, 2014
Room: Room 307
Location: David L. Lawrence Convention Center

Session Chairs: Amar Bhalla, The University of Texas at San Antonio; K. M. Nair, E.I.duPont de Nemours & Co, Inc

10:20 AM Invited
Nano-size Particles and Nanostructured Functional Materials: *Dragan Uskokovic*[1]; [1]Institute of Technical Sciences of the Serbian Academy of Sciences and Arts

10:40 AM Invited
Voltage Dependent Magnetic Sensors Based on Tunable Varistors: *R. K. Pandey*[1]; [1]Texas State University

11:00 AM Invited
Effect of Domain Structure and Controlled Grain Size on the Dielectric and Piezoelectric Properties of $BaTiO_3$: *Danilo Suvorov*[1]; Marjeta Macek Kržmanc[1]; [1]Jožef Stefan Institute

11:20 AM Invited
Non Lead Relaxors: Self-assembled Nanocomposite: *Tanmoy Maiti*[1]; Ruyan Guo[2]; Amar Bhalla[2]; [1]IIT Kanpur; [2]University of Texas at San Antonio

11:40 AM Invited
Piezoresonant Electrooptic Modulators: Simulations and Comparisons: *Robert McIntosh*[1]; Amar Bhalla[1]; Ruyan Guo[1]; [1]The University of Texas at San Antonio

Advances in Smart and Functional Coatings and Thin Films — Functional Coatings and Thin Film

Program Organizer: Abdel Salam Makhlouf, College of Engineering and Computer Science, University of Texas - Pan American

Monday AM
October 13, 2014
Room: Room 321
Location: David L. Lawrence Convention Center

Session Chair: Shunsuke Nishimoto, Okayama University

10:20 AM Keynote
New Simple Approaches for Designing Eco-friendly Smart and Functional Coatings for Industrial Applications: *Abdel Salam Makhlouf*[1]; [1]College of Engineering and Computer Science, University of Texas - Pan American

11:00 AM
Underwater Superoleophobicity of TiO2 Photocatalyst Surface: *Shunsuke Nishimoto*[1]; Yusuke Sawai[1]; Yoshikazu Kameshima[1]; Michihiro Miyake[1]; [1]Okayama University

Advances in Titanium Manufacturing: Powder Processing, Powder Metallurgy, and Additive/ Emerging Manufacturing Techniques — Additive Manufacturing and 3D Printing

Program Organizers: K. S. Ravi Chandran, University of Utah; Zak Fang, University of Utah ; M. Ashraf Imam, George Washington University; Jean Stewart, ATI Powder Metals

Monday AM
October 13, 2014

Room: Room 325
Location: David L. Lawrence Convention Center

Session Chairs: K. S. Ravi Chandran, University of Utah; Jean Stewart, ATI Powder Metals

10:20 AM Invited
Stainless Steel-titanium Alloy Compositionally Graded Material Using Additive Powder Manufacturing: Himanshu Sahasrabudhe[1]; *Amit Bandyopadhyay*[1]; [1]Washington State University

11:00 AM
3D Printing of Ti Alloys and Quality Control of Its Products and Powder Feedstock: *Xinhua Wu*[1]; Junfa Mei[2]; Rodney Boyer[2]; James Williams[2]; [1]Monash Centre for Additive Manufacturing(MCAM); [2]Falcontech

11:20 AM
Characterization of As-built Microstructure and Mechanical Properties of Ti-6Al-4V Alloy Fabricated by Electron Beam Melting: *Kenta Yamanaka*[1]; Manami Mori[2]; Akihiko Chiba[1]; Tsuyoshi Saito[1]; Shingo Kurosu[1]; Yuichiro Koizumi[1]; [1]Tohoku University; [2]Sendai National College of Technology

11:40 AM
3D Printing of Ti-6Al-4V by Selective Electron Beam Melting (SEBM): *H. P. Tang*[1]; Qian Ma[2]; Guangyu Yang[3]; Nan Liu[3]; Liang Jia[3]; Changshu Xiang[3]; [1]Northwest Institute for Nonferrous Metal Research ; [2]RMIT University; [3]Northwest Institute for Nonferrous Metal Research

Boron, Boron Compounds, and Boron Nanomaterials: Structure, Properties, Processing, and Applications — Nanostructures and Particles I

Program Organizers: Roumiana Petrova, New Jersey Institute of Tech; Jens Kunstmann, Columbia University

Monday AM
October 13, 2014

Room: Room 331
Location: David L. Lawrence Convention Center

Session Chair: Roumiana Petrova, New Jersey Institute of Technology

10:20 AM Invited
Boron Nanotubes: Thermal Stability, Charge Transport and Chemical Functionalization: *Jens Kunstmann*[1]; Viktor Bezugly[2]; Hauke Rabbel[2]; Frederic Berndt[2]; Hartmut Zopf[2]; Gianaurelio Cuniberti[2]; [1]Columbia University; [2]TU Dresden

11:00 AM
Boronated Carbon and Boron Carbide Synthesize Via Aerosol Method: Beril Ozcelik[1]; *Celaletdin Ergun*[1]; [1]Istanbul Technical University

11:20 AM
Insulating Polymer-nanocomposites with Incorporation of 3-D Controlled Boron Nitride Nanosheets Assembly: *Hong-Baek Cho*[1]; Tadachika Nakayama[1]; Hisayuki Suematsu[1]; Tsuneo Suzuki[1]; Weihua Jiang[1]; Koichi Niihara[1]; [1]Nagaoka University of Technology

Computational Design of Ceramic Materials — Ceramics Under Extreme Conditions I

Program Organizers: Liping Huang, Rensselaer Polytechnic Institute; Randall Youngman, Corning Incorporated

Monday AM
October 13, 2014

Room: Room 306
Location: David L. Lawrence Convention Center

Session Chair: Randall Youngman, Corning Incorporated

10:20 AM Invited
Application of Computational Methods to Design Ceramic Microstructure for Radiation Environments: *Veena Tikare*[1]; [1]Sandia National Laboratories

11:00 AM Invited
Molecular Dynamics Simulations of Swift Heavy Ion Tracks in Ceramics: *Ram Devanathan*[1]; [1]Pacific Northwest National Laboratory

11:40 AM Invited
First Principles Studies of Porous Metal Oxide Deposits on Nuclear Fuel Rods in Pressurized Light Water Reactors.: *Donald Brenner*[1]; Christopher O'Brien[1]; Zsolt Rak[1]; Eric Bucholz[1]; [1]North Carolina State University

Energy Storage IV: Materials, Systems and Applications Symposium — Overview

Program Organizers: Xingbo Liu, West Virginia University; Keeyoung Jung, Research Institute of Industrial Science and Technology (RIST); Terry Holesinger, Los Alamos National Laboratory; Yang-Tse Cheng, University of Kentucky; Karen Waldrip, Sandia National Laboratory

Monday AM
October 13, 2014

Room: Room 414
Location: David L. Lawrence Convention Center

Session Chair: Xingbo Liu, West Virginia University

10:20 AM Invited
Sodium Sulfur (NaS) Secondary Battery Research in Korea: Part III. Development of Planar Sodium Sulfur Batteries: *Keeyoung Jung*[1]; Yoon-Cheol Park[1]; Soon-Hong Park[1]; Changhui Lee[1]; Goun Kim[1]; Ju Hyeok Lee[1]; Sung Wun Cheon[1]; Soon Cheol Hwang[1]; Choonmo Yang[1]; Namung Cho[1]; [1]Research Institute of Industrial Science and Technology (RIST)

11:00 AM
Lithium Ion Conductivity in Thiogermanates with Diamond-like Structures: *Jennifer Aitken*[1]; Jacilynn Brant[1]; Christian Bischoff[2]; Deborah Watson[2]; Steve Martin[2]; Kasey Devlin[1]; Danielle Massi[1]; Joseph MacNeil[3]; [1]Duquesne University; [2]Iowa State University; [3]Chatham University

Failure Analysis and Prevention — Historical and Unsolved/Cold Cases

Program Organizers: Nicholas Cherolis, Rolls-Royce Corporation; Dustin Turnquist, ESI; Erhan Ulvan, Acuren Group Inc.

Monday AM
October 13, 2014

Room: Room 406
Location: David L. Lawrence Convention Center

Session Chairs: Erik Mueller, National Transportation Safety Board; Chuck White, Kettering University; Craig Clauser, Crag Clauser Engineering Consulting; Dan Grice, IMR Labs

10:20 AM
Mechanical Twins and a Very Cold Case: *Donato Firrao*[1]; Paolo Matteis[1]; Graziano Ubertalli[1]; Giorgio Scavino[1]; [1]Politecnico di Torino

10:40 AM
Investigation of the Fatigue Cracking Leading to the Fatal Crash of a Replica Wright Flyer: *Erik Mueller*[1]; [1]National Transportation Safety Board

11:00 AM
Metallography of a Hammer Welded Gun Barrel: *Nicholas Cherolis*[1]; [1]Rolls-Royce Corporation

11:20 AM
Failure Analysis of Early Wrought Iron Cannon: *Craig Clauser*[1]; [1]CCECI

11:40 AM
Battleship Gun Tube Metallurgical Analysis: *Charles White*[1]; [1]Kettering University

Fatigue of Materials III — Aluminum

Program Organizers: Tirumalai Srivatsan, The University of Akron; Raghavan Srinivasan, Wright State University; M. Ashraf Imam, George Washington University

Monday AM
October 13, 2014

Room: Room 336
Location: David L. Lawrence Convention Center

Session Chair: To Be Announced

10:20 AM Invited
Sensitization Effects on Fracture and Fatigue of Al-Mg Naval Alloys: *Mohsen Seifi*[1]; John Lewandowski[1]; [1]Case Western Reserve University

11:00 AM
Improvement of Fatigue Properties in Cast Aluminum A_{356} by Warm Deformation: *Matthew Roy*[1]; Daan Maijer[2]; Yves Nadot[3]; [1]The University of Manchester; [2]The University of British Columbia; [3]École Nationale Supérieure de Mécanique et d'Aérotechnique

11:20 AM Invited
Role of Dispersoids on the Fatigue Behavior of Aluminum Alloys: A Review: *Raghavan Srinivasan*[1]; Ashraf Imam[2]; [1]Wright State University; [2]Naval Research Laboratory

11:40 AM
Study on Fatigue Crack Closure Behaviour in Al-7075 T_6 Alloy: *Kenichi Masuda*[1]; Sotomi Ishihara[2]; Yuki Tochikawa[1]; Masaki Okane[2]; Seiichi Nishino[3]; [1]Toyama University; [2]Toyama National College of Technology; [3]Anan National College of Technology

Ferrous Metallurgy: From Past to Present — Session I

Program Organizers: Amy Woods, Steel Dynamics Flat Roll; Kester Clarke, Los Alamos National Laboratory

Monday AM
October 13, 2014

Room: Room 409
Location: David L. Lawrence Convention Center

Session Chair: To Be Announced

10:20 AM Invited
The Historical Development of Phase Transformations Understanding in Ferrous Alloys: *Robert Hackenberg*[1]; [1]Los Alamos National Laboratory

11:00 AM Invited
Introduction of Science into the Production of Steel: *Bernard Queneau*[1]; [1]US Steel (retired)

Fifth Symposium on Railroad Tank Cars — Session I

Program Organizers: Murali Manohar, ArcelorMittal; Amy Woods, Steel Dynamics Flat Roll; Tanya Ros, ArcelorMittal

Monday AM
October 13, 2014

Room: Room 411
Location: David L. Lawrence Convention Center

Session Chair: Murali Manohar, ArcelorMittal Global R&D

10:20 AM Introductory Comments - Dr. Murali Manohar

10:30 AM Keynote
FRA Hazmat Tank Car Research: Safety Issues Facing the Tank Car Industry: Francisco González III[1]; *David Jeong*[2]; [1]U.S. Department of Transportation - Federal Railroad Administration; [2]Volpe National Transportation Systems Center/U.S. Department of Transportation

11:10 AM
Field Examination of Lac-Mégantic Derailed Tank Cars: *Sylvie Dionne*[1]; [1]Transportation Safety Board of Canada

11:30 AM
3D Laser Scan Analysis of Lac-Mégantic Tank Cars: *Sylvie Dionne*[1]; [1]Transportation Safety Board of Canada

Fluctuations and Collective Phenomena in Materials Deformation — Modeling and Simulation

Program Organizers: Karin Dahmen, University of Illinois at Urbana Champaign; Peter Liaw, University of Tennessee; Gongyao Wang, University of Tennessee

Monday AM
October 13, 2014

Room: Room 405
Location: David L. Lawrence Convention Center

Session Chairs: Karin Dahmen, University of Illinois at Urbana Champaign; Peter Liaw, University of Tennessee

10:20 AM Introductory Comments

10:25 AM Invited
Fatigue Crack Initiation, Slip Localization and Twin Boundaries in a Nickel-based Superalloy: *Anthony Rollett*[1]; Clayton Stein[1]; Albert Cerrone[2]; Tugce Ozturk[1]; Anthony Ingraffea[2]; [1]Carnegie Mellon University; [2]Cornell University

11:05 AM
Characterization of Serrated Flows in High Entropy Alloys: Xie Xie[1]; Shuying Chen[1]; James Antonaglia[2]; Junwei Qiao[3]; Gongyao Wang[1]; Yong Zhang[4]; Karin Dahmen[2]; *Peter Liaw*[1]; [1]University of Tennessee; [2]University of Illinois at Urbana Champaign; [3]Taiyuan University of Technology; [4]University of Science and Technology Beijing

11:45 AM
Microstructure-sensitive Modeling of Void Nucleation in Single-phase Polycrystalline Materials: *Evan Lieberman*[1]; Anthony Rollett[1]; Edward Kober[2]; Ricardo Lebensohn[2]; [1]Carnegie Mellon University; [2]Los Alamos National Laboratory

12:05 PM Invited
Discrete Dislocation Dynamics with Anisotropic Elasticity: *Richard LeSar*[1]; John Graham[1]; Anthony Rollett[2]; [1]Iowa State University; [2]Carnegie Mellon University

12:45 PM
Statistical Analysis of Nanoindentation Pop-in Behavior and What It Can Tell Us about Material Structure: *Michael Maughan*[1]; David Bahr[1]; [1]Purdue University

1:05 PM
Elastic-plastic-brittle Transitions in Disordered Media: Avalanches and Fractals: *Sohan Kale*[1]; Martin Ostoja-Starzewski[1]; [1]University of Illinois at Urbana-Champaign

Glass and Optical Materials — Optical Fibers

Program Organizers: Juejun Hu, University of Delaware; David Musgraves, IRradiance Glass Inc.

Monday AM
October 13, 2014

Room: Room 302
Location: David L. Lawrence Convention Center

Session Chair: To Be Announced

10:20 AM Invited
Elaboration of All-solid Chalcogenide Microstructured Optical Fibers: *Johann Troles*[1]; Celine Caillaud[1]; Gilles Renversez[2]; Laurent Brilland[3]; David Mechin[3]; Jean-Luc Adam[1]; [1]University of Rennes 1; [2]University of Aix-Marseille; [3]Perfos

11:00 AM Invited
Multimaterial Fibers in Photonics and Nanotechnology: *Guangming Tao*[1]; Ayman Abouraddy[1]; [1]University of Central Florida

11:40 AM
Structural Changes and Elastic Properties of Bent Silica Fibers: *Michael Guerette*[1]; Liping Huang[1]; [1]RPI

Green Technologies for Materials Manufacturing and Processing VI — Green Manufacturing I

Program Organizers: Tatsuki Ohji, National Institute of Advanced Industrial Science and Technology (AIST); Mrityunjay Singh, Ohio Aerospace Institute, NASA Glenn Research Center; Richard Sisson, Worcester Polytechnic Institute, Center for Heat Treating Excellence; Marsha Bischel, Armstrong World Industries, Inc.; Makio Naito, Osaka University; Allen Apblett, Oklahoma State University

Monday AM
October 13, 2014

Room: Room 311
Location: David L. Lawrence Convention Center

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

10:20 AM Invited
Green Manufacturing of Geopolymer from Industrial Wastes as the Next-generation Cementitious Binder: *Jianyu Liang*[1]; Mo Zhang[1]; Mingjiang Tao[1]; Yifeng Ling[1]; [1]Worcester Polytechnic Institute

10:40 AM
Iron Production Via a Green Electrolysis: *Yan Wang*[1]; [1]Worcester Polytechnic Institute

11:00 AM
Silicon Recovery from Waste Electrical and Electronic Equipment for the Photovoltaic Industry: *Fernando Kameoka*[1]; Denise Espinosa[1]; Jorge Tenorio[1]; [1]University of Sao Paulo

11:20 AM
A Green Leaching Method of Decomposing Synthetic CaWO4 by HCl-H3PO4 in Tungsten Producing Process: *Liang Liu*[1]; Jilai Xue[1]; [1]University of Science and Technology Beijing

Innovation in Processing of Light Metals for Transportation Industries: A Symposium in Honor of C. Ravi Ravindran — Innovative Materials Processing I

Program Organizers: Lukas Bichler, University of British Columbia; B S Murty, Indian Institute of Technology Madras

Monday AM
October 13, 2014

Room: Room 333
Location: David L. Lawrence Convention Center

Session Chair: Krishan Chawla, University of Alabama at Birmingham

10:20 AM Introductory Comments

10:40 AM Keynote
High Temperature High Strength Aluminium Alloys for Transportation Sector: *Kamanio Chattopadhyay*[1]; S. K. Makineni[1]; C.S. Tiwary[1]; S. Kumar[1]; [1]Indian Institute of Science

11:20 AM Invited
Aluminium Based In-situ Composites for Automotive and Aerospace Applications: *Srinivasa Murty Budaraju*[1]; [1]IIT Madras

11:40 AM Invited
Some Perspectives on Innovative Processing and Materials Development: Genjiro Motoyasu[1]; Atsumi Ohno[1]; Hiroshi Soda[2]; *Alexander McLean*[2]; [1]Chiba Institute of Technology; [2]University of Toronto

Interfaces, Grain Boundaries, and Surfaces from Atomistic and Macroscopic Approaches: Fundamental and Engineering Issues — Interface Thermodynamics

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

Monday AM
October 13, 2014

Room: Room 404
Location: David L. Lawrence Convention Center

Session Chairs: Paul Wynblatt, CMU; Dominique Chatain, CNRS

10:20 AM Keynote
Templated Edge Retraction during Solid-state Dewetting of Thin Films: *Carl Thompson*[1]; [1]MIT

11:00 AM Invited
Capillary Phenomena in Thin Films: When Interface Diffusion Becomes Dominant: *Dor Amram*[1]; Oleg Kovalenko[1]; Leonid Klinger[1]; Eugen Rabkin[1]; [1]Technion - Israel Institute of Technology

11:20 AM Invited
Mechanisms of Slip During Rapid Contact Line Advancement: *Edmund Webb*[1]; Baiou Shi[1]; [1]Lehigh University

11:40 AM
Observation of an Unusual Case of Triple-line Wetting by a Vapor Phase: *Yuanyao Zhang*[1]; Jian Luo[1]; [1]University of California, San Diego

International Symposium on Defects, Transport, and Related Phenomena — Defects and Transport in Ceramics: Fundamentals I

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

Monday AM
October 13, 2014

Room: Room 403
Location: David L. Lawrence Convention Center

Session Chair: Hans Wiemhöfer, University of Münster

10:20 AM Invited
A New Method to Measure Oxygen Thermomigration in Mixed Conductor Oxides: *Han-Ill Yoo*[1]; Inbeom Lee[1]; Taewon Lee[1]; [1]Department of Materials Science and Engineering, Seoul National University

11:00 AM
Adhesion and Pb Diffusion across Pt/Pb(Zr,Ti)O_3 and Pt_3Pb/Pb(Zr,Ti)O_3 Interfaces: Influence of Composition, Defects, and Disorder: Fang-Yin Lin[1]; Aleksandr Chernatynskiy[1]; Simon Phillpot[1]; Juan Nino[1]; Jacob Jones[2]; *Susan Sinnott*[1]; [1]University of Florida; [2]North Carolina State University

11:20 AM Invited
Polar Surface Domains in Non-polar Materials: *Gregory Rohrer*[1]; Paul Salvador[1]; Ratiporn Munprom[1]; [1]Carnegie Mellon University

Joining of Advanced and Specialty Materials (JASM XVI) — Welding Metallurgy I

Program Organizers: Michael Halbig, NASA Glenn Research Center; Boian Alexandrov, The Ohio State University; Akio Hirose, Osaka University; Anming Hu, University of Tennessee; Peng He, Harbin Insitute of Technology; Darren Barborak, Aquilex WSI; Bingtao Li, AZZ WSI; Xinjin Cao, Institute for Aerospace Research

Monday AM
October 13, 2014

Room: Room 330
Location: David L. Lawrence Convention Center

Session Chair: Michael Halbig, NASA Glenn Research Center

10:20 AM Keynote
Influence of System Factors on Energy Consumption during Resistance Welding: *Jerry Gould*[1]; [1]Edison Welding Institute (EWI)

11:00 AM
Applying Advanced Electron Beam Technologies for Welding of Gamma-prime Strengthened Superalloys: *Amber Black*[1]; John Rugh[1]; Gary LaFlamme[1]; Daniel Cunningham[1]; [1]PTR - Precision Technologies, Inc.

11:20 AM
Multi-scale FEA Modeling of Brazed Joint Structures in Ni-based Superalloys for Gas Turbine Applications: *Bryan Riggs*[1]; [1]The Ohio State University

11:40 AM
Weldability of High-temperature Shape Memory Alloys: *Jeffrey Rodelas*[1]; [1]Sandia National Laboratories

Materials and Processes for CO_2 Capture, Conversion, and Sequestration — Metal Organic Frameworks

Program Organizers: Kevin Huang, University of South Carolina; Winnie Wong-Ng, NIST; David Luebke, National Energy Technology Laboratory; Omar Farha, Northwestern University; Xiaotong Wei, Membrane Technology and Research, Inc.; Lan Li, Boise State University

Monday AM
October 13, 2014

Room: Room 312
Location: David L. Lawrence Convention Center

Session Chair: Kevin Huang, University of South Carolina

10:20 AM Invited
Functionalized, Rigid, and Structurally Dynamic Metal Organic Frameworks: *Christopher Matranga*[1]; [1]US DOE- NETL

11:00 AM Invited
Metal Organic Frameworks for Energy Applications: *Praveen Thallapally*[1]; Peter McGrail[1]; Radha Kishan Motkuri[1]; Jeromy Jenks[1]; Paul Martin[1]; [1]Pacific Northwest National Laboratory

11:40 AM Invited
Selected Metal Organic Framework (MOF) Materials for CO_2 Capture Applications: *Winnie Wong-Ng*[1]; James Kaduk[2]; Jeffrey Culp[3]; Yu-Sheng Chen[4]; Christopher Matranger[5]; Laura Espinal[1]; Andrew Allen[1]; Igor Levin[1]; Hui Wu[1]; Matthew Suchomel[6]; [1]NIST; [2]Illinois Institute of Technology; [3]URS; [4]The University of Chicago; [5]National Energy Technology Laboratory ; [6]Argonne National Laboratory

Materials Development for Nuclear Applications and Extreme Environments — Irradiation Effects I

Program Organizers: Raghunath Kanakala, University of Idaho; Ram Devanathan, Pacific Northwest National Laboratory; Josef Matyas, Pacific Northwest National Laboratory; Kevin Fox, Savannah River National Laboratory; Elizabeth Hoffman, Savannah River National Laboratory; Raul Rebak, GE Global Research; Aladar Csontos, U.S. Nuclear Regulatory Commission; Kumar Sridharan, University of Wisconsin; Bill Lee, Imperial College London

Monday AM
October 13, 2014

Room: Room 415
Location: David L. Lawrence Convention Center

Session Chairs: Olivia Graeve, University of California San Diego; Yutai Katoh, ORNL

10:20 AM Invited
Synergistic Effect of Neutron Radiation and Thermal Aging on Cast Stainless Steels: *Yong Yang*[1]; [1]University of Florida

11:00 AM
Analyzing Irradiation Effects on Nano- Yttria Stabilized Zirconia: *Sanchita Dey*[1]; James Valdez[2]; Yongqiang Wang[2]; Terry Holesinger[2]; Ricardo Castro[1]; [1]UCDavis; [2]Los Alamos National Laboratory

11:20 AM
Irradiation Effect on Magnetic Nanomaterials and Their Applications in Nuclear Energy: Jennifer Anand Sundararajan[1]; Maninder Kaur[1]; Weilin Jiang[2]; John McCloy[3]; *You Qiang*[1]; [1]University of Idaho; [2]Pacific Northwest National Laboratory; [3]Washington State University

Materials Issues in Nuclear Waste Management in the 21st Century — Recent Developments and Progress in Nuclear Waste Vitrification I

Program Organizers: Josef Matyas, Pacific Northwest National Laboratory; Stéphane Gin, CEA; Kevin Fox, Savannah River National Laboratory; Elizabeth Hoffman, Savannah River National Laboratory; Dawn Janney, Idaho National Laboratory; Ramana Reddy, The University of Alabama; Ram Devanathan, Pacific Northwest National Laboratory; Raghunath Kanakala, University of Idaho

Monday AM
October 13, 2014

Room: Room 413
Location: David L. Lawrence Convention Center

Session Chairs: Josef Matyas, Pacific Northwest National Laboratory; Kevin Fox, Savannah River National Laboratory

10:20 AM Invited
Vitrification in France: Current Status and Perspectives: *Eric Chauvin*[1]; Christian Ladirat[2]; [1]AREVA; [2]CEA

11:00 AM Invited
Operational Experience and Benefits Derived from the Vitrification Test Rig Experimental Programme: *Nick Gribble*[1]; Carl Steele[2]; [1]UK National Nuclear Laboratory; [2]Sellafield Ltd

11:40 AM
Research-scale Melter: An Experimental Platform for Evaluating Crystal Accumulation in the HLW Glasses: *Josef Matyas*[1]; Gary Sevigny[1]; Michael Schweiger[1]; Albert Kruger[2]; [1]Pacific Northwest National Laboratory; [2]DOE-ORP

Materials Science of Additive Manufacturing — Materials Characterization I

Program Organizers: Panagiotis (Pan) Michaleris, Penn State University; Brett Conner, Youngstown State University; Michael Blaszkiewicz, SABIC Innovative Plastics; Wayne King, LLNL; Edward Reutzel, ARL Penn State; Todd Palmer, Penn State; Crystal Morrison, RJ Lee Group; Guha Manogharan, YSU

Monday AM
October 13, 2014

Room: Room 328
Location: David L. Lawrence Convention Center

Session Chair: Michael Blaszkiewicz, SABIC Innovative Plastics

10:20 AM Invited
Additive Manufacturing Materials: An Inter-Laboratory Study: *John Slotwinski*[1]; [1]Johns Hopkins University Applied Physics Laboratory

11:00 AM
Microstructural and Porosity Characterization during the Sintering Process of 420 Stainless Steel Samples Using Powder Based 3D Printing: *Zhou Yu*[1]; Sin Chien Siw[1]; Isaac Garcia[1]; [1]University of Pittsburgh

11:20 AM
Characterization of Anisotropic Plasticity and Fracture Properties of Ti-6Al-4V Components Fabricated Using Laser-based Directed Energy Deposition: Beth Carroll[1]; Todd Palmer[1]; *Allison Beese*[1]; [1]Pennsylvania State University

11:40 AM
Characterizing the High Strain Rate Mechanical Behavior of Stainless Steel 316L Processed by Selective Laser Melting: *Travis Kneen*[1]; Ashley Bowers[1]; Brett Conner[1]; Guha Manogharan[1]; [1]Youngstown State University

Multiscale Modeling of Microstructure Deformation in Material Processing — Session I

Program Organizers: Lukasz Madej, AGH University of Science and Technology; Maciej Pietrzyk, AGH University of Science and Technology

Monday AM
October 13, 2014

Room: Room 324
Location: David L. Lawrence Convention Center

Session Chair: Lukasz Madej, AGH University of Science and Technology

10:20 AM Invited
Sensitivity Analysis and Identification of Internal Variable Material Model: *Danuta Szeliga*[1]; [1]AGH University of Science and Technology

11:00 AM
Evaluation of an X-ray Stress Technique by Means of Crystal Plasticity: *Youngung Jeong*[1]; Thomas Gnaeupel-Herold[1]; Mark Iadicola[1]; Adam Creuziger[1]; [1]National Institute of Standards and Technology

11:20 AM
An Exponential Hardening Model for Crystal Plasticity Modeling of Single Crystals: *Aboozar Mapar*[1]; [1]Michigan State University

11:40 AM
Fast Fourier Transform Based Mechanical Behavior Formulation: Optimized Implementation and Sensitivity Analysis of the Method: *Tugce Ozturk*[1]; Thom Popovici[1]; Clayton Stein[1]; Reeju Pokharel[1]; Franz Franchetti[1]; Anthony Rollett[1]; [1]Carnegie Mellon University

Nanomechanics of Biomaterials — Nanomechanics of Biomaterials I

Program Organizers: Kantesh Balani, Indian Institute of Technology Kanpur; R Jayaganthan, IIT Roorkee; Roger Narayan, UNC/NCSU Joint Department of Biomedical Engineering; Virginia Ferguson, University of Colorado, Boulder; Donna Ebenstein, Bucknell University

Monday AM
October 13, 2014

Room: Room 316
Location: David L. Lawrence Convention Center

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

10:20 AM Keynote
Nanomechanics of Biological Cells in Health and Disease: *Subra Suresh*[1]; [1]Carnegie Mellon University

11:00 AM Keynote
Nanoindentation and Contact Modeling of Natural and Artificial Biomaterials: *Timothy Ovaert*[1]; [1]University of Notre Dame

11:40 AM
Necking and Failure of Constrained 3D Microtissues induced by Cellular Tension: *Vivek Shenoy*[1]; Hailong Wang[1]; Alexander Svoronos[2]; Thomas Boudou[1]; Mahmut Selman Sakar[3]; Jacquelyn Youssef Schell[2]; Jeffrey Morgan[2]; Christopher Chen[1]; [1]University of Pennsylvania; [2]Brown University; [3]Eidgenössische Technische Hochschule Zürich

Nanotechnology for Energy, Environment, Electronics, and Industry — Energy & Environment I

Program Organizers: Gary Pickrell, Virginia Tech; Navin Manjooran, Siemens AG

Monday AM
October 13, 2014

Room: Room 320
Location: David L. Lawrence Convention Center

Session Chairs: Navin Manjooran, Siemens AG; Gary Pickrell, Virginia Tech; Parthiban Rajashekaran, UCF

10:20 AM Introductory Comments

10:40 AM
Plasmon Assisted Semiconductor Nanoparticles Sensitized Solar Cells: *Salim Caliskan*[1]; Jung Kun Lee[1]; [1]University of Pittsburgh

11:00 AM
The Evolving Intellectual Property Landscape for Nanomaterials: *Keith Weiss*[1]; Kelly Burris[1]; [1]Brinks, Gilson, & Lione

11:20 AM
Effects of Non-ionic,Cationic and Anionic Surfactants on the Sol-gel Formation of Iridium Oxide with Samarium Doped Ceria Perovskite Nano-composites for Sofc Applications: *Njoku Chima*[1]; Ndungu Patrick[1]; [1]University of Kwazulunatal

Next Generation Biomaterials — Session I

Program Organizers: Roger Narayan, UNC/NCSU Joint Department of Biomedical Engineering; Diego Mantovani, Laval University; Raman Singh, Monash University

Monday AM
October 13, 2014

Room: Room 315
Location: David L. Lawrence Convention Center

Session Chairs: Sarit Bhaduri , University of Toledo; Mitsuo Niinomi, Tohoku University

10:20 AM Invited
New Generation of Cardiovascular Biomaterials: A Dry Ditch Separates Research Scientists and Clinicians: *Robert Guidoin*[1]; Mark Nutley[2]; Jing Lin[3]; Ze Zhang[1]; Lu Wang[3]; Yvan Douville[1]; [1]Laval University; [2]Peter Lougheed Health Centre; [3]Donghua University

10:40 AM Invited
Strengthening Behaviors of Low-precious Ag-Pd-Au-Zn Alloys for Dental Applications: *Mitsuo Niinomi*[1]; Masaaki Nakai[1]; Junko Hieda[1]; Ken Cho[1]; Yonghwan Kim[1]; Hisao Fukui[2]; [1]Tohoku University; [2]Aicji-Gakuin University

11:00 AM Invited
Microwave Processing of Biomaterials: *Sarit Bhaduri*[1]; Yufu Ren[1]; Huan Zhou[2]; [1]University of Toledo; [2]Changzhou University

11:20 AM Invited
Degradable Metals for the Next Generation Biomaterials: *Diego Mantovani*[1]; [1]Laval University

Phase Stability, Diffusion Kinetics, and their Applications (PSDK-IX) — Phase Stabilites and Diffusion Kinetics of Structural Materials

Program Organizers: Dongwon Shin, Oak Ridge National Laboratory; In-Ho Jung, McGill University; James Saal, Northwestern University; Raymundo Arroyave, Texas A & M University

Monday AM
October 13, 2014

Room: Room 402
Location: David L. Lawrence Convention Center

Session Chairs: Ji-Cheng Zhao, The Ohio State University; In-Ho Jung, McGill University

10:20 AM
Study of Fe-Mn-X Systems for the Development of High-temperature Steels for Advanced Ultrasupercritical Steam Turbines: Changdong Wei[1]; *Ji-Cheng Zhao*[1]; [1]The Ohio State University

10:40 AM
Microstructure-mechanical Property Correlation in Several Cast Aluminum Alloys: *Shibayan Roy*[1]; C. Shane Hawkins[1]; Dana McClurg[1]; G. Muralidharan[1]; Amit Shyam[1]; [1]Oak Ridge National Laboratory

11:00 AM
Thermodynamic Modeling of the Al-rich Corner of the Al-Cr-Mg-Mn Quaternary System: *Senlin Cui*[1]; In-Ho Jung[1]; [1]McGill University

11:20 AM
Thermodynamic Modeling of Sulfur in Steels: *David Dilner*[1]; Lina Kjellqvist[2]; [1]KTH Royal Institute of Technology; [2]Thermo-Calc Software AB

11:40 AM
Austenite Stability in Austempered Ductile Iron: *Ann Zammit*[1]; Lynne Hopkins[1]; Matthew Maunay[2]; Stephen Abela[1]; Maurice Grech[1]; [1]University of Malta; [2]Ecole Nationale Superieure des Ingenieurs en Arts Chimiques et Technologiques

Rustum Roy Symposium on Processing and Performance of Materials using Microwaves, Electric and Magnetic Fields, Ultrasound, Lasers, and Mechanical Work — Session I

Program Organizers: Morsi Mahmoud , Karlsruhe Institute of Technology (KIT) & City for Scientific Research and Technological Applications (SRTA City); Dinesh Agrawal, Pennsylvania State University; Guido Link, Karlsruhe Institute of Technology; Motoyasu Sato, Chubu University; Rishi Raj, University of Colorado

Monday AM
October 13, 2014
Room: Room 317
Location: David L. Lawrence Convention Center

Session Chair: Morsi Mahmoud, Karlsruhe Institute of Technology (KIT) & City for Scientific Research and Technological Applications (SRTA City)

10:20 AM Invited
Millimeter and Microwave Processing at the U.S. Naval Research Laboratory: *Ralph Bruce*[1]; Arne Fliflet[2]; M. Ashraf Imam[2]; Benjamin Rock[2]; [1]Vanderbilt University; [2]Naval Research Laboratory

11:00 AM
A Multi-tip Dielectric Property Probe for High Temperature Measurements of Dielectric Properties as a Function of Temperature: Edward Ripley[1]; Jeffery Cook[1]; [1]B&W Y-12 Plant

11:20 AM
Competition between Sintering Mechanism during Microwave and Spark-plasma Sintering of Ceramic on Initial, Intermediate and Final Stages of Sintering: *Dmytro Demirskyi*[1]; Hanna Borodianska[1]; Dinesh Agrawal[2]; Oleg Vasylkiv[1]; Yoshio Sakka[1]; [1]National Institute for Materials Science; [2]Pennsylvania State University

11:40 AM
Two-step Microwave Sintering of Nanostructured ZnO-based Varistor: *Rodolfo Gunnewiek*[1]; Ruth Kiminami[1]; [1]Universidade Federal de São Carlos

12:00 PM
Permittivity and Electric Conductivity Measurement of Inorganic Powder Mixed with Graphite: *Noboru Yoshikawa*[1]; Keita Kawahira[2]; Youichi Saito[3]; Hidekazu Todoroki[3]; Shoji Taniguchi[1]; [1]Tohoku University; [2]JX Nippon Mining and Metals Co. Ltd ; [3]Nippon Yoakin Kogyo Co. Ltd

Sintering and Related Powder Processing Science and Technologies — Sintering: SPS I

Program Organizers: Ricardo H. R. Castro, University of California at Davis; Eugene Olevsky, San Diego State University; Olivia Graeve, University of California, San Diego; Umberto Anselmi-Tamburini, University of Pavia; Zak Fang, University of Utah ; Troy Holland, Colorado State University

Monday AM
October 13, 2014
Room: Room 326
Location: David L. Lawrence Convention Center

Session Chair: Ricardo Castro, University of California, Davis

10:20 AM Invited
Development of Electric Current Activated/Assisted Sintering (ECAS, SPS): *Yoshio Sakka*[1]; [1]NIMS

11:00 AM Invited
Sintering of Oxide Ceramic Materials under Electric Field/Current: *Olivier Guillon*[1]; Benjamin Dargatz[1]; Jesus Gonzalez-Julian[1]; Christoph Schmerbauch[1]; [1]Forschungszentrum Juelich

11:40 AM
Flash Spark-plasma Sintering of SiC Powder: Further Developments: *Eugene Olevsky*[1]; Geuntak Lee[1]; [1]San Diego State University

Structural Intermetallics: Alloy Design, Processing, and Applications — Intermetallics in Superalloys

Program Organizers: David Forrest, Department of Energy; John Perepezko, University of Wisconsin-Madison; Bruce Pint, Oak Ridge National Laboratory

Monday AM
October 13, 2014
Room: Room 335
Location: David L. Lawrence Convention Center

Session Chair: John Perepezko, University of Wisconsin

10:20 AM Invited
Sigma Phase as a Potential Strengthener at Elevated Temperatures in Fe-Ni-Cr Systems: *Masao Takeyama*[1]; Taku Hirosawa[2]; Yoshiki Kumagai[3]; Naoki Takata[1]; [1]Tokyo Institute of Technology; [2]Tokyo Tech (now Hitach Metal Co. Ltd); [3]Tokyo Tech

11:00 AM
Magnetic and Structural Analyzes of the Deformation Failures in Nickel Superalloys: *Nataliya Kazantseva*[1]; Natalya Stepanova[2]; Mihael Rigmant[2]; Denis Davidov[2]; [1]Institute of Metal Physics ; [2]Institute of Metal Physics

11:20 AM
Design of an Eta-phase Precipitation-hardenable Nickel-based Alloy with the Potential for Improved Creep Strength above 750°C: *Matthew Wong*[1]; Paul Sanders[1]; John Shingledecker[2]; Calvin White[1]; [1]Michigan Technological University; [2]Electric Power Research Institute

11:40 AM
The Effects of Cold Work and Heat Treatment on the Microstructure and Mechanical Properties of Iron Based Superalloys: *Bin Hu*[1]; Ian Baker[1]; [1]Dartmouth College

Surface Properties of Biomaterials V — Antimicrobial Surfaces

Program Organizers: Susmita Bose, Washington State University; Amit Bandyopadhyay, Washington State University; Mukesh Kumar, Biomet Inc

Monday AM
October 13, 2014

Room: Room 310
Location: David L. Lawrence Convention Center

Session Chair: Susmita Bose, Washington State University

10:20 AM
The Efficacy of Silver Nanoparticles in Controlling the Colonization of Microfilters by Environmental Mycobacteria: Curtis Larimer[1]; Mohammad Islam[1]; Anil Ojha[1]; *Ian Nettleship*[1]; [1]University of Pittsburgh

10:40 AM
Evaluation of Mechanical Damage on TiO_2 Nanotubes with and without Silver Coating: *Anish Shivaram*[1]; Susmita Bose[1]; Amit Bandyopadhyay[1]; [1]Washington State University

11:00 AM Invited
Tunable Biointerfaces: Bioactive to Antimicrobial Surfaces: *Candan Tamerler*[1]; [1]University of Kansas

11:40 AM
Study of Silver Nanoparticle Coating and Its Vivo Biocompatibility on Stainless Steel Implants: Samit Nandi[1]; Anish Shivaram[2]; *Amit Bandyopadhyay*[2]; Susmita Bose[2]; [1]West Bengal University of Animal & Fishery Sciences; [2]Washington State University

Surface Protection for Enhanced Materials Performance: Science, Technology, and Application — High Temperature Oxidation-Corrosion Resistant Coatings

Program Organizers: Dongming Zhu, NASA Glenn Research Center; Rodney Trice, Purdue University; Yutaka Kagawa, The University of Tokyo; Daniel Mumm, University of California-Irvine; Hua-Tay Lin, Oak Ridge National Laboratory; Kang Lee, Rolls Royce; Mitchell Dorfman, Sulzer Metco (US) Inc.; Christian Moreau, Concordia University

Monday AM
October 13, 2014

Room: Room 323
Location: David L. Lawrence Convention Center

Session Chair: Daniel Mumm, University of California-Irvine

10:20 AM Invited
Preliminary Evaluations of MAX Phases for Turbine Coatings: *James Smialek*[1]; Anita Garg[1]; James Nesbitt[1]; Bryan Harder[1]; [1]NASA Glenn Research Center

11:00 AM
Development of γ-Ni Based Coatings for Extended Resistance to Low-temperature Hot Corrosion and Oxidation: *Xu Liu*[1]; Brian Gleeson[1]; [1]University of Pittsburgh

11:20 AM
Formation of an Adherent Protective Alumina Scale on Ni-base Superalloys after Surface Modification with Fluorine and Reactive Elements: *Hans-Eberhard Zschau*[1]; Michael Schütze[1]; Mathias Galetz[1]; Sven Neve[1]; Frederik King[1]; Michael Lorenz[1]; Marius Grundmann[1]; [1]DECHEMA - Forschungsinstitut

11:40 AM
Use of Computational Thermodynamics to Optimize MCrAlY Coating Design against High Temperature Corrosion: *Thomas Gheno*[1]; Xuan Liu[2]; Zi-Kui Liu[2]; Brian Gleeson[1]; [1]University of Pittsburgh; [2]Pennsylvania State University

Thermal Protection Materials and Systems — Thermal Protection Materials: Needs, Applications, and Analysis

Program Organizers: Sylvia Johnson, NASA-Ames Research Center; Parul Agrawal, ERC Corporation; Frances Hurwitz, NASA Glenn Research Center; John Lawson, NASA Ames Research Center

Monday AM
October 13, 2014

Room: Room 412
Location: David L. Lawrence Convention Center

Session Chairs: Sylvia Johnson, NASA-Ames Research Center; Jean-Marc Bouilly, AIRBUS Defence and Space

10:20 AM
USAF Overview of Materials for Hypersonic System Concepts: *Kenneth Davidson*[1]; [1]USAF, AFRL/RXCCP

10:40 AM
Thermal Protection Materials and System for NASA Needs: *Sylvia Johnson*[1]; Thomas Squire[1]; [1]NASA Ames Research Center

11:00 AM
Maturation of AIRBUS D&S Thermal Protection Systems Portfolio: *Wolfgang P.P. Fischer*[1]; [1]AIRBUS D&S

11:20 AM
Fundamental Data Requirements for Thermal and Mechanical Response Analysis of Thermal Protection Materials and Systems: *Thomas Squire*[1]; Sylvia Johnson[1]; [1]NASA Ames Research Center

11:40 AM
Thermal Testing of Thermal Protection System Materials: *Parul Agrawal*[1]; Matthew Gasch[2]; [1]ERC Corporation; [2]NASA Ames

Vanadium Microalloyed Steels: A Symposium in Memory of Michael Korchynsky — Vanadium:The Versatile Microalloying Element

Program Organizers: Riad Asfahani, U. S. Steel Research & Technology; David Milbourn, Vanitec Limited; Robert Glodowski, Evraz East Metals NA; Bevis Hutchinson, Swerea KIMAB; Anthony Deardo, University of Pittsburgh; Yang Caifu, Central Iron & Steel Research Institute; Terry Perles, TTP Squared, Inc.

Monday AM
October 13, 2014

Room: Room 410
Location: David L. Lawrence Convention Center

Session Chair: Riad Asfahani, U. S. Steel Research & Technology

10:20 AM
Vanadium – The Versatile Microalloy Element: *Bevis Hutchinson*[1]; Rune Lagneborg[1]; [1]Swerea KIMAB

11:00 AM
Development and Applications of V-N Microalloyed Steels in China: *Yang Caifu*[1]; Pan Tao[1]; Chai Feng[1]; Wang Ruizhen[1]; Chen Xuehui[1]; [1]Central Iron & Steel Research Institute

11:40 AM
The Influence of V, N Content on the Vanadium Precipitation Behavior and Intragranular Ferrite Transformation in Low Carbon Steel: Jiangnan Ma[1]; *Caifu Yang*[1]; Ruizhen Wang[1]; [1]CISRI (Central Iron and Steel Research Institute)

ASM-TMS 2014 Joint Distinguished Lectureship in Materials and Society — Materials and Society Lecture

Monday PM
October 13, 2014
Room: Room 406
Location: David L. Lawrence Convention Center

1:00 PM Introductory Comments
Hani Henein, 2014 TMS President

1:05 PM Introductory Comments
C. Ravi Ravindran, 2014 ASM President

1:10 PM Invited
Materials for a Non-steady State World: *Robert Schafrik*[1]; [1]GE Aviation Retired

1:55 PM Presentation of Award
Hani Henein, 2014 TMS President

2:00 PM Adjournment
C. Ravi Ravindran, 2014 ASM President

ACerS Richard M. Fulrath Award Session — ACerS Richard M. Fulrath Award Session

Monday PM
October 13, 2014
Room: Room 303
Location: David L. Lawrence Convention Center

Session Chair: Thomas Mason, Northwestern University

2:00 PM Invited
Alkali Niobate Perovskite for Lead-free Piezoelectrics: *Ken-ichi Kakimoto*[1]; [1]Nagoya Institute of Technology

2:40 PM Invited
Development of Monolithic Multilayer Type Thermoelectric Generator by Co-fire Technology: *Takanori Nakamura*[1]; [1]Murata Manufacturing Co., Ltd.

3:00 PM Invited
Additive Manufacturing of Silicon Carbide: *Edward Herderick*[1]; [1]rp+m

3:20 PM Break

3:40 PM Invited
Challenges on the Development of Rare-earth Less and Free Magnets: Yasushi Enokido[1]; [1]TDK Corporation

4:00 PM Invited
3D Printing of Ceramics in Bone Tissue Engineering and Beyond: *Susmita Bose*[1]; [1]Washington State University

Advanced Spintronic Materials — Spin-Orbitronics II

Program Organizers: Vincent Sokalski, Carnegie Mellon University; David Laughlin, Carnegie Mellon University; Jian-Gang Zhu, Carnegie Mellon University

Monday PM
October 13, 2014
Room: Room 305
Location: David L. Lawrence Convention Center

Session Chair: Robert Buhrman, Cornell University

2:00 PM Invited
Magneto-ionic Control of Interfacial Magnetism: *Geoffrey Beach*[1]; [1]Massachusetts Institute of Technology

2:40 PM Invited
Magnetization Switching and Spin-orbit Torques in Heavy Metal/ Ferromagnetic Layers: *Pietro Gambardella*[1]; [1]ETH Zurich

3:20 PM Break

3:40 PM Invited
Control of Magnetization Using Spin Orbit Torque: *Sayeef Salahuddin*[1]; [1]University of California Berkeley

4:20 PM
Longitudinal Spin Wave: *John Wallace*[1]; [1]Casting Analysis Corp

4:40 PM
Phase Field Simulations of Stress and Magnetic Field Induced Metamagnetic Martensite Transition in NiCoMnIn Alloys: *Houbing Huang*[1]; Xingqiao Ma[2]; Jianjun Wang[2]; Zhuhong Liu[2]; Wangqiang He[2]; Long-Qing Chen[1]; [1]Penn State University; [2]Beijing University of Science and Technology

5:00 PM
Phase Field Simulations of Stress-control Magnetization Precession Frequency in Heusler-based Spin Torque Oscillator: *Houbing Huang*[1]; Congpeng Zhao[2]; Xingqiao Ma[2]; Long-Qing Chen[1]; [1]Penn State University; [2]Beijing University of Science and Technology

Advanced Steel Metallurgy: Products and Processing — Stainless Steel and High Alloy Steels I

Program Organizer: Amy Woods, Steel Dynamics Flat Roll

Monday PM
October 13, 2014
Room: Room 408
Location: David L. Lawrence Convention Center

Session Chair: To Be Announced

2:00 PM
A Comparison of Different Measurement Methods to Evaluate Strain-induced Martensite Formation in a Metastable Austenitic Stainless Steel: *K. Raghavan*[1]; G Thomas[1]; J Arnold[1]; A. Gill[1]; T. Gnaupel-Herold[2]; [1]AK Steel Corporation; [2]National Institute of Standards and Technology

2:20 PM
Cu and Mn Effect on Intermetallic Compounds Precipitation in PREN 50 Grade Duplex Stainless Steels: *Doo Hyun Kim*[1]; Soon-Tae Kim[2]; Jong Hoon Lee[1]; [1]Korea Institute of Materials Science; [2]Yonsei University

2:40 PM
The Effect of Cold-work and Temperature on the Microstructural Evolution of an Alumina-forming Austenitic Stainless Steel: *Geneva Trotter*[1]; Garrett Rayner[1]; Yi Sun[1]; Paul Munroe[2]; Ian Baker[1]; [1]Thayer School of Engineering, Dartmouth College; [2]Materials Science and Engineering, University of New South Wales

3:00 PM
A Composition Formula for Maraging Stainless Steels: *Qing Wang*[1]; Chuang Dong[1]; [1]Dalian University of Technology

3:20 PM Break

3:40 PM
Mechanical Properties of Creep- and Coarsening-resistant Ferritic Superalloys: *Michael Rawlings*[1]; Nhon Vo[1]; Chris Liebscher[2]; Mark Asta[2]; Peter Liaw[3]; David Dunand[1]; Gautam Ghosh[1]; Gian Song[3]; [1]Northwestern University; [2]University of California-Berkeley; [3]University of Tennessee

4:00 PM
Hall-petch Behavior of Fe-Co-V Soft Magnetic Alloy Barstock: *Donald Susan*[1]; Jeff Rodelas[1]; Charlie Robino[1]; William Greenwood[1]; [1]Sandia National Laboratories

4:20 PM
Mechanism of Solid-state Reaction between MnO-SiO_2-FeO Oxides and Fe-Mn-Si Alloys by Heat Treatment at 1473K: *Chengsong Liu*[1]; Jingshe Li[1]; Shufeng Yang[1]; [1]University of Science and Technology Beijing

4:40 PM
Thermodynamic Analysis on the Behavior of Titanium in Productions Process of 95CrMo Hollow Steel: Linzhu Wang[1]; Jingshe Li[1]; *Jiaze Xiong*[2]; Shufeng Yang[1]; Tuo Wu[1]; Xiang Li[1]; [1]University of Science and Technology Beijing; [2]Shougang Guiyang Special Steel Co.

Advanced Steel Metallurgy: Products and Processing — Steel Making and Casting I

Program Organizer: Amy Woods, Steel Dynamics Flat Roll

Monday PM
October 13, 2014

Room: Room 407
Location: David L. Lawrence Convention Center

Session Chair: To Be Announced

2:00 PM
Dephosphorization Model for a Continuous DRI-EAF Process: *Mohammed Tayeb*[1]; Chris Pistorius[1]; Richard Fruehan[1]; [1]Carnegie Mellon University

2:20 PM
Kinetics Study on Carbothermic Reduction of Composite Briquettes Made of Iron-bearing Dust and Sludge: *Rui Mao*[1]; [1]University of Science and Technology Beijing

2:40 PM
Development of a Novel RH Degassing Process with Powder Injection through the Nozzles of Snorkel: *Xiaofeng Wang*[1]; [1]ANSTEEL Group Company

3:00 PM
Reduction of Calcium Oxide in the Slag by Aluminum and Inclusion Modification: *Haoyuan Mu*[1]; Bryan Webler[1]; Richard Fruehan[1]; [1]Carnegie Mellon University

3:20 PM Break

3:40 PM
An Insight into Steelmaking Slag Structure from Phosphorus Distribution: *Pengcheng Li*[1]; Jianliang Zhang[1]; Runsheng Xu[1]; [1]University of Science and Technology Beijing

4:00 PM
Thermodynamic Analysis on Fusion Temperature and Melting Characteristic of BF Slags: *Ya-peng Zhang*[1]; Jian-liang Zhang[1]; Rui Mao[1]; Zheng-jian Liu[1]; Xiang Yuan[1]; [1]University of Science and Technology Beijing

4:20 PM
Effect of the Granularity of Different Metamorphic Degree Coal on Combustion Characteristics: Runsheng Xu[1]; Jianliang Zhang[1]; Haibin Zuo[1]; Tengfei Song[1]; Haiyang Wang[1]; [1]USTB

Advances in Dielectric Materials and Electronic Devices — Ferroics and Related Materials II

Program Organizers: Amar Bhalla, The University of Texas at San Antonio; Ruyan Guo, The University of Texas at San Antonio; K. M. Nair, E.I.duPont de Nemours & Co, Inc; Danilo Suvorov, Jožef Stefan Institute; Rick Ubic, Boise State University

Monday PM
October 13, 2014

Room: Room 307
Location: David L. Lawrence Convention Center

Session Chairs: Qiming Zhang, The Pennsylvania State University; Vojislav Mitic, University of Nis, Faculty of Electronic Engineering; Ruyan Guo, The University of Texas at San Antonio; Jose de Los Santos Guerra, Federal University of Uberlândia

2:00 PM Invited
Ferroelectric Transition and Low-temperature Dielectric Relaxations in Filled Tungsten Bronze Ceramics: *Xiang Ming Chen*[1]; Xiao Li Zhu[1]; Kun Li[1]; [1]Zhejiang University

2:20 PM Invited
Modeling the Effective Size of Vacancies in Aliovalently Doped Perovskites: *Rick Ubic*[1]; Kevin Tolman[1]; Binay Joshi[1]; Emma Faulkner[1]; Kevin Talley[1]; Chris Rumrill[1]; Jonathan Schmidt[1]; Aaron Garland[1]; Josh Owens[1]; Meagan Papac[1]; [1]Boise State University

2:40 PM
Local 90° Switching in $Pb(Zr_{0.2}Ti_{0.8})O_3$ Thin Film: Phase-field Modeling: *Zijian Hong*[1]; Jason Britson[1]; Jia-Mian Hu[1]; Long-Qing Chen[1]; [1]The Pennsylvania State University

3:00 PM
The Temperature Stability of Ferroelectric Behavior for Pb(Zn1/3Nb2/3) O3–Pb(Zr0.95Ti0.05)O3 Ceramics: *Mupeng Zheng*[1]; Yudong Hou[1]; Zhirong Ai[1]; Mankang Zhu[1]; Hui Yan[1]; [1]Beijing University of Technology

3:20 PM Break

3:40 PM
Dielectric and Electrical Properties of Un-doped and Fe-doped Yttrium Copper Titanate: *Kamdeo Mandal*[1]; Sunita Sharma[1]; [1]Indian Institute of Technology (BHU)

4:00 PM
Optimization of Piezoelectric Properties of Perovskite Oxides through Strain Engineering: Fu-Chang Sun[1]; Hamidreza Khassaf[1]; *Pamir Alpay*[1]; [1]University of Connecticut

4:20 PM
The Knowledge-based Modeling of Hysteresis Area in (1-x)PZT-(x) PZN Systems: *Wimalin Laosiritaworn*[1]; Rattikorn Yimnirun[2]; Yongyut Laosiritaworn[3]; [1]Department of Industrial Engineering, Faculty of Engineering, Chiang Mai University; [2]Suranaree University of Technology; [3]Department of Physics and Materials Science, Faculty of Science, Chiang Mai University

4:40 PM
Microwave Dielectric Properties in PLZT Ferroeletric Ceramics – Effect of the Lanthanum Content: *Jose de Los Santos Guerra*[1]; Atair Carvalho da Silva[2]; Robert McIntosh[1]; Ruyan Guo[1]; Amar Bhalla[1]; [1]The University of Texas at San Antonio - UTSA; [2]Universidade Estadual Paulista - UNESP

5:00 PM
Electrocaloric Relaxor Ferroelectric Materials for Dielectric Refrigeration: Novel Developments and Future Perspectives: *Zdravko Kutnjak*[1]; Brigita Rozic[1]; Barbara Malic[1]; Hana Ursic[1]; Qiming Zhang[2]; [1]Jozef Stefan Institute; [2]The Pennsylvania State University

Advances in Titanium Manufacturing: Powder Processing, Powder Metallurgy, and Additive/ Emerging Manufacturing Techniques — Structure, Properties and Modeling of Titanium Powder and Alloys

Program Organizers: K. S. Ravi Chandran, University of Utah; Zak Fang, University of Utah ; M. Ashraf Imam, George Washington University; Jean Stewart, ATI Powder Metals

Monday PM
October 13, 2014
Room: Room 325
Location: David L. Lawrence Convention Center

Session Chairs: M. Ashraf Imam, George Washington University; Ji-Cheng Zhao, The Ohio State University

2:00 PM Invited
Investigating Qualities and Chemistries of Ti-6Al-4V Powder in Electron Beam Powder Bed Deposition: *William Peter*[1]; Ryan Dehoff[1]; Peeyush Nandwana[1]; Francisco Medina[2]; William Sames[3]; Paul Menchhofer[1]; [1]Oak Ridge National Laboratory; [2]Arcam AB; [3]Texas A&M University

2:40 PM
Processing of Ti-Ni and Ti-Sn Binary Alloys Using a Powder Metallurgical Approach: *Hung-Wei Liu*[1]; Kevin Plucknett[1]; [1]Dalhousie University

3:00 PM Break

3:20 PM
Phase-field Simulations of Microstructure Evolution in Ti-alloys under Thermal Cycles: *Patrick Hricko*[1]; Yanzhou Ji[1]; Tae Wook Heo[2]; Todd Palmer[1]; Long-Qing Chen[1]; [1]Penn State University; [2]Lawrence Livermore National Laboratory

3:40 PM
Formability and Strength Analysis of High Strength and High Formability Titanium Alloy: *Jong-Taek Yeom*[1]; Chan Hee Park[1]; Seong-Woong Kim[1]; Jae-Keun Hong[1]; Seung Eon Kim[1]; Yong Taek Hyun[1]; [1]Korea Institute of Materials Science

ASM Alpha Sigma Mu Lecture — ASM Alpha Sigma Mu Lecture

Monday PM
October 13, 2014
Room: Room 329
Location: David L. Lawrence Convention Center

2:30 PM Introductory Comments and Award Presentation

3:00 PM
The Development of Materials: Signals from the Past - Guidance for the Future: *Alexander McLean*[1]; [1]Professor Emeritus - University of Toronto

Boron, Boron Compounds, and Boron Nanomaterials: Structure, Properties, Processing, and Applications — Films and Surfaces

Program Organizers: Roumiana Petrova, New Jersey Institute of Tech; Jens Kunstmann, Columbia University

Monday PM
October 13, 2014
Room: Room 331
Location: David L. Lawrence Convention Center

Session Chair: Roumiana Petrova, New Jersey Institute of Technology

2:00 PM
LASER Powder Deposition of $ALMGB_{14}$-TIB_2 Wear Resistant Coatings for Biomedical Applications: *Jacob Fuerst*[1]; Dana Medlin[1]; Michael Carter[2]; [1]Engineering Systems Inc.; [2]South Dakota School of Mines and Technology

2:20 PM
Hard and Tough Amorphous-based B-C-Mg Thin Films Designed Using the Cluster-plus-glue-atom Model: *Chuang Dong*[1]; Xuyang Zhou[1]; Yanping Ma[2]; Aimin Wu[1]; [1]Dalian University of Technology; [2]Hainan University

2:40 PM
Crystal Growth and Characterization of Cubic Boron Phosphide on Silicon Carbide: *Balabalaji Padavala*[1]; Clint Frye[1]; James Edgar[1]; Zihao Ding[2]; Ruifen Chen[2]; Michael Dudley[2]; Balaji Raghothamachar[2]; [1]Kansas State University; [2]Stony Brook University

3:00 PM
Characterization and Analysis of Knoop Indents in Boron Carbide: Jerry LaSalvia[1]; *Kristopher Behler*[1]; Vlad Domnich[2]; Devin Murray[1]; Scott Walck[1]; [1]U.S. Army Reseach Laboratory; [2]Rutgers University

3:20 PM Break

3:40 PM
Effect of Silicate Additives on the Microstructure of Hot-pressed Boron Carbide: *Kristopher Behler*[1]; Adam Hutchinson[1]; Jerry LaSalvia[1]; [1]U.S. Army Reseach Laboratory

4:00 PM
Phase Relationships and Solubility in the Ca-Sr-Ba-B System: *Michael Alberga*[1]; Doreen Edwards[1]; [1]Alfred University

Ceramic Matrix Composites — Ceramic Composites: Mechanical Properties and Environmental Effects

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

Monday PM
October 13, 2014

Room: Room 304
Location: David L. Lawrence Convention Center

Session Chair: Triplicane Parthasarathy, UES, Inc.

2:00 PM Invited
Modeling Environmental Degradation of SiC Fibers and CMCs: *Triplicane Parthasarathy*[1]; Craig Przybyla[2]; Randall Hay[2]; Michael Cinibulk[2]; [1]UES, Inc.; [2]Air Force Research Laboratory

2:40 PM
Effect of Interface Coating for High-temperature Oxide Fiber Reinforced Ceramic Composites: *Nijuan Sun*[1]; Jingpeng Fan[1]; Dahai Zhang[1]; Zhihai Feng[1]; [1]Aerospace Research Institute of Material & Processing Technology (ARIMPT)

3:00 PM
Na_2SO_4-Induced Hot Corrosion of SiC-based CMC Materials at 1000°C: The Effect of Na_2O Activity: *Joseph Hagan*[1]; Elizabeth Opila[1]; [1]University of Virginia

3:20 PM Break

3:40 PM
B2O3 Fluxing of SiC in Ceramic Matrix Composite Aeropropulsion Applications: *Bohuslava McFarland*[1]; Elizabeth Opila[1]; [1]University of Virginia

4:00 PM
Microstructure, Mechanical Properties, and Deformation Mechanisms of Laser Processed WC-W_2C Directionally Solidified Eutectoid Ceramics: *Wei-Ting Chen*[1]; Caleb Meredith[1]; Elizabeth Dickey[1]; [1]North Carolina State University

4:20 PM
Effects of Woven Architecture on Damage Initiation and Evolution in 2D Woven Ceramic Composites: *Michael Rossol*[1]; Varun Rajan[1]; Frank Zok[1]; [1]University of California, Santa Barbara

4:40 PM
Effects of Warp Tow Wavelength on the Mechanical Response of an Angle-interlock C/SiC Composite: *John Shaw*[1]; Frank Zok[1]; [1]University of California, Santa Barbara

5:00 PM
Resistance of High Performance Fiber Reinforced Concrete Composite Panels Against Ballistic Threats: *Faruk Gul*[1]; Mehmet Tasdemir[2]; Ehat Arslan[3]; Omer Kaya[3]; [1]Turkish Air Force Academy; [2]ITU (Retired); [3]ITU

Computational Design of Ceramic Materials — High Performance Ceramics

Program Organizers: Liping Huang, Rensselaer Polytechnic Institute; Randall Youngman, Corning Incorporated

Monday PM
October 13, 2014

Room: Room 306
Location: David L. Lawrence Convention Center

Session Chair: Liping Huang, Rensselaer Polytechnic Institute

2:00 PM Invited
Mechanical Properties and Lattice Thermal Conductivities of $Y_2Si_2O_7$ Polymorphs: *Jingyang Wang*[1]; [1]Institute of Metal Research

2:40 PM
A Novel Approach to Predict Thermo-physical Properties of Mullite Phase $3Al_2O_3$•$2SiO_2$: *Payam Norouzzadeh*[1]; Pankaj Sarin[1]; [1]Oklahoma State University

3:00 PM
Microstructure-based Modeling of the Failure and Strength of Advanced Ceramics: *James Hogan*[1]; Debjoy Mallick[1]; Ravi S. Ayyagari[1]; K.T. Ramesh[1]; [1]Hopkins Extreme Materials Institute

3:20 PM Break

3:40 PM Invited
Investigation of Ceramic Interfacial Systems and Design of Novel Ferroelectric Materials via First-principles Calculations: *Susan Sinnott*[1]; [1]University of Florida

4:20 PM
Structural, Mechanical and Electronic Properties of 3d Transition Metal Nitrides in Cubic Zincblende, Rocksalt and Cesium Chloride Structures: A First-principles Investigation: Zhi Liu[1]; Xiuquan Zhou[2]; *Sanjay Khare*[1]; Daniel Gall[3]; [1]University of Toledo; [2]University of Maryland; [3]Rensselaer Polytechnic Institute

4:40 PM
First-principles Investigation of the Structural, Mechanical and Electronic Properties of the NbO-Structured 3d, 4d and 5d Transition Metal Nitrides: *Zhi Liu*[1]; Xiuquan Zhou[2]; Sanjay Khare[1]; Daniel Gall[3]; [1]University of Toledo; [2]University of Maryland; [3]Rensselaer Polytechnic Institute

5:00 PM
Theoretical and Experimental Structure-properties Studies in Mn and Nb Doped $AlFeO_3$ Compositions: *Guilherme Santos*[1]; Igor Catelani[1]; Breno Oliveira[1]; Ivair Santos[1]; Luiz Cótica[1]; Ruyan Guo[2]; Amar Bhalla[2]; [1]Universidade Estadual de Maringá; [2]University of Texas at San Antonio

5:20 PM
Grain Boundary's Influence on the Spontaneous Polarization Configuration in PZT: *Xiaoxing Cheng*[1]; Jason Britson[1]; Longqing Chen[1]; [1]Penn State University

Controlled Synthesis, Processing, and Applications of Structural and Functional Nanomaterials — Session I

Program Organizers: Gurpreet Singh, Kansas State University; Kathy Lu, Virginia Tech; Eugene Olevsky, San Diego State University; Edward Gorzkowski, Naval Research Laboratory; Sanjay Mathur, University of Cologne

Monday PM
October 13, 2014
Room: Room 319
Location: David L. Lawrence Convention Center

Session Chair: Gurpreet Singh, Kansas State University

2:00 PM
A Phase Field Model for the Stabilization of Nanocrystalline Microstructures: *Philip Goins*[1]; Elizabeth Holm[1]; [1]Carnegie Mellon University

2:20 PM Invited
Materials That Can Replace Liquid Electrolytes in Li Batteries: Superionic Conductivities in Li1.7Al0.3Ti1.7Si0.4P2.6O12 Made Using LF-FSP (Liquid- Feed Flame Spray Pyrolysis). Processing to Free Standing Thin Films: *Richard Laine*[1]; Eongyu Yi[1]; Ryo Tamaki[2]; John Kieffer[1]; E. Wang[1]; Som Mohanty[3]; [1]University of Michigan; [2]Connexsys; [3]Quallion Corp

3:00 PM
Molecular Mechanisms of Size Control and Catalytic Functionality of Peptide-directed Palladium Nanocrystals in Aqueous Solution: *Hadi Ramezani-Dakhel*[1]; Marc Knecht[2]; Rajesh Naik[3]; Rajiv Berry[3]; Peter Mirau[3]; Hendrik Heinz[1]; [1]University of Akron; [2]University of Miami; [3]Air Force Research Laboratory

3:20 PM Break

3:40 PM Invited
Ligand-mediated Synthesis of Colloidal Nanoparticle Alloys: *Jill Millstone*[1]; Christopher Andolina[1]; Patrick Straney[1]; Lauren Marbella[1]; [1]University of Pittsburgh

4:20 PM
Development of Novel Force Field for Gold Nano-clusters: *Badri Narayanan*[1]; Alper Kinaci[1]; Michael Davis[1]; Maria Chan[1]; Subramanian Sankaranarayanan[1]; Stephen Gray[1]; [1]Argonne National Laboratory

4:40 PM
Core-shell Nanoparticles Obtained by Au Segregation in Fe/Au Thin Films: *Dor Amram*[1]; Eugen Rabkin[1]; [1]Technion - Israel Institute of Technology

5:00 PM
Atomic-level Insight into Interactions of Poly(phenyleneethynylene)s with Ligand-stabilized CdS Nanoparticles: Hua Liu[1]; Matthew Espe[1]; David Modarelli[1]; Eduardo Arias[2]; Ivana Moggio[2]; Ronald Ziolo[2]; *Hendrik Heinz*[1]; [1]University of Akron; [2]Centro de Investigación en Quimica Aplicada (CIQA)

5:20 PM
Preparation of Micro/Nano Porous SiOC Bulk Ceramics: *Jiake Li*[1]; Kathy Lu[1]; Tiesong Lin[1]; Fengyu Shen[1]; [1]Virginia Tech

Corrosion of Biomaterials — Corrosion of Materials in Physiological Environments

Program Organizer: Vilupanur Ravi, California State Polytechnic University, Pomona

Monday PM
October 13, 2014
Room: Room 318
Location: David L. Lawrence Convention Center

Session Chair: Vilupanur Ravi, California State Polytechnic University, Pomona

2:00 PM
Comparison of Fluoride Conversion Coatings on Hot Extruded and Cast Magnesium Alloy AZ31 and Their Corrosion Behavior in Hank's Solution: *Zhang Chunyan*[1]; [1]Chongqing University of Technology

2:20 PM
Corrosion Behavior of Titanium Boron Alloys in Simulated Physiological Environments: Travis Voorhees[1]; Obed Villalpando[1]; Morgan Wong[1]; Hannah Leu[1]; Matthew Borgialli[1]; *Vilupanur Ravi*[1]; [1]California State Polytechnic University, Pomona

2:40 PM
Corrosion Control of Single Crystal Mg for Biomedical Implant Applications: Madhura Joshi[1]; Pravahan Salunke[1]; Guangqi Zhang[1]; *Vibhor Chaswal*[1]; Vesselin Shanov[1]; Zhongyun Dong[1]; [1]University of Cincinnati

3:00 PM
Corrosion Resistance of Niobium and Silicon Oxide Coated Stainless Steel in Prepared Physiological Fluids: *Dimple Pradhan*[1]; Anthony Wren[1]; Dawei Liu[1]; Nathan Mellott[1]; [1]AlfredUniversity

3:20 PM Break

3:40 PM
Investigating Electrochemical Behavior of Nitrogen Ion Implanted Commercially Pure Titanium in Simulated Body Fluid: *Kashif Mairaj Deen*[1]; Muhammad Rizwan[2]; Akhlaq Ahmad Malik[2]; Rafiq Ahmad[1]; [1]University of the Punjab; [2]University of Engineering & Technology

4:00 PM
Magnesium Single Crystal as a Biomaterial: Growth, Characterization, Corrosion Behavior & Protection: *Madhura Joshi*[1]; Pravahan Salunke[1]; Guangqi Zhang[1]; Vibhor Chaswal[1]; Vesselin Shanov[1]; [1]University Of Cincinnati

4:20 PM
Preclinical Studies of a Surface Treated Biomaterial for Knee Prosthesis: *Julia Mirza Rosca*[1]; Juan Francisco Cardenes Martin[1]; [1]Las Palmas de Gran Canaria University

4:40 PM
Effect of Surface Mechanical Attrition Treatment (SMAT) on the Microstructural and Electrochemical Characteristics of AISI 304 Stainless Steel: Suitability for Implant Applications: T Balusamy[1]; *Sankara Narayanan TSN*[2]; Ravichandran K[1]; Min Ho Lee[2]; [1]Department of Analytical Chemistry; [2]Chonbuk National University

Energy Storage IV: Materials, Systems and Applications Symposium — Sodium Batteries

Program Organizers: Xingbo Liu, West Virginia University; Keeyoung Jung, Research Institute of Industrial Science and Technology (RIST); Terry Holesinger, Los Alamos National Laboratory; Yang-Tse Cheng, University of Kentucky; Karen Waldrip, Sandia National Laboratory

Monday PM
October 13, 2014

Room: Room 414
Location: David L. Lawrence Convention Center

Session Chair: Keeyoung Jung, Research Institute of Industrial Science and Technology (RIST)

2:00 PM Invited
Hybrid Na-based Flow Batteries for Next Generation Grid-scale Energy Storage: *Jack Shamie*[1]; Leon Shaw[1]; Caihong Liu[1]; Vincent Sprenkle[2]; [1]Illinois Institute of Technology; [2]Pacific Northwest National Laboratory

2:40 PM
Effect of Intimate Carbon to Electrochemical Performance of $NaTi_2(PO_4)_3$ Anode Materials for Aqueous Sodium-ion Battery: *Wei Wu*[1]; Jingyi Yan[1]; Adam Wise[1]; Ann Rutt[1]; Jay Whitacre[1]; [1]Carnegie Mellon University

3:00 PM
Large Area MoS2/rGO Paper Electrodes for Room Temperature Na-Ion Batteries: *Lamuel David*[1]; Gurpreet Singh[1]; [1]Kansas State University

3:20 PM Break

3:40 PM
Fabrication and Characterization of NaSICON Electrolyte Doped with Yttrium, Cobalt and Indium: *Greg Collins*[1]; Xingbo Liu; [1]West Virginia University

4:00 PM
Modification of Beta"-Alumina Membranes for Low Temperature Na-based Batteries: *Caihong Liu*[1]; Jack Shamie[1]; Leon Shaw[1]; Vincent Sprenkle[2]; [1]Illinois Institute of Technology; [2]Pacific Northwest National Laboratory

4:20 PM
Finite Element Modeling Study on the Thermo-mechanical Stability of Planar NaS Batteries: Materials Selection Perspectives: *Chang-Soo Kim*[1]; Yoon-Cheol Park[2]; Keeyoung Jung[2]; [1]University of Wisconsin-Milwaukee; [2]RIST

4:40 PM
Energy Storage in Thin Sputtered Films: *J.R. Gaines*[1]; [1]Kurt J. Lesker Company

Failure Analysis and Prevention — Modeling and Visualization

Program Organizers: Nicholas Cherolis, Rolls-Royce Corporation; Dustin Turnquist, ESI; Erhan Ulvan, Acuren Group Inc.

Monday PM
October 13, 2014

Room: Room 406
Location: David L. Lawrence Convention Center

Session Chairs: Brandon Rollins, DNV Inc.; Amber Dally, US Steel Research And Technology Center; Pierre Dupont, Mons Polytechnic University

2:00 PM
Demonstration of 3D Laser Scanning Techniques for Forensic Investigation: Brandon Rollins[1]; Shane Finneran[1]; *T.J. Prewitt*[1]; [1]Det Norske Veritas (U.S.A) Inc.

2:40 PM
Modeling of the Plastic Constraint in an Undermatched Weld: *Daniel Dennies*[1]; Steven Fulmer[1]; [1]Exponent

3:00 PM
Study of Centrifugal Casting: Two Approaches by Physical Modelling: *Véronique Vitry*[1]; Fabienne Delaunois[1]; [1]U-MONS Faculté Polytechnique FPMs

3:20 PM Break

3:40 PM
Improvements to a Vibration-based Gigacycle Bending Fatigue Test Method: *Onome Scott-Emuakpor*[1]; Tommy George[1]; Casey Holycross[1]; [1]Air Force Research Laboratory

4:00 PM
Progress Toward a Model Based Approach to the Robust Design of Welded Structures: Eric Johnson[1]; *Scott Chumbley*[2]; [1]John Deere; [2]Iowa State University

4:20 PM
Modeling of Thermal Buckling during the Process of Adhesive Bonding for Aluminum and Steel: *Jiangchao Wang*[1]; [1]Carleton University

4:40 PM
Multiscale Control Volume Analysis of Notch Root Strain Energy Density Using Digital Image Correlation: *Casey Holycross*[1]; Herman Shen[2]; Onome Scott-Emaukpor[1]; Tommy George[1]; [1]Air Force Research Laboratory; [2]The Ohio State University

5:00 PM
On the Use of Contact Stresses Simulations as a Relevant Tool for Explaining Superficial (Fatigue) Failures: *Pierre Dupont*[1]; [1]Schaeffler Belgium Sprl/Bvba

5:20 PM Question and Answer Period

Fatigue of Materials III — Ferrous Materials I

Program Organizers: Tirumalai Srivatsan, The University of Akron; Raghavan Srinivasan, Wright State University; M. Ashraf Imam, George Washington University

Monday PM
October 13, 2014

Room: Room 336
Location: David L. Lawrence Convention Center

Session Chair: To Be Announced

2:00 PM Invited
Application of Quantitative Stereology to Study the Fatigue Damage Evolution in Ferrite Dominated Dual Phase Steels: *Anshul Godha*[1]; Shrikant Bhat[2]; Arun Gokhale[1]; [1]Georgia Institute of Technology, Atlanta; [2]ArcelorMittal Global R&D, East Chicago

2:40 PM
Cyclic Strain Resistance, Deformation and Fracture Behavior of a Novel Alloy Steel: *Manigandan Kannan*[1]; Tirumalai Srivatsan[1]; Vijay Vasudevan[2]; A. Abhishek[3]; [1]The University of Akron; [2]University of Cincinnati ; [3]University of Cincinnati

3:00 PM
Fatigue Crack Propagation Behavior of High Manganese Steels in Various Environments: Daeho Jeong[1]; Soon-Ki Lee[2]; In-Sik Seo[2]; Jang-Yong Yoo[2]; Yong-Nam Kwon[3]; *Sangshik Kim*[1]; [1]Gyeongsang National University; [2]POSCO; [3]Korea Institute of Materials Science

3:20 PM Break

3:40 PM Invited
Characterisation of Fatigue Crack Growth in Structural Steels: Some Experiences: *G Sasikala*[1]; [1]IGCAR

4:20 PM
Fatigue Study on Pipeline Steels: *Bilin Chen*[1]; Gongyao Wang[1]; Ke An[2]; Zhinan An[1]; Govindarajan Muralidharan[2]; Peter Liaw[1]; [1]University of Tennessee; [2]Oak Ridge National Laboratory

4:40 PM
SEM Analysis of Hydrogen-exposed 304 Stainless Bending Fatigue Samples: Michael Phillips[1]; Kyle McLaughlin[1]; Dylan Ojeda[1]; Estefen Luna[1]; Mai Burke[1]; Paloma Cruz[1]; Kevin Featherstone[1]; *Emily Petersen*[1]; Patrick Ferro[1]; [1]Gonzaga University

5:00 PM
Influence of Long-term Aging on the Fatigue Crack Growth Behaviour of P91 Steel at Different Temperatures: M Nanibabu[1]; S. Swain[1]; B.Shashank Dutt[1]; S. Venugopal[1]; *G Sasikala*[1]; [1]IGCAR

Ferrous Metallurgy: From Past to Present — Session II

Program Organizers: Amy Woods, Steel Dynamics Flat Roll; Kester Clarke, Los Alamos National Laboratory

Monday PM
October 13, 2014

Room: Room 409
Location: David L. Lawrence Convention Center

Session Chair: To Be Announced

2:00 PM Invited
American Iron Industry Development from Colonization to 1910: *Hugh McQueen*[1]; [1]Concordia University

2:40 PM Invited
Why and How Lath Martensite Was Named: *George Krauss*[1]; [1]Colorado School of Mines

3:20 PM Break

3:40 PM
The Production of Armour Plating for the Austro-Hungarian Navy by the Vítkovice Ironworks (1891-1914): *Aleš Materna*[1]; [1]Evraz Vítkovice Steel, University of Ostrava

4:00 PM
Cast Iron Smelting in Early China: Archaeological Survey and Scientific Analysis: *Wei Qian*[1]; [1]University of Science and Technology Beijing

4:20 PM Invited
From Ferrous Metallurgy to Materials Science: A Round Trip: Pello Uranga[1]; Beatriz Lopez[1]; *Jose Rodriguez-Ibabe*[1]; [1]CEIT

Fifth Symposium on Railroad Tank Cars — Session II

Program Organizers: Murali Manohar, ArcelorMittal; Amy Woods, Steel Dynamics Flat Roll; Tanya Ros, ArcelorMittal

Monday PM
October 13, 2014

Room: Room 411
Location: David L. Lawrence Convention Center

Session Chairs: David Jeong , U.S. Department of Transportation_ Volpe National Transportation Systems Center; Carl Hybinette, WATCO

2:00 PM
Correlating Material Properties to Puncture Resistance to Enhance the Safety of Tank Cars
: *Peter Mckeighan*[1]; Steven Kirkpatrick[2]; [1]Exponent; [2]Applied Research Associates, Inc.

2:20 PM
An Insight to the AAR Steels Task Force Projects and Initiatives to Improve Materials for Tank Car Construction: *Carl Hybinette*[1]; [1]WATCO

2:40 PM
Advanced Materials in Tank Car Construction: *Robert Toms*[1]; [1]Union Tank Car Co.

3:00 PM
HPS 50W Steel (ASTM A709) Applicability to Tank Car Structures: *Roger Sims*[1]; Tanya Ros-Yanez[2]; William Heitmann[2]; [1]Sims Professional Engineers; [2]ArcelorMittal

3:20 PM Break

3:40 PM
A Low-carbon Alloy Design for the Development of a Steel with Enhanced Low Temperature Toughness for Pressure Tank Car Applications: *Amar De*[1]; Murali Manohar[1]; [1]ArcelorMittal Global R&D

4:00 PM
Weldability Evaluation of High Toughness Steel Plates for Tank Car Applications: *Amar K. De*[1]; Özlem E. Güngör[2]; Murali Manohar[1]; [1]ArcelorMittal Global R&D East Chicago; [2]ArcelorMittal Global R&D Gent / OCAS NV

4:20 PM
Design of TRIP Steels for Anti-terrorism Blast Mitigation: *Nicholas Wengrenovich*[1]; Gregory Olson[1]; [1]Northwestern University

4:40 PM Concluding Comments - Dr. Tanya Ros, ArcelorMittal

Fluctuations and Collective Phenomena in Materials Deformation — Deformation Mechanisms

Program Organizers: Karin Dahmen, University of Illinois at Urbana Champaign; Peter Liaw, University of Tennessee; Gongyao Wang, University of Tennessee

Monday PM
October 13, 2014
Room: Room 405
Location: David L. Lawrence Convention Center

Session Chairs: Richard LeSar, Iowa State University; Anthony Rollett, Carnegie Mellon University

2:00 PM Invited
Serration Behaviors and Crackling Noise in Materials: *Yong Zhang*[1]; JP Liu[1]; Xie Xie[2]; SY Chen[2]; Karin A. Dahmen[3]; Peter K. Liaw[2]; [1]University of Science and Technology Beijing; [2]The University of Tennessee, Knoxville; [3]University of Illinois at Urbana-Champaign

2:40 PM
Phase Strength Effects on Mixing in Mechanically Driven Alloys: *Zachary Cordero*[1]; Christopher Schuh[1]; [1]MIT

3:00 PM
Micromechanisms Governing Plastic Inhomogeneity in an Al-Cu-Li-Mg-Zr Alloy: *Henry Ovri*[1]; Erica Lilleodden[1]; [1]Helmholtz Zentrum Geesthacht

3:40 PM Break

4:00 PM
Deformation Behavior of Mg-Gd Solid Solutions between 4.2K and 298K: *Anna Kula*[1]; Raj K. Mishra[2]; Marek Niewczas[1]; [1]McMaster University; [2]General Motors Research and Development Center

4:20 PM
Microstructure and Crystallographic Texture Evolution of Mg-Al-Ca Alloys during Uniaxial Compression Tests at Elevated Temperatures: *Shirin Kaboli*[1]; Raynald Gauvin[1]; [1]McGill Univerity

4:40 PM
The Effects of Pre-strain on {10-12}<10-11> Twinning Stress in Mg Single Crystals: *Fumiaki Hiura*[1]; Marek Niewczas[1]; Raja Mishra[2]; [1]McMaster University; [2]General Motors Research & Development Center

5:00 PM
Serration Behaviors in Small-sized Materials: *J.P. Liu*[1]; Y. Zhang[1]; Peter K.Liaw[2]; Y.Y. Zhao[1]; X. Xie[2]; Karin A Dahmen[3]; [1]University of Science and Technology Beijing; [2]University of Tennessee; [3]University of Illinois at Urbana Champaign

Glass and Optical Materials — ACerS Alfred R. Cooper Award Session

Program Organizers: Juejun Hu, University of Delaware; David Musgraves, IRradiance Glass Inc.

Monday PM
October 13, 2014
Room: Room 302
Location: David L. Lawrence Convention Center

Session Chairs: Minoru Tomozawa, Rensselaer Polytechnic Institute ; Alexandra Navrotsky, UC Davis

2:00 PM Invited
Forty Years of Silica Simulations. Where Are We Now? (With a Digression on Al Cooper and the Deborah Number): C. Austen Angell[1]; [1]Arizona State University

2:40 PM Invited
Relaxation is Everywhere: *John Mauro*[1]; [1]Corning Incorporated

3:20 PM Break

3:40 PM Invited
Interesting Aspects of the Glass Transition: *Cornelius Moynihan*[1]; [1]Rensselaer Polytechnic Institute

4:00 PM
Stress Relaxation of Ion-exchanged Glasses Due to "Surface Stress Relaxation Mechanism": *Jared Seaman*[1]; Peter Lezzi[1]; Thierry Blanchet[1]; Minoru Tomozawa[1]; [1]Rensselaer Polytechnic Institute

4:20 PM Invited
Development of Electronically Conductive Glasses for Resistive Plate Calorimeter Particle Detectors: *Nicole Johnson*[1]; [1]Coe College

4:40 PM Concluding Comments - Cooper Award Presentations

Green Technologies for Materials Manufacturing and Processing VI — Green Manufacturing II

Program Organizers: Tatsuki Ohji, National Institute of Advanced Industrial Science and Technology (AIST); Mrityunjay Singh, Ohio Aerospace Institute, NASA Glenn Research Center; Richard Sisson, Worcester Polytechnic Institute, Center for Heat Treating Excellence; Marsha Bischel, Armstrong World Industries, Inc.; Makio Naito, Osaka University; Allen Apblett, Oklahoma State University

Monday PM
October 13, 2014
Room: Room 311
Location: David L. Lawrence Convention Center

Session Chairs: Jianyu Liang, Worcester Polytechnic Institute; Allen Apblett, Oklahoma State University

2:00 PM Invited
De NOx Catalyst Management Technology for Improving NOx Reduction Efficiency and Restraining Catalyst Degradation: Makino Hisao[1]; *Tanno Kenji*[1]; [1]Central Research Institute of Electric Power Industry

2:20 PM
Recycling Electrochemical Machining for Metal Recovery and Elimination of Waste: *Brian Skinn*[1]; Timothy Hall[1]; EJ Taylor[1]; Savidra Lucatero[1]; Stephen Snyder[1]; Holly Garich[1]; Maria Inman[1]; [1]Faraday Technology, Inc.

2:40 PM
Utilization of Diatoms to Collect Cesium Ion: *Takeru Ono*[1]; Masanao Kunugi[1]; Itaru Jimbo[1]; [1]Tokai University

3:00 PM
Chemical Modification of Impurity during the Solvent Refining of Silicon: *Liyuan Sun*[1]; Zhi Wang[1]; Bing Du[1]; Hang Chen[1]; [1]Institute of Process Engineering, Chinese Academy of Sciences

3:20 PM Break

3:40 PM
Correlation of Fast Firing with Conventional Heat Treatment Schedule for Ceramic Manufacturing: *Wirat Lerdprom*[1]; William Carty[1]; [1]Alfred University

4:00 PM
Mathematical Modeling of the Carbothermic Reduction of Dust-carbon Composite Briquettes: *Fei Wang*[1]; [1]University of Science and Technology Beijing

4:20 PM
Electrically Enhanced the Removal of Boron from Silicon-tin Solvent Using Slag Treatment: Bing Du[1]; *Zhi Wang*[1]; Wenhui Ma[1]; Liyuan Sun[1]; Hang Chen[1]; [1]Institute of Process Engineering Chinese Academy of Sciences

Innovation in Processing of Light Metals for Transportation Industries: A Symposium in Honor of C. Ravi Ravindran — Innovative Materials Processing II/Advances in Casting Technologies

Program Organizers: Lukas Bichler, University of British Columbia; B S Murty, Indian Institute of Technology Madras

Monday PM
October 13, 2014

Room: Room 333
Location: David L. Lawrence Convention Center

Session Chairs: Nortbert Hort, Helmholtz-Zentrum Geesthacht; Geoffrey Sigworth, GKS Engineering Services

2:00 PM Keynote
Innovative Solid State Weld Techniques to Improve Weld Performance: *Prasad Rao Kalvala*[1]; [1]University of Utah

2:40 PM Invited
State of the Art Process Modeling of the Low-pressure Die Casting Process for Automotive Wheels: Sara Moayedinia[1]; Xiaodan Wei[1]; Carl Reilly[1]; Daan Maijer[1]; *Steve Cockcroft*[1]; [1]The University of British Columbia

3:00 PM Invited
Recent Advances on the Ultrasonic Cavitation Processing of Al-Based Alloys and Nanocomposites: *Laurentiu Nastac*[1]; Shian Jia[1]; Daojie Zhang[1]; [1]The University of Alabama

3:20 PM Break

3:40 PM Invited
Advanced Casting Technologies for Light Metals: *Alan Luo*[1]; [1]The Ohio State University

4:00 PM Invited
Study of Microstructure Characteristics of Al-7%Si Alloy Cast through RheoMetal Process: *Ashok Sharma*[1]; Robin Gupta[1]; Lorenz Ratke[1]; [1]MNIT Jaipur

4:20PM Invited
Nucleation and Dendrite Fragmentation in Al alloys Processed by MC-DC Casting: *Prasada Rao A.K.*[1]; [1]Universiti Malaysia Pahang

Innovative Processing and Synthesis of Ceramics, Glasses, and Composites — Ceramic Processing I

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

Monday PM
October 13, 2014

Room: Room 301
Location: David L. Lawrence Convention Center

Session Chair: Edward Gorzkowski, Naval Research Laboratory

2:00 PM
Fabrication of Thin Film Solid Oxide Fuel Cell by Inexpensive Ink Jet Printing Method: *Christophe Gadea*[1]; Vincenzo Esposito[1]; Qiang Hu[1]; Johan Hjelm[1]; Karsten Agersted[1]; Søren Højgaard[1]; Séverine Ramousse[1]; [1]DTU Energy Conversion

2:20 PM
Strategies for Nano-catalyst Infiltration of Porous SOFC Electrodes: *Ozcan Ozmen*[1]; Shiwoo Lee[2]; Kirk Gerdes[2]; John Zondlo[1]; Katarzyna Sabolsky[1]; Edward Sabolsky[1]; [1]West Virginia University; [2]National Energy Technology Laboratory – Regional University Alliance (NETL-RUA)

2:40 PM
Novel Methods for Manufacturing Porous Ceramics: *M Riyad*[1]; Tom Hammann[1]; Ryan Johnson[1]; Surojit Gupta[1]; [1]University of North Dakota

3:00 PM
Innovative Elaboration of Porous Silicon Carbide by Soft Templating Approach: *Thibaud Nardin*[1]; Benoît Gouze[1]; Julien Cambedouzou[1]; Daniel Meyer[1]; Olivier Diat[1]; [1]ICSM, Institut de Chimie Séparative de Marcoule

3:20 PM Break

3:40 PM
Polymer-derived Ceramic Foams with Hierarchical Porosity: *Chen-Chih Tsai*[1]; Rajendra Bordia[1]; [1]Clemson University

4:00 PM
Polymer-derived Ceramic Support Structures for Membrane and Catalyst Applications: *Thomas Konegger*[1]; Rajendra Bordia[1]; [1]Clemson University

4:20 PM
Influence of Calendering on the Density of Paper-derived Ceramics: *Benjamin Dermeik*[1]; Tobias Schlordt[1]; Nahum Travitzky[1]; Peter Greil[1]; [1]University of Erlangen-Nuremberg

4:40 PM
Low-temperature Synthesis Method of Aluminum Nitride Powder: *Kyyoul Yun*[1]; Yuya Tahakashi[1]; Shunji Yanase[1]; [1]Gifu University

5:00 PM
Novel Processing of ZnS Infrared Transparent Ceramics: *Noha Hakmeh*[1]; Odile Merdrignac-Conanec[1]; Xianghua Zhang[1]; [1]University of Rennes

Interfaces, Grain Boundaries, and Surfaces from Atomistic and Macroscopic Approaches: Fundamental and Engineering Issues — Complexions vs Wetting Films

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

Monday PM
October 13, 2014

Room: Room 404
Location: David L. Lawrence Convention Center

Session Chairs: John Blendell, Purdue; Wayne Kaplan, Technion

2:00 PM Keynote
Discontinuities in Properties of Interfaces, Triple Lines, and Quadruple Junctions: *W. Craig Carter*[1]; Timofey Frolov[2]; [1]MIT; [2]University of California, Berkeley

2:40 PM Invited
Grain Boundary Complexions – Open Questions and Future Opportunities: *Martin Harmer*[1]; Andrea Harmer[2]; Patrick Cantwell[1]; Helen Chan[1]; Shen Dillon[3]; Animesh Kundu[1]; Jian Luo[4]; Jeffrey Rickman[1]; Anthony Rollett[5]; Michael Widom[5]; Gregory Rohrer[5]; Zhiyang Yu[1]; [1]Lehigh University; [2]Kutztown University; [3]University of Illinois Urbana-Champaign; [4]University of California San Diego; [5]Carnegie Mellon University

3:00 PM Invited
Grain Growth in Perovskite Ceramics: New Evidence for a Structural Grain Boundary Transition: Wolfgang Rheinheimer[1]; *Michael Hoffmann*[1]; [1]Karlsruhe Institute of Technology

3:20 PM Break

3:40 PM Keynote
Adhesion and Kinetics at Metal/Ceramic Interfaces: *Eduardo Saiz*[1]; Na Ni[1]; Rui Hao[1]; Finn Giuliani[1]; Yaron Kaufmann[2]; Wayne Kaplan[2]; [1]Imperial College; [2]Technion—Israel Institute of Technology

4:20 PM
Controlled Wetting of Tin Oxide Particles by Tuning the Surface Chemistry: *Markus Jung*[1]; Jan Krausmann[2]; Michael Bender[3]; Jürgen Rödel[1]; [1]TU Darmstadt; [2]Friedrich-Alexander-Universität Erlangen-Nürnberg; [3]Umicore

4:40 PM
Systematics of Grain Boundary Complexion Transitions and Complexion Diagrams: *Naixie Zhou*[1]; Jian Luo[1]; [1]University of California San Diego

International Symposium on Defects, Transport, and Related Phenomena — Defects and Transport in Ceramics: Fundamentals II

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

Monday PM
October 13, 2014

Room: Room 403
Location: David L. Lawrence Convention Center

Session Chairs: Han-Ill Yoo, WCU Hybrid Materials Program, Department of Materials Science and Engineering; Gregory Rohrer, Carnegie Mellon University

2:00 PM Invited
First Principles Calculations of Oxygen Transport in SOFC Cathode Materials: *Eugene Kotomin*[1]; Rotraut Merkle[2]; Yuri Mastrikov[3]; Maija Kuklja[4]; Joahim Maier[2]; [1]Max Planck Institute ; [2]Max Planck Institute; [3]Institute for solid state physics; [4]Maryland University

2:40 PM Invited
Dynamics of Point Defects in Perovskite Dielectric Materials: *Clive Randall*[1]; Dennis Shay[1]; Russell Maier[1]; Jonathan Bock[1]; Hiroyuki Shimizu[1]; [1]Penn State University

3:20 PM Break

3:40 PM Invited
Correlated Sodium Transport in ß"alumina: Bu Wang[1]; Bernadette Cladek[1]; *Alastair Cormack*[1]; [1]Alfred University

4:20 PM
Fast Na-ion Conduction in a Novel Chalcogenide Glass-ceramics: *Sangtae Kim*[1]; Seong Kim[1]; Alvin Mao[1]; Sabyasachi Sen[1]; [1]University of California, Davis

4:40 PM
Cooperative Conduction of Interstitial Oxide Ions in Apatite-type Fast Ionic Conductors: *Katsuyuki Matsunaga*[1]; Kota Imaizumi[1]; Kazuaki Toyoura[1]; Atsutomo Nakamura[1]; [1]Nagoya University

Joining of Advanced and Specialty Materials (JASM XVI) — Welding of Lightweight Metals

Program Organizers: Michael Halbig, NASA Glenn Research Center; Boian Alexandrov, The Ohio State University; Akio Hirose, Osaka University; Anming Hu, University of Tennessee; Peng He, Harbin Insitute of Technology; Darren Barborak, Aquilex WSI; Bingtao Li, AZZ WSI; Xinjin Cao, Institute for Aerospace Research

Monday PM
October 13, 2014

Room: Room 330
Location: David L. Lawrence Convention Center

Session Chairs: Leijun Li, University of Alberta; Peng He, Harbin Institute of Technology

2:00 PM
Effect of Holding Time on the Interfacial Microstructure and Mechanical Properties of Brazing on SiCp/Al Composite: *Ziyang Xiu*[1]; Peng He[1]; Yongxing Liu[1]; Tiesong Lin[1]; Longtao Jiang[1]; [1]Harbin Institute of Technology

2:20 PM
Femtosecond Laser Peening of A6061-T651 Aluminum Alloy: *Norihiro Matsuyama*[1]; Tomokazu Sano[1]; Yuji Sano[2]; Akio Hirose[1]; [1]Osaka University; [2]Toshiba Corporation

2:40 PM
Joining of Pure Aluminum Using the Self-propagating High-Temperature Synthesis of Ti-B Mix Powder: *Takaaki Maruko*[1]; Tomo Ogura[1]; Tomokazu Sano[1]; Akio Hirose[1]; [1]Osaka University

3:00 PM
Microstructural Evolution and Creep Rupture Behavior of INCONEL® Alloy 740H ® Fusion Welds: *Daniel Bechetti*[1]; John DuPont[1]; [1]Lehigh University

3:20 PM Break

3:40 PM
The Investigation of Microstructure and Crack Features of Ti-22Al-25Nb Electron Beam Welds: *Wei Chen*[1]; Jinwei Li[1]; Zhenyun Tang[1]; Zhiyong Mao[1]; [1]Beijing Aeronautical Manufacturing Technology Research Institute

4:00 PM
Microstructural Evolution and Mechanical Properties of Thermally Simulated Heat Affected Zones in Eglin Steel: Brett Leister[1]; *John DuPont*[1]; [1]Lehigh University

4:20 PM
Fundamental Understanding of Stress Corrosion Cracking in Gas Metal Arc Welded High-strength Aluminum Alloys (Al-Zn-Mg): *Tyler Borchers*[1]; [1]The Ohio State University

4:40 PM
Pressurized Post-weld Heat Treatment on Bond Strength of Ultrasonically Bonded Aluminum Multilayers: *Leijun Li*[1]; Zhiyong Yin[1]; [1]University of Alberta

5:00 PM
Resistance Spot Welding of Al to Mg with Ni Interlayer: *Meng Sun*[1]; Seyed Niknejad[2]; Guangjun Zhang[1]; Lin Wu[1]; Norman Zhou[2]; [1]Harbin Institute of Technology; [2]University of Waterloo

5:20 PM
Diode Laser Welding-brazing of Steel to Aluminum Alloy With Various Filler Metal: *Jin Yang*[1]; Norman Zhou[2]; Hua Zhang[1]; Yulong Li[1]; David Weckman[2]; Wei Guo[3]; [1]Nanchang University; [2]University of Waterloo; [3]Beijing University of Aeronautics and Astronautics

Materials and Processes for CO_2 Capture, Conversion, and Sequestration — Electrochemical Capture and Conversion

Program Organizers: Kevin Huang, University of South Carolina; Winnie Wong-Ng, NIST; David Luebke, National Energy Technology Laboratory; Omar Farha, Northwestern University; Xiaotong Wei, Membrane Technology and Research, Inc.; Lan Li, Boise State University

Monday PM
October 13, 2014

Room: Room 312
Location: David L. Lawrence Convention Center

Session Chair: Lan Li, Boise State University

2:00 PM Invited
Metal-carbonate Membranes for Fast Post-combustion CO_2 Capture: *Kevin Huang*[1]; [1]University of South Carolina

2:40 PM Invited
Density Functional Theory Studies of Candidate Carbon Capture Materials Cryptomelane and CuBTC: *Eric Cockayne*[1]; [1]NIST

3:20 PM Break

3:40 PM
Recycled Agricultural Wastes during High Temperature Reactions as a Resource for EAF Steelmaking: *Nur Farhana Diyana Mohd Yunos*[1]; Anis Nadhirah Ismail[1]; Muhammad Asri Idris[1]; [1]University Malaysia Perlis

Materials Development for Nuclear Applications and Extreme Environments — Irradiation Effects II

Program Organizers: Raghunath Kanakala, University of Idaho; Ram Devanathan, Pacific Northwest National Laboratory; Josef Matyas, Pacific Northwest National Laboratory; Kevin Fox, Savannah River National Laboratory; Elizabeth Hoffman, Savannah River National Laboratory; Raul Rebak, GE Global Research; Aladar Csontos, U.S. Nuclear Regulatory Commission; Kumar Sridharan, University of Wisconsin; Bill Lee, Imperial College London

Monday PM
October 13, 2014

Room: Room 415
Location: David L. Lawrence Convention Center

Session Chairs: Krishnan Raja, University of Idaho; Ram Devanathan, PNNL

2:00 PM Invited
Understanding Microstructural Evolution under Irradiation and Its Importance to Advanced Nuclear Fuels and Materials Development: *J. Carmack*[1]; J. Kennedy[1]; [1]Idaho National Laboratory

2:40 PM
The Impact of Pre-irradiation Surface Preparation on Helium-irradiated Morphology of Tungsten: *Lauren Garrison*[1]; Gerald Kulcinski[2]; [1]Oak Ridge National Laboratory; [2]University of Wisconsin-Madison

3:00 PM Break

3:20 PM
Radiation-induced Effects in Ni-Cr Binary Alloys: *Samuel Briggs*[1]; Janne Pakarinen[1]; Leland Barnard[1]; Dane Morgan[1]; Todd Allen[2]; Kumar Sridharan[1]; [1]University of Wisconsin-Madison; [2]Idaho National Laboratory

3:40 PM
Synchrotron Radiation Study of Deformation in Ion-irradiated HT9: *Kun Mo*[1]; Di Yun[1]; Walid Mohamed[1]; Yinbin Miao[2]; Michael Pellin[1]; James Stubbins[2]; Jonathon Almer[1]; Abdellatif Yacout[1]; [1]Argonne National Laboratory; [2]University of Illinois

4:00 PM
Stability of Fe-12%Cr: Thin Films Interfaces under Heavy Ion Irradiation: *Alexander Mairov*[1]; Benjamin Hauch[1]; Kumar Sridharan[1]; Todd Allen[1]; [1]University of Wisconsin-Madison

4:20 PM
Coupled Thermochemistry and Transport In Modeling of Nuclear Fuel Irradiation Behavior: *Theodore Besmann*[1]; Srdjan Simunovic[1]; Stewart Voit[1]; Jason Hales[2]; Stephen Novascone[2]; Benjamin Spencer[2]; Richard Williamson[2]; Dongwon Shin[1]; Markus Piro[3]; [1]Oak Ridge National Laboratory; [2]Idaho National Laboratory; [3]AECL Chalk River

4:40 PM Invited
SiC Technology for LWR Cladding and Structures: Progress and Challenges: *Yutai Katoh*[1]; [1]Oak Ridge National Laboratory

Materials Issues in Nuclear Waste Management in the 21st Century — Recent Developments and Progress in Nuclear Waste Vitrification II

Program Organizers: Josef Matyas, Pacific Northwest National Laboratory; Stéphane Gin, CEA; Kevin Fox, Savannah River National Laboratory; Elizabeth Hoffman, Savannah River National Laboratory; Dawn Janney, Idaho National Laboratory; Ramana Reddy, The University of Alabama; Ram Devanathan, Pacific Northwest National Laboratory; Raghunath Kanakala, University of Idaho

Monday PM
October 13, 2014

Room: Room 413
Location: David L. Lawrence Convention Center

Session Chairs: Josef Matyas, PNNL; Kevin Fox, Savannah River National Laboratory

2:00 PM
Electrical Conductivity Method for Monitoring Accumulation of Crystals in HLW Melters: *Matthew Edwards*[1]; Josef Matyas[1]; Jarrod Crum[1]; [1]Pacific Northwest National Laboratory

2:20 PM
Crystallization in High Level Waste (HLW) Glass Melters: Savannah River Site Operational Experience: *Kevin Fox*[1]; David Peeler[1]; Albert Kruger[2]; [1]Savannah River National Laboratory; [2]U.S. Department of Energy, Office of River Protection

2:40 PM
Characterization of High Level Nuclear Waste Glass Samples Following Extended Melter Idling: *David Peeler*[1]; Kevin Fox[1]; Albert Kruger[2]; [1]Savannah River National Laboratory; [2]U.S. Department of Energy, Office of River Protection

3:00 PM
Corrosion Evaluation of Melter Materials for Radioactive Waste Vitrification: *Marissa Reigel*[1]; Carol Jantzen[1]; Ken Imrich[1]; David Peeler[1]; [1]Savannah River National Laboratory

3:20 PM Break

3:40 PM Invited
Plutonium Disposition – The Saga: *James Marra*[1]; [1]Savannah River National Laboratory

4:20 PM
Melter Feed Reactions in Nuclear Waste Vitrification: *Kai Xu*[1]; Pavel Hrma[1]; Michael Schweiger[1]; [1]Pacific Northwest National Lab

4:40 PM
Determining Temperature Distribution within a High-level Waste Cold Cap: *Derek Dixon*[1]; Michael Schweiger[1]; Brian Riley[1]; Pavel Hrma[1]; [1]Pacific Northwest National Laboratory

Materials Science of Additive Manufacturing — Materials Characterization II

Program Organizers: Panagiotis (Pan) Michaleris, Penn State University; Brett Conner, Youngstown State University; Michael Blaszkiewicz, SABIC Innovative Plastics; Wayne King, LLNL; Edward Reutzel, ARL Penn State; Todd Palmer, Penn State; Crystal Morrison, RJ Lee Group; Guha Manogharan, YSU

Monday PM
October 13, 2014

Room: Room 328
Location: David L. Lawrence Convention Center

Session Chair: Crystal Morrison, RJ Lee Group

2:00 PM Invited
An Experimental Investigation into Residual Stresses in Additively Manufactured 316L Stainless Steel: *Amanda Wu*[1]; Donald Brown[2]; Mukul Kumar[1]; Gilbert Gallegos[1]; Wayne King[1]; [1]Lawrence Livermore National Laboratory; [2]Los Alamos National Laboratory

2:40 PM
Anisotropic Creep Properties of Inconel 718 Fabricated by Electron Beam Melting: *Shihai Sun*[1]; Yuichiro Koizumi[1]; Tsuyoshi Saito[1]; Yunping Li[1]; Akihiko Chiba[1]; [1]Tohoku University

3:00 PM
Selective Laser Melting of TiNi Shape Memory Alloys: Microstructural and Structural Integrity Development: *Khamis Essa*[1]; Sheng Li[1]; Hany Hassanin[1]; Nicholas Adkins[1]; Moataz Attallah[1]; [1]University of Birmingham

3:20 PM Break

3:40 PM
Texture Development in AlSi10Mg Alloy due to Selective Laser Melting: *Wei Wang*[1]; Noriko Read[1]; Emilie Herny[2]; Moataz Attallah[1]; [1]University of Birmingham; [2]Mircoturbo

4:00 PM
Engineering Thermoplastics for Use in Additive Manufacturing: *Tom Hocker*[1]; [1]SABIC

4:20 PM
Non-contact Thermometry and Imaging in Additive Manufacturing: Challenges and Opportunities: *Sergey Mekhontsev*[1]; Steven Grantham[1]; Leonard Hanssen[1]; Weston Tew[1]; [1]NIST

4:40 PM
Quantitative Characterization of Microstructure Evolution during Pulsed-laser-induced Rapid Solidification in Al-Cu Alloys Using In-situ Transmission electron Microscopy: *Jorg Wiezorek*[1]; Joseph McKeown[2]; Kai Zweiacker[1]; Can Liu[1]; Bryan Reed[2]; Thomas LaGrange[2]; Geoffrey Campbell[2]; [1]University of Pittsburgh; [2]Lawrence Livermore National Laboratory

5:00 PM
Laser Deposited In Situ TiC and Graphite Reinforced Nickel Matrix Composites: Microstructure and Tribological Properties: *Tushar Borkar*[1]; John Sosa[2]; Jun Yeon Hwang[3]; Jaimie Tiley[4]; Hamish Fraser[2]; Thomas Scharf[1]; Rajarshi Banerjee[1]; [1]University of North Texas; [2]The Ohio State University; [3]Korea Institute of Science and Technology; [4]Air-force Research laboratory

Materials Technology Aspects in Product Remanufacturing — Materials Technology Aspects in Product Remanufacturing

Program Organizers: Derek Guest, Remanufacturing Industries Council; Jacqueline Earle, Caterpillar Inc; Todd Wieland, Cummins, Inc

Monday PM
October 13, 2014
Room: Room 327
Location: David L. Lawrence Convention Center

Session Chair: Todd Wieland, Cummins, Inc.

2:00 PM
An Introduction to the Remanufacturing Industry: *Derek Guest*[1]; [1]Remanufacturing Industries Council

2:20 PM
Overview of Remanufacturing Technical Challenges: *Jeffrey Stukenborg*[1]; [1]WABCO Reman Solutions

2:40 PM
Cleaning Technology in Remanufacturing: Leslie Caviness[1]; Jarrod Moss[1]; *Andrea Tognetti*[1]; [1]Caterpillar Inc.

3:00 PM
Metal Deposition Technology in Remanufacturing: Robert Sharp[1]; Kegan Luick[1]; Jarrod Moss[1]; *Daniel Sordelet*[1]; [1]Caterpillar Inc.

3:20 PM Break

3:40 PM
Mechanical Behavior of Spray Coated Structural Composites: *Andrew Vackel*[1]; Sanjay Sampath[1]; [1]Stony Brook University

4:00 PM
Materials Specification for Cosmetic Effectiveness in Remanufacturing: *Eugene Bukowski*[1]; [1]GE Healthcare Global Services

4:20 PM
Prognostics and Health Management for Life Extension of Electronic Systems: *Diganta Das*[1]; Michael Pecht[1]; P.V. Varde[1]; [1]University of Maryland

4:40 PM Panel Discussion

Measurement and Modeling of High Strain-rate Deformation — High Strain-Rate Deformation

Program Organizers: Ivi Smid, Penn State; Tim Eden, Penn State

Monday PM
October 13, 2014
Room: Room 338
Location: David L. Lawrence Convention Center

Session Chairs: George Gray, LANL; Ellen Cerreta, LANL; Kathryn Dannemann, Southwest Research Institute; Tim Eden, ARL, Penn State

2:00 PM
The Influence of Microstructural Anisotropy on the Dynamic Shear Response of 6061 and 7039 Aluminum Alloys: *George Gray*[1]; Kenneth Vecchio[2]; Veronica LIvescu[1]; [1]Los Alamos National Laboratory; [2]University of California-San Diego

2:20 PM
Modeling Dislocation Evolution during Laser Shock Peening: *Vibhor Chaswal*[1]; [1]University of Cincinnati

2:40 PM
High Strain Rate Deformation Response of DP980 and QP980 Automotive Sheet Steels: *Whitney Poling*[1]; Kip Findley[1]; [1]Colorado School of Mines

3:00 PM
Role of Inclusion Distribution on the Shock Behavior of Cu-Pb Alloys: *Adam Farrow*[1]; Saryu Fensin[1]; Ellen Cerreta[1]; George Gray III[1]; Seth Imhoff[1]; Robert Aikin[1]; Carl Trujillo[1]; [1]Los Alamos National Laboratory

3:20 PM Break

3:40 PM
High-strain Rate Nano-scale Deformation Using Nano-impact Indentation Technique: *Abhi Ghosh*[1]; Huseyin Arreguin[1]; Javier Arreguin[1]; Sumin Jin[1]; Mathieu Brochu[1]; [1]McGill University

4:00 PM
A Comparison of the Mechanical Response of Weld Regions in Friction Stir Welded Aluminum Alloy 7085: *Kathryn Dannemann*[1]; Alexander Carpenter[1]; Sidney Chocron[1]; Nikki Scott[1]; [1]Southwest Research Institute

4:20 PM
Dynamic Single Crystal Experiments for Phase Aware Strength Models: *Ellen Cerreta*[1]; Carl Trujillo[1]; Paulo Rigg[1]; Frank Addessio[1]; Curt Bronkhorst[1]; Turab Lookman[1]; [1]Los Alamos National Laboratory

4:40 PM
Measurement and Modeling of the Stress-strain State of the Surface of the Band at the Caliber Rolling by Deformation: *Borys Sereda*[1]; Dmytro Sereda[1]; [1]ZSEA

5:00 PM
Numerical Simulation of Swelling Elastomer Seals in Tubular Expansion Applications: *Sayyad Qamar*[1]; Tasneem Pervez[1]; [1]Sultan Qaboos University

5:20 PM
Examination of the Two-phase Shock-induced Microstructure in Zirconium: *Benjamin Morrow*[1]; J. Pablo Escobedo-Diaz[2]; Robert Field[3]; Robert Dickerson[1]; Patricia Dickerson[1]; Carl Trujillo[1]; Ellen Cerreta[1]; [1]Los Alamos National Laboratory; [2]University of New South Wales; [3]Colorado School of Mines

5:40 PM
Coupling Experimental and Numerical Methods to Predict Fragmentation under Extremely High Strain Rates: Jeremy Schreiber[1]; *Ivi Smid*[1]; Tim Eden[1]; [1]Penn State University

Mechanical Behavior of Technological Coatings and Thin Films — The Role of Interfaces and Defects on Mechanical Behavior

Program Organizers: Douglas Stauffer, Hysitron, Inc.; Megan Cordill, Erich Schmid Institute of Materials Science; Joseph Jakes, USDA Forest Products Laboratory; Mark Weaver, University of Alabama; Marian Kennedy, Clemson University; Reginald Hamilton, The Pennsylvania State University

Monday PM
October 13, 2014
Room: Room 401
Location: David L. Lawrence Convention Center

Session Chairs: Douglas Stauffer, Hysitron, Inc.; Reginald Hamilton, Penn State University

Funding support provided by Hysitron, Inc.

2:00 PM Invited
Fracture Patterns and Size Effects in Thin Coatings under Tensile Load: The Interplay of Extrinsic and Intrinsic Defects: *Ralph Spolenak*[1]; [1]ETH Zurich

2:40 PM
Influences of Thermal Cycling on Thin Copper Films on Silicon Substrate: Stephan Bigl[1]; *Stefan Wurster*[1]; Megan Cordill[2]; Daniel Kiener[1]; [1]University of Leoben; [2]Erich Schmid Institute of the Austrian Academy of Sciences

3:00 PM
Fatigue Degradation Properties and Mechanisms in Atomic-layered-deposited Alumina and Titania Coatings: *Farzad Sadeghi-Tohidi*[1]; Eva Baumert[1]; Olivier Pierron[1]; [1]Georgia Institute of Technology

3:20 PM Break

3:40 PM
Solute Segregation in Manipulating Intrinsic Stress States in Metallic Thin Films: *Tyler Kaub*[1]; Xiao-xiang Yu[1]; Gregory Thompson[1]; [1]University of Alabama

4:00 PM
The Role of Electrodeposited Films on the Adhesion in Printed Circuit Boards: *Megan Cordill*[1]; [1]Erich Schmid Institute of Materials Science

4:20 PM Invited
Effect of Interface Structure on Mechanical Behavior of Nanolamellar Composites: *Nathan Mara*[1]; Shijian Zheng[1]; Thomas Nizolek[2]; John Carpenter[1]; William Mook[1]; Jian Wang[1]; Tresa Pollock[2]; Irene Beyerlein[1]; [1]Los Alamos National Laboratory; [2]University of California, Santa Barbara

5:00 PM Invited
Growth Twins and Stacking Faults in Cu/Co Nanolayers and In Situ Studies of Stress Induced Martensitic Twins in NiFeGa Magnetic Shape Memory Alloys: *Yue Liu*[1]; Haiyan Wang[1]; Ibrahim Karaman[1]; Xinghang Zhang[1]; [1]Texas A&M University

5:40 PM Invited
Elastic Behavior of Multi-layer Thin Films and Interfaces: *John Kieffer*[1]; [1]University Of Michigan

Multiscale Modeling of Microstructure Deformation in Material Processing — Session II

Program Organizers: Lukasz Madej, AGH University of Science and Technology; Maciej Pietrzyk, AGH University of Science and Technology

Monday PM
October 13, 2014

Room: Room 324
Location: David L. Lawrence Convention Center

Session Chair: Krzysztof Muszka, AGH University of Science and Technology

2:00 PM Invited
Comparison of Experiment and Simulation in Deformation of Polycrystals: *Anthony Rollett*[1]; Francis Wagner[2]; Robert Suter[1]; Ricardo Lebensohn[3]; [1]Carnegie Mellon University; [2]University of Lorraine; [3]Los Alamos National. Laboratory

2:40 PM
Microstructure Evolution Models Based on the Cellular Automata Framework: *Lukasz Madej*[1]; Rafal Golab[1]; Mateusz Sitko[1]; [1]AGH University of Science and Technology

3:00 PM
Computer Aided Design of Innovative Incremental Forming Process: *Joanna Szyndler*[1]; Konrad Perzynski[1]; Franciszek Grosman[2]; Lukasz Madej[1]; [1]AGH University of Science and Technology; [2]University of Silesia in Katowice

3:20 PM Break

3:40 PM
Multiscale Modelling of Static Recrystallization during Multi-pass Hot Rolling: *Krzysztof Muszka*[1]; Mateusz Sitko[1]; Konrad Perzynski[1]; Lukasz Madej[1]; Eric Palmiere[2]; [1]AGH Univeristy of Science and Technology; [2]The University of Sheffield

4:00 PM
An Integrated Finite Element Framework of Studying Edge Cracking during Stretching of Previous Trimmed Sheets.: *Xiaohua Hu*[1]; Xin Sun[1]; Sergey Golovaschenko[1]; [1]Pacific Northwest National Laboratory

4:20 PM
Study the Effect of the Evolution of the Transformation Induced Geometrically Necessary Dislocations on the Flow Curve Modeling of Bainite Aided DP Steels: *Ali Ramazani*[1]; Ulrich Prahl[1]; [1]University of Michigan

4:40 PM
Study of the Subsurface Slip Activity of Polycrystalline Ti-5Al-2.5Sn Alloy with Crystal Plasticity Finite Element Method Using 3D Microstructure: *Thomas Bieler*[1]; Chen Zhang; Hongmei Li; Philip Eisenlohr; Martin Crimp[1]; Carl Boehlert; [1]Michigan State University

5:00 PM
Efficient Reconstruction of Subsurface Grain Structure from Selective Differential Aperture X-ray Microscopy: *Philip Eisenlohr*[1]; Chen Zhang[1]; Pratheek Shanthraj[2]; Bret Dunlap[1]; Wenjun Liu[3]; Ruqing Xu[3]; Thomas Bieler[1]; [1]Michigan State University; [2]Max-Planck-Institut für Eisenforschung; [3]Argonne National Laboratory

Nanomechanics of Biomaterials — Nanomechanics of Biomaterials II

Program Organizers: Kantesh Balani, Indian Institute of Technology Kanpur; R Jayaganthan, IIT Roorkee; Roger Narayan, UNC/NCSU Joint Department of Biomedical Engineering; Virginia Ferguson, University of Colorado, Boulder; Donna Ebenstein, Bucknell University

Monday PM
October 13, 2014

Room: Room 316
Location: David L. Lawrence Convention Center

Session Chairs: Donna Ebenstein, Bucknell University; Kantesh Balani, Indian Institute of Technolgy Kanpur

2:00 PM Keynote
Nanoindentation of Soft Biomaterials: Challenges and Advances: *Donna Ebenstein*[1]; [1]Bucknell University

2:40 PM
Mechanical and Biological Responses of Surface Modified Ti Alloy Implant Materials for Orthopedic Applications: *Vishal Musaramthota*[1]; Amit Datye[2]; Rupak Dua[1]; Ryszard Rokicki[3]; Sharan Ramaswamy[1]; Norman Munroe[1]; [1]Florida International University; [2]The University of Tennessee; [3]Electrobright

3:00 PM
Mathematical Model to Predict The First Mode Fracture Toughness of Hydroxyapatite-carbon Nanotube-silver Nanocomposite: *Vishnu Shukla*[1]; Katharina Herkendell[2]; Anup Patel[1]; Kantesh Balani[1]; [1]IIT Kanpur; [2]Karlsruhe Institute of Technology

3:20 PM Break

3:40 PM Keynote
Probing the Mechanical Properties of Soft Biological Materials on the Micron Scale: *Brian Derby*[1]; [1]University of Manchester

4:20 PM Invited
Morphological Dependence of Interfacial Strength in ZnO Reinforced Ultra High Molecular Weight Polyethylene Biocomposite: Rajeev Sharma[1]; *Kantesh Balani*[1]; [1]IIT Kanpur

4:40 PM
Diopside ($CaMgSi_2O_6$) - ZnO Biocomposites: Synthesis, Sintering, Microstructure, Mechanical, Antimicrobial and Cytocompatibility Properties: Baburao Sherikar[1]; Yashoda Chandorkar[2]; Bikramjit Basu[2]; *Arun Umarji*[2]; [1]Department of Ceramic And Cement Technology P.D.A.College of Engineering; [2]Materials Research Centre Indian Institute of Science

Nanotechnology for Energy, Environment, Electronics, and Industry — Energy & Environment II

Program Organizers: Gary Pickrell, Virginia Tech; Navin Manjooran, Siemens AG

Monday PM
October 13, 2014

Room: Room 320
Location: David L. Lawrence Convention Center

Session Chairs: Gary Pickrell, Virginia Tech; Navin Manjooran, Siemens AG; Parthiban Rajasekaran, UCF

2:00 PM Introductory Comments

2:20 PM
Co-based Nanocomposite Soft Magnets for Energy-efficient Electric Motors: *Josefina Silveyra*[1]; Alex Leary[1]; Vincent DeGeorge[1]; Satoru Simizu[2]; Michael McHenry[1]; [1]Carnegie Mellon University; [2]Advanced Materials Corporation

2:40 PM
The 2014 NCMS-NSF Survey of Nanotechnology in the U.S. Manufacturing Industry: *Manish Mehta*[1]; [1]National Center for Manufacturing Sciences (NCMS)

3:00 PM
Platinum Decorated Nafion Functionalized Single-wall Carbon Nanohorns as Catalyst for Proton Exchange Membrane Fuel Cell Applications: *D Ebenezer*[1]; M Lahari[1]; M Jagannatham[1]; Prathap Haridoss[1]; [1]IIT MADRAS

3:20 PM Break

3:40 PM
Innovative Nanostructured WC-12Co Thermal Spray Coatings for Oil/Gas Applications- Technology Overview: *Ahmed Al Hamed*[1]; [1]Dublin City Unversity

4:00 PM
Depleted Bulk Heterojunctions in Thermally Annealed PbS Quantum Dot Solar Cells: Bo Ding[1]; Yang Wang[1]; Po-Shun Huang[1]; David Waldeck[1]; *Jung-Kun Lee*[1]; [1]University of Pittsburgh

4:20 PM
Environmental and Economic Tradeoffs in CNT Li-ion Battery Manufacture: *Jacqueline Isaacs*[1]; Ali Hakimian[1]; Sagar Kamarthi[1]; Thomas Cullinane[1]; K Abraham[1]; Ahmed Busnaina[1]; [1]Northeastern University

4:40 PM
Fabrication of Electrochromic Smart Window with Dye Sensitized Solar Cell Fabricated (DSSC) by Nano Particle Deposition System (NPDS): *Hyungsub Kim*[1]; Seungkyu Yang[1]; Yoonchan Park[1]; Sung-Hoon Ahn[2]; Caroline Sunyong Lee[1]; [1]Hanyang University; [2]Seoul National University

Next Generation Biomaterials — Session II

Program Organizers: Roger Narayan, UNC/NCSU Joint Department of Biomedical Engineering; Diego Mantovani, Laval University; Raman Singh, Monash University

Monday PM
October 13, 2014

Room: Room 315
Location: David L. Lawrence Convention Center

Session Chairs: Otto Wilson, Catholic University of America; Dora Alicia Cortés-Hernández, CINVESTAV IPN-Unidad Saltillo

2:00 PM Invited
A Biomineralization Model for Nanoscale Single Crystal Hydroxyapatite: *Otto Wilson*[1]; Tiffany Omokanwaye[1]; Ayele Gugssa[2]; Winston Anderson[2]; [1]Catholic University of America; [2]Howard University

2:20 PM Invited
Nanoclay-polycapralactone Scaffolds for Bone Tissue Engineering: Experiments and Modeling: *Kalpana Katti*[1]; Avinash Ambre[1]; Dinesh Katti[1]; Anurag Sharma[1]; [1]North Dakota State University

2:40 PM Invited
Ga and Fe Magnetic Nanoparticles for Hyperthermia Treatment: *Dora Cortés-Hernández*[1]; Héctor Sánchez-Fuentes[1]; [1]CINVESTAV-Unidad Saltillo

3:00 PM Invited
Tantalum Diffusion Coating for Increasing the Biocompatibility of Conventional Metal Implant Alloys: *Jacob Stiglich*; Brian Williams[1]; [1]Ultramet

3:20 PM Break

3:40 PM
Evaluation of Long-term Mechanical and Biological Biocompatibility of Low-cost Beta-type Ti-Mn Alloys for Biomedical Applications: *Ken Cho*[1]; Mitsuo Niinomi[1]; Masaaki Nakai[1]; Junko Hieda[1]; Pedro Santos[1]; Alethea Liens[1]; Masahiko Ikeda[2]; [1]Tohoku University; [2]Kansai University

4:00 PM
Use of Magnesium Alloys in Tension Band Wiring of Olecranon Fractures: *Joseph Gay*[1]; Louisa King[1]; Adrienne Lysen[1]; Satya Shivkumar[1]; [1]WPI

4:20 PM
Fatigue Crack Initiation Mechanisms of Nickel and Nitrogen-stabilized Cold-worked Austenitic Stainless Steels Used for Implant Manufacturing: *Michael Roach*[1]; Stuart Wright[2]; Jack Lemons[3]; Lyle Zardiackas[1]; [1]UMMC; [2]EDAX Inc; [3]University of Alabama Birmingham

4:40 PM
Two Photon Induced Polymerization for Medical Applications: *Roger Narayan*[1]; [1]UNC/NCSU Joint Department of Biomedical Engineering

5:00 PM
Corrosion Fatigue of Magnesium Alloys for Biodegradable Implant Applications: *Sajjad Jafari*[1]; R.K. Singh Raman[1]; C.H.J. Davies[1]; [1]Department of Mechanical and Aerospace Engineering, Monash University, Melbourne, Victoria, Australia

Phase Stability, Diffusion Kinetics, and their Applications (PSDK-IX) — High Entropy Alloys / Materials Genome / Advanced Numerical Models

Program Organizers: Dongwon Shin, Oak Ridge National Laboratory; In-Ho Jung, McGill University; James Saal, Northwestern University; Raymundo Arroyave, Texas A & M University

Monday PM
October 13, 2014

Room: Room 402
Location: David L. Lawrence Convention Center

Session Chairs: Ursula Kattner, National Institute of Standards and Technology; Irina Belova, University of Newcastle

2:00 PM
Tensile Characterization and In-situ Neutron Diffraction of As-cast and Homogenized AlCoCrFeNi High-entropy Alloys: *Zhi Tang*[1]; Oleg Senkov[2]; Chad Parish[3]; Daniel Miracle[2]; Chuan Zhang[4]; Fan Zhang[4]; Michael Gao[5]; Peter Liaw[1]; Takeshi Egami[1]; [1]The University of Tennessee; [2]Air Force Research Laboratory; [3]Oak Ridge National Laboratory; [4]CompuTherm LLC; [5]National Energy Technology Laboratory

2:20 PM
Casting Microstructures, Physical Properties and Phase Diagram Calculations of AlxCoFeCuNi High Entropy Alloys: *Mohsen Beyramali Kivy*[1]; Mohsen Asle Zaeem[1]; Simon Lekakh[1]; [1]Missouri University of Science and Technology

2:40 PM
Progress on TC-PRISMA Precipitation Simulations: Effects of Existing Microstructure and Multiple Nucleation Types: *Kaisheng Wu*[1]; Qing Chen[2]; Paul Mason[1]; [1]Thermo-Calc Software Inc; [2]Thermo-Calc Software AB

3:00 PM
Schemas for Capturing Phase-based Data: *Ursula Kattner*[1]; Carelyn Campbell[1]; Shengyen Li[1]; Vladimir Diky[1]; Robert Chirico[1]; [1]National Institute of Standards and Technology

3:20 PM Break

3:40 PM
Thermodynamic and Kinetic Models for Transient Liquid Phase Sintering (TLPS) Systems: *John Holaday*[1]; Carol Handwerker[1]; [1]Purdue University

4:00 PM
Calculation of Diffusion Coefficients in Mg from First-principles: *Bi-Cheng Zhou*[1]; Shun-Li Shang[1]; Yi Wang[1]; Zi-Kui Liu[1]; [1]The Pennsylvania State University, University Park

4:20 PM
Global Energy Minimization of Multi-component Phases with Internal Degrees of Freedom: *Richard Otis*[1]; Zi-Kui Liu[1]; [1]Pennsylvania State University

4:40 PM
Onsager Transport Coefficients in Multicomponent Alloy Systems: *Irina Belova*[1]; Graeme Murch[1]; [1]University of Newcastle

5:00 PM
Performance of a Discrete Curvature Interfacial Energy Driven Microstructural Evolution Model: *Efrain Hernandez-Rivera*[1]; Veena Tikare[2]; Laurence Noirot[3]; Lumin Wang[1]; [1]University of Michigan; [2]Sandia National Laboratories; [3]Centre d'Énergie Atomique

5:20 PM
A Case Study of the Mg-Zn Binary System Using the Debye-Grüneisen Model: *Xuan Liu*[1]; Brian VanLeeuwen[1]; Yong Du[2]; Zi-Kui Liu[1]; [1]Penn State University; [2]Central South University

Recent Advances in Electron Microscopy, Spectral Imaging, and Surface Analysis Techniques for Materials Characterization — Session I

Program Organizer: Brian Strohmeier, Thermo Fisher Scientific

Monday PM
October 13, 2014

Room: Room 334
Location: David L. Lawrence Convention Center

Session Chair: Brian Strohmeier, Thermo Fisher Scientific

2:00 PM Invited
Towards an Automated Particle Analysis of Fibrous Material: *C.M. Hefferan*[1]; D. Oliphant[1]; H. Lentz[1]; M.S. Potter[1]; G.S. Casuccio[1]; R.J. Lee[1]; [1]R.J. Lee Group

2:40 PM
Quantitative Analysis of Heterogeneous Samples by SEM/EDS Using COMPASS Applied to Spectral Imaging Data Sets: *John Konopka*[1]; [1]Thermo Fisher Scientific

3:00 PM
Counting Atoms in Nanoparticles by Quantitative Scanning Transmission Electron microscopy: *Cecile Bonifacio*[1]; Long Li[2]; Judith Yang[1]; [1]University of Pittsburgh; [2]RJ Lee Group Inc.

3:20 PM Break

3:40 PM
TEM Analysis of Opaque Black Glass Ceramic: *Indrajit Dutta*[1]; Matthew Dejneka[1]; Charlene Smith[1]; David Baker[1]; Michael Carson[1]; [1]Corning Incorporated

4:00 PM Invited
Applications of Advanced X-ray Photoelectron Spectroscopy (XPS) for Materials Surface Characterization: *Brian Strohmeier*[1]; Robert Blackledge[2]; [1]Thermo Fisher Scientific; [2]Independent Consultant

4:40 PM
Product Lifecycle Assessment: Analytical Approaches for Nanotechnology: *Mark Sparrow*[1]; Crystal Morrison[1]; Kristin Bunker[1]; John Mastovich[1]; [1]RJ Lee Group

5:00 PM
Optimizing Graphene Growth Parameters with Raman Imaging: *Mark Wall*[1]; Jennifer Ramirez[1]; [1]Thermo Fisher Scientific

5:20 PM
X-ray Diffraction in High Magnetic Fields Using the Florida Split Coil 25 Tesla Magnet: *Shengyu Wang*[1]; Alexey Kovalev[1]; Alexey Suslov[1]; Theo Siegrist[1]; [1]National High Magnetic Field Lab

5:40 PM
Compositionally Dependent Structure of Metallic Glasses Quantified by X-ray Absorption Spectroscopy: *Jennifer Carter*[1]; [1]Case Western Reserve University

Rustum Roy Symposium on Processing and Performance of Materials using Microwaves, Electric and Magnetic Fields, Ultrasound, Lasers, and Mechanical Work — Session II

Program Organizers: Morsi Mahmoud , Karlsruhe Institute of Technology (KIT) & City for Scientific Research and Technological Applications (SRTA City); Dinesh Agrawal, Pennsylvania State University; Guido Link, Karlsruhe Institute of Technology; Motoyasu Sato, Chubu University; Rishi Raj, University of Colorado

Monday PM
October 13, 2014

Room: Room 317
Location: David L. Lawrence Convention Center

Session Chairs: Lambert Feher, TWI Ltd; Edward Ripley, Y-12 National Security Complex

2:00 PM Invited
Microwave Effects on the Thermodynamic and Thermochemical Kinetics of Gas-carbon Reactions: Jacob Hunt[1]; Anthony Ferrari[1]; *Albert Stiegman*[1]; [1]Florida State University

2:40 PM
Field-enhanced Crystallographic Texturing of Transparent Alumina: *Raymond Brennan*[1]; Robert Pavlacka[1]; Claire Brennan[1]; Constantine Fountzoulas[1]; [1]US Army Research Laboratory

3:00 PM
Some Phenomena in Microwave Processing Interpreted in Terms of Non-thermal Effect: *Noboru Yoshikawa*[1]; [1]Tohoku University

3:20 PM Break

3:40 PM
Field-assisted Viscous Flow of Mixed Alkali Silicate Glasses: *Charles McLaren*[1]; Himanshu Jain[1]; William Heffner[1]; Rishi Raj[2]; [1]Lehigh University; [2]University of Colorado

4:00 PM
Investigation of Microwave Effect in the Enzyme Reaction by 5.8-GHz Microwave System: *Taichiro Nakamura*[1]; Satoshi Horikoshi[1]; [1]Sophia University

Sintering and Related Powder Processing Science and Technologies — Sintering: SPS II

Program Organizers: Ricardo H. R. Castro, University of California at Davis; Eugene Olevsky, San Diego State University; Olivia Graeve, University of California, San Diego; Umberto Anselmi-Tamburini, University of Pavia; Zak Fang, University of Utah ; Troy Holland, Colorado State University

Monday PM
October 13, 2014

Room: Room 326
Location: David L. Lawrence Convention Center

Session Chairs: Eugene Olevsky, San Diego State University; Olivier Guillon, Forschungszentrum Jülich GmbH

2:00 PM
FAST Processing of Nanocomposites: *Andrew Sherman*[1]; Mark Grogan[1]; Jack Stiglich[2]; [1]Powdermet Inc; [2]Advanced Materials Associates

2:20 PM
Effect of Spark-plasma Sintering Parameters on Densification, Microstructure Evolution and Properties of Ta(Nb)-Ti-B-C Ceramic Composites: *Dmytro Demirskyi*[1]; Yoshio Sakka[1]; Oleg Vasylkiv[1]; [1]National Institute for Materials Science

2:40 PM
Direct Current Assisted Processing of Large Scale Metallic Ceramics: *Erica Corral*[1]; David Pham[1]; [1]The University of Arizona

3:00 PM
Mechanism of Low-temperature Protonic Conductivity in Fully Dense Nanometric TiO2 Obtained by HP-SPS: *Umberto Anselmi-Tamburini*[1]; Ilenia Tredici[1]; Filippo Maglia[1]; Piercarlo Mustarelli[1]; Chiara Ferrara[1]; [1]University of Pavia

3:20 PM Break

3:40 PM
Sintering of ZnS Powder Synthesized through a Colloidal Processing: *Yiyu Li*[1]; Frederick Langenstein[1]; Yiquan Wu[1]; [1]Alfred University

4:00 PM
Spark-plasma Sintering Kinetics of Ferritic/Martensitic ODS Steel Powders: *Igor Bogachev*[1]; Eugene Olevsky[2]; Evgeniy Grigoryev[1]; Ivan Chernov[1]; [1]Moscow Engineering Physics University; [2]San Diego State University

4:20 PM
Wave Mode of Powders Compaction at High Voltage Pulse Consolidation: *Evgeny Grigoryev*[1]; Eugene Olevsky[2]; Artem Yudin[1]; Maria Yurlova[1]; Nikita Medyankov[1]; [1]MEPHI; [2]SDSU (CA, USA), MEPhI (Moscow, Russia)

Structural Intermetallics: Alloy Design, Processing, and Applications — Silicide Intermetallic Systems

Program Organizers: David Forrest, Department of Energy; John Perepezko, University of Wisconsin-Madison; Bruce Pint, Oak Ridge National Laboratory

Monday PM
October 13, 2014

Room: Room 335
Location: David L. Lawrence Convention Center

Session Chair: David Forrest, Dept. of Energy

2:00 PM Invited
Phase Stability and Environmental Resistance of Mo-Si-B Alloys and Coatings: *John Perepezko*[1]; Travis Sossaman[1]; Patrick Ritt[1]; [1]University of Wisconsin-Madison

2:40 PM Invited
Processing Concepts for Optimizing Properties of Ultrahigh Temperature Silicide Alloys: *Martin Heilmaier*[1]; Florian Gang[1]; Daniel Schliephake[1]; Christoph Seemüller[1]; [1]Karlsruhe Institute of Technology (KIT)

3:20 PM Break

3:40 PM Invited
Physico-chemical Approach for Designing Silicide Coatings Dedicated to the Protection of Nb-alloys: *Michel Vilasi*[1]; Stephane Mathieu[1]; Léo Portebois[1]; Michel François[1]; Stéphane Knittel[1]; Stefan Drawin[1]; [1]University of Lorraine

4:20 PM Invited
Processing, Microstructure and Mechanical Properties of TiC-Added Mo-Si-B Alloys: *Kyosuke Yoshimi*[1]; Shimpei Miyamoto[1]; Takahiro Moriyama[1]; Takahiro Kaneko[1]; Daiki Kanekon[1]; Junya Nakamura[1]; Joung-Wook Kim[1]; Kouichi Maruyama[1]; Hirokazu Katsui[1]; Takashi Goto[1]; [1]Tohoku University

5:00 PM
Pressureless Sintering of Mo-Si-B Alloys with Fe Additive: *Gaoyuan Ouyang*[1]; Pratik Ray[2]; Matthew Kramer[2]; Mufit Akinc[1]; [1]Iowa State University; [2]Ames Laboratory

5:20 PM
Enhanced Oxidation Protection of Niobium Alloys Utilizing a Mo-Si-B Base Coating: *Otto Lu-Steffes*[1]; Linfen Su[2]; John Perepezko[1]; Hu Zhang[2]; [1]University of Wisconsin-Madison; [2]Beihang University

Surface Properties of Biomaterials V — Bioceramics and Biopolymers

Program Organizers: Susmita Bose, Washington State University; Amit Bandyopadhyay, Washington State University; Mukesh Kumar, Biomet Inc

Monday PM
October 13, 2014

Room: Room 310
Location: David L. Lawrence Convention Center

Session Chair: Ketul Popat, Colorado State University

2:00 PM Invited
Silicon Oxynitride Coatings with Antioxidant Properties for the Enhancement of Osteogenesis: *Venu Varanasi*[1]; Megen Velten[2]; Tetsuro Odatsu[3]; Pranesh Aswath[2]; [1]Texas A & M University Baylor College of Dentistry; [2]University of Texas at Arlington; [3]Nagasaki University

2:40 PM
Imparting a Better Bioactivity of Microarc Oxidized Magnesium by Biomimetic Deposition of Strontium and Zinc Substituted Calcium Phosphates: *Sankara Narayanan TSN*[1]; Min Ho Lee[1]; [1]Chonbuk National University

3:00 PM
Mechanical and In Vitro Characterization of Porous Doped Tricalcium Phosphate Scaffolds by Sucrose Decomposition Method: *Dongxu Ke*[1]; Amit Bandyopadhyay[1]; Bose Susmita[1]; [1]Washington State University

3:20 PM Break

3:40 PM Invited
Osteogenic Differentiation of Adipose Derived Stem Cells on Polycaprolactone Nanowire Surfaces: Nathan Trujillo[1]; *Ketul Popat*[1]; [1]Colorado State University

4:20 PM Invited
Two Families of Novel, Elastomeric and Resilient Biointegrative Cross-linked Polyurethane Scaffolds: *Arindam Datta*[1]; [1]Biomerix

5:00 PM Invited
Post Transcriptional Regulation in Cells using Sustained Delivery of MicroRNA Based Therapeutics: *lakshmi Nair*[1]; [1]University of Connecticut Health Center

Surface Protection for Enhanced Materials Performance: Science, Technology, and Application — Environmental Barrier Coatings

Program Organizers: Dongming Zhu, NASA Glenn Research Center; Rodney Trice, Purdue University; Yutaka Kagawa, The University of Tokyo; Daniel Mumm, University of California-Irvine; Hua-Tay Lin, Oak Ridge National Laboratory; Kang Lee, Rolls Royce; Mitchell Dorfman, Sulzer Metco (US) Inc.; Christian Moreau, Concordia University

Monday PM
October 13, 2014

Room: Room 323
Location: David L. Lawrence Convention Center

Session Chairs: Charles Lewinsohn, Ceramatec Inc.; Bryan Harder, NASA Glenn Research Center

2:00 PM Invited
Damage Evolution of Oxide Ceramic/Si EBC System on SiC/SiC Substrate after Cyclic Heat Exposure and/or Mechanical Loading: *Yutaka Kagawa*[1]; [1]The University of Tokyo

2:40 PM
High Temperature Multilayer Environmental Barrier Coatings Deposited Via Plasma Spray–physical Vapor Deposition: *Bryan Harder*[1]; Dongming Zhu[1]; Michael Schmitt[2]; Douglas Wolfe[2]; [1]NASA Glenn Research Center; [2]The Pennsylvania State University

3:00 PM
Steam Cycling Behavior and Failure Mechanisms of Ytterbium Disilicate EBCs: *Bradley Richards*[1]; Haydn Wadley[1]; [1]University of Virginia

3:20 PM Break

3:40 PM Invited
Environmental Barrier Coatings for Silicon-based Ceramics and Composites in Advanced Energy Applications: *Charles Lewinsohn*[1]; Hyrum Anderson[1]; [1]Ceramatec Inc.

4:20 PM
Degradation of Oxide Ebc System on SiC/SiC Substrate Using Si Bond Coat Layer after Heat Exposure above Melting Point of Si: *Takaho Kuribara*[1]; Hideki Kakisawa[1]; Satoshi Kitaoka[2]; Yutaka Kagawa[1]; [1]The University of Tokyo; [2]Japan Fine Ceramics Center

4:40 PM
Recession Behavior of Yttrium Silicates in High-temperature High-velocity Water Vapor: *Robert Golden*[1]; Elizabeth Opila[2]; [1]University of Virginia ; [2]University of Virginia

Thermal Protection Materials and Systems — Advanced Concepts for Ablative Materials

Program Organizers: Sylvia Johnson, NASA-Ames Research Center; Parul Agrawal, ERC Corporation; Frances Hurwitz, NASA Glenn Research Center; John Lawson, NASA Ames Research Center

Monday PM
October 13, 2014

Room: Room 412
Location: David L. Lawrence Convention Center

Session Chairs: Parul Agrawal, NASA-Ames Research Center; Thomas Squire, NASA-Ames Research Center

2:00 PM
ASTERM Low Density Ablative Material: Development Status: *Jean-Marc Bouilly*[1]; [1]Airbus Defence and Space - Space Systems

2:40 PM
Woven Thermal Protection System (WTPS) a Novel Approach to Meet NASA's Most Demanding Reentry Missions: *Mairead Stackpoole*[1]; [1]NASA Ames Research Center

3:00 PM Break

3:20 PM
HYDRA a New Hybrid Thermal Protection System for LEO & Moon Mission Re-entry Vehicles: *Wolfgang P.P. Fischer*[1]; Jorge Barcena[2]; Gregory Pinaud[1]; Jean-Marc Bouilly[1]; [1]AIRBUS D&S; [2]TECNALIA

4:00 PM
Multiscale Modeling of Ablative Composites for Atmospheric Entry Applications: *John Lawson*[1]; Joshua Monk[1]; Justin Haskins[1]; Charles Bauschlicher[1]; Thomas Squire[1]; [1]NASA Ames Research Center

4:40 PM
Design and Optimization of Photonic Heat Shields for Aatmospheric Re-entry: *Nikolay Komarevskiy*[1]; Valery Shklover[1]; Leonid Braginsky[1]; Christian Hafner[1]; John Lawson[1]; [1]ETH Zurich

Vanadium Microalloyed Steels: A Symposium in Memory of Michael Korchynsky — Metallurgical Roles of Vanadium /Vanadium Microallying in Welded Applications

Program Organizers: Riad Asfahani, U. S. Steel Research & Technology; David Milbourn, Vanitec Limited; Robert Glodowski, Evraz East Metals NA; Bevis Hutchinson, Swerea KIMAB; Anthony Deardo, University of Pittsburgh; Yang Caifu, Central Iron & Steel Research Institute; Terry Perles, TTP Squared, Inc.

Monday PM
October 13, 2014

Room: Room 410
Location: David L. Lawrence Convention Center

Session Chairs: David Milbourn, Vanitec Ltd.; Terry Perles, MoTiV Metals, LLC.

2:00 PM
Metallurgical Roles of Vanadium Microalloying in Eutectoid Steel Grades: Amaia Iza-Mendia[1]; Beatriz Lopez[1]; *Jose Rodriguez-Ibabe*[1]; [1]CEIT

2:40 PM
Study of High Strength V-alloyed Guard Rail: *Xu Liang*[1]; Qingyue Zhou[1]; Yinhua Zhang[1]; [1]CARS

3:00 PM
Application of V-N Microalloyed Technology on Section Steel: *Chai Feng*[1]; Yang Caifu[1]; Su Hang[1]; Chen Xuehui[1]; [1]Central Iron & Steel Research Institute

3:20 PM Break

3:40 PM
HAZ Toughness in Vanadium-microalloyed Steels: Karl Fahlström[1]; *Bevis Hutchinson*[1]; Jacek Komenda[1]; David Martin[1]; Eva Lindh-Ulmgren[1]; Hossein Beladi[1]; [1]Swerea KIMAB

4:20 PM
Comparison of Microstructure and Toughness of Simulated CGHAZs between V-N-Ti, V-Ti And Nb-Ti Microalloyed Steels: *Ruizhen Wang*[1]; Zhongran Shi[2]; Qingfeng Wang[2]; Caifu Yang[1]; Hang Su[1]; Yongquan Zhang[1]; [1]Central Iron & Steel Research Institute; [2]State Key Laboratory of Metastable Materials Science and Technology, Yanshan University

4:40 PM
Weld Heat Affected Zone Toughness of Vanadium Microalloyed Steels: Yu Li[1]; *David Milbourn*[1]; [1]Vanitec Ltd

5:00 PM
Research of 600C Grade Easy Welding V-N Micro-alloyed Steel Used on Truck Axle Housing after Annealing: *Wang Quanli*[1]; Pan Hui[2]; Liu Qingmei[2]; [1]Shougang Corporation; [2]Shougang Corporation

ACerS/NICE Arthur L. Friedberg Memorial Lecture

Tuesday AM
October 14, 2014

Room: Room 303
Location: David L. Lawrence Convention Center

Session Chairs: Kristen Brosnan, GE Global Research; Olivia Graeve, University of California, San Diego

9:00 AM Invited
Rethinking Optical Fiber: New Demands, Old Glasses: *John Ballato*[1]; [1]Clemson University

Advanced Aluminum Alloys, Composites, and Process Technologies — New Materials I

Program Organizers: Awadh Pandey, Pratt & Whitney; Thomas Watson, Pratt & Whitney

Tuesday AM
October 14, 2014

Room: Room 329
Location: David L. Lawrence Convention Center

Session Chair: Awadh Pandey, Pratt & Whitney

8:00 AM Invited
Development of High Temperature Aluminium Alloys with Nano Dispersed Coherent Intermetallic Nanoparticles: Surendra Makineni[1]; Subhashish Meher[2]; Rajarshi Banerjee[2]; Subodh Kumar[1]; *Kamanio Chattopadhyay*[1]; [1]Indian Institute of Science Bangalore; [2]University of North Texas

8:40 AM
Effects of Trace Elements on Microstructure and Thermal Properties of Al-Zn-Cu Based Alloys Using Extrusion: *Yong-Ho Kim*[1]; Jung-Han Kim[1]; Hyo-Sang Yoo[1]; Jeong-Won Choi[1]; Hyeon-Taek Son[1]; [1]Korea Institute of Industrial Technology

9:00 AM
Metal Encapsulated MMC Macrocomposites: *Prashant Karandikar*[1]; Eric Klier[2]; Brandon McWilliams[2]; Matthew Watkins[1]; Michael Aghajanian[1]; [1]M Cubed Technologies; [2]Army Research Labs

9:20 AM Invited
Microstructure and Nitrogen Impurity Concentration of Nanocrystalline AA5083 Cryomilled for Extended Durations: *Clara Hofmeister*[1]; Tim Delahanty[2]; Anit Giri[3]; Frank Kellogg[3]; Kyu Cho[3]; Yongho Sohn[1]; [1]UCF; [2]Pittsburgh Materials Technology; [3]U.S. Army Research Laboratory

10:00 AM Break

10:20 AM
Novel MAX (Nanolaminates) -Al (Aluminum) Multifunctional Composites: *Tom Hammann*[1]; Surojit Gupta[1]; R Johnson[1]; M Riyad[1]; [1]University of North Dakota

10:40 AM
High Strength, High Conductivity, Lightweight Al-9 vol.% Ca Deformation Processed Metal-metal Composite with Potential for Overhead Electrical Conductor Cables: *Liang Tian*[1]; Iver Anderson[2]; Alan Russell[2]; [1]Iowa State University; [2]Iowa State University/Ames Laboratory

11:00 AM
Investigation of the Aluminum Rich Corner of the Al-Sc-Zr Phase Diagram: *Marcel Kerkove*[1]; Kyle Deane[1]; Thomas Wood[1]; Paul Sanders[1]; Stephen Kampe[1]; Douglas Swenson[1]; [1]Michigan Technological University

11:20 AM
Precipitate Evolution in Supersaturated Melt Spun Al-Sc-Zr Ribbons: *Kyle Deane*[1]; Stephen Kampe[1]; Douglas Swenson[1]; Paul Sanders[1]; [1]Michigan Technological University

Advanced Spintronic Materials — Tunnel Junctions and Spin Transfer Torque

Program Organizers: Vincent Sokalski, Carnegie Mellon University; David Laughlin, Carnegie Mellon University; Jian-Gang Zhu, Carnegie Mellon University

Tuesday AM
October 14, 2014

Room: Room 305
Location: David L. Lawrence Convention Center

Session Chair: Pietro Gambardella, ETH Zurich

8:00 AM Invited
Perpendicular Spin Torque MRAM: *Daniel Worledge*[1]; [1]IBM Research

8:40 AM Invited
Voltage-controlled Magnetic Anisotropy in Magnetic Tunnel Junctions: *Weigang Wang*[1]; [1]University of Arizona

9:20 AM
Antiferromagnetic Spin Waves Induced by Spin-transfer Torque: *Matthew Daniels*[1]; Wei Guo[2]; Di Xiao[1]; Jiang Xiao[2]; [1]Carnegie Mellon University; [2]Fudan University

9:40 AM Break

10:00 AM Invited
Status and Outlook of STT-MRAM Development: *Tai Min*[1]; G. Kar[1]; K. Xu[1]; L. Souriau[1]; D. Radisic[1]; D. Wouters[1]; S. Cornelissen[1]; J. Swerts[1]; T. Tahmasebi[1]; S. Martens[1]; P. Raghavan[1]; S. Coseman[1]; H. Okuyama[2]; K Tsunekawa[2]; S. Tahara[1]; E. Nishimura[3]; [1]Imec; [2]Anelva Corp; [3]Tokyo Electron Miyagi Ltd

10:40 AM Invited
Oxide Nanoelectronics on Demand: Jeremy Levy[1]; [1]University of Pittsburgh

11:20 AM Invited
Exploring the Domain Behavior of Magnetic Nanostructures Using Lorentz Microscopy: V Brajuskovic[1]; S. Zhang[1]; Amanda Petford-Long[1]; *Charudatta Phatak*[1]; [1]Argonne National Laboratory

Advanced Steel Metallurgy: Products and Processing — Advanced High Strength Steels I

Program Organizer: Amy Woods, Steel Dynamics Flat Roll

Tuesday AM
October 14, 2014

Room: Room 409
Location: David L. Lawrence Convention Center

Session Chair: To Be Announced

8:00 AM
Back-stress Contribution to the Work Hardening of Dual-phase Steels: *Hossein Seyedrezai*[1]; Keith Pilkey[1]; Doug Boyd[1]; [1]Queen's University

8:20 AM
Stretch-flangeability of 0.2%C-1.5%Si-(1.5-5)%Mn TRIP-aided Martensitic Steels: *Koh-ichi Sugimoto*[1]; Junya Kobayashi[1]; Hikaru Tanino[1]; [1]Shinshu University

8:40 AM
A Uniaxial Tension/Compression Test to Measure the Bauschinger Effect in High-strength Steel Sheet: *Mark Stoudt*[1]; Lyle Levine[1]; Li Ma[1]; [1]National Institute of Standards and Technology

9:00 AM
Springback Prediction: Simplified Model: *Jorge Gonzalez-Coneo*[1]; [1]Universidad de la Costa

9:20 AM
Effect of Cooling Rate and Grain Size on the Formation of Thermal Martensite in TWIP Steel through Dialtometer Test: *Dinesh Kumar*[1]; [1]Indian Institute of Technology Kharagpur

9:40 AM Break

10:00 AM
New AHSS in Three Distinct Classes: *Alla Sergueeva*[1]; Andrew Frerichs[1]; Brian Meacham[1]; Longzhou Ma[1]; Igor Yakubtsov[1]; Sheng Cheng[1]; Daniel Branagan[1]; [1]The NanoSteel Company

10:20 AM
Quantitative Analysis of Effect of Microstructure on Fatigue Damage Evolution in Advanced Martensite Dominated Dual Phase Steels: *Anshul Godha*[1]; Shrikant Bhat[2]; Arun Gokhale[1]; [1]Georgia Institute of Technology, Atlanta; [2]ArcelorMittal Global R&D, East Chicago

10:40 AM
In-situ Study and Simulation of The Influence of Microstructure and Heating Rate on Phase Transformation in a Dual Phase AHSS: *Zhenzhen Yu*[1]; John Vitek[2]; Ke An[2]; Zhili Feng[2]; Stan David[2]; Xun-Li Wang[3]; [1]Colorado School of Mines; [2]Oak Ridge National Laboratory; [3]City University of Hong Kong

Advanced Steel Metallurgy: Products and Processing — Stainless Steel and High Alloy Steels II

Program Organizer: Amy Woods, Steel Dynamics Flat Roll

Tuesday AM
October 14, 2014

Room: Room 408
Location: David L. Lawrence Convention Center

Session Chair: To Be Announced

8:00 AM
Effect of Tempering on Microstructure and Mechanical Properties of Quenched and Tempered 4340 Steel: *David Alexander*[1]; Daniel Coughlin[1]; Kester Clarke[1]; Amy Clarke[1]; [1]Los Alamos National Laboratory

8:20 AM
Improving Mechanical Properties in an Ultrahigh Carbon Steel through Heat Treatment: *Matthew Hecht*[1]; Bryan Webler[1]; Yoosuf Picard[1]; [1]Carnegie Mellon University

8:40 AM
Isothermal Heat Treatment Effects on the Microstructure of Sub-micron Grain 9310 Steel: *Thomas Kozmel*[1]; Sammy Tin[1]; [1]Illinois Institute of Technology

9:00 AM
Phase Transformations and Crash Performance of Mo-Nb Bearing Press Hardening Steels: *Fateh Fazeli*[1]; [1]CanmetMATERIALS

9:20 AM
The Research of Influence Alloying Elements on Processes Structure Formation in Stamp Steel: *Borys Sereda*[1]; Dmytro Sereda[1]; [1]ZSEA

9:40 AM Break

10:00 AM
The Effect of Composition and Heat Treatment on Retained Austenite in a High Toughness Secondary Hardening Steel: *Carolyn Norwood*[1]; Warren Garrison[1]; [1]Carnegie Mellon University

10:20 AM
Austenite Formation and Decomposition in Medium Mn Steels: *Huseyin Aydin*[1]; Binhan Sun[1]; Fateh Fazeli[2]; Stephen Yue[1]; [1]McGill University; [2]Canmet MATERIALS; Natural Resources Canada

10:40 AM
Creation of Light, Ductile, Ultrastrong Steels through Modification of B2-IMC (Intermetallic Compound) Morphology in Austenite Matrix: *Hansoo Kim*[1]; Sang-Heon Kim[1]; Nack Joon Kim[1]; [1]POSTECH

11:00 AM
To Study the Formation of ε and α' Martensite in High Manganese Steels via Deformation and Transformation Mode and Its Correlation with Mechanical Properties: *Dinesh Kumar*[1]; [1]Indian Institute of Technology Kharagpur

Advanced Steel Metallurgy: Products and Processing — Steel Making and Casting II

Program Organizer: Amy Woods, Steel Dynamics Flat Roll

Tuesday AM
October 14, 2014

Room: Room 407
Location: David L. Lawrence Convention Center

Session Chair: To Be Announced

8:00 AM
Development of a Virtual Blast Furnace Training System: *Tenghao Wang*[1]; Lucas Phillips[1]; Jichao Wang[1]; Dong Fu[1]; John Moreland[1]; Chenn Zhou[1]; Yongfu Zhao[2]; Jerry Capo[2]; [1]Center for Innovation through Visualization and Simulation; [2]United State Steel Corporation

8:20 AM
Process Modeling and Simulation of EAF with Electromagnetic Stirring: Michael Lundh[1]; *Xiaojing Zhang*[1]; Jan-Erik Eriksson[1]; Lidong Teng[1]; Carl-Fredrik Lindberg[1]; [1]ABB

8:40 AM
CFD Analysis of Hotmetal Desulfurization Process for Improved Mixing in a Torpedo Vessel: *Bin Wu*[1]; [1]Purdue University Calumet

9:00 AM
Optimization of Oxygen Lance with Four Nozzles in 80t Converter by Numerical Simulation: *Tongbo Zhang*[1]; Jingshe Li[1]; Hongbo Yang[1]; Wei Liu[1]; Shufeng Yang[1]; [1]USTB

9:20 AM
Increased Use of Natural Gas in Blast Furnace Iron-making: *Megha Jampani*[1]; Petrus Pistorius[1]; [1]Carnegie Mellon University

9:40 AM Break

10:00 AM
Numerical Analysis of Flow Behavior in Tuyere and Raceway of Oxygen Blast Furnace under Double Oxy-coal Lances Operation: *Chao Zhang*[1]; [1]University of Science&Technology Beijing

10:20 AM
Comparision of Hot Test with Dross and Glossy Cast Iron Cooling Stave: *Qian Li*[1]; [1]University of Science and Technology Beijing

Advances in Dielectric Materials and Electronic Devices — Dielectrics and Microwave Applications I

Program Organizers: Amar Bhalla, The University of Texas at San Antonio; Ruyan Guo, The University of Texas at San Antonio; K. M. Nair, E.I.duPont de Nemours & Co, Inc; Danilo Suvorov, Jožef Stefan Institute; Rick Ubic, Boise State University

Tuesday AM
October 14, 2014

Room: Room 307
Location: David L. Lawrence Convention Center

Session Chairs: Xiang Ming Chen, Zhejiang University; Monika Tomar, Delhi University; Pradeep Fulay, University of West Virginia; Danilo Suvorov, Jožef Stefan Institute

8:00 AM Invited
Fundamental Properties of Atoms: Advances in Design and Development of New Perovskite Materials: *Steven Tidrow*[1]; [1]The University Of Texas - Pan American

8:20 AM Invited
Microstructural Evolution in Ion Irradiated Heteroepitaxial Dielectric Films: Z. Bi[1]; M. J. Zhuo[1]; B. P. Uberuaga[1]; J. L. Vernon[1]; Y. Q. Wang[1]; A. Misra[1]; *Quanxi Jia*[1]; [1]Los Alamos National Laboratory

8:40 AM Invited
Enriched Schottky Barrier Affected by Fractality of $BaTiO_3$ Ceramics: *Vojislav Mitic*[1]; Vesna Paunovic[1]; Ljubisa Kocic[1]; Slobodanka Jankovic[2]; [1]University of Nis, Faculty of Electronic Engineering; [2]Institute of Technical Sciences

9:00 AM Invited
Dielectric Properties and Applications of Nanocrystalline Diamond Thin Films: *Raj Singh*[1]; Nirmal Govindaraju[1]; [1]Oklahoma State University

9:20 AM
Synthesis and Microstructural, Electrical and Dielectric Characterization of BiFeO3-PbTiO3 Highly Dense Ceramics Produced by Micro Milling: *Otávio Protzek*[1]; Valdirlei Freitas[2]; Jaciele Rosso[1]; Diogo Montanher[1]; Luiz Cótica[1]; Diego Viana[3]; Dulcinei Garcia[3]; José Eiras[3]; Ivair dos Santos[1]; [1]Universidade Estadual de Maringá; [2]Universidade Estadual do Centro-Oeste; [3]Universidade Federal de São Carlos

9:40 AM Break

10:00 AM
Development and Characterization of Manganese-zinc Spinel Ferrite for Microwave Absorption at 2.4 GHz: *Kishwar Khan*[1]; Sarish Rehman[2]; Hafeez Rahman[3]; [1]iUSE, (Affiliated with UET Taxila); [2]Peking University; [3]iUSE, (Affiliated with UET Taxila)

10:20 AM
Design and Growth of Multifunctional Chalcogenides Materials: *Narsingh Singh*[1]; [1]University of Maryland, Baltimore County

10:40 AM
Zirconium Modified Bismuth Zinc Niobate Thin Films for High-k Capacitors: *Sudheendran Kooriyattil*[1]; Shojan Pavunny[1]; Ram Katiyar[1]; [1]University of Puerto Rico

11:00 AM Invited
Microwave Processing of Advanced Electroceramics: *Chandra Prakash*[1]; [1]Solid State Physics Laboratory

11:20 AM
Enhanced Ferroelectric Properties in Ti-doped Bi0.86Sm0.14FeO3 Multiferroic Ceramics: *Shi Xin Xin*[1]; Chen Xiang Ming[1]; [1]Zhejiang University

Advances in Titanium Manufacturing: Powder Processing, Powder Metallurgy, and Additive/ Emerging Manufacturing Techniques — Titanium PM Additive Manufacturing and Sintering

Program Organizers: K. S. Ravi Chandran, University of Utah; Zak Fang, University of Utah ; M. Ashraf Imam, George Washington University; Jean Stewart, ATI Powder Metals

Tuesday AM
October 14, 2014
Room: Room 325
Location: David L. Lawrence Convention Center

Session Chairs: Iver Anderson, Ames Laboratory; Jean Stewart, ATI Powder Metals

8:00 AM Invited
Developments in Close-coupled Gas Atomization for Titanium Additive Manufacturing: *Joel Rieken*[1]; Andrew Heidloff[1]; Iver Anderson[1]; [1]Ames Laboratory

8:40 AM Invited
Influence of Additive Manufacturing on Titanium Alloy Microstructures and Properties: *Todd Palmer*[1]; Jay Keist[1]; Rich Martukanitz[1]; [1]Penn State

9:20 AM
Porosity-ductility Correlation in Powder Metallurgy Ti-6Al-4V Alloy Made by Dehydrogenation of CIPed Compacts of Titanium Hydride: *Pankaj Kumar*[1]; Fei Cao[1]; K.S. Ravi Chandran[1]; [1]University of Utah

9:40 AM Break

10:00 AM Invited
Comparison of Structures and Properties of Ti6Al4V Components Produced Via Powder Bed Direct Metal Additive Manufacturing to Cast and Forged Components: *Ron Aman*[1]; Tim Horn[1]; Ola Harrysson[1]; Harvey West[1]; Mike Rigsbee[1]; [1]North Carolina State University

10:40 AM
Fatigue Behavior of PM Ti-6Al-4V Alloy Obtained by Dehydrogenation of CIPed Titanium Hydride Powder Compacts: *Fei Cao*[1]; Pankaj Kumar[1]; K.S. Ravi Chandran[1]; [1]University of Utah

11:00 AM
Microstructures and Mechanical Properties of Extruded Powder Metallurgy Pure Ti Materials by Gas-solid Reaction Process: *Takanori Mimoto*[1]; Junko Umeda[1]; Katsuyoshi Kondoh[1]; [1]Osaka University

11:20 AM
Titanium Based Metal-matrix Composites Via In-situ Nitridation: Tushar Borkar[1]; Soumya Nag[1]; *Rajarshi Banerjee*[1]; [1]University of North Texas

11:40 AM
Microwave Assisted Sintering of Titanium and Titanium Alloy Compacts: *Benjamin Rock*[1]; M. Ashraf Imam[1]; Jared Baucom[1]; Jerry Feng[1]; Kimberly Kanzler[2]; Arne Fliflet[1]; [1]Naval Research Lab; [2]The ExOne Company

Boron, Boron Compounds, and Boron Nanomaterials: Structure, Properties, Processing, and Applications — Bulk Systems

Program Organizers: Roumiana Petrova, New Jersey Institute of Tech; Jens Kunstmann, Columbia University

Tuesday AM
October 14, 2014
Room: Room 331
Location: David L. Lawrence Convention Center

Session Chair: Jens Kunstmann, Columbia University

8:00 AM Invited
Structure and Properties of Boron and Boron Compounds Synthesized under High Pressure: *Natalia Dubrovinskaia*[1]; [1]University of Bayreuth

8:40 AM Invited
The Creation of Alkali Metal Hexagonal Boron Nitride Intercalation Compounds: *Hiroshi Hyodo*[1]; Atsuro Sumiyoshi[2]; Yohei Sato[1]; Masami Terauchi[1]; Kaoru Kimura[2]; [1]Tohoku University; [2]The University of Tokyo

9:20 AM
Mechanochemical Synthesis and Mechanical Properties of Novel Hexagonal OsB2: *Zhilin Xie*[1]; Richard Blair[1]; David Cullen[2]; Andrew Payzant[2]; Nina Orlovskaya[1]; [1]University of Central Florida; [2]Oak Ridge National Laboratory

9:40 AM Break

10:00 AM Invited
Phase Relations in Boron at High Pressure and High Temperature: *Jiaqian Qin*[1]; [1]Chulalongkorn University

10:40 AM Invited
Defect Structure of Boron Carbides: *Koun Shirai*[1]; Kyohei Sakuma[1]; Naoki Uemura[1]; [1]Osaka University

11:20 AM Invited
Effect of Synthesize Condition on Thermoelectric Properties of Divalent Hexaborides: *Masatoshi Takeda*[1]; Koji Kayamura[1]; Hiroya Ishiyama[1]; Shinji Makino[1]; Hironobu Kuribayashi[1]; [1]Nagaoka University of Technology

Ceramic Matrix Composites — Ceramic Composites: Performance, Characterization, and Modeling

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

Tuesday AM
October 14, 2014

Room: Room 304
Location: David L. Lawrence Convention Center

Session Chair: Jacques Lamon, CNRS

8:00 AM Invited
The Fatigue Behavior of Hi-Nicalon and Hi-NicalonS Fibers and Tows at Intermediate Temperatures: Experiment and Models: *Jacques Lamon*[1]; [1]CNRS

8:40 AM
Quantifying Amorphous Content of SiC Load Pre-ceramic Polymers: *Ian Wolford*[1]; Thomas Key[2]; Matthew O'Malley[3]; Michael Cinibulk[3]; [1]SOCHE; [2]UES, Inc; [3]Air Force Research Laboratory

9:00 AM
Residual Microstresses and Ply-level Residual Stresses in MI-SiC-SiC: *Bradley Wing*[1]; John Halloran[1]; [1]University of Michigan

9:20 AM
Properties and Performance of Composite Based on Superrefractories Cements: *Ilyoukha Nickolai*[1]; Valentina Timofeeva[1]; [1]Academic Ceramic Center

9:40 AM Break

10:00 AM
Use of Electrical Resistance to Measure Interlaminar Crack Growth during a Wedge DCB Test of a Woven SiC/SiC Composite: *Gregory Morscher*[1]; Rabih Mansour[1]; Emmanuel Maillet[1]; [1]University of Akron

10:20 AM
Effect of Fly Ash and Nano-silica on Concrete Compressive Strength at Early Age: *Carlos Medina*[1]; Gilebert Del Orbe[1]; Nitza Garcia[1]; Oscar Suarez[1]; [1]University of Puerto Rico, Mayaguez Campus

10:40 AM
Effect of Water Absorption on the Mechanical Properties of Cotton Fabric Reinforced Geopolymer Composites: *Thamer Alo*[1]; [1]University

11:00 AM
Mechanical Properties of Cotton Fabric Reinforced Geopolymer Composites at Elevated Temperature: *Thamer Alo*[1]; [1]Curtin University

Computational Design of Ceramic Materials — Structure and Properties of Ceramics I

Program Organizers: Liping Huang, Rensselaer Polytechnic Institute; Randall Youngman, Corning Incorporated

Tuesday AM
October 14, 2014

Room: Room 306
Location: David L. Lawrence Convention Center

Session Chair: Ram Devanathan , Pacific Northwest National Laboratory

8:00 AM Invited
Use of Total Bond Order Density as a Quantum Mechanical Metric for Material Characterization: *Wai-Yim Ching*[1]; [1]University of Missouri-Kansas City

8:40 AM
Application of Computational Thermodynamics in LSM Pervoskite Thermal Cycle Shrinkage: Ali Karbasi[1]; Shadi Darvish[1]; Maria Mora[1]; *Yu Zhong*[1]; [1]Florida International University

9:00 AM
First Principles and Kinetic Monte Carlo Simulations of Vacancy Diffusion in Alumina: *Yinkai Lei*[1]; Guofeng Wang[1]; [1]University of Pittsburgh

9:20 AM
Computational Screening of Hard ZrSiBCN Coatings: *Peter Kroll*[1]; Atreyi Dasmahapatra[1]; Stathis Meletis[1]; [1]UT Arlington

9:40 AM Break

10:00 AM Invited
Comparison of Microstructural Data from Modeling and Experiments: *Burton Patterson*[1]; Robert DeHoff[1]; Veena Tikare[2]; [1]University of Florida; [2]Sandia National Laboratories, New Mexico

10:40 AM
Ab Initio Study on High Pressure Phase Transitions of Zirconia: Yi Zhang[1]; *Jing Zhang*[1]; [1]Indiana University - Purdue University Indianapolis

11:00 AM
Improving the Resistance to Creep by Molecular Dynamics Simulations: *Mathieu Bauchy*[1]; Mohammad Javad Abdolhosseini Qomi[1]; Roland Pellenq[1]; Franz-Joseph Ulm[1]; [1]MIT

11:20 AM
Correlation between Microstructure and Electrochemical Properties in Microarc Oxidation Coated Magnesium Alloy: Jiayang Liu[1]; *Jing Zhang*[1]; [1]Indiana University - Purdue University Indianapolis

11:40 AM
Ab Initio Investigations of the Phase Stability and Hardness in Tantalum Carbides: Xiao-Xiang Yu[1]; Christopher Weinberger[2]; *Gregory Thompson*[1]; [1]University of Alabama; [2]Drexel University

Continuous Improvement of Academic Programs (and Satisfying ABET Along the Way): The Elizabeth Judson Memorial Symposium — Session I

Program Organizers: Thomas Bieler, Michigan State University; Gillian Bond, New Mexico Tech; Janet Callahan, Boise State University; Jeffrey Fergus, Auburn University; Ronald Gibala, University of Michigan; William Hammetter, Sandia National Laboratory; Devarajan Venugopalan, Univ of Wisconsin

Tuesday AM
October 14, 2014

Room: Room 318
Location: David L. Lawrence Convention Center

Session Chair: Devarajan Venugopalan, Univ of Wisconsin

8:00 AM
Reflections and Ideas for a Smooth ABET Visit: *Chester Van Tyne*[1]; [1]Colorado School of Mines

8:40 AM
Recent and Upcoming Changes in ABET Criteria: *Jeffrey Fergus*[1]; [1]Auburn University

9:00 AM
Accreditation Review: Lessons Learned One Year Later and Several Years in the Making: *James Earthman*[1]; Farghalli Mohamed[1]; [1]University of California, Irvine

9:20 AM
Restructuring an MSE Curriculum in the Era of Continuous Improvement: Mark DeGuire[1]; Peter Lagerlof[1]; *James McGuffin-Cawley*[1]; [1]Case Western Reserve University

9:40 AM Break

10:00 AM Invited
The Value of Assessment: Integral Pathways for Professional Development: *Rochelle Williams*[1]; [1]ABET

10:40 AM
Introducing Sustainability and Life Cycle Thinking into Materials Engineering Curriculum: *John Howarter*[1]; [1]Purdue University

11:00 AM
Developing a Narrative for Sustainability: *Richard LeSar*[1]; Arne Hallam[1]; Kenneth Bryden[1]; [1]Iowa State University

11:20 AM
Courses on Energy, Life Cycle Analysis and Critical Materials: *Jeffrey Fergus*[1]; [1]Auburn University

11:40 AM
Russian Universities XXI Challenge: Evolution vs Revolution?: *Olga Ushakova*[1]; Mikhail Chernikov[1]; [1]NUST MIS&S

Controlled Synthesis, Processing, and Applications of Structural and Functional Nanomaterials — Session II

Program Organizers: Gurpreet Singh, Kansas State University; Kathy Lu, Virginia Tech; Eugene Olevsky, San Diego State University; Edward Gorzkowski, Naval Research Laboratory; Sanjay Mathur, University of Cologne

Tuesday AM
October 14, 2014

Room: Room 319
Location: David L. Lawrence Convention Center

Session Chair: Kathy Lu, Virginia Tech

8:00 AM
Controlled Synthesis, Processing and Applications of Multiscale Hierarchical Materials: *Sharmila Mukhopadhyay*[1]; Hema Vijwani[1]; Anil Karumuri[1]; [1]Wright State University

8:20 AM Invited
Fabrication of Ceramic and Hybrid Nanofibers: *Wolfgang Sigmund*[1]; [1]University of Florida

9:00 AM
New VLS Growth Modes of Molybdenum Oxide 1D Nanostructures for Energy Applications: Tao Sheng[1]; Baobao Cao[1]; *Haitao Zhang*[1]; [1]UNC Charlotte

9:20 AM
Preparation and Characterization of Silicon Oxycarbide Coatings on Stainless Steel: *Tiesong Lin*[1]; Kathy Lu[1]; Jiake Li[1]; Fengyu Shen[1]; [1]Virginia Polytechnic Institute and State University

9:40 AM Break

10:00 AM
Nano-structures of β-SiC Formed by Pyrolosis of Agricultural Waste: *Edward Gorzkowski*[1]; Syed Qadri[1]; Joshua Caldwell[1]; Ramasis Goswami[1]; M. Ashraf Imam[1]; Bhakta Rath[1]; [1]Naval Research Lab

10:20 AM
Nanoparticle-polymer Hybrid Sub-micron Structures: *Kathy Lu*[1]; Michelle Gervasio[1]; [1]Virginia Tech

10:40 AM
Mitigating the Problems of Nanosized ZnO Via MicNo®-Z Particles: *Ender Suvaci*[1]; Gürkan Yilmazoglu[1]; Ozan Özer[1]; Ugur Can Özögüt[1]; Yücel Sahin[1]; A. Tansu Koparal[1]; Hatice Genç[1]; Banu Barutça[1]; [1]Anadolu University

11:00 AM
Spray Pyrolysis Synthesis of Doped-pyrochlore Oxides for Reforming Catalyst Applications: *Jonathan Yancey*[1]; [1]West Virginia University

11:20 AM
Magnetic and Electric Field Directed Assembly of Ferrite-ferroelectric Coaxial Nanowires and Studies on Magneto-electric Interactions: *Gopalan Srinivasan*[1]; Gollapudi Sreenivasulu[1]; [1]Oakland University

11:40 AM
Synthesis and Electronic Properties of Oxide Nano-heterostructures: *Derek Miller*[1]; Sheikh Akbar[1]; Pat Morris[1]; [1]Ohio State University

Corrosion Testing and Modeling — Corrosion Testing and Modeling

Program Organizers: Vishal Lagad, Lloyd's Register Energy Americas, Inc; Jason Lee, Naval Research Laboratory

Tuesday AM
October 14, 2014

Room: Room 411
Location: David L. Lawrence Convention Center

Session Chairs: Vishal Lagad, Lloyd's Register Energy Americas, Inc; Jason Lee, Naval Research Laboratory

8:00 AM
Corrosion-fatigue Behavior of a Single-phase Face-centered-cubic High-entropy Alloy: *Zhi Tang*[1]; Carl Lundin[1]; Carl McHargue[1]; Peter Liaw[1]; [1]The University of Tennessee

8:20 AM
Oxidative Corrosion and Passivation of $Al_xFe_yNi_{1-x-y}$ Alloys across Composition Space: *Matthew Payne*[1]; James Miller[1]; Andrew Gellman[1]; [1]Carnegie Mellon University

8:40 AM
Stress Corrosion Cracking of Pipeline Steel in Near-neutral pH Environment: *Roman Bogdanov*[1]; Andrey Marshakov[2]; Vasiliy Ignatenko[2]; Ilya Ryakhovskikh[1]; [1]Institute of Natural Gases and Gas Technologies; [2]A.N.Frumkin Institute of Physical Chemistry and Electrochemistry, Russian Academy of Sciences

9:00 AM
A Corrosion Study on an Advanced Degradable Alloy for Multi-stage Fracturing and a Comparison of Two Measurement Methods: *Tatiana Ayers*[1]; Manuel Marya[1]; Chunnong Wang[1]; Timothy Dunne[1]; Virendra Singh[1]; [1]Schlumberger

9:20 AM
Stability of Yttria Stabilized Zirconia Membrane in Molten CaC_{l2}-CaO Melt: *Abhishek Mukherjee*[1]; Nicolo` Campagnol[1]; Joris VanDyck[1]; Jan Fransaer[1]; Bart Blanpain[1]; [1]KU Leuven

9:40 AM Break

10:00 AM
Susceptibility of 5xxx Series Al to MIC in Marine Environments: *Jason Lee*[1]; Richard Ray[2]; Brenda Little[1]; [1]Naval Research Laboratory; [2]NVisions Solutions, Inc.

Energy Storage IV: Materials, Systems and Applications Symposium — Li Batteries I

Program Organizers: Xingbo Liu, West Virginia University; Keeyoung Jung, Research Institute of Industrial Science and Technology (RIST); Terry Holesinger, Los Alamos National Laboratory; Yang-Tse Cheng, University of Kentucky; Karen Waldrip, Sandia National Laboratory

Tuesday AM
October 14, 2014

Room: Room 414
Location: David L. Lawrence Convention Center

Session Chair: Junwei WU, HITSZ

8:00 AM
High Rate Capability of Si-Al-C-N Functionalized Carbon Nanotubes as Li-ion Battery Electrodes: *Lamuel David*[1]; Deepu Asok[1]; Uriel Barrera[1]; Erin Black[1]; Gurpreet Singh[1]; [1]Kansas State University

8:20 AM
Hollow Silicon Nanospheres as Next Generation Lithium-ion Battery Anodes: *Maziar Ashuri*[1]; Qianran He[1]; Kan Zhang[1]; Satyanarayana Emani[1]; Monica Sawicki[1]; Jack Shamie[1]; Leon Shaw[1]; [1]Illinois Institute of Technology (IIT)

8:40 AM
Reduced Graphene Oxide Paper Electrodes For Lithium-ion and Sodium-ion Batteries Applications: *Lamuel David*[1]; Gurpreet Singh[1]; [1]Kansas State University

9:00 AM
Studies of Thin Coatings for Improving the Performance and Durability of Lithium Ion Batteries: *Qinglin Zhang*[1]; Yang-Yse Cheng[1]; [1]University of Kentucky

9:20 AM
Transport Behavior of Lithium in Silicon and Germanium Electrodes for Lithium Ion Batteries: *Jie Pan*[1]; Matthew Beck[1]; Yang-Tse Cheng[1]; [1]University of Kentucky

9:40 AM Break

10:00 AM
A Phase-field Simulation of Lithium Dendritic Growth on the Anode of Lithium Ion Battery: *Hao-Wei Zhang*[1]; Zhe Liu[1]; Lei Chen[1]; Yue Qi[2]; Stephen Harris[3]; Peng Lu[4]; Long-Qing Chen[1]; [1]The Pennsylvania State University; [2]Michigan State University; [3]Lawrence Berkeley Laboratory; [4]General Motors Research and Development Center

10:20 AM
Investigation on Electrolyte Transport Properties in Anode and Cathode Electrode Film in Lithium Ion Battery by Wetting Balance Test: *Yangping Sheng*[1]; Christopher Fell[2]; Benjamin Church[1]; [1]Univeristy of Wisconsin, Milwaukee; [2]Johnson Controls Inc

10:40 AM
Structural and Conductivitity Characteristics of Garnet Li Ion Conducting Solid Electrolytes: *Peter Slater*[1]; [1]University of Birmingham

11:00 AM
Grain Boundary Optimization Techniques in Li-ion Conductors for Li-air Batteries: *Claire Weiss Brennan*[1]; Kristopher Behler[1]; Jeffrey Wolfenstine[1]; Victoria Blair[2]; [1]Army Research Lab; [2]U.S. Army Research Laboratory

11:20 AM
Preparation and Characterization of Nanocomposite Polymer Electrolytes Based on Poly(Methyl Methacrylate) with Nano-sized Ceramic Fillers: *Rajni Sharma*[1]; Anjan Sil[1]; Subrata Ray[2]; [1]Indian Institute of Technology Roorkee; [2]IIT Mandi

11:40 AM
Ti Substituted $0.7Li_2MnO_3$-$0.3LiMn1/3Ni1/3Co1/3O_2$ Layered Structure Cathode Material with Improved Structure Stability and Voltage Fading: *Zhaoxin Yu*[1]; Shunli Shang[1]; Zikui Liu[1]; Donghai Wang[1]; [1]The Pennsylvania State University

Failure Analysis and Prevention — Fatigue and Fracture - Metals

Program Organizers: Nicholas Cherolis, Rolls-Royce Corporation; Dustin Turnquist, ESI; Erhan Ulvan, Acuren Group Inc.

Tuesday AM
October 14, 2014

Room: Room 406
Location: David L. Lawrence Convention Center

Session Chairs: Erhan Ulvan, Acuren Group; Ryan Haase, Materials Evaluation and Engineering; James F. Lane, CTL Group; Daniel P. Dennies, Exponent Failure Analysis Associates

8:00 AM
Failure Analysis of a Broken Beam: *Mehdi Taheri*[1]; Erhan Ulvan[1]; [1]Acuren Group Inc

8:20 AM
Failure Analyses of Calorized Copper Oxygen Lance Tips: *Amber Dalley*[1]; [1]United States Steel Corporation

8:40 AM
Characterization of an Undermatched Weld: *Daniel Dennies*[1]; Andrew DeVillier[1]; [1]Exponent

9:00 AM
Investigation of a Gray Cast Iron Crane Counterweight Fracture: *Anthony Yurko*[1]; [1]Engineering Design & Testing Corp.

9:20 AM
Cleavage Fracture in Cold Rolled Steel Fasteners: *Mahesh Darji*[1]; [1]Square D-Schneider Electric

9:40 AM Break

10:00 AM
Failure of a Bolted Connection in a Rotary Dryer: Roland Huet[1]; *William Kane*[1]; [1]Exponent

10:20 AM
Failure Analysis of an MVR (Mechanical Vapor Recompressor) Impeller: *Milo Kral*[1]; [1]University of Canterbury

10:40 AM
Spring Fatigue Fractures Due to Microstructural Changes in Service: *Burak Akyuz*[1]; Joseph Maciejewski[1]; [1]ATS, Inc.

11:00 AM
Fracture of a Helicopter Main Transmission Spiral Bevel Gear: *Aaron Slager*[1]; [1]Bell Helicopter Textron

11:20 AM
Failure Analysis of a Ship-to-shore Gantry Crane: *Leonardo Araujo*[1]; Luiz Henrique de Almeida[2]; Eduardo Batista[2]; [1]Federal Center for Technological Education; [2]Federal University of Rio de Janeiro

11:40 AM
Facets on Fatigue Fractures: *Nicholas Cherolis*[1]; [1]Rolls-Royce Corporation

Fatigue of Materials III — Ferrous Materials II

Program Organizers: Tirumalai Srivatsan, The University of Akron; Raghavan Srinivasan, Wright State University; M. Ashraf Imam, George Washington University

Tuesday AM
October 14, 2014

Room: Room 336
Location: David L. Lawrence Convention Center

Session Chair: To Be Announced

8:00 AM Invited
Multistage Strength Degradation in S25C Steel under Torsional Cyclic Loading and Its Engineering Applications: *Zihai Shi*[1]; Masaaki Nakano[1]; Cuiping Liu[1]; [1]Nippon Koei Co., Ltd.

8:40 AM
The Stress Controlled Cyclic Fatigue and Fracture Behavior of Alloy Steel 300M: *Kannan Manigandan*[1]; Tirumalai Srivatsan[1]; Gary Doll[1]; Thomas Quick[1]; [1]The University of Akron

9:00 AM
The Effects of Pre-straining Conditions on Austenite Stability during Fatigue of Multiphase TRIP Steels: *Alexander Ly*[1]; Kip Findley[1]; [1]Colorado School of Mines

Friction Stir Processing — Friction Stir Processing

Program Organizer: Richard Fonda, Naval Research Laboratory

Tuesday AM
October 14, 2014

Room: Room 338
Location: David L. Lawrence Convention Center

Session Chair: Richard Fonda, Naval Research Laboratory

8:00 AM Invited
Exceptional Properties in Friction Stir Processed Titanium Alloys: Aniket Dutt[1]; Vedavyas Tungala[1]; *Rajiv Mishra*[1]; James Williams[1]; Sesh Tamirisakandala[2]; [1]University of North Texas; [2]RTI International Metals Inc.

8:20 AM
Corrosion Behaviour of Metallic Glass Subjected to Severe Plastic Deformation: Ayyagari Aditya[1]; Harpreet Arora[1]; *Sundeep Mukherjee*[1]; [1]University of North Texas

8:40 AM
High-particle-content Surface Composites Produced by Friction Stir Powder Processing: *Yoshihisa Kimoto*[1]; Toru Nagaoka[1]; Hiroyuki Watanabe[1]; Masao Fukusumi[1]; Yoshiaki Morisada[2]; Hidetoshi Fujii[2]; [1]Osaka Municipal Technical Research Institute; [2]Joining and Welding Research Institute, Osaka University

9:00 AM
Strengthening of Cemented Carbide Layer by Friction Stir Processing: *Toru Nagaoka*[1]; Yoshihisa Kimoto[1]; Masao Fukusumi[1]; Yusuke Kitamura[2]; Tadashi Mizuno[2]; Genryu Abe[2]; Yoshiaki Morisada[3]; Hidetoshi Fujii[3]; [1]Osaka Municipal Technical Research Institute; [2]AMC Corporation; [3]Joining and Welding Research Institute, Osaka University

9:20 AM
Additive Friction Stir Processing: *Kumar Kandasamy*[1]; Jacob Calvert[1]; Jeffrey Schultz[1]; [1]Aeroprobe Corporation

9:40 AM Break

9:50 AM
Microstructural Development during Additive Manufacturing of Additive Friction Stir Technology: *Kumar Kandasamy*[1]; Jacob Calvert[1]; Jeffrey Schultz[1]; [1]Aeroprobe Corporation

10:10 AM
Friction Stir Back Extrusion of Magnesium and Aluminium Tubes: Microstructural Evolution and Mechanical Properties: *Zeren Xu*[1]; Justin Milner[1]; Fadi Abu-Farha[1]; [1]Clemson University

10:30 AM
Microstructure and Superplasticity of AZ91 Magnesium Alloy Prepared by Friction Stir Processing under Water: *Zhang Datong*[1]; Chai Fang[1]; [1]South China University of Technology, School of Mechanical and Automotive Engineering

10:50 AM
Microstructure and Mechanical Properties of Additive Friction Stir Deposited Aluminum Alloy: *Kumar Kandasamy*[1]; Jacob Calvert[1]; Jeffrey Schultz[1]; [1]Aeroprobe Corporation

Glass and Optical Materials — Structure and Properties

Program Organizers: Juejun Hu, University of Delaware; David Musgraves, IRradiance Glass Inc.

Tuesday AM
October 14, 2014

Room: Room 302
Location: David L. Lawrence Convention Center

Session Chair: To Be Announced

8:00 AM Invited
On the Structure and Properties of New Mixed Glass Former Solid Electrolytes for All Solid State Sodium Batteries: *Steve W. Martin*[1]; Randilynn Christensen[2]; Christian Bischoff[3]; [1]Iowa State University; [2]3M; [3]Missouri University of Science & Technology

8:40 AM
Intermediate-range Order in Amorphous Materials with Large Surface Area: Mayur Sundararajan[1]; Chandrasiri Ihalawela[1]; Kiran Prasai[1]; David Drabold[1]; *Gang Chen*[1]; [1]Ohio University

9:00 AM
Effect of Boron Oxide on Thermal Conductivity and Structure of the CaO-SiO_2 System at High Temperature: *Youngjae Kim*[1]; Kazuki Morita[1]; [1]The University of Tokyo

9:20 AM Invited
Nanoglasses: Interface and Exchange in Glass Science and Magnetism: *John McCloy*[1]; [1]Washington State University

10:00 AM Break

10:20 AM Invited
Statistical Mechanics of Glass: *John Mauro*[1]; [1]Corning Incorporated

11:00 AM
Thermochemistry of Metal Borosilicate Glasses: *Peter Kroll*[1]; [1]UT Arlington

11:20 AM
Glass and Glass-ceramic Lithium Thiophosphate Solid Electrolytes for Solid-state Batteries and Electrochemical Capacitors
: *Seth Berbano*[1]; Michael Lanagan[1]; Clive Randall[1]; [1]Penn State University

Green Technologies for Materials Manufacturing and Processing VI — Green Materials Processing I

Program Organizers: Tatsuki Ohji, National Institute of Advanced Industrial Science and Technology (AIST); Mrityunjay Singh, Ohio Aerospace Institute, NASA Glenn Research Center; Richard Sisson, Worcester Polytechnic Institute, Center for Heat Treating Excellence; Marsha Bischel, Armstrong World Industries, Inc.; Makio Naito, Osaka University; Allen Apblett, Oklahoma State University

Tuesday AM
October 14, 2014

Room: Room 311
Location: David L. Lawrence Convention Center

Session Chairs: Yiquan Wu, Alfred University; Junichi Tatami, Yokohama National University

8:00 AM Invited
On the Development of Next Generation Green Manufacturing Technologies: *Surojit Gupta*[1]; M Riyad[1]; Tom Hammann[1]; Ryan Johnson[1]; [1]University of North Dakota

8:20 AM
Green Flame Retardants Based on Ceramic Precursors: *Allen Apblett*[1]; Bhawani Regmi[1]; Cory Perkins[1]; [1]Oklahoma State University

8:40 AM
Synthesis and 3D Characterization of Barium-ferrite Hybrid System with Highly Regulated Structures: *Tadachika Nakayama*[1]; Masanao Kanno[1]; Hong-Baek Cho[1]; Boldbaatar Dalai[2]; Masafumi AJIRI[3]; Huynh Tan Minh TRIET[1]; Tsuneo Suzuki[1]; Hisayuki Suematsu[1]; Koichi Niihara[1]; [1]Nagaoka Univ of Tech; [2]Mongolian University of Science and Technology; [3]Tohoku University

9:00 AM
Studies of the Synthesis and Deposition of Cu_3BiS_3 for Use in Photovoltaic Devices: *Joshua Epstein*[1]; Dunbar Birnie[1]; [1]Rutgers University

9:20 AM
A Comparative Analysis for Charpy Impact Energy in Polyester Composites Reinforced with Malva, Ramie and Curaua Fibers: *Frederico Margem*[1]; Sergio Monteiro[2]; Luiz Gustavo Borges[3]; André Gomes[1]; Carlos Mauricio Vieira[1]; [1]UENF; [2]IME-RJ; [3]UFF

9:40 AM Break

10:00 AM Invited
Green Manufacturing Initiatives in Ceramic Tile Manufacturing: Shreekant Somany[1]; G.G. Trivedi[1]; T. Sridhar[1]; *Ashutosh Goel*[1]; B.C.O. Reddy[1]; Debajyoti Mohanty[1]; [1]Somany Ceramics Limited

10:40 AM
Single Source Precursor Approach to Barium Molybdenum Oxides: *Allen Apblett*[1]; Ahmed Moneeb[1]; Abdulah Alabdulrahman[2]; Abdulaziz Bagabas[2]; [1]Oklahoma State University; [2]King Abdulaziz City for Science and Technology

11:00 AM
Synthesis and Evaluation of Pseudobrookite-type Al_2TiO_5-$MgTi_2O_5$ Solid Solutions with Low Thermal Expansion: *Ryosuke Maki*[1]; Yoshikazu Suzuki[1]; [1]University of Tsukuba

11:20 AM
Synthesis of Biodegradable Cellulose-chitin Polymer Blend Film: *Myra Ruth Poblete*[1]; Leslie Joy Diaz[1]; [1]University of the Philippines

11:40 AM Invited
Metal Ceramic Nanocomposites Coatings by Electrodeposition Approaches: *Vijai Singh*[1]; [1]Banaras Hindu University

Innovation in Processing of Light Metals for Transportation Industries: A Symposium in Honor of C. Ravi Ravindran — Microstructure-Property Correlations

Program Organizers: Lukas Bichler, University of British Columbia; B S Murty, Indian Institute of Technology Madras

Tuesday AM
October 14, 2014

Room: Room 333
Location: David L. Lawrence Convention Center

Session Chairs: Alan Luo, The Ohio State University; Dimitry Sediako, Canadian Neutron Beam Centre

8:00 AM Keynote
In-situ Neutron Diffraction in Studies of Phase Evolution during Solidification and Heat Treatment of Aluminum and Magnesium Alloys: *Dimitry Sediako*[1]; [1]Canadian Neutron Beam Centre

8:20 AM Invited
Light Weighting Vehicles by Aluminum and Magnesium Components: *TVL Narasimha Rao*[1]; [1]Sundaram Clayton Limited

8:40 AM Invited
Investigations in Grain Refinement and Solidification of Mg Alloys: *Abdallah Elsayed*[1]; Dimitry Sediako[2]; Comondore Ravindran[1]; [1]Ryerson University; [2]Canadian Neutron Beam Centre

9:00 AM
Improving Al Alloy Engine Block Casting Integrity Via Heat Treatment Optimization: *Anthony Lombardi*[1]; Comondore (Ravi) Ravindran[1]; Dimitry Sediako[2]; Robert MacKay[3]; [1]Ryerson University; [2]National Research Council, Canadian Neutron Beam Centre; [3]Nemak of Canada Corporation

9:20 AM
In-situ Study of the Deformation Behavior, Microstructure and Mechanical Properties of Cast and Extruded Mg-1Mn-1Nd (wt%) at Elevated Temperatures: *Ajith Chakkedath*[1]; Jan Bohlen[2]; Sangbong Yi[2]; Dietmar Letzig[2]; Zhe Chen[3]; Carl Boehlert[1]; [1]Michigan State University; [2]Magnesium Innovation Centre MagIC; [3]University of Michigan

Innovative Processing and Synthesis of Ceramics, Glasses, and Composites — Ceramic Processing II

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

Tuesday AM
October 14, 2014

Room: Room 301
Location: David L. Lawrence Convention Center

Session Chair: Henry Colorado, University of Antioquia

8:00 AM
Texture Development of Alumina Coating Processed by Aerosol Deposition Method: *Kota Akiyama*[1]; Yosuke Oki[1]; Makoto Hasegawa[1]; Makoto Tanaka[2]; Satoshi Kitaoka[2]; Yutaka Kagawa[3]; [1]Yokohama National University; [2]Japan Fine Ceramics Center; [3]The University of Tokyo

8:20 AM
Photocatalytic Property of Nanostructured TiO2 and ZnO Thin Films Prepared by Low Temperature Solution Processing: *Jong Hyun Shim*[1]; Junghyun Cho[1]; [1]State University of New York at Binghamton

8:40 AM
Cerium Monosulfide: Novel Synthesis Method and Oxidation Behavior: *Brian Jaques*[1]; Gordon Alanko[1]; Sumit Tamrakar[1]; Joshua Kane[1]; Darryl Butt[1]; [1]Boise State University

9:00 AM
Densification Of SHS Obtained Ti_2AlC Active Precursors Powder By Hot Pressing Method: *Leszek Chlubny*[1]; Jerzy Lis[1]; [1]AGH-University of Science and Technology, Faculty of Materials Science and Ceramics

9:20 AM
Energy Storage Properties of $BaTiO_3/Bi_2O_3$-B_2O_3-SiO_2 Glass Core-Shell Nanocomposites: *Xiaofeng Su*[1]; Brian Riggs[2]; Minoru Tomozawa[1]; Douglas Chrisey[2]; [1]Rensselaer Polytechnic Institute; [2]Tulane University

9:40 AM Break

10:00 AM
Synthesis of $LaAlO_3$ Doped with Eu for Luminescence Applications: *Alfredo Morales-Hernández*[1]; Teodoro Rivera-Montalvo[2]; José Lemus-Ruíz[1]; Juan Zarate-Medina[1]; [1]Instituto de Investigaciones Metalúrgicas de la Universidad Michoacana de San Nicolás de Hidalgo, Edif. "U".; [2]Centro de Investigación en Ciencia Aplicada y Tecnología Avanzada-Legaria, IPN.

10:20 AM
Interaction between Ti Containing Copper Alloys during Reactive Melt Infiltration: *Khurram Iqbal*[1]; Jianjun Sha[1]; [1]Dalian University of Technology

10:40 AM
Inorganic Phosphate Cement with Steel Slag Waste: *Henry Colorado*[1]; Jonathan Quan[2]; Jenn-Ming Yang; [1]Universidad de Antioquia; [2]University of California Los Angeles

11:00 AM
Portland Cement-Steel Slag Waste Composites: *Henry Colorado*[1]; J. Posada[1]; Jonathan Quan[2]; [1]Universidad de Antioquia; [2]University of California Los Angeles

11:20 AM
Low-temperature Synthesis of Organometallic Hybrid Precursor-derived Nanosized HfC: *N Patra*[1]; D Jayaseelan[1]; E. Wuchina[2]; W. Lee[2]; [1]Imperial College London; [2]Naval Surface Warfare Center

Interfaces, Grain Boundaries, and Surfaces from Atomistic and Macroscopic Approaches: Fundamental and Engineering Issues — Structure and Chemistry of Interfaces

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

Tuesday AM
October 14, 2014

Room: Room 404
Location: David L. Lawrence Convention Center

Session Chairs: Gerhard Dehm, Max-Planck-Institut für Eisenforschung; Shen Dillon, University of Illinois

8:00 AM Keynote
Metal-oxide Electrode Interfaces: Temporal Evolution under Applied Electric Field: *Elizabeth Dickey*[1]; Ali Moballegh[1]; [1]North Carolina State University

8:40 AM Invited
Resolving Ambiguities at Interfaces with Atomic Resolution X-ray Spectroscopy in the Electron Microscope: *James LeBeau*[1]; Joseph Dycus[1]; [1]North Carolina State University

9:00 AM
Morphology and Distribution of Pt Nanoparticles in Sapphire Cavities: *Melissa Santala*[1]; Ronald Gronsky[2]; [1]Lawrence Livermore National Laboratory; [2]University of California

9:20 AM
Grain Boundary Energy and Complexions in Europium-doped Magnesium Aluminate Spinel: *Onthida Kosasang*[1]; Zhiyang Yu[1]; Animesh Kundu[1]; Martin Harmer[1]; Richard Vinci[1]; [1]Lehigh University

9:40 AM Break

10:00 AM Keynote
AFM Investigations of Nanoscale Interface Properties for Functional Ceramics: James Bosse[1]; Linghan Ye[1]; Yasemin Kutes[1]; Brandon Moffitt[1]; *Bryan Huey*[1]; [1]University of Connecticut MS&E

10:40 AM Invited
Interface Challenges in Nanostructured Energy Generating Devices: *Christina Scheu*[1]; [1]Max-Planck-Institute for Iron Research

11:00 AM Invited
Predicting and Fabricating Epitaxially (Interfacially) Stabilized Materials in the BO_2 Family: Julia Wittkamper[1]; Prateek Mehta[1]; John Kitchin[1]; Gregory Rohrer[1]; *Paul Salvador*[1]; [1]Carnegie Mellon University

11:20 AM
Electron Microscopy Characterization of Europium Segregation in Magnesium Aluminate Spinel Grain Boundaries: *Zhiyang Yu*[1]; Onthida Kosasang[1]; Animesh Kundu[1]; Martin Harmer[1]; Richard Vinci[1]; [1]Lehigh University

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

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

Tuesday AM
October 14, 2014

Room: Room 403
Location: David L. Lawrence Convention Center

Session Chairs: Shu Yamaguchi, The University of Tokyo; Alastair Cormack, Alfred University

8:00 AM Invited
The Insulator to Metal Transition in $Ca_{12}Al_{14}O_{33}$: *Mariana Bertoni*[1]; Julia Medvedeva[2]; Ricardo Lobo[3]; Kenneth Poeppelmeier[4]; Thomas Mason[4]; [1]Arizona State University; [2]Missouri University of Science & Technology; [3]Ecole Superieure de Physique et Chimie Industrielles de la Ville de Paris; [4]Northwestern University

8:40 AM
Defects in Phosphors with Apatite Structure: *Eric Kreidler*[1]; Jessi Baughman[2]; [1]Ohio State University; [2]University of Akron

9:00 AM Invited
Effects of Surface Modification on the Oxygen Transport of Mixed Ionic and Electronic Conductors: *Hitoshi Takamura*[1]; [1]Tohoku University

9:40 AM Break

10:00 AM Invited
Percolation Conductivity in Heavily Doped Perovskite Oxides: *Shu Yamaguchi*[1]; DongYoung Kim[1]; Yuki Itoh[1]; Yasushi Shibuta[1]; Shogo Miyoshi[1]; [1]The University of Tokyo

10:40 AM
Relaxation Behavior of Oxygen Vacancies in Sc-doped $BaTiO_3$: *Il Jeong Park*[1]; Young Ho Han[1]; [1]Sungkyunkwan University

11:00 AM
Electric Field Driven Point Defect Redistribution in Rutile TiO_{2-x}: *Ali Moballegh*[1]; Elizabeth Dickey[1]; [1]NC State University

11:20 AM Invited
Real-time Detection of Electroactive Chemical Bonds in Gd-doped Ceria: Roman Korobko[1]; Alyssa Lerner[2]; *Igor Lubomirsky*[1]; Anatoly Frenkel[2]; [1]Weizmann Institute of Science; [2]Yeshiva University

Joining of Advanced and Specialty Materials (JASM XVI) — Welding Metallurgy II

Program Organizers: Michael Halbig, NASA Glenn Research Center; Boian Alexandrov, The Ohio State University; Akio Hirose, Osaka University; Anming Hu, University of Tennessee; Peng He, Harbin Insitute of Technology; Darren Barborak, Aquilex WSI; Bingtao Li, AZZ WSI; Xinjin Cao, Institute for Aerospace Research

Tuesday AM
October 14, 2014

Room: Room 330
Location: David L. Lawrence Convention Center

Session Chairs: Boian Alexandrov, The Ohio State University; Xinjin Cao, National Research Council Canada

8:00 AM
Towards Understanding Material Effect on Weld Shrinkage and Distortion: *Yu-Ping Yang*[1]; Randy Dull[1]; Harvey Castner[1]; [1]EWI

8:20 AM
The Correlation of Welding Integrity on Bimetal Joints to the Performance of a Circuit Breaker under Overload Conditions: *Paola Beltran*[1]; Haritha Namduri[1]; [1]General Electric

8:40 AM
Effects of Oxygen Content in Weld Metal on Properties of Laser-arc Hybrid Weld Joints of Steel: *Kaoru Takezaki*[1]; Tomo Ogura[1]; Tomokazu Sano[1]; Akio Hirose[1]; Masami Mizutani[1]; Seiji Katayama[1]; Hikotaro Ochiai[1]; Ryosuke Kimura[1]; Shozo Ono[1]; [1]Osaka University

9:00 AM
Investigation on Impact Toughness of Submerged-arc Welds of Creep Resistant Steels: *Shenjia Zhang*[1]; Badri Narayanan[1]; [1]Lincoln Electric

9:20 AM
Hybrid Fiber Laser–arc Welding of 10-mm Thick CA6NM Stainless Steel: *Fatemeh Mirakhorli*[1]; Xinjin Cao[2]; Xuan-Tan Pham[1]; Priti wanjara[2]; Jean-Luc Fihey[1]; [1]École de Technologie Supérieure; [2]National Research Council Canada – Aerospace

9:40 AM Break

10:00 AM
Understanding the Mechanisms that Control Hydrogen Assisted Cracking in Dissimilar Metal Welds: *Desmond Bourgeois*[1]; Boian Alexandrov[1]; Jamey Fenske[2]; John Lippold[1]; [1]The Ohio State University; [2]ExxonMobil Development Company

10:20 AM
Quantification of Solidification Cracking Susceptibility in Creep Resistant Steels Using Numerical Simulations of the Cast Pin Tear Test: *Huimin Wang*[1]; Boian Alexandrov[1]; [1]The Ohio State University

10:40 AM
Development of Continuous Cooling Transformation Diagrams for Weld Metal
of Creep-resistant Steels: Joseph Steiner[1]; *Boian Alexandrov*[1]; John Lippold[1]; [1]The Ohio State University

11:00 AM
Development of CCT Diagrams for the CGHAZ of Creep-resistant Steels: *Katherine Strader*[1]; Boian Alexandrov[1]; John Lippold[1]; [1]The Ohio State University

11:20 AM
Fabrication of Zircaloy-4-clad Depleted Uranium Targets for Production of Medical Isotopes: *David Alexander*[1]; Maria Pena[1]; Matthew Dvornak[1]; Joel Montalvo[1]; Pallas Papin[1]; Sergey Chemerisov[2]; James Bailey[2]; [1]Los Alamos National Laboratory; [2]Argonne National Laboratory

11:40 AM
Microstructural Evolution and Mechanical Properties of the Simulated Heat Affected Zones in Precipitation Hardened Stainless Steels 17-4, 17-4+Co, and 13-8+Mo: *Robert Hamlin*[1]; John DuPont[1]; [1]Lehigh University

Materials and Processes for CO_2 Capture, Conversion, and Sequestration — Membranes, Sorbents and Solvents

Program Organizers: Kevin Huang, University of South Carolina; Winnie Wong-Ng, NIST; David Luebke, National Energy Technology Laboratory; Omar Farha, Northwestern University; Xiaotong Wei, Membrane Technology and Research, Inc.; Lan Li, Boise State University

Tuesday AM
October 14, 2014

Room: Room 312
Location: David L. Lawrence Convention Center

Session Chair: Winnie Wong-Ng, NIST

8:00 AM Invited
Membrane Materials and Processes for CO_2 Capture: *Tim Merkel*[1]; Xiaotong Wei[1]; [1]MTR

8:40 AM Invited
Gas Binding and Transport in Zeolitic Imidazolate Frameworks: *Keith Ray*[1]; [1]UC Berkeley

9:20 AM
Effect of As and Se Compounds in Syngas on Gas Separation Membrane Alloys: *Omer Dogan*[1]; Benjamin Nielsen[2]; Bret Howard[1]; Richard Pineault[1]; Todd Gardner[1]; Gregory Hackett[1]; Kirk Gerdes[1]; [1]DOE National Energy Technology Laboratory; [2]URS Corporation

9:40 AM Break

10:00 AM Invited
Carbon Dioxide Capture Properties of One-dimensional Nanoporous Octahedral Molecular Sieve: *Izaak Williamson*[1]; Eric Nelson[1]; Lan Li[1]; [1]Boise State University

10:40 AM Invited
CO2 Diffusivity, Viscosity and Ionic Conductivity of Liquid-like Nanoparticle Organic Hybrid Materials for Novel Carbon Capture and Conversion: *Ah-Hyung Park*[1]; Camille Petit[2]; [1]Columbia University; [2]Imperial College London

11:20 AM
Powder Sorbents for CO_2 Capture at High Temperatures: *Steven Milne*[1]; Ming Zhao[1]; Valerie Dupont[1]; Andrew Brown[1]; Matthew Bilton[1]; Emiliana Dvininov; Emiliana Dvininov[1]; [1]University of Leeds

Materials Development for Nuclear Applications and Extreme Environments — Mechanical Behavior I

Program Organizers: Raghunath Kanakala, University of Idaho; Ram Devanathan, Pacific Northwest National Laboratory; Josef Matyas, Pacific Northwest National Laboratory; Kevin Fox, Savannah River National Laboratory; Elizabeth Hoffman, Savannah River National Laboratory; Raul Rebak, GE Global Research; Aladar Csontos, U.S. Nuclear Regulatory Commission; Kumar Sridharan, University of Wisconsin; Bill Lee, Imperial College London

Tuesday AM
October 14, 2014

Room: Room 415
Location: David L. Lawrence Convention Center

Session Chairs: Kumar Sridharan, University of Wisconsin - Madison; Krishnan Raja, University of Idaho

8:00 AM
Advanced Magnetic Methods for Monitoring Nuclear Reactor Structural Materials: *John McCloy*[1]; Chuck Henager[2]; Pradeep Ramuhalli[2]; Shenyang Hu[2]; Ryan Meyer[2]; [1]Washington State University; [2]Pacific Northwest National Laboratory

8:20 AM
Hybrid Materials Design to Control Creep in Pipes: *Milo Kral*[1]; Ben Reyngoud[1]; [1]University of Canterbury

8:40 AM
Grain Growth Mitigation in Nanostructured Fe-Cr Alloys for High-temperature Applications: *Mostafa Saber*[1]; Weizong Xu[1]; Lulu Li[1]; Yuntian Zhu[1]; Carl Koch[1]; Ronald Scattergood[1]; [1]North Carolina State University

9:00 AM Invited
Microstructure and Mechanical Properties of Ion Irradiated Lanthanum-bearing Nanostructured Ferritic Steels: *Indrajit Charit*[1]; Somayeh Pasebani[1]; Lloyd Price[2]; Lin Shao[2]; Yaqiao Wu[3]; Jatu Burns[3]; James Cole[4]; Darryl Butt[5]; [1]University of Idaho; [2]Texas A&M University; [3]Center for Advanced Energy Studies; [4]Idaho National Laboratory; [5]Boise State University

9:20 AM
Corrosion Study of Alloys in High Temperature Supercritical Carbon Dioxide: *Julia Ziege*[1]; Jacob Mahaffey[1]; Mark Anderson[1]; Kumar Sridharan[1]; [1]University of Wisconsin-Madison

9:40 AM Break

10:00 AM Invited
Development of Advanced Ferritic Steels for Fast Reactor Applications: *Stuart Maloy*[1]; Tarik Saleh[1]; Osman Anderoglu[1]; Mychailo Toloczko[2]; G. Odette[3]; T.S. Byun[4]; Dave Hoelzer[4]; [1]Los Alamos National Laboratory; [2]Pacific Northwest National Laboratory; [3]UC-Santa Barbara; [4]Oak Ridge National Laboratory

10:40 AM
Kinetically Modelling the Thermodynamically Driven Evolution of y" Precipitates in Alloy 625: *Ian Moore*[1]; Mary Burke[2]; Eric Palmiere[1]; [1]University of Sheffield; [2]University of Manchester

11:00 AM
Corrosion of Materials in Molten LiF-BeF_2 Salt for FHR Applications: *Kumar Sridharan*[1]; Guiqiu Zheng[1]; Guoping Cao[1]; Brian Kelleher[1]; Mark Anderson[1]; Kieran Dolan[1]; [1]University of Wisconsin

11:20 AM
From Oxalate Precursors to the Sintering of Neodymium Oxides: Impact of the Morphology: *Nicolas Clavier*[1]; Anne-Lise Vitart[2]; Murielle Rivenet[3]; Bénédicte Arab-Chapelet[2]; Johann Ravaux[1]; Francis Abraham[3]; Stéphane Grandjean[2]; Nicolas Dacheux[1]; [1]ICSM; [2]CEA; [3]UCCS

11:40 AM
Creep Behavior of Alloy 617 as Structural Material in Next Generation Nuclear Plant: *Xingshuo Wen*[1]; Laura Carroll[2]; Richard Wright[2]; T.-L. (Sam) Sham[3]; Vijay Vasudevan[1]; [1]University of Cincinnati; [2]Idaho National Laboratory; [3]Oak Ridge National Laboratory

Materials Issues in Nuclear Waste Management in the 21st Century — Research on Radioactive Waste Forms for Safe Disposal I

Program Organizers: Josef Matyas, Pacific Northwest National Laboratory; Stéphane Gin, CEA; Kevin Fox, Savannah River National Laboratory; Elizabeth Hoffman, Savannah River National Laboratory; Dawn Janney, Idaho National Laboratory; Ramana Reddy, The University of Alabama; Ram Devanathan, Pacific Northwest National Laboratory; Raghunath Kanakala, University of Idaho

Tuesday AM
October 14, 2014

Room: Room 413
Location: David L. Lawrence Convention Center

Session Chairs: James Marra, Savannah River National Laboratory; Josef Matyas, PNNL

8:00 AM Invited
The Long-term Performance of Nuclear Waste Forms: Current Status and Perspectives: *Rodney Ewing*[1]; [1]Stanford University

8:40 AM
Synthesis and Solubility of Purified Coffinite: *Nicolas Dacheux*[1]; Stéphanie Szenknect[2]; Adel Mesbah[3]; Nicolas Clavier[3]; Christophe Poinssot[2]; Rodney Ewing[4]; [1]University of Montpellier 2; [2]CEA; [3]CNRS; [4]Stanford University

9:00 AM
Cementitious Waste Forms: A Program Overview of Synthesis and Characterization for Radioactive Material Disposal: *Elizabeth Hoffman*[1]; Alex Cozzi[1]; Christine Langton[1]; [1]Savannah River National Laboratory

9:20 AM
Nepheline Crystallization in High Level Nuclear Waste Glass: *Kevin Fox*[1]; David Peeler[1]; Albert Kruger[2]; [1]Savannah River National Laboratory; [2]U.S. Department of Energy Office of River Protection

9:40 AM Break

10:00 AM
Effects of Fe Redox on Phase Formation in Ceramic Waste Forms Processed from a Melt: *Jake Amoroso*[1]; Kyle Brinkman[2]; Ming Tang[3]; Ye Lin[4]; Fanglin Chen[4]; Dong Su[5]; James Marra[1]; [1]Savannah River National Laboratory; [2]Clemson University; [3]Los Alamos National Laboratory; [4]University of South Carolina; [5]Brookhaven National Laboratory

10:20 AM
The Behavior of Mineral Phases in Glass Melting Process: *Steven Luksic*[1]; Pavel Hrma[1]; [1]Battelle

10:40 AM Invited
Immobilization of Long-lived Iodine into Inert Matrices: *Clemens Walther*[1]; [1]Leibniz Unversität Hannover

11:20 AM Invited
Structural Investigation in Silver-phosphate Glasses for Iodine-based Nuclear Waste Immobilization: *Francois Mear*[1]; Thomas Lemesle[1]; Lionel Campayo[2]; Olivier Pinet[2]; Lionel Montagne[1]; [1]Lille 1 University; [2]CEA Marcoule

Materials Science of Additive Manufacturing — Modeling and Simulation I

Program Organizers: Panagiotis (Pan) Michaleris, Penn State University; Brett Conner, Youngstown State University; Michael Blaszkiewicz, SABIC Innovative Plastics; Wayne King, LLNL; Edward Reutzel, ARL Penn State; Todd Palmer, Penn State; Crystal Morrison, RJ Lee Group; Guha Manogharan, YSU

Tuesday AM
October 14, 2014

Room: Room 328
Location: David L. Lawrence Convention Center

Session Chair: Panagiotis (Pan) Michaleris, Penn State University

8:00 AM Invited
A New Architecture for Microstructural Predictions and Crystal Plasticity Simulations of Additive Manufacturing: *Brent Stucker*[1]; Deepankar Pal[1]; Tim Sublette[2]; [1]University of Louisville; [2]3DSIM, LLC

8:40 AM
Residual Stress and Distortion Modeling of Electron Beam Deposited Ti-6Al-4V: *Erik Denlinger*[1]; Jeff Irwin[1]; Jarred Heigel[1]; Pan Michaleris[1]; [1]The Pennsylvania State University

9:00 AM
Hot Wire Laser Cladding as an Additive Manufacturing Process: *B. Lynn Ferguson*[1]; Zhichao Li[1]; David Schwam[2]; [1]DANTE SOlutions, Inc.; [2]Case Western Reserve University

9:20 AM
Physics Based Modeling of Laser Powder Bed Fusion Process Applied to Inconel 718: *Vijay Jagdale*[1]; Yu Long[1]; Alexander Staroselsky[1]; Jacquelynn Garofano[1]; Tahany El-Wardany[1]; Gajawalli Srinivasan[1]; [1]United Technologies Research Center

9:40 AM Break

10:00 AM
Thermodynamic and Kinetic Modeling of Ti-6Al-4V Directed Laser Deposition Additive Manufacturing: *Richard Otis*[1]; Richard Martukanitz[1]; Zi-Kui Liu[1]; [1]Pennsylvania State University

10:20 AM
Prediction of Melt Pool Profiles for Selective Laser Melting of AlSi10Mg: *Jan White*[1]; Noriko Read[1]; Mark Ward[1]; Richard Mellor[2]; Moataz Attallah[1]; [1]University of Birmingham; [2]Rolls-Royce Controls & Data Services Ltd.

10:40 AM
Therm-mechanical Model Development of Directed Energy Deposition of Additive Manufacturing: *Jarred Heigel*[1]; Pan Michaleris[1]; Ted Reutzel[1]; Todd Palmer[1]; [1]Penn State

11:00 AM
Thermal Characterization of Direct Metal Deposition: *Cameron Knapp*[1]; Desiderio Kovar[1]; Thomas Lienert[2]; Chris Chen[2]; [1]University of Texas; [2]Los Alamos National Laboratory

11:20 AM
Computational Through-process Modeling for Cold Sprayed Alloy Optimization: *Danielle Belsito*[1]; Victor Champagne[2]; Richard Sisson[1]; [1]Worcester Polytechnic Institute; [2]U.S. Army Research Laboratory

11:40 AM
Experimental Verification of Through-process Modeling of Cold Spray Al Alloys: *Baillie McNally*[1]; Danielle Belsito[1]; Luke Bassett[1]; Victor Champagne[2]; Richard Sisson[1]; [1]Worcester Polytechnic Institute; [2]US Army Research Laboratory

Mechanical Behavior of Technological Coatings and Thin Films — Tribological Coatings

Program Organizers: Douglas Stauffer, Hysitron, Inc.; Megan Cordill, Erich Schmid Institute of Materials Science; Joseph Jakes, USDA Forest Products Laboratory; Mark Weaver, University of Alabama; Marian Kennedy, Clemson University; Reginald Hamilton, The Pennsylvania State University

Tuesday AM
October 14, 2014

Room: Room 401
Location: David L. Lawrence Convention Center

Session Chairs: Megan Cordill, Erich Schmid Institute of Materials Science; Mark Weaver, University of Alabama

Funding support provided by Hysitron, Inc.

8:00 AM Invited
Space Tribology: Experiments and Results from the Materials on the International Space Station (MISSE) Tribometers: *Brandon Krick*[1]; W. Gregory Sawyer[2]; [1]Lehigh University; [2]University of Florida

8:40 AM Invited
Assessing the Mechanical and Electrical Performance of Wear Tested Au-ZnO Nanocomposites for Electrical Contact Applications: Rachel Schoeppner[1]; Helena Jin[2]; Somuri Prasad[2]; Ronald Goeke[2]; David Bahr[3]; *Neville Moody*[2]; [1]Washington State University; [2]Sandia National Laboratories; [3]Purdue University

9:00 AM
Development of Mechanically and Environmentally Stable Oxide Coatings Using Pulsed Laser Irradiation: *Samantha Lawrence*[1]; David Adams[2]; Neville Moody[2]; David Bahr[1]; [1]Purdue University; [2]Sandia National Laboratories

9:20 AM
Quantitative Analysis of Pore Morphology in Lanthanum Zirconate Thermal Barrier Coating: *Jing Zhang*[1]; Xingye Guo[1]; Yeon-Gil Jung[2]; Li Li[3]; James Knapp[3]; [1]Indiana University - Purdue University Indianapolis; [2]Changwon National University; [3]Praxair Surface Technologies, Inc

9:40 AM Break

10:00 AM
Ab Initio Study of Thermal Properties of Lanthanum Zirconate: Jing Zhang[1]; *Xingye Guo*[1]; Yeon-Gil Jung[2]; Li Li[3]; James Knapp[3]; [1]Indiana University - Purdue University Indianapolis; [2]Changwon National University; [3]Praxair Surface Technologies, Inc

10:20 AM Invited
Lubricious Oxide Coatings for Extreme Temperature Applications: *Thomas Scharf*[1]; Samir Aouadi[1]; Ashlie Martini[2]; [1]The University of North Texas; [2]University of California, Merced

11:00 AM
Spectral Modeling of Residual Stress and Stored Elastic Strain Energy in Thermal Barrier Coatings: *Sean Donegan*[1]; Anthony Rollett[1]; [1]Carnegie Mellon University

11:20 AM
Obtaining Less-rigid Coating in Ti Parts by Laser Surface Alloying: Edwin Sallica-Leva[1]; Lisiane Carvalho[1]; Hipólito Fals[2]; Rubens Caram[1]; *João Fogagnolo*[1]; [1]University of Campinas; [2]University of Oriente

11:40 AM
Investigation on Process Parameter Optimization of Cold Sprayed Coatings for Multiple Responses: *Tarun Goyal*[1]; R.S. Walia[2]; T.S. Sidhu[3]; [1]Shaheed Udham Singh College of Engg. & Technology, Tangori, Mohali; [2]Delhi Technological University, Delhi; [3]Shaheed Bhagat Singh State Technical Campus

Multiscale Modeling of Microstructure Deformation in Material Processing — Session III

Program Organizers: Lukasz Madej, AGH University of Science and Technology; Maciej Pietrzyk, AGH University of Science and Technology

Tuesday AM
October 14, 2014

Room: Room 324
Location: David L. Lawrence Convention Center

Session Chairs: Danuta Szeliga, AGH University of Science and Technology; Maciej Pietrzyk, AGH University of Science and Technology

8:00 AM
Mesoscopic Measurements for the Formulation and Validation of Multiscale Materials Models: *Joel Bernier*[1]; Shiu Fai Frankie Li[1]; Todd Turner[2]; Paul Shade[2]; Jay Schuren[2]; [1]Lawrence Livermore National Laboratory, Computational Engineering Division; [2]Air Force Research Laboratory, Materials and Manufacturing Directorate

8:20 AM
Through-process Simulation of Microstructure and Texture Evolution in IF Steel Based on Microstructure-based Modeling Approach: *Dongkyu Kim*[1]; Won-Woong Park[2]; Jae-Min Kim[2]; Yong-Taek Im[2]; Wanchuck Woo[1]; [1]Korea Atomic Energy Research Institute; [2]Korea Adanced Institute of Science and Technology

8:40 AM
Using Moment Invariants to Study the Effect of Annealing on Grain Shape in $SrTiO_3$: *Lily Nguyen*[1]; Melanie Syha[2]; Peter Gumbsch[2]; Marc De Graef[1]; [1]Carnegie Mellon University; [2]Karlsruhe Institute of Technology

9:00 AM
Instantiating Microtextured Regions in Alpha+Beta Titanium Alloys: *Joseph Tucker*[1]; Tyler Weihing[2]; Adam Pilchak[3]; Michael Groeber[3]; [1]UES, Inc.; [2]Southwestern Ohio Council for Higher Education; [3]Air Force Research Laboratory

9:20 AM
Discrete Dislocation Dynamics Simulations of Metal Crystals in a Cylinder: *Maosheng Li*[1]; Chan Gao[2]; Jianing Xu[1]; [1]Institute of Applied Physics and Computational Mathematics; [2]Institute of Nuclear Physics and Chemistry

9:40 AM Break

10:00 AM
Multi-scale Modeling and Characterization of Random Microstructures with Gaussian Correlations: *Ankit Saharan*[1]; Sohan Kale[1]; Martin Ostoja-Starzewski[1]; [1]University of Illinois

10:20 AM
Producing a Local Properties Map of Large, Complex Castings through a Multiscale Approach: *Benjamin Anglin*[1]; Charles Randow[1]; Tomoko Sano[1]; Chian-Fong Yen[1]; [1]US Army Research Laboratory

10:40 AM
Generation of Synthetic Three-dimensional Microstructures for Two-phase Titanium Alloys: *Sudipto Mandal*[1]; Anthony Rollett[1]; Dipankar Banerjee[2]; Shanoob Balachandran[2]; [1]Carnegie Mellon University; [2]Indian Institute of Science, Bangalore

11:00 AM
Non-schmid Crystal Plasticity Modeling of Deformation of BCC Single Crystals: *Aboozar Mapar*[1]; Thomas Bieler[1]; Farhang Pourboghrat[1]; Christopher Compton[2]; [1]Michigan State University; [2]Facility For Rare Isotope Beam

11:20 AM
Numerical Study on Crystallographic Slip Activities of a Single-slip Oriented Single Crystal Micro-pillar Deformed in Compression: *Jae-Ho Jung*[1]; Yoon Suk Choi[1]; Kyung-Mox Cho[1]; [1]Busan National University

11:40 AM
Study of the Subsurface Slip Activity of Polycrystalline Ti-5Al-2.5Sn Alloy with Crystal Plasticity Finite Element Method Using 3D Microstructure: *Chen Zhang*[1]; Hongmei Li[1]; Philip Eisenlohr[1]; Thomas Bieler[1]; Martin Crimp[1]; Carl Boehlert[1]; [1]Michigan State University

12:00 PM
Dislocation-based Constitutive Model Including Latent Hardening, Aging and Recovery for Strain Path Dependence: *Minh-Son Pham*[1]; Anthony Rollett; Mark Iadicola; Adam Creuziger; Tim Foecke; [1]Carnegie Mellon University

Nanomechanics of Biomaterials — Processing and Characterization of Biomaterials

Program Organizers: Kantesh Balani, Indian Institute of Technology Kanpur; R Jayaganthan, IIT Roorkee; Roger Narayan, UNC/NCSU Joint Department of Biomedical Engineering; Virginia Ferguson, University of Colorado, Boulder; Donna Ebenstein, Bucknell University

Tuesday AM
October 14, 2014

Room: Room 316
Location: David L. Lawrence Convention Center

Session Chairs: R Jayaganthan, Indian Institute of Technology Roorkee; Roger Narayan, UNC/NCSU

8:00 AM Invited
Grain Refined Magnesium Alloy for Orthopedic Application: Khelendra Agarwal[1]; Debrupa Lahiri[1]; *R Jayaganthan*[1]; [1]IIT Roorkee

8:40 AM
Fabrication, Characterization, and Corrosion Studies of Multimodal Zircaloy-2 for Medical Applications: *Pramanshu Trivedi*[1]; Snehasish Das[1]; Sunkulp Goel[1]; R Jayaganthan[1]; [1]Indian Institute of Technology Roorkee India

9:00 AM
Nano-patterned Lipid Particles for Targeted Drug Delivery: *Jayakumar Rajadas*[1]; [1]Stanford University

9:20 AM
NanoCPR: Cardiomyocyte (Heart) Cell Beating[2]: Varun Vyas[1]; Yasemin Kutes[1]; Neerajha Nagarajan[2]; Pinar Zorlutuna[3]; *Bryan Huey*[1]; [1]University of Connecticut MS&E; [2]University of Connecticut BME; [3]University of Connecticut ME

9:40 AM Break

10:00 AM
Fretting Wear of Zinc Oxide and Silver Nanoparticles Reinforced Ultra High Molecular Weight Polyethylene Biopolymer Composites: *Fahad Alam*[1]; Rajeev Sharma[1]; Kantesh Balani[1]; [1]IIT K

10:20 AM
Tribological Performance of Carbon Nanotube and Aluminum Oxide Reinforced Ultra High Molecular Weight Polyethylene Biocomposite: *Anup Patel*[1]; Kantesh Balani[1]; [1]Indian Institute of Technology Kanpur

10:40 AM
Synthesis of Hydroxyapatite Nanoparticles Produced by Laser Ablation Pulsed in Liquid: *Rogelio Ospina*[1]; Alexandre Mello[1]; Elvis Lopez[1]; Fabio Borges[2]; [1]Centro Brasileiro de Pesquisas Fisicas; [2]Universidade Federal Fluminense

Nanotechnology for Energy, Environment, Electronics, and Industry — Energy & Environment III

Program Organizers: Gary Pickrell, Virginia Tech; Navin Manjooran, Siemens AG

Tuesday AM
October 14, 2014

Room: Room 320
Location: David L. Lawrence Convention Center

Session Chairs: Gary Pickrell, Virginia Tech; Navin Manjooran, Siemens AG; Parthiban Rajasekaran, UCF

8:00 AM Introductory Comments

8:20 AM
Multi-scale Carbon Structures for Environmental Applications: *Hema Vijwani*[1]; Mallikarjuna Nadagouda[2]; Vasudevan Namboodiri[2]; Sharmila Mukhopadhyay[1]; [1]Wright State University; [2]U.S. Environmental Protection Agency

8:40 AM
Interaction of Metal Catalysts with Different Morphological CeO_2 Supports for CO Oxidation: *Ruigang Wang*[1]; Samantha Mock[1]; [1]Youngstown State University

9:00 AM
Synthesis of ZnO@ZSM-5 Nanocatalysts for Methane Upgrading: *Yungchieh Lai*[1]; Götz Veser[1]; [1]University of Pittsburgh

9:20 AM
Wastewater Treatment by Electrochemically Assisted Photocatalytic Ozonation Using TiO_2 Nanotube Photoelectrode: *Takayuki Mano*[1]; Shunsuke Nishimoto[1]; Yoshikazu Kameshima[1]; Michihiro Miyake[1]; [1]Okayama University

9:40 AM Break

10:00 AM
Facile Synthesis of Copper Oxide Nanostructures and their Application in Non-enzymatic Hydrogen Peroxide Sensing: *Peng Gao*[1]; Dawei Liu[1]; [1]Alfred University (New York State College of Ceramics)

10:20 AM
Towards Highly Efficient and Cost-effective Catalytic Converters: Monolithically Integrated 3D Nanostructure-Arrays with Tunable Catalytic Performance for Low Temperature Emission Control: *Zheng Ren*[1]; Pu-Xian Gao[1]; [1]University of Connecticut

10:40 AM
Nano-photochemical Cell with Spatially Separated Oxidation and Reduction Channels: *Hang-Ah Park*[1]; Paul Salvador[1]; Gregory Rohrer[1]; Mohammad Islam[1]; [1]Carnegie Mellon University

11:00 AM
Electroless Copper Coatings on Arc Discharged Carbon Nanotubes and their Electrical Properties: *M Jagannatham*[1]; D Ebenezer[1]; S Sankaran[1]; Prathap Haridoss[1]; [1]Indian Institute of Technology Madras

11:20 AM
Magnetic Nanosorbents for Heavy Metal and Radioactive Waste Treatment: *Huijin Zhang*[1]; Tao Xing[1]; You Qiang[1]; [1]University of Idaho

Next Generation Biomaterials — Session III

Program Organizers: Roger Narayan, UNC/NCSU Joint Department of Biomedical Engineering; Diego Mantovani, Laval University; Raman Singh, Monash University

Tuesday AM
October 14, 2014

Room: Room 315
Location: David L. Lawrence Convention Center

Session Chairs: Nathan Mellott, Alfred University; Anthony Wren, Alfred University

8:00 AM Invited
Novel Synthesis of Single Crystal Nanowire Sensing Probes for Diagnostic Breathalyzers: *Perena Gouma*[1]; [1]SUNY Stony Brook

8:20 AM Invited
Modifying the Chemistry of Dental Adhesives to Improve Their Orthopaedic Applicability: *Anthony Wren*[1]; [1]Alfred University

8:40 AM Invited
Potential Toxicity of Bioactive Borate Glasses: *Steven Jung*[1]; [1]Mo-Sci Corporation

9:00 AM
Molybdenum-rhenium Implantable Medical Devices: *Todd Leonhardt*[1]; Udayan Patel[2]; [1]Rhenium Alloys Inc; [2]ICON Interventional Systems, Inc.

9:20 AM
Oligoethylenimine-based Biodegradable Copolymer Nanoparticles for Gene Delivery: *Chaoyu Liu*[1]; Min Wang[1]; [1]Department of Mechanical Engineering, The University of Hong Kong

9:40 AM Break

10:00 AM Invited
Sol-gel Based Coatings for Biomaterials: *Nathan Mellott*[1]; [1]Alfred University

10:20 AM Invited
The Novel Use of 3-dimensional Tissue Mimetics and Ultrasound to Understand the Role of Mechanical Forces in Both Regenerative and Pathological Conditions: *Yusuf Khan*[1]; [1]University of Connecticut Health Center

10:40 AM Invited
Evaluation of Long-term Bone Regeneration, Hydroxyapatite Conversion and Angiogenesis in Rat Calvarial Defects Implanted with Strong Porous Bioactive Glass (13-93) Scaffolds: *Mohamed Rahaman*[1]; Yinan Lin[1]; Xin Liu[1]; [1]Missouri University of Science and Technology

11:00 AM
Novel Antibacterial Hemostatic Sealent: *Aisling Coughlan*[1]; [1]Purdue University

11:20 AM
Bioglass® Scaffolds Reinforced by a Composite Polyvinyl Alcohol/ Microfibrillated Cellulose Coating: *Luca Bertolla*[1]; Ivo Dlouhy[1]; Aldo Boccaccini[2]; [1]IPM; [2]University of Erlangen-Nuremberg

11:40 AM
Novel Biodegradable Mg-based Bulk Metallic Glasses for Biomedical Applications: *Haifei Li*[1]; Shujie Pang[2]; Peter Liaw[3]; Tao Zhang[2]; [1]Beihang University & University of Tennessee; [2]Beihang University; [3]University of Tennessee

Perspectives for Emerging Materials Professionals — Career Perspectives for Emerging Materials Professionals: Career Opportunities and Experiences in Materials Science and Engineering I

Program Organizers: Mark Tschopp, Army Research Laboratory; Khinlay Maung, ATK

Tuesday AM
October 14, 2014

Room: Room 321
Location: David L. Lawrence Convention Center

Session Chairs: Mark Tschopp, U.S. Army Research Laboratory; Khinlay Maung, ATK Space Systems

8:30 AM Introductory Comments

8:40 AM Keynote
The Case for Success of the Materials "Generalist": Career Experiences in Multidisciplinary Research Teams for ICME and MGI: *Paul Mason*[1]; [1]Thermo-Calc Software Inc

9:20 AM Invited
The Introspective Engineer: Career Development on the Journey of Self Discovery: *Austin Leach*[1]; [1]TechLink

9:40 AM Invited
Mentorship: Learning, Advice, and Personal Experiences: Joshua Yee[1]; *Enrique Lavernia*[1]; [1]University of California, Davis

10:00 AM Break

10:20 AM Invited
Compare and Contrast a Career in National Laboratories Versus Academia: *Anthony Rollett*[1]; [1]Carnegie Mellon University

10:40 AM Invited
Non-obvious Path from Materials Science to Law School and Back: *Michael Alexander*[1]; [1]The Webb Law Firm

11:00 AM Invited
"I Will" be a Materials Engineer at Under Armour: *Matt Trexler*[1]; [1]Under Armour

11:20 AM Invited
Armed with Science: Career Experiences and Opportunities within Government Defense Laboratories: *Mark Tschopp*[1]; [1]Army Research Laboratory

11:40 AM
Considerations of Two-decades of Career in Materials Science, Metallurgical Engineering and Health Care Fields: A Personal Perspective: *Narayana Garimella*[1]; [1]University at Buffalo

Phase Stability, Diffusion Kinetics, and their Applications (PSDK-IX) — Session Honoring Professor Zi-Kui Liu, Recipient of ASM's 2014 J. Willard Gibbs Phase Equilibria Award I

Program Organizers: Dongwon Shin, Oak Ridge National Laboratory; In-Ho Jung, McGill University; James Saal, Northwestern University; Raymundo Arroyave, Texas A & M University

Tuesday AM
October 14, 2014
Room: Room 402
Location: David L. Lawrence Convention Center

Session Chairs: Dongwon Shin, Oak Ridge National Laboratory; Alan Luo, The Ohio State University

8:00 AM Introductory Comments

8:20 AM Invited
Entropy: *Zi-Kui Liu*[1]; [1]The Pennsylvania State University

9:00 AM Invited
Design of Structural Materials Based on Ab Initio Computed Phase Stabilities: *Jörg Neugebauer*[1]; Tilmann Hickel[1]; Blazej Grabowski[1]; Fritz Kormann[1]; [1]Max-Planck-Institut für Eisenforschung GmbH

9:40 AM Break

10:00 AM Invited
Exact Phenomenological Theory for the Simultaneous Measurement of Tracer and Interdiffusion Coefficients.: *Graeme Murch*[1]; Irina Belova[1]; [1]The University of Newcastle

10:40 AM Invited
Computational Thermodynamics and Kinetics – Mapping the Materials Genome: *John Agren*[1]; [1]Royal Institute of Technology

11:20 AM Invited
Chemical Potentials: *Long Qing Chen*[1]; Tina Chen[2]; [1]Penn State University; [2]Massachusetts Institute of Technology

Recent Advances in Electron Microscopy, Spectral Imaging, and Surface Analysis Techniques for Materials Characterization — Session II

Program Organizer: Brian Strohmeier, Thermo Fisher Scientific

Tuesday AM
October 14, 2014
Room: Room 334
Location: David L. Lawrence Convention Center

Session Chair: Brian Strohmeier, Thermo Fisher Scientific

8:00 AM Invited
Transmission Electron Backscatter Diffraction in the SEM for Thin Films and Nanomaterials: *Robert Keller*[1]; Katherine Rice[1]; [1]NIST

8:40 AM
Using an EBSD Detector as an Imaging Device: *Stuart Wright*[1]; Matthew Nowell[1]; Patrick Camus[1]; Rene de Kloe[1]; Travis Rampton[1]; [1]EDAX

9:00 AM
A Method for Merging Monte Carlo and Dynamical EBSD Simulations: *Patrick Callahan*[1]; Marc De Graef[1]; [1]Carnegie Mellon University

9:20 AM
Recent Developments Using Electron Channeling for Non-destructive Defect Analysis in a Scanning Electron Microscope: *Yoosuf Picard*[1]; Mincong Liu[1]; Joel Lammatao[1]; Marc de Graef[1]; [1]Carnegie Mellon University

9:40 AM Break

10:00 AM
Microstructural Evolution in Deformed Zr-based Bulk Metallic Glass Composite: Jessica Booth[1]; *Jennifer Carter*[1]; [1]Case Western Reserve University

10:20 AM
Characterization of Deformed Microstructures in a Field Emission Scanning Electron Microscope with Electron Channeling Contrast Imaging and Electron Backscattered Diffraction: *Shirin Kaboli*[1]; Raynald Gauvin[1]; [1]McGill Univerity

10:40 AM
Defect Image Simulation Using the Scattering Matrix Approach with Bethe Potential Approximation: *Amy Wang*[1]; Marc De Graef[1]; [1]Carnegie Mellon University

11:00 AM
Measuring Strain Sensitivity in Si (001) Electron Channeling Patterns Using Higher-order Laue Zone Line Shifts: Joel Lammatao[1]; Lisa Chan[2]; Tony Owens[2]; Marc De Graef[1]; *Yoosuf Picard*[1]; [1]Carnegie Mellon University; [2]TESCAN USA

11:20 AM
Simulation of Electron Channeling Patterns and Electron Channeling Contrast Images: *Saransh Singh*[1]; Marc De Graef[1]; [1]Carnegie Mellon University

11:40 AM
Low Temperature SEM Observations of the Martensitic Transformation in a AuCuZn Alloy: *Michael Chapman*[1]; Marc DeGraef[1]; [1]Carnegie Mellon University

Role of Solidification Technology for Multifunctional Materials — Role of Solidification Technology for Multifunctional Materials

Program Organizers: Narsingh Singh, University of Maryland, Baltimore County; Surendra Tewari, Cleveland State University; David Knuteson, Northrop Grumman ES; Nuggehalli Ravindra, New Jersey Institute of Technology

Tuesday AM
October 14, 2014
Room: Room 405
Location: David L. Lawrence Convention Center

Session Chairs: Dimitra Stratis-Cullum, Army Research Laboratory; Chandra Pande, Naval ResearchLaboratory; Walter Duval, NASA Glenn Research Center; Nuggehalli Ravindra, New Jersey Institute of Technology

8:00 AM Invited
Discovery and Study of Genetically Engineered Peptides Using Bacterial Surface Display Technology: *Dimitra Stratis-Cullum*[1]; Bryn Adams[2]; Margaret Hurley[1]; Deborah Sarkes[3]; Amethist Finch[1]; [1]US Army Research Laboratory; [2]Oak Ridge Associated Universities/US Army Research Laboratory; [3]Federal Staffing Resources/US Army Research Laboratory

8:20 AM Invited
Effect of Impurities on the Solidification Morphology of the Al-Si Alloys in Dynamic Condition: *Narsingh Singh*[1]; Bradley Arnold[1]; Lisa Kelly[1]; Darren Thomson[1]; Raghaw Rai[1]; Fow-Sen Choa[1]; [1]University of Maryland, Baltimore County

8:40 AM Invited
Progress in Solidification of Binary Organic Materials: *Uma Shanker Rai*[1]; Ramanand Rai[1]; [1]Banaras Hindu University

9:00 AM
Deformation Mechanisms in Layered Biomimetic and Other Nanomaterials: *Chandra Pande*[1]; [1]Naval Research Laboratory

9:20 AM Invited
Solidification of Nitroaniline: *Om Singh*[1]; Vinod Yadav[1]; [1]K. N. Government Post Graduate College

9:40 AM Break

10:00 AM
Reactive Solidification Growth of Lead Tin Selenide for MWIR Detectors: Narsingh Singh[1]; Christopher Cooper[1]; Narasimha Prasad[1]; Fow-Sen Choa[1]; Bradley Arnold[1]; *Reecha Suri*[1]; [1]University of Maryland, Baltimore County

10:20 AM
The Mechanism of Grain Refinement of Cast Zinc by Silver: *Zhilin Liu*[1]; Dong Qiu[1]; Feng Wang[1]; John Taylor[1]; Mingxing Zhang[1]; [1]The University of Queensland

10:40 AM
Effect of Solidification Parameters on the Performance of Energy Storage Materials: *Vishnu Razdan*[1]; Bradley Arnold[1]; Lisa Kelly[1]; Narsingh Singh[1]; Fow-Sen Choa[1]; Walter Duval[1]; [1]University of Maryland, Baltimore County

11:00 AM Invited
Dielectric and Electrical Properties of Un-doped and Fe-doped Yttrium Copper Titanate: *Kamdeo Mandal*[1]; Sunita Sharma[1]; [1]Indian Institute of Technology (BHU)

11:20 AM
Comparative Analysis of Thermal Transport in Graphene Nanosheets and Nanoribbons: *Vishal Nakhate*[1]; Nagarajan Chandrasekaran[1]; Sarang Muley[1]; Yan Liu[1]; Nuggehalli Ravindra[1]; [1]New Jersey Institute of Technology

11:40 AM
Electronic & Thermoelectric Properties of Pristine and Doped Graphene Nanoribbons: *Sarang Muley*[1]; Nuggehalli Ravindra[1]; [1]New Jersey Institute of Technology

Rustum Roy Symposium on Processing and Performance of Materials using Microwaves, Electric and Magnetic Fields, Ultrasound, Lasers, and Mechanical Work — Session III

Program Organizers: Morsi Mahmoud , Karlsruhe Institute of Technology (KIT) & City for Scientific Research and Technological Applications (SRTA City); Dinesh Agrawal, Pennsylvania State University; Guido Link, Karlsruhe Institute of Technology; Motoyasu Sato, Chubu University; Rishi Raj, University of Colorado

Tuesday AM
October 14, 2014
Room: Room 317
Location: David L. Lawrence Convention Center

Session Chairs: Ashraf Imam, Naval Research Laboratory; Noboru Yoshikawa, Tohoku University

8:00 AM Invited
Large Microwave Furnace for Treatment of Sludge Containing Radioactive Isotopes at Fukushima Nuclear Plant: *Motoyasu Sato*[1]; [1]Chubu University

8:40 AM
A Study of High Temperature Refractory Insulation for Use in Microwave Metal and High Temperature Ceramic Heating: Edward Ripley[1]; *Jeffery Cook*[1]; [1]B&W Y-12 Plant

9:00 AM
Effect of Microwave Irradiation on the Magnetic Properties of Spinel-type Ferrites: *Hirotsugu Takizawa*[1]; Jun Fukushima[1]; Daisuke Nagao[1]; Yamato Hayashi[1]; [1]Tohoku University

9:20 AM
Millimeter-wave Sintering of Spinel under Uniaxial Pressure: *Arne Fliflet*[1]; M. Ashraf Imam[1]; Benjamin Rock[1]; Allen Kinkead[2]; [1]Naval Research Laboratory; [2]Icarus Research, Inc.

9:40 AM
Synthesis of Copper Spinels by Microwave Irradiation: *Jun Fukushima*[1]; Yamato Hayashi[1]; Hirotsugu Takizawa[1]; [1]Tohoku University

Sintering and Related Powder Processing Science and Technologies — Sintering: SPS III

Program Organizers: Ricardo H. R. Castro, University of California at Davis; Eugene Olevsky, San Diego State University; Olivia Graeve, University of California, San Diego; Umberto Anselmi-Tamburini, University of Pavia; Zak Fang, University of Utah ; Troy Holland, Colorado State University

Tuesday AM
October 14, 2014
Room: Room 326
Location: David L. Lawrence Convention Center

Session Chairs: Umberto Anselmi-Tamburini, Universita di Pavia; Erica Corral, The University of Arizona

8:00 AM
Construction of Spark Plasma Sintering Maps of Aluminum Alloys: *Lucie Nguyen*[1]; Jason Milligan[1]; Philippe Hendrickx[1]; Brochu Mathieu[1]; [1]McGill University

8:20 AM
Effect of Particle Size and Heating Rate on Densification, Microstructure and Mechanical Properties of B4C Ceramics: *Baris Yavas*[1]; Onuralp Yucel[1]; Filiz Cinar[1]; Gultekin Goller[1]; [1]Istanbul Technical University

8:40 AM
Rapid Electric Pulse Pretreatment for Enhanced Field Assisted Sintering: *Joshua Yee*[1]; Chuandong Wu[2]; Troy Holland[3]; Fei Chen[2]; Lianmeng Zhang[2]; Enrique Lavernia[1]; [1]University of California, Davis; [2]State Key Laboratory of Advanced Technology for Materials Synthesis and Processing; [3]Colorado State University

9:00 AM
Single Step Electro-sinter-forging of Alloys: *Alessandro Fais*[1]; [1]EPoS srl

9:20 AM
Grain Boundary Character in Nanocrystalline $MgAl_2O_4$ Prepared by Electric Field Assisted Sintering: *Jorgen Rufner*[1]; Thomas LaGrange[2]; Klaus van Benthem[1]; Ricardo Castro[1]; [1]University of California - Davis; [2]Lawrence Livermore National Laboratory

9:40 AM Break

10:00 AM
De-convolution of Field Factor in Spark-plasma Sinter-forging: *Alexandra Ilyina*[1]; Elena Aleksandrova[1]; Eugene Grigoryev[1]; Eugene Olevsky[2]; [1]National Research Nuclear University "MEPhI" (Moscow Engineering Physics Institute); [2]San Diego State University

10:20 AM
Advanced Analysis of the Heating of Powders in a 'Pusher' Furnace: *Peter Witting*[1]; Bruce Dover[1]; [1]Harper International

Structural Intermetallics: Alloy Design, Processing, and Applications — Heat Treatment, Processing, and Characterization of Intermetallics

Program Organizers: David Forrest, Department of Energy; John Perepezko, University of Wisconsin-Madison; Bruce Pint, Oak Ridge National Laboratory

Tuesday AM
October 14, 2014

Room: Room 335
Location: David L. Lawrence Convention Center

Session Chair: John Perepezko, University of Wisconsin

8:00 AM
A Study on the Effect of Homogenization Treatment on Different Ni-42.5wt%Ti-Xwt% (X= 0, 3 and 7.5) Shape Memory Alloys: *Emad Omrani*[1]; Amir Etaati[2]; Pooria Movahed[3]; Ali Shokuhfar[4]; [1]University of Wisconsin - Milwaukee; [2]University of Southern Queensland; [3]Politecnico di Milano; [4]K.N. Toosi University of Technology

8:20 AM
Oxidation Behaviour of Binary Iron Aluminides with Fine-scaled, Lamellar Microstructure: *Anke Scherf*[1]; Daniel Janda[1]; Mehrdad Baghaie-Yazdi[2]; Xiaolin Li[3]; Frank Stein[3]; Martin Heilmaier[1]; [1]Karlsruhe Institute of Technology (KIT); [2]Technische Universität Darmstadt; [3]Max-Planck-Institut für Eisenforschung

8:40 AM
Sintering of the Titanium Aluminide Foils: Nataliya Kazantseva[1]; *Sergei Demakov*[2]; Artem Yurovskikh[2]; [1]Institute of Metal Physics; [2]Ural Federal University

9:00 AM
Reactivity of Aluminum-based Mixtures with Early Transition Metals: *Laszlo Kecskes*[1]; Kenneth Plunkett[1]; [1]US Army Research Laboratory

9:20 AM
Bulk Processing of and Reverse Peritectoid Phase Transformation in Ni3mo Alloy: *Ibrahim Khalfallah*[1]; Alex Aning[1]; [1]Virginia Tech

9:40 AM Break

10:00 AM
Direct Measurement of Lattice Parameter in Ordered/Disordered Systems Using HAADF-STEM.: *Adedapo Oni*[1]; Xiahan Sang[1]; Aakash Kumar[2]; Selva Raju[3]; Susan Sinnott[2]; Surendra Saxena[3]; Krishna Rajan[4]; James LeBeau[1]; [1]North Carolina State University; [2]University of Florida; [3]Florida International University; [4]Iowa State University

10:20 AM
Fracture and Fatigue Crack Growth Behavior of Cast Titanium Aluminide: Matt Dahar[1]; Mohsen Seifi[1]; Bernard Bewlay[2]; John Lewandowski[1]; [1]Case Western Reserve University; [2]GE Global Research

10:40 AM
In-situ Neutron Diffraction Study of Twinning in γ-TiAl based Alloys: *Premysl Beran*[1]; Milan Heczko[2]; Tomas Kruml[2]; Martin Petrenec[3]; [1]Nuclear Physics Institute ASCR; [2]CEITEC, Institute of Physics of Materials, ASCR; [3]TESCAN ORSAY HOLDING, a.s.

11:00 AM
Thermodynamic Analysis of NiAl Formation Intermetallic by Mechanical Alloying: *Mahyar Mohammadnezhad*[1]; Mortaza Shamanian[1]; M.Hosein Enayati[1]; [1]Department of Materials Engineering, Isfahan University of Technology

Surface Properties of Biomaterials V — Surface Modification

Program Organizers: Susmita Bose, Washington State University; Amit Bandyopadhyay, Washington State University; Mukesh Kumar, Biomet Inc

Tuesday AM
October 14, 2014

Room: Room 310
Location: David L. Lawrence Convention Center

Session Chair: Tom Webster, Northeastern University

8:00 AM Invited
Surface Chemistry Effects on Cell Mechanics: *Adrian Pegoraro*[1]; Ming Guo[1]; Huayin Wu[1]; David Weitz[1]; [1]Harvard University

8:40 AM Invited
Evolution of Healthy and Cancer Cells on Nanoclay-polycaprolactone Scaffolds: *Kalpana Katti*[1]; Md. Shahajahan Molla[1]; Avinash Ambre[1]; Dinesh Katti[1]; [1]North Dakota State University

9:20 AM Invited
Improving Medical Device Surface Properties Using Picotechnology: *Thomas Webster*[1]; [1]Northeastern University

10:00 AM Break

10:20 AM
Methods for Assessing Permeable Surface-modifications of Biocompatibility: *Narayana Garimella*[1]; [1]University at Buffalo

10:40 AM Invited
Combinatorial Cassette for High-throughput In Vivo Screening of Osteogenesis: *Subhadip Bodhak*[1]; Luis Fernandez de Castro Diaz[2]; Sergei Kuznetsov[2]; Tina Kilts[2]; Marian Young[2]; Sheng Lin-Gibson[1]; Pamela Robey[2]; Carl Simon, Jr.[1]; [1]National Institute of Standards and Technology (NIST); [2]National Institutes of Health / NIDCR

11:20 AM
Nitinol Polishing in Acid-free, Aqueous Salt Electrolytes: *Savidra Lucatero*[1]; Timothy Hall[1]; Holly Garich[1]; EJ Taylor[1]; Maria Inman[1]; [1]Faraday Technology, Inc.

11:40 AM
Patterning of Antibacterial Nanoparticles on Microfilters: *Ziye Xiong*[1]; Ian Nettleship[1]; Jung-Kun Lee[1]; John Barnard[1]; Anil Ojha[1]; [1]University of Pittsburgh

Surface Protection for Enhanced Materials Performance: Science, Technology, and Application — Thermal Barrier Coatings

Program Organizers: Dongming Zhu, NASA Glenn Research Center; Rodney Trice, Purdue University; Yutaka Kagawa, The University of Tokyo; Daniel Mumm, University of California-Irvine; Hua-Tay Lin, Oak Ridge National Laboratory; Kang Lee, Rolls Royce; Mitchell Dorfman, Sulzer Metco (US) Inc.; Christian Moreau, Concordia University

Tuesday AM
October 14, 2014

Room: Room 323
Location: David L. Lawrence Convention Center

Session Chairs: Yutaka Kagawa, The University of Tokyo; Kang Lee, Rolls Royce

8:00 AM Invited
Characteristics of Lanthanum/Gadolinium Zirconate TBCs Fabricated by Suspension Plasma Spray: *Hyung-Tae Kim*[1]; Seongwon Kim[1]; Sung-Min Lee[1]; Yoon-Suk Oh[1]; Byung-Koog Jang[2]; [1]Korea Institute of Ceramic Engineering and Technology; [2]National Institute of Materials Science

8:40 AM
Directed Vapor Deposition on Complex Substrates: Simulations and Experiments: *Theron Rodgers*[1]; Hengbei Zhao[1]; Haydn Wadley[1]; [1]University of Virginia

9:00 AM
Microstructural and Phase Evolution in Yttria-Stabilized Zirconia Thermal Barrier Coatings (TBCs) Deposited Via Plasma Spray-physical Vapor Deposition (PS-PVD): *Michael Schmitt*[1]; Douglas Wolfe[1]; Bryan Harder[2]; [1]Penn State University; [2]NASA Glenn Research Center

9:20 AM
Pyrochlore Lanthanide Zirconates for Environmental Barrier Coatings: *Jeffrey Fergus*[1]; Honglong Wang[1]; Emily Tarwater[1]; [1]Auburn University

9:40 AM Break

10:00 AM
Investigating the Resistance of CMAS Infiltrated TBCs to Cracking in Thermal Gradients: *Wesley Jackson*[1]; Matthew Begley[1]; Carlos Levi[1]; [1]University of California, Santa Barbara

10:20 AM
Transient Reaction Processes during Thermal Barrier Oxide/Silicate Melt Interactions: *David Poerschke*[1]; Carlos Levi[1]; [1]University of California Santa Barbara

10:40 AM
TBC Degradation by Fly-ash Deposits in Environments Relevant to Advanced Gas Turbines for IGCC Systems: *Nathaniel Bohna*[1]; Thomas Gheno[1]; Gerald Meier[1]; Brian Gleeson[1]; [1]University of Pittsburgh

11:00 AM
Investigation of Cracks Behavior Correlated with Interface Geometry in TBC Systems Using 3D Non-destructive Imaging: *Navid Asadizanjani*[1]; Sina Shahbazmohamadi[1]; Eric Jordan[1]; [1]University of Connecticut

11:20 AM
Thermal Cycling Behavior of CYSZ/GZ and CYSZ/CYSZ+GZ Multilayered Thermal Barrier Coatings: *Mustafa Gok*[1]; Gultekin Goller[1]; [1]Istanbul Technical University

Thermal Protection Materials and Systems — UHTCs and Extreme Environment Materials

Program Organizers: Sylvia Johnson, NASA-Ames Research Center; Parul Agrawal, ERC Corporation; Frances Hurwitz, NASA Glenn Research Center; John Lawson, NASA Ames Research Center

Tuesday AM
October 14, 2014

Room: Room 412
Location: David L. Lawrence Convention Center

Session Chairs: John Lawson, NASA-Ames Research Center; Jorge Barcena, TECNALIA - Industry and Transport Division

8:00 AM
Ultra-high Temperature Ceramics: Fifteen Years of Challenges, Opportunities, and Progress: *William Fahrenholtz*[1]; Greg Hilmas[1]; [1]Missouri University of Science and Technology

8:40 AM
Innovative Thermal Management Concepts for Sharp Leading Edges of Hypersonic Vehicles: *Jorge Barcena*[1]; Cristina Jimenez[1]; Burkard Esser[2]; Ali Gülhan[2]; Markus Kuhn[2]; Ivaylo Petkov[2]; Volker Hannemann[2]; Altug Okan[3]; Suat Ontac[3]; Jim Merrifield[4]; Sandro Gianella[5]; Daniele Gaia[5]; Volker Liedtke[6]; Daniele Francesconi[7]; Mauricio Portaluppi[7]; Daniella Santella[7]; Alberto Ortona[8]; Maurizio Barbato[8]; Hideyuki Tanno[9]; [1]Tecnalia Research & Innovation; [2]Deutsches Zentrum für Luft- und Raumfahrt e.V. (DLR); [3]TÜBITAK UZAY; [4]Fluid Gravity Engineering Ltd; [5]EngiCer; [6]Aerospace & Advanced Composites GmbH; [7]Thales Alenia Space; [8]ICIMSI-SUPSI; [9]Japan Aerospace Exploration Agency

9:20 AM
The Development of HfO_2-rare Earth Based Oxide Materials and Barrier Coatings for Thermal Protection Systems: *Dongming Zhu*[1]; Bryan Harder[1]; [1]NASA Glenn Research Center

9:40 AM Break

10:00 AM
Oxidation Behavior of Aerospace Materials in Relevant Environments: *Erica Corral*[1]; Melia Miller[1]; [1]The University of Arizona

10:40 AM
Multiscale Modeling of Ultra High Temperature Ceramics (UHTC) ZrB_2 and HfB_2: Application to Lattice Thermal Conductivity: *John Lawson*[1]; Murray Daw[2]; Thomas Squire[1]; Charles Bauschlicher[1]; [1]NASA Ames Research Center; [2]Clemson University

11:20 AM
Towards a New Reusable Thermal Protection System Tile Design for Low Earth Orbit Return Missions: *Jorge Barcena*[1]; Cristina Jimenez[1]; Miguel Lagos[1]; Claudio Badini[2]; Elisa Padovano[2]; Sandro Gianella[3]; Daniele Gaia[3]; Konstatina Mergia[4]; Efi Tsompopoulou[4]; Christian Wilhelmi[5]; Wolfgang Fischer[6]; Alberto Ortona[7]; Volker Liedtke[8]; [1]Tecnalia Research & Innovation; [2]Politecnico di Torino; [3]EngiCer; [4]NCSR-Demokritos; [5]Airbus Group Innovations; [6]Airbus Defence & Space; [7]ICIMSI-SUPSI; [8] Aerospace & Advanced Composites GmbH

Vanadium Microalloyed Steels: A Symposium in Memory of Michael Korchynsky — Processing of Vanadium Steel

Program Organizers: Riad Asfahani, U. S. Steel Research & Technology; David Milbourn, Vanitec Limited; Robert Glodowski, Evraz East Metals NA; Bevis Hutchinson, Swerea KIMAB; Anthony Deardo, University of Pittsburgh; Yang Caifu, Central Iron & Steel Research Institute; Terry Perles, TTP Squared, Inc.

Tuesday AM
October 14, 2014
Room: Room 410
Location: David L. Lawrence Convention Center

Session Chairs: Robert Glodowski, EVRAZ East Metals, NA; Yang Caifu, Central Iron & Stel Research Institute

8:00 AM
Dissolution Behavior of the Carbonitrides in Low Carbon Micro-alloyed Steels of Railway Vehicles: *Liu Xin Gui*[1]; Wu Yi[1]; Xiang Bin[1]; [1]China Academy of Railway Sciences

8:20 AM
Some Comments on the Physical Metallurgy of HSLA Steels Containing Vanadium and Nitrogen: *Anthony Deardo*[1]; Mingjian Hua[1]; [1]University of Pittsburgh

9:00 AM
Hot Ductility in V-microalloyed Steels: Kevin Banks[1]; Barrie Mintz[2]; *Alison Tuling*[1]; [1]University of Pretoria; [2]School of Engineering Science and Mathematics, City University, London

9:40 AM Break

10:00 AM
The Influence of High Vanadium Contents on the Risk of Transverse Cracking in Continuous Casting of Advanced High Strength Steels: *Colin Scott*[1]; Robert Glodowski[2]; Yu Li[3]; David Milbourn[3]; Philippe Maugis[4]; [1]CanmetMATERIALS; [2]EVRAZ East Metals; [3]Vanitec Limited; [4] Aix-Marseille University

10:40 AM
Effect of V and C on the Hot Flow Behavior of V Microalloyed Steels: *Hailian Wei*[1]; Guoquan Liu[1]; [1]School of Materials Science and Engineering, University of Science and Technology Beijing

11:00 AM
Microstructure and Vanadium Precipitate Reversion during Rapid Austenization of SAE 10V45 Steel: *Lee Rothleutner*[1]; Chester Van Tyne[1]; [1]Colorado School of Mines

11:20 AM
Some Effects of Vanadium in TRIP and BH steels: *Lin Li*[1]; Wen Shi[1]; Yanlin He[1]; [1]School of Materials Science and Engineering, Shanghai University

ASM Edward DeMille Campbell Memorial Lecture

Tuesday PM
October 14, 2014
Room: Room 406
Location: David L. Lawrence Convention Center

12:45 PM Introductory Comments

12:55 PM Invited
Hydrogen Embrittlement Understood: *Ian Robertson*[1]; [1]University of Illinois at Urbana Champaign

1:15 PM Question and Answer Period

ACerS Edward Orton, Jr., Memorial Lecture

Tuesday PM
October 14, 2014
Room: Room 407
Location: David L. Lawrence Convention Center

Session Chair: David Green, The Pennsylvania State University

1:00 PM Invited
My Borate Life: An Enigmatic Journey: *Adrian Wright*[1]; [1]University of Reading

Advanced Aluminum Alloys, Composites, and Process Technologies — Alloys and Composites I

Program Organizers: Awadh Pandey, Pratt & Whitney; Thomas Watson, Pratt & Whitney

Tuesday PM
October 14, 2014
Room: Room 329
Location: David L. Lawrence Convention Center

Session Chair: Thomas Watson, Pratt & Whitney

2:00 PM
Numerical Simulation of Extrusion Process of Complex Aluminum Alloy Disks: *Jing Zhang*[1]; Guihua Liu[2]; Zaixin Feng[2]; Michael Golub[1]; Guangrong Yan[3]; Yongtao Dong[4]; [1]Indiana University - Purdue University Indianapolis; [2]North University of China; [3]Beihang University; [4] New Mexico Institute of Mining and Technology

2:20 PM
Tensile Properties and Microstructure of Friction Stir Welded Cast Al-Mg-Sc Aluminum Alloy: *K Subbaiah*[1]; M Geetha[2]; M Govindaraju[3]; S.R. Koteswara Rao[4]; [1]SSN College of Engineering; [2] VIT University; [3]NFTDC; [4]Tagore Engineering College

2:40 PM
Ultrasonic Dispersion Cast Light Metals: *Andrew Sherman*[1]; Nick Farkas[2]; David Weiss[3]; [1]Powdermet Inc; [2]Terves Inc; [3]Eck Industries

3:00 PM
The Development and Characterization of Glass Fiber-silica Sand Nanoparticles Reinforced Aluminium Based Hybrid Composites: *Muhammad Kamran*[1]; Tahir Ahmad[1]; Mohsin Kalim[1]; Muhammad Ahmad[1]; Zaheer Abbas[1]; Rafiq Ahmad[1]; [1]University of the Punjab

3:20 PM
The Developemt and Characterization of Modelling Deformation of Al-Cu Alloy: *Adekunle Adegbola*[1]; Julius Olapade[1]; Ismaila Alabi[1]; Akeem Ghazali[1]; Emmanuel Ekundayo[1]; Olugbenga Fashina[1]; Mutiu Kareem[1]; Abolade Olaniyan[1]; David Oke[1]; [1]The Polytechnic, Ibadan

Advanced Manufacturing Technologies — Advanced Manufacturing I: Surfaces and Removal Processes

Program Organizer: Muammer Koc, Istanbul Sehir University

Tuesday PM
October 14, 2014

Room: Room 324
Location: David L. Lawrence Convention Center

Session Chairs: Timothy Hall, Faraday Technology Inc.; Sunday Ojolo, University of Lagos

2:00 PM Introductory Comments

2:20 PM
Effect of Machining Variables on the Fatigue Life of End-milled Aluminium Alloy: *Sunday Ojolo*[1]; Ifeolu Orisaleye[1]; Oluwole Adegbenro[1]; [1]University of Lagos

2:40 PM
Hybrid Micro-EDM Grinding with Co-Ni Diamond Co-deposition Tools and Its Experimental Analysis: *Wen-Jeng Hsue*[1]; Y-F Chang[1]; [1]National Kaohsiung University of Applied Sciences

3:20 PM
Effect of Surface Finishing on Cutting Tool Service Life: Case of Cutlery: *Wilian Labiapari*[1]; Jose Lucio Gonçalves[1]; Cláudio Alcântara[2]; Henara Costa[1]; Jose Daniel de Mello[1]; [1]Universidade Federal de Uberlandia; [2]Aperan South America

3:40 PM
Environmentally Benign Electrofinishing Process for Selective Material Removal and Reduced Surface Roughness of Materials (Nb, Ti, Ta, SS, Mo) in Low Viscosity Aqueous Electrolytes: *Timothy Hall*[1]; EJ Taylor[1]; Maria Inman[1]; Holly Garich[1]; Savidra Lucatero[1]; Brian Skinn[1]; [1]Faraday Technology Inc.

4:00 PM
Effect of Reinforcement on Kerf during Wire Electric Discharge Machining of Metal Matrix Composite: *Pragya Shandilya*[1]; [1]MNNIT Allahabad,

Advanced Materials for Harsh Environments — Session I

Program Organizers: Navin Manjooran, Siemens AG; Gary Pickrell, Virginia Tech

Tuesday PM
October 14, 2014

Room: Room 405
Location: David L. Lawrence Convention Center

Session Chairs: Gary Pickrell, Virginia Tech; Navin Manjooran, Siemens AG

2:00 PM Invited
An Integrated Computational Approach to Predicting the Oxidation Behavior of Alloys Exposed to Extreme Environments.: *Brian Gleeson*[1]; Zi-Kui Liu[2]; Andrew Gellman[3]; DeNyago Tafen[4]; Dominic Alfonso[5]; Bryan Morreale[5]; David Alman[5]; [1]The University of Pittsburgh; [2]The Pennsylvania State University; [3]Carnegie Mellon University; [4]URS Corporation; [5]National Energy Technology Laboratory

2:40 PM
Development of Advanced Coatings for Nerva-type Fuel Elements: *S. Raj*[1]; James Nesbitt[1]; [1]NASA Glenn Research Center

3:00 PM
Effect of Molybdenum on Deformation of Austenitic Stainless Steels in a Corrosive Environment: *David Sapiro*[1]; Bryan Webler[1]; [1]Carnegie Mellon University

3:20 PM
Long-term Lifetime Prediction of ODS FeCrAl Alloys: *Sebastien Dryepondt*[1]; Bruce Pint[1]; [1]ORNL

Advanced Solution and Colloidal Processing for Ceramics — Battery Materials

Program Organizers: Geoff Brennecka, Sandia National Laboratories; Song Won Ko, Pennsylvania State University; Barbara Malic, Jožef Stefan Institute; An Hardy, Hasselt University; Xiaohui Wang, Tsinghua University; Kazumi Kato, National Institute of Advanced Industrial Science and Technology

Tuesday PM
October 14, 2014

Room: Room 334
Location: David L. Lawrence Convention Center

Session Chair: Darja Lisjak, Jozef Stefan Institute

2:00 PM Invited
Aqueous Colloidal Chemistry for Low-cost, Green Manufacturing of Lithium-ion Battery Electrodes: *David Wood*[1]; Jianlin Li[1]; Claus Daniel[1]; Beth Armstrong[1]; [1]Oak Ridge National Laboratory

2:40 PM
Exploring Colloidal Properties of Si Based Anode Pastes Towards Better Li-ion Batteries: *Maarten Verheijen*[1]; Jean-Sébastien Bridel[2]; Jan Gilleir[2]; Anke Kelchtermans[1]; An Hardy[1]; Marlies Van Bael[1]; [1]UHasselt; [2]Umicore

3:00 PM
Aqueous Solution Processing of Li-based Oxides as Candidate Electrode or Electrolyte in Solid-state Li-ion Batteries: *Nick Peys*[1]; Sven Gielis[1]; Jonathan van den Ham[1]; Giulia Maino[1]; An Hardy[1]; Marlies Van Bael[1]; [1]UHasselt - IMEC division IMOMEC

3:20 PM Invited
Ceramic Nanofibers for Energy and Environmental Applications: *Hui Wu*[1]; Wei Pan[1]; [1]Tsinghua University

4:00 PM
Synthesis and Chemical Solution Deposition of Cathode LiMn2O4 for Lithium Battery Applications: Giulia Maino[1]; *Nick Peys*[1]; Jan D'Haen[1]; An Hardy[1]; Marlies Van Bael[1]; [1]UHasselt

Advanced Steel Metallurgy: Products and Processing — Advanced Steel Coatings

Program Organizer: Amy Woods, Steel Dynamics Flat Roll

Tuesday PM
October 14, 2014

Room: Room 408
Location: David L. Lawrence Convention Center

Session Chair: To Be Announced

2:00 PM
Fate and Effect of Steel Sheet Surface Oxides on Galvanizing Bath Management: *James McGuffin-Cawley*[1]; Zhuoying Jiang[1]; [1]Case Western Reserve University

2:20 PM
Influence of Steel Surface Condition on Selective Oxidation during Galvanizing: James McGuffin-Cawley[1]; *Meng-Hsien Chen*[1]; Shrikant Bhat[2]; John Rotole[2]; [1]Case Western Reserve University; [2]ArcelorMittal

2:40 PM
Role of Heating Conditions On Microcrack Formation In Zinc Coated 22MnB5: *Vit Janik*[1]; Peter Beentjes[2]; David Norman[2]; Guido Hensen[2]; Sridhar Seetharaman[1]; [1]WMG, University of Warwick; [2]TATA Steel

3:00 PM
Bonding Studies between Fracture Toughened Adhesives and Advanced High Strength Steels: *Jagdeesh Bandekar*[1]; Michael Golden[1]; Chann Cheng[2]; Susan Wolf[2]; [1]Dow Automotive; [2]ArcelorMittal Global R&D

Advanced Steel Metallurgy: Products and Processing — Pipe and Tube

Program Organizer: Amy Woods, Steel Dynamics Flat Roll

Tuesday PM
October 14, 2014

Room: Room 409
Location: David L. Lawrence Convention Center

Session Chair: To Be Announced

2:00 PM
High Temperature Flow Stress Modeling of Microalloyed Steels: *Susan Farjami*[1]; Xiaojun Liang[2]; Anthony DeArdo[2]; [1]United States Steel Corporation; [2]University of Pittsburgh

2:20 PM
High Temperature Young's Modulus of a Seamless Pipe Steel: Anthony Deardo[1]; Qiongshu Wang[1]; Kent Li[1]; Michael Panzeri[1]; Timothy Ryan[1]; Jeffrey Vipperman[1]; *Mingjian Hua*[1]; [1]University of Pittsburgh

2:40 PM
Characterization of L80 Steel Microstructure Using Ultrasonic Measurements: *Jacob Kennedy*[1]; Hani Henein[1]; D.G. Ivey[1]; J.B. Wiskel[1]; [1]University of Alberta

3:00 PM
Improvement of EW Toughness in High Strength Line Pipes through Gleeble® Simulations: Mariano Coloschi[1]; Victoria Ramos[1]; *Gonzalo Gomez*[1]; Martín Valdez[1]; Debora Tieppo[1]; Eduardo Martinez[1]; [1]Tenaris

3:20 PM
The Water Model Experiment and Verification for Optimization of 150t Ladle Bottom Blowing Argon: Xiang Li[1]; Yanping Bao[1]; Linzhu Wang[1]; Lu Li[1]; *Qiyi Zhang*[2]; [1]University of Science and Technology Beijing; [2]Jiangyin Xingcheng Special Steel Company

Advances in Dielectric Materials and Electronic Devices — Magnetic and Electrical Properties I

Program Organizers: Amar Bhalla, The University of Texas at San Antonio; Ruyan Guo, The University of Texas at San Antonio; K. M. Nair, E.I.duPont de Nemours & Co, Inc; Danilo Suvorov, Jožef Stefan Institute; Rick Ubic, Boise State University

Tuesday PM
October 14, 2014

Room: Room 307
Location: David L. Lawrence Convention Center

Session Chairs: Steven Tidrow, The University Of Texas - Pan American; Rick Ubic, Boise State University

2:00 PM Invited
High Temperature Dielectric and Magnetic Properties of Pb-Based Single Phase Multiferroics: *Jose Eiras*[1]; [1]Universidade Federal de São Carlos

2:20 PM Invited
Multiferroism and Magnetoelectric Coupling in La Doped BiFeO3-PbTiO3 Compositions: *Ivair Santos*[1]; Valdirlei Freitas[2]; Luiz Cótica[1]; Ducinei Garcia[3]; José Eiras[3]; [1]Universidade Estadual de Maringá; [2]Universidade Estadual do Centro-Oeste; [3]Universidade Federal de São Carlos

2:40 PM
Structural, Electrical, and Magnetic Properties of Layered Barium Iron Titanates: Ba12Fe28Ti15O84, Ba11Fe8Ti9O41, Ba27Fe16Ti33O117: *Matthew O'Malley*[1]; Clifford Leslie[2]; Thomas Key[2]; Emmanuel Boakye[2]; Graham King[3]; Michael Cinibulk[1]; [1]Air Force Research Laboratory; [2]UES, Inc; [3]Los Alamos National Laboratory

3:00 PM
Magnetoelectric Quasi (0-3) Nanocomposite Film: *Yanxi Li*[1]; Zhongchang Wang[2]; Jianjun Yao[1]; Zhiguang Wang[1]; Yaodong Yang[3]; Ravindranath Viswan[1]; Jiefang Li[1]; D. Viehland[1]; [1]Virginia Tech; [2]Tohoku University; [3]Xi'an Jiaotong University

3:20 PM
Magnetoelectric and Pyroelectric Interactions in Tri-layered NiFe2O4/P b(Z r ,T i) O 3/N iF e 2O4 Composite at Cryogenic Temperatures: *Soutik Betal*[1]; Luiz Cótica[1]; Clayton Morrow[1]; Shashank Priya[2]; Ruyan Guo[1]; Amar Bhalla[1]; [1]University of Texas at San Antonio; [2]Virginia Tech

3:40 PM
Study of Sm Modified PZT and Ni-Zn Ferrite Composites: *Rekha Rani*[1]; JK Juneja[2]; KK Raina[3]; Chandra Prakash[4]; [1]SD PG College; [2]Hindu College; [3]Thapar University; [4]Solid State Physics Laboratory

Advances in Metal Casting Technologies — Material Properties & Characterization

Program Organizers: Alan Druschitz, Virginia Tech; Paul Sanders, Michigan Technological University; Laurentiu Nastac, The University of Alabama

Tuesday PM
October 14, 2014

Room: Room 331
Location: David L. Lawrence Convention Center

Session Chair: Alan Druschitz, Virginia Tech

2:00 PM
Study on Mechanical Properties and Microstructure of Cu-Mn-Ni-P Alloys Made by the Horizontal Continuous Casting: *Jungsoo Kim*[1]; Jaeho Jang[1]; Utae Choi[2]; Daegeun Nam[1]; [1]Korea Institute of Industrial Technology; [2]Minyoung Industry Co.

2:20 PM
Investigation of Microstructure and Purity of Nickel Based Superalloy Master Alloy with Revert Remelting Method: *Chuanbo Ji*[1]; Xiaofeng Wang[1]; Jie Yang[1]; Jinwen Zou[1]; [1]Science and Technology on Advanced High Temperature Structure Materials Laboratory,Beijing Institute of Aeronautical Materials

2:40 PM
Effects of Various Heat-treatments on Nb Segregation of Inconel 718 Fabricated by Investment Casting: *Jeonghyeon Do*[1]; In Soo Kim[1]; Baig Gyu Choi[1]; Chang Yong Cho[1]; [1]KIMS

3:00 PM
Characterization of Oxide Bifilms and Nonmetallic Inclusions in Investment Cast Superalloy IN100: *Max Kaplan*[1]; Gerhard Fuchs[1]; [1]University of Florida

3:20 PM
Surface Pattern and Generating Mechanism in Molten Cast Iron: *Natsuki Miyai*[1]; [1]Nagaoka University of Technology

3:40 PM
Production and Characterization of Intercritically Austempered Ductile Iron (IADI): *Peter Kim*[1]; Alan Druschitz[1]; [1]Virginia Tech

4:00 PM
Solidification Characteristics of Fe-rich Intermetallics and Its Effect on Mechanical Properties of Squeeze Cast Al-5.0Cu-0.6Mn Alloy: *Wei-Wen Zhang*[1]; Bo Lin[1]; Da-Tong Zhang[1]; Yuan-Yuan Li[1]; [1]South China University of Technology, School of Mechanical and Automotive Engineering

4:20 PM
Low Voltage, Cast Al-Zn-Bi, Sacrificial Anodes: Effect of Heat Treatment: *Alan Druschitz*[1]; Katie Tontodonato[1]; [1]Virginia Tech

4:40 PM
Effect of Nickel Additions on Solidification Structure and Aging Response in Copper-manganese Alloys: *Kevin Chaput*[1]; Kevin Trumble[1]; [1]Purdue University

5:00 PM
Proton Imaging of Metal Casting for Predictive Modeling: *Paul Gibbs*[1]; Seth Imhoff[1]; Neil Carlson[1]; Chris Morris[1]; Frank Merrill[1]; Fesseha Mariam[1]; Amy Clarke[1]; [1]Los Alamos National Laboratory

Advances in Titanium Manufacturing: Powder Processing, Powder Metallurgy, and Additive/ Emerging Manufacturing Techniques — Titanium Powder Production

Program Organizers: K. S. Ravi Chandran, University of Utah; Zak Fang, University of Utah ; M. Ashraf Imam, George Washington University; Jean Stewart, ATI Powder Metals

Tuesday PM
October 14, 2014

Room: Room 325
Location: David L. Lawrence Convention Center

Session Chairs: Zak Fang, University of Utah ; Sushant Jha, Air Force Research Laboratory/Universal Technology Corporation

2:00 PM Invited
Low Cost Titanium Becomes a Reality: *James Withers*[1]; John Laughlin[1]; Vladimir Shapovalov[1]; Raouf Loutfy[1]; [1]MER Corporation

2:40 PM Invited
Developing Eco-friendly Energy Saving Chemical Routes for Titanium Powder Production from Titanium Ore: *Amarchand Sathyapalan*[1]; Michael Free[1]; Zak Fang[1]; [1]University of Utah

3:20 PM
ADMA Process for Hydrogenated Titanium Powder Production: *Vladimir Duz*[1]; Vladimir Moxson[1]; Andrey Klevtsov[1]; Viktor Sukhoplyuyev[1]; [1]ADMA Products, Inc.

3:40 PM
Reducing the Proportion of Hard Lump in Titanium Sponge Production Process: *Liang Li*[1]; [1]Panzhihua Iron&Steel Research Institute

4:00 PM
An Investigation on Commercial Production of Pure Metallic Titanium Nanoparticles by Electromagnetic Levitation Melting Method: Technical Aspects: *Armin Vahid Mohammadi*[1]; Mohammad Halali[2]; [1]Florida International University; [2]Sharif University of Technology

Bioinspired Materials Engineering — Bioinspired Functional Materials

Program Organizers: Cordt Zollfrank, Technische Universität München, Germany ; Michael Bartl, University of Utah

Tuesday PM
October 14, 2014

Room: Room 305
Location: David L. Lawrence Convention Center

Session Chairs: Cordt Zollfrank, Technische Universität München; Joseph Jakes, USDA Forest Products Laboratory

2:00 PM Introductory Comments

2:20 PM Keynote
Mimumes: *Akhlesh Lakhtakia*[1]; [1]Penn State University

3:00 PM
Designing Biomimetic Photonic Crystals: *Bryce Turner*[1]; Michael Bartl[1]; [1]University of Utah

3:20 PM Invited
Bioinspired Multifunctional Broadband Antireflection Coatings: *Peng Jiang*[1]; [1]University of Florida

Boron, Boron Compounds, and Boron Nanomaterials: Structure, Properties, Processing, and Applications — Nanostructures and Particles II

Program Organizers: Roumiana Petrova, New Jersey Institute of Tech; Jens Kunstmann, Columbia University

Tuesday PM
October 14, 2014

Room: Room 338
Location: David L. Lawrence Convention Center

Session Chair: Jens Kunstmann, Columbia University

2:00 PM Invited
Room Temperature In-situ Synthesis of B/BOx Nanowires and BOx Nanotubes Inside a Transmission Electron Microscope: *Ignacio Gonzalez Martinez*[1]; Sandeep Gorantla[1]; Alicja Bachmatiuk[2]; Viktor Bezugly[3]; Jiong Zhao[1]; Thomas Gemming[1]; Jens Kunstmann[4]; Jürgen Eckert[1]; Gianaurelio Cuniberti[3]; Mark Rümmeli[1]; [1]IFW Dresden; [2]Centre of Polymer and Carbon Materials, Polish Academy of Sciences; [3]Technical University Dresden; [4]Columbia University

2:40 PM Invited
Fabrication of Patterned Boron-based Nanowires and Their Field Emission Properties: *Chengmin Shen*[1]; [1]Institute of Physics, Chinese Academy of Sciences

Computational Design of Ceramic Materials — Structure and Properties of Ceramics II

Program Organizers: Liping Huang, Rensselaer Polytechnic Institute; Randall Youngman, Corning Incorporated

Tuesday PM
October 14, 2014

Room: Room 306
Location: David L. Lawrence Convention Center

Session Chair: Liping Huang, Rensselaer Polytechnic Institute

2:00 PM
First Principles and Empirical Calculations of Stacking Fault Energies in $ZnTiO_3$ Ceramics: *Wei Sun*[1]; Jincheng Du[1]; [1]University of North Texas

2:20 PM
Interfacial Structure Study of the Solid Electrolyte Interphase in Li-ion Batteries from First Principle Calculation: *Zhe Liu*[1]; Hao-Wei Zhang[1]; Lei Chen[1]; Yue Qi[2]; Peng Lu[3]; Stephen Harris[4]; Long-Qing Chen[1]; [1]Pennsylvania State University; [2]Michigan State University; [3]General Motors Research & Development Center; [4] Lawrence Berkeley National Lab

2:40 PM Invited
Intergranular Films in Ceramics: Predictions Affecting Synthesis and Growth, and Identification of Competing Mechanisms: *Stephen Garofalini*[1]; Yun Jiang[1]; [1]Rutgers University

Continuous Improvement of Academic Programs (and Satisfying ABET Along the Way): The Elizabeth Judson Memorial Symposium — Session II

Program Organizers: Thomas Bieler, Michigan State University; Gillian Bond, New Mexico Tech; Janet Callahan, Boise State University; Jeffrey Fergus, Auburn University; Ronald Gibala, University of Michigan; William Hammetter, Sandia National Laboratory; Devarajan Venugopalan, Univ of Wisconsin

Tuesday PM
October 14, 2014

Room: Room 318
Location: David L. Lawrence Convention Center

Session Chair: Thomas Bieler, Michigan State University

2:00 PM
Engaged Learning Environments to Drive Enhanced Learning in Materials Science and Engineering Introductory Courses: *Steve Yalisove*[1]; [1]University of Michigan

2:20 PM
Modern Pedagogy vs. Classical Methods: Challenges of a New Faculty: *Vibhor Chaswal*[1]; Premlata Chaswal[2]; [1]University of Cincinnati; [2]M.M. University - Mullana

2:40 PM
An Overview of the Virginia Tech MSE Engineering Communications Program: *Christine Burgoyne*[1]; *Robert Hendricks*[1]; [1]Virginia Tech

3:00 PM
Revisiting Design in Materials Science and Engineering Programs: *Devarajan Venugopalan*[1]; [1]University of Wisconsin-Milwaukee

3:20 PM Panel Discussion - Continuous Improvement of Student Learning
Moderator: Janet Callahan, Boise State University
Panelists: Doreen Edwards, Alfred University; Stacy Gleixner, San Jose State University; Chris Leighton, University of Minnesota; Cindy Kornegay Waters, North Carolina A&T State University

Controlled Synthesis, Processing, and Applications of Structural and Functional Nanomaterials — Session III

Program Organizers: Gurpreet Singh, Kansas State University; Kathy Lu, Virginia Tech; Eugene Olevsky, San Diego State University; Edward Gorzkowski, Naval Research Laboratory; Sanjay Mathur, University of Cologne

Tuesday PM
October 14, 2014

Room: Room 319
Location: David L. Lawrence Convention Center

Session Chair: Edward Gorzkowski, Naval Research Laboratory

2:00 PM
Field-assisted Consolidation of Zirconium Nitride: *Maria Yurlova*[1]; Geuntak Lee[2]; Evgeny Grigoryev[1]; Eugene Olevsky[2]; [1]NRNU MEPHI; [2]SDSU

2:20 PM
Retaining Nanostructures in Bulk Materials by Enhanced High Pressure Processing: *James Wollmershauser*[1]; Boris Feigelson[1]; Syed Qadri[1]; M Imam[1]; Edward Gorzkowski[1]; Jasbinder Sanghera[1]; Richard Everett[1]; [1]Naval Research Laboratory

3:00 PM Invited
Synthesis and Processing of Nanotungsten Powders: *Brady Butler*[1]; Scott Middlemas[1]; Eric Klier[1]; Kevin Hemker[2]; [1]U.S. Army Research Laboratory; [2]Johns Hopkins University

3:40 PM
Observation of Inverse Hall-petch Behavior in Diamantane Stabilized Bulk Nanocrystalline Aluminum: *Khinlay Maung*[1]; James Earthman[2]; Farghalli Mohamed[2]; [1]ATK; [2]University of California, Irvine

4:00 PM
Synthesis of Mesostructured Silicon Carbide Via Preceramic Polymers Nanocasting: *Thibaud Nardin*[1]; Benoît Gouze[1]; Julien Cambedouzou[1]; Cyrielle Rey[1]; Johann Ravaux[1]; Olivier Diat[1]; [1]ICSM, Institut de Chimie Séparative de Marcoule

Degradation of Nonmetallic Materials — Degradation of Non-Metallic Materials

Program Organizer: Brian Chambers, Shell Global Solutions US

Tuesday PM
October 14, 2014

Room: Room 401
Location: David L. Lawrence Convention Center

Session Chairs: Brian Chambers, Shell Global Solutions; Jessica Torrey, Bureau of Reclamation

2:00 PM
Object Dependent Properties of Multi-component Acrylic Systems: *Ian Kidd*[1]; Elan Weiss[1]; Laura Bruckman[1]; Olivier Rosseler[2]; Roger French[1]; [1]Case Western Reserve University; [2]Saint Gobain

2:20 PM
In Situ Measurements of Aqueous Degradation Kinetics in Polymer Thin Films: *Logan Kearney*[1]; John Howarter[1]; [1]Purdue University

2:40 PM
Thermodynamic Approach to Accelerated Weathering Impact on Water Distribution: *Brian Hinderliter*[1]; [1]University of Minnesota - Duluth

3:00 PM
The Effect of Surface Preparation and Coating Thickness of Fusion-bonded-epoxy on Cathodic Disbondment of Oil and Gas Pipelines: *Emad Behdad*[1]; [1]IAUN

3:20 PM
Development of Nonmetallic Insulation for High Pressure and High Temperature Subsea Performance: *Lindsey Goodman*[1]; Eric Caldwell[1]; [1]GATE, Inc.

3:40 PM
Thermal Aging Studies of Polymeric Materials in a Dormant Sub-system Environment: *Yunusa Balogun*[1]; Ryan Ubelhor[1]; [1]Naval Surface Warfare Center

4:00 PM
Measuring the Effect of Hazardous Environments on Brittle Polymeric Materials Using Fracture Toughness: *Carl Cady*[1]; Cheng Liu[1]; Manuel Lovato[1]; [1]Los Alamos National Laboratory

4:20 PM
Material Challenges in Assessing Long Term Environmental Durability of High Performance Concrete Using Standard Accelerated Tests: *Matthew Perricone*[1]; Keith Wagner[1]; Richard Lee[1]; [1]RJ Lee Group

Energy Storage IV: Materials, Systems and Applications Symposium — Li Batteries II

Program Organizers: Xingbo Liu, West Virginia University; Keeyoung Jung, Research Institute of Industrial Science and Technology (RIST); Terry Holesinger, Los Alamos National Laboratory; Yang-Tse Cheng, University of Kentucky; Karen Waldrip, Sandia National Laboratory

Tuesday PM
October 14, 2014

Room: Room 414
Location: David L. Lawrence Convention Center

Session Chair: Hui Zhang, West Virginia University

2:00 PM
First Principles Study of Lithium Ion Diffusion in Layered Li_xCoO_2: *Linmin Wu*[1]; Jing Zhang[1]; [1]Indiana University - Purdue University Indianapolis

2:20 PM
Scale Up of High Energy Cathode Material for Electric Vehicles: *Youngho Shin*[1]; Ozgenur Feridun[1]; Gregory Krumdick[1]; [1]Argonne National Laboratory

2:40 PM
Fully Encapsulated Li2S Cathodes for Next Generation Lithium-sulfur Batteries: *Lin Chen*[1]; Leon Shaw[1]; [1]Illinois Institute of Technology

3:00 PM
Synthesis and Electrochemical Characteristics of Graphene Oxide/Sulfur Nanocomposite as the Cathode in Lithium-sulfur Batteries: *Aaron Blake*[1]; Kevin Dorney[2]; Ioana Sizemore[2]; Hong Huang[1]; [1]Department of Mechanical & Materials Engineering Wright State University; [2]Department of Chemistry Wright State University

3:20 PM
Analytical Modeling of Electrochemical Charge/Discharge Behavior of $LiFePO_4$ Electrodes for Li-ion Batteries: *K. S. Ravi Chandran*[1]; Madhu Jagannathan[1]; [1]University of Utah

3:40 PM
Origin of Double Miscibility Gaps in LixFePO4 Revisited by First-principles Partition Function Approach: *Shun-Li Shang*[1]; Yi Wang[1]; Zi-Kui Liu[1]; [1]Pennsylvania State University

Failure Analysis and Prevention — Tools and Techniques

Program Organizers: Nicholas Cherolis, Rolls-Royce Corporation; Dustin Turnquist, ESI; Erhan Ulvan, Acuren Group Inc.

Tuesday PM
October 14, 2014
Room: Room 406
Location: David L. Lawrence Convention Center

Session Chairs: Tony Havics, pH2 LLC; Dave Christie, IMR Test Labs; Alexander Alexander, Engineering Systems Incorporated; Nicholas E. Cherolis, Rolls-Royce Corp

2:00 PM
Detection and Analysis of Sub-surface Corrosion by Computed X-ray Tomography (CT): *Jonathan Trenkle*[1]; Noah Budiansky[1]; Paul Verghese[1]; [1]Exponent, Inc.

2:20 PM
The Dawning of the Age of Electron Microscopic Fractography for Failure Analysis: *William Warke*[1]; [1]Retired

2:40 PM
The Use of Standards in Failure Analysis for Litigation or Similar Levels of Inquiry: *Andrew Havics*[1]; [1]pH2, LLC

3:00 PM
Uses and Capabilities of Computed Tomography in Forensic Engineering and Science: *Jonathan Jordan*[1]; *Amy Richards*[1]; [1]Engineering Systems Inc.

3:20 PM
Weathered Glass Failure: People Are Dying: *Mark Meshulam*[1]; [1]Mark Meshulam LLC

3:40 PM
Wöhler's Fatigue Analysis of Railcar Axles: An Article Presented Posthumously by the Author: Brad Barrett[1]; *Tim Jur*[1]; [1]Engineering Design & Testing Corp.

Fatigue of Materials III — Composites

Program Organizers: Tirumalai Srivatsan, The University of Akron; Raghavan Srinivasan, Wright State University; M. Ashraf Imam, George Washington University

Tuesday PM
October 14, 2014
Room: Room 336
Location: David L. Lawrence Convention Center

Session Chair: To Be Announced

2:00 PM
The Quasi-static, Cyclic Fatigue and Fracture Behavior of an Aluminum Alloy Metal Matrix Composite: *Kannan Manigandan*[1]; Tirumalai Srivatsan[1]; [1]The University of Akron

2:20 PM Invited
Effect of Co Content on Fatigue Lifetimes and Short Fatigue Crack Growth Behavior of WC-Co Cemented Carbides: *Hiroko Mikado*[1]; Sotomi Ishihara[2]; Noriyasu Oguma[1]; Kenichi Masuda[1]; Shingo Kawamura[3]; [1]University of Toyama; [2]Toyama National College of Technology; [3]YKK Corporation

3:00 PM
Numerical Analysis of Multistage Strength Degradation in Notched Concrete Beams under Sequential Loading: A Review: *Masaaki Nakano*[1]; Zihai Shi[1]; Yukari Nakamura[1]; Hiroshi Tanaka[1]; [1]Nippon Koei Co., Ltd.

3:20 PM Invited
Strain Energy Diagram for Characterizing Fatigue Behaviour in Structural Members and Machine Parts Subjected to Repeated Loads: *Zihai Shi*[1]; Yukari Nakamura[1]; Masaaki Nakano[1]; [1]Nippon Koei Co., Ltd.

Glass and Optical Materials — Glass Thin Films and Devices

Program Organizers: Juejun Hu, University of Delaware; David Musgraves, IRradiance Glass Inc.

Tuesday PM
October 14, 2014
Room: Room 302
Location: David L. Lawrence Convention Center

Session Chair: To Be Announced

2:00 PM Invited
Structure of Spin-coated vs, Thermally Deposited Chalcogenide Glass Thin Films: *Andriy Kovalskiy*[1]; Miroslav Vlcek[2]; Karel Palka[2]; Stanislav Slang[2]; Justin Cook[1]; Roman Golovchak[1]; Himanshu Jain[3]; [1]Austin Peay State University; [2]University of Pardubice; [3]Lehigh University

2:40 PM
Foldable and Biocompatible Sol-gel TiO2 Photonics: *Lan Li*[1]; Ping Zhang[2]; Hongtao Lin[1]; Sarah Geiger[1]; Aidan Zerdoum[1]; Yangchen Liu[1]; Nicholas Xiao[1]; Yi Zou[1]; Okechukwu Ogbuu[1]; Qingyang Du[1]; Xinqiao Jia[1]; Juejun Hu[1]; [1]University of Delaware; [2]Tianjin University

3:00 PM
High-Q Mid-infrared Chalcogenide Glass Resonators for Chemical Sensing: *Hongtao Lin*[1]; Yang Xiang[1]; Lan Li[1]; Kati McLaughlin[1]; Yangchen Liu[1]; Yeshwant Chillakuru[1]; Erick Koontz[2]; J. David Musgraves[3]; Kathleen Richardson[2]; Chaoying Ni[1]; Juejun Hu[1]; [1]University of Delaware; [2]University of Central Florida; [3]IRradiance Glass Inc.

3:20 PM
Low-stress Silicon Nitride Platform for Broadband Mid-infrared Microphotonics: *Pao Lin*[1]; Vivek Singh[1]; Juejun Hu[2]; Dawn Tan[3]; Lionel Kimerling[1]; Anuradha Agarwal[1]; [1]MIT; [2]University of Delaware ; [3]Singapore University of Technology and Design

3:40 PM
Effect of Oxygen Deficiency on Structural and Optical Properties of Sputter Deposited Multi-component Tellurite Glass Films: *Okechukwu Ogbuu*[1]; Qingyang Du[1]; Hongtao Lin[1]; Lan Li[1]; Yi Zou[1]; Sylvain Danto[2]; Kathleen Richardson[2]; Juejun Hu[1]; [1]University of Delaware; [2]University of Central Florida

Green Technologies for Materials Manufacturing and Processing VI — Green Materials Processing II

Program Organizers: Tatsuki Ohji, National Institute of Advanced Industrial Science and Technology (AIST); Mrityunjay Singh, Ohio Aerospace Institute, NASA Glenn Research Center; Richard Sisson, Worcester Polytechnic Institute, Center for Heat Treating Excellence; Marsha Bischel, Armstrong World Industries, Inc.; Makio Naito, Osaka University; Allen Apblett, Oklahoma State University

Tuesday PM
October 14, 2014

Room: Room 311
Location: David L. Lawrence Convention Center

Session Chair: You Zhou, National Institute of Advanced Industrial Science and Technology (AIST)

2:00 PM Invited
Particle Size Determining Factor in Powder Preparation by Pulsed Wire Discharge: *H. Sueamtsu*[1]; Y. Sato[1]; Y. Tokoi[2]; R. Sarathi[3]; T. Kikuchi[1]; T. Sasaki[1]; T. Suzuki[1]; T. Nakayama[1]; K. Niihara[1]; [1]Nagaoka University of Technololgy; [2]Nagaoka National College of Technology; [3]Indian Institute of Technology Madras

2:20 PM
Highly Porous Ceramic Thermal Insulators Prepared by Gelation Freezing Route: *Manabu Fukushima*[1]; Tatsuki Ohji[1]; Yu-ichi Yoshizawa[1]; [1]National Institute of Advanced Industrial Science and Technology (AIST)

2:40 PM
Innovations and Novel Techniques Used to Manufacture Low Cost Environmentally Friendly Porous Ceramics: *Jonathan Lancien*[1]; Siobhan Matthews[1]; Emma Branigan[1]; Sinead Clarke[1]; [1]SCF Processing Ltd

3:00 PM
Bio-inspired Synthesis of Al_2O_3/Epoxy Composite and Its Mechanical Properties: *Younghee Kim*[1]; Tatsuki Ohji[2]; Dong Geun Shin[1]; Bo Yeon Kim[1]; Yoon Ju Lee[1]; Woo Teck Kwon[1]; Soo Ryong Kim[1]; [1]Korea Institute of Ceramic Engineering and Technology; [2]National Institute of Advanced Industrial Science and Technology

3:20 PM
Reduction Mechanism of Rare Earth Bayan Obo Complex Iron by Carbon Monoxide: *Xue-feng She*[1]; Jing-song Wang[1]; Yu-xiao Zhao[1]; Qing-guo Xue[1]; [1]University of Science and Technology Beijing

Innovation in Processing of Light Metals for Transportation Industries: A Symposium in Honor of C. Ravi Ravindran — Microstructural Modification

Program Organizers: Lukas Bichler, University of British Columbia; B S Murty, Indian Institute of Technology Madras

Tuesday PM
October 14, 2014

Room: Room 333
Location: David L. Lawrence Convention Center

Session Chair: Glenn Byczynski, Nemak Canada

2:00 PM Keynote
From "Grain Refiners" to "Aluminium Based In-situ Composites" in Ternary Al-Ti-B System: *Madhusudan Chakraborty*[1]; [1]IIT Bhubaneswar

2:40 PM Invited
Synchrotron X-ray Radiography of Equiaxed Dendrites in Grain Refined Alloys and the Automatic Extraction of the Nucleation and Growth Rate: *Enzo Liotti*[1]; Andrew Lui[1]; Sundaram Kumar[1]; Keyna O'Reilly[1]; Patrick Grant[1]; [1]University of Oxford

3:00 PM Invited
Influence of Cast Microstructure on the Fe Bearing Intermetallic Formation during Homogenisation of a 6063 Al Alloy: *Kumar Sundaram*[1]; Akash Verma[1]; Patrick Grant[1]; Keyna O'Reilly[1]; [1]University of Oxford

Interfaces, Grain Boundaries, and Surfaces from Atomistic and Macroscopic Approaches: Fundamental and Engineering Issues — Atomistic Simulations of Interfaces

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

Tuesday PM
October 14, 2014

Room: Room 404
Location: David L. Lawrence Convention Center

Session Chairs: Elizabeth Dickey, North Carolina State University; Christina Scheu, University of Munich

2:00 PM Keynote
Wetting Instability in Nanowire Geometries: Timofey Frolov[1]; W. Craig Carter[2]; *Mark Asta*[1]; [1]University of California, Berkeley; [2]Massachusetts Institute of Technology

2:40 PM Invited
Structure and Properties of Un-doped and Y-doped ε7 Boundaries in Al_2O_3: *Arthur Heuer*[1]; H. Guhl[2]; Mike Finnis[2]; W.M.C. Foukes[2]; [1]Case Western Reserve University; [2]Imperial College London

3:00 PM
Energetics and Length Scales of Point Defect and Element Segregation to Grain Boundaries in Iron: *Mark Tschopp*[1]; Kiran Solanki[2]; Fei Gao[3]; [1]Army Research Laboratory; [2]Arizona State University; [3]PNNL

3:20 PM Keynote
Thermodynamics of Phase Transformations in Solid-solid Interfaces: T. Frolov[1]; *Y. Mishin*[2]; [1]University of California Berkeley; [2]George Mason University

International Symposium on Defects, Transport, and Related Phenomena — Defect and Transport at Interfaces

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

Tuesday PM
October 14, 2014

Room: Room 403
Location: David L. Lawrence Convention Center

Session Chair: Tatsuya Kawada, Tohoku University

2:00 PM Invited
Elastic Strain and Dislocations in Oxide Thin Films: Hand-in-hand or Counter in Oxide Ion Conduction?: *Bilge Yildiz*[1]; Lixin Sun[1]; Dario Marrocchelli[1]; [1]Massachusetts Institute of Technology

2:40 PM Invited
The Role of the Local Atomic Order and Boundary Effects on the Electrical Transport of Ceria: *Giuliano Gregori*[1]; Chiara Aliotta[2]; Francesco Giannici[2]; Marcus Goebel[1]; Antonino Martorana[2]; Joachim Maier[1]; [1]Max Planck Institute for Solid State Research; [2]Università di Palermo

3:20 PM Invited
Influence of Mechanical Strain on Chemical Potential of Cathode Materials in Lithim ion Batteries: *Koji Amezawa*[1]; Kita Funayama[1]; Takashi Nakamura[1]; Naoki Kuwata[1]; Tatsuya Kawada[1]; Junichi Kawamura[1]; [1]Tohoku University

Joining of Advanced and Specialty Materials (JASM XVI) — Weld Overlaying

Program Organizers: Michael Halbig, NASA Glenn Research Center; Boian Alexandrov, The Ohio State University; Akio Hirose, Osaka University; Anming Hu, University of Tennessee; Peng He, Harbin Insitute of Technology; Darren Barborak, Aquilex WSI; Bingtao Li, AZZ WSI; Xinjin Cao, Institute for Aerospace Research

Tuesday PM
October 14, 2014

Room: Room 330
Location: David L. Lawrence Convention Center

Session Chairs: Darren Barborak, AZZ WSI LLC; Bingtao Li, AZZ WSI LLC

2:00 PM
Weld Buildup and Overlay to Restore Structural Integrity of Pressure Retaining Components: *Darren Barborak*[1]; [1]AZZ|WSI

2:20 PM
Application of Cold Metal Transfer Process for Dissimilar Structural Weld Overlays on 304L Stainless Steel: *Thomas Daniels*[1]; Boian Alexandrov[1]; [1]Ohio State University

2:40 PM
Evaluation of Solidification Cracking Susceptibility in High Chromium, Ni-base Filler Metals Using the Cast Pin Tear Test: *Eric Przybylowicz*[1]; [1]The Ohio State University

3:00 PM
Investigation of Mechanical Properties and Microstructure of Weld Overlay Cladding of Low Alloy Steel with Austenitic Stainless Steel and Comparison of Hydrogen Embrittlement on Jointing: *Emad Behdad*[1]; Omid Ghani[1]; [1]IAUN

3:20 PM
The Corrosion Fatigue Cracking Behavior of Alloy 622 Weld Overlay and Coextruded Claddings: Andrew Stockdale[1]; *John DuPont*[1]; [1]Lehigh University

3:40 PM
Evaluation of a Boiler Weld Overlay Produced by Cold Metal Transfer (CMT) Process: *Bingtao Li*[1]; Tyler Ratchford[1]; Darren Barborak[1]; [1]AZZ WSI

4:00 PM
Cold Metal Transfer Weld Overlays on Carbon Steel in Nuclear Power Repair: *Nate McVicker*[1]; Boian Alexandrov[1]; [1]The Ohio State University

Materials Development for Nuclear Applications and Extreme Environments — Mechanical Behavior II

Program Organizers: Raghunath Kanakala, University of Idaho; Ram Devanathan, Pacific Northwest National Laboratory; Josef Matyas, Pacific Northwest National Laboratory; Kevin Fox, Savannah River National Laboratory; Elizabeth Hoffman, Savannah River National Laboratory; Raul Rebak, GE Global Research; Aladar Csontos, U.S. Nuclear Regulatory Commission; Kumar Sridharan, University of Wisconsin; Bill Lee, Imperial College London

Tuesday PM
October 14, 2014

Room: Room 415
Location: David L. Lawrence Convention Center

Session Chair: Kumar Sridharan, University of Wisconsin - Madison

2:00 PM Invited
Self-healing Materials and Damage from Shock Induced Nanobubble Collapse: Reactive Molecular Dynamics Simulations: *Priya Vashishta*[1]; Adarsh Shekhar[1]; Ken-ichi Nomura[1]; Rajiv Kalia[1]; Aiichiro Nakano[1]; Kohei Shimamura[1]; Fuyuki Shimojo[1]; [1]University of Southern California

2:40 PM
Effects of Laser Shock Peening on SCC Behavior of Alloy 600 in Tetrathionate Solution and High Temperature Pure Water: *Abhishek Telang*[1]; Vijay Vasudevan[1]; [1]University of Cincinnati

3:00 PM Invited
Characterizations of Nanometric Stacking Disordered SiC and the Consolidation without Additives: *Manshi Ohyanagi*[1]; Takahito Imai[1]; Zuhair Munir[2]; [1]Ryukoku University; [2]University of California, Davis

3:40 PM
Nanoscale Stable Precipitation-strengthened Steels for Nuclear Reactor Applications: *Clarissa Yablinsky*[1]; Osman Anderoglu[1]; Semyon Vaynman[2]; Morris Fine[2]; Kristin Tippey[3]; John Speer[3]; Kip Findley[3]; Omer Dogan[4]; Paul Jablonski[4]; Stuart Malloy[1]; Amy Clarke[1]; Kester Clarke[1]; [1]Los Alamos National Laboratory; [2]Northwestern University; [3]Colorado School of Mines; [4]National Energy Technology Laboratory

Materials Issues in Nuclear Waste Management in the 21st Century — Research on Radioactive Waste Forms for Safe Disposal II

Program Organizers: Josef Matyas, Pacific Northwest National Laboratory; Stéphane Gin, CEA; Kevin Fox, Savannah River National Laboratory; Elizabeth Hoffman, Savannah River National Laboratory; Dawn Janney, Idaho National Laboratory; Ramana Reddy, The University of Alabama; Ram Devanathan, Pacific Northwest National Laboratory; Raghunath Kanakala, University of Idaho

Tuesday PM
October 14, 2014

Room: Room 413
Location: David L. Lawrence Convention Center

Session Chairs: Josef Matyas, Pacific Northwest National Laboratory; Elizabeth Hoffman, Savannah River National Laboratory

2:00 PM
Sintering of Monazites: New Insights from an In Situ HT-ESEM Approach: *Nicolas Clavier*[1]; Yulia Arinicheva[2]; Andrey Bukaemskiy[2]; Renaud Podor[1]; Stefan Neumeier[2]; Nicolas Dacheux[1]; [1]ICSM; [2]Institute for Energy and Climate Research

2:20 PM
Experiments and Simulations of Microstructural Evolution in Hollandites: *Priyatham Tumurugoti*[1]; Eric Payton[1]; S K Sundaram[1]; [1]Kazuo Inamori School of Engineering, Alfred University

2:40 PM
Defect Studies of Cerium Substituted Zirconolite ($CaZrTi_2O_7$) and Pyrochlore ($Nd_2Ti_2O_7$) Phases: *Braeden Clark*[1]; S Sundaram[1]; Alastair Cormack[1]; [1]Alfred University

3:00 PM
Sodalite as a Vehicle to Increase Re Retention in Waste Glass Simulant: *Steven Luksic*[1]; Dong-Sang Kim[1]; Brian Riley[1]; Kent Parker[1]; Pavel Hrma[1]; [1]Battelle

3:20 PM
Rhenium Incorporation during Melting of Sulfate-containing Low-activity Waste Glass Feeds: *Tongan Jin*[1]; Dongsang Kim[1]; Michael Schweiger[1]; [1]Pacific Northwest National Laboratory

3:40 PM
Scoping Melting Studies of High Alumina Waste Glass Compositions: *Jared Kroll*[1]; Michael Schweiger[1]; John Vienna[1]; [1]Pacific Northwest National Laboratory

Materials Science of Additive Manufacturing — Modeling and Simulation II

Program Organizers: Panagiotis (Pan) Michaleris, Penn State University; Brett Conner, Youngstown State University; Michael Blaszkiewicz, SABIC Innovative Plastics; Wayne King, LLNL; Edward Reutzel, ARL Penn State; Todd Palmer, Penn State; Crystal Morrison, RJ Lee Group; Guha Manogharan, YSU

Tuesday PM
October 14, 2014

Room: Room 328
Location: David L. Lawrence Convention Center

Session Chair: Wayne King, LLNL

2:00 PM Invited
Continuum Modeling and Simulation for Selective Laser Melting Metal Powder Additive Manufacturing: *Robert Ferencz*[1]; Neil Hodge[1]; [1]Lawrence Livermore National Laboratory

2:40 PM
A Line Heat Input Model for Additive Manufacturing: *Jeff Irwin*[1]; Pan Michaleris[2]; [1]The Pennsylvania State University; [2]Pan Computing LLC

3:00 PM
Design-optimization of Additive Manufactured Components with Variable-density Cubic Cellular Structure: *Pu Zhang*[1]; Emre Biyikli[1]; Jakub Toman[1]; Yiqi Yu[1]; Markus Chmielus[1]; Albert To[1]; [1]University of Pittsburgh

3:20 PM
Additive Manufacturing and Overlays of Nickel Alloys by Laser Hot Wire Cladding: *Shenjia Zhang*[1]; Paul Denney[1]; James McGuffin-Cawley[2]; Darren Barborak[3]; Badri Narayanan[1]; [1]Lincoln Electric; [2]Case Western Reserve University; [3]Aquilex WSI

3:40 PM
The Engineering of Powder Blends for Selective Laser Melting: *Ryan Chou*[1]; Mathieu Brochu[1]; [1]McGill University

Multifunctional Oxides — Advanced Characterization and Theory

Program Organizers: Xiaoqing Pan, University of Michigan; Chonglin Chen, University of Texas at San Antonio; Quanxi Jia, Los Alamos National Laboratory; Judith Driscoll, University of Cambridge

Tuesday PM
October 14, 2014

Room: Room 303
Location: David L. Lawrence Convention Center

Session Chairs: Chonglin Chen, University of Texas at San Antonio; Zhongchang Wang, Tohoku University

2:00 PM
Defect Analysis in $La_{0.7}Sr_{0.3}MnO_3$ Epitaxial Thin Films by Electron Channeling Contrast Imaging (ECCI): *Miaolei Yan*[1]; Marc DeGraef[1]; Yoosuf Picard[1]; Paul Salvador[1]; [1]Carnegie Mellon University

2:20 PM Invited
Enhanced Resolution Current Mapping for Resistive Media and Photovoltaics: James Bosse[1]; Yasemin Kutes[1]; Alejandro Lluberes[1]; Alexandra Merkouriou[1]; *Bryan Huey*[1]; [1]University of Connecticut MS&E

2:40 PM
Characterization of ZnO/Au/ZnO Composite Films Using UHV E-beam Evaporation: Its Electrical and Optical Properties for the Application of Flexible Photovoltaics: *Po-Shun Huang*[1]; Jung-Kun Lee[1]; [1]University of Pittsburgh

3:00 PM Invited
Polymorphism of Dislocation Core Structures at the Atomic Scale: *Zhongchang Wang*[1]; Mitsuhiro Saito[1]; Keith McKenna[2]; Yuichi Ikuhara[1]; [1]Advanced Institute for Materials Research, Tohoku University; [2]Department of Physics, University of York

3:20 PM Invited
Versatile Abilities of Lattice Instabilities: New Design Strategies for Emergent Ferroics: *James Rondinelli*[1]; Gaoyang Gou[2]; [1]Drexel University; [2]Xi' an Jiaotong University

3:40 PM
Vertical Interface Engineering in Oxide Thin Films: *Hao Yang*[1]; Haiyan Wang[2]; [1]Soochow University; [2]Texas A&M University

Nanotechnology for Energy, Environment, Electronics, and Industry — Healthcare & Electronics I

Program Organizers: Gary Pickrell, Virginia Tech; Navin Manjooran, Siemens AG

Tuesday PM
October 14, 2014
Room: Room 320
Location: David L. Lawrence Convention Center

Session Chairs: Gary Pickrell, Virginia Tech; Navin Manjooran, Siemens AG; Parthiban Rajasekaran, UCF

2:00 PM Keynote
Transition Metals Embedded Biocompatible Nanocomposites for Combating Antimicrobial Resistance: *Parthiban Rajasekaran*[1]; Swadeshmukul Santra[1]; [1]University of Central Florida

2:20 PM
Mid-Infrared Opto-nanofluidics for Label-free On-chip Sensing: *Pao Lin*[1]; Sen Kwok[2]; Hao-Yu Lin[2]; Vivek Singh[1]; Dawn Tan[3]; Lionel Kimerling[1]; George Whitesides[2]; Anu Agarwal[1]; [1]MIT; [2]Harvard University; [3]Singapore University of Technology and Design

2:40 PM
Carbon Nanotube-based Impedimetric Biosensors for Bone Marker Detection: *Mitali Patil*[1]; Madhumati Ramanathan[1]; Vesselin Shanov[2]; Prashant Kumta[1]; [1]University of Pittsburgh; [2]University of Cincinnati

3:00 PM
Photothermal Effect of Fe_3O_4 Nanoparticles Via Near-infrared Laser and Penetration Depth of Simulated Body Tissue for Cancer Treatment: *Yu Zhang*[1]; Andrew Dunn[1]; Sadat Md Ehsan[1]; David Mast[1]; Donglu Shi[1]; [1]University of Cincinnati

3:20 PM
High Performance Hybrid Conducting Nanocomposite of Graphene/ Carbon Nanofibres for Engineering Applications: *Balasubramanian Kandasubramanian*[1]; [1]DIAT(DU), Ministry of Defence

3:40 PM
Migration of Nano-components of Commercially Available Nano-enabled Food Contact Materials: *Susana Addo Ntim*[1]; Treye Thomas[2]; Timothy Begley[1]; Gregory Noonan[1]; [1]US-FDA; [2]US CPSC

Next Generation Biomaterials — Session IV

Program Organizers: Roger Narayan, UNC/NCSU Joint Department of Biomedical Engineering; Diego Mantovani, Laval University; Raman Singh, Monash University

Tuesday PM
October 14, 2014
Room: Room 315
Location: David L. Lawrence Convention Center

Session Chairs: Rajarshi Banerjee, University of North Texas; Roy Bloebaum, Department of Veterans Affairs

2:00 PM Invited
No Excuses for Mechanical Loosening in TJR in the 21st Century: *Roy Bloebaum*[1]; Ornusa Chalayon[2]; Richard Tyler Epperson[2]; Brooke Kawaguchi[2]; Raymond Olsen[3]; Aaron Hofmann[4]; [1]George E. Wahlen Department of Veterans Affairs/University of Utah, Department of Orthopaedics; [2]University of Utah, Department of Orthopaedics; [3]IMDS Discovery Research; [4]Hofmann Arthritis Institute

2:40 PM Invited
Biomaterials for Recruitment and Differentiation of Endogenous Cells: *Steven Little*[1]; [1]University of Pittsburgh

3:00 PM Invited
Surface Engineering Approaches for Enhancing the Wear Resistance of Titanium Alloys For Prosthesis Implantation: Pavani Kami[1]; Sanket Dahotre[1]; Tushar Borkar[1]; Soumya Nag[1]; Thomas Scharf[1]; Narendra Dahotre[1]; *Rajarshi Banerjee*[1]; [1]University of North Texas

3:20 PM Invited
Nanoscale Structure and Properties of Biomaterials: *Federico Rosei*[1]; [1]INRS Energy

3:40 PM
Development of Novel Magnesium Phosphate Cements for Orthopedic Applications: *Niloufar Rostami*[1]; Huan Zhou[1]; Sarit Bhaduri[1]; [1]The University of Toledo

Pb-free Solders and Advanced Interconnecting Materials — Session I

Program Organizers: Albert T. Wu, National Central University; Carol Handwerker, Purdue University

Tuesday PM
October 14, 2014
Room: Room 312
Location: David L. Lawrence Convention Center

Session Chairs: Carol Handwerker, Purdue University; Albert T Wu, National Central University

2:00 PM Invited
Towards the Materials Genome of Pb-free Interconnects: Contributions from Phase Field Modeling: *Raymundo Arroyave*[1]; Min Soo Park[1]; Sean Gibbons[1]; [1]Texas A & M University

2:40 PM
Influence of Microstructure on Current-enhanced Diffusion and Intermetallic Growth in Pb-free Solder Joints: *John Morris*[1]; Xioranny Linares[1]; Christopher Kinney[1]; Kyu-Oh Lee[1]; [1]University of California Berkeley

3:00 PM
TLPS Joints for Advanced High Temperature Interconnection: *Patrick McCluskey*[1]; Hannes Greve[1]; [1]University of Maryland

3:20 PM
Effects of Alloying Elements and Interfacial Reactions on Thermal and Mechanical Performance of High-Bi Solders: *Sandeep Mallampati*[1]; Harry Schoeller[2]; Junghyun Cho[1]; [1]Binghamton University; [2]Universal Instruments Corp.

3:40 PM
Effect of Thermal Aging on Microstructure and Mechanical Property of Sn-Bi-Ag and Sn-Bi-In Solder Joints on Cu Substrate: *Xu Chen*[1]; Feng Xue[1]; Jian Zhou[1]; Yao Yao[1]; [1]Southeast University

Perspectives for Emerging Materials Professionals — Career Perspectives for Emerging Materials Professionals: Career Opportunities and Experiences in Materials Science and Engineering II

Program Organizers: Mark Tschopp, Army Research Laboratory; Khinlay Maung, ATK

Tuesday PM
October 14, 2014
Room: Room 321
Location: David L. Lawrence Convention Center

Session Chairs: Mark Tschopp, U.S. Army Research Laboratory; Khinlay Maung, ATK Space Systems

2:00 PM Keynote
A Voyage of Discovery: Career Considerations for Emerging Materials Professionals: *Sunniva Collins*[1]; [1]CWRU

2:40 PM Invited
Lessons from the First Workshop on the Future of Materials Science and Materials Engineering Education: *Chandralekha Singh*[1]; [1]University of Pittsburgh

3:00 PM Invited
Customer Service Skills….Yes, for You: *Jacqueline Earle*[1]; [1]Caterpillar Inc

3:30 PM Invited
Views from a Materials Engineer on the Dance of Legislation -or- How I Found Out What Really Happen Inside the Beltway: *Edward Herderick*[1]; [1]Rapid prototype + manufacturing (rp+m)

Phase Stability, Diffusion Kinetics, and their Applications (PSDK-IX) — Session Honoring Professor Zi-Kui Liu, Recipient of ASM's 2014 J. Willard Gibbs Phase Equilibria Award II

Program Organizers: Dongwon Shin, Oak Ridge National Laboratory; In-Ho Jung, McGill University; James Saal, Northwestern University; Raymundo Arroyave, Texas A & M University

Tuesday PM
October 14, 2014
Room: Room 402
Location: David L. Lawrence Convention Center

Session Chairs: Raymundo Arróyave, Texas A&M University; Jörg Neugebauer, Max-Planck-Institut Für Eisenforschung

2:00 PM Invited
Materials Genomics: From CALPHAD to Flight: *Greg Olson*[1]; [1]Northwestern University

2:40 PM Invited
Chemical Diffusivities and Their Hidden Concentration Units: *John Morral*[1]; [1]The Ohio State University

3:20 PM Invited
Thermodynamic Modeling for Lithium-ion Batteries: *Hans Juergen Seifert*[1]; Maren Lepple[1]; Damian Cupid[1]; Peter Franke[1]; [1]Karlsruhe Institute of Technology (KIT)

4:00 PM Invited
Thermodynamics of Rare Earth Silicates: *Nathan Jacobson*[1]; Gustavo Costa[1]; [1]NASA Glenn Research Center

4:40 PM Invited
Use of Classical and Computational Thermodynamics in Light Alloy Development: *Alan Luo*[1]; [1]The Ohio State University

Phase Transformations in Ceramics: The Present and the Future — Advances in Methodology

Program Organizers: Ivar Reimanis, Colorado School of Mines; Waltraud Kriven, University of Illinois at Urbana-Champaign; Pankaj Sarin, Oklahoma State University in Tulsa

Tuesday PM
October 14, 2014
Room: Room 301
Location: David L. Lawrence Convention Center

Session Chair: Waltraud Kriven, University of Illinois at Urbana-Champaign

2:00 PM
Phase Transformations in Ceramics: The Present and the Future: *Ivar Reimanis*[1]; Waltraud Kriven[2]; Pankaj Sarin[3]; [1]Colorado School of Mines; [2]University of Illinois; [3]Oklahoma State University

2:20 PM Invited
Calorimetric Studies of Phase Transitions above 1500 °C: *Alexandra Navrotsky*[1]; Sergey Ushakov[1]; [1]University of California, Davis

3:00 PM
Surface Enthalpy and Thermodynamic Stability of Nb-doped-TiO_2 Obtained by Hydrothermal Synthesis: *Andre Silva*[1]; Dachamir Hotza[2]; Ricardo Castro[1]; [1]University of California, Davis; [2]Federal University of Santa Catarina

3:20 PM
Simplifying the Characterization of Glass Transition and Softening Points of Clay Composites Via a Horizontal Pushrod Dilatometer: Jarett Nickerson[1]; Adam Harris[1]; *Matthew Ouellette*[1]; [1]C-Therm Technologies Ltd.

3:40 PM Invited
Phase Transformations in Fergusonite Type Rare Earth Tantalates: *Robert Hughes*[1]; Zlatomir Apostolov[1]; Pankaj Sarin[2]; Waltraud Kriven[2]; [1]UIUC; [2]University of Illinois at Urbana-Champaign

4:20 PM Invited
In-situ Measurements of Electric Field Assisted Phase Transformation in Yttria Stabilized Zirconia: *Jean-Marie Lebrun*[1]; Timothy Morissey[1]; John Francis[1]; Kevin Seymour[2]; Waltraud Kriven[2]; Rishi Raj[1]; [1]University of Colorado Boulder; [2]University of Illinois at Urbana-Champaign

4:40 PM Invited
The New X-ray Powder Diffraction Facility at NSLS-II: *Eric Dooryhee*[1]; S Ghose[1]; [1]Brookhaven National Laboratory

Processes, Applications, and Performance of Materials in Additive Manufacturing — Electron Beam Deposition Process

Program Organizers: Andrzej Wojcieszynski, ATI Powder Metals; Ulf Ackelid, Arcam AB; Ian Harris, Edison Welding Institute; Ola Harrysson, North Carolina State University; Sudarsanam Babu, The Ohio State University; Rodney Boyer, Boeing - retired

Tuesday PM
October 14, 2014

Room: Room 327
Location: David L. Lawrence Convention Center

Session Chairs: Ulf Ackelid, Arcam AB; Andrzej Wojcieszynski, ATI Powder Metals

2:00 PM Invited
Processing Science Related to the Electron Beam Melting Additive Manufacturing Process: *Ryan DeHoff*[1]; Michael Kirka; Kinga Unocic[1]; William Sames[2]; Sudarsanam Babu[3]; [1]Oak Ridge National Laboratory; [2]Texas A&M University; [3]The University of Tennessee, Knoxville

2:40 PM Invited
Transient Melt Pool Response in Wire Feed and Powder Bed Electron Beam Additive Manufacturing: *Jason Fox*[1]; Jack Beuth[1]; Karen Taminger[2]; Robert Hafley[2]; [1]Carnegie Mellon University; [2]NASA Langley

3:20 PM
Process Temperatures in Electron Beam Additive Manufacturing: Modeling and Measurements: Steven Price[1]; Bo Cheng[1]; James Lydon[2]; Kenneth Copper[2]; *Kevin Chou*[1]; [1]University of Alabama; [2]Marshall Space Flight Center

3:40 PM
Real Time Defect Detection on New Generation Electron Beam Manufacturing System: *Ryan Dehoff*[1]; Francisco Medina[2]; Ben George[3]; Vincent Paquit[1]; [1]ORNL; [2]Arcam; [3]USAF

4:00 PM
Microstructural Analysis in Electron Beam Additive Manufacturing: Speed Function Effects: *Xibing Gong*[1]; James Lydon[2]; Kenneth Cooper[2]; Kevin Chou[1]; [1]University of Alabama; [2]Marshall Space Flight Center

4:20 PM
Fracture and Fatigue Crack Growth Behavior of Ti-6Al-4V Made by Electron Beam Melting – Influence of Process-Induced Defects: *Mohsen Seifi*[1]; Matt Dahar[1]; John Lewandowski[1]; [1]Case Western Reserve University

4:40 PM
Process Mapping of Aluminum Evaporation in EBM Additive Manufacturing of Ti-6Al-4V: *Sneha Narra*[1]; Jack Beuth[1]; [1]Carnegie Mellon University

Rustum Roy Symposium on Processing and Performance of Materials using Microwaves, Electric and Magnetic Fields, Ultrasound, Lasers, and Mechanical Work — Session IV

Program Organizers: Morsi Mahmoud , Karlsruhe Institute of Technology (KIT) & City for Scientific Research and Technological Applications (SRTA City); Dinesh Agrawal, Pennsylvania State University; Guido Link, Karlsruhe Institute of Technology; Motoyasu Sato, Chubu University; Rishi Raj, University of Colorado

Tuesday PM
October 14, 2014

Room: Room 317
Location: David L. Lawrence Convention Center

Session Chair: Motoyasu Sato , Chubu University

2:00 PM Invited
Superfast Microwave Sintering of Oxide Ceramics: *Kirill Rybakov*[1]; Yury Bykov[2]; A. G. Eremeev[2]; S. V. Egorov[2]; A. A. Sorokin[3]; V. E. Semenov[2]; [1]Lobachevsky State University of Nizhny Novgorod; Institute of Applied Physics, Russian Academy of Sciences; [2]Institute of Applied Physics, Russian Academy of Sciences; [3] Institute of Applied Physics, Russian Academy of Sciences

2:40 PM
The Role of Ceramics on the Microwave Sintering of Copper Metal Powder Compacts: *Morsi Mahmoud*[1]; Guido Link[2]; John Jelonnek[2]; Manfred Thumm[2]; [1]Karlsruhe Institute of Technology (KIT) & City for Scientific Research and Technological Applications (SRTA City); [2]Karlsruhe Institute of Technology (KIT)

3:00 PM
Role of Microwaves in Heterogeneous Catalytic Systems: *Satoshi Horikoshi*[1]; [1]Sophia University

Sintering and Related Powder Processing Science and Technologies — Sintering I

Program Organizers: Ricardo H. R. Castro, University of California at Davis; Eugene Olevsky, San Diego State University; Olivia Graeve, University of California, San Diego; Umberto Anselmi-Tamburini, University of Pavia; Zak Fang, University of Utah ; Troy Holland, Colorado State University

Tuesday PM
October 14, 2014

Room: Room 326
Location: David L. Lawrence Convention Center

Session Chairs: Olivia Graeve, University of California, San Diego; Troy Holland, Colorado State University

2:00 PM Invited
Time-temperature-transformation Diagrams for Grain Boundary Complexions and Their Influence on Processing: *Gregory Rohrer*[1]; Stephanie Bojarski[1]; Madeleine Kelly[1]; [1]Carnegie Mellon University

2:40 PM Invited
Coarsening of Zirconia Powders: Effects of Nickel Ions: *Ivar Reimanis*[1]; Amy Morrissey[1]; [1]Colorado School of Mines

3:20 PM Invited
Critical Effect of Oxygen Stoichiometry in Doped Ceria Sintering Mechanisms: *Vincenzo Esposito*[1]; [1]Technical University of Denmark, DTU Energy Conversion, Risø Campus

Structural Intermetallics: Alloy Design, Processing, and Applications — Design Approaches for Structural Intermetallics

Program Organizers: David Forrest, Department of Energy; John Perepezko, University of Wisconsin-Madison; Bruce Pint, Oak Ridge National Laboratory

Tuesday PM
October 14, 2014

Room: Room 335
Location: David L. Lawrence Convention Center

Session Chair: Bruce Pint, Oak Ridge National Laboratory

2:00 PM Invited
Non-traditional Approach for 3rd Generation AHSS Development: *Daniel Branagan*[1]; Andrew Frerichs[1]; Brian Meacham[1]; Longzhou Ma[1]; Igor Yakubtsov[1]; Sheng Cheng[1]; Alla Sergueeva[1]; [1]The NanoSteel Company

2:40 PM Invited
Overview of the Microstructures and Mechanical Properties of Intermetallic-based FeNiMnAl Alloys: *I. Baker*[1]; [1]Dartmouth College

3:20 PM
The Role of Cr Addition on Alleviating the Environmental Embrittlement in $Fe_{30}Ni_{20}Mn_{35}Al_{15}$: *Fanling Meng*[1]; Samuel Bauer[1]; Ian Baker[1]; Yifeng Liao[2]; [1]Dartmouth College; [2]Northwestern University

3:40 PM Invited
High Temperature Oxidation of Ni- and Fe-base Aluminides: Impact of Alloy Thermal Expansion and Phase Transformations: *Bruce Pint*[1]; [1]Oak Ridge National Laboratory

4:20 PM Invited
Protection Mechanism of the Halogen Effect during the Oxidation of TiAl-Alloys: *Hans-Eberhard Zschau*[1]; Michael Schütze[1]; Alexander Donchev[1]; Simone Friedle[1]; Raluca Pflumm[1]; Mathias Galetz[1]; [1]DECHEMA - Forschungsinstitut

5:00 PM
Site Preference and Energetics of Alloying Elements in TiAl: A First-principles Study: *Fang Cheng*[1]; Shun-Li Shang[2]; Yong-Feng Liang[1]; Jun-Pin Lin[1]; Zi-Kui Liu[1]; [1]University of Science and Technology Beijing; [2]Pennsylvania State University

Surface Properties of Biomaterials V — Biomedical Devices and Drug Delivery

Program Organizers: Susmita Bose, Washington State University; Amit Bandyopadhyay, Washington State University; Mukesh Kumar, Biomet Inc

Tuesday PM
October 14, 2014

Room: Room 310
Location: David L. Lawrence Convention Center

Session Chair: Amit Bandyopadhyay, Washington State University

2:00 PM
Drug Delivery from TiO_2 Nanotube on Ti Substrate: Solaiman Tarafder[1]; Amit Bandyopadhyay[1]; *Susmita Bose*[1]; [1]Washington State University

2:20 PM
In Situ Titanium Nitride Coating on Titanium: Julie Soderlind[1]; *Himanshu Sahasrabudhe*[1]; Amit Bandyopadhyay[1]; [1]Washington State University

2:40 PM Invited
Recent Developments in Polyelectrolyte Capsules for Targeted Drug Delivery: R Sreeranjini[1]; E Rajasegaran[1]; *Ashok Raichur*[1]; [1]Indian Institute of Science

3:20 PM Invited
Nano-structuring and Chemical Functionalization of Biomaterial Surfaces: Anil Karumuri[1]; LvMeng He[1]; Hema Vijwani[1]; *Sharmila Mukhopadhyay*[1]; [1]Wright State University

4:00 PM
Bioresorbable Iron-manganese for Implantation: The Effect of Microstructure and Surface Morphology on Degradation Behavior: *Michael Heiden*[1]; Andrew Kustas[1]; Kevin Chaput[1]; David Johnson[1]; Eric Nauman[2]; Lia Stanciu[3]; [1]School of Materials Engineering, Purdue University; [2]Weldon School of Biomedical Engineering, Purdue University ; [3]School of Materials Engineering, Purdue University

Surface Protection for Enhanced Materials Performance: Science, Technology, and Application — Multifunctional and Tribological Coatings

Program Organizers: Dongming Zhu, NASA Glenn Research Center; Rodney Trice, Purdue University; Yutaka Kagawa, The University of Tokyo; Daniel Mumm, University of California-Irvine; Hua-Tay Lin, Oak Ridge National Laboratory; Kang Lee, Rolls Royce; Mitchell Dorfman, Sulzer Metco (US) Inc.; Christian Moreau, Concordia University

Tuesday PM
October 14, 2014

Room: Room 323
Location: David L. Lawrence Convention Center

Session Chair: Rohit Khanna, Chubu University

2:00 PM
Improvement of Hardness and Wear Resistance of Ti-Si Based Alloys by Electron Beam Surface Modification: *Serhii Tkachenko*[1]; Jan Kouril[1]; Jirí Matlák[1]; David Necas[1]; Oleg Datskevich[2]; Jan Cupera[1]; Martin Vrbka[1]; Leonid Kulak[2]; Rudolf Foret[1]; [1]Brno University of Technology; [2]Frantsevich Institute for Problems of Materials Science

2:20 PM
Tribological and Sliding Abrasion Studies of the Boride-based Thermal Diffusion Coatings: *Eugene Medvedovski*[1]; [1]Endurance Technologies Inc.

2:40 PM
A Novel Artificial Hip Joint: Dense Alumina Layer Formed on Ti Alloy by Micro-arc Oxidation: *Rohit Khanna*[1]; Tadashi Kokuko[1]; Tomiharu Matsushita[1]; Yuuji Nomura[2]; Norihiro Nose[2]; Yoshiyuki Oomri[2]; Takuya Yoshida[1]; Koichi Wakita[1]; Hiroaki Takadama[1]; [1]Chubu University; [2]Taiyo Nippon Sanso, Inc

Thermal Protection Materials and Systems — Metals and Composites for Thermal Protection

Program Organizers: Sylvia Johnson, NASA-Ames Research Center; Parul Agrawal, ERC Corporation; Frances Hurwitz, NASA Glenn Research Center; John Lawson, NASA Ames Research Center

Tuesday PM
October 14, 2014

Room: Room 412
Location: David L. Lawrence Convention Center

Session Chairs: Thomas Reimer, German Aerospace Center; Harlan Brown-Shaklee, Sandia National Laboratories

2:00 PM
Characterization of Oxygen Ingress and Phase Evolution in Ti-6242S: *Jaimie Tiley*[1]; William Porter[2]; Reji John[1]; Mackenzie Kirby[3]; Tinu Daboiku[3]; Sang-Lan Kim[4]; Soumya Nag[5]; Rajarshi Banerjee[5]; [1]Air Force Research Laboratory; [2]UDRI; [3]Wright State University; [4]UES; [5]University of North Texas

2:20 PM
Stiffness Response of Oxide Scales on Nickel Based ODS Alloys Exposed to Thermal Cyclic Oxidation: *Belachew Amare*[1]; Bruce Kang[1]; [1]WVU

2:40 PM
Glass-like Thermal Conductivity of (010)-textured Lanthanum-doped Strontium Niobate (Sr2-xLaxNb2O7-d) Synthesized with Wet Chemical Deposition: Brian Foley[1]; Harlan Brown-Shaklee[2]; Jon Ihlefeld[2]; Paul Clem[2]; *Patrick Hopkins*[1]; [1]University of Virginia; [2]Sandia National Laboratories

3:00 PM
Nanoscale Mechanical Properties of Superalloy Bond Coat at Elevated Temperatures: *Karolina Rzepiejewska-Malyska*[1]; Ude Hangen[1]; Syed Asif[1]; [1]Hysitron, Inc.

3:20 PM
Fabrication and Characterization of C/C-SiC Material Made with Pitch-based Carbon Fibers: *Thomas Reimer*[1]; Dietmar Koch[1]; Martin Friess[1]; Ivaylo Petkov[1]; Christoph Dellin[1]; [1]DLR

Town Hall Meeting on the National and International Materials Data Infrastructure

Program Organizers: James Warren, NIST; Lisa Friedersdorf, National Nanotechnology Coordination Office

Tuesday PM
October 14, 2014

Room: Room 316
Location: David L. Lawrence Convention Center

Session Chairs: James Warren, NIST; Lisa Friedersdorf, National Nanotechnology Coordination Office

2:00 PM Introductory Comments

2:10 PM
Materials Data Infrastructure: Current Status and Development Needed to Achieve the Goals of the Materials Genome Initiative: *James Warren*[1]; [1]NIST

2:20 PM
Nanotechnology Knowledge Infrastructure and the Concept of Data Readiness Levels (DRLs): *Lisa Friedersdorf*; [1]National Nanotechnology Coordination Office

2:30 PM
Lessons Learned from Pilot and Demonstration Projects for Data Networking and Curation: *Scott Henry*[1]; [1]ASM International

2:40 PM
Materials Innovation Ecosystem and Accelerator Network: *David McDowell*[1]; [1]Georgia Institute of Technology

2:50 PM
Center for Hierarchical Materials Data (CHiMaD) Data Initiatives: *Carelyn Campbell*[1]; [1]National Institute of Standards and Technology

3:00 PM
AFLOWLIB and Other Quantum Materials Databases: *Stefano Curtarolo*[1]; [1]Duke University

3:10 PM
Infrastructure and Community Incentives for Lightweight Materials Data: *William Joost*[1]; [1]US Department of Energy

3:20 PM Panel Discussion

Vanadium Microalloyed Steels: A Symposium in Memory of Michael Korchynsky — Vanadium Strengthening Mechanisms in Steel

Program Organizers: Riad Asfahani, U. S. Steel Research & Technology; David Milbourn, Vanitec Limited; Robert Glodowski, Evraz East Metals NA; Bevis Hutchinson, Swerea KIMAB; Anthony Deardo, University of Pittsburgh; Yang Caifu, Central Iron & Steel Research Institute; Terry Perles, TTP Squared, Inc.

Tuesday PM
October 14, 2014

Room: Room 410
Location: David L. Lawrence Convention Center

Session Chair: Anthony DeArdo, University of Pittsburgh

2:00 PM
An Upper Estimation for the Solid Solution Strengthening Effect of Vanadium: Veronique Smanio[1]; *Thomas Sourmail*[1]; Carlos Garcia-Mateo[2]; Francisca G. Caballero[2]; Sophie Cazottes[3]; Thierry Epicier[4]; Frederic Danoix[5]; David Millbourn[6]; [1]Ascometal-Creas; [2]CENIM-CSIC; [3]INSA-LYON; [4]CLYM-INSA-LYON; [5]Universite de Rouen; [6]VANITEC

2:20 PM
Interphase Precipitation in Low-alloy Steels with Vanadium Addition: Microstructure and Properties: *Tadashi Furuhara*[1]; Yongjie Zhang[1]; Goro Miyamoto[1]; Naoya Kamikawa[1]; [1]Tohoku University

2:40 PM
Study on Section Homogeneity of V-N Microalloyed High Strength Bulb Flat Steel: *Chen Xuehui*[1]; Yang Caifu[1]; Su Hang[1]; Chai Feng[1]; [1]Central Iron & Steel Research Institute

3:00 PM
Precipitation Behavior of V-N Microalloyed Steel at Normalizing Process: *Pan Tao*[1]; Chai Xiyang[1]; Yang Caifu[1]; Su Hang; [1]Central Iron & Steel Research Institute

3:20 PM
An Updated Prediction Model for Vanadium Precipitation Strengthening of Ferritic Steels: *Robert Glodowski*[1]; [1]Evraz East Metals NA

Advanced Aluminum Alloys, Composites, and Process Technologies — Metal-Matrix Composites

Program Organizers: Awadh Pandey, Pratt & Whitney; Thomas Watson, Pratt & Whitney

Wednesday AM
October 15, 2014

Room: Room 329
Location: David L. Lawrence Convention Center

Session Chair: Awadh Pandey, Pratt & Whitney

8:00 AM Invited
Development of Elevated Temperature Aluminum MMC Alloy and Its Processing Technology: *David Weiss*[1]; Gerald Gegel[2]; [1]Eck Industries, Inc.; [2]Material & Process Consultancy

8:40 AM
Ultrasonic Nano-dispersion Technique of Aluminium Alloy and Carbon Nano-tubes (CNT) for Automotive Applications: *Giridhar Venkatesan*[1]; Kalaichelvan K[2]; Arunraj Selvaraj[3]; Dhisondhar Rajendran[4]; [1]Ashok Leyland; [2]MIT Campus, Anna University; [3]IIIT D & M; [4]Infotech Enterprises Limited

9:00 AM
Synthesis and Characterization of Cast In-situ Aluminum Based Composites: Gaurav Gupta[1]; *Om Modi*[1]; Monu Kumar[1]; Brij Prasad[1]; [1]AMPRI bhopal

9:20 AM
The Mechanical and Micro Structural Properties of Aluminum-Copper Oxide Reinforced Composite: *Jennifer Alexander-Omeje*[1]; [1]Moshood Abiola Polytechnic

9:40 AM Break

10:00 AM Invited
Manufacturing of Continuous Carbon Fiber Reinforced Aluminum Matrix Composites by High Pressure Die Casting: *Franziska Kachold*[1]; Robert Singer[1]; [1]University of Erlangen-Nuremberg

10:40 AM
Study of Aluminum Matrix Composite (AMC) Used in the Deposition of Thin Films by RF Sputtering Magnetron: *Ulises Barajas*[1]; Sugeily Flores[1]; O. Marcelo Suárez[1]; [1]University of Puerto Rico

Advanced Coatings for Wear and Corrosion — Advances in Thermal Spray and Vapor Deposited Materials

Program Organizers: Andrew Sherman, Powdermet Inc; Fei Tang, DNV GL

Wednesday AM
October 15, 2014

Room: Room 321
Location: David L. Lawrence Convention Center

Session Chairs: Andrew Sherman, Powdermet Inc, Mesocoat Inc; Fei Tang, DNV

8:00 AM
A Study on the Wear Behavior of Thermal Sprayed Mo and Mo2C Coating: *Juyeon Won*[1]; Myoungseoup Han[1]; Taedong Park[1]; Taeyoung Hur[1]; [1]Hyundai Heavy Industries Co.,Ltd.

8:20 AM
Development of Iron Aluminide Coatings Reinforced with Hard Ceramic Particles for Wear Resistant Applications: *Mahdi Amiriyan*[1]; Houshang Alamdari[1]; Carl Blais[1]; Robert Schulz[2]; [1]Université Laval; [2]Hydro-Quebec Research Institute

8:40 AM
Effect of Rare Earth Addition to the High Temperature Oxidation Behaviour of the D-gun Sprayed Ni Based Coatings: *Ramakrishna Anam*[1]; Bhargavi Gunturu[2]; Nidhi Rana[3]; [1]SRM; [2]Anna University; [3]IITR

9:00 AM
Fracture Strength of Carbon Nanotube Reinforced Plasma Sprayed Aluminum Oxide Coating: *Anup Keshri*[1]; Arvind Agarwal[2]; [1]Indian Institute of Technology, Patna; [2]Indian Institute of Technology, Delhi

9:20 AM
Wear Behavior of Grey Cast Iron Coated with Al_2O_3-13TiO_2 and $Ni_{20}Cr$ Using Detonation Spray Process: *Harjot Gill*[1]; [1]Chandigarh University

9:40 AM Break

10:00 AM
On-site Hydrogen Generation Enhances Attractiveness of PTWA Thermal Spray Cylinder Liner Technology: *Dave Wolff*[1]; David Cook[2]; Benjamin Tower[3]; [1]Proton OnSite; [2]Flame-Spray Industries Inc.; [3]Comau

10:20 AM
Low Pressure Carburizing: *Thomas Lord*[1]; [1]SECO/WARWICK Corp.

10:40 AM
Prediction of Intermetallics and Their Corrosion Resistance Evolved during Laser Surface Alloying of Niobium on Aluminum: Experimental & Theoretical Approach: *Ravi Rajamure*[1]; Hitesh Vora[1]; Srinivasan Srivilliputhur[1]; Narendra Dahotre[1]; [1]University of North Texas

Advanced Manufacturing Technologies — Advanced Manufacturing II: Deformation Processes

Program Organizer: Muammer Koc, Istanbul Sehir University

Wednesday AM
October 15, 2014

Room: Room 324
Location: David L. Lawrence Convention Center

Session Chair: Muammer Koc, Istanbul Sehir University

8:00 AM
Hot Blank – Cold Die (HB-CD) Stamping of Lightweight Alloy Sheets: A Preliminary Study: Nan Zhang[1]; *Fadi Abu-Farha*[1]; [1]Clemson University

8:20 AM
Process Modeling Semiphysical Approach for Soundness Evaluation of Aluminum FSW: *Elizabeth Hoyos*[1]; Diana Lopéz[2]; Hernán Álvarez[2]; [1]Escuela de Ingeniería de Antioquia; [2]Universidad Nacional de Colombia

8:40 AM
Hydro-mechanical Forming of Al-Mg Sheet: *Yong-Nam Kwon*[1]; Y. S. Lee[1]; [1]Korea Institute of Materials Science

9:00 AM
Quality of Strip Produced by Extrusion Machining Directly from Cast 5052 Aluminum: *Andrew Kustas*[1]; Kevin Chaput[1]; Srinivasan Chandrasekar[2]; Kevin Trumble[1]; [1]Purdue University School of Materials Engineering; [2]Purdue University School of Industrial Engineering

9:20 AM
Fabrication of Micro-scale Porous Surfaces for Mg-based Implants: *Muammer Koc*[1]; Zafer Evis[2]; Yusuf Usta[3]; Said Kayhan[1]; Aydin Tahmasebifar[2]; [1]Istanbul Sehir University; [2]Middle East Tech University; [3]Gazi University

10:00 AM Break

10:20 AM
Modeling Studies on the Elevated Temperatures Formability of Tube Ends Using RSM: *M Joseph Davidson*[1]; Lingampalli Venugopal[1]; N Selvaraj[1]; [1]NIT Warangal

Advanced Materials for Harsh Environments — Session II

Program Organizers: Navin Manjooran, Siemens AG; Gary Pickrell, Virginia Tech

Wednesday AM
October 15, 2014

Room: Room 405
Location: David L. Lawrence Convention Center

Session Chairs: Gary Pickrell, Virginia Tech; Navin Manjooran, Siemens AG

8:00 AM Introductory Comments

8:40 AM
Copper-nickel-tin Alloys for Service in Harsh Environments: *Anand Samant*[1]; W. Raymond Cribb[1]; Michael J. Gedeon[1]; Fritz C. Grensing[1]; [1]Materion

9:00 AM
Design and Development of Microalloyed Fire-resistant Steels: *Cameron Gross*[1]; Dieter Isheim[1]; Semyon Vaynman[1]; Morris Fine[1]; Yip-Wah Chung[1]; [1]Northwestern University

9:20 AM
Environmental Degradation of Silver Coated Copper Wire with Cross-linked ETFE Insulation: *Paul Keiser*[1]; Devrajsinh Atodaria[1]; Prabir Chaudhury[1]; [1]Orbital Sciences Corporation

9:40 AM Break

10:00 AM
High Temperature Corrosion Behavior of Alloys in Mixed-gas Environments: *Satia Soltanattar*[1]; Brian Gleeson[1]; [1]University of Pittsburgh

10:20 AM
Study on the Critical Aluminum Concentration for the Establishment of a Continuous Surface Al_2O_3 Scale on Ni-Al Alloys at 1200°C: *Wei Zhao*[1]; Brian Gleeson[1]; [1]University of Pittsburgh

10:40 AM
The Sliding Wear Behaviour of TiC and Ti(C,N) Cermets with a Stoichiometric Ni3Al Binder: *Tyler Stewart*[1]; Kevin Plucknett[1]; [1]Dalhousie University

11:00 AM
Comparison of the Corrosion Behavior of High Strength Aluminum Alloys after Exposure to ASTM B117 Exposure: *Sara Grieshop*[1]; [1]The Ohio State University

Advanced Solution and Colloidal Processing for Ceramics — Assembly of Functional Materials

Program Organizers: Geoff Brennecka, Sandia National Laboratories; Song Won Ko, Pennsylvania State University; Barbara Malic, Jožef Stefan Institute; An Hardy, Hasselt University; Xiaohui Wang, Tsinghua University; Kazumi Kato, National Institute of Advanced Industrial Science and Technology

Wednesday AM
October 15, 2014

Room: Room 334
Location: David L. Lawrence Convention Center

Session Chair: An Hardy, Hasselt University

8:00 AM
The Roles of Solution Chemistry, Substrate, and Pyrolysis Temperature on the Chemical Heterogeneity in PZT Films: *Jon Ihlefeld*[1]; Paul Kotula[1]; Brian Gauntt[1]; Geoff Brennecka[1]; Dara Gough[1]; Erik Spoerke[1]; [1]Sandia National Laboratories

8:20 AM
Size and Characteristics of Single Crystalline $BaTiO_3$ Nanocubes: Qiang Ma[1]; Ken-ichi Mimura[1]; *Kazumi Kato*[1]; [1]National Institute of Advanced Industrial Science and Technology

8:40 AM
Dielectric Properties of Barium Titanate Single-crystalline Nanocube Ordered Assemblies: *Ken-ichi Mimura*[1]; Qiang Ma[1]; Kazumi Kato[1]; [1]National Institute of Advanced Industrial Science and Technology

9:00 AM Invited
Chemical Solution Processed Aluminum Electrodes with Highly Electrical Conductivity: *Hye Moon Lee*[1]; [1]Korea Institute of Materials Science

9:40 AM Break

10:00 AM Invited
Ferrite Nanoparticles: From Synthesis to New Advanced Materials: *Darja Lisjak*[1]; [1]Jozef Stefan Institute

10:40 AM
Colloidal Processing of Asymmetric Membranes for Gas Separation: *Adam Stevenson*[1]; Jordi Seuba[1]; Stéphane Richaud[1]; Chika Matsunaga[2]; Tetsuo Uchikoshi[2]; [1]Saint-Gobain; [2]National Institute of Materials Science

Advanced Steel Metallurgy: Products and Processing — Advanced High Strength Steels II

Program Organizer: Amy Woods, Steel Dynamics Flat Roll

Wednesday AM
October 15, 2014

Room: Room 408
Location: David L. Lawrence Convention Center

Session Chair: To Be Announced

8:00 AM
Characterization of Hot Deformation Behavior of Low Carbon Steel Using Processing Maps, Constitutive Equations and Zener-hollomon Parameter: Sunil Rajput[1]; *G.P. Chaudhari*[1]; S.K. Nath[1]; [1]I.I.T., Roorkee

8:20 AM
Quantitative Approach to Select a Heat Treater Using CQI-9 System: *Sankaran Srinivasan*[1]; K Manikandan[1]; Giridhar Venkatesan[1]; [1]Ashok Leyland Limited

8:40 AM
Study on Mechanical Properties and Wear Resistance of Cr-Mo Steels in Different Heat Treatment Conditions: *Mahyar Mohammadnezhad*[1]; Mortaza Shamanian[1]; Vahid Jvaheri[1]; [1]Isfahan Casting Industrial, Department of Materials Engineering, Isfahan University of Technology

9:00 AM
Flash Bainite ~ Cold Stamping 1550MPa B-pillars and Zero-T/1T Bends: *Gary Cola*[1]; [1]Flash Bainite

9:20 AM
Quenching and Partitioning Process Development to Replace Hot Stamping of High Strength Automotive Steel: *Daniel Coughlin*[1]; Emmanuel De Moor[2]; Kester Clarke[1]; Amy Clarke[1]; Robert Hackenberg[1]; Omer Dogan[3]; Paul Joblonski[3]; [1]Los Alamos National Laboratory; [2]ASPPRC Colorado School of Mines; [3]National Energy Technology Laboratory

9:40 AM Break

10:00 AM
Intercritical Austempering of Austempered Ductile Cast Iron (ADI): Susil Putatunda[1]; *Saranya Panneerselvam*[2]; [1]Wayne State University; [2]Wayne State University

10:20 AM
On the Occurrence of Carbide Precipitation during Quenching & Partitioning Heat Treatments: *Bij-Na Kim*[1]; Farideh HajyAkbary[1]; Jilt Sietsma[1]; Maria Jesus Santofimia[1]; [1]TU Delft

10:40 AM
Characterizing the Deformation of a Quenched and Partitioned Steel Sheet: Jun Hu[1]; *Fadi Abu-Farha*[1]; [1]Clemson University

Advanced Steel Metallurgy: Products and Processing — Steel Making and Casting III

Program Organizer: Amy Woods, Steel Dynamics Flat Roll

Wednesday AM
October 15, 2014

Room: Room 407
Location: David L. Lawrence Convention Center

Session Chair: To Be Announced

8:00 AM
Numerical Analysis of Grade Mixing and Inclusion Motion in Steelmaking Tundish during Ladle Change Process: *Md Irfanul Siddiqui*[1]; Pradeep Jha[1]; [1]Indian Institute of Technology, Roorkee

8:20 AM
Effective Inclusion Treatment with Solid Core Pure Calcium Wire: *Qizheng Liu*[1]; Scott Story[1]; Bill Jones[1]; Joshua Jones[1]; Derek Floyd[1]; [1]U.S. Steel

8:40 AM
Hot Ductility Comparison of Percent Reduction in Area and Strain Energy for the Continuous Casting of Nb-microalloyed Steels: *Steven Jansto*[1]; [1]CBMM-North America, Inc.

9:00 AM
Advances in Automated SEM/EDS Technology for the Characterization of Non-metallic Inclusions in Steel: *Sumin Zhu*[1]; [1]FEI Company

9:20 AM
Kinetics Model on Modification of MgO Al_2O_3 Inclusions: *Shufeng Yang*[1]; Jingshe Li[1]; Xiangzhou Gao[1]; [1]University of Science and Technology Beijing

9:40 AM Break

10:00 AM
Effect of B2O3 on Viscosity and Structure of Lime-alumina Based Mold Slag: *Zuotai Zhang*[1]; Kai Zheng[1]; [1]Peking University

10:20 AM
Physical Simulation Study on Optimization of Nozzle Structure for Round Mould with M-EMS: *Chao Wang*[1]; Hui Zhang[1]; Minglin Wang[1]; Zhongwei Ma[1]; Pei Zhao[1]; [1]CISRI

10:40 AM
A Coupled Model of Microsegregation and TiN Inclusion Precipitation during Solidification of GCr15SiMn in ESR Process: *Liang Yang*[1]; Shijian Li[1]; Guoguang Cheng[1]; Min Zhao[2]; Guiping Feng[2]; [1]University of Science and Technology Beijing; [2]Dongbei Special Steel Group

Advances in Dielectric Materials and Electronic Devices — Magnetic and Electrical Properties II

Program Organizers: Amar Bhalla, The University of Texas at San Antonio; Ruyan Guo, The University of Texas at San Antonio; K. M. Nair, E.I.duPont de Nemours & Co, Inc; Danilo Suvorov, Jožef Stefan Institute; Rick Ubic, Boise State University

Wednesday AM
October 15, 2014

Room: Room 307
Location: David L. Lawrence Convention Center

Session Chairs: Ram Katiyar, University of Puerto Rico; Narsingh Singh, University of Maryland, Baltimore County; Shashank Priya, Virginia Tech

8:00 AM Invited
Grain Coarsening and Its Effects on the Properties of Magnetoelectric PMN-PT/CFO Particulate Composites: *Ducinei Garcia*[1]; Fabio Zabotto[1]; Alexandre Gualdi[1]; Adilson Oliveira[1]; José Eiras[1]; [1]Federal University of São Carlos

8:20 AM Invited
Nonlinear Magnetoelectric Effect in AlFeO3-based Compositions (Invited): *Luiz Cotica*[1]; Guilherme Santos[1]; Valdirlei Freitas[1]; Adelino Coelho[2]; Madhuparna Pal[3]; Ivair Santos[1]; Ruyan Guo[3]; Amar Bhalla[3]; [1]State University of Maringa; [2]State University of Campinas; [3]University of Texas at San Antonio

8:40 AM
Electrical and Thermal Control of Magnetic Coercive Field in Ferromagnetic/Ferroelectric Heterostructures: *Zhiguang Wang*[1]; Yue Zhang[1]; Yaojin Wang[1]; Yanxi Li[1]; Jiefang Li[1]; Dwight Viehland[1]; [1]Virginia Tech

9:00 AM
Ferroelectric Control of Magnetization in Ferromagnetic/Piezoelectric Heterostructures: *Yue Zhang*[1]; Zhiguang Wang[1]; Yaojin Wang[1]; Jiefang Li[1]; Dwight Viehland[1]; [1]Virginia Tech

9:20 AM Invited
Grain Orientation Effects for High-power Piezoelectric Properties of Some Bismuth Layer-structured Ferroelectric Ceramics: *Hajime Nagata*[1]; Shun Endo[1]; Tadashi Takenaka[1]; [1]Tokyo University of Science

9:40 AM Break

10:00 AM
Preparation of (100),(001)-Oriented Reduction-resistant (Ba,Ca)TiO_3 Piezoelectric Ceramics and their Electrical Properties: *Wataru Sakamoto*[1]; Hiroki Ichikawa[1]; Yoshikazu Akiyama[2]; Toshinobu Yogo[1]; [1]Nagoya University; [2]Ricoh Co., Ltd.

Advances in Metal Casting Technologies — Modeling/ Simulation

Program Organizers: Alan Druschitz, Virginia Tech; Paul Sanders, Michigan Technological University; Laurentiu Nastac, The University of Alabama

Wednesday AM
October 15, 2014

Room: Room 331
Location: David L. Lawrence Convention Center

Session Chair: Laurentiu Nastac, The University of Alabama

8:00 AM
Mathematical Modelling of Solidification in a Curved Strand during Continuous Casting of Steel: *Ambrish Maurya*[1]; Pradeep Jha[1]; [1]Indian Institute of Technology Roorkee

8:20 AM
Numerical Simulation of Molten Steel Flow and Inclusions Motion Behavior in the Solidification Processes for High Speed Continuous Casting Slab: Shaowu Lei[1]; Jiongming Zhang[1]; Xinkai Zhao[1]; Qipeng Dong[1]; [1]School of Metallurgical and Ecological Engineering, University of Science and Technology in Beijing

8:40 AM
Flow and Temperature Field Evolution during Solidification of an Electromagnetically Stirred Melt: Influence of Magnetic Shields: *Gregory Poole*[1]; Laurentiu Nastac[1]; [1]University of Alabama

9:00 AM
Numerical Simulation on Optimization of Center Segregation on 50CrMo Billet: *Xiangzhou Gao*[1]; Jingshe Li[1]; Shufeng Yang[1]; [1]University of Science and Technology Beijing

9:20 AM
Precipitation in Continuously Cast Microalloyed Steels: *Adeline Maitre*[1]; Douglas Ivey[1]; Hani Henein[1]; [1]University of Alberta

9:40 AM Break

10:00 AM
Research and Application of Numerical Simulation on Optimizing of Ingot Casting Process: *Tongjun Zhou*[1]; Junzhan Liu[2]; Hui Luo[2]; [1]Baosteel Special Material Co., Ltd; [2]Baosteel Special Steel Co., Ltd

10:20 AM
Numerical Simulation of Vacuum Remelting Process for Cr-Co-Mo-Ni Gear Steel: *Chuanan Hou*[1]; Shufeng Yang[1]; Jingshe Li[1]; Xiangzhou Gao[1]; [1]University of Science and Technology Beijing

10:40 AM
Numerical Modeling of the Dispersion of Ceramic Nanoparticles during Ultrasonic Processing of 6061-based Nanocomposites: Daojie Zhang[1]; *Laurentiu Nastac*[1]; Paul Allison[2]; Brian Jordon[1]; [1]The University of Alabama; [2]USArmy ERDC

Advances in Titanium Manufacturing: Powder Processing, Powder Metallurgy, and Additive/ Emerging Manufacturing Techniques — PM Titanium Biomaterials

Program Organizers: K. S. Ravi Chandran, University of Utah; Zak Fang, University of Utah ; M. Ashraf Imam, George Washington University; Jean Stewart, ATI Powder Metals

Wednesday AM
October 15, 2014

Room: Room 325
Location: David L. Lawrence Convention Center

Session Chair: K. S. Ravi Chandran, University of Utah

8:00 AM Invited
Application of Diffusion-multiple Approach to the Development of Low-modulus Biomedical Ti Alloys: Zhangqi Chen[1]; *Ji-Cheng Zhao*[1]; [1]The Ohio State University

8:40 AM Invited
Development of Low-cost High-strength Beta-type Titanium Alloys Using a Metal Injection Molding: *Ken Cho*[1]; Mitsuo Niinomi[1]; Masaaki Nakai[1]; Junko Hieda[1]; Pedro Santos[1]; Yoshinori Itoh[2]; Masahiko Ikeda[3]; [1]Tohoku University; [2]Industrial Research Institute of Shizuoka Prefecture; [3]Kansai University

9:20 AM
A Review on the Equal Channel Angular Process of Commercially Pure Titanium: *Peiman Shahbeigi Roodposhti*[1]; Apu Sarkar[1]; Korukonda Murty[1]; [1]North Carolina State University

9:40 AM Break

10:00 AM
A Comparative Analysis on the Influence of Kinetic Energy and System Selection on the Mechanical Properties and Microstructure of Cold Sprayed Ti-6Al-4V: *Aaron Birt*[1]; Diran Apelian[1]; Richard Sisson[1]; Victor Champagne[1]; [1]Worcester Polytechnic Institute

10:20 AM
Processing and Characterization of Titanium Porous Metals Via the Space Holder Method: *Cindy Waters*[1]; [1]NCA&T State University

10:40 AM
Functionally Graded Novel Beta Titanium Alloys for Orthopedic Implants Via Additive Manufacturing: Tushar Borkar[1]; *Srinivas Aditya Mantri*[1]; Rodrigo Contieri[1]; Soumya Nag[1]; Rubens Caram[2]; Rajarshi Banerjee[1]; [1]University of North Texas; [2]UNICAMP

Bioinspired Materials Engineering — Responsive and Applied Biomaterials

Program Organizers: Cordt Zollfrank, Technische Universität München, Germany ; Michael Bartl, University of Utah

Wednesday AM
October 15, 2014

Room: Room 305
Location: David L. Lawrence Convention Center

Session Chairs: Michael Bartl, University of Utah; Francisco Fernandes, Université Pierre et Marie Curie

8:00 AM Invited
Wood as Inspiration for New Stimuli-responsive Structures and Materials: *Joseph Jakes*[1]; Nayomi Plaza[1]; Sam Zelinka[1]; Don Stone[2]; Sophie-Charlotte Gleber[3]; Stefan Vogt[3]; [1]US Forest Service, Forest Products Laboratory; [2]University of Wisconsin-Madison; [3]Argonne National Laboratory

8:40 AM
Conduction Mechanism of Molecularly Imprinted Polymer on Surface of Conductive Polymer in Terpene Sensors: *Sung Pil Lee*[1]; James Lee[2]; [1]Kyungnam University; [2]Korea University

9:00 AM Invited
Atomic-scale Structure and Catalytic Functionality of Bio-inspired Nanoparticles: A Systematic Approach Using Computation and Experiment: *Hadi Ramezani-Dakhel*[1]; Nicholas Bedford[2]; Beverly Briggs[2]; Yang Ren[3]; Anatoly Frenkel[4]; Valeri Petkov[5]; Hendrik Heinz[1]; Rajesh Naik[6]; Marc Knecht[2]; [1]University of Akron; [2]University of Miami; [3]Argonne National Laboratory; [4]Yeshiva University; [5]Central Michigan University; [6]Air Force Research Laboratory

9:40 AM Break

10:00 AM Invited
Flexible Minerals: Self-assembled Calcite Spicules with Extreme Bending Strength: *Filipe Natalio*[1]; Tomas P. Corrales[2]; Martin Panthöfer[3]; Dieter Schollmeyer[4]; Ingo Lieberwirth[2]; Werner Müller[5]; Michael Kappl[2]; Hans-Jürgen Butt[2]; Wolfgang Tremel[3]; [1]Martin Luther University - Institute for Inorganic Chemistry; [2]Max-Planck-Institut für Polymerforschung; [3]Institut für Anorganische Chemie und Analytische Chemie, Johannes Gutenberg-Universität; [4]Institut für Organische Chemie, Johannes Gutenberg-Universität; [5]Institut für Physiologische Chemie, Universitätsmedizin, Johannes Gutenberg-Universität

Ceramic Matrix Composites — Ceramic Composites: Processing and Evaluation

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

Wednesday AM
October 15, 2014

Room: Room 304
Location: David L. Lawrence Convention Center

Session Chair: Michael Cinibulk, AFRL

8:00 AM Invited
Research and Development Needs for High-temperature Application of Ceramic Matrix Composites: *Michael Cinibulk*[1]; [1]Air Force Research Laboratory

8:40 AM
Processing and Testing of Ultrahigh Temperature Fiber-reinforced Ceramics: *Jacob Stiglich*; Brian Williams[1]; [1]Ultramet

9:00 AM
Process Development to Achieve Reactive Melt Infiltration of Fiber Reinforced Preforms Forming a ZrB2 Rich Matrix: *Marius Kuetemeyer*[1]; [1]German Aerospace Center

9:20 AM
Fabrication of C/SiC Composites by Liquid Silicon Infiltration: *Khurram Iqbal*[1]; Jianjun Sha[1]; [1]Dalian University of Technology

9:40 AM Break

10:00 AM
3D Alumina Grain Growth in Nextel 610 Fiber: *Randall Hay*[1]; Geoff Fair[2]; Kristin Keller[3]; Travis Tidball[4]; [1]Air Force Research Laboratory; [2]GE; [3]UES, Inc.; [4]Wright State University

10:20 AM
Detailed Microstructural Characterization of SiC Fibers Heat Treated under Varying Conditions: *Matthew O'Malley*[1]; Pavel Mogilevsky[2]; Ian Wolford[3]; Travis Tidball[3]; Michael Cinibulk[1]; [1]Air Force Research Laboratory; [2]UES, Inc.; [3]SOCHE

10:40 AM
Defect Evolution in Polymer Impregnation and Pyrolysis Derived CMCs: *Natalie Larson*[1]; Carlos Levi[1]; Frank Zok[1]; [1]University of California, Santa Barbara

Commercial Production and Applications of Nanomaterials: ECAP and Fullerenes — Commercial Production and Applications of Nanomaterials

Program Organizers: David Forrest, Department of Energy; Terry Lowe, Colorado School of Mines; William Frazier, NAVAIR; Yellapu Murty, MC Technologies

Wednesday AM
October 15, 2014

Room: Room 335
Location: David L. Lawrence Convention Center

Session Chair: David Forrest, Dept. of Energy

8:00 AM
Carbon NanoComposite for Batteries and Supercapacitors: *Jie Liu*[1]; [1]Duke University

8:20 AM
A Nanotechnology for Large-scale Production of Carbon Nanotube Composites: Xin Wang[1]; Philip Bradford[1]; Qingwen Li[2]; *Yuntian Zhu*[1]; [1]North Carolina State University; [2]Suzhou Institute of Nanotechnology and Nanobionics

8:40 AM
Integrated Design and Scalable Manufacturing of Lightweight, Multifunctional Buckypaper Materials: *Chuck Zhang*[1]; Kan Wang[1]; Richard Liang[2]; Ben Wang[1]; [1]Georgia Institute of Technology; [2]Florida State University

9:00 AM Invited
Towards Industrial Scale High Shear Processing of Metals: *Terry Lowe*[1]; [1]Colorado School of Mines

9:40 AM Break

10:00 AM Invited
Graphene-like Nanocarbon Structures in Metal Matrices: Structure, Processing, and Applications: *Lourdes Salamanca-Riba*[1]; Romaine Isaacs[1]; Azzam Mansour[2]; Wenzhong Bao[3]; Melburne LeMieux,[1]; Liangbing Hu[1]; Serger Rashkeev[1]; Maija Kukla[1]; [1]Materials Science and Engineering Department, University of Maryland; [2]Naval Surface Warfare Center; [3]Department of Physics, University of Maryland

10:40 AM Invited
The Production and Properties of Copper and Aluminum Covetic Nanomaterials: *Peter Joyce*[1]; Lloyd Brown[2]; David Forrest[3]; Timothy Langan[4]; Carrie Davis[5]; [1]U.S. Naval Academy; [2]Los Alamos National Laboratory; [3]Department of Energy; [4]Surface Treatment Technologies, Inc.; [5]Naval Surface Warfare Center

Computational Design of Ceramic Materials — Ceramics Under Extreme Conditions II

Program Organizers: Liping Huang, Rensselaer Polytechnic Institute; Randall Youngman, Corning Incorporated

Wednesday AM
October 15, 2014

Room: Room 306
Location: David L. Lawrence Convention Center

Session Chair: Veena Tikare, Sandia National Laboratories

8:00 AM Invited
Crystal Structure, Defects and Radiation Effects in Complex Oxides: *Kurt Sickafus*[1]; [1]University of Tennessee

8:40 AM Invited
Multiscale Modeling of Ion Beam Modification Processes: *William Weber*[1]; [1]University of Tennessee

9:20 AM Invited
Computational Modeling of Ceramic Material Interactions with Complex Environments at High Temperatures: Comments of an Experimentalist: *Elizabeth Opila*[1]; [1]University of Virginia

Controlled Synthesis, Processing, and Applications of Structural and Functional Nanomaterials — Session IV

Program Organizers: Gurpreet Singh, Kansas State University; Kathy Lu, Virginia Tech; Eugene Olevsky, San Diego State University; Edward Gorzkowski, Naval Research Laboratory; Sanjay Mathur, University of Cologne

Wednesday AM
October 15, 2014

Room: Room 319
Location: David L. Lawrence Convention Center

Session Chair: Edward Gorzkowski, Naval Research Laboratory

8:00 AM
A Two-step Route to Synthesize Highly Oriented ZnO Nanorod Arrays on Copper: *Yongmei Xia*[1]; Haiyan Zhu[1]; Youfa Zhang[1]; Xinquan Yu[1]; Feng Chen[1]; [1]Southeast University

8:20 AM
Design and Synthesis of Metallic Nanoparticle-ceramic Support Interfaces for Enhancing Thermal Stability: *Stephen Sofie*[1]; David Driscoll[1]; [1]Montana State University

8:40 AM
Magnetic Characterization of Nanocrystalline Ni-Fe Alloys: *Minghe Wang*[1]; Niewczas Marek[1]; [1]McMaster University

9:00 AM
Novel Manufacturing Techniques of Metallic Glass Fibers: *Henry Neilson*[1]; Jun Yi[1]; Jesi Booth[1]; John Lewandowski[1]; [1]Case Western Reserve University

9:20 AM
Fabrication of Three-dimensional (3D) Supercapacitors with the Structure of Interpenetrating Positive and Negative Electrodes: *Ling Li*[1]; Shaik Mohamed Imran Ayub[1]; Leon Shaw[1]; [1]Illinois Institute of Technology

9:40 AM Break

10:00 AM
High Conductivity Carbon Nanotube Coated Conductors: *Terry Holesinger*[1]; [1]Los Alamos National Laboratory

10:20 AM
Synthesis of Carbon-coated Hollow Silicon Nanospheres for Lithium-ion Battery Application: *Qianran He*[1]; Maziar Ashuri[1]; Kan Zhang[1]; Satyanarayana Emani[1]; Monica Sawicki[1]; Jack Shamie[1]; Leon Shaw[1]; [1]Illinois Institute of Technology

Energy Storage IV: Materials, Systems and Applications Symposium — Fuel Cells and Other Batteries

Program Organizers: Xingbo Liu, West Virginia University; Keeyoung Jung, Research Institute of Industrial Science and Technology (RIST); Terry Holesinger, Los Alamos National Laboratory; Yang-Tse Cheng, University of Kentucky; Karen Waldrip, Sandia National Laboratory

Wednesday AM
October 15, 2014

Room: Room 414
Location: David L. Lawrence Convention Center

Session Chair: Junwei Wu, Harbin Institute of Technology (Shenzhen)

8:00 AM
LTA Zeolite/SPEEK Composite Membranes for DMFC Applications: Wenjuan Wang[1]; Andrew Baker[1]; *Junwei Wu*[1]; [1]HITSZ

8:20 AM Invited
Spark Plasma Sintering of Proton Conducting Oxide Ceramics for Solid Oxide Fuel Cell and Hydrogen Separation Applications: *Siwei Wang*[1]; Yufei Liu[1]; Jian He[1]; Kyle Brinkman[1]; [1]Clemson University

9:00 AM
Disorder and Structural Stability of Complex Perovskites for Solid Oxide Fuel Cells: Ab Initio Modeling: *Maija Kuklja*[1]; Eugene Kotomin[2]; David Fuks[3]; Yuri Mastrikov[4]; Onise Sharia[1]; [1]University of Maryland College Park; [2]Max Planck Institute for Solid State Research; [3]Ben Gurion University of the Negev, ; [4]Institute for Solid State Physics, University of Latvia,

9:20 AM
Molybdenum Carbide for Solid Oxide Fuel Cells: *Taro Inoue*[1]; Taesik Oh[1]; Raymond Gorte[1]; [1]University of Pennsylvania

9:40 AM Break

10:00 AM
Novel Organic Electrodes for Organic Rechargeable Batteries: Burak Esat[1]; *Sumeyye Bahceci*[1]; Sevda Akay[1]; Aliyu B. Abdullahi[1]; [1]Fatih University

10:20 AM
Scale-up of Redox Shuttles: *Trevor Dzwiniel*[1]; Krzysztof Pupek[1]; Gregory Krumdick[1]; [1]Argonne National Laboratory

10:40 AM
Simulations of Electrodeposition/Dissolution for Metallic Magnesium Battery Anodes: Stephen DeWitt[1]; Hui-Chia Yu[1]; Alexander Chadwick[1]; *Katsuyo Thornton*[1]; [1]University of Michigan - Ann Arbor

Environmentally Assisted Cracking: Nuclear

Program Organizer: Hundal Jung, AREVA

Wednesday AM
October 15, 2014

Room: Room 411
Location: David L. Lawrence Convention Center

Session Chair: Hundal (Andy) Jung, AREVA

8:00 AM
Environmentally Assisted Cracking Resistance of Alloys Candidate for Accident Tolerant Cladding in Light Water Reactors: *Raul Rebak*[1]; Peter Andresen[1]; [1]GE Global Research

8:20 AM
Hydrogen Embrittlement of Pulse Plated Polycrystalline Nickel: *Sathiskumar Jothi*[1]; Nick Croft[1]; Stephen GR Brown[1]; E. A. de Souza Neto[1]; [1]Swansea University

8:40 AM
Hydrogen Embrittlement Testing of a Zirconium Based Alloy: *Paul Korinko*[1]; Robert Sindelar[1]; Ronald Kesterson[1]; Thad Adams[1]; [1]Savannah River National Laboratory

9:00 AM
Influence of the Base Material on the Hydrogen Embrittlement of a Nuclear Reactor Pressure Vessel: *Jesus Toribio*[1]; Diego Vergara[1]; Miguel Lorenzo[1]; [1]University of Salamanca

9:20 AM
Modeling Transgranular to Intergranular Transition during Room Temperature Fatigue Crack Growth of 9Cr1Mo Type Steels: *Vibhor Chaswal*[1]; H S Khatak[2]; [1]University of Cincinnati; [2]NC College, Israna

9:40 AM Break

10:00 AM
Radiation Induced Segregation and Inter-granular Stress Corrosion Cracking in Steels: *Roy Faulkner*[1]; [1]Loughbrough University

10:20 AM
Assessment of Atmospheric Chloride-induced Stress Corrosion Cracking of Austenitic Stainless Steel Canister for Spent Fuel Dry Storage: *Hundal Jung*[1]; [1]AREVA

10:40 AM
Phase Field Modeling of Gamma Hydrides in Zirconium: *Jake Bair*[1]; Mohsen Asle Zaeem[1]; [1]Missouri University of Science and Technology

Failure Analysis and Prevention — Consumer Products

Program Organizers: Nicholas Cherolis, Rolls-Royce Corporation; Dustin Turnquist, ESI; Erhan Ulvan, Acuren Group Inc.

Wednesday AM
October 15, 2014

Room: Room 406
Location: David L. Lawrence Convention Center

Session Chairs: Bill Carden, McSwain Engineering Inc.; Bobby O'Shea, Engineering Systems Inc.; Dave Moore, Unified Engineering

8:00 AM
Steel and Aluminum Fabrication and Design in Motorcycle Applications: *Mark Hineman*[1]; Frederick Schmidt[1]; [1]Engineering Systems, Inc.

8:20 AM
Failure of a Motorhome and Trailer Mounted Awning: Eric Van Iderstine[1]; *Mark Hood*[1]; [1]McSwain Engineering, Inc.

8:40 AM
Failure of a Pickup Truck Track Bar: *William Carden*[1]; [1]McSwain Engineering, Inc.

9:00 AM
Knife Blade Delamination Failure: *William Carden*[1]; Eric Van Iderstine[1]; [1]McSwain Engineering, Inc.

9:20 AM
Automotive Ignition Switch Study: *Mark Hood*[1]; [1]McSwain Engineering, Inc.

9:40 AM Break

10:00 AM
Fire Cracking of Leaded and Lead-free Brasses for Use in Water, Oil and Gas Applications: *Joseph Lemberg*[1]; Jonathan Gibbs[1]; Ryan Birringer[1]; Brad James[1]; Lawrence Eiselstein[1]; [1]Exponent Failure Analysis Associates, Inc.

10:20 AM
Counterfeit Prevention in US Currency: *Elizabeth Holm*[1]; [1]Carnegie Mellon University

Fatigue of Materials III — Advanced Materials

Program Organizers: Tirumalai Srivatsan, The University of Akron; Raghavan Srinivasan, Wright State University; M. Ashraf Imam, George Washington University

Wednesday AM
October 15, 2014

Room: Room 336
Location: David L. Lawrence Convention Center

Session Chair: To Be Announced

8:00 AM Invited
Prediction of the Life-limiting Mechanism and Its Probability of Occurrence with Respect to Temperature in IN100 under Notched Geometry: *Sushant Jha*[1]; Andrew Rosenberger[2]; Vikas Sinha[3]; William Porter[4]; Dennis Buchanan[4]; Reji John[2]; James Larsen[2]; [1]Air Force Research Laboratory/Universal Technology Corporation; [2]US Air Force Research Laboratory; [3]UES, Inc.; [4]University of Dayton Research Institute

8:40 AM
Thermal and Cyclic Deformation in a Ni-base Superalloy Containing a Non-metallic Agglomerate: *Tiantian Zhang*[1]; David Collins[2]; Jun Jiang[1]; Fionn Dunne[1]; Barbara Shollock[1]; [1]Imperial College London; [2]University of Oxford

9:00 AM
Crystallographic Description of Low Cycle Fatigue Crack Growth in Polycrystalline Ni Based Superalloy: Kaustav Barat[1]; Alok Doharey[2]; S Sivaprasad[1]; Sujoy Kar[3]; *Soumitra Tarafder*[1]; Amit Chakraborty; [1]CSIR-NML; [2]NIT Durgapur; [3]IIT Kharagpur

9:20 AM Invited
Fatigue Behavior of Ultra-fine Grained Ti-6Al-4V Alloy: *Ryuichiro Ebara*[1]; Masahiro Endo[1]; Hyojin Kim[1]; Jun Nakahigashi[2]; [1]Fukuoka University; [2]Fukuyama University

9:40 AM Break

10:00 AM
Room Temperature Fracture Processes of a Near-a Titanium Alloy Following Elevated Temperature Exposure: Adam Pilchak; William Porter; *Reji John*[1]; [1]Air Force Research Laboratory

10:40 AM
Fatigue Behavior and Statistical Modeling of Cold-rolled Al0.5CoCrCuFeNi High-entropy Alloys: *Zhi Tang*[1]; Yuan Tao[2]; Che-Wei Tsai[3]; Jien-Wei Yeh[3]; Carl Lundin[1]; Peter Liaw[1]; [1]The University of Tennessee; [2]Ohio University; [3]National Tsing Hua University

Glass and Optical Materials — Luminescent Materials and Nuclear Materials

Program Organizers: Juejun Hu, University of Delaware; David Musgraves, IRradiance Glass Inc.

Wednesday AM
October 15, 2014

Room: Room 302
Location: David L. Lawrence Convention Center

Session Chair: To Be Announced

8:20 AM Invited
Near-band-edge Photoluminescence of Y Doped $CuAlO_2$ Nanofibers: *Yin Liu*[1]; Thomas Olson[1]; Yiquan Wu[1]; [1]Alfred University

8:40 AM
Efficient Stabilization of Luminescent Copper Ions in Phosphate Glass: Synthesis, Characterization, and Prospective Application: *Jose Jimenez*[1]; [1]University of North Florida

9:00 AM
High Intensity Broadband IR Source Using PbSe Quantum Dots in 3-dimensional Structure: *Janardan Nath*[1]; Deep Panjwani[1]; Robert Peale[1]; J. Musgraves[2]; Pete Wachtel[2]; Jennifer McKinley[2]; [1]University of Central; [2]IRradiance Glass Inc.

9:20 AM
Photoluminescence and Structural Analysis of Eu3+ Doped Lithium Titanate: *Yan Yang*[1]; Eric Tower[1]; Yiquan Wu[1]; [1]Alfred University

9:40 AM Break

10:00 AM
Barium Halide Scintillator Ceramics: *Taylor Shoulders*[1]; Samuel Paul[1]; Martin Gascon[2]; Romain Gaume[1]; Gregory Bizarri[2]; Edith Bourret-Courchesne[2]; [1]CREOL/University of Central Florida; [2]Lawrence Berkeley National Lab

10:20 AM Invited
Photomultiplier Tube Glasses for Neutrino Detection: Modeling vs. Experimental: *S. Sundaram*[1]; [1]Alfred University

Green Technologies for Materials Manufacturing and Processing VI — Green Materials Processing III

Program Organizers: Tatsuki Ohji, National Institute of Advanced Industrial Science and Technology (AIST); Mrityunjay Singh, Ohio Aerospace Institute, NASA Glenn Research Center; Richard Sisson, Worcester Polytechnic Institute, Center for Heat Treating Excellence; Marsha Bischel, Armstrong World Industries, Inc.; Makio Naito, Osaka University; Allen Apblett, Oklahoma State University

Wednesday AM
October 15, 2014

Room: Room 311
Location: David L. Lawrence Convention Center

Session Chairs: Tadachika Nakayama, Nagaoka Univ of Tech; Surojit Gupta, University of North Dakota

8:00 AM Invited
Integrated Strategy to Develop Rare-earth Silicate Thermal Insulators: *Jingyang Wang*[1]; [1]Institute of Metal Research

8:20 AM
Fabrication of Si_3N_4 Ceramics by Post-reaction Sintering Technique Using Nanocmoposite Particles of Si-Y_2O_3-Al_2O_3: *Junichi Tatami*[1]; Kwangjin Jeong[1]; Motoyuki Iijima[1]; Takuma Takahashi[2]; [1]Yokohama National University; [2]Kanagawa Academy of Science and Technology

8:40 AM
Effects of Sintering Additives on Thermal and Mechanical Properties of Sintered Reaction-bonded Silicon Nitride Ceramics: *You Zhou*[1]; Hideki Hyuga[1]; Yu-ichi Yoshizawa[1]; Tatsuki Ohji[1]; Kiyoshi Hirao[1]; [1]National Institute of Advanced Industrial Science and Technology (AIST)

9:00 AM
Rare-earth Doped Y2O3 Transparent Multilayer Ceramics: Yan Yang[1]; *Yiquan Wu*[1]; [1]Alfred University

9:20 AM
Contribution to Intergranular Micro-capacity of $BaTiO_3$ Ceramics in View of Fractal Structure: *Vojislav Mitic*[1]; Ljubisa Kocic[1]; Vesna Paunovic[1]; Slobodanka Jankovic[2]; [1]University of Nis, Faculty of Electronic Engineering; [2]Institute of Technical Sciences

Innovation in Processing of Light Metals for Transportation Industries: A Symposium in Honor of C. Ravi Ravindran — Issues in the Processing of Light Alloys

Program Organizers: Lukas Bichler, University of British Columbia; B S Murty, Indian Institute of Technology Madras

Wednesday AM
October 15, 2014

Room: Room 333
Location: David L. Lawrence Convention Center

Session Chairs: Hani Henein, University of Alberta; Steven Cockcroft, University of British Columbia

8:00 AM Keynote
Some Aspects of Solidification of Magnesium Alloys: *Norbert Hort*[1]; Domonkos Tolnai[1]; [1]Helmholtz-Zentrum Geesthacht

8:40 AM Invited
Evolution of Hot Tears during Solidification of Magnesium Alloys: *Lukas Bichler*[1]; Comondore Ravindran[2]; [1]University of British Columbia; [2]Ryerson University

9:00 AM Invited
Horizontal Single Belt Casting of AA6111 Auto-alloy, Including Predictions and Measurements of Interfacial Heat Transfer and Solidification during the First Critical Moments of Melt-substrate Contact: *Roderick Guthrie*[1]; Mihaiela Isac[1]; [1]McGill Metals Processing Centre

9:20 AM Invited
Effect of Deformation Temperature on Precipitation Kinetics of Ultrafine Grained Al-Mg-Si Alloys: *R Jayaganthan*[1]; P.N Nageswara Rao[1]; [1]IIT Roorkee

9:40 AM Break

10:00 AM Invited
Additive Manufacturing with Aluminium Alloys: *G.D. Janaki Ram*[1]; [1]Indian Institute of Technology Madras

10:20 AM Invited
Hot Tearing Mechanisms during Solidification of B206 Aluminum Alloy: *Francesco D'Elia*[1]; Comondore (Ravi) Ravindran[1]; Dimitry Sediako[2]; Karl Kainer[3]; Norbert Hort[3]; [1]Ryerson University; [2]Canadian Neutron Beam Centre - National Research Council of Canada; [3]Helmholtz-Zentrum Geesthacht

10:40 AM Invited
Optimization of the Aluminum Alloy Wheel Casting Process Using Process Modeling: Jianglan Duan[1]; Carl Reilly[1]; *Daan Maijer*[1]; Steve Cockcroft[1]; [1]The University of British Columbia

Interfaces, Grain Boundaries, and Surfaces from Atomistic and Macroscopic Approaches: Fundamental and Engineering Issues — Kinetics of Interface and Surface Morphological Changes

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

Wednesday AM
October 15, 2014

Room: Room 404
Location: David L. Lawrence Convention Center

Session Chairs: Mor Baram, McMaster University; James LeBeau, North Carolina University

8:00 AM Invited
Probing Trends in Grain Boundary Thermodynamics through Diffusivity Measurements: *Shen Dillon*[1]; [1]University of Illinois at Urbana-Champaign

8:20 AM Invited
Mixed Control of Boundary Migration and the Principle of Microstructural Evolution: *Suk-Joong L. Kang*[1]; [1]KAIST

8:40 AM Invited
An Alternative Mechanism for Two-step Sintering: *Patrick Cantwell*[1]; Shuailei Ma[1]; Stephanie Bojarski[2]; Gregory Rohrer[2]; Martin Harmer[1]; [1]Lehigh University; [2]Carnegie Mellon University

9:00 AM Invited
Concurrent Physical Vapor Deposition and Microstructure Evolution Simulation of Thin Films: Yunbo Wang[1]; David Ely[1]; *R. Edwin Garcia*[1]; [1]Purdue University

9:20 AM
Evolution of Grain Boundaries during Thermal Coarsening of Copper with Varying Processing History: *S.F. Li*[1]; J. Lind[1]; M. Kumar[1]; [1]Lawrence Livermore National Laboratory

9:40 AM Break

10:00 AM
Spatially Resolved Critical Events in Bulk Microstructures: *C.M. Hefferan*[1]; S.F. Li[2]; J. Lind[2]; D. Menasche[3]; U. Lienert[4]; A.D. Rollett[3]; R.M. Suter[3]; R. Pokharel[5]; [1]R.J. Lee Group; [2]Lawrence Livermore National Laboratory; [3]Carnegie Mellon University; [4]Detusches Elektronen-Synchrotron; [5]Los Alamos National Laboratory

10:20 AM
Monte Carlo Study of Nanostructured Alloys with Grain Boundary Segregation States: *Tongjai Chookajorn*[1]; Christopher Schuh[1]; [1]MIT

10:40 AM
Computing the Free Energy and Mobility of Curved Grain Boundaries: *Jonathan Humberson*[1]; Elizabeth Holm[1]; [1]Carnegie Mellon University

International Symposium on Defects, Transport, and Related Phenomena — Defect and Transport in Materials for Applications I

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

Wednesday AM
October 15, 2014

Room: Room 403
Location: David L. Lawrence Convention Center

Session Chairs: Eugene Kotomin, Max Planck Institute ; Peter Slater, University of Birmingham

8:00 AM Invited
Mixed Conducting Electrodes for SOFC: Current State of Understanding and Problems to be Clarified: *Tatsuya Kawada*[1]; [1]Tohoku University

8:40 AM Invited
Oxyanion Doping Strategies in Solid Oxide Fuel Cell Electrode Materials: *Peter Slater*[1]; Jose Porras-Vazquez[1]; Phil Keenan[1]; [1]University of Birmingham

9:20 AM
Electrical Conductivity Relaxation (ECR) Investigations of Anisotropic Oxygen Transport in $La_2NiO_{4+\delta}$ Thin Films: Miaolei Yan[1]; *Paul Salvador*[1]; [1]Carnegie Mellon University

9:40 AM Break

10:00 AM Invited
Ceria Based Solid Oxide Solutions: Taking a Closer Look at Doping Strategies to Control Mixed Conduction: *Hans Wiemhöfer*[1]; [1]University of Münster

10:40 AM
The Correlation between Oxygen Non-stoichiometry and Oxygen Exchange Rate of Praseodymium-cerium Oxide System: *Di Chen*[1]; Harry Tuller[1]; [1]Massachusetts Institute of Technology

Joining of Advanced and Specialty Materials (JASM XVI) — Welding Metallurgy III

Program Organizers: Michael Halbig, NASA Glenn Research Center; Boian Alexandrov, The Ohio State University; Akio Hirose, Osaka University; Anming Hu, University of Tennessee; Peng He, Harbin Insitute of Technology; Darren Barborak, Aquilex WSI; Bingtao Li, AZZ WSI; Xinjin Cao, Institute for Aerospace Research

Wednesday AM
October 15, 2014

Room: Room 330
Location: David L. Lawrence Convention Center

Session Chairs: Thomas Lienert, Los Alamos National Laboratory; Norman Zhou, University of Waterloo

8:00 AM
Strength Recovery in NUCu-140 through Multipass Weld Simulations and Isothermal Post-weld Heat Treatments: *Jason Bono*[1]; John DuPont[1]; [1]Lehigh University

8:20 AM
Ductility-dip Cracking Susceptibility of Various Nickel-based Alloys Utilizing the Strain-to-fracture Testing Technique: *Verner Kreuter*[1]; John Lippold[1]; [1]The Ohio State University

8:40 AM
Microstructure and Mechanical Properties of the Fusion and Heat Affected Zones of a Laser Welded DP780 Steel: *Heather Smith*[1]; Joseph McDermid[1]; Moise Bruhis[1]; Elliot Biro[2]; Y. Norman Zhou[3]; [1]McMaster University; [2]ArcelorMittal Dofasco; [3]University of Waterloo

9:00 AM
Prediction Method for Initial Deformation of Multi-pass Circumferential TIG Welding with Narrow Gap: *Hisashi Serizawa*[1]; Kyosuke Kanbe[2]; Yusuke Okuda[2]; Shinichiro Nakamura[3]; Hidekazu Murakawa[1]; [1]Joining and Welding Research Institute, Osaka University; [2]Graduate School of Engineering, Osaka University; [3]Power Systems Company,Toshiba Corporation

9:20 AM
Residual Stresses through Multi-pass Welds in Inconel 600: *Joanna Walsh*[1]; Alison Mark[1]; John Francis[1]; Philip Withers[1]; [1]University of Manchester

9:40 AM Break

10:00 AM
Stress-relief Cracking in Creep-resistant Steel Welds: *Katherine Strader*[1]; Boian Alexandrov[2]; John Lippold[2]; [1]Other; [2]The Ohio State University

10:20 AM
The Assessment of the Satoh Test as a Means to Understand Residual Stress Evolution in Welds: *Jonathan Galler*[1]; John DuPont[1]; [1]Lehigh University

10:40 AM
Strain Energy Approach to Study Carbon Segregation in Niobium High-strength Steels during Friction Stir Welding: Juana Eloina Mancilla Tolama[1]; *Carlos Adolfo Hernández Carreón*[1]; Alfonso Treviño González[1]; Juan Hernández Garduño[1]; [1]Instituto Politécnico Nacional

Materials Development for Nuclear Applications and Extreme Environments — Cladding Materials

Program Organizers: Raghunath Kanakala, University of Idaho; Ram Devanathan, Pacific Northwest National Laboratory; Josef Matyas, Pacific Northwest National Laboratory; Kevin Fox, Savannah River National Laboratory; Elizabeth Hoffman, Savannah River National Laboratory; Raul Rebak, GE Global Research; Aladar Csontos, U.S. Nuclear Regulatory Commission; Kumar Sridharan, University of Wisconsin; Bill Lee, Imperial College London

Wednesday AM
October 15, 2014

Room: Room 415
Location: David L. Lawrence Convention Center

Session Chair: Raul Rebak, GE Global Research

8:00 AM
Compositionally Graded Transition Joints between Ceramics and Alloys for Nuclear Fuel Cladding Applications: Andrew Morgan[1]; *Gokul Vasudevamurthy*[1]; Lance Snead[2]; [1]Virginia Commonwealth University; [2]Oak Ridge National Laboratory

8:20 AM Invited
Accident Tolerant Alloys for Extreme Nuclear Applications: *Raul Rebak*[1]; [1]GE Global Research

9:00 AM Invited
Lessons Learned in the Design and Analysis of Accident Tolerant Fuel-cladding Systems in Preparation for In-reactor Testing: *Kristine Barrett*[1]; Steven Hayes[1]; Heather Chichester[1]; Shannon Bragg-Sitton[1]; Jason Harp[1]; Michael Teague[1]; Christopher Glass[1]; Glenn Roth[1]; Kelly Ellis[1]; [1]Idaho National Laboratory

9:40 AM Break

10:00 AM Invited
Densification Behavior and Interfaces of Ultra-high Temperature Carbide Materials for Extreme Environment Applications: *Olivia Graeve*[1]; James Kelly[1]; [1]University of California, San Diego

10:20 AM
Process Optimization Of Hot Isostatically Pressed Aluminum-clad Monolithic Uranium-10 wt. pct. Molybdenum Fuel Plates: *Kester Clarke*[1]; Joel Montalvo[1]; Ann Kelly[1]; Laura Tucker[1]; Jeffrey Scott[1]; Beverly Aikin[1]; Victor Vargas[1]; Matthew Dvornak[1]; Cheng Liu[1]; Manuel Lovato[1]; Rick Hudson[1]; David Dombrowski[1]; [1]Los Alamos National Laboratory

10:40 AM Invited
Correlation between Electronic Properties and Stability of Protective Oxide Layers of Fuel Cladding Materials: *Krishnan Raja*[1]; [1]University of Idaho

Materials Issues in Nuclear Waste Management in the 21st Century — A Science-based Approach to Understanding Long-Term Performance of Waste Forms

Program Organizers: Josef Matyas, Pacific Northwest National Laboratory; Stéphane Gin, CEA; Kevin Fox, Savannah River National Laboratory; Elizabeth Hoffman, Savannah River National Laboratory; Dawn Janney, Idaho National Laboratory; Ramana Reddy, The University of Alabama; Ram Devanathan, Pacific Northwest National Laboratory; Raghunath Kanakala, University of Idaho

Wednesday AM
October 15, 2014

Room: Room 413
Location: David L. Lawrence Convention Center

Session Chairs: Rodney Ewing, Stanford University; Nicholas Dacheux, Universite de Montpellier

8:00 AM Invited
Long-term Performance of Waste Glass: Recent Results and Perspectives: *Joseph Ryan*[1]; [1]Pacific Northwest National Lab

8:40 AM
Glass Surface and Bulk Glass-surface Layer Interface Evolution with Aqueous Corrosion: *Wei Deng*[1]; Yuxuan Gong[1]; Scott Misture[1]; Nathan Mellott[1]; [1]Alfred University

9:00 AM
Effect of Initial Surface Condition on Aqueous Corrosion Behavior of Simulated High-level Waste Glass Surfaces: *Yuxuan Gong*[1]; Wei Deng[1]; Nathan Mellott[1]; [1]Alfred University

9:20 AM
AFM Based Mechanical Property Mapping of Polished Glass Surfaces: *Juliane Hopf*[1]; Eric Pierce[1]; [1]ORNL

9:40 AM Break

10:00 AM
Analyses of Ceramic Waste Forms Exposed to Vapor Hydration Conditions: *James Marra*[1]; Jake Amoroso[1]; Kyle Brinkman[2]; [1]Savannah River National Laboratory; [2]Clemson University

10:20 AM
Structural and Microstructural Changes during the Dissolution of Oxide Based Ceramics: Consequences on Evolving Reactive Interface: *Nicolas Dacheux*[1]; Florent Tocino[2]; Laurent Claparede[1]; Denis Horlait[1]; Nicolas Clavier[3]; Adel Mesbah[3]; Stéphanie Szenknect[2]; [1]University of Montpellier 2; [2]CEA; [3]CNRS

Materials Science of Additive Manufacturing — Processing I

Program Organizers: Panagiotis (Pan) Michaleris, Penn State University; Brett Conner, Youngstown State University; Michael Blaszkiewicz, SABIC Innovative Plastics; Wayne King, LLNL; Edward Reutzel, ARL Penn State; Todd Palmer, Penn State; Crystal Morrison, RJ Lee Group; Guha Manogharan, YSU

Wednesday AM
October 15, 2014

Room: Room 328
Location: David L. Lawrence Convention Center

Session Chair: Brett Conner, Youngstown State University

8:00 AM Invited
Advanced Materials Processing by Electron Beam Melting: *Sara Gaytan*[1]; Ryan Wicker[1]; [1]UTEP

8:40 AM
Integrated Control of Solidification Microstructure and Melt Pool Dimensions in Electron Beam Powder Bed Additive Manufacturing Processes: *Joy Gockel*[1]; Daniel Christiansen[1]; Jason Fox[1]; Jack Beuth[1]; Ola Harrysson[2]; Tim Horn[2]; Ron Aman[2]; Harvey West[2]; [1]Carnegie Mellon University; [2]North Carolina State University

9:00 AM
Effect of Process Variables on Solidification Microstructure in Beam-based Additive Manufacturing of Inconel 718: *John Thompson*[1]; Nathan Klingbeil[1]; [1]Wright State University

9:20 AM
Sintering Behavior of Components Produced by Additive Manufacturing Using Gas Versus Water Atomized 420 Stainless Steels Powders: *Zhou Yu*[1]; Sin Chien Siw[1]; Isaac Garcia[1]; Mike Orange[2]; Chris Shade[3]; [1]University of Pittsburgh; [2]ExOne; [3]Hoeganaes Corporation

9:40 AM Break

10:00 AM
Structure-property Relationship of 3D Printed Ceramic and Foam Structures: *Kyle Myers*[1]; Pedro Cortes[1]; [1]Youngstown State University

10:20 AM
Metal Alloy Characterization and Design for 3-D Metal Printing Applications: *Amberlee Haselhuhn*[1]; Paul Sanders[1]; Joshua Pearce[1]; [1]Michigan Technological University

10:40 AM
The Development of Laser Cold Spray for Spatiotemporal Microstructural Control of Ti-6Al-4V Deposits: *Aaron Birt*[1]; Richard Sisson[1]; Diran Apelian[1]; Victor Champagne[1]; [1]Worcester Polytechnic Institute

Mechanical Behavior of Technological Coatings and Thin Films — Techniques for Measuring Mechanical Behavior of Thin Films

Program Organizers: Douglas Stauffer, Hysitron, Inc.; Megan Cordill, Erich Schmid Institute of Materials Science; Joseph Jakes, USDA Forest Products Laboratory; Mark Weaver, University of Alabama; Marian Kennedy, Clemson University; Reginald Hamilton, The Pennsylvania State University

Wednesday AM
October 15, 2014

Room: Room 401
Location: David L. Lawrence Convention Center

Session Chair: Megan Cordill, Erich Schmid Institute of Materials Science

Funding support provided by Hysitron, Inc.

8:00 AM Invited
Fracture Toughness Enhancement of Thin Films by Advanced Microstructural Design and Architecture: *Rostislav Daniel*[1]; Christian Mitterer[1]; Jozef Keckes[1]; [1]Montanuniversität Leoben

8:40 AM
Recent Advancements in Thin Film Characterization: *Karolina Rzepiejewska-Malyska*[1]; Anqi Qiu[1]; Rajiv Dama[1]; Oden Warren[1]; [1]Hysitron, Inc.

9:00 AM
Accounting for Substrate Effects in Thin Film Nanoindentation Using the Structural Compliance Method: *Joseph Jakes*[1]; [1]US Forest Service, Forest Products Laboratory

9:20 AM
Deformation Mechanism and Nanomechanical Properties of Tungsten-carbon Tribofilms: An Experimental and Numerical Atomistic Investigation: *Pantcho Stoyanov*[1]; Pedro Romero[2]; Martin Dienwiebel[2]; Michael Moseler[2]; Roland Bennewitz[3]; [1]Kennametal Inc.; [2]Fraunhofer-Institute for Mechanics of Materials IWM; [3]INM – Leibniz-Institut für Neue Materialien gGmbH

9:40 AM Break

10:00 AM Invited
Multi-modal Nanoscale Characterization, Chemical, Thermal and Mechanical Analysis of Coatings and Thin Films: *Kevin Kjoller*[1]; Michael Lo[1]; Eoghan Dillon[1]; Craig Prater[1]; [1]Anasys Instruments

10:40 AM
Measurement of Young's Modulus in Gold-nickel Nanolaminates Using Nanoindentation and the Tapping Mode: *Alan Jankowski*[1]; [1]Texas Tech University

Multifunctional Oxides — Novel Applications

Program Organizers: Xiaoqing Pan, University of Michigan; Chonglin Chen, University of Texas at San Antonio; Quanxi Jia, Los Alamos National Laboratory; Judith Driscoll, University of Cambridge

Wednesday AM
October 15, 2014

Room: Room 303
Location: David L. Lawrence Convention Center

Session Chairs: Jim Zheng, FAMU-FSU College of Engineering; Kevin Huang, Univ. South Carolina

8:20 AM
Fabrication of Titanium Oxide Magnéli Phase Nanoceramics for Thermoelectric Applications: *Sudeep Pandey*[1]; Taylor Shoulders[1]; Shidong Wang[2]; Stefano Curtarolo[2]; Romain Gaume[1]; [1]University of Central Florida; [2]Duke University

8:40 AM Invited
Multifunctionality of Atomic Layer Deposition Derived Oxide Overlayers for High Performance Intermediate-temperature Solid Oxide Fuel Cells: *Kevin Huang*[1]; [1]University of South Carolina

9:00 AM
Magnetoelectric Assisted 180-degree Magnetization Switching for Electric Field-addressable Writing in Magnetoresistive Random-access Memory: *Zhiguang Wang*[1]; Jiefang Li[1]; Dwight Viehland[1]; [1]Virginia Tech

9:20 AM
The Effects of Humidity and Pressure on the Low Field Resistivity of Zinc Oxide Based Varistor Granules: *Terry Garino*[1]; [1]Sandia National Laboratories

9:40 AM Break

10:00 AM Invited
Proton Transfer and Storage Behavior in Nanoparticles of Ruthenium Oxide: *Jim Zheng*[1]; [1]Florida State University

10:20 AM
Water splitting photocatalysis using pristine H1.8Bi0.2CaNaNb3O10 nanosheets: *Jian Liu*[1]; Eric Nichols[1]; Luke Daemen[2]; Monkia Hartl[2]; Graham King[2]; Jane Howe[3]; Scott Misture[1]; [1]Alfred Univeristy; [2]Los Alamos National Laboratory; [3]Oak Ridge National Laboratory

10:40 AM Invited
Integrating Multifunctional Oxides into Monodisperse Nanomaterial Heterostructures and Composites: *Mark Hersam*[1]; [1]Northwestern University

11:00 AM
Experimental Phase Stability of (LaxSr1-x)zCryFe1-yO$_3$-d (LSCF) and Stabilized Zirconia (MSZ, M=Y,Sc) for Oxygen Membranes: Maria Mora[1]; Shadi Darvish[1]; Vadym Drozd[1]; Andriy Durgin[1]; Surendra Saxena[1]; *Yu Zhong*[1]; [1]Florida International University

Nanotechnology for Energy, Environment, Electronics, and Industry — Healthcare & Electronics II

Program Organizers: Gary Pickrell, Virginia Tech; Navin Manjooran, Siemens AG

Wednesday AM
October 15, 2014

Room: Room 320
Location: David L. Lawrence Convention Center

Session Chairs: Navin Manjooran, Siemens AG; Gary Pickrell, Virginia Tech; Parthiban Rajashekaran, UCF

8:00 AM Invited
Functional Materials for High Temperature Sensing in Power Generation Applications: *Paul Ohodnicki*[1]; Thomas Brown[1]; Andrew Schultz[1]; Michael Buric[1]; John Baltrus[1]; [1]National Energy Technology Laboratory

8:40 AM
Graphene Substrate Mediated Self-assembly of Aligned Fullerene Nanorods: *Tony Jefferson Gnanaprakasa*[1]; Deepak Sridhar[1]; Warren Beck[1]; Thomas Zega[1]; Keith Runge[1]; Pierre Deymier[1]; Barrett Potter Jr.[1]; Krishna Muralidharan[1]; [1]The University of Arizona

9:00 AM
Development of (Cu_2O-ZnO) Binary Oxide Anode for Electrochemical Degradation of Dye: *Meryem El Hajji*[1]; Abdelali Hallaoui[2]; Lahcen Bazzi[2]; Abdeljalil Benlhachemi[2]; Omar Jbara[3]; Ahmed Tara[3]; Bahcine Bakiz[4]; [1]Materials and Environment Laboratory, Faculty of Sciences Agadir; [2]Ibn Zohr University Faculty of Science; [3]Engineering and Materials Science Laboratory (LISM), UFR Sciences, University of Reims; [4]Microelectronic Materials and Nanosciences Institute of Provence, CNRS UMR 7334, University South Toulon-Var

9:20 AM
Synthesis of Coated Nano Calcium Carbonate Particles and Their Characterization: *Sylvia Benjamin*[1]; Farah Mustafa[1]; [1]Forman Christian College

9:40 AM Break

10:00 AM
Structural Stability Study of Ni-Co Core-shell Nanoparticles: *Cecile Bonifacio*[1]; Sophie Carenco[2]; Huolin Xin[3]; Miquel Salmeron[2]; Eric Stach[3]; Judith Yang[1]; [1]University of Pittsburgh; [2]Materials Science Division, Lawrence Berkeley National Laboratory; [3]Center for Functional Nanomaterials

10:20 AM
Synthesis of TiO_2 Nano-structures Via Hydrothermal Method: *Nursev Bilgin*[1]; Lutfi Agartan[2]; Jongee Park[3]; Abdullah Ozturk[1]; [1]Middle East Technical University; [2]Drexel University; [3]Atilim University

Next Generation Biomaterials — Session V

Program Organizers: Roger Narayan, UNC/NCSU Joint Department of Biomedical Engineering; Diego Mantovani, Laval University; Raman Singh, Monash University

Wednesday AM
October 15, 2014

Room: Room 315
Location: David L. Lawrence Convention Center

Session Chairs: William Brantley, The Ohio State University; Christopher Siedlecki, The Pennsylvania State University

8:00 AM
Graphene Oxide as a Potential Carrier for Drug & Gene Delivery: *Mitali Kakran*[1]; Maria Antipina[1]; [1]Institute of Materials Research and Engineering (IMRE)

8:20 AM
Accurate Atomistic Models of pH Responsive Surfaces of Silica and Apatite to Quantify Recognition of Proteins and Drugs: Fateme Emami[1]; Tzu-Jen Lin[1]; Rajesh Naik[2]; Carole Perry[3]; *Hendrik Heinz*[1]; [1]University of Akron; [2]Air Force Research Laboratory; [3]Nottingham Trent University

8:40 AM
Exploration of Amorphous and Crystalline Tri-magnesium Phosphates for Bone Cements: *Nicole Ostrowski*[1]; Vidisha Sharma[1]; Abhijit Roy[1]; Prashant Kumta[1]; [1]University of Pittsburgh

9:00 AM Invited
Micro-x-ray Diffraction Study of New Nickel-titanium Rotary Endodontic Instruments: Masahiro Iijima[1]; *William Brantley*[2]; William Clark[2]; Scott Schricker[2]; John Nusstein[2]; Itaru Mizoguchi[1]; [1]Health Sciences University of Hokkaido; [2]The Ohio State University

9:20 AM Invited
Nanoengineering of the Blood-material Interface: *Christopher Siedlecki*[1]; [1]Pennsylvania State University

9:40 AM Break

10:00 AM
Synthesization, Characterization, and In Vitro Evaluation of Cytotoxicity of Biomaterials Based on Halloysite Nanotubes: Antonio Sánchez-Fernández[1]; Laura Pena-Paras[2]; Rodrigo Cué Sampedro[1]; Román Tamayo[2]; *Ana Mendoza*[2]; Paulina Riojas[2]; [1]Tecnológico de Monterrey; [2]Universidad de Monterrey

Pb-free Solders and Advanced Interconnecting Materials — Session II

Program Organizers: Albert T. Wu, National Central University; Carol Handwerker, Purdue University

Wednesday AM
October 15, 2014

Room: Room 312
Location: David L. Lawrence Convention Center

Session Chairs: C. Robert Kao, National Taiwan University; George Milad, Uyemura; Albert T. Wu, National Central University

8:00 AM Invited
The Inhibition of Tin Whiskers from Electroplated Tin: *George Milad*[1]; [1]Uyemura International Corporation

8:20 AM
3-D Simulations for Thermoelastic Stress Distributions Related to Whisker Growth: *Wei-Hsun Chen*[1]; Benjamin Anglin[2]; Carol Handwerker[1]; Anthony Rollett[2]; John Blendell[1]; [1]Purdue University; [2]Carnegie Mellon University

8:40 AM
Evaluation of Interfacial Adhesion of Polyurethane Conformal Coatings Used for Tin Whisker Mitigation: *Maria Penafrancia Roma*[1]; Suraj Maganty[1]; Ryan Roder[1]; S.J. Meschter[2]; Junghyun Cho[1]; [1]SUNY - Binghamton; [2]BAE` Systems

9:00 AM
Evolution of Residual Stress of Tin Film and the Kinetic Analysis for Tin Whiskers: *Hao Chen*[1]; Chien-Hao Su[1]; Hsin-Yi Lee[2]; Ching-Shun Ku[2]; Albert T. Wu[1]; [1]National Central University; [2]National Synchrotron Radiation Research Center

9:20 AM
Nanoparticle-filled Conformal Coatings for Tin Whisker Mitigation: *Suraj Maganty*[1]; Maria Roma[1]; Stephan Meschter[2]; Junghyun Cho[1]; [1]Binghamton University; [2]BAE Systems

9:40 AM Break

10:00 AM
Interfacial Reactions Issues Related to Micro Joints: *C. Robert Kao*[1]; [1]National Taiwan University

10:20 AM
Spreading Kinetics and Interfacial Reaction in Sn/Cu System: Oleksii Liashenko[1]; *Fiqiri Hodaj*[1]; [1]Grenoble Institute of Technology

10:40 AM
Interfacial Reactions of Sn-9Zn/Al and Sn-3.5Ag/Al Solder Joints during Soldering Process: *Yao Yao*[1]; Feng Xue[1]; Jian Zhou[1]; Xu Chen[1]; [1]Southeast University

11:00 AM
In-situ HE-XRD Characterization of Microstructure Evolution in SAC Solder Joints with Different Cooling and Thermal Cycling Conditions: *Quan Zhou*[1]; Huili Xu[2]; Choong-Un Kim[2]; Thomas Bieler[1]; Tae-Kyu Lee[3]; [1]Michigan State University; [2]University of Texas at Arlington; [3]Cisco System Inc.

Phase Stability, Diffusion Kinetics, and their Applications (PSDK-IX) — Critical Materials I

Program Organizers: Dongwon Shin, Oak Ridge National Laboratory; In-Ho Jung, McGill University; James Saal, Northwestern University; Raymundo Arroyave, Texas A & M University

Wednesday AM
October 15, 2014

Room: Room 402
Location: David L. Lawrence Convention Center

Session Chairs: In-Ho Jung, McGill University; Yu Zhong, Florida International University

8:00 AM Invited
Thermodynamics of Multicomponent Oxides Containing Rare Earths: *Alexandra Navrotsky*[1]; [1]UC Davis

8:40 AM Invited
Synthesis and Thermoelectric Properties of Rare-earth Sulfides: *Shinji Hirai*[1]; [1]Muroran Institute of Technology

9:20 AM Invited
Phase Diagram and Thermodynamic Properties Modeling of Rare-earth Systems Involving Light Metals and Salts: *Patrice Chartrand*[1]; Liling Jin[1]; Zhijun Zhu[1]; Arthur Pelton[1]; [1]Ecole Polytechnique

10:00 AM Break

10:20 AM
Application of Computational Thermodynamics on Long Term Degradation of Solid Oxide Fuel Cell: Ali Karbasi[1]; Maria Mora[1]; Shadi Darvish[1]; *Yu Zhong*[1]; [1]Florida International University

10:40 AM Invited
Unique Properties of Rare Earth Oxides-Application for Environmental Catalysts: *Nobuhito Imanaka*[1]; [1]Osaka University

Phase Transformations in Ceramics: The Present and the Future — Characterization of Transformations

Program Organizers: Ivar Reimanis, Colorado School of Mines; Waltraud Kriven, University of Illinois at Urbana-Champaign; Pankaj Sarin, Oklahoma State University in Tulsa

Wednesday AM
October 15, 2014

Room: Room 301
Location: David L. Lawrence Convention Center

Session Chairs: Eric Dooryhee, Brookhaven National Laboratory; Pankaj Sarin, Oklahoma State University at Tulsa

8:00 AM Invited
In Situ Diffraction Studies of Phase Transitions Driven by Oxygen Activity: *Scott Misture*[1]; [1]Alfred University

8:40 AM
Ageing of Yttria-stabilized Zirconia in Controlled Environments: *Timothy Montalbano*[1]; Daniel Mumm[1]; [1]University of California, Irvine

9:00 AM
Nanostability of the Yittria-zirconia System: An Encompassing Phase Diagram Using Grain Size and Composition: *John Drazin*[1]; Ricardo Castro[1]; [1]UC Davis

9:20 AM
In Situ Phase Diagram of Scandia-zirconia by High Temperature X-ray Diffraction: Maria Mora[1]; Shadi Darvish[1]; Andriy Durgin[1]; Vadym Drozd[1]; Surendra Saxena[1]; *Yu Zhong*[1]; [1]Florida International University

9:40 AM Break

10:00 AM Invited
In Situ Synchrotron Diffraction of the HfO_2 Phase Transformation in Air to 1850°C: Ryan Haggerty[1]; Pankaj Sarin[1]; Zlatomir Apostolov[1]; Patrick Driemeyer[1]; *Waltraud Kriven*[1]; [1]University of Illinois at Urbana-Champaign

10:40 AM Invited
In Situ Diffraction Investigations of the Interactions Between Elasticity, Phase Transformations, and Plasticity: *Aaron Stebner*[1]; [1]Colorado School of Mines

11:20 AM
Characterization of Thermal Expansion and Phase Transformations in the Ln_2TiO_5 System via *In Situ* Synchrotron X-ray Diffraction (Ln= Dy, Y, Er) up to 1500 °C: *Kevin Seymour*[1]; Robert Hughes[1]; Waltraud Kriven[1]; [1]University of Illinois at Urbana-Champaign

Processes, Applications, and Performance of Materials in Additive Manufacturing — Laser Based Processes

Program Organizers: Andrzej Wojcieszynski, ATI Powder Metals; Ulf Ackelid, Arcam AB; Ian Harris, Edison Welding Institute; Ola Harrysson, North Carolina State University; Sudarsanam Babu, The Ohio State University; Rodney Boyer, Boeing - retired

Wednesday AM
October 15, 2014

Room: Room 327
Location: David L. Lawrence Convention Center

Session Chair: Sudarsanam Babu, The University of Tennessee

8:00 AM Invited
Mechanical Properties of Nickel Alloys Produced by Laser Powder Bed Fusion: *Shawn Kelly*[1]; Alber Sadek[1]; Ian Harris[1]; [1]EWI

8:40 AM
A Facility for Absolute Temperature Characterization of Laser Irradiated Metal Powders for Additive Manufacturing: *Steven Grantham*[1]; Sergey Mekhontsev[1]; Leonard Hanssen[1]; Wes Tew[1]; [1]NIST

9:00 AM
Analysis of a Wire-based Laser Deposition Welding Process with High-frequency Oscillation of the Laser Beam: *Maximilian Wegener*[1]; Fritz Klocke[2]; Kristian Arntz[1]; [1]Fraunhofer Institute for Production Technology; [2]Werkzeugmaschinenlabor WZL der RWTH Aachen

9:20 AM
Atomization and Selective Laser Melting of Cu-Al-Ni-Mn and Cu-Al-Ni-Mn-Zr Shape Memory Alloys: Claudio Kiminami[1]; Jonadabe Martins[1]; Tobias Gustmann[2]; Eric Mazzer[1]; Regis Cava[1]; Claudemiro Bolfarini[1]; Walter Botta[1]; *Piter Gargarella*[1]; Jürgen Eckert[3]; Simon Pauly[2]; [1]Federal University of S. Carlos; [2]Leibniz Institute for Solid State and Materials Research - Dresden; [3]Leibniz Institute for Solid State and Materials Reseach - Dresden

9:40 AM Break

10:00 AM
Process Mapping of Melt Pool Geometry in the Laser Powder Bed Additive Manufacturing of Inconel 625: *Colt Montgomery*[1]; Jack Beuth[1]; Shawn Moylan[2]; [1]Carnegie Mellon University; [2]NIST

10:20 AM
Phase Transformation Behavior in NiTi Fabricated Using Laser-based Directed Energy Deposition: Reginald Hamilton[1]; *Beth Bimber*[1]; Jayme Keist[1]; Todd Palmer[1]; [1]The Pennsylvania State University

10:40 AM
Selective Laser Melting and Sub-solidus Selective Laser Sintering of Coated Cu Powders: *David Walker*[1]; William Caley[2]; Mathieu Brochu[1]; [1]McGill University; [2]Dalhousie University

Robert B. Sosman Award Symposium: Opportunities for Enhancement of Nanomechanical Properties of Materials — Session I

Program Organizers: Debra Kaiser, NIST; Rajan Tandon, Sandia National Laboratories

Wednesday AM
October 15, 2014

Room: Room 316
Location: David L. Lawrence Convention Center

Session Chair: Rajan Tandon, Sandia National Laboratories

8:00 AM Invited
Hybrid Films for Nano and Energy Technologies: Molecular Design and ThermoMechanical Properties: *Reinhold Dauskardt*[1]; [1]Stanford University

8:40 AM Invited
Assessing the Role of Adhesion and Fracture on the Performance of Thin Film Systems: *Neville Moody*[1]; Megan Cordill[2]; Marian Kennedy[3]; David Adams[1]; E. Reedy, Jr[1]; David Bahr[4]; William Gerberich[5]; [1]Sandia National Laboratories; [2]Erich Schmid Institute; [3]Clemson University; [4]Purdue University; [5]University of Minnesota

9:20 AM Invited
Advances in Instrumented Indentation: "Conventional" Mechanical Testing at the Micron Scale: *Erica Lilleodden*[1]; [1]Helmholtz-Zentrum Geesthacht

10:00 AM Break

10:20 AM Invited
A Short History of Indentation: *Brian Lawn*[1]; [1]National Institute of Standards and Technology

Rustum Roy Symposium on Processing and Performance of Materials using Microwaves, Electric and Magnetic Fields, Ultrasound, Lasers, and Mechanical Work — Session V

Program Organizers: Morsi Mahmoud , Karlsruhe Institute of Technology (KIT) & City for Scientific Research and Technological Applications (SRTA City); Dinesh Agrawal, Pennsylvania State University; Guido Link, Karlsruhe Institute of Technology; Motoyasu Sato, Chubu University; Rishi Raj, University of Colorado

Wednesday AM
October 15, 2014

Room: Room 317
Location: David L. Lawrence Convention Center

Session Chair: Ralph Bruce, Vanderbilt University

8:00 AM Invited
Advancing Composites in Automotive by Electromagnetic Processing: *Lambert Feher*[1]; [1]TWI Ltd.

8:40 AM Invited
Electrochemical Assisted Microstructure Control for Ceramic Coatings on Metallic Materials by Growing Integration Layer [GIL] Method: *Masahiro Yoshimura*[1]; [1]National Cheng Kung University

9:20 AM
Magnetic Processing of Lead Free Solder Systems: Edward Ripley[1]; *Russell Hallman*[1]; [1]B&W Y-12 Plant

9:40 AM Break

10:00 AM
On Microwave Drilling of Borosilicate Glass in a Customised Applicator: Nitin Lautre[1]; *Apurbba Sharma*[1]; [1]IIT Roorkee

Sintering and Related Powder Processing Science and Technologies — Sintering II

Program Organizers: Ricardo H. R. Castro, University of California at Davis; Eugene Olevsky, San Diego State University; Olivia Graeve, University of California, San Diego; Umberto Anselmi-Tamburini, University of Pavia; Zak Fang, University of Utah ; Troy Holland, Colorado State University

Wednesday AM
October 15, 2014

Room: Room 326
Location: David L. Lawrence Convention Center

Session Chairs: Ian Nettleship, University of Pittsburgh; Elizabeth Kupp, The Pennsylvania State University

8:00 AM
Additive Manufacturing of Bi_2Te_3 for Improved Thermoelectric Performance: Effects of Laser Sintering and Deposition with and without PCO Substrates: *Matthew Barry*[1]; Jon Kim[1]; C. Garcia[1]; Minking Chyu[1]; [1]University of Pittsburgh

8:20 AM
The Effects of MgO on the Sintering Behavior and Microstructure Evolution of Bayer-processed Aluminas: *Elizabeth Kupp*[1]; I. Ozer[1]; Tobias Frueh[1]; Jesse Mattson[1]; Charles Compson[2]; Joseph Atria[2]; Marcel Spreij[2]; Gary Messing[1]; [1]Penn State University; [2]Almatis, Inc.

8:40 AM
Crystallographic Influence on Thermally Induced Porosity Studied Using nf-HEDM: *David Menasche*[1]; Jon Lind[2]; Shiu Fai Li[2]; Joel Bernier[2]; Paul Shade[3]; Jay Schuren[3]; Robert Suter[1]; [1]Carnegie Mellon University; [2]Lawrence Livermore National Laboratory; [3]Air Force Research Laboratory

9:00 AM Invited
The Evolution of Aggregated Microstructures during Sintering: *Ian Nettleship*[1]; [1]University of Pittsburgh

9:40 AM Break

10:00 AM
In Situ HT-ESEM Observation of CeO_2 and ThO_2 Sintering : An Original Way to Bridging and Grain Growth Kinetics: *Nicolas Clavier*[1]; Galy Ingrid Nkou Bouala[1]; Renaud Podor[1]; Johann Ravaux[1]; Jacques Lechelle[2]; Nicolas Dacheux[3]; [1]ICSM; [2]CEA; [3]University Montpellier 2

10:20 AM
The Effects of Ga- and In-doping on the Sintering Behavior of Alumina: *Yan Wang*[1]; Patrick Cantwell[1]; Zhiyang Yu[1]; Martin Harmer[1]; [1]Lehigh University

10:40 AM
Transition Metal Oxides and Sintering Atmosphere on the Enhancement of Densification Mechanisms in Stabilized Zirconia: *Stephen Sofie*[1]; Clay Hunt[1]; [1]Montana State University

Surface Protection for Enhanced Materials Performance: Science, Technology, and Application — Multifunctional, Wear and Corrosion Resistant Coatings I

Program Organizers: Dongming Zhu, NASA Glenn Research Center; Rodney Trice, Purdue University; Yutaka Kagawa, The University of Tokyo; Daniel Mumm, University of California-Irvine; Hua-Tay Lin, Oak Ridge National Laboratory; Kang Lee, Rolls Royce; Mitchell Dorfman, Sulzer Metco (US) Inc.; Christian Moreau, Concordia University

Wednesday AM
October 15, 2014

Room: Room 323
Location: David L. Lawrence Convention Center

Session Chair: Bradley Richards, University of Virginia

8:00 AM
Aluminized Multifunctional Coating on Steel in SHS Condition: Borys Sereda[1]; *Dmytro Sereda*[1]; [1]ZSEA

8:20 AM
Effect of Contact Stress and Relative Humidity on the Friction Behaviour of Ion Vapor Deposited (IVD) Al Coatings: *Priyadarshi Behera*[1]; Lisa Lee[1]; Sriraman Rajagopalan[1]; Salim Brahimi[2]; Richard Chromik[1]; Stephen Yue[1]; [1]McGill University; [2]McGill University and IBECA Technologies Corp.

8:40 AM
Hardness Enhancement of Electroplated Zn on Fe-Al Whisker Sensor Using e-ion Plasma and Nano-sized Particle Embedding Techniques: Casey Forman[1]; *Joseph Crapo*[2]; Alison Flatau[2]; Suok-Min Na[2]; [1]University of Maryland ; [2]University of Maryland

9:00 AM
Surface Alloying, Grain Refinement and Corrosion Response Using Surface Mechanical Attrition Treatment: *Heather Murdoch*[1]; Kris Darling[1]; Joseph Labukas[1]; Laszlo Kecskes[1]; [1]Army Research Lab

9:20 AM
Simulation and Modeling of a Carburizing Process Variables for Effective Performance in Service in AISI 1032 Steel: *Adekunle Adegbola*[1]; Joseph Omotoyinbo[2]; Olugbenga Fashina[1]; Abolade Olaniyan[1]; Ghazali Akeem[1]; Oladayo Olaniran[2]; Mutiu Kareem[1]; [1]The Polytechnic, Ibadan; [2]The Federal University of Technology, Akure

9:40 AM Break

10:00 AM
Scale-inhibiting Coating for Oilfield Tools: *Deepak Kumar*[1]; John Welch[1]; Zhiyue Xu[1]; [1]Baker Hughes Inc

10:20 AM
The Influence of Burnishing Depth, Feed Rate, and Number of Tool Passes on the Mechanical Properties of Polymeric Burnishing Flat Components: *NS El-Tayeb*[1]; M Medhat[1]; [1]The British University in Egypt

10:40 AM
Development and Testing of High Temperature Lubrication for Push Bench Mandrel Bars: *Minnal Mayuram*[1]; T. Srihrsha[2]; [1]Indian Institute of Technology Madras; [2]Bharat Heavy Electrical Limited

Thermal Protection Materials and Systems — Insulators for Thermal Protection

Program Organizers: Sylvia Johnson, NASA-Ames Research Center; Parul Agrawal, ERC Corporation; Frances Hurwitz, NASA Glenn Research Center; John Lawson, NASA Ames Research Center

Wednesday AM
October 15, 2014

Room: Room 412
Location: David L. Lawrence Convention Center

Session Chairs: Frances Hurwitz, NASA-Glenn Research Center; Alberto Ortona, ICIMSI-SUPSI

8:00 AM
Development of Aerogel Composites for Thermal Protection Systems: *Frances Hurwitz*[1]; [1]NASA Glenn Research Center

8:40 AM
Engineering Porous Ceramics Cores in Ceramic Sandwich Structures for TPS Structural Applications: *Alberto Ortona*[1]; Sandro Gianella[2]; Maurizio Barbato[1]; [1]SUPSI-ICIMSI; [2]EngiCer

9:20 AM
Empirical Analysis Approach to the Definition of a Tortuosity Index of Polyimide Foam for Aerospace Applications: *Sugeily Flores-Bonano*[1]; O. Marcelo Suárez[1]; Walter Silva - Araya[1]; [1]University of Puerto Rico - Mayagüez

9:40 AM Break

10:00 AM
Processing and Testing of Ultrahigh Temperature Structural Ceramic Foam Insulation: *Jacob Stiglich*; Brian Williams[1]; [1]Ultramet

10:20 AM
Extending Our Understanding of Soft Good Thermal Barrier Performance: *Jeff DeMange*[1]; Joshua Finkbeiner[2]; Patrick Dunlap[2]; [1]University of Toledo; [2]NASA Glenn Research Center

10:40 AM
Toughened Syntactics: Structural Insulators: *Andrew Sherman*[1]; Mark Grogan[1]; Brian Doud[1]; [1]Powdermet Inc

Third Symposium on Surface Hardening of Corrosion-Resistant Alloys — Modeling and Structure

Program Organizers: Sunniva Collins, CWRU; Arthur Heuer, Case Western Reserve University; Frank Ernst, CWRU; Hanshan Dong, University of Birmingham

Wednesday AM
October 15, 2014

Room: Room 409
Location: David L. Lawrence Convention Center

Session Chair: Arthur Heuer, CWRU

8:00 AM Introductory Comments

8:20 AM
Computational Modeling of Concentration-dependent Interstitial Diffusion: *Frank Ernst*[1]; Dandan Wu[1]; Qiong Li[1]; Xiaoting Gu[1]; Harold Kahn[1]; Arthur Heuer[1]; [1]CWRU

9:00 AM
Modelling of Composition Profiles in Low Temperature Surface Engineering of Stainless Steel: *Freja Jespersen*[1]; Marcel Somers[1]; [1]Technical University of Denmark

9:20 AM
The Concentration-dependent Diffusivity and Trapping Models for the Diffusion of Nitrogen Interstitials in Austenitic Stainless Steels: *Hal Kahn*[1]; Dandan Wu[2]; Xiaoting Gu[3]; Frank Ernst[1]; Arthur Heuer[1]; [1]Case Western Reserve University; [2]The Timken Company; [3]Atotech USA

9:40 AM Break

10:00 AM
Development of Duplex High Temperature Gas Nitriding and Low Temperature Plasma Nitriding Surface Treatments for UNS S31803 Duplex Stainless Steel: Andre Tschiptschin[1]; Luis Varela[1]; *Carlos Pinedo*[2]; Xiao-Ying Li[3]; Hanshan Dong[3]; [1]University of Sao Paulo; [2]Heat Tech Heat Treatment and Surface Engineering Technology; [3]University of Birmingham

10:20 AM
Response of the Ferritic Phase in 2205 Duplex Stainless Steel to Low-temperature Interstitial Hardening Treatments: *John Dalton*[1]; Arthur Heuer[1]; Frank Ernst[1]; Hal Kahn[1]; Danqi Wang[1]; [1]Case Western Reserve University

10:40 AM
Gaseous Nitriding of Ferritic and Austenitic Stainless Steels Containing Strong Nitride Formers: *Frederico Fernandes*[1]; Thomas Christiansen[1]; Marcel Somers[1]; [1]Denmark Technical University

11:00 AM
"Colossal" Interstitial Supersaturation in Delta Ferrite of 17-7 PH Stainless Steel: *Danqi Wang*[1]; Chieh-Wen Chen[1]; Reza Sharghi-Moshtaghin[1]; Harold Kahn[1]; Gary Michal[1]; Frank Ernst[1]; Arthur Heuer[1]; [1]Case Western Reserve University

11:20 AM
Enhanced Nitrogen Transport Mechanism in Nitrogen-modified Austenitic Stainless Steels for Combined Improvement in Wear and Corrosion Resistance: *M.K. Lei*[1]; [1]Dalian University of Technology

Understanding the Engineering Design of Art Objects and Cultural Heritage — Session I

Program Organizers: Glenn Gates, Walters Art Museum; Bruce Kaiser, Bruker Elemental; Pamela Vandiver, University of Arizona; Carlo Pantano, Penn State University; Nicholas Bigelow, University of Rochester

Wednesday AM
October 15, 2014

Room: Room 318
Location: David L. Lawrence Convention Center

Session Chair: Glenn Gates, Walters Art Museum

8:00 AM Introductory Comments

8:10 AM Invited
Saving the Vivid Yellows of Henri Matisse and Edvard Munch: Preservation Begins with Reverse Engineering: *Jennifer Mass*[1]; [1]Winterthur Museum

8:50 AM
Nanoindentation of Naturally Aged Biopolymers: Testing the Mechanical Properties of Oil Paints from Van Gogh Forward: Madeleine Wright[1]; *Katherine Faber*[1]; Kenneth Shull[1]; Francesca Casadio[2]; Maria Kokkori[2]; Kimberley Muir[2]; [1]Northwestern University; [2]The Art Institute of Chicago

9:10 AM
Deconstructing and Reconstructing a Popular Art Conservation Adhesive: BEVA® 371: *Rebecca Ploeger*[1]; Chris McGlinchey[2]; E. René de la Rie[3]; [1]SUNY - Buffalo State; [2]The Museum of Modern Art; [3]University of Amsterdam

9:30 AM
Biological Clocks: High Throughput Identification of Deterioration Markers and Dating of Museums' Proteinaceous Specimens: *Mehdi Moini*[1]; [1]George Washington University

9:50 AM Break

10:10 AM
Understanding Soap Formation in Paint Films by ^{207}Pb, ^{119}Sn and ^{13}C Solid-state NMR: *Jaclyn Catalano*[1]; Anna Murphy[2]; Yao Yao[2]; Nicholas Zumbulyadis[3]; Silvia Centeno[1]; Cecil Dybowski[2]; [1]Metropolitan Museum of Art; [2]University of Delaware; [3]Independent Researcher

10:30 AM
Atomic Layer Deposited Films as Diffusion Barriers for Silver Cultural Heritage Objects: *Amy Marquardt*[1]; Eric Breitung[2]; Terry Drayman-Weisser[3]; Glenn Gates[3]; Gary Rubloff[1]; Ray Phaneuf[1]; [1]University of Maryland; [2]E^2 Art Conservation Science; [3]The Walters Art Museum

10:50 AM
3-D Reconstruction of Ag-plated Cultural Heritage Objects Using Dual Beam SEM/FIB: *Matthew Carl*[1]; Marcus Young[1]; [1]University of North Texas

11:10 AM
Science and Preservation of the Daguerreotype: *Ralph Wiegandt*[1]; Nicholas Bigelow[2]; [1]George Eastman House International Museum of Photography & Film and the University of Rochester; [2]University of Rochester

11:30 AM Question and Answer Period

Vanadium Microalloyed Steels: A Symposium in Memory of Michael Korchynsky — Vanadium Applications in Advanced Steels

Program Organizers: Riad Asfahani, U. S. Steel Research & Technology; David Milbourn, Vanitec Limited; Robert Glodowski, Evraz East Metals NA; Bevis Hutchinson, Swerea KIMAB; Anthony Deardo, University of Pittsburgh; Yang Caifu, Central Iron & Steel Research Institute; Terry Perles, TTP Squared, Inc.

Wednesday AM
October 15, 2014

Room: Room 410
Location: David L. Lawrence Convention Center

Session Chairs: Bevis Hutchinson, Swerea-KIMAB; Matthew Merwin, U. S. Steel Research & Technology

8:00 AM
Potential Benefits of Vanadium Microalloying in AHSS Cold Rolled and Annealed Strip: *Colin Scott*[1]; Fateh Fazeli[1]; Robert Glodowski[2]; Yu Li[3]; David Milbourn[3]; [1]CanmetMATERIALS; [2]EVRAZ East Metals; [3]Vanitec Limited

8:40 AM
On the Use of Vanadium in Bainitic Special Steels Bars: *Thomas Sourmail*[1]; Véronique Smanio[1]; [1]Ascometal CREAS

9:00 AM
Effect of V Microalloying in the Hot Working Behavior of High MN TWIP Steels: Laura Llanos[1]; Beatriz Pereda[1]; Jose Rodriguez-Ibabe[1]; *Beatriz Lopez*[1]; [1]CEIT

9:20 AM
Effect of Vanadium Addition on API X100 Linepipe Steel: *Shahrooz Nafisi*[1]; Muhammad Arafin[2]; Robert Glodowski[3]; Laurie Collins[1]; Jerzy Szpunar[2]; [1]EVRAZ Inc. NA; [2]McGill University; [3]EVRAZ, East Metals North America

9:40 AM Break

10:00 AM
High Vanadium PM Alloys for Demanding Applications: *Andrzej Wojcieszynski*[1]; [1]ATI Powder Metals

10:20 AM
Precipitation Behavior of Vandium Carbide in TRIP Steel with Ni: Yanlin He[1]; Naqiong Zhu[1]; Lin Li[1]; Xiaogang Lu[1]; [1]School of Materials Science and Engineering, Shanghai University

10:40 AM
Development of Micro-alloyed Axle Steel Used on Heavy-haul Train: Wu Yi[1]; *Liu Xingui*[1]; Xiang Bin[1]; [1]China Academy of Railway Sciences

11:00 PM
Selection of Alloy Design for Low Temperature Toughness Plates Used for Linepipes: *T S Kathayat*[1]; Rajesh Goyal[1]; Raghu Shant[1]; Sohanlal Khadia[1]; [1]Welspun Corp Ltd

ACerS Robert B. Sosman Lecture

Program Organizers: Debra Kaiser, NIST; Rajan Tandon, Sandia National Laboratories

Wednesday PM
October 15, 2014
Room: Room 316
Location: David L. Lawrence Convention Center

Session Chairs: Debra Kaiser, NIST; Rajan Tandon, Sandia National Laboratories

1:00 PM Invited
Multi-scale Effects in the Strength of Ceramics: *Robert Cook*[1]; [1]National Institute of Standards and Technology

AIST Adolf Martens Memorial Steel Lecture

Wednesday PM
October 15, 2014
Room: Room 407
Location: David L. Lawrence Convention Center

1:00 PM
The 'Silicon Age' of Steel: How Alloying with Silicon is Playing a Crucial Role in Modern Steel Development: *David Edmonds*[1]; [1]University of Leeds

Advanced Aluminum Alloys, Composites, and Process Technologies — New Materials II

Program Organizers: Awadh Pandey, Pratt & Whitney; Thomas Watson, Pratt & Whitney

Wednesday PM
October 15, 2014
Room: Room 329
Location: David L. Lawrence Convention Center

Session Chair: Thomas Watson, Pratt & Whitney

2:00 PM Invited
Recrystallization Mapping of Al-0.10 Sc-0.10 Zr and Al-3.5 Mg-0.10 Sc-0.10 Zr (at%): *Cameron McNamara*[1]; Tom Wood[1]; Paul Sanders[1]; Douglas Swenson[1]; Stephen Kampe[1]; [1]Michigan Technological University

2:40 PM
Deformation Behavior of Progressively Controlled Cast Al-Si Alloy: *Yong-Nam Kwon*[1]; H. J. Kim[2]; [1]Korea Institute of Materials Science; [2]Korea Institute of Industrial Technology

3:00 PM
Stress Equivalence in Al-Cr Binary Alloys: Mike Jobba[1]; Raja Mishra[2]; *Marek Niewczas*[1]; [1]McMaster University; [2]General Motors

3:20 PM Break

3:40 PM Invited
Strengthening of Aluminum with Multiwalled Carbon Nanotubes by Mechanical Alloying and Sintering: *Hector Colon*[1]; David Florian[1]; Sujeily Soto[1]; Oscar Suarez[1]; [1]Material Advantage - UPRM Chapter

4:20 PM
Study of Wire Fabrication of Aluminum Treated with γ–Al_2O_3 Nanoparticles: *Raul Marrero Rosa*[1]; Alexandra Padilla[1]; David Florian[1]; Xiaochun Li[2]; Hongseok Choi[3]; O. Marcelo Suarez[1]; [1]University of Puerto Rico at Mayaguez, Material Advantage Student Chapter; [2]University of California, Los Angeles; [3]Clemson University

4:40 PM
A Study on the Parameters Effecting Density of Al-Al_3Ti Nanocomposites Produced by Two-step Hot Pressing Method: *Armin Vahid Mohammadi*[1]; Hamid Reza Madaah Hosseini[2]; [1]Florida International University; [2]Sharif University of Technology

Advanced Coatings for Wear and Corrosion — Electrochemistry and Chrome Alternatives

Program Organizers: Andrew Sherman, Powdermet Inc; Fei Tang, DNV GL

Wednesday PM
October 15, 2014
Room: Room 321
Location: David L. Lawrence Convention Center

Session Chairs: Tim Hall, Faraday Technologies; Melissa Klingenberg, Concurrent Technologies Corp

2:00 PM
A Comparative Study on Wear and Corrosion Properties of Hard Chrome and Electroless Nickel Plating: *Nanjunda Velu*[1]; V P Balaji[2]; [1]National Insitute of Technology, Karnataka Suratkal; [2]WABCO Vehicle Control Systems

2:20 PM
Deposition of Manganese Phosphate Coating on Aluminium: A Novel Electrochemical Approach: S Shanmugam[1]; K Ravichandran[1]; *Sankara Narayanan TSN*[2]; Min Ho Lee[2]; [1]University of Madras; [2]Chonbuk National University

2:40 PM
Functional Trivalent Chromium Electroplating: Enhanced Fatigue Performance: *Timothy Hall*[1]; Maria Inman[1]; EJ Taylor[1]; Bruce Griffin[2]; George Cushine[3]; Randal Taylor[3]; Roger Eybel[4]; Mark Jaworoski[5]; Joe Bonivel[5]; [1]Faraday Technology Inc.; [2]The Boeing Company; [3]Advanced Tooling Corporation; [4]Messier-Bugatti-Dowty; [5]United Technologies Research Center

3:00 PM Break

3:20 PM
Hardness and Wear Resistance Behavior of Electroless Ni-P/Ni-W-P Duplex Coating at Elevated Temperature: *Olamilekan Oloyede*[1]; [1]University of Manchester

3:40 PM
An Advanced Thiadiazole-based Conversion Coating on Aluminium Alloy 2024: *Weihua Li*[1]; Huiwen Tian[1]; Baorong Hou[1]; [1]Institute of Oceanology, Chinese Academy of Sciences

Advanced Manufacturing Technologies — Advanced Manufacturing III: Newer Methods and Applications

Program Organizer: Muammer Koc, Istanbul Sehir University

Wednesday PM
October 15, 2014

Room: Room 324
Location: David L. Lawrence Convention Center

Session Chairs: Liang Tian, Iowa State University; Dominik Hawelka, Fraunhofer-Institut für Lasertechnik ILT

2:00 PM Introductory Comments

2:20 PM
Solid-state Additive Manufacturing Via Additive Friction Stir Technology: *Kumar Kandasamy*[1]; Jacob Calvert[1]; Jeffrey Schultz[1]; [1]Aeroprobe Corporation

2:40 PM
Solid-state Foaming with Additive Expansion: A Simple Method for Teaching Old Dogs New Tricks: *Mark Atwater*[1]; Kris Darling[2]; Mark Tschopp[2]; [1]Millersville University; [2]US Army Research Laboratory

3:20 PM Break

3:40 PM
Tailoring Laser Induced Temperature-distributions for the Nano Crystallization of Printed Sol-gel-films on Substrates with Low Thermal Stability: *Dominik Hawelka*[1]; Norbert Pirch[1]; Konrad Wissenbach[1]; Jochen Stollenwerk[2]; [1]Fraunhofer ILT; [2]RWTH Aachen University

4:20 PM
Corrosion of Laser Welded Magnesium Alloys as a Function of Alloy and Process Variables: *Leslie Bland*[1]; James Fitz-Gerald[1]; John Scully[1]; [1]University of Virginia

4:40 PM
Heat Affected Zones Induced by Ultrashort Pulsed Lasers in Metals: *Yoosuf Picard*[1]; Heather Thompson[1]; Joel Lammatao[1]; Matthew Hecht[1]; Aziz Yousif[1]; Benjamin Campbell[2]; [1]Carnegie Mellon University; [2]Robert Morris University

5:20 PM
A Novel Deformation Processed Lightweight Al/Ca Composite Conductor for Overhead High Voltage Direct Current (HVDC) Power Transmission: *Liang Tian*[1]; Alan Russell[2]; Trevor Riedemann[3]; Iver Anderson[2]; [1]Iowa State University; [2]Iowa State University/Ames Laboratory; [3]Ames Laboratory

Advanced Materials for Harsh Environments — Session III

Program Organizers: Navin Manjooran, Siemens AG; Gary Pickrell, Virginia Tech

Wednesday PM
October 15, 2014

Room: Room 405
Location: David L. Lawrence Convention Center

Session Chairs: Gary Pickrell, Virginia Tech; Navin Manjooran, Siemens AG

2:00 PM Introductory Comments

2:40 PM
Strain Induced Precipitation in a Hanyes 282 Using Stress Relaxation Technique: *Martha Guerrero-Mata*[1]; Adriana Salas[1]; Ana Macias[1]; Jose Ma Cabrera[2]; Octavio Covarrubias[3]; [1]Universidad Autonoma de Nuevo Leon; [2]Universidad Politecnica de Cataluña; [3]Frisa Forjados SA de CV

3:00 PM
Extending the Lifetime of Mixer Paddles Used in the Production of a Low-level Radioactive Cementitious Waste Form: *Marissa Reigel*[1]; Mark Fowley[1]; Ken Imrich[1]; Satish Shah[2]; [1]Savannah River National Laboratory; [2]Savannah River Remediation

3:20 PM Break

3:40 PM
The Use of Nano-structured Tungsten Carbide-based Overlays for Oil Sands Applications: *Gary Fisher*[1]; Tonya Wolfe[1]; Thilan Liyanage[1]; [1]Alberta Innovates - Technology Futures

4:00 PM
TiO2 Decorated Graphite Nanoplatelets- A High Temperature Thermal Sensor Material: *Ashish Mishra*[1]; Liping Huang[1]; [1]RPI

4:20 PM
The Aqueous Corrosion Response of TiC and Ti(C,N) Cermets with Ni_3Al-based Binders: *Zhila Memarrashidi*[1]; Kevin Plucknett[1]; [1]Dalhousie University

4:40 PM
Durable, Low Thermal Conductivity Thermal Barrier Coatings Evaluated under Harsh Environments: *Chen Jiang*[1]; Eric Jordan[1]; Jeffrey Roth[1]; Maurice Gell[1]; [1]University of Connecticut

5:00 PM
The Aqueous Corrosion Behaviour of WC-Co Cermets: *Zhila Memarrashidi*[1]; Kevin Plucknett[1]; [1]Dalhousie University

Advanced Solution and Colloidal Processing for Ceramics — Synthesis and Fabrication

Program Organizers: Geoff Brennecka, Sandia National Laboratories; Song Won Ko, Pennsylvania State University; Barbara Malic, Jožef Stefan Institute; An Hardy, Hasselt University; Xiaohui Wang, Tsinghua University; Kazumi Kato, National Institute of Advanced Industrial Science and Technology

Wednesday PM
October 15, 2014

Room: Room 334
Location: David L. Lawrence Convention Center

Session Chair: David Wood, Oak Ridge National Laboratory

2:00 PM Invited
Parallel Synthesis of Rare Earth Doped Complex Oxide up Conversion Phosphors Using Aqueous Solution Process: *Koji Tomita*[1]; Kiyofumi Katagiri[2]; Masato Kakihana[3]; [1]Tokai University; [2]Hiroshima University; [3]Tohoku University

2:40 PM
Synthesis and Post-process of High Purity Ceramic Powders for High Power Solid State Lasers: *Woohong Kim*[1]; Colin Baker[1]; Guillermo Villalobos[1]; Jesse Frantz[1]; Brandon Shaw[1]; Michael Hunt[2]; Shyam Bayya[1]; Bryan Sadowski[3]; Ishwar Aggarwal[3]; Jasbinder Sanghera[1]; [1]Naval Research Laboratory; [2]University Research Foundation; [3]Sotera Defense Solutions

3:00 PM
Fabrication and Characterization of Solution-based Chalcogenide Micro- and Nano-photonics: *Pao Lin*[1]; Yunlai Zha[2]; Lionel Kimerling[1]; Anuradha Agarwal[1]; Craig Arnold[2]; [1]MIT; [2]Princeton University

3:20 PM Break

3:40 PM
Direct Fabrication Processing for Nano-structured Ceramics from Solution Beyond Powder & Colloid Processes: *Masahiro Yoshimura*[1]; [1]National Cheng Kung University

4:00 PM Invited
Surface Capping Assisted Hydrothermal Growth of Tailored Ceramic Nanocrystals: *Kazuyoshi Sato*[1]; [1]Gunma University

4:40 PM
A Versatile Strategy for Ordered Mesoporous Crystalline Hydroxides: In-situ Nanocrystallization Accompanied with Self-assembly: *Yasuaki Tokudome*[1]; Naoki Tarutani[1]; Tsuyoshi Morimoto[1]; Masahide Takahashi[1]; [1]Osaka Prefecture University

5:00 PM
Layered Double Hydroxide-based Monolithic Adsorbent with Tailored Hierarchical Channels: *Naoki Tarutani*[1]; Yasuaki Tokudome[1]; Kazuki Nakanishi[2]; Masahide Takahashi[1]; [1]Osaka Prefecture University; [2]Kyoto University

5:20 PM
Synthesis and Characterization of Metal/Ceramic Nanoparticles in Bulk Amount Using Cryomilling: *Chandra Tiwary*[1]; [1]IISc

Advanced Steel Metallurgy: Products and Processing — Advanced High Strength Steels III

Program Organizer: Amy Woods, Steel Dynamics Flat Roll

Wednesday PM
October 15, 2014

Room: Room 408
Location: David L. Lawrence Convention Center

Session Chair: To Be Announced

2:00 PM
Austenite Evolution during Limited Roughing of HTP Steel: *Kevin Banks*[1]; Rorisang Maubane[1]; [1]University of Pretoria

2:20 PM
Understanding the Precipitation Behaviour of Nb micro-alloyed Steels during Thermomechanical Processing: *Peng Gong*[1]; Eric Palmiere[1]; Mark Rainforth[1]; [1]The University of Sheffield

2:40 PM
Dynamic Transformation of Austenite to Ferrite during the Torsion Simulation of Strip Rolling: *Clodualdo Aranas*[1]; John Jonas[1]; [1]McGill University

3:00 PM
In-situ Observation of Acicular Ferrite Formation Using HT-LSCM: Possibilities, Challenges and Influencing Factors: *Denise Loder*[1]; Susanne Michelic[1]; Alexander Mayerhofer[1]; Christian Bernhard[1]; Rian Dippenaar[2]; [1]Montanuniversitaet Leoben; [2]University of Wollongong

3:20 PM Break

3:40 PM
Thermomechanical Processing of Structural Steels with Dilute Nb Additions: *Zhe Cui*[1]; Eric Palmiere[1]; [1]University of Sheffield

4:00 PM
Microstructural Effects on Mechanical Properties in High Strength Low Alloy Martensite Steel: *Duhan Kim*[1]; Eunji Yu[2]; Jongryoul Kim[1]; [1]Hanyang University; [2]Hyundai Steel Company

4:20 PM
Effects of the Microstructure on the Mechanical Properties of Fully Pearlitic Eutectoid Steels: *Jesus Toribio*[1]; Beatriz González[1]; Juan-Carlos Matos[1]; Javier Ayaso[1]; [1]University of Salamanca

4:40 PM
Pearlite Growth Rate in Ternary Steels: *Seung-Woo Seo*[1]; Dong Woo Suh[1]; Harry Bhadeshia[1]; [1]POSTECH

5:00 PM
Development of a Non-linear Ultrasonics and SEM-EBSD based Model to Predict the Remaining Life of Creep Damage Prone High Cr,Ni Steels Based Hydrogen Reformer Tubes: Sai Vadlamani[1]; *J.Ernesto Indacochea*[1]; Didem Ozevin[1]; Travis Rampton[2]; [1]University of Illinois at Chicago; [2]EDAX.Inc

5:20 PM
Growth Model of Scales (FeO, Fe_3O_4, Fe_2O_3, Fe_2SiO_4) of Carbon Steel: *Sangwoo Choi*[1]; [1]POSCO Technical Research Lab.

Advanced Steel Metallurgy: Products and Processing — Cold Rolling/Annealing

Program Organizer: Amy Woods, Steel Dynamics Flat Roll

Wednesday PM
October 15, 2014

Room: Room 407
Location: David L. Lawrence Convention Center

Session Chair: To Be Announced

2:00 PM
Influence of Stored Energy in Cold Rolled Sheet on the Formation of Austenite during the Subsequent Intercritical Annealing of V-bearing Dual-phase Steels: *Anthony Deardo*[1]; Yu Gong[1]; Xiaojun Liang[1]; Juha Uusitalo[2]; Mingjian Hua[1]; [1]University of Pittsburgh; [2]University of Oulu

2:20 PM
In-situ SAXS Studies on Precipitates Evolution in Cold Rolled Steel Strip: *Prakash Srirangam*[1]; Joost van Krevel[2]; Daniel Rowley[3]; Sourav Das[2]; Olga Shebanova[4]; Sridhar Seetharaman[1]; Peter Lee[3]; [1]University of Warwick; [2]TATA Steels; [3]University of Manchester; [4]Diamond Light Source

2:40 PM
Study of Friction during Cold Rolling of Steel in a Four-high Reversible Mill: *Alan Gonzalez*[1]; Luis Leduc[1]; Rafael Mercado[1]; Fernando Gonzalez[2]; Guillermo Barrera[2]; [1]Universidad Autonoma de Nuevo Leon; [2]Ternium Mexico

3:00 PM
Microstructural and Computer Modeling Study of the Annealing Behavior of Vanadium Bearing HSLA Steel after Cold Rolling: *Raymundo Ordonez Olivares*[1]; G. Wang[1]; Z Liu[1]; J. Smiley[2]; R. Moses[2]; Isaac Garcia[1]; [1]University of Pittsburgh; [2]Nucor Berkeley Division

3:20 PM Break

3:40 PM
Recent Developments in Continuous Annealing Process of Advanced High Strength Steels at ThyssenKrupp Steel Europe: *Marc Blumenau*[1]; Annette Bäumer[1]; [1]ThyssenKrupp Steel Europe AG

4:00 PM
Different Routes for the Development of Ferrite-pearlite Microstructures Suitable for Spheroidization during Soft Annealing Treatments: Jon Arruabarrena[1]; *Pello Uranga*[1]; Beatriz López[1]; Jose Rodriguez-Ibabe[1]; [1]CEIT and Tecnun

4:20 PM
Effect of Water Temperature on the Cooling Rate, Mcirostructure and Mechanical Properties of a C-Mn Containing Steel Sheet: *Xiaodong Zhu*[1]; Wei Li[1]; Peng Xue[1]; [1]Baosteel

Advances in Dielectric Materials and Electronic Devices — Ferroics and Applications

Program Organizers: Amar Bhalla, The University of Texas at San Antonio; Ruyan Guo, The University of Texas at San Antonio; K. M. Nair, E.I.duPont de Nemours & Co, Inc; Danilo Suvorov, Jožef Stefan Institute; Rick Ubic, Boise State University

Wednesday PM
October 15, 2014

Room: Room 307
Location: David L. Lawrence Convention Center

Session Chairs: Ducinei Garcia, Federal University of São Carlos; Yongyut Laosiritaworn, Chiang Mai University; Prashant Kumta, University of Pittsburgh; Dwight Viehland, Virginia Polytechnic Institute and State University

2:00 PM Invited
(Invited) Nonvolatile Resistive Memory Switching Characteristics of Mixed Oxides: *Ram Katiyar*[1]; Yogesh Sharma[1]; Rajesh Katiyar[1]; Geetika Khurana[1]; Shojan Pavunny[1]; Pankaj Misra[1]; [1]University of Puerto Rico

2:20 PM Invited
Switching the Electrical Resistance of Ferroelectrics through Control of Charged Domain Walls: *Xiaoqing Pan*[1]; Linze Li[1]; Joacob Jokisaari[1]; [1]University of Michigan

2:40 PM Invited
Potential Photovoltaic Application of Multiferroic Materials for Energy Harvesting: Savita Sharma[1]; Surbhi Gupta[1]; *Monika Tomar*[1]; Ashok Kumar[2]; Nitin Puri[3]; Vinay Gupta[1]; [1]University of Delhi; [2]CSIR-National Physical Laboratory; [3]Delhi Technological University

3:00 PM
Single Crystal Phosphors for High-brightness White LEDs and LDs: *Kiyoshi Shimamura*[1]; Encarnacion G. Villora[1]; Stelian Arjoca[1]; Daisuke Inomata[2]; Kazuo Aoki[2]; Junichi Hayashi[3]; [1]National Institute for Materials Science; [2]KOHA Co., Ltd.; [3]Shinko Manufacturing Co., Ltd.

3:20 PM Break

3:40 PM Invited
Dielectric and Piezoelectric Behavior of Silver Nanoparticle Filled in Bacterial Cellulose/Poly(Vinylidene Fluoride) Blend: *Hathaikarn Manuspiya*[1]; Ekasit Phakdeepataraphan[1]; Sarute Ummartyotin[2]; [1]Chulalongkorn University; [2]Thammasat University

4:00 PM
The Fabrication and Energy-storage Properties of Lead-based Thick Films: *Xihong Hao*[1]; [1]School of Materials and Metallurgy, Inner Mongolia University of Science and Technology

4:20 PM
Thermoelectric Properties of Vanadium Oxides: *Chiranjivi Lamsal*[1]; Nuggehalli Ravindra[1]; [1]New Jersey Institute of Technology

4:40 PM
Rational Interface Design for Structure-property Control in Polymer-ceramic Nanocomposites: *Alex Bruce*[1]; Holly Avins[1]; Danielle Lieber[1]; Inez Hua[1]; John Howarter[1]; [1]Purdue University

Advances in Metal Casting Technologies — Process Control

Program Organizers: Alan Druschitz, Virginia Tech; Paul Sanders, Michigan Technological University; Laurentiu Nastac, The University of Alabama

Wednesday PM
October 15, 2014

Room: Room 331
Location: David L. Lawrence Convention Center

Session Chair: Paul Sanders, Michigan Tech

2:00 PM
Investigation of Argon Protection Behavior in Ingot Casting Process: *Tongjun Zhou*[1]; [1]Baosteel Special Material Co. , Ltd

2:20 PM
Control of Internal Cracks in the Fe-Cr-Al Alloy Produced by ESR Process: *Weihua Zhang*[1]; Shufeng Yang[1]; Jingshe Li[1]; Xiangzhou Gao[1]; [1]University of Science and Technology Beijing

2:40 PM
Study on Arcing Control in ESR Process: *Gang Li*[1]; Shufeng Yang[1]; Jingshe Li[1]; Xiangzhou Gao[1]; [1]University of Science and Technology Beijing

3:00 PM Break

3:20 PM
Effect of Pressure Die Casting in the Microstructure of an Al-8.5 Si-3.5 Cu alloy: Miguel Angel Barbes[1]; Jose Ignacio Verdeja[1]; María José Quintana[2]; Luis Felipe Verdeja[1]; *Roberto Gonzalez*[2]; [1]Oviedo University; [2]Universidad Panamericana

3:40 PM
Effect of Shell Preheat, Firing and Pouring Temperatures on Surface Roughness of Aluminum Alloy ADC12 Castings Produced by Ceramic Shell Investment Casting Process: *Balwinder Singh*[1]; [1]GZS PTU Campus BATHINDA

4:00 PM
Ultrasonic Processing of 6061-based Nanocomposites for High Performance Applications: Shian Jia[1]; Daojie Zhang[1]; *Laurentiu Nastac*[1]; Paul Allison[2]; Brian Jordon[1]; [1]The University of Alabama; [2]USArmy ERDC

4:20 PM
Lattices for Advanced Filtration and Flow Control of Molten Metals: *Joe Cesarano*[1]; John Stuecker[1]; [1]Robocasting Enterprises LLC

4:40 PM
Prediction and Control of Microstructural Development in Metallic Alloys during Directional Solidification: *Amy Clarke*[1]; Seth Imhoff[1]; Paul Gibbs[1]; Damien Tourret[2]; Alain Karma[2]; Kamel Fezzaa[3]; Wah-Keat Lee[4]; [1]Los Alamos National Laboratory; [2]Northeastern University; [3]Argonne National Laboratory; [4]Brookhaven National Laboratory

5:00 PM
Boride Particle Detection in Al Melts Via Laser-induced Breakdown Spectroscopy: *Shaymus Hudson*[1]; Diran Apelian[1]; [1]Worcester Polytechnic Institute

Amorphous Materials: Common Issues within Science and Technology — Amorphous Materials: Common Issues within Science and Technology

Program Organizers: David Musgraves, IRradiance Glass Inc.; Juejun Hu, University of Delaware

Wednesday PM
October 15, 2014

Room: Room 311
Location: David L. Lawrence Convention Center

Session Chair: To Be Announced

2:00 PM
Composition Interpretation of Metallic Glasses Using Cluster Formulas from Relevant Eutectic Phases: *Chuang Dong*[1]; [1]Dalian University of Technology

2:20 PM
Molecular Dynamics Simulation of Metallic Liquids and Glass Formation: *David Riegner*[1]; Logan Ward[2]; Katharine Flores[3]; Wolfgang Windl[1]; [1]The Ohio State University; [2]Northwestern University; [3]Washington University in St. Louis

2:40 PM
Molecular Dynamics Study of Hydration in Amorphous Polyimide: *Eleanor Coyle*[1]; Katherine Sebeck[1]; John Kieffer[1]; [1]University of Michigan

3:00 PM Break

3:20 PM
Novel Microstructures and Crystallization Kinetics in Al-Fe-Si Glasses: *Seth Imhoff*[1]; John Perepezko[2]; [1]Los Alamos National Laboratory; [2]University of Wisconsin-Madison

3:40 PM
Structural Properties of Amorphous Silicon Oxycarbide Ceramics Obtained Via First-principles 29Si-NMR Chemical Shifts: John Paul Nimmo[1]; *Peter Kroll*[1]; [1]UT Arlington

4:00 PM
Thermochemistry of Hafnium-silicate Glasses: Atreyi Dasmahapatra[1]; *Peter Kroll*[1]; [1]UT Arlington

4:20 PM
Weibull Modulus of Hardness, Bend Strength, and Tensile Strength of Ni-Ta-Co-X Metallic Glass Ribbons: *Henry Neilson*[1]; John Lewandowski[1]; [1]Case Western Reserve University

4:40 PM
Size Effects of Plasticity in Metallic Glasses: *Henry Neilson*[1]; Jun Yi[1]; W. Wang[2]; John Lewandowski[1]; [1]Case Western Reserve University; [2]Institute of Physics

Bioinspired Materials Engineering — Bioinspired Particle Growth

Program Organizers: Cordt Zollfrank, Technische Universität München, Germany ; Michael Bartl, University of Utah

Wednesday PM
October 15, 2014

Room: Room 305
Location: David L. Lawrence Convention Center

Session Chairs: Akhlesh Lakhtakia , Penn State University; Peng Jiang, University of Florida

2:00 PM Invited
Controlled Formation of Curved Micron-sized Gold Single Crystals: Maria Koifman Khristosov[1]; Lee Kabalah-Amitai[1]; Manfred Burghammer[2]; *Alexander Katsman*[1]; Boaz Pokroy[1]; [1]Technion - Israel Institute of Technology; [2]European Synchrotron Radiation Facility

2:40 PM
Facet-specific Molecular Recognition Mechanisms on Metal Surfaces and Applications to Nanostructure Shape Control: Jie Feng[1]; Kshitij Jha[1]; Hadi Ramezani-Dakhel[1]; Michael Bockstaller[2]; Rajesh Naik[3]; Yu Huang[4]; *Hendrik Heinz*[1]; [1]University of Akron; [2]Carnegie Mellon University; [3]Air Force Resarch Laboratory; [4]University of California-Los Angeles

3:00 PM Break

3:20 PM Invited
Hybrid Materials by Atomic Layer Deposition: *Mato Knez*[1]; [1]CIC nanoGUNE

4:00 PM
Effect of a Silica Hydrogel Matrix on the Mosaic Structure and Formation Mechanism of Hematite (a-Fe2O3): *Emily Asenath-Smith*[1]; Lara Estroff[1]; [1]Cornell University

Ceramic Matrix Composites — Glass and Ceramics Composites: Modeling, Processing and Characterization

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

Wednesday PM
October 15, 2014

Room: Room 304
Location: David L. Lawrence Convention Center

Session Chair: Raj Singh, Oklahoma State University

2:00 PM Invited
Study of Kinetics of Self Repair in Glass and Glass Composites: *Raj Singh*[1]; [1]Oklahoma State University

2:40 PM
Boron Nitride Nanosheets Reinforced Amorphous Glass Composites: *Richa Saggar*[1]; Harshit Porwal[2]; Peter Tatarko[2]; Ivo Dlouhý[1]; Micheal Reece[2]; [1]Institute of Physics of Materials, Academy of Sciences of the Czech Republic; [2]School of Engineering & Materials Science and Nanoforce Technology Ltd.

3:00 PM
Study on the Effect of V_2O_5 Additive on the Cermet Based on $NiFe_2O_4$ Spinel: *Yihan Liu*[1]; Xiaoxu Cheng[1]; Guanglei Song[1]; Jintao Zhang[1]; [1]Northeastern University

3:20 PM Break

3:40 PM
Bio-inspired Al_2O_3/Al Micro-layered Composite: *Guillermo Villalobos*[1]; Shyam Bayya[1]; Woohong Kim[1]; Michael Hunt[2]; Bryan Sadowski[3]; Colin Baker[1]; Ramasis Goswami[1]; Jasbinder Sanghera[1]; [1]US Naval Research Laboratory; [2]URF; [3]Sotera

4:00 PM
Study of Bulk TiC/C Produced Via a Low Pressure DC Focus Plasma Technique: *Reza Mahmoodian*[1]; Mohsen A. Hassan[1]; Mohd Hamdi[1]; Bushroa Abd Razak[1]; [1]University of Malaya

4:20 PM
Composite Microstructures Produced In-situ through Partial Reduction of Cobalt Titanate: *Kevin Anderson*[1]; Helen Chan[1]; [1]Lehigh University

4:40 PM
Characterization of ZrC-TiB_2 Composites Prepared by Spark Plasma Sintering: *Ozden Ormanci*[1]; Ipek Akin[1]; Filiz Sahin[1]; Onuralp Yucel[1]; Gultekin Goller[1]; [1]Istanbul Technical University

Corrosion Monitoring and Control — Corrosion Characterization and Measurement

Program Organizer: Guang-Ling Song, Oak Ridge National Laboratory

Wednesday PM
October 15, 2014

Room: Room 412
Location: David L. Lawrence Convention Center

Session Chairs: Guang-Ling Song, ORNL National Lab; John Zhang, Gamry Instruments

2:00 PM Invited
In-situ STM Assisted Scanning Electrochemical Probes for Imaging Localized Corrosions: *Changjian Lin*[1]; Ruiqing Hou[1]; Chenqing Ye[1]; Guangling Song[2]; [1]Xiamen University; [2]Oak Ridge National Laboratory

2:40 PM
Development and Application of Electrochemical Frequency Modulation Technique in Corrosion and Corrosion Protection: Xueyuan Zhang[1]; [1]Gamry Instruments

3:00 PM
Contribution of Acoustic Emission to the Monitoring of Stress Corrosion Cracking of Stainless Steel: Identification of the Phases of the Corrosion Process and Use of Accelerated Test: *Fabienne Delaunois*[1]; Alexis Tshimombo[2]; Victor Stanciu[1]; Véronique Vitry[1]; [1]UMONS Faculté Polytechnique FPMs; [2]ISTA

3:20 PM Break

3:40 PM
Spatially Resolved, In-situ Monitoring of Stress Corrosion Crack Growth Via the Coupling Current in Aluminum Alloy 5083: *Krystaufeux Williams*[1]; Robert Bayles[1]; Digby Macdonald[2]; [1]Naval Research Laboratory; [2]University of California, Berkeley

4:00 PM
Atmospheric Corrosion Monitoring and Modeling of a Low Alloy Steel under an Electrolyte Film in Cyclic Wet–dry Condition: *Junhua Dong*[1]; Thee Ch.[1]; Wei Ke[1]; [1]Institute of Metal Research, CASM

4:20 PM
Film Formation and Evolution on Magnesium Alloys: Kinga Unocic[1]; Jeffrey Thomson[1]; Hassan Elsentriecy[1]; Michael Brady[1]; Harry Meyer III[1]; *Guang-Ling Song*[1]; Mostafa Fayek[1]; Bruce Davis[1]; [1]ORNL

4:40 PM
Corrosion Monitoring Technology for Integrity Management of the Hull Structure of Floating Production, Storage and Offloading (FPSO) Vessel: *Shan Guan*[1]; Graeme Ripley[1]; [1]DNV GL

Dielectric, Magnetic and Semiconductor Materials for Harsh Environments — Session I

Program Organizers: Steven Milne, University of Leeds; Mike Lanagan, Penn State University; Beihai Ma, Argonne National Laboratory

Wednesday PM
October 15, 2014

Room: Room 306
Location: David L. Lawrence Convention Center

Session Chair: Michael Lanagan, Penn State University

2:00 PM Keynote
Materials for High Temperature Power Electronics Packaging: *Patrick McCluskey*[1]; [1]University of Maryland

2:40 PM Invited
CoFe-based Soft Magnetic Nanocomposites for High Temperature Applications in Inductors and Sensors: *Paul Ohodnicki*[1]; Samuel Kernion[2]; Alex Leary[2]; Michael McHenry[2]; [1]National Energy Technology Laboratory; [2]Carnegie Mellon University

3:00 PM Invited
Advanced Power Module Structures for High-temperature Semiconductor Devices: *Yoshirou Kuromitsu*[1]; Toshiyuki Nagase[1]; Kazuhiro Akiyama[1]; Yoshiyuki Nagatomo[1]; Nobuyuki Terasaki[1]; [1]Mitsubishi Materials Corporation

3:20 PM Break

3:40 PM
Embedding Capacitive Tactile Sensors for Space Applications: *Lisa Kogan*[1]; Timothy Weadon[1]; Thomas Evans[1]; Edward Sabolsky[1]; David DeVallance[2]; [1]Department of Mechanical and Aerospace Engineering, West Virginia University; [2]Division of Forestry and Natural Resources, West Virginia University

4:00 PM Invited
Capacitor Development for Reliable High Temperature Operation in Inverter Applications: *Geoff Brennecka*[1]; Harlan Brown-Shaklee[1]; Natthaphon Raengthon[2]; Narit Triamnak[3]; David Cann[3]; Mia Blea-Kirby[1]; Stan Atcitty[1]; [1]Sandia National Laboratories; [2]Chulalongkorn University; [3]Oregon State University

4:40 PM Invited
High Temperature Multi-layer Ceramic Capacitors: Materials Development & Performance: *John Bultitude*[1]; Abhijit Gurav[1]; John McConnell[1]; Lonnie Jones[1]; Travis Ashburn[1]; [1]KEMET Corporation

5:00 PM
Dielectric Breakdown: Theory, Characterization and Its Relationship to Energy and Power Density: *Mike Lanagan*[1]; [1]Penn State University

5:20 PM
Temperature-stable Dielectric Properties from -70 ºC to 500 ºC in $NaNbO_3$-modified $5Ba_{0.8}Ca_{0.2}TiO_3$-$55Bi(Mg_{0.5}Ti_{0.5})O_3$ Ceramics: Steven Milne[1]; *Aurang Zeb*[1]; [1]University of Leeds

5:40 PM
Stability in Relative Permittivity to 450 °C for $0.7[Ba_{0.8}Ca_{0.2}TiO_3]$-$0.3[Bi(Zn_{0.5}Ti_{0.5})O_3]$ Ceramics: *Aurang Zeb*[1]; Steven Milne[1]; [1]University of Leeds

Energy Storage IV: Materials, Systems and Applications Symposium — Thermal Storage Other Systems

Program Organizers: Xingbo Liu, West Virginia University; Keeyoung Jung, Research Institute of Industrial Science and Technology (RIST); Terry Holesinger, Los Alamos National Laboratory; Yang-Tse Cheng, University of Kentucky; Karen Waldrip, Sandia National Laboratory

Wednesday PM
October 15, 2014

Room: Room 414
Location: David L. Lawrence Convention Center

Session Chair: Xingbo Liu, West Virginia University

2:00 PM
Developing a Thermal Battery System Based on Metal Hydride: *Chengshang Zhou*[1]; Zhigang Fang[1]; Chai Ren[1]; Peng Fan[1]; R.C. Bowman[1]; John Vajo[2]; Jingzhu Li[2]; Justin Purewal[2]; [1]The University of Utah; [2]HRL Laboratories

2:20 PM
Preparation, Characterization and Thermal Reliability of Form-stable Myristic Acid /Polypyrrole Composites as Phase Change Materials for Thermal Energy Storage: *Mahyar Silakhori*[1]; Hendrik Simon Cornelis Metselaar[1]; Teuku Meurah Indra Mahlia[1]; Hadi Fauzi[1]; [1]University of Malaya

2:40 PM
Thermal Energy Storage (TES): Requirements and Constrains for a Material-based Design: *Camila Barreneche*[1]; Aran Solé[2]; A. Inés Fernández[2]; Ingrid Martorell[2]; Mònica Martínez[1]; Luisa Cabeza[2]; [1]University of Barcelona; [2]University of Lleida

3:00 PM
Energetic Performance of a VDSF with PCM under Different Weather Conditions: *Alvaro de Gracia*[1]; Lidia Navarro[1]; Albert Castell[1]; Luisa Cabeza[1]; [1]University of Lleida

3:20 PM Break

3:40 PM
Statistic Thermodynamic Theory of Hydrogen Absorption in Metal Hydride: *Guangxin Wu*[1]; [1]Shanghai University

4:00 PM
An Advance Model for Thermoelectric Energy Harvestor: *Guangxi Wu*[1]; Xiong Yu[1]; [1]Case Western Reserve University

4:20 PM
Development of High Energy Density SMES Devices with YBCO Coated Conductors: *Timothy Haugan*[1]; Damir Latypov[2]; Thomas Bullard[3]; [1]The Air Force Research Laboratory; [2]BerrieHill Research Corp.; [3]UES Inc.

4:40 PM
First Experimental Study of Nanoscale Plasticity Mechanisms in Nanocrystalline Pd Thin Films under Hydrogen Cycling: *Behnam Aminahmadi*[1]; Hosni Idrissi[1]; Loic Malet[2]; Renaud Delmelle[3]; Stephane Godet[2]; Thomas Pardoen[3]; Joris Proost[3]; Dominique Schryvers[1]; [1]Electron Microscopy for Material Science (EMAT); [2]Université Libre de Bruxelles; [3]Université Catholique de Louvain

5:00 PM
Solar Water Heating: Optimization and Rationalization of Materials and Fundamental Alternative Energy for Sustainable Development: *Aurea Vendramin Georgi*[1]; Carlos[1]; [1]UFPR

5:20 PM
Sensible Solid Storage Material from Waste Non-metallic Industry: *Andrea Gutierrez*[1]; Pedro Vargas[1]; Mario Grágeda[1]; Svetlana Ushak[1]; [1]University of Antofagasta

Failure Analysis and Prevention — Polymers and Composites

Program Organizers: Nicholas Cherolis, Rolls-Royce Corporation; Dustin Turnquist, ESI; Erhan Ulvan, Acuren Group Inc.

Wednesday PM
October 15, 2014

Room: Room 406
Location: David L. Lawrence Convention Center

Session Chairs: Dennis McGarry, SEA Ltd; Mike Budinski, NTSB

2:00 PM
Red Herrings in Polymer Fractography and Failure Analysis: *Michael Hayes*[1]; [1]Engineering Systems Inc.

2:20 PM
Slow Crack Growth in Polyetherimide Components: *Michael Budinski*[1]; Nancy McAtee[1]; [1]National Transportation Safety Board

2:40 PM
Rapid Prototyping Technology as a Testing Tool for Improving the Mechanical Performances of Prototyped Polymer Structural Parts: *Pierre Dupont*[1]; [1]Schaeffler Belgium Sprl/Bvba

3:00 PM
Void Content in Out-of-autoclave Manufacturing Processes: *Cecilia Larrosa*[1]; Joseph Rakow[1]; [1]Exponent, Inc.

3:20 PM Break

3:40 PM
Flexible Toilet Hose Failures: Problems and Prevention: *Nathan Bamsey*[1]; Robert Sparling[1]; Paul Okrutny[1]; [1]Giffin Koerth

4:00 PM
Environmental Stress Cracking of Plastic Sprinkler Pipe: *Mark Russell*[1]; Richard Edwards[1]; [1]Engineering Design & Testing

4:20 PM
Failure Analysis of an HVAC Flex Hose Connector: Eric Guyer[1]; *Robert Kupkovits*[1]; [1]Exponent

Fatigue of Materials III — Modeling

Program Organizers: Tirumalai Srivatsan, The University of Akron; Raghavan Srinivasan, Wright State University; M. Ashraf Imam, George Washington University

Wednesday PM
October 15, 2014

Room: Room 336
Location: David L. Lawrence Convention Center

Session Chair: To Be Announced

2:00 PM Invited
Crack Tip Dislocations under Static and Cyclic Loading: *Ramasis Goswami*[1]; Peter Pao[1]; Ronald Holtz[1]; Syed Qadri[1]; Chandra Pande[1]; [1]Naval Research Laboratory

2:40 PM
On the Role of Plasticity-induced Fatigue Crack Closure in High-strength Steels: *Jesus Toribio*[1]; Viktor Kharin[1]; [1]University of Salamanca

3:00 PM Break

3:20 PM Invited
Fatigue Life Prediction in Aluminum Alloy 2618-T_6 Using a Paris Law Modification: *Adriana Salas Zamarripa*[1]; Chirstophe Pinna[2]; Martha Guerrero-Mata[1]; Martin Castillo Morales[1]; [1]Universidad Autónoma de Nuevo León; [2]University of Sheffield

4:00 PM Invited
There is No Unique S-N Fatigue Curve in Fatigue of Materials: Competing Failure Modes and Dual S-N Curves: *K. S. Ravi Chandran*[1]; [1]University of Utah

4:40 PM
Fatigue Crack Growth in Prestressing Steel Wires: Transient and Steady-state Regimes: *Jesus Toribio*[1]; Juan-Carlos Matos[1]; Beatriz González[1]; [1]University of Salamanca

5:00 PM
Evolution of Crack Aspect Ratio in Sheets under Tension and Bending Cyclic Loading: *Jesus Toribio*[1]; Juan-Carlos Matos[1]; Beatriz González[1]; José Escuadra[1]; [1]University of Salamanca

Glass and Optical Materials — Theory and Modeling: Joint Session with Computational Design of Ceramic Materials

Program Organizers: Juejun Hu, University of Delaware; David Musgraves, IRradiance Glass Inc.

Wednesday PM
October 15, 2014

Room: Room 302
Location: David L. Lawrence Convention Center

Session Chair: To Be Announced

2:00 PM
A Thermodynamically Consistent First Principles Model of Amorphous Silica Surfaces: *Christopher Ewing*[1]; Götz Veser[1]; Joseph McCarthy[1]; J Johnson[1]; [1]University of Pittsburgh

2:20 PM
Modeling Silicate Glass Structures by Combining Reverse Monte Carlo and Molecular Dynamics Simulations: *Ye Xiang*[1]; Jincheng Du[1]; [1]University of North Texas

2:40 PM
Molecular Dynamics Simulation of Water-glass Interactions: *Ruhil Dongol*[1]; Alastair Cormack[1]; S. K. Sundaram[1]; [1]Alfred University

3:00 PM Break

3:20 PM
Molecular Dynamics Simulations of Borate and Borosilicate Glasses: *Lu Deng*[1]; Jincheng Du[1]; [1]University of North Texas

3:40 PM
Simulation of the Activation Barrier for Dissolution of Amorphous Silica in Water Using a Reactive Potential: *Stephen Garofalini*[1]; Michael Kagan[1]; Glenn Lockwood[1]; [1]Rutgers University

High Temperature Corrosion — High Temperature Corrosion

Program Organizer: Vaibhav Nikam, ConocoPhillips Company

Wednesday PM
October 15, 2014

Room: Room 411
Location: David L. Lawrence Convention Center

Session Chairs: Brian Gleeson, University of Pittsburgh; Ramana Reddy, The University of Alabama

2:00 PM
Development of a Thermodynamic Basis for Predicting Oxide Scale Formation in Nickel-base Superalloys for Advanced Energy Systems: *Austin Ross*[1]; Greta Lindwall[1]; Huazhi Fang[1]; Zi-Kui Liu[1]; [1]Pennsylvania State University

2:20 PM
The High-temperature Oxidation of Bulk Nanocrystalline 304 Stainless Steel in Air: *Sheng-Gang Wang*[1]; K. Long[1]; M. Sun[1]; H. B. Han[1]; [1]Institute of Metal Research, Chinese Academy of Sciences

2:40 PM
Early Stage Hot Corrosion Behavior of Pt/Cr-modified ß-NiAl Alloys at 700°C.: *Maryam Zahiri Azar*[1]; Thomas Gheno[2]; Brian Gleeson[2]; Arthur Heuer[1]; [1]Case Western Reserve University; [2]University of Pittsburgh

3:00 PM
The Effects of Sulfur on the Cyclic Oxidation of GTD-111 at 1100 °C: *Dae Won Yun*[1]; Young-Soo Yoo[1]; Hi-Won Jeong[1]; Seong-Moon Seo[1]; [1]Korea Institute of Materials Science

3:20 PM Break

3:40 PM
High Temperature Oxidation Behaviours of Low Chromium Steels Used in Petroleum Refinery Heaters: Abdelrahman Sultan[1]; Ishak Karakaya[2]; *Metehan Erdogan*[3]; [1]Elmergib University-Alkhoms-Libya; [2]Middle East Technical University/Metallurgical and Materials Engineering Department; [3]Yildirim Beyazit University/Materials Engineering Department

4:00 PM
Effect of Deposit Composition and Temperature on the Deposit-induced Degradation Regimes in Coatings and Structural Alloys for Gas Turbines: *Juan Alvarado-Orozco*[1]; Brian Gleeson[1]; Gerald Meier[1]; [1]University of Pittsburgh

4:20 PM
Corrosion of Nickel Based Alloys in MgCl2-KCl Molten Salts as Ultra High Temperature Energy Storage Fluids for Concentrating Solar Power (CSP) System: *Tao Wang*[1]; Ramana Reddy[1]; [1]The University of Alabama

4:40 PM
Influence of Mn-Co Spinel Coating on Oxidation Behavior of Ferritic SS Alloys for SOFC Interconnect Applications: *Vinothini Venkatachalam*[1]; Sebastian Molin[1]; Wolff-Ragnar Kiebach[1]; Ming Chen[1]; Peter Vang Hendriksen[1]; [1]Technical University of Denmark

5:00 PM
Role of Oxide and Sulfate Constituents in Fly Ash-induced Degradation of MCrAlY Bondcoats for Thermal Barrier Coating Systems: *Thomas Gheno*[1]; Gerald Meier[1]; Brian Gleeson[1]; [1]University of Pittsburgh

5:20 PM
Determination of the Initiation and Propagation Mechanism of Fireside Corrosion: *Brad Lutz*[1]; Gordon Holcomb[2]; Gerald Meier[1]; [1]University of Pittsburgh; [2]NETL

Innovation in Processing of Light Metals for Transportation Industries: A Symposium in Honor of C. Ravi Ravindran — High Strength Al Alloys and Composites

Program Organizers: Lukas Bichler, University of British Columbia; B S Murty, Indian Institute of Technology Madras

Wednesday PM
October 15, 2014

Room: Room 333
Location: David L. Lawrence Convention Center

Session Chair: TVL Narasimha Rao, Sundaram Clayton Limited

2:00 PM Invited
Synthesis and Characterization of Bulk Al-Cu-Fe Based Quasicrystals and Composites by Spray Forming: *Nilay Mukhopadhyay*[1]; Volker Uhlenwinkel[2]; Vikas Srivastava[3]; [1]Indian Institute of Technology (BHU); [2]Institut für Werkstofftechnik; [3]CSIR-National Metallurgical Laboratory

2:20 PM
Influence of Sn-solubility on Suppression of Natural Aging in an AA_{6061} Aluminum Alloy: *Marion Werinos*[1]; Helmut Antrekowitsch[1]; Werner Fragner[2]; Thomas Ebner[3]; Peter Uggowitzer[4]; Stefan Pogatscher[4]; [1]Montanuniversitaet Leoben; [2]AMAG Austria Metall AG; [3]AMAG Rolling GmbH; [4]ETH Zurich

2:40 PM
Effect of Sc Addition on Microstructure, Mechanical and Wear Properties in A_{356} Alloy and A_{356}-TiB_2 Composites: *S L Pramod*[1]; A Prasada Rao[2]; S R Bakshi[1]; B S Murty[1]; [1]IIT Madras; [2]University of Malaysia

Innovation in Processing of Light Metals for Transportation Industries: A Symposium in Honor of C. Ravi Ravindran — Panel Discussion: Light Alloys: Prospects and Challenges

Program Organizers: Lukas Bichler, University of British Columbia; B S Murty, Indian Institute of Technology Madras

Wednesday PM
October 15, 2014

Room: Room 333
Location: David L. Lawrence Convention Center

Session Chair: Raymond Donahue, Mercury Marine

3:20 PM Panel Discussion: Light Alloys: Prospects and Challenges
The panel discussion includes: C. Ravindran (President of ASM International), M. Chakraborty, A. Luo, G.K. Sigworth, and M.K. Surappa
Moderator: R.J. Donahue

5:10 PM Concluding Comments

Interfaces, Grain Boundaries, and Surfaces from Atomistic and Macroscopic Approaches: Fundamental and Engineering Issues — Organization of Polycrystals and Their Properties

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

Wednesday PM
October 15, 2014

Room: Room 404
Location: David L. Lawrence Convention Center

Session Chairs: Eduardo Saiz, Imperial College of London; Bryan Huey, University of Connecticut

2:00 PM Keynote
Preferred Epitaxial Orientations for Oxide Thin Films: *Gregory Rohrer*[1]; Paul Salvador[1]; [1]Carnegie Mellon University

2:40 PM Invited
Increasing Twin Density in Polycrystalline Nickel and Nickel Alloys by Thermomechanical Processing from the Perspective of Grain Boundary Engineering: *Nathalie Bozzolo*[1]; Marc Bernacki[1]; Yuan Jin[1]; Brian Lin[2]; Gregory S. Rohrer[2]; Anthony D. Rollett[2]; [1]MINES ParisTech; [2]Carnegie Mellon University

3:00 PM Invited
Comparative Analysis of Polycrystals in Simulated and Experimental Datasets: *Dan Lewis*[1]; Trevor Keller[1]; Barbara Cutler[1]; [1]Rensselaer Polytechnic Institute

3:20 PM Break

3:40 PM Invited
Localized Mechanical Study of Individual Interfaces in Miniaturized Cu Structures: *Gerhard Dehm*[1]; [1]Max-Planck-Institut für Eisenforschung

4:00 PM Invited
Mechanical Deformation and Martensitic Phase Transformations in Nanocrystalline Metals: *Alejandro Strachan*[1]; Keith Morrison[1]; Hojin Kim[1]; [1]Purdue University

4:20 PM
Damage Nucleation from Dislocation-Grain Boundary Interactions: Mechanisms and Toughening Strategies: *Zhiliang Pan*[1]; Timothy Rupert[1]; [1]University of California, Irvine

4:40 PM
Impact of Interface Variability on Grain Boundary Diffusion in Polycrystalline Structures: *Mahyar Moghadam*[1]; Jeffrey Rickman[1]; Helen Chan[1]; Martin Harmer[1]; [1]Lehigh University

5:00 PM
Surface Segregation of Manganese Doped Ceria Nanoparticles and Relationship with Nanostability: *Longjia Wu*[1]; Sanchita Dey[1]; Mingming Gong[2]; Ricardo Castro[1]; [1]University of California, Davis; [2]Northwestern Polytechnical University

5:20 PM
Frequency of Triple Junction Coalescence: *J. Lind*[1]; J. Mason[2]; S. F. Li[1]; B. Reed[1]; V. Bulatov[1]; M. Kumar[1]; [1]Lawrence Livermore National Laboratory; [2]Bogazici University

5:40 PM
Investigating the Formation of Annealing Twins during Grain Growth in Nickel: *Brian Lin*[1]; Yuan Jin[2]; Marc Bernacki[2]; Nathalie Bozzolo[2]; Chris Hefferan[3]; Robert Suter[1]; Anthony Rollett[1]; Gregory Rohrer[1]; [1]Carnegie Mellon University; [2]CEMEF Mines-Paristech; [3]R.J. Lee Group

International Symposium on Defects, Transport, and Related Phenomena — Defect and Transport in Materials for Applications II

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

Wednesday PM
October 15, 2014

Room: Room 403
Location: David L. Lawrence Convention Center

Session Chair: Igor Lubomirsky, Weizmann Institute of Science

2:00 PM
Bulk Mixed Ion Electron Conduction in Amorphous Gallium Oxide Causes Memristive Behavior: *Manfred Martin*[1]; Yoshitaka Aoki[1]; Vitaliy Feyer[2]; Claus Michael Schneider[2]; Hong-Seok Kim[3]; Han-Ill Yoo[3]; [1]RWTH Aachen University; [2]Research Centre Jülich; [3]Seoul National University

2:20 PM
Investigation on Oxygen Vacancies in Functional Oxide-materials by Optical, Electric and Thermogravimetric Approaches: *Yuta Matsushima*[1]; Naoto Kakinuma[1]; Mina Todo[1]; Hiroki Mori-ai[1]; Ryosuke Toyoda[1]; [1]Yamagata University

2:40 PM Invited
Defect Chemistry of Alkaline Earth Metal (Sr/Ba) Titanates: *Xin Guo*[1]; [1]Huazhong University of Science & Technology

3:20 PM Break

3:40 PM Invited
Investigating the Role of Defect Concentrations and Transport on Solid Oxide Fuel Cell and Battery Performances: *Brian Ingram*[1]; E. Hopper[1]; Albert Lipson[1]; John Vaughey[1]; Jeffrey Eastman[1]; Kee-Chul Chang[1]; Hoydoo You[1]; Paul Fuoss[1]; [1]Argonne National Laboratory

Joining of Advanced and Specialty Materials (JASM XVI) — Concurrent Session: Micro and Ceramic Joining

Program Organizers: Michael Halbig, NASA Glenn Research Center; Boian Alexandrov, The Ohio State University; Akio Hirose, Osaka University; Anming Hu, University of Tennessee; Peng He, Harbin Insitute of Technology; Darren Barborak, Aquilex WSI; Bingtao Li, AZZ WSI; Xinjin Cao, Institute for Aerospace Research

Wednesday PM
October 15, 2014

Room: Room 325
Location: David L. Lawrence Convention Center

Session Chairs: Rajiv Asthana, University of Wisconsin-Stout; Soshu Kirihara, Osaka University

2:00 PM
High Speed Ceramics Printing for Geometrical Reinforcements by Thermal Nanoparticles Spraying: *Soshu Kirihara*[1]; [1]Osaka University

2:20 PM
Role of Interfacial Interactions in Joining of Ceramics by Brazing Alloys: *Fiqiri Hodaj*[1]; [1]Grenoble Institute of Technology

2:40 PM
Development of High Temperature Joining and Characterization Approaches for SiC-based Composite Materials: *Michael Halbig*[1]; Mrityunjay Singh[2]; Craig Smith[2]; [1]NASA Glenn Research Center; [2]Ohio Aerospace Institute

3:00 PM
Diffusion Bonding of a SiC Fiber-bonded Ceramic Using Ti/Mo, Ti/Cu and Mo-B Interlayers: *Rajiv Asthana*[1]; Michael Halbig[2]; Hiroshi Tsuda[3]; S. Mori[3]; Mrityunjay Singh[4]; [1]University of Wisconsin-Stout; [2]NASA Glenn Research Center; [3]Osaka Prefecture University; [4]Ohio Aerospace Institute

3:20 PM Break

3:40 PM
Effect of Reverse-transformed Austenite on Cyclic Fatigue Properties of Thin Films of Austenitic Stainless Steels: *Hiroaki Mori*[1]; Kazunori Yada[1]; Hirofumi Maniwa[1]; Tetsusei Kurashiki[1]; [1]Osaka University

4:00 PM
Effect of Coupling Treatment of Filler and Copper Substrate on Adhesion of Underfill: *Hironao Mitsugi*[1]; Ikuo Shohji[1]; Shinji Koyama[1]; [1]Gunma University

4:20 PM
Improvement Effect of Joint Reliability of Sn-3Ag-0.5Cu Solder Ball Joint with Epoxy-based Flux: *Akiyoshi Ishiyama*[1]; Ikuo Shohji[1]; Tatsuya Ganbe[2]; Hirohiko Watanabe[2]; [1]Gunma University, Graduate School of Science and Technology; [2]Fuji Electric Co., Ltd

4:40 PM
Effect of Fiber Direction and Temperature on Fatigue Behaviors of Short Fiber-reinforced PPS: *Ryogo Takahashi*[1]; Ikuo Shohji[1]; Yuki Seki[2]; Satoshi Maruyama[2]; [1]Gunma University,Graduate School of Science and Technology; [2]Yamada Manufacturing Co., Ltd.

Joining of Advanced and Specialty Materials (JASM XVI) — Nanojoining

Program Organizers: Michael Halbig, NASA Glenn Research Center; Boian Alexandrov, The Ohio State University; Akio Hirose, Osaka University; Anming Hu, University of Tennessee; Peng He, Harbin Insitute of Technology; Darren Barborak, Aquilex WSI; Bingtao Li, AZZ WSI; Xinjin Cao, Institute for Aerospace Research

Wednesday PM
October 15, 2014

Room: Room 330
Location: David L. Lawrence Convention Center

Session Chairs: Akio Hirose, Osaka University; Anming Hu, The University of Tennessee

2:00 PM Invited
Laser Thermal Processing of Nanoparticles for Micro/Nano Electronics: *Heng Pan*[1]; [1]Missouri S&T

2:20 PM
Femtosecond Laser Peening for Strengthening of Nano/Micro-weld Joints and Its Dynamics: *Tomokazu Sano*[1]; Akio Hirose[1]; [1]Osaka University

2:40 PM
'Hot Spot' Induced Effective Joining of Silver Nanostructures under Femtosecond Laser Excitation: *Luchan Lin*[1]; Hong Huang[2]; Mugunthan Sivayoganathan[2]; Lei Liu[1]; Guisheng Zou[1]; Walter Duley[2]; Norman Zhou[2]; [1]Tsinghua University; [2]University of Waterloo

3:00 PM
Development of Nanowire Inks and Nanojoining for Printable Electronics: *Anming Hu*[1]; Ruozou Li[1]; [1]University of Tennessee

3:20 PM Break

3:40 PM Invited
Silver Nanowire and Nanoplate Pastes for Low Temperature Bonding Processes: *Ruozhou Li*[1]; Tong Zhang[1]; Anming Hu[2]; [1]Southeast University; [2]University of Tennessee

4:00 PM
Investigation on the Plasmon Enhanced Light Localization in Photovoltaics and Optical Sensing: *Tong Zhang*[1]; Guang Qian[1]; Jing-Yuan Wu[1]; Sheng-Qing Zhu[1]; Jie Tang[2]; Xiao-Su Xu[2]; Xiao-Dan Ma[1]; [1]School of Electronic Science and Engineering, Southeast University; Key Laboratory of Micro-Inertial Instrument and Advanced Navigation Technology, Ministry of Education; [2]School of Instrument Science & Engineering, Southeast University

4:20 PM
Evaluation of Joint Properties of Bonding Using Metal Nanoparticles Derived from Metal Oxides: *Tomoyuki Fujimoto*[1]; Tomo Ogura[1]; Akio Hirose[1]; [1]Osaka University

4:40 PM
Fabrication and Spectroscopic Analysis of Metal Nanostructures by Multistep Methods: *Xiao-Yang Zhang*[1]; Yuan-Jun Song[1]; Feng Shan[1]; Tong Zhang[1]; [1]School of Electronic Science and Engineering, Southeast University; Key Laboratory of Micro-Inertial Instrument and Advanced Navigation Technology, Ministry of Education

5:00 PM
Light Induced Nanojoining of Silver Nanowires: *Yanhong Tian*[1]; Ding Su[1]; Jiang Zhi[1]; Chunqing Wang[1]; Peng He[1]; [1]Harbin Insitute of Technology

5:20 PM
Localized Heating of Plasmonic Silver Nanoparticle Clusters by Low Fluence Laser Irradiation: *Mugunthan Sivayoganathan*[1]; Hong Huang[1]; Walt Duley[1]; Norman Zhou[1]; [1]University of Waterloo

Materials Development for Nuclear Applications and Extreme Environments — Nuclear Fuels

Program Organizers: Raghunath Kanakala, University of Idaho; Ram Devanathan, Pacific Northwest National Laboratory; Josef Matyas, Pacific Northwest National Laboratory; Kevin Fox, Savannah River National Laboratory; Elizabeth Hoffman, Savannah River National Laboratory; Raul Rebak, GE Global Research; Aladar Csontos, U.S. Nuclear Regulatory Commission; Kumar Sridharan, University of Wisconsin; Bill Lee, Imperial College London

Wednesday PM
October 15, 2014

Room: Room 415
Location: David L. Lawrence Convention Center

Session Chair: S Sundaram, Alfred University

2:00 PM Invited
Synthesis of Advanced Multiphase Actinide Fuels: Brian Jaques[1]; Gordon Alanko[1]; Peng Xu[2]; Edward Lahoda[2]; *Darryl Butt*[1]; [1]Boise State University; [2]Westinghouse Electric Company LLC

2:40 PM Invited
Advanced Rare-earth-based Thermoelectric Materials for Extreme Space Power Generation Applications: *Sabah Bux*[1]; Jean-Pierre Fleurial[1]; Yufei Hu[2]; Jason Grenkemper[2]; Trinh Vo[1]; David Uhl[1]; Chen-Kuo Huang[1]; James Ma[1]; Susan Kauzlarich[2]; Paul Von Allmen[1]; Thierry Caillat[1]; ; [1]Jet Propulsion Laboratory/California Institute of Technology; [2]UCD

3:20 PM Break

3:40 PM
Use of Uranium Silicide Composite Fuels for Improved Oxidation Resistance in Light Water Reactor Applications: *Josh White*[1]; Andrew Nelson[1]; John Dunwoody[1]; Darrin Byler[1]; Kenneth McClellan[1]; [1]Los Alamos National Laboratory

4:00 PM Invited
Multiphase Ceramic Waste Forms for Nuclear Energy: *S. Sundaram*[1]; [1]Alfred University

Materials Issues in Nuclear Waste Management in the 21st Century — The Safe Disposal of Nuclear Waste

Program Organizers: Josef Matyas, Pacific Northwest National Laboratory; Stéphane Gin, CEA; Kevin Fox, Savannah River National Laboratory; Elizabeth Hoffman, Savannah River National Laboratory; Dawn Janney, Idaho National Laboratory; Ramana Reddy, The University of Alabama; Ram Devanathan, Pacific Northwest National Laboratory; Raghunath Kanakala, University of Idaho

Wednesday PM
October 15, 2014

Room: Room 413
Location: David L. Lawrence Convention Center

Session Chairs: Joseph Ryan, Pacific Northwest National Lab; Yutai Katoh, Oak Ridge National Laboratory

2:00 PM Invited
The Science behind Deep Borehole Disposal of Nuclear Waste: *Patrick Brady*[1]; Bill Arnold[1]; Robert MacKinnon[1]; [1]Sandia National Laboratories

2:40 PM Invited
Monazite for Long Term Specific Conditioning : Lessons Coming from Chemistry and Geochemistry: *Nicolas Dacheux*[1]; Nicolas Clavier[2]; Renaud Podor[2]; Clemence Gausse[1]; Adel Mesbah[2]; Stéphanie Szenknect[3]; [1]University of Montpellier 2; [2]CNRS; [3]CEA

3:20 PM Break

3:40 PM
Interactions between Glass Melt and Liquid Metal Coming from High Temperature Treatment of Nuclear Waste: *Annabelle Laplace*[1]; Simon Bor[1]; Isabelle Hugon[1]; Sylvain Mure[1]; Olivier Pinet[1]; [1]CEA -Commissariat à l'Energie Atomique

4:00 PM Invited
Radiation Effects on Materials Used in Geological Repositories: *Mats Jonsson*[1]; [1]KTH Royal Institute of Technology

4:40 PM Invited
Understanding Radionuclide Interactions with Layered Materials: *Yifeng Wang*[1]; [1]Sandia National Laboratories

Materials Science of Additive Manufacturing — Processing II

Program Organizers: Panagiotis (Pan) Michaleris, Penn State University; Brett Conner, Youngstown State University; Michael Blaszkiewicz, SABIC Innovative Plastics; Wayne King, LLNL; Edward Reutzel, ARL Penn State; Todd Palmer, Penn State; Crystal Morrison, RJ Lee Group; Guha Manogharan, YSU

Wednesday PM
October 15, 2014

Room: Room 328
Location: David L. Lawrence Convention Center

Session Chair: Guha Manogharan, YSU

2:00 PM
Microstructural Evaluation of Ti-6Al-4V Made by Electron Beam Additive Manufacturing: *Matt Dahar*[1]; Mohsen Seifi[1]; Ola Harrysson[1]; John Lewandowski[1]; [1]Case Western Reserve University

2:20 PM
Novel Strategies for Control of Microstructure in Directed-energy Additive Manufacturing of Metal Parts: *Abdalla Nassar*[1]; Edward Reutzel[1]; [1]Penn State University

2:40 PM
Simulation-assisted Rapid Solidification of Titanium Aluminides for Additive Manufacture: *Christoph Kenel*[1]; Christian Leinenbach[1]; [1]Empa - Swiss Federal Laboratories for Materials Science and Technology

3:00 PM
Effect of Inter-layer Dwell Time on Distortion, Residual Stress, and Microstructure in Titanium and Nickel Alloy Components Produced by Laser-based Directed Energy Deposition: Jay Keist[1]; *Erik Denlinger*[1]; Jarred Heigel[1]; Pan Michaleris[1]; Todd Palmer[1]; [1]Penn State

3:20 PM Break

3:40 PM
Reducing Solidification Cracking during Selective Laser Sintering of Heat Treatable Aluminum Alloys: *Jason Milligan*[1]; Mathieu Brochu[1]; [1]McGill University

4:00 PM
Development of Low-alloy High-strength Steel Process Parameters for DMLS: *Elias Jelis*[1]; Stacey Kerwien[2]; Ravindra Nugehalli[3]; Matthew Clemente[4]; [1] U.S Army, ARDEC, Picatinny Arsenal; [2]U.S Army ARDEC, Picatinny Arsenal; [3]New Jersey Institute of Technology; [4]U.S. Army ARDEC, Picatinny Arsenal

4:20 PM
Grain Structure Heterogeneity in Biomedical Co-Cr-Mo-N Alloy Fabricated by Electron Beam Melting (EBM): *Arata Okazaki*[1]; Yuichiro Koizumi[1]; Shi-Hai Sun[1]; Tsuyoshi Saito[1]; Yunping Li[1]; Kenta Yamanaka[1]; Akihiko Chiba[1]; [1]Tohoku University

4:40 PM
Laser Beam: Material Interaction and Thermal Absorption Model Validation: *Frederick Lia*[1]; Joshua Park[1]; Richard Martukanitz[1]; Jay Tressler[1]; [1]Applied Research Laboratory at the Pennsylvania State University

5:00 PM
Use of Computational Methods to Optimize Additive Manufacturing Outcomes: *Deborah Mies*[1]; [1]Granta Design, Ltd.

Mechanical Behavior of Technological Coatings and Thin Films — Relating Synthesis, Structure, and Mechanical Property Relationships

Program Organizers: Douglas Stauffer, Hysitron, Inc.; Megan Cordill, Erich Schmid Institute of Materials Science; Joseph Jakes, USDA Forest Products Laboratory; Mark Weaver, University of Alabama; Marian Kennedy, Clemson University; Reginald Hamilton, The Pennsylvania State University

Wednesday PM
October 15, 2014

Room: Room 401
Location: David L. Lawrence Convention Center

Session Chairs: Joseph Jakes, Forest Products Laboratory; Reginald Hamilton, Penn State University

Funding support provided by Hysitron, Inc.

2:00 PM Invited
Thermo-mechanical Fatigue Behaviour of Cu Films on Substrates: *Walther Heinz*[1]; Gerhard Dehm[2]; Werner Robl[3]; [1]KAI- KAI-Kompetenzzentrum Automobil- und Industrie-Elektronik GmbH; [2]Max-Planck-Institut für Eisenforschung; [3]Infineon Technologies Germany AG

2:40 PM Invited
Synthesize-structure-properties Relations of AlN-based Protective Coatings: Jörg Paulitsch[1]; Paul H. Mayrhofer[1]; *Matthias Bartosik*[1]; [1]Vienna University of Technology

3:20 PM Break

3:40 PM Invited
The Influence of Argon Sputter Pressure on the Development of the Phase-transformed Alpha-tantalum Microstructure and Stress Evolution during Phase Transformation: *Markus Chmielus*[1]; Elizabeth Ellis[2]; Shefford Baker[2]; [1]University of Pittsburgh; [2]Cornell University

4:20 PM
Synthesis of Ultra-smooth and Thin TiNi Films by Biased Target Ion Beam Deposition: *Huilong Hou*[1]; Reginald Hamilton[1]; Yao Jin[1]; Mark Horn[1]; [1]The Pennsylvania State University

4:40 PM Invited
Coating Technologies for Biomedical Devices - Current State of Art, Challenges and Future Opportunities: *Mallika Kamarajugadda*[1]; [1]Medtronic

5:20 PM
Deposition, Microstructure and Mechanical Characterization of Graphene Oxide Thin Films on Al Substrates: *Sumin Jin*[1]; Viet Hung Pham[2]; Abhi Ghosh[1]; James Dickerson[2]; Mathieu Brochu[1]; [1]McGill University; [2]Brookhaven National Laboratory

5:40 PM
Pulsed Electrodeposition of Nano-crystalline Ni with Uniform Co-depostion of Micron Sized Diamond Particles on Annealed Copper Substrate: *Prashant Kumar*[1]; [1]Indian Institute of Technology Banaras Hindu University Varanasi

6:00 PM
Mechanical Properties of Microfibrous Films of Parylene C for Acoustic Applications: *Chandraprakash Chindam*[1]; Nicole Brown[1]; Osama Awadelkarim[1]; Wasim Orfali[2]; Akhlesh Lakhtakia[1]; [1]The Pennsylvania State University; [2]Taibah University

Multifunctional Materials for Aerospace and Defense: Challenges and Prospects — Multifunctional Materials Design and Characterization

Program Organizers: David Forrest, Department of Energy; Roumiana Petrova, New Jersey Institute of Technology; Yellapu Murty, MC Technologies; Rodney Boyer, RB; Ali Yousefiani, Boeing Research and Technology

Wednesday PM
October 15, 2014

Room: Room 335
Location: David L. Lawrence Convention Center

Session Chair: Ali Yousefiani, Boeing Research and Technology

2:00 PM
Production of Nanostructured Materials with Controlled Microstructural Architectures (MCMA): *Christopher Melnyk*[1]; Brian Weinstein[1]; David Lao[1]; [1]California Nanotechnologies, Inc

2:20 PM
Strength and Ductility of Nanostructured Metals and Alloys: *Yuntian Zhu*[1]; [1]North Carolina State University

2:40 PM
Structure and Performance across the Martensitic Transition in Co-Ni-Al Magnetic Shape Memory Alloys: *Jia Ju*[1]; Feng Xue[1]; Jing Bai[1]; Hong Li[1]; [1]Southeast University

3:00 PM
Multifunctional Design of Thermoelectric Harvestor: Guangxi Wu[1]; *Xiong Yu*[1]; [1]Case Western Reserve University

3:20 PM Break

3:40 PM
On the Development of Novel Light Weight Multifunctional Composites: *R Johnson*[1]; Tom Hammann[1]; M Riyad[1]; Surojit Gupta[1]; [1]University of North Dakota

4:00 PM
Deformation Processed Syntactic Composites: Novel Low Density Materials: *Andrew Sherman*[1]; Brian Doud[2]; Nick Farkas[2]; [1]Powdermet Inc; [2]Terves Inc

4:20 PM
Damping Mechanisms in Ferroelectric Ceramic-reinforced Metal Matrix Composites: *Zachary Morgan*[1]; Yongmei Jin[1]; Stephen Kampe[1]; [1]Michigan Technological University

4:40 PM
A Combinatorial Assessment of the High-temperature Oxidation of Binary Ti-X (X=Mo, Cr, W and Al) Systems: Peyman Samimi[1]; David Brice[1]; Peter Collins[1]; *Iman Ghamarian*; [1]University of North Texas

5:00 PM
A Novel Approach to Deformation Studies of Advanced Non-ferrous Structural Alloys: *Iman Ghamarian*[1]; Yue Liu[1]; Peter Collins[1]; [1]University of North Texas

5:20 PM
Evaluation of Flaws in Polymer Composites Using a Microwave Interference Scanning System: *William Green*[1]; Jared Gardner[1]; [1]US Army Research Laboratory

5:40 PM
Understanding the Role of Contamination on Adhesively Bonded Composite Joints to Evaluate Durability: A Comparative Assessment: *Vishal Musaramthota*[1]; Tomas Pribanic[1]; Dwayne McDaniel[1]; Norman Munroe[1]; Xiangyang Zhou[2]; [1]Florida International University; [2]University of Miami

Multifunctional Oxides — Synthesis and Charcterization I

Program Organizers: Xiaoqing Pan, University of Michigan; Chonglin Chen, University of Texas at San Antonio; Quanxi Jia, Los Alamos National Laboratory; Judith Driscoll, University of Cambridge

Wednesday PM
October 15, 2014

Room: Room 303
Location: David L. Lawrence Convention Center

Session Chairs: Jon Ihlefeld, Sandia National Laboratory; Quanxi Jia, Los Alamos National Laboratory

2:00 PM Invited
Enhanced Electrocaloric and Pyroelectric Response from Ferroelectric Multilayers: *S. Pamir Alpay*[1]; Jialan Zhang[2]; M. Tumerkan Kesim[1]; Lane Martin[2]; [1]University of Connecticut; [2]University of Illinois at Urbana-Champaign

2:20 PM
Colossal pO_2 Dependence of Thermoelectric Power Factor in Nb-Doped $SrTiO_3$ Ceramics: *Jon Ihlefeld*[1]; Harlan Brown-Shaklee[1]; Peter Sharma[1]; [1]Sandia National Laboratories

2:40 PM
Study of Nd Doping on the Photoluminescence and Morphology of $Y_2Si_2O_7$ Nanofibers: *Yin Liu*[1]; Bradford Divine[1]; Yiquan Wu[1]; [1]Alfred University

3:00 PM Invited
Role of Vertical Strain and Microstructure on Magnetoresistance in Vertically Aligned Nanocomposites: *Aiping Chen*[1]; Zhenxing Bi[1]; Wenrui Zhang[2]; Judith MacManus-Driscoll[3]; Haiyan Wang[2]; Quanxi Jia[1]; [1]Los Alamos National Laboratory; [2]Texas A&M University; [3]University of Cambridge

3:20 PM Break

3:40 PM Invited
Multifunctional Divalent Europium Perovskite Oxides: *Katsuhisa Tanaka*[1]; Koji Fujita[1]; [1]Kyoto University

4:00 PM
Origin of Monoclinic Distortion in Nanodomained Ferroelectric Materials: *Liwei Geng*[1]; Yongmei Jin[1]; Yu Wang[1]; [1]Michigan Technological University

4:20 PM
N-type Thermoelectric Oxide $Ga_{3-x}In_{5+x}Sn_2O_{16}$ Properties Via Spark Plasma Sintering: *Claire Dvorak*[1]; Doreen Edwards[1]; [1]Alfred University

4:40 PM
Ferroelastic Domain Switching Dynamics under Electrical and Mechanical Excitations: Peng Gao[1]; Jason Britson[2]; Long-Qing Chen[2]; *Xiaoqing Pan*[1]; [1]University of Michigan; [2]Penn State University

5:00 PM Invited
Atomically Precise Interfaces from Non-stoichiometric Deposition: *Yuefeng Nie*[1]; Ye Zhu[1]; Che-Hui Lee[1]; Lena Kourkoutis[1]; Julia Mundy[1]; Javier Junquera[2]; Philippe Ghosez[3]; Xiaoxing Xi[4]; Kyle Shen[1]; David Muller[1]; Darrell Schlom[1]; [1]Cornell University; [2]Universidad de Cantabria; [3]Universite de Liege; [4]Temple University

Nanotechnology for Energy, Environment, Electronics, and Industry — Industry I

Program Organizers: Gary Pickrell, Virginia Tech; Navin Manjooran, Siemens AG

Wednesday PM
October 15, 2014

Room: Room 320
Location: David L. Lawrence Convention Center

Session Chairs: Gary Pickrell, Virginia Tech; Navin Manjooran, Siemens AG; Parthiban Rajasekaran, UCF

2:00 PM Introductory Comments

2:40 PM
Micro-, Meso-, and Macropore Tailoring of Polysilazane-derived Silicon Carbonitride Ceramics: *Thomas Konegger*[1]; Rajendra Bordia[1]; [1]Clemson University

3:00 PM
Incorporating Nano Si Particles Into Cr-coated Steel for Better Mechanical Performance: *Mohamad Zbib*[1]; David Bahr[1]; [1]Purdue University

3:20 PM Break

3:40 PM
First-principles Study of Oxygen Reduction Reaction on Transition Metal-nitrogen-carbon Nonprecious Metal Catalysts: *Shyam Kattel*[1]; Guofeng Wang[1]; [1]University of Pittsburgh

4:00 PM
High Dispersion and Hydrothermal Stability of a Mesoporous $MgAl_2O_4$-supported Bimetallic Pt-Pd Catalyst: *Solène Le Bras*[1]; Fabrice Rossignol[1]; Thierry Chartier[1]; Karine Lombaert[2]; Nicolas Raoul[2]; Pascal Del Gallo[3]; [1]SPCTS CEC; [2]RENAULT; [3]AIR LIQUIDE

4:20 PM
Microwave-assisted Hydrothermal Synthesis of Sodium Titanates for Heavy Metal Adsorption: *Brittany Higgins*[1]; Doreen Edwards[1]; [1]Alfred University

4:40 PM
Elucidating the Governing Parameters that Dictate Thermal Transport in Polymer Nanocomposites: *Clare Mahoney*[1]; Maxim Tchoul[2]; Jonathan Malen[1]; Krzysztof Matyjaszewski[1]; Michael Bockstaller[1]; [1]Carnegie Mellon University; [2]OSRAM-SYLVANIA

Next Generation Biomaterials — Session VI

Program Organizers: Roger Narayan, UNC/NCSU Joint Department of Biomedical Engineering; Diego Mantovani, Laval University; Raman Singh, Monash University

Wednesday PM
October 15, 2014

Room: Room 315
Location: David L. Lawrence Convention Center

Session Chairs: Kenta Yamanaka, Tohoku University; Ian Nettleship, University of Pittsburgh

2:00 PM
The Effect of Calcium Phosphate Ceramic Scaffolds on the Culturing of Primary Human Cells in Bioreactors: Anthony Finoli[1]; Christopher Pekor[1]; Eva Schmelzer[1]; *Ian Nettleship*[1]; Joerg Geralch[1]; [1]University of Pittsburgh

2:20 PM
Fracture and Fatigue of Wires and Cables for Biomedical Applications: *Janet Gbur*[1]; John Lewandowski[1]; [1]Case Western Reserve University

2:40 PM
Spatiotemporal Release of NGF and GDNF from Nanofibrous Scaffolds: *Chaoyu Liu*[1]; Min Wang[1]; [1]Department of Mechanical Engineering, The University of Hong Kong

3:00 PM
Mixing Nozzle for 3D Printing, Application in Silicone and Bio-ceramics Manufacturing: Jim Smay[1]; *Yang Shi*[1]; Swati Jindal[2]; Trevor Coward[2]; [1]Oklahoma State University; [2]King's College London

3:20 PM Break

3:40 PM
Nanostructured Co-Cr Alloys for Biomedical Applications: *Kenta Yamanaka*[1]; Mamani Mori[2]; Akihiko Chiba[1]; [1]Tohoku University; [2]Sendai National College of Technology

4:00 PM
Synthesis of Nanocrystalline Mg-Y Alloys by Mechanical Alloying and Spark Plasma Sintering: *Yufu Ren*[1]; Huan Zhou[2]; Sarit Bhaduri[1]; [1]University of Toledo; [2]Changzhou University

4:20 PM
Unraveling Molecular Mechanisms of Pt{100} Recognition and Formation of Cubic Nanoparticles in Peptide Directed Synthesis: *Hadi Ramezani-Dakhel*[1]; Lingyan Ruan[2]; Yu Huang[2]; Hendrik Heinz[1]; [1]University of Akron; [2]University of California

4:40 PM
Next Generation Surface Modification Techniques on Ti Alloys for Orthopedic Implant Materials: *Vishal Musaramthota*[1]; Rupak Dua[1]; Ryszard Rokicki[2]; Sharan Ramaswamy[1]; Norman Munroe[1]; [1]Florida International University; [2]Electrobright

Pb-free Solders and Advanced Interconnecting Materials — Session III

Program Organizers: Albert T. Wu, National Central University; Carol Handwerker, Purdue University

Wednesday PM
October 15, 2014

Room: Room 312
Location: David L. Lawrence Convention Center

Session Chairs: Holly Garich, Faraday Technology, Inc.; Raymundo Arroyave, Texas A & M University

2:00 PM Invited
Progress on Pb-free Composite Solder Paste to Replace High-Pb Hierarchical Solders: *Iver Anderson*[1]; Stephanie Choquette[2]; [1]Ames Laboratory; [2]Iowa State University

2:40 PM
Rapid Solidification of Micro-alloyed Sn-3.0Cu-0.4Al for High Reliability Lead-free Solders: *Kathlene Reeve*[1]; Iver Anderson[2]; Carol Handwerker[1]; [1]Purdue University; [2]Ames Laboratory

3:00 PM
Al Alloy Pad for Power Devices: *Po-Chen Lin*[1]; Tao-Chih Chang[2]; Albert T Wu[1]; [1]Department of Chemical and Material Engineering, National Central University; [2]Industrial Technology Research Institute

3:20 PM Break

3:40 PM
Electrochemical Study of Cu-Al IMCs for Service Reliability of Cu-wire Packages: *Yuelin Wu*[1]; KN Subramanian[1]; Andre Lee[1]; [1]Michigan State University

4:00 PM
Pulse Reverse Deposition of Pure Tin Solder with Controlled Properties: *Holly Garich*[1]; EJ Taylor[1]; [1]Faraday Technology, Inc.

4:20 PM
Densification of Thin Film Interconnects Derived from Pyrolytic Processing of Carbon Nanotube Polymeric Precursors by Spark Plasma Sintering: *Frank Harwath*[1]; [1]Illinois Institute of Technology

4:40 PM
Effects of Metallic Nanoparticle Doped Flux on Interfacial Intermetallic Compounds between Lead Free Solder Ball and Cu Substrate: G. K. Sujan[1]; *A. S. M. A Haseeb*[1]; Amalina Afifi[1]; [1]University of Malaya

5:00 PM
SiC Die-attach on DBA Substrate with Ceramic Nano-particles Added Hybrid Ag Particle Paste: *Hao Zhang*[1]; Shijo Nagao[1]; Katsuaki Suganuma[1]; [1]The Institute of Scientific and Industrial Research (ISIR) Osaka University

Phase Stability, Diffusion Kinetics, and their Applications (PSDK-IX) — Critical Materials II / Functional Materials / Superalloys

Program Organizers: Dongwon Shin, Oak Ridge National Laboratory; In-Ho Jung, McGill University; James Saal, Northwestern University; Raymundo Arroyave, Texas A & M University

Wednesday PM
October 15, 2014

Room: Room 402
Location: David L. Lawrence Convention Center

Session Chairs: Shihuai Zhou, The Ames Laboratory; Yongho Sohn, University of Central Florida

2:00 PM Invited
Determining Enthalpy of Mixing for Al-Tb Liquid: Solution Calorimeter, Electromagnetic Levitation Measurements, First-principles Calculation and Thermodynamic Modeling: *Shihuai Zhou*[1]; M. J. Kramer[1]; E. Simsek[1]; R. T. Ott[1]; R. E. Napolitano[2]; [1]Ames Laboratory; [2]Iowa State University

2:40 PM
Critical Thermodynamic Evaluation and Optimization of the Binary Nd_2O_3-B_2O_3 System: *Lars Klemet Jakobsson*[1]; Gabriella Tranell[1]; In-Ho Jung[2]; [1]Norwegian University of Science and Technology; [2]McGill University

3:00 PM
Thermodynamics of Actinide-based Alloys: Challenges and Opportunities: *Aurelien Perron*[1]; Patrice Turchi[1]; Alexander Landa[1]; Per Soderlind[1]; [1]Lawrence Livermore National Laboratory

3:20 PM Break

3:40 PM
Phase Stability of B2 Phase and Phase Equilibria in the Ni-Ti-Hf High Temperature Shape Memory Alloy System: *Chang-Seok Oh*[1]; Hak-Sung Lee[1]; Jong-Taek Yeom[1]; [1]Korea Institute of Materials Science

4:00 PM
Interdiffusion in Ni-Mn-Ga Alloys: *Le Zhou*[1]; Anit Giri[2]; Kyu Cho[2]; Yongho Sohn[1]; [1]University of Central Florida; [2]US Army Research Laboratory

4:20 PM
Microstructural Evolution and Stability of Two-phase γ-γ' Co-Al-W Alloys: *Eric Lass*[1]; [1]NIST

4:40 PM
Critical Assessment and Application of the Co-Ni-Ti System: *Shengyen Li*[1]; U.R. Kattner[1]; C.E. Campbell[1]; [1]National Institute of Standards and Technology

5:00 PM
Kinetically Modelling the Thermodynamically Driven Evolution of γ" Precipitates in Ni-based Alloy 625: *Ian Moore*[1]; Mary Burke[2]; Eric Palmiere[1]; [1]University of Sheffield; [2]University of Manchester

Phase Transformations in Ceramics: The Present and the Future — Theory and Modeling

Program Organizers: Ivar Reimanis, Colorado School of Mines; Waltraud Kriven, University of Illinois at Urbana-Champaign; Pankaj Sarin, Oklahoma State University in Tulsa

Wednesday PM
October 15, 2014

Room: Room 301
Location: David L. Lawrence Convention Center

Session Chair: Ivar Reimanis, Colorado School of Mines

2:00 PM Invited
Prediction of Martensitic Phase Transformations: *Randall Hay*[1]; Pavel Mogilevsky; Emmanuel Boakye[2]; [1]Air Force Research Laboratory; [2]UES, Inc.

2:40 PM Invited
High Temperature Ferroelastic Phase Transition in Rare-earth Niobates ($LnNbO_4$, Where Ln = La, Dy and Y): *Pankaj Sarin*[1]; Robert Hughes[2]; Daniel Lowry[1]; Zlatomir Apostolov[2]; Waltraud Kriven[2]; [1]Oklahoma State University in Tulsa; [2]University of Illinois at Urbana-Champaign

3:20 PM Break

3:40 PM
Tetragonal to Monoclinic Ferroelastic Transformation in YTaO4: *Samuel Shian*[1]; Jing Feng[1]; Mor Baram[1]; Mary Gurak[1]; David Clarke[1]; [1]Harvard University

4:00 PM Invited
The Value of Theoretical Computations in Understanding Phase Transformations of Ceramic Materials: *Sanjay Khare*[1]; Xiuquan Zhou[2]; Yuejian Wang[3]; Cora Lind-Kovacs[1]; [1]University of Toledo; [2]University of Maryland; [3]Oakland University

4:40 PM Invited
On the Utility of Metastable Phases – An Example from Ln_6WO_{12} (Ln = Y, Ho, Er, Yb): *Zlatomir Apostolov*[1]; Pankaj Sarin[2]; Robert Hughes[1]; Waltraud Kriven[1]; [1]University of Illinois at Urbana-Champaign; [2]Oklahoma State University

5:20 PM
Formulating Phase Transition with Thermally Floating Harmonics: Beyond the Landau Expansion: *Yi Wang*[1]; Long-Qing Chen[1]; Zi-Kui Liu[1]; [1]Penn State

Processes, Applications, and Performance of Materials in Additive Manufacturing — Microstructure and Properties

Program Organizers: Andrzej Wojcieszynski, ATI Powder Metals; Ulf Ackelid, Arcam AB; Ian Harris, Edison Welding Institute; Ola Harrysson, North Carolina State University; Sudarsanam Babu, The Ohio State University; Rodney Boyer, Boeing - retired

Wednesday PM
October 15, 2014

Room: Room 327
Location: David L. Lawrence Convention Center

Session Chairs: Andrzej Wojcieszynski, ATI Powder Metals; Rodney Boyer, Boeing Company (Retired)

2:00 PM Invited
Assessing Application-specific Gamma TiAl Alloy-microstructure Combinations for Additive Manufacturing: *Young-Won Kim*[1]; [1]Gamteck, Inc.

2:40 PM Invited
Build Direction Dependence of Microstructure and Tensile Property of Co Based Alloys Fabricated by Electron Beam Melting: *Akihiko Chiba*[1]; Shi-Hai Sun[1]; Yuichiro Koizumi[1]; Shingo Kurosu[1]; Yun-Ping Li[1]; Kenta Yamanaka[1]; [1]Tohoku University

3:00 PM
Phase-field Simulation of Microstructural Evolution of Ti-6Al-4V in Electron Beam Additive Manufacturing Process: Seshadev Sahoo[1]; *Kevin Chou*[1]; [1]University of Alabama

3:20 PM Break

3:40 PM
Characterization and Heat Treatment of Nickel Alloy 718 Produced by Laser-powder Bed Fusion Additive Manufacturing: *Hyeyun Song*[1]; Shawn Kelly[2]; Wei Zhang[1]; [1]The Ohio State University; [2]EWI

4:00 PM
EBM Fabricated Ti6Al4V with Boron Additions: A First Step towards Tailoring Composition and Microstructure for Additive Manufacturing: *Tim Horn*[1]; Ola Harrysson[1]; Michael Rigsbee[1]; Harvey West[1]; Ron Aman[1]; Zaynab Mahbooba[1]; Jean Stewart[2]; Andrzej Wojcieszynski[2]; [1]North Carolina State University; [2]ATI Powder Metals

4:20 PM
Sensing with Optical Emissions Spectroscopy for Real-time Defect Detection during Directed-energy Additive Manufacturing of Metal Parts: *Abdalla Nassar*[1]; Edward Reutzel[1]; [1]Penn State University

4:40 PM
Statistical Analysis of the Influence of Laser Cold Spray System Parameters on the Properties and Microstructure of Consolidated: *Aaron Birt*[1]; Diran Apelian[1]; Richard Sisson[1]; Victor Champagne[1]; [1]Worcester Polytechnic Institute

Robert B. Sosman Award Symposium: Opportunities for Enhancement of Nanomechanical Properties of Materials — Session II

Program Organizers: Debra Kaiser, NIST; Rajan Tandon, Sandia National Laboratories

Wednesday PM
October 15, 2014

Room: Room 316
Location: David L. Lawrence Convention Center

Session Chair: Debra Kaiser, National Institute of Standards and Technology

2:00 PM Invited
Effects of Grain Refinement on Nanoscale Friction: *Izabela Szlufarska*[1]; [1]Universty of Wisconsin

2:40 PM Invited
Crack Stability and Fracture Initiation in Chemically Tempered Glass: *Rajan Tandon*[1]; [1]Sandia National Laboratories

3:00 PM Break

3:20 PM Invited
The Critical Role of Reference Material Standards in Nanoscale Measurements: *Debra Kaiser*[1]; [1]NIST

3:40 PM Invited
Nanoscale Strength of Silicon and Its Interfaces: *Frank DelRio*[1]; Brian Bush[1]; Michael Gaither[1]; Robert Cook[1]; [1]National Institute of Standards and Technology

4:20 PM Concluding Comments

Rustum Roy Symposium on Processing and Performance of Materials using Microwaves, Electric and Magnetic Fields, Ultrasound, Lasers, and Mechanical Work — Session VI

Program Organizers: Morsi Mahmoud , Karlsruhe Institute of Technology (KIT) & City for Scientific Research and Technological Applications (SRTA City); Dinesh Agrawal, Pennsylvania State University; Guido Link, Karlsruhe Institute of Technology; Motoyasu Sato, Chubu University; Rishi Raj, University of Colorado

Wednesday PM
October 15, 2014

Room: Room 317
Location: David L. Lawrence Convention Center

Session Chair: Kirill Rybakov, Lobachevsky State University of Nizhny Novgorod

2:00 PM Invited
Electrochemical-calorimetric Studies of Lithium-ion Batteries: *Hans Juergen Seifert*[1]; Elke Schuster[1]; Carlos Ziebert[1]; Magnus Rohde[1]; [1]Karlsruhe Institute of Technology (KIT)

2:40 PM
Feasibility of Using Laser-sustained Nitrogen Plasma to Form Crack-free Wear-resistant Titanium Nitride Coatings on Commercially Pure Titanium: *Amar Kamat*[1]; Judith Todd[1]; Stephen Copley[1]; [1]Pennsylvania State University

3:00 PM
Evaluation of Radio-frequency Application for Pest Control: *Ulf Roland*[1]; Christian Hoyer[1]; Ulf Trommler[1]; Frank Holzer[1]; Frank-Dieter Kopinke[1]; [1]Helmholtz Centre for Environmental Research - UFZ

3:20 PM Break

3:40 PM
Developing a Relationship between Nonlinear Ultrasonics and Microstructure: *Vamshi Chillara*[1]; Cliff Lissenden[1]; [1]Penn State

4:00 PM
Closing Remarks & Discussions: Morsi Mahmoud[1]; [1]Karlsruhe Institute of Technology (KIT) & City for Scientific Research and Technological Applications (SRTA City)

Sintering and Related Powder Processing Science and Technologies — Sintering III

Program Organizers: Ricardo H. R. Castro, University of California at Davis; Eugene Olevsky, San Diego State University; Olivia Graeve, University of California, San Diego; Umberto Anselmi-Tamburini, University of Pavia; Zak Fang, University of Utah ; Troy Holland, Colorado State University

Wednesday PM
October 15, 2014

Room: Room 326
Location: David L. Lawrence Convention Center

Session Chair: Yoshio Sakka, National Institute for Materials Science

2:00 PM
Challenges and Opportunities of Master Sintering Curve (MSC) Analysis of Sintering Processes: *Elizabeth Kupp*[1]; I. Ozer[1]; Tobias Frueh[1]; Jesse Mattson[1]; Charles Compson[2]; A Joseph[2]; Marcel Spreij[2]; Gary Messing[1]; [1]Penn State University; [2]Almatis, Inc.

2:20 PM
Comparison of The Effect of Sinter Hardening on Mechanical and Microstructure Properties Astaloy 1,5 Mo and Distaloy 1,5 Mo: *Cihan Balaban*[1]; Adem Bakkaoglu[2]; Ilknur Unlu[2]; [1]Sarvion Ind.Met.end Eng. Com.A.S.; [2]Yildiz Technical University

2:40 PM
Effect of Alloying Elements on Mechanical Properties and Electrical Conductivity of P/M Copper Alloys Dispersed with Vapor-grown Carbon Fiber: *Hisashi Imai*[1]; Katsuyoshi Kondoh[1]; [1]Joining and Welding Research Institute Osaka University

3:00 PM
Flame-assisted Flash Sintering of Ceramic Coatings: *Stephen Johnson*[1]; Andrew Hunt[1]; Ganesh Venugopal[1]; Riley Nesbit[1]; Joey Stieha[1]; Dan Webster[1]; [1]nGimat LLC

3:20 PM Break

3:40 PM
Stabilization and Mechanical Properties of Nano-crystalline Copper by Alloying with Tantalum: *Kris Darling*[1]; Mark Tschopp[1]; Heather Murdoch[1]; Laszlo Kecskes[1]; [1]ARL

4:00 PM
The Role of Liquid Phase on Microstructure Development and Mechanical Properties in Ceramic Tiles for Interior Wall Facing: *Anna Poznyak*[1]; [1]BSTU

4:20 PM
Three-directional Anisotropic Shrinkage of Green Tapes Induced by Pore Orientation: *Zongwen Fu*[1]; Dellert Armin[1]; Andreas Roosen[1]; [1]University of Erlangen-Nuremberg

4:40 PM
Microstructure and Mechanical Property of Shape Memory Alloy TiNi with Transition Metals by Powder Metallurgy: *Katsuyoshi Kondoh*[1]; Takayuki Yonezawa[1]; Hisashi Imai[1]; Junko Umeda[1]; Ryouichi Souba[2]; [1]Osaka University; [2]Terumo Cooperation

Surface Protection for Enhanced Materials Performance: Science, Technology, and Application — Multifunctional, Wear and Corrosion Resistant Coatings II

Program Organizers: Dongming Zhu, NASA Glenn Research Center; Rodney Trice, Purdue University; Yutaka Kagawa, The University of Tokyo; Daniel Mumm, University of California-Irvine; Hua-Tay Lin, Oak Ridge National Laboratory; Kang Lee, Rolls Royce; Mitchell Dorfman, Sulzer Metco (US) Inc.; Christian Moreau, Concordia University

Wednesday PM
October 15, 2014

Room: Room 323
Location: David L. Lawrence Convention Center

Session Chair: Cynthia Gosselin, TecCoat

2:00 PM
Mill Applied Coatings: The Next Generation: *Cynthia Gosselin*[1]; David Kelley[1]; Richard Ransom[1]; [1]TecCoat

2:20 PM
Metallization of Carbon Fiber Reinforced Polymers for Lightning Strike Protection: *Hanqing Che*[1]; Stephen Yue[1]; [1]McGill University

2:40 PM
Nanocoatings on Clay and Cement: Understanding the Action of Surfactants and Grinding Aids: *Hendrik Heinz*[1]; Yao-Tsung Fu[2]; Ratan Mishra[3]; Robert Flatt[3]; [1]University of Akron; [2]Georgia Institute of Technology; [3]ETH Zurich

3:00 PM
The Effect of Cryogenic Treatment and Nitriding Treatment on Microstructure & Properties of DIN 1.2714 Steel: *Shreyans Khot*[1]; [1]Bharat Forge Ltd.

Third Symposium on Surface Hardening of Corrosion-Resistant Alloys — Applications and Processes

Program Organizers: Sunniva Collins, CWRU; Arthur Heuer, Case Western Reserve University; Frank Ernst, CWRU; Hanshan Dong, University of Birmingham

Wednesday PM
October 15, 2014

Room: Room 409
Location: David L. Lawrence Convention Center

Session Chair: Peter Williams, Swagelok

2:00 PM Introductory Comments

2:20 PM
Microstructure Effect on the Plasma Carburising Response of AISI F-1537 Co-Cr Alloy: Xia Luo[1]; Xiaoying Li[1]; *Hanshan Dong*[1]; [1]The University of Birmingham

3:00 PM
Alleviating the Problem of Cobalt-based Metal-on-metal Implants by Kolsterising®: Malcolm Caligari Conti[1]; *Shaun Maniscalco*[1]; Josianne Cassar[1]; Andreas Karl[2]; Pierre Schembri Wismayer[1]; Bertram Mallia[1]; Joseph Buhagiar[3]; [1]University of Malta; [2]Bodycote Hardiff GmbH; [3]University of Malta

3:20 PM Break

3:40 PM
Kolsterised® Austenitic Stainless Steel for Metal-on-metal Prosthetic Applications: Shaun Maniscalco[1]; Malcolm Caligari Conti[1]; Andreas Karl[2]; Pierre Schembri Wismayer[1]; Bertram Mallia[1]; *Joseph Buhagiar*[1]; [1]University of Malta; [2]Bodycote Hardiff GmbH

4:00 PM
Development of New Long-lasting Antibacterial S-phase Coatings Doped with Ag and Cu: *Dennis Formosa*[1]; Hanshan Dong[1]; Xiaoying Li[1]; [1]University of Birmingham

4:20 PM
Encapsulation Method for Urea-based Low-temperature Nitrocarburization of Austenitic Stainless Steel: *Anna Agaponova*[1]; Frank Ernst[1]; Arthur Heuer[1]; Peter Williams[1]; [1]Case Western Reserve University

4:40 PM
Carbon Supersaturation in Martensitic Precipitation-hardening Stainless Steels 15-5 PH Carburized at Low Temperature: *Amirali Zangiabadi*[1]; Frank Ernst[1]; Harold Kahn[1]; Arthur Heuer[1]; [1]CWRU

5:00 PM
Low Temperature Plasma Carburising of Inconel 625 Nickel Alloy: *Xiaoying Li*[1]; Jiayun Jiang[1]; Chen Xu[2]; Hanshan Dong[1]; [1]University of Birmingham; [2]Oxford University

5:20 PM Question and Answer Period

Understanding the Engineering Design of Art Objects and Cultural Heritage — Session II

Program Organizers: Glenn Gates, Walters Art Museum; Bruce Kaiser, Bruker Elemental; Pamela Vandiver, University of Arizona; Carlo Pantano, Penn State University; Nicholas Bigelow, University of Rochester

Wednesday PM
October 15, 2014

Room: Room 318
Location: David L. Lawrence Convention Center

Session Chair: Pamela Vandiver, The University of Arizona

2:00 PM Introductory Comments

2:10 PM
The Design, Manufacture and Use of Some Neolithic Period Chinese Ceramics: Pamela Vandiver[1]; Autumn Eaton[1]; *Alec Olson*[1]; [1]University of Arizona

2:30 PM
Mineralogical Changes Observed during Experimental Firing of Traditional Mud Bricks: Implications to History and Culture in the Biblical City of Tel Megiddo, Israel: *Mathilde Forget*[1]; Ruth Shahack-Gross[1]; [1]Weizmann Institute of Sciences

2:50 PM
Investigating the Firing Protocol of Athenian Pottery Production: A XANES and Hi-resolution TEM Study: *Ilaria Cianchetta*[1]; Karen Trentelman[1]; Marc Walton[2]; Apurva Mehta[3]; Brendan Foran[4]; [1]Getty Conservation Institute; [2]Robert McCormick School of Engineering and Applied Science; [3]SSRL/SLAC; [4]The Aerospace Corporation

3:10 PM Break

3:30 PM
Technical Analysis and Replication of Corinthian Polychrome Slips, 8th - 6th Centuries BCE: *Jay Stephens*[1]; Pamela Vandiver[1]; Kenneth Domanik[1]; [1]University of Arizona

3:50 PM
Determining the Firing Conditions of Ancient Porcelain: *Hyojin Lee*[1]; Ruifeng Ouyang[1]; William Carty[1]; [1]Alfred University

4:10 PM
Determining the Firing Conditions of Ancient Korean Celadons: Correcting for the Role of Iron: *William Carty*[1]; Hyojin Lee[1]; [1]Alfred University

4:30 PM
Microstructural Influences on Marble Degradation Mechanisms: Victoria Shushakova[1]; Siegfried Siegesmund[1]; *Edwin Fuller*[2]; [1]Universität Göttingen; [2]North Carolina State University

4:50 PM
From Additive Manufacturing of Glass and Ceramics to Architectural Design and Detailing: *Shadi Nazarian*[1]; Carlo Pantano[1]; Elizabeth Kupp[1]; David Saint John[1]; Alexandre Marcieau[1]; [1]PSU

5:10 PM Question and Answer Period

Advanced Aluminum Alloys, Composites, and Process Technologies — Alloys and Composites II

Program Organizers: Awadh Pandey, Pratt & Whitney; Thomas Watson, Pratt & Whitney

Thursday AM
October 16, 2014

Room: Room 329
Location: David L. Lawrence Convention Center

Session Chair: Awadh Pandey, Pratt & Whitney

8:00 AM Invited
Nanoscale Precipitation-strengthened Al-Sc-(V,Nb,Ta) Alloys: *Keith Knipling*[1]; David Dunand; David Seidman; [1]Naval Research Laboratory

8:20 AM
Experimental Correlation between Aging Parameters and Mechanical Properties of Be-treated 7075 Aluminum Alloys Using Minitab Software: *Mahmoud Tash*[1]; Saleh Alkahtani[1]; [1]Salman bin Abdulaziz University

8:40 AM
Vibration-damping Behavior of Al/SiC Metal Matrix Composites: *Sam Salamone*[1]; Mike Aghajanian[1]; Ken Kremer[1]; [1]M Cubed Technologies, Inc.

9:00 AM
High Bonding Strength between Stainless Steel and Aluminum Alloy Using Resistance Spot Welding: *Chihiro Matsuda*[1]; Kyyoul Yun[1]; Junghyun Kong[2]; Shunji Yanase[1]; Masahiro Okumiya[2]; Ibrahim Ishak[1]; Toshifumi Kakiuchi[1]; Yoshihiko Uematsu[1]; [1]Gifu University; [2]Toyota Technological Institute

9:20 AM
Stir Casting and Mechanical Properties of Nickel Coated Carbon Nanotubes Reinforced Aluminum Metal Matrix Composites: *M Jagannatham*[1]; S Sankaran[1]; Prathap Haridoss[1]; [1]IIT MADRAS

Advanced Coatings for Wear and Corrosion — Performance of Advanced Coatings in Industrial Environments

Program Organizers: Andrew Sherman, Powdermet Inc; Fei Tang, DNV GL

Thursday AM
October 16, 2014

Room: Room 321
Location: David L. Lawrence Convention Center

Session Chairs: Bingtao Li, WSI; Andrew Sherman, Powdermet Inc

8:00 AM
The Role of Tribofilms on the Tribology of MAX Phases: *Surojit Gupta*[1]; [1]University of North Dakota

8:20 AM
Effect of TiN Composition and Bilayer Thickness on the Wear Modes and Corrosion of Titanium Nitride/Titanium Nanolaminates: *Bradley Schultz*[1]; Amir Poursaee[1]; John DesJardins[1]; Marian Kennedy[1]; [1]Clemson University

8:40 AM
Enhanced Service Life of Rail Material: *Seky Chang*[1]; Young Sik Pyun[2]; Yasutoshi Tominaga[2]; [1]Korea Railroad Research Institute; [2]Sunmoon University

9:00 AM
On the Influences of Ultrasonic Peening on the Mechanical and Electrochemical Behaviors of Oilfield Alloys: *Virendra Singh*[1]; Manuel Marya[1]; Tatiana Ayers[1]; [1]Schlumberger

9:20 AM
Titanium Carbide MMC Overlays for Oil Sands Applications: *Thilan Liyanage*[1]; Tonya Wolfe[1]; Gary Fisher[1]; [1]Alberta Innovates - Technology Futures

9:40 AM Break

10:00 AM
Wear Mechanism of Stellite Bearing Used in Zinc Bath and the Effect on Galvanizing Line: *Hamid Bayati*[1]; Saeed Al-Shahrani[1]; Shahreer Ahmad[1]; [1]SABIC

10:20 AM
Research of Physical and Mechanical Properties of Wear-resistant and Corrosion-resistant Coatings on Copper Alloys: Borys Sereda[1]; *Dmytro Sereda*[1]; [1]ZSEA

10:40 AM Question and Answer Period - Andrew Sherman, Evelina Vogli**:** Discussion on the performance of boride nanocomposites in molten metal environments

Advanced Manufacturing Technologies — Advanced Manufacturing IV: Materials and Characterization

Program Organizer: Muammer Koc, Istanbul Sehir University

Thursday AM
October 16, 2014
Room: Room 324
Location: David L. Lawrence Convention Center

Session Chairs: Jagannathan Rajagopalan, Pesmel South Asia and North America; Siobhan Matthews, SCF Processing

8:00 AM
Special Alloy Material Selection, Welding and Treatment for Material Handling Equipment Components: *Jagannathan Rajagopalan*[1]; [1]PESMEL

8:40 AM
Supercritical Fluid–assisted Processing of Materials; A Complete and Sustainable Manufacturing Cycle: *Siobhan Matthews*[1]; Jonathan Lancien[1]; John Matthews[1]; [1]SCF Processing Ltd

9:20 AM
Study on the Reactivity of Lime Calcined Rapidly at Super High Temperature: *Jianli Li*[1]; Rong Gao[1]; Wanting Cheng[1]; Wutao Jin[1]; Zhengliang Xue[1]; Xiao Xie[2]; [1]Wuhan University of Science and Technology; [2]Wuhan NARI Limited Liability Company of State Grid Electric Power Research Institute

9:40 AM
Thermodynamic Modeling of Wetting in C/Cu Composites: *Khurram Iqbal*[1]; Jianjun Sha[1]; [1]Dalian University of Technology

Advanced Materials for Harsh Environments — Session IV

Program Organizers: Navin Manjooran, Siemens AG; Gary Pickrell, Virginia Tech

Thursday AM
October 16, 2014
Room: Room 405
Location: David L. Lawrence Convention Center

Session Chairs: Navin Manjooran, Siemens AG; Gary Pickrell, Virginia Tech

8:00 AM Introductory Comments

8:40 AM
Aqueous Corrosion of Ti(C,N)/Ni3Al Cermets: Melanie Holmes[1]; Georges Kipouros[1]; Zoheir Farhat[1]; *Kevin Plucknett*[1]; [1]Dalhousie University

9:00 AM
Creep Deformation Mechanism Map for Incoloy 800H: *Aaron Beardsley*[1]; Milo Kral[1]; [1]University of Canterbury

9:20 AM
Electrical and Thermomechanical Characterization of Silicide/Oxide Composites: *Edward Sabolsky*[1]; Katarzyna Sabolsky[1]; Rajalekshmi Chockalingam[1]; Sreekumar Chockalingam[1]; Marc Palmisiano[2]; [1]West Virginia University; [2]ANH Refractories Company Technology Center

9:40 AM
Thermal Cycling Performance of Thermal Barrier Coatings with CMAS Corrosion: Parameters Affecting Life: *Alan Harris*[1]; Eric Jordan[1]; [1]University of Connecticut

Advanced Steel Metallurgy: Products and Processing — Advanced High Strength Steels IV

Program Organizer: Amy Woods, Steel Dynamics Flat Roll

Thursday AM
October 16, 2014
Room: Room 408
Location: David L. Lawrence Convention Center

Session Chair: To Be Announced

8:00 AM
A New Dispersion Strengthening Mechanism in Ferritic Alloys: *Yong-Jie Hu*[1]; Jing Li[2]; Kristopher Darling[3]; William Wang[1]; Brian VanLeeuwen[1]; Laszlo Kecskes[3]; Elizabeth Dickey[2]; Zi-kui Liu[1]; [1]The Pennsylvania State University; [2]North Carolina State University; [3]U.S. Army Research Laboratory

8:20 AM
Atom Probe Compositional Analysis of Nanoscale Carbide and Carbo-nitride Precipitates in Nb-Ti Micro-alloyed Steels: *Monica Kapoor*[1]; Ron O'Malley[2]; Gregory Thompson[1]; [1]University of Alabama; [2]Nucor Steel

8:40 AM
Thermodynamic and Kinetic Aspects of the Effect of Alloying Elements on Cementite and Carbide Formation in High-strength Steels: *Greta Lindwall*[1]; Zi-Kui Liu[1]; Paul Lynch[1]; Robert Voigt[1]; [1]Pennsylvania State University

9:00 AM
Superstrengthening Phenomenon (An Overview): *Nikolai Kobasko*[1]; [1]IQ Technologies, Inc.

9:20 AM Break

9:40 AM
The Effect of Silicon in Early Stages of Tempering of Medium Carbon Steels: *Bij-Na Kim*[1]; David San Martin[2]; Thomas Sourmail[3]; Pedro Rivera-Diaz-del-Castillo[4]; [1]TU Delft; [2]Centro Nacional de Investigaciones Metalurgicas (CENIM-CSIC); [3]Ascometal-CREAS (research centre); [4]University of Cambridge

10:00 AM
Synthesis of Fe-C Alloys by Mechanical Alloying: *Ahmed Al-Joubori*[1]; Suryanarayana Challapalli[1]; [1]University of Central Florida

Advanced Steel Metallurgy: Products and Processing — Studies of Steel Applications

Program Organizer: Amy Woods, Steel Dynamics Flat Roll

Thursday AM
October 16, 2014
Room: Room 407
Location: David L. Lawrence Convention Center

Session Chair: To Be Announced

8:00 AM
The Microstructure and Properties of Ultra-high Strength Wear Resistance Steel Plate by a Novel Energy Conservation Process: *Biao Ju*[1]; Huibin Wu[1]; Di Tang[1]; Pengcheng Zhang[1]; [1]University of Science & Technology Beijing

8:20 AM
Concrete Reinforcement Bar Manufacturing Technologies and their Effect on Rebar Performance in Structural Durability: *Tariq Mehmood*[1]; Marwan Al-Mojil[1]; [1]SABIC Technology Center

8:40 AM
A Study on the Strain Ageing Behavior of Steel Plates for Offshore Structure: *Hyunjoon Park*[1]; Tae-Dong Park[1]; Young-Cheol Yoon[1]; [1]Hyundai Heavy Industries Co.,Ltd.

9:00 AM
Method for Testing the Fracture Splittability of Forged Steel Connecting Rods: *Robert Cryderman*[1]; Danielle Rickert[1]; Michael Burnett[2]; John Speer[1]; David Matlock[1]; [1]Colorado School of Mines; [2]The Timken Company

9:20 AM
Influence of Small Deviations in Steel Chemical Composition on Hardenability: *Pavel Suchmann*[1]; Petr Martinek[1]; [1]COMTES FHT a.s.

9:40 AM Break

10:00 AM
Effect of Tempering Temperature and Cooling Rate after Tempering on Mechanical and Microstructural Properties of Heavy Forged Components: *Abhijit Patil*[1]; Nityanand Prabhu[2]; [1]Bharat Forge Ltd; [2]IIT Bombay

10:20 AM
X-ray Micro Tomography Study of High Strength Cast Iron for Heavy-duty Engine Applications: *Chih-Pin Chuang*[1]; Peter Kenesei[1]; Jonathan Almer[1]; John Hryn[1]; Richard Huff[2]; Dileep Singh[1]; [1]Argonne National Laboratory; [2]Caterpillar Inc.

Bioinspired Materials Engineering — Biorelated Materials

Program Organizers: Cordt Zollfrank, Technische Universität München, Germany ; Michael Bartl, University of Utah

Thursday AM
October 16, 2014
Room: Room 305
Location: David L. Lawrence Convention Center

Session Chairs: Mato Knez, CIC nanoGUNE; Bryce Turner, University of Utah

8:00 AM Invited
Engineering Type I Collagen for Biomedical Applications: From Delivery Capsules to Fibrillated Matrices: *Francisco Fernandes*[1]; [1]Université Pierre et Marie Curie

8:40 AM Invited
3D-printed Bi-phasic Calcium Phosphate Scaffolds for Bone Regeneration: *In Vivo* Model: *Lukasz Witek*[1]; Yang Shi[1]; Michael Sobieraj[2]; Nick Tovar[3]; Paulo Coelho[3]; James Smay[1]; [1]Oklahoma State University; [2]New York University Langone Medical Center; [3]New York University

9:00 AM
Analytical and Experimental Study of Mechanical Properties of Bone Using Miniature Specimen: *Parag Marathe*[1]; N. K. Sharma[1]; D. k. Sehgal[2]; R. K. Pandey[2]; [1]The Glocal University; [2]IIT, Delhi

9:20 AM
On the Effect of Ferroelectric Nanoparticles in a Biopolymer-based Composite: *Amarilis Declet Vega*[1]; Edgardo Reyes[1]; Johnny López[1]; Ruddy Rivera[1]; Nakaira Ramírez[1]; Carolyn Ortiz[1]; O. Marcelo Suárez[1]; [1]University of Puerto Rico

9:40 AM Break

10:00 AM Invited
Structure-property Relations in the Arthropod Exoskeleton, a Multifunctional Biological Composite: *Helge-Otto Fabritius*[1]; Anna Janus[1]; Xia Wu[1]; Svetoslav Nikolov[2]; Philip Eisenlohr[3]; Martin Friák[4]; Jörg Neugebauer[1]; Dierk Raabe[1]; [1]Max-Planck-Institut für Eisenforschung GmbH; [2]Bulgarian Academy of Sciences; [3]Michigan State University; [4]Academy of Sciences of the Czech Republic

Computational Design of Ceramic Materials — Structure and Properties of Glasses

Program Organizers: Liping Huang, Rensselaer Polytechnic Institute; Randall Youngman, Corning Incorporated

Thursday AM
October 16, 2014
Room: Room 304
Location: David L. Lawrence Convention Center

Session Chair: Randall Youngman, Corning Incorporated

8:00 AM Invited
Static and Dynamic Properties of Silica at a Crystal-glass Interface: Insight from Computer Simulations: *Walter Kob*[1]; [1]University Montpellier 2

8:40 AM
Ab Intio Molecular Dynamic Cascade Simulations of Argon Plasma–organosilicate Glass Surface Reactions: *Jessica Rimsza*[1]; Jincheng Du[1]; [1]University of North Texas

9:00 AM
The INTERFACE Approach toward Accurate Force Field Parameters - Example Predictions for Aluminosilicates at the 1 to 100 nm Scale: *Hendrik Heinz*[1]; [1]University of Akron

9:20 AM Invited
Understanding Glasses Via First-principles Molecular Dynamics: *Carlo Massobrio*[1]; [1]IPCMS

10:00 AM Break

10:20 AM
Understanding the Structure of Glass from Its Poisson's Ratio: *Liping Huang*[1]; Siddharth Sundararaman[1]; Fenglin Yuan[1]; [1]Rensselaer Polytechnic Institute

Corrosion Monitoring and Control — Corrosion Understanding and Mitigation

Program Organizer: Guang-Ling Song, Oak Ridge National Laboratory

Thursday AM
October 16, 2014

Room: Room 412
Location: David L. Lawrence Convention Center

Session Chairs: Guang-Ling Song, ORNL National Lab; Yeoheung Yun, NC A&T State University

8:00 AM Invited
The Effect of Water Vapor on High Temperature Oxidation: *Bruce Pint*[1]; [1]Oak Ridge National Laboratory

8:40 AM Invited
Localized Corrosion of Mild Steel in a CO_2 Aqueous Environment: an Overview: *Srdjan Nesic*[1]; [1]Ohio University

9:20 AM
CO2 Corrosion of Steels for the Oil and Gas Production and Transportation: Andrea Herrera[1]; Adriana Forero[1]; Ronaldo Pedro da Silva[2]; *Ivani Bott*[1]; [1]PUC-Rio; [2]UFRJ

9:40 AM Break

10:00 AM
Corrosion Studies with Biomass Derived Fluids: *James Keiser*[1]; Michael Brady[1]; Jeffery Thomson[1]; Samuel Lewis[1]; Raynella Connatser[1]; [1]Oak Ridge National Laboratory

10:20 AM
Understanding Corrosion Behavior of Biodegradable Magnesium Alloys: In Vivo and In Vitro Correlation: *Yeoheung Yun*[1]; Yongseok Jang[1]; Juan Wang[1]; Youngmi Koo[1]; Boyce Collins[1]; Jag Sankar[1]; [1]NC A & T State University

10:40 AM
Effect of Temperature on the Localized Corrosion of 2024-T_3 and the Electrochemistry of Intermetallic Compounds and during Exposure to a Dilute NaCl Solution: *Jichao Li*[1]; Rudy Buchheit[1]; [1]The Ohio State University

11:00 AM
Studies of Anionic Surfactants Inhibiting Effect of Al-2017 Corrosion in HCl Aqueous Solutions: *Razika Mehdaoui*[1]; Abdellah Khelifa[1]; Achraf Boudiaf[2]; Abdelkader Khadaoui[1]; [1]Université de Blida1; [2]Ecole Militaire Polytechnique

11:20 AM
NaCl-induced Atmospheric Corrosion of Two MgAl Alloys in Semi-solid Cast and Diecast States: Influence of Microstructure and CO2: *Mehrdad Shahabi Navid*[1]; Mohsen Esmaily[1]; Yu Cao[1]; Lars-Gunnar Johansson[1]; Jan-Erik Svensson[1]; [1]Chalmers University of Technology

Dielectric, Magnetic and Semiconductor Materials for Harsh Environments — Session II

Program Organizers: Steven Milne, University of Leeds; Mike Lanagan, Penn State University; Beihai Ma, Argonne National Laboratory

Thursday AM
October 16, 2014

Room: Room 306
Location: David L. Lawrence Convention Center

Session Chairs: Steven Milne, University of Leeds; Beihai Ma, Argonne National Laboratory

8:00 AM Keynote
High Temperature Piezoelectric Crystals: Recent Developments and Application Specifications: *Shujun Zhang*[1]; Thomas Shrout[1]; [1]Pennsylvania State University

8:40 AM
Development of Hard High-temperature Piezoelectric Ceramics for Actuator Applications: *Zhongqiang Hu*[1]; [1]Northeastern University

9:00 AM
Preparation, Structure and Properties of Lead-free Piezoelectric Ceramics: $Na_{0.5}K_{0.5}NbO_3$ Modified by $LiSbO_3$ and $AlFeO_3$: *Minhong Jiang*[1]; Ling Peng[1]; Clive Randall[2]; Zhengfei Gu[1]; Gang Cheng[1]; Guanghui Rao[1]; [1]Guilin University of Electronic Technology; [2]Pennsylvania State University

9:20 AM
Promising Lead-free Piezoelectric Ceramics: (Na, K)NbO_3 Modified by $BiScO_3$ and $BaZrO_3$: *Fangyuan Zhu*[1]; Michael Ward[2]; Timothy Comyn[2]; Andrew Bell[2]; Steven Milne[2]; Jing-Feng Li[1]; [1]University of Tsinghua; [2]Institute for Materials Research, SPEME, University of Leeds

9:40 AM Break

10:00 AM
High Temperture Lead-free Piezoelectric Based on (1-x)$K_{0.5}Bi_{0.5}TiO_3$-x$Ba(Ti_{0.8}Zr_{0.2}0)O_3$: Steven Milne[1]; *Aurang Zeb*[1]; [1]University of Leeds

10:20 AM
Satellite Fuel Leak Detection Using PZT-based µSAW Sensors: *Jonathan Taub*[1]; Mark A. Jerabek[2]; Thomas Evans[3]; Edward M. Sabolsky[1]; [1]Department of Mechanical & Aerospace Engineering, West Virginia University; [2]Lane Department of Computer Science and Electrical Engineering, West Virginia University; [3]WV Robotic Technology Center

10:40 AM Invited
Materials and Processing of Ceramic Film Based High Energy Capacitors for Pulse Power and Power Electronics: *Do-Kyun Kwon*[1]; Dong Su Son[1]; Yumin Koh[1]; [1]Korea Aerospace University

11:00 AM Invited
Ferroelectric Oxide Thin Films from Solution Deposition Methods for Applications in Micro- and Flexible Electronics: *M.Lourdes Calzada*[1]; Iñigo Bretos[1]; Ricardo Jimenez[1]; Dulce Perez-Mezcua[1]; Armando Perez-Rivero[1]; Norberto Salazar[2]; Rafael Sirera[3]; [1]Instituto de Ciencia de Materiales de Madrid. Consejo Superior de Investigaciones Científicas (ICMM-CSIC); [2]Nanotec Electrónica S.L.; [3]Departamento de Química y Edafología, Facultad de Ciencias, Universidad de Navarra

11:20 AM Invited
The Fabrication and Energy-storage Properties of Lead-based Thick Films: *Xihong Hao*[1]; [1]School of Materials and Metallurgy, Inner Mongolia University of Science and Technology

11:40 AM
High Temperature Giant MagnetoImpedance in Co-based Nanocomposite: *Michael Kurniawan*[1]; Paul Ohodnicki[1]; David Greve[1]; Michael McHenry[1]; [1]Carnegie Mellon University

Failure Analysis and Prevention — Corrosion - Biomaterials and Medical Devices

Program Organizers: Nicholas Cherolis, Rolls-Royce Corporation; Dustin Turnquist, ESI; Erhan Ulvan, Acuren Group Inc.

Thursday AM
October 16, 2014

Room: Room 406
Location: David L. Lawrence Convention Center

Session Chairs: Brett Miller, IMR Test labs; Thomas D. Traubert, Engineering Design & Testing; Burak Akyuz, ATS, Inc.

8:00 AM
Analysis of Tube Plugging and Wastage in a Cupola Off-gas Recuperator: *Thomas Traubert*[1]; Tim Jur[1]; [1]Engineering Design & Testing

8:20 AM
Corrosion of a Boiler Tubes under Refractory Concrete: A Case Study: *Manabendra Maity*[1]; Avtandil Bairamov[1]; Eissa Al-Zahrani[1]; [1]SABIC-KSA

8:40 AM
Understanding Damage-induced Rust Creep in the Automotive Industry through Metallography: *Tom Ackerson*[1]; [1]IMR Metallurgical Services

9:00 AM
Silver Assisted Corrosion in Fasteners: *Tomasz Didenko*[1]; [1]GE Aviation

9:20 AM
Influence of Hot & Harsh Environment on Engine Components: Dorota Szczesniak[1]; *Piotr Juzon*[1]; [1]General Electric

9:40 AM Break

10:00 AM
The Role of Thread Compounds in Brass Stress Corrosion Cracking: Paul Verghese[1]; *Noah Budiansky*[1]; Jonathan Trenkle[1]; [1]Exponent, Inc.

10:20 AM
Possible Microbiologically Induced Corrosion (MIC) of Stainless Steel Weld Used in Domestic Water Risers: *Joseph Lemberg*[1]; Eric Guyer[1]; Lawrence Eiselstein[1]; [1]Exponent Failure Analysis Associates, Inc.

10:40 AM
Corrosion Failure Analysis of Aging Commercial Aircrafts: *Mehrooz Zamanzadeh*[1]; Huiping Xu[1]; [1]Matco Services

11:00 AM
Pitting Corrosion Due to MnS Inclusion and Strain Induced Martensite in Stainless Steel: *Pankaj Sharma*[1]; [1]Buckman

11:20 AM
Failure Analysis of Bone Plates and Screws: *Gabriel Ganot*[1]; Ryan Birringer[1]; Brad James[1]; [1]Exponent

11:40 AM
Fracture of a Surgical Instrument and the Resulting Crisis during a Spinal Operation: *Tim Jur*[1]; [1]Engineering Design & Testing Corp

12:00 PM
Evaluation of the Failure of Two Grade IV CP Ti Spinal Fusions Rods: *Jacob Fuerst*[1]; Dana Medlin[1]; Micahel Stevenson[1]; [1]Engineering Systems Inc.

12:20 PM
Tibial Non-Union as a Cause for Fracture Fixation Screw Failure: Jacob Fuerst[1]; *Dana Medlin*[1]; [1]Engineering Systems Inc.

Glass and Optical Materials — Mechanical and Rheological Properties and Photosensitivity

Program Organizers: Juejun Hu, University of Delaware; David Musgraves, IRradiance Glass Inc.

Thursday AM
October 16, 2014

Room: Room 302
Location: David L. Lawrence Convention Center

Session Chair: To Be Announced

8:00 AM
Chemically Strengthened Low Crystallinity Glass-Ceramics with High Liquidus Viscosities: *Matthew Dejneka*[1]; Indrajit Dutta[2]; Charlene Smith[2]; [1]Corning Incorporated ; [2]Corning Incorporated

8:20 AM
Development of Protective Multi-composite Bullet-proof from Waste Pure Water Sachet for Various Applications: *Tobechukwu Ayogu*[1]; [1]University of Nigeria, Nsukka

8:40 AM
Effects of Temperature on the Indentation and Cracking Behavior of Na_2O-TiO_2-SiO_2 Glasses.: *Garth Scannell*[1]; Tanguy Rouxel[2]; Liping Huang[1]; [1]Rensselaer Polytechnic Institute; [2]University of Rennes 1

9:00 AM
Interdiffusion Kinetics and Curvature of Thin Chemically Strengthened Float Glass: *Garrett Olson*[1]; Patrick Kreski[1]; Arun Varshneya[1]; [1]Saxon Glass Technologies, Inc.

9:20 AM
Topological Origin of the Toughening in Glasses: *Mathieu Bauchy*[1]; [1]MIT

9:40 AM Break

10:00 AM Invited
New Route of Buried Waveguide Inscription Using Femtosecond Laser: *David Le Coq*[1]; Ophelie Caulier[2]; Eugène Bychkov[2]; Xianghua Zhang[1]; Pascal Masselin[2]; [1]University of Rennes 1 - ISCR; [2]University of Littoral-Côte d'Opale

10:40 AM
Photosensitive Silica-based Glasses Prepared by Sol-gel Processing: *Fiona Cormack*[1]; [1]Alfred University

11:00 AM Invited
Multi-component Chalcogenide Glass-ceramics for Infrared Applications: *Kathleen Richardson*[1]; Clara Baleine[2]; Steve Aiken[2]; Theresa Mayer[3]; Alexej Pogrebnyakov[3]; Andrew Swisher[3]; Charmayne Smith[4]; Andrew Buff[4]; Laura Sisken[4]; Karima Chamma[4]; David Musgraves; Peter Wachtel[5]; [1]University of Central Florida, IRradiance Glass Inc., ; [2]Lockheed Martin Missile and Fire Control; [3]Pennsylvania State University; [4]University of Central Florida; [5]IRradiance Glass Inc.

Interfaces, Grain Boundaries, and Surfaces from Atomistic and Macroscopic Approaches: Fundamental and Engineering Issues — General Properties of Interfaces

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

Thursday AM
October 16, 2014

Room: Room 404
Location: David L. Lawrence Convention Center

Session Chairs: Dominique Chatain, CNRS; Wayne Kaplan, Technion

8:00 AM
Quantitative Analysis of Microstructural Development and Impurity Interactions in Commercial Grade Aluminas: Charles Compson[1]; Joe Atria[1]; Marcel Spreij[1]; *Abigail Lawrence*[2]; Animesh Kundu[2]; Martin Harmer[2]; Eric Weiss[3]; [1]Almatis, Inc.; [2]Lehigh University; [3]Material Complexions, Inc.

8:20 AM
Abnormal Grain Growth Due to Non-uniform Grain Boundary Mobility: *Brian DeCost*[1]; Elizabeth Holm[1]; [1]Carnegie Mellon University

8:40 AM
Grain Boundary Tracking during Coarsening and Extraction of Energies and Mobilities: *Siddharth Maddali*[1]; Shlomo Ta'asan[1]; Robert Suter[1]; [1]Carnegie Mellon University

9:00 AM
Macroscopic and Atomic-scale Faceting in Bismuth-doped Nickel Grain Boundaries: *Denise Yin*[1]; Zhiyang Yu[1]; Yuanyao Zhang[2]; Jian Luo[2]; Martin Harmer[1]; [1]Lehigh University; [2]University of California, San Diego

9:20 AM
The Influence of Phase Transformation Path on Grain Boundary Character Distribution: *Hossein Beladi*[1]; Gregory Rohrer[2]; Anthony Rollett[2]; Vahid Tari[3]; Peter Hodgson[1]; [1]Deakin University; [2]Carnegie Mellon University; [3]Mississippi State University

9:40 AM Break

10:00 AM
The Structure of Grain Boundary Networks and Effective Properties: Towards Grain Boundary Network Design: *Oliver Johnson*[1]; Christopher Schuh[1]; [1]Massachusetts Institute of Technology

10:20 AM
Protective Nanoscale Surfaces on Perovskites Through Minor Dopant Segregation: Driving Forces and Applications: *Colin Gore*[1]; Karen Gaskell[1]; Venkataraman Thangadurai[2]; Eric Wachsman[1]; [1]University of Maryland, College Park; [2]Calgary University

10:40 AM
On the Mechanism of Grain Size Stabilization in Nanocrystalline NiW Alloys: *Christopher Marvel*[1]; Martin Harmer[1]; Patrick Cantwell[1]; [1]Lehigh University

11:00 AM
In Situ Deformation of Niobium-alumina Interlayers: Rui Hao[1]; Ben Britton[1]; Eduardo Saiz[1]; *Finn Giuliani*[1]; [1]Imperial College London

Joining of Advanced and Specialty Materials (JASM XVI) — Friction Stir Welding

Program Organizers: Michael Halbig, NASA Glenn Research Center; Boian Alexandrov, The Ohio State University; Akio Hirose, Osaka University; Anming Hu, University of Tennessee; Peng He, Harbin Insitute of Technology; Darren Barborak, Aquilex WSI; Bingtao Li, AZZ WSI; Xinjin Cao, Institute for Aerospace Research

Thursday AM
October 16, 2014

Room: Room 330
Location: David L. Lawrence Convention Center

Session Chairs: Judy Schneider, Mississippi State University; Richard Fonda, Navy Research Laboratory

8:00 AM Invited
3D Material Flow during Friction Stir Welding: *Richard Fonda*[1]; David Rowenhorst[1]; Keith Knipling[1]; [1]Naval Research Laboratory

8:20 AM
Numerical Modeling of Flow Stress in Friction Stir Welding of Low Carbon Steel Using 3D CFD: *Carlos Adolfo Hernández Carreón*[1]; Juana Eloina Mancilla Tolama[1]; Victor Hugo Ferrer López[1]; Miguel Ángeles Hernández[1]; [1]Instituto Politécnico Nacional

8:40 AM
Toward Establishing Effective Heat Generation Formulation for Thermo-mechanical Modeling of Inertia Friction Welding of Nickel Base Superalloy: *Daniel Tung*[1]; Wei Zhang[1]; [1]The Ohio State University

9:00 AM
Metal Cutting Analogy for Establishing FSW Process Parameters: *Sylvester Stafford*[1]; Judith Schneider[1]; [1]Mississippi State University

9:20 AM
Friction Assisted Seam Welding of Nickel Based Super Alloys: *Javed Akram*[1]; James Samuel[1]; Ramesh Puli[1]; Prasad Kalvala[1]; Mano Misra[1]; [1]University of Utah

9:40 AM Break

10:00 AM Invited
Joining Dissimilar Materials with Friction Stir Scribe Technology: *Yuri Hovanski*[1]; Piyush Upadhyay[1]; Leo Fifield[1]; Saumyadeep Jana[1]; [1]Pacific Northwest National Laboratory

10:20 AM
Evaluation of Asymmetry in a Friction Stir Welded Aluminum Alloy/Stainless Steel Lap Joint: *Tomo Ogura*[1]; Yuta Komiyama[1]; Hidehito Nishida[2]; Mitsuo Fujimoto[2]; Makoto Takahashi[1]; Akio Hirose[1]; [1]Osaka University; [2]Kawasaki Heavy Industries, LTD

10:40 AM
Tensile, Creep, and Fatigue Analysis of Friction Stir Welded Al 2139-T8 Alloy: *Uchechi Okeke*[1]; Tomoko Sano[2]; Jian Yu[2]; Chian-Fong Yen[2]; Carl Boehlert[1]; [1]Michigan State University; [2]U.S. Army Research Lab

11:00 AM
The Effect of Welding Parameters on the Corrosion Behaviour of Friction Stir Welded AA7475-T7351: *Hua Zhang*[1]; Kasra Sotoudeh[1]; Shiladitya Paul[1]; Steve Shi[1]; Mike Gittos[1]; Chi Lee[1]; [1]The Welding Institute

11:20 AM
Mechanical Properties and Characterization of Friction Stir Welded/Root Arc Welded Pipe Steel: *Yong Chae Lim*[1]; Samuel Sanderson[2]; Murray Mahoney[3]; Yanli Wang[1]; Zhili Feng[1]; [1]Oak Ridge National Laboratory; [2]MegaStir Technology LLC; [3]Consultant

11:40 AM
Effect of Friction Stir Welding on Microstructure and Fatigue Properties of Non-combustive Mg-9Al-Zn-Ca Magnesium Alloy: *Li Zhou*[1]; B. Chen[1]; K. Nakata[2]; J.S. Liao[3]; M. Hotta[3]; J. C. Feng[4]; P. He[4]; [1]Harbin Institute of Technology at Weihai; [2]Osaka University; [3]Technology Development Headquarters, Kurimoto Ltd; [4]Harbin Institute of Technology

Materials Development for Nuclear Applications and Extreme Environments — Materials for Extreme Applications and Characterization

Program Organizers: Raghunath Kanakala, University of Idaho; Ram Devanathan, Pacific Northwest National Laboratory; Josef Matyas, Pacific Northwest National Laboratory; Kevin Fox, Savannah River National Laboratory; Elizabeth Hoffman, Savannah River National Laboratory; Raul Rebak, GE Global Research; Aladar Csontos, U.S. Nuclear Regulatory Commission; Kumar Sridharan, University of Wisconsin; Bill Lee, Imperial College London

Thursday AM
October 16, 2014

Room: Room 415
Location: David L. Lawrence Convention Center

Session Chairs: Umberto Anselmi-Tamburini, University of Pavia; Raghunath Kanakala, University of Idaho

8:00 AM Invited
Field Assisted Sintering of High Temperature Materials: *Umberto Anselmi-Tamburini*[1]; Ilenia Tredici[1]; [1]University of Pavia

8:40 AM Invited
Field Assisted Sintering of ZrB2 and Enhancement of Oxidation Resistance: *Olivier Guillon*[1]; Jesus Gonzalez-Julian[1]; Limeng Liu[1]; Jan Raethel[2]; Stefan Nolte[3]; Bill Lee[4]; [1]Forschungszentrum Juelich; [2]Fraunhofer IKTS; [3]Friedrich Schiller University of Jena; [4]Imperial College

9:20 AM
Versatile Co-precipitation Route for Synthesis of High Temperature Nano Composites: *Raghunath Kanakala*[1]; Michael Opoku[1]; James Kelly[2]; Olivia Graeve[2]; [1]University of Idaho; [2]University of California San Diego

9:40 AM Break

10:00 AM
Using Localized Electrode Atom Probe (LEAP) to Understand the Effect of High Temperature Oxidation and Radiation Damage on Zircaloy-2 Nuclear Fuel Tubes Coated with Nano-laminates: *Sumit Bhattacharya*[1]; Michael Pellin[2]; David Seidman[1]; Di Yun[2]; A. Yacout[2]; [1]Northwestern University; [2]Argonne National Laboratory

10:20 AM
A High-temperature Neutron Diffraction Study of Nb_2AlC and $(Ti_{0.45}Nb_{0.55})_2AlC$: *Grady Bentzel*[1]; Nina Lane[1]; Michel Barsoum[1]; El'ad Caspi[2]; [1]Drexel University; [2]Nuclear Research Centre – Negev, Israel

10:40 AM
Transmission Electron Microscopy Characterization of Xenon Fission Fragment Energy Ion Irradiated Uranium Molybdenum and Uranium Zirconium Alloy Fuels: *Di Yun*[1]; Kun Mo[1]; Walid Mohamed[1]; Bei Ye[1]; Jeffrey Fortner[1]; Sumit Bhattacharya[2]; Michael Pellin[1]; Abdellatif Yacout[1]; [1]Argonne National Laboratory; [2]Northwestern University

11:00 AM
Advanced 3D Characterization and Reconstruction of Reactor Materials: *Melissa Teague*[1]; Benjerman Hauch[2]; Bradley Fromm[3]; Michael Tonks[1]; Kumar Sridharan[2]; [1]Idaho National Laboratory; [2]University of Wisconsin; [3]Washington State University

11:20 AM
Defect Production in Irradiated Silicon Carbide (ß-SiC): *Deepak Sahoo*[1]; Izabela Szlufarska[2]; Dane Morgan[2]; Narasimhan Swaminathan[1]; [1]Indian Institute of Technology,Madras; [2]University of Wisconsin.

Materials Issues in Nuclear Waste Management in the 21st Century — Waste Recycle and Stabilization Processes

Program Organizers: Josef Matyas, Pacific Northwest National Laboratory; Stéphane Gin, CEA; Kevin Fox, Savannah River National Laboratory; Elizabeth Hoffman, Savannah River National Laboratory; Dawn Janney, Idaho National Laboratory; Ramana Reddy, The University of Alabama; Ram Devanathan, Pacific Northwest National Laboratory; Raghunath Kanakala, University of Idaho

Thursday AM
October 16, 2014

Room: Room 413
Location: David L. Lawrence Convention Center

Session Chairs: S. Sundaram, Alfred University; Alex Cozzi, Savannah River National Laboratory

8:00 AM Invited
Magnetic Separation Nanotechnology for Nuclear Waste Recycle: *You Qiang*[1]; Huijin Zhang[1]; Leigh Martin[2]; Terry Todd[2]; [1]University of Idaho; [2]Idaho National Laboratory

8:40 AM Invited
Developing Engineered Forms of Silver and Hydrogen Mordenites for the Capture of Kr/Xe from Nuclear Fuel Reprocessing Off-gas Streams: *Mitchell Greenhalgh*[1]; Troy Garn[1]; [1]Idaho National Laboratory

9:00 AM
Uptake of Uranium by Supported Tungstic Acid: *Allen Apblett*[1]; Cory Perkins[1]; [1]Oklahoma State University

9:20 AM
Evaluation of Admixtures for Modifying Rheological Properties of Grout Slurries: *Alex Cozzi*[1]; Erich Hansen[1]; [1]Savannah River National Laboratory

9:40 AM Break

10:00 AM
Environmentally Assisted Cracking of Nickel Alloys in Aqueous Solutions Containing Bicarbonate and Chloride: *Raul Rebak*[1]; Natalia Zadorozne[2]; C. Giordano[3]; Ricardo Carranza[3]; Alicia Ares[2]; [1]GE Global Research; [2]Universidad Nacional de Misiones; [3]Instituto Sabato

10:20 AM
Stainless Steel Canister Corrosion Issues in Dry Cask Storage of Used Nuclear Fuel: *Benjamin Hauch*[1]; Brandon Semerau[1]; Kelsey Amundson[1]; Dylan Clark[1]; Soham Banerjee[1]; Kumar Sridharan[1]; [1]University of Wisconsin - Madison

Materials Science of Additive Manufacturing — Certification

Program Organizers: Panagiotis (Pan) Michaleris, Penn State University; Brett Conner, Youngstown State University; Michael Blaszkiewicz, SABIC Innovative Plastics; Wayne King, LLNL; Edward Reutzel, ARL Penn State; Todd Palmer, Penn State; Crystal Morrison, RJ Lee Group; Guha Manogharan, YSU

Thursday AM
October 16, 2014

Room: Room 334
Location: David L. Lawrence Convention Center

Session Chair: Todd Palmer, Penn State

8:00 AM Invited
Advanced High Temperature Thermoplastics Manufactured Using Stratasys Fused Deposition Modeling: *Edward Herderick*[1]; Clark Patterson[1]; [1]Rapid prototype + manufacturing (rp+m)

8:40 AM
Composite Matrix Polymers for Improved Thermal Conductivity in 3D Printed Thermoplastic Materials: *Corey Shemelya*[1]; Angel De la Rosa[1]; Angel Torrado Perez[1]; Carmen Rocha[1]; Eric MacDonald[1]; David Roberson[1]; Ryan Wicker[1]; [1]University of Texas at El Paso

9:00 AM
Overcoming Mechanical Property Degradation in Recycling 3D Printed Polymeric Specimens: Carmen Rocha[1]; Angel Torrado[1]; David Roberson[1]; Corey Shemelya[1]; Ryan Wicker[1]; [1]University of Texas at El Paso

9:20 AM
Direct-ink Writing of 3D Periodic Graphene Aerogels: *Cheng Zhu*[1]; Marcus Worsley[1]; Eric Duoss[1]; Thomas Han[1]; Joshua Kuntz[1]; Christopher Spadaccini[1]; [1]Lawrence Livermore National Laboratory

9:40 AM Break

10:00 AM Invited
Qualification of Additive Manufacturing Processes: *Richard Martukanitz*[1]; [1]Center for Innovative Materials Processing through Direct Digital Deposition, Pennsylvania State University

10:40 AM
Development of Processing-structure-property Relationships for Rapid Certification of Ti-6Al-4V Components Produced Using Laser-based Directed Energy Deposition: *Jay Keist*[1]; Griffin Jones[1]; Todd Palmer[1]; [1]Penn State

11:00 AM
Customizable Monofilaments to Advance Material Extrusion 3D Printing: *David Roberson*[1]; Angel Torrado Perez[1]; Carmen Rocha[1]; Corey Shemelya[1]; Ryan Wicker[1]; [1]The University of Texas at El Paso

11:20 AM
Understanding Polymer Properties for Additively Manufactured Medical Devices: *Crystal Morrison*[1]; [1]RJ Lee Group

Multifunctional Oxides — Synthesis and Characterization II

Program Organizers: Xiaoqing Pan, University of Michigan; Chonglin Chen, University of Texas at San Antonio; Quanxi Jia, Los Alamos National Laboratory; Judith Driscoll, University of Cambridge

Thursday AM
October 16, 2014

Room: Room 303
Location: David L. Lawrence Convention Center

Session Chairs: Aiping Chen, Los Alamos National Laboratory; Fabio Granozio, CNR-SPIN Institute

8:20 AM
Aqueous Mechanochemical Processing of Porous Multifunctional Mesostructured Oxides: *Peter Metz*[1]; Trevyn Hey[1]; Jian Liu[1]; Scott Misture[1]; [1]Alfred University

8:40 AM Invited
Addressing the Origin of Conductivity in Two Dimensional Electron Gases at Oxide Interfaces: *Fabio MIletto Granozio*[1]; [1]CNR-SPIN, Naples Unit

9:00 AM
Electrosprayed Co-doped ZnO Transparent Conductive Films: *Sureeporn Chothirawat*[1]; Yiquan Wu[1]; [1]Alfred University

9:20 AM Invited
Effect of Strain on Voltage-controlled Magnetism in BiFeO3-based Heterostructures: *Jiamian Hu*[1]; Jianjun Wang[2]; Tiannan Yang[1]; Jinxing Zhang[3]; Long-Qing Chen[1]; Ce-Wen Nan[2]; [1]Pennsylvania State University; [2]Tsinghua University; [3]Beijing Normal University

9:40 AM Break

10:00 AM Invited
Emerging Opportunities in Oxide Nanocomposite Heterostructures: From Tunable Microstructures to Novel Functionalities: Wenrui Zhang[1]; Leigang Li[1]; Qing Su[1]; Aiping Chen[1]; Quanxi Jia[2]; Judith MacManus-Driscoll[3]; *Haiyan Wang*[1]; [1]Texas A&M University; [2]Los Alamos National Lab; [3]University of Cambridge

10:20 AM
Piezoreponsive Surfaces of Centrosymmetric Monoclinic $BiVO_4$ Ceramic: *Ratiporn Munprom*[1]; Paul Salvador[1]; Gregory Rohrer[1]; [1]Carnegie Mellon University

10:40 AM
Variation in the Oxidation State of Mo and V Co-doped Perovskites as a Mechanism to Enhance Electronic Conduction: *Stephen Sofie*[1]; Adam Weisenstein[1]; Nick Childs[1]; [1]Montana State University

11:00 AM
Work Function Physics of 3*d* Transition Metal Perovskites Using Density Functional Theory: *Ryan Jacobs*[1]; Dane Morgan[1]; John Booske[1]; [1]University of Wisconsin- Madison

11:20 AM
Local Epitaxial Growth of Films in the K_2NiF_4 Family on Isostructural Polycrystals Using Combinatorial Substrate Epitaxy: Morgane Lacotte[1]; Wilfrid Prellier[1]; Juan Infante[2]; Ratiporn Munprom[2]; Miaolei Yan[2]; Gregory Rohrer[2]; *Paul Salvador*[2]; [1]ENSICAEN, Universite de Basse-Normandie, CNRS UMR 6508; [2]Carnegie Mellon University

Nanotechnology for Energy, Environment, Electronics, and Industry — Industry II

Program Organizers: Gary Pickrell, Virginia Tech; Navin Manjooran, Siemens AG

Thursday AM
October 16, 2014

Room: Room 320
Location: David L. Lawrence Convention Center

Session Chairs: Navin Manjooran, Siemens AG; Gary Pickrell, Virginia Tech; Parthiban Rajashekaran, UCF

8:00 AM Introductory Comments

8:40 AM
Phase Change Materials for Use in Self-heating Concrete to Prevent the Buildup of Ice and Snow on Pavement Surfaces: *Matthew Krafcik*[1]; Yaghoob Farnam[1]; Leah Liston[1]; William Weiss[1]; Bernard Tao[1]; Kendra Erk[1]; [1]Purdue University

9:00 AM
Preparation and Characterization of Sodium Bismuth Titanate ($Na_{0.5}Bi_{0.5}TiO_3$) Nano-powders by Pechini Method: *Sayonara Eliziario*[1]; Ruth Kiminami[1]; Bruna Miranda[1]; [1]Universidade Federal de São Carlos

9:20 AM
Anti-fouling Enhancement and Flux Selectivity of Polymer Membranes with pH-sensitive Grafted Polymer Brushes: Kai Gao[1]; *John Howarter*[1]; [1]Purdue University

9:40 AM Break

10:00 AM
Reduced Spinels as Ni-Co Dry Reforming Catalysts: *Kyle McDevitt*[1]; Scott Misture[1]; [1]Alfred University

10:20 AM
Interactions between TiO2 Nanotube Electrode and Nonaqueous Electrolytes for Sodium-ion Batteries: Richard Cutler[1]; Riley Parrish[1]; Ganesh Kamath[2]; Subramanian K. R. S. Sankaranarayanan[3]; *Hui (Claire) Xiong*[4]; [1]Boise State University; [2]University of Missouri–Columbia; [3]Argonne National Laboratory; [4]Boise State University; Center for Advanced Energy Studies

Next Generation Biomaterials — Session VII

Program Organizers: Roger Narayan, UNC/NCSU Joint Department of Biomedical Engineering; Diego Mantovani, Laval University; Raman Singh, Monash University

Thursday AM
October 16, 2014

Room: Room 315
Location: David L. Lawrence Convention Center

Session Chairs: Puneet Gill, Florida International University; Sankara Narayanan TSN, Chonbuk National University; Maryam Nabiyouni, The University of Toledo

8:00 AM
Microarc Oxidation of Magnesium by Duplex Treatment: Possible Means of Sealing the Pores and Achieving a Better Corrosion Resistance: *Sankara Narayanan TSN*[1]; Min Ho Lee[1]; [1]Chonbuk National University

8:20 AM
Anodized Mg-based Metal Matrix Composites for Biodegradable Implant Application: Corrosion, Mechanical, and Biocompatibility Properties: *Puneet Gill*[1]; Vishal Musaramthota[1]; Rupak Dua[1]; Amit Datye[2]; Norman Munroe[1]; Ryszard Rokicki[3]; [1]Florida International University; [2]The University of Tennessee; [3]Electrobright

8:40 AM
Control of Ag Release from Ag-containing Calcium Phosphates in Simulated Body Fluid: *Ozkan Gokcekaya*[1]; Kyosuke Ueda[1]; Takayuki Narushima[1]; [1]Tohoku University

9:00 AM
DNA Delivery Applications of the Magnesium Phosphate Nanoparticles: *Maryam Nabiyouni*[1]; Sarit Bhaduri[1]; [1]The University of Toledo

9:20 AM
Enhancing the Solubility of Calcium Phosphate Ceramics by Calcium Salt Infiltration: *Qinghao Zhang*[1]; Anthony Finoli[1]; Eva Schmelzer[2]; Ian Nettleship[1]; Jorg Gerlach[2]; [1]University of Pittsburgh; [2]McGowan Institute

Pb-free Solders and Advanced Interconnecting Materials — Session IV

Program Organizers: Albert T. Wu, National Central University; Carol Handwerker, Purdue University

Thursday AM
October 16, 2014

Room: Room 312
Location: David L. Lawrence Convention Center

Session Chairs: Fu Guo, Beijing University of Technology ; Carol Handwerker, Purdue University; Eugene Rabkin, Technion - Israel Institute of Technology

8:00 AM Invited
The Role of Short-circuit Diffusion Paths in Solid State Dewetting of Thin Films: *Eugen Rabkin*[1]; Dor Amram[1]; Oleg Kovalenko[1]; Anna Kosinova[1]; Leonid Klinger[1]; [1]Technion

8:40 AM
Elastic Properties of Sintered Ag for Die Bonding Studied by Dynamic Resonant Method. The Role of the Residual Stresses: Pascal Gadaud[1]; Vincenzo Caccuri[1]; *Xavier Milhet*[1]; Denis Bertheau[1]; Michel Gerland[1]; [1]Pprime Institute UPR CNRS 3346

9:00 AM
Evaluation of Nano-silver Paste as a Die Attach for High Power Dissipation Packaging: *Russell Tobias*[1]; Mohammed Mansi[2]; Bruce Fried[3]; Dipak Sengupta[3]; Junghyun Cho[1]; [1]Department of Mechanical Engineering (Binghamton University); [2]Department of Systems Science and Industrial Engineering (Binghamton University); [3]Analog Devices, Inc.

9:20 AM
Effects of Silver Content on the Reliability of Lead-free Solder Joints under Board Level Drop Test: *Jian Gu*[1]; Yongping Lei[1]; Guichen Wen[1]; Jian Lin[1]; Hanguang Fu[1]; [1]Beijing University of Technology

9:40 AM Break

10:00 AM
Nickel and Bismuth Doped Sn-Ag-Cu Solder for High Thermal Cycling and Drop-shock Performance: *Santosh Kumar*[1]; Young-Woo Lee[1]; Jae-Yeol Son[1]; Jae-Hong Lee[1]; Hui-Joong Kim[1]; Eung-Jae Kim[1]; Ho-Gun Cha[1]; Jeong-Tak Moon[1]; [1]MK Electron Co. Ltd

10:20 AM
In Situ Simulation Studies of Package Reliability Mechanisms: *Peng Li*[1]; Alfred La Mar[1]; Yongmei Liu[1]; Deepak Goyal[1]; [1]Intel Corp.

10:40 AM
Effect of Grain Orientation on Mechanical Properties and Thermomechanical Responses of Sn-based Solder Interconnects: *Hongtao Chen*[1]; [1]Shenzhen Graduate School, Harbin Institute of Technology

11:00 AM
Optimisation of Flip Chip Lead-free Solder Joints Reliability Using Numerical Methods: *Emeka Amalu*[1]; Nduka Ekere[1]; Musa Zarmai[1]; [1]University of Wolverhampton

11:20 AM
Effects of Electromigration and Creep on the Mechanical Reliability of Lead-free Solder Joint: *Yong Zuo*[1]; Limin Ma[1]; Lei Qiao[1]; Yutian Shu[1]; Fu Guo[1]; [1]Beijing University of Technology

11:40 AM
Thermo-mechanical Reliability of Lead-free Solder Joints in Solar Cell Assembly: *Musa Zarmai*[1]; Ndy Ekere[1]; Emeka Amalu[1]; [1]University of Wolverhampton

Phase Stability, Diffusion Kinetics, and their Applications (PSDK-IX) — Experimental Investigation of Thermodynamics and Kinetics / Phase Field Simulations / Nuclear Materials

Program Organizers: Dongwon Shin, Oak Ridge National Laboratory; In-Ho Jung, McGill University; James Saal, Northwestern University; Raymundo Arroyave, Texas A & M University

Thursday AM
October 16, 2014

Room: Room 402
Location: David L. Lawrence Convention Center

Session Chairs: Melissa Santala, Lawrence Livermore National Laboratory; Ali Ramazani, University of Michigan

8:00 AM
Nanosecond-scale Time-resolved TEM for Studying Highly-driven Phase Transformations: *Melissa Santala*[1]; Teya Topuria[2]; Simone Raoux[3]; Michael Grapes[4]; Timothy Weihs[4]; Bryan Reed[1]; Thomas LaGrange[1]; Geoffrey Campbell[1]; [1]Lawrence Livermore National Laboraotry; [2]IBM Research Division, Almaden Research Center; [3]Helmholtz Center Berlin for Energy and Materials; [4]The John Hopkins University

8:20 AM
Microstructure and Oxidation Behavior Relationship of Fe-Cr Alloys: *Junchong Shen*[1]; Elizabeth Opila[1]; [1]University of Virginia

8:40 AM
Experimental and Computational Investigations on the Formation of Ag3Sn Intermetallic Compounds in Ag-Sn Layer Systems: Adrian Lis[1]; Min Soo Park[2]; Raymundo Arroyave[2]; *Christian Leinebach*[1]; [1]Empa-Swiss Federal Laboratories for Materials Science and Technology; [2]Texas A&M University

9:00 AM
Phase Stability and Glass-forming Ability of Mg-based Ternary Alloys: Eyal Eshed[1]; Menachem Bamberger[1]; *Alexander Katsman*[1]; [1]Technion - Israel Institute of Technology

9:20 AM
a-Fe <-> γ-Fe Phase Transformation in Fe and Fe-Au Thin Films and Nanoparticles: *Dor Amram*[1]; Oleg Kovalenko[1]; Leonid Klinger[1]; Eugen Rabkin[1]; [1]Technion - Israel Institute of Technology

9:40 AM Break

10:00 AM
Microstructure Evolution in Polycrystalline Ti-6Al-4V Alloys: *Yanzhou Ji*[1]; Tae Wook Heo[2]; Long-Qing Chen[2]; [1]The Pennsylvania State University, University Park; [2]The Pennsylvania State University, University Park

10:20 AM
Phase-field Modeling of Eutectic Growth in Confined Geometry for Nanophotonic Metamaterials: *Ali Ramazani*[1]; Larry Aagesen[1]; Jinwoo Kim[2]; Paul Braun[2]; Katsuyo Thornton[1]; [1]University of Michigan; [2]University of Illinois at Urbana-Champaign

10:40 AM
Phase Field Modeling of Spinodal Decomposition in the Fe-Cr-Ni System: *Thomas Barkar*[1]; John Ågren[1]; Joakim Odqvist[1]; Lars Höglund[1]; [1]KTH Royal Institute of Technology

11:00 AM
Phase Field Simulation of Interfacial Diffusion-driven Spheroidization in a Two Phase Composite: *Liang Tian*[1]; Alan Russell[2]; [1]Iowa State University; [2]Iowa State University/Ames Laboratory

11:20 AM
Thermodynamic Assessments of Complex Uranium Oxide Systems Using the CALPHAD Approach: *Jacob McMurray*[1]; Dongwon Shin[2]; Stewart Voit[2]; Benjamin Slone[3]; Theodore Besmann[2]; [1]University of Tennessee/Oak Ridge National Laboratory; [2]ORNL; [3]Cal. Tech.

11:40 AM
Microstructural Anomalies in Hot-isostatic Pressed U – 10 wt.% Mo Fuel Plates with Zr Diffusion Barrier: *Youngjoo Park*[1]; Nicholas Eriksson[1]; Dennis Keiser[2]; Yongho Sohn[1]; [1]University of Central Florida; [2]Idaho National Laboratory

Phase Transformations in Ceramics: The Present and the Future — Phase Transformations: Microstructure and Properties

Program Organizers: Ivar Reimanis, Colorado School of Mines; Waltraud Kriven, University of Illinois at Urbana-Champaign; Pankaj Sarin, Oklahoma State University in Tulsa

Thursday AM
October 16, 2014

Room: Room 301
Location: David L. Lawrence Convention Center

Session Chair: Pankaj Sarin, Oklahoma State University at Tulsa

8:00 AM Invited
Stress Induced Phase Transitions in Negative Thermal Expansion Materials: *Angus Wilkinson*[1]; Leighanne Gallington[1]; [1]Georgia Institute of Technology

8:40 AM
Decomposition of Delafossite-structured CuAlO2 into Copper/Alumina Composites: *Michael Kracum*[1]; Animesh Kundu[1]; Martin Harmer[1]; Helen Chan[1]; [1]Lehigh University

9:00 AM
Titanomagnetite Lath Formation in Second Phase Wüstite: *Whitney Schoenthal*[1]; Adam Wise[1]; Xinye Liu[1]; David Laughlin[1]; Michael McHenry[1]; [1]Carnegie Mellon University

9:20 AM Invited
Phase Transformations and Expansion Behavior in Ca Substituted Lanthanum Ferrites: Patrick Price[1]; *Darryl Butt*[1]; Scott Misture[2]; [1]Boise State University; [2]Alfred University

10:00 AM Break

10:20 AM
Effect of Zr^{4+} Doping on the Monoclinic to Tetragonal Phase Transformation in $LaNbO_4$: *Daniel Lowry*[1]; Pankaj Sarin[1]; [1]Oklahoma State University

10:40 AM
Phase Transformation Study on β-Eucryptite Doped with Mg: *Yachao Chen*[1]; Ivar Reimanis[1]; [1]Colorado School of Mines

11:00 AM
Role of Phase Transformations in Controlling the Microstructures in High Temperature Ceramics: *Gregory Thompson*[1]; Robert Morris[1]; Bradford Schulz[1]; Christopher Weinberger[2]; [1]University of Alabama; [2]Drexel University

Processes, Applications, and Performance of Materials in Additive Manufacturing — Applications and Products

Program Organizers: Andrzej Wojcieszynski, ATI Powder Metals; Ulf Ackelid, Arcam AB; Ian Harris, Edison Welding Institute; Ola Harrysson, North Carolina State University; Sudarsanam Babu, The Ohio State University; Rodney Boyer, Boeing - retired

Thursday AM
October 16, 2014

Room: Room 327
Location: David L. Lawrence Convention Center

Session Chairs: Ola Harrysson, North Carolina State University; Ian Harris, Edison Welding Institute

8:00 AM Invited
Medical Applications of Additive Manufacturing Technologies: *Bryan Crutchfield*[1]; [1]Materialise

8:40 AM
Defeating Anisotropy in Material Extrusion 3D Printed Parts: *Ángel Torrado Pérez*[1]; Carmen Rocha[1]; Joel English[1]; Corey Shemelya[1]; David Roberson[1]; Ryan Wicker[1]; [1]University of Texas at El Paso

9:00 AM
Inconel 718 Development for Electron Beam Melting: Francisco Medina[1]; Ryan Dehoff[2]; William Sames[3]; *Ulf Ackelid*[1]; [1]ARCAM; [2]ORNL MDF; [3]Texas A&M University

9:20 AM
Quasi-static and Dynamic Performance of 316L Stainless Steel Fabricated through Directed Energy Additive Manufacturing: *John Carpenter*[1]; George Gray[1]; Thomas Lienert[1]; Ellen Cerreta[1]; Jacob Sutton[1]; Veronica Livescu[1]; [1]Los Alamos National Laboratory

9:40 AM Break

10:00 AM
Selective Laser Melting of Hot Isotactic Pressing Canisters Using Fe Powder: Hany Hassanin[1]; Nicholas Adkins[1]; Mick Wickins[1]; *Moataz Attallah*[1]; [1]University of Birmingham

10:20 AM
Shape Memory Response in NiTi Fabricated Using Laser-based Directed Energy Deposition: *Reginald Hamilton*[1]; Beth Bimber[1]; Jayme Keist[1]; Todd Palmer[1]; [1]The Pennsylvania State University

10:40 AM
Fiber Laser Cladding of Spherotene Spherical Fused WC/Inconel 625 Metal Matrix Composite (MMC) Coatings: *Jianyin Chen*[1]; Lijue Xue[1]; [1]National Research Council Canada

11:00 AM
Simulation-based Cost Analysis Tool for Additive Manufacturing Processes: *Jerry Evans*[1]; Edmund Moore[2]; Joseph Shelton[1]; Charles Skira[3]; [1]Future Way Designs LLC; [2]AFRL/RQTE; [3]Universal Technology Corporation

Semiconductor Heterostructures: Theory, Growth, Characterization, and Device Applications — Semiconductor Heterostructures

Program Organizer: John Ayers, University of Connecticut

Thursday AM
October 16, 2014

Room: Room 311
Location: David L. Lawrence Convention Center

Session Chair: John Ayers, University of Connecticut

8:00 AM
Metamorphic and Pseudomorphic Growth of GaSb Based Lasers: *Chris Richardson*[1]; [1]Laboratory for Physical Sciences

8:40 AM
Mosaic Crystal Model For X-Ray Diffraction from Step-Graded and Linearly-graded InGaAs/GaAs (001) Metamorphic Buffers: *Paul Rago*[1]; John Ayers[2]; [1]Phonon Corporation; [2]University of Connecticut

9:00 AM
InP-lattice-matched Quantum Wells for Photovoltaic Energy Conversion: *Christopher Bailey*[1]; [1]Old Dominion University

9:40 AM Break

10:00 AM
Evolution of Lattice Relaxation and Threading Dislocations in ZnSySe1-y/GaAs (001) Metamorphic Buffer Layers: *Tedi Kujofsa*[1]; John Ayers[1]; [1]University of Connecticut

10:20 AM
Phonon Transport Processes in Complex Oxide Nanostructures: Coherent Transport, Grain Scattering, and Domain Interactions: *Patrick Hopkins*[1]; Brian Foley[1]; Ramez Cheaito[1]; Brian Donovan[1]; Ajay Yadav[2]; Pim Rossen[2]; Ramamoorthy Ramesh[2]; Arunava Majumdar[3]; Doug Medlin[4]; Harlan Brown-Shaklee[4]; Jon Ihlefeld[4]; Jayakanth Ravichandran[5]; [1]University of Virginia; [2]University of California, Berkeley; [3]Google; [4]Sandia National Laboratories; [5]Columbia University

10:40 AM
Polarization and Electric Fields in AlGaN/GaN Nitride Heterostructures: *Ali Sangghaleh*[1]; Ernian Pan[1]; [1]University of Akron

11:00 AM
Charge and Energy Transfer between Quasi-zero Dimensional Semiconducting Nanostructures: *Karel Kral*[1]; [1]Inst. Phys. ASCR, v.v.i.

Structural Characteristics for High-toughness Steels — Structural Characteristics for High-toughness Steels

Program Organizer: Carl-Peter Reip, SMS Siemag AG

Thursday AM
October 16, 2014

Room: Room 410
Location: David L. Lawrence Convention Center

Session Chair: Jose Rodriguez-Ibabe, CEIT and Tecnun (Univ. Navarra)

8:00 AM
Toughness Anisotropy in Four X70 Pipeline Steels Produced Via Different Rolling Practices: *Haytham Al-Jabr*[1]; John Speer[1]; David Matlock[1]; [1]Advanced Steel Processing and Products Research Center, Colorado School of Mines

8:20 AM Invited
The Design of Microstructure for Strength and Toughness in Low Carbon High Strength Bainite Using EBSD Techniques: *Xiaojun Liang*[1]; Yu Gong[1]; Bing Ma[1]; Anthony Deardo[1]; [1]University of Pittsburgh

8:40 AM Invited
Microstructural Features Intervening in Brittle Processes in Microalloyed High Strength Steels: Denis Jorge-Badiola[1]; Carl-Peter Reip[2]; *Jose Rodriguez-Ibabe*[1]; [1]CEIT; [2]SMS Siemag Aktiengesellschaft

9:00 AM Invited
Deformation and Fracture Characteristics of Hot Press Formed Steels: *Bing Ma*[1]; Xiaojun Liang[1]; Yeol-Rae Cho[2]; Anthony Deardo[1]; [1]University of Pittsburgh; [2]Pohang Iron and Steel Company (POSCO),

9:20 AM
Pre and Post-expansion Mechanical Behavior of Petroleum Tubulars: *Sayyad Qamar*[1]; Tasneem Pervez[1]; [1]Sultan Qaboos University

9:40 AM
Effect of Non-metallic Inclusions on Formation of Structure of the Weld Metal in High-strength Low-alloy Steels: *Victor Holowko*[1]; Igor Pokhodnya[1]; [1]Paton Welding Institute

Third Symposium on Surface Hardening of Corrosion-Resistant Alloys — Performance and Environment

Program Organizers: Sunniva Collins, CWRU; Arthur Heuer, Case Western Reserve University; Frank Ernst, CWRU; Hanshan Dong, University of Birmingham

Thursday AM
October 16, 2014

Room: Room 409
Location: David L. Lawrence Convention Center

Session Chair: Frank Ernst, CWRU

8:00 AM Introductory Comments

8:20 AM
Interstitially Hardened 316L Stainless Steel: A Surface Analytical and Electrochemical Study of the Oxide: *Paul Natishan*[1]; Nicole Tailleart[2]; Farrel Martin[1]; Harold Kahn[3]; Arthur Heuer[3]; [1]Naval Research Laboratory; [2]American Society for Engineering Education; [3]Case Western Reserve University

9:00 AM
The Increase of Cavitation Erosion Resistance of Stainless Steel Products by Carbon Supersaturation: *Andreas Karl*[1]; Martina Wägner[1]; [1]Bodycote Hardiff GmbH

9:20 AM
Cavitation Erosion Resistance of Active Screen-low Temperature Plasma Nitrided AISI 410 Martensitic Stainless Steel: Andre Tschiptschin[1]; *Luis Espitia*[1]; Carlos Pinedo[2]; Xiao-Ying Li[3]; Hanshan Dong[3]; [1]University of Sao Paulo; [2]Heat Tech Heat Treatment and Surface Engineering Technology; [3]University of Birmingham

9:40 AM Break

10:00 AM
Low Temperature Gaseous Nitriding of Plastically Deformed Austenitic Stainless Steels: *Federico Bottoli*[1]; Grethe Winther[1]; Thomas Christiansen[1]; Marcel Somers[1]; [1]Technical University of Denmark

10:20 AM
The Effect of Surface Finish on Low-temperature Acetylene-Based Carburization of 316L Austenitic Stainless Steel: Yindong Ge[1]; Frank Ernst[2]; *Hal Kahn*[2]; Arthur Heuer[2]; [1]Parker Hannifin Corp; [2]Case Western Reserve University

10:40 AM
A Comparative Study of the Thermo-stability of Low-temperature Gas- and -Plasma Carburized Surface Layers of Austenitic Stainless Steels: *Qiong Li*[1]; Frank Ernst[1]; Hanshan Dong[2]; Xiaoying Li[2]; [1]Case Western Reserve University; [2]University of Birmingham

11:00 AM
Thermal Stability and Decomposition of Carbon and Nitrogen Expanded Austenite: *Bastian Brink*[1]; Kenny Stahl[1]; Thomas Christiansen[1]; Marcel Somers[1]; [1]Technical University of Denmark

11:20 AM Panel Discussion

MS&T'14 Poster Session — Biomaterials

Wednesday AM
October 15, 2014

Room: Exhibition Hall
Location: David L. Lawrence Convention Center

A-1: Effect of Immersion Medium on the Degradation and Conversion of 13-93 Bioactive Glass Scaffolds: *Mohamed Rahaman*[1]; Wenhai Huang[2]; Yifei Gu[2]; [1]Missouri University of Science and Technology; [2]Tongji University

A-2: Effects of Silica on Physical, Mechanical and In Vivo Osteogenesis Properties of Brushite Cements: *Sahar Vahabzadeh*[1]; Mangal Roy[2]; Susmita Bose[1]; [1]Washington State University; [2]Indian Institute of Technology Kharagpur

A-3: High Stiffness Nanopowder Filled Composites for Dental Fillings: *Isabel Lloyd*[1]; Beth Wyler[2]; Nathan Cloeter[1]; Christopher Wong[1]; Itohan Ebhojiaye[1]; Alec Roskowinski[1]; [1]University of Maryland; [2]Anne Arundel Community College

A-4: Improved Fracture Toughness and Fatigue Strength of Acrylic Bone Cements by Incorporating an Aromatic Co-monomer: *J. Solis-Ruiz*[1]; J. Cervantes-Uc[1]; N. Acuna-Gonzalez[2]; A. May-Pat[1]; G. Alonzo-Medina[2]; [1]Centro de Investigación Científica de Yucatán, A.C.; [2]Universidad Anáhuac Mayab

A-5: Laser Processing of Ti-Si-N Ceramic Coatings on Titanium Substrate: *Himanshu Sahasrabudhe*[1]; Yanning Zhang[1]; Amit Bandyopadhyay[1]; [1]Washington State University

A-6: Magnesium Doped Hydroxyapatite: Synthesis, Characterization and Bioactivity Evaluation: *Harpal Singh*[1]; Jaswinder Singh[2]; Uma Batra[3]; [1]University of Akron; [2]Doon Valley College of Engineering; [3]PEC University of Technology

A-7: Microwave Sintering of Magnesium-calcium Phosphates: *Elham Babaie*[1]; Sarit B Bhaduri[1]; Huan Zhou[1]; Yufu Ren[1]; [1]University of Toledo

A-8: Microwave Sintering of Magnesium-calcium Phosphates: *Elham Babaie*[1]; Sarit B Bhaduri[1]; Huan Zhou[2]; Yufu Ren[1]; [1]University of Toledo

A-9: Novel Hydroxyapatite-Nb_2O_5 Composite Scaffold for Bone Regeneration: *Taiana Bonadio*[1]; Humberto Pasquinelli[1]; Valdirlei Freitas[2]; Ivair dos Santos[1]; Luzmarina Hernandes[1]; Wilson Weinand[1]; Mauro Baesso[1]; [1]UEM; [2]Unicentro

A-10: SrO and SiO_2 Doped 3D Printed ß-Tricalcium Phosphate Ceramic Scaffolds: Mechanical and Biological Property Evaluation: Solaiman Tarafder[1]; Samit Nandi[2]; William Dernell[1]; Amit Bandyopadhyay[1]; *Susmita Bose*[1]; [1]Washington State University; [2]West Bengal University of Animal & Fishery Sciences

A-11: SrO and SiO_2 Doped Tricalcium Phosphate Scaffolds for Vitamin D3 Delivery by Carboxymethyl Chitosan Coating: *Dongxu Ke*[1]; Bose Susmita[1]; Amit Bandyopadhyay[1]; [1]W. M. Keck Biomedical Materials Research Laboratory School of Mechanical and Materials Engineering Washington State University

A-12: Strengthening Mechanism of Biomedical Co-Cr-Mo Alloy Prepared by Thermomechanical Processing: *Manami Mori*[1]; Kenta Yamanaka[2]; Kozue Satoh[2]; Shigeo Sato[3]; Shinki Tsubaki[4]; Masayoshi Kumagai[4]; Muneyuki Imafuku[4]; Akihiko Chiba[2]; [1]Sendai National College of Technology; [2]Tohoku University; [3]Ibaraki University; [4]Tokyo City University

A-13: The Effect of Pulsed Anodization Duty Cycle on Crystallinity, Nanopore Formation, and Surface Roughness of the Oxide of Commercially Pure Titanium Grade 4: *Scott Williamson*[1]; John Disegi[2]; Amol Janorkar[1]; Jason Griggs[1]; Michael Roach[1]; [1]University of MS Medical Center; [2]Depuy-Synthes

A-14: Thermal Degradation of TiO_2 Nanotubes: *Anish Shivaram*[1]; Susmita Bose[1]; Amit Bandyopadhyay[1]; [1]Washington State University

A-15: Torsional Properties of Nanoprocessed Titanium Cortical Bone Screws: *John Disegi*[1]; Brian Shultzabarger[1]; Michael Roach[2]; [1]DePuy Synthes; [2]University of Mississippi Medical Center

MS&T'14 Poster Session — Ceramic and Glass Materials

Wednesday AM
October 15, 2014

Room: Exhibition Hall
Location: David L. Lawrence Convention Center

B-1: Characterization of the Clay Used in Manufacturing Structural Clay Brick: *Neila Azeredo*[1]; Jonas Alexandre[1]; Afonso Azevedo[1]; Sergio Monteiro[1]; Gustavo Xavier[1]; [1]State University of the Northern Rio de Janeiro

B-2: Synthesysof $NdMnO_3$, $Nd_{0.6}Pb_{0.4}MnO_3$ And $(La_{0.7}Nd_{0.3})_{0.6}Pb_{0.4}MnO_3$ Nanopowders by Mechanochemical Activation: *Anna Staneva*[1]; Valeri Dzhurkov[2]; Reni Yordanova[2]; Maria Mancheva[2]; Radoslav Raikov[1]; Stanislav Slavov[1]; Yanko Dimitriev[1]; Janna Mateeva[1]; [1]University of Chemical Technology and Metallurgy; [2]Bulgarian Academy of Sciences

B-3: Influence of Thickness Effect on Photocatalytic Activity of TiO_2 Thin Films: *Bensouici Fayçal*[1]; Aicha Iratni[1]; [1]University of Boumerdes

B-4: Modeling of Oxide Film Growth by Molecular Beam Epitaxy: Examples of $SrTiO_3$ and Sr_2TiO_4: *Guangfu Luo*[1]; June Lee[2]; Milind Gadre[1]; Milind Malshe[2]; Julius Jellinek[2]; Dillon Fong[2]; John Freeland[2]; Dane Morgan[1]; [1]UW-Madison; [2]Argonne National Laboratory

B-5: Nature of Ferroelectric-paraelectric Phase Transition and Origin of Negative Thermal Expansion in $PbTiO_3$: *Huazhi Fang*[1]; Shunli Shang[1]; YI Wang[1]; Zi-Kui Liu[1]; [1]The Pennsylvania State University

B-6: Fabrication and Characterizations of Pressureless Sintered Porous SiC for the Reactor of PFCs Gas Scrubber: *Young-Hoon Seong*[1]; In-Sub Han[1]; Doo Won Seo[1]; Seyoung Kim[1]; Sang Kuk Woo[1]; [1]Korea Institute of Energy Research

B-7: Fracture Toughness Study of Si-based Cr Alloy Infiltrated C/C-Si-Cr Alloy Composite Material: *Seyoung Kim*[1]; Sangkuk Woo[1]; Insub Han[1]; Jaehyung Choi[1]; Young-Hoon Seong[1]; [1]Korea Institute of Energy Research

B-8: Physical Characteristics and Microstructure of MgO-C Brick under Vacuum Condition: *Tsuyoshi Mukai*[1]; [1]Nagaoka University of Technology

B-9: Structural and Thermal Investigations on Magnesium Oxy-chloride Bismo-borate Glasses: *Satish Khasa*[1]; [1]Deenbandhu Chhotu Ram University of Science & Technology

B-10: Microwave Heated Chemical Vapour Infiltration of Ultra-high Temperature Ceramic Composites: *Andrea D'Angio*[1]; Anish Paul[1]; Jon Binner[1]; [1]University of Birmingham

B-11: Rheological and Extrusion Behavior of $Ce_{0.9}Gd_{0.1}O_2$-dSlurries as an Electrolyte of Solid Oxide Fuel Cells: *Jie Li*[1]; Mashfiqul Islam[1]; Ling Li[1]; Imran Mohamed[1]; Leon Shaw[1]; [1]Illinois Institute of Technology

B-12: Synthesis and Magnetorheological Behavior of Cooper, Cobalt or Niquel Ferrites Suspensions: *Felipe Legorreta-García*[1]; Fernando Donado-Pérez[1]; Edgar Cardoso-Legorreta[1]; Alberto Arenas-Flores[1]; Carlos Maya-Dorantes[1]; [1]Universidad Autónoma de Hidalgo

B-13: Abnormal Grain Growth: Investigating Onset Conditions: *Catherine Sahi*[1]; Steven Chiu[1]; Jackson Carroll[1]; Veena Tikare[2]; Zak Fang[3]; Robert DeHoff[1]; Burton Patterson[1]; Peter Kellner[4]; [1]University of Florida; [2]Sandia National Laboratories; [3]University of Utah; [4]Ostbayerische Technische Hochschule

B-14: Evaluation of Morphological and Thermal Behavior of Minerals Originating from Clayey Layer of the Municipality of Goytacazes / RJ: *Afonso Azevedo*[1]; Jonas Alexandre[1]; Gustavo Xavier[1]; Neila Azeredo[1]; Sergio Monteiro[2]; Frederico Margem[1]; [1]UENF; [2]IME

B-15: Influence of Magnesia Zirconium Addition on Properties of Chrome-free Castables for RH Degassers: *Yonghe Liang*[1]; [1]Wuhan University of Science and Technology

B-16: Strengthening and Surface Stress Relaxation of Soda-lime Silicate Glass Fibers: *Peter Lezzi*[1]; Minoru Tomozawa[1]; [1]Rensselaer Polytechnic Institute

B-17: Tailored Surface Functionalization of Boron Nitride Nanoparticles for Directed Assembly of High Performance Epoxy Composites: *Alex Bruce*[1]; Inez Hua[1]; John Howarter[1]; [1]Purdue University

B-18: Studies on Electrical/Mechanical Properties of Hybrid Composite Membranes for Fuel Cell Applications: *Uma Thanganathan*[1]; [1]Okayama University

B-19: Fabrication and Characterization of SiC/ZrC Ultra-thin Mesoporous Fibers: Kaikai Ge[1]; Li Ye[1]; *Tong Zhao*[1]; Xun Pan[2]; [1]Institute of Chemistry, Chinese Academy of Science; [2]Tunable Materials Co Ltd

B-20: The Synthesis and Exfoliation of Dion-Jacobson Layered Perovskites: *Edward Gorzkowski*[1]; Ming-Jen Pan[1]; [1]Naval Research Lab

B-21: Effect of Annealing Temperature on Structural and Optical properties of Dip and Spin Coated ZnO Thin Films: *Shivaraj Wali*[1]; H N Narasimhamurthy[1]; M Krishna[1]; B.S.Satyanarayana[1]; [1]RVCE

B-22: Study on Synthesis of Silicon Oxynitride: Nie Jianhua[1]; Yin Guohen[1]; Qiu Wendong[2]; Zhao Wei[2]; Wen Jin[1]; Qiao Wan[1]; Liang Yonghe[1]; Yin Yucheng[1]; [1]The State Key Laboratory Refractories and Metallurgy, Wuhan University of Science and Technology; [2]Shanghai Baosteel Industrial Services Co., Ltd

B-23: Synthesis Route for Doped Monoclinic $LaPO_4$ (Monazite) Avoiding the Formation of Rhabdophane: *Kenta Ohtaki*[1]; Neshat J. Heravi[1]; Peter Morgan[1]; Martha Mecartney[1]; [1]University of California, Irvine

B-24: Effect of the Ratio of MgO and CaO on the Viscosity and Crystallization of E-Glass with 2.5% B_2O_3 at High Temperature: Zhongqing Tian[1]; Xilin Li[1]; Weiwei Yuan[1]; Fancheng Meng[1]; Weijiu Huang[1]; [1]Chongqing University of Technology

B-25: Alignment of Microstructural Features in Ceramics through Injection Molding of Ceramic Suspension Gels (CeraSGels) at Room Temperature: *Lisa Rueschhoff*[1]; Jeffrey Youngblood[1]; Rodney Trice[1]; [1]Purdue University

B-26: Anisotropic Symmetries Induced Anomalous Magnetic Transport Properties on Highly Epitaxial $LaBaCo_2O_{5.5}$+ δ Thin Films on (110) $NdGaO_3$: *Chunrui Ma*[1]; Dong Han[2]; Ming Liu[3]; Gregory Collins[1]; Haibin Wang[1]; Xing Xu[1]; Erik Enriquez[1]; Yuan Lin[4]; Shengbai Zhang[2]; Chonglin Chen[1]; [1]The University of Texas at San Antonio; [2]Rensselaer Polytechnic Institute; [3]Xi'an Jiaotong University; [4]University of Electronic Science and Technology of China

MS&T'14 Poster Session — Electronic, Optical, and Magnetic Materials

Wednesday AM
October 15, 2014

Room: Exhibition Hall
Location: David L. Lawrence Convention Center

C-1: Assessment of Wettability for Sn-0.7wt%Cu-(0-1,000 ppm Ni) Lead-free Solder Alloys on Copper Substrates: *Bismarck Silva*[1]; Noé Cheung[2]; Amauri Garcia[2]; José Spinelli[1]; [1]Federal University of São Carlos; [2]University of Campinas

C-2: Ab Initio Calculations in Rhombohedral and Monoclinic $BiFeO_3$: *Igor Catellani*[1]; Breno Oliveira[1]; Ivair Santos[1]; Luiz Cótica[1]; Ruyan Guo[2]; Amar Bhalla[2]; [1]Universidade Estadual de Maringá; [2]University of Texas at San Antonio

C-3: Dielectric Investigations in Polyvinylidene Fluoride (PVDF)/ $Ba_{0.3}Na_{0.7}Ti_{0.3}Nb_{0.7}O_3$ Composites: *Jaciele Rosso*[1]; Taiana Bonadio[1]; Valdirlei Freitas[2]; Otávio Protzek[3]; Gustavo Sanguino[1]; Luiz Cótica[1]; Ducinei Garcia[3]; José Eiras[3]; Ivair dos Santos[1]; [1]State University of Maringá; [2]State University of Guarapuava; [3]Federal University of São Carlos

C-4: Maximum Entropy Method Applied in the Experimental Visualization of Electron Density Distributions in $BiFeO_3$: *Igor Catellani*[1]; Gustavo Dias[1]; Ivair Santos[1]; Luiz Cótica[1]; Ruyan Guo[2]; Amar Bhalla[2]; [1]Universidade Estadual de Maringá; [2]University of Texas at San Antonio

C-5: Structure-properties Correlations in Rare-earth Modified $TbMnO_3$ Polycrystalline Ceramics: *Gustavo Dias*[1]; Luiz Gustavo Silveira[1]; Luiz Cótica[1]; Ducinei Garcia[2]; José Eiras[2]; Ivair Santos[1]; [1]Universidade Estadual de Maringá; [2]Universidade Federal de São Carlos

C-6: Dielectric and Electrical Impedance Studies on Magnetoelectric Coupling in $AlFeO_3$ Compositions: *Guilherme Santos*[1]; Ivair Santos[1]; Luiz Cótica[1]; Ruyan Guo[2]; Amar Bhalla[2]; [1]Universidade Estadual de Maringá; [2]University of Texas at San Antonio

C-7: Low Temperatures Dielectric Anomaly in $BiFeO_3$–based Multiferroic Ceramics: *Jose de Los Santos Guerra*[1]; Madhuparna Pal[1]; Atair Carvalho da Silva[2]; Ivair dos Santos[3]; Ruyan Guo[1]; Amar Bhalla[1]; [1]The University of Texas at San Antonio - UTSA; [2]Universidade Estadual Paulista - UNESP; [3]Universidade Estadual de Maringá - UEM

C-8: Structural, Optical, and Electrical Characterization of Holmium Hafnate Ceramics: *Shojan Pavunny*[1]; Sudheendran Kooriyattil[1]; James Scott[2]; Ram Katiyar[1]; [1]Department of Physics and Institute for Functional Nanomaterials, University of Puerto Rico; [2]University of Cambridge

C-9: Fast Sintered $BiFeO_3$ Single-phased Ceramics: *Gustavo Dias*[1]; Valdirlei Freitas[2]; Luiz Cótica[1]; Ducinei Garcia[3]; José Eiras[3]; Ivair Santos[1]; [1]Universidade Estadual de Maringá; [2]Universidade Estadual do Centro-Oeste; [3]Universidade Federal de São Carlos

C-10: Electric Field Dependence of the Dielectric Properties of Multiferroic Ceramics: *Luiz Gustavo Silveira*[1]; Gustavo Dias[1]; Luiz Fernando Cótica[1]; José Eiras[2]; Ducinei Garcia[2]; Ivair Santos[1]; [1]Maringá State University; [2]Universidade Federal de São Carlos

C-11: Equilibrium Strain and Dislocation Density Profiles in Graded InGaN/GaN (0001) Heterostructures Using the Isotropic and Hexagonal Approximation Models for Dislocation Line Energy: Johanna Raphael[1]; John Ayers[1]; [1]University of Connecticut

C-12: Non-linear Dielectric Response of Multiferroic Ceramics: *Luiz Gustavo Silveira*[1]; Gustavo Dias[1]; Luiz Fernando Cótica[1]; José Eiras[2]; Ducinei Garcia[2]; Ivair Santos[1]; [1]Maringá State University; [2]Universidade Federal de São Carlos

C-13: Strain Relaxation in GaN Based Heterostructures: *Raffaele Coppeta*[1]; Hajdin Ceric[1]; David Holec[2]; Tibor Grasser[1]; [1]Technische Universität Wien Institute for Microelectronics; [2]Montanuniversität Leoben

C-14: Structural Origin of the Piezoelectric Properties and Large Nonvolatile Strains in [110]-Orientated PbMg1/3Nb2/3O3-xPbTiO3 Ferroelectric Crystals: Cases for Sensor and Actuator Applications: *Yaojin Wang*[1]; Jiefang Li[1]; Dwight Viehland[1]; [1]Virginia Tech

C-15: Structural, Microstructural and Dielectric Properties of Tri-layered Aurivillius-type Structure $Bi_4Ti_3O_{12}$ ferroelectric ceramics: *Idalci Cruvinel dos Reis*[1]; Atair Carvalho da Silva[1]; Ruyan Guo[2]; Amar Bhalla[2]; Jose de Los Santos Guerra[2]; [1]Universidade Estadual Paulista - UNESP; [2]The University of Texas at San Antonio - UTSA

C-16: Structural and Electrical Properties of Rare-earth Modified $BaTiO_3$ Ferroelectric Ceramics: *Marco de Oliveira*[1]; Atair Carvalho da Silva[1]; Maria Basso Bernardi[2]; Jean M'Peko[2]; Antonio Hernandes[2]; Ruyan Guo[3]; Amar Bhalla[3]; Jose de los Santos Guerra[3]; [1]Universidade Estadual Paulista - UNESP; [2]Universidade de São Paulo - USP; [3]The University of Texas at San Antonio - UTSA

C-17: Characterization and Properties of Nanostructured PVDF/ Hydroxyapatite Composites: *Jaciele Rosso*[1]; Taiana Bonadio[1]; Valdirlei Freitas[2]; Gustavo Sanguino[1]; Otávio Protzek[1]; Luiz Cótica[1]; José Eiras[3]; Ducinei Garcia[3]; Ivair dos Santos[1]; [1]State University of Maringá; [2]State University of Guarapuava; [3]Federal University of São Carlos

C-18: Correlation between Substitutions and Properties in NBT-based Lead-free Crystals: Evolution of Domain Morphology: *Chengtao Luo*[1]; [1]Virginia Tech

C-19: Heater Dissipation in a Radial Mode Piezoelectric with a Large Central Hole: *Diogo Montanher*[1]; Fernando Gaiotto[1]; Daniel Matos[1]; José Roberto Pereira[1]; Ivair dos Santos[1]; Dulcinei Garcia[2]; José Eiras[2]; [1]State University of Maringa; [2]Federal University of São Carlos

C-20: Monolith of Nanostructured $BiFeO_3$ - $PbTiO_3$ Obtained by Micro Milling and Sintered by Spark Plasma: *Otávio Protzek*[1]; Valdirlei Freitas[2]; Jaciele Rosso[1]; Diogo Montanher[1]; Diego Viana[3]; Luiz Cótica[1]; José Eiras[3]; Dulcinei Garcia[3]; Ivair dos Santos[1]; [1]Universidade Estadual de Maringá; [2]Universidade Estadual do Centro-Oeste; [3]Universidade Federal de São Carlos

C-21: On the Development of Powdered Ni-Mn-Ga Heusler Alloys for Magnetoelectric Composites Application: *Diogo Montanher*[1]; Ivair dos Santos[1]; Luiz Cótica[1]; José Roberto Pereira[1]; Otavio Protzek[1]; Dulcinei Garcia[2]; José Eiras[2]; [1]State University of Maringa; [2]Federal University of São Carlos

C-22: Preparations of Shunt Resistor Processed with Cu/Mn/Ni/P Alloy and Study Its Electrical Properties: *Sangeun Lee*[1]; Seungpil Kim[1]; Daehan Jang[1]; Daegon Kim[2]; Daegeun Nam[1]; [1]Korea Institute of Industrial Technology; [2]Minyoung Industry Co.

C-23: Production of High Quality Barium Titanate from Turkish Barite: *Gürol O. Demirel*[1]; Sükrü Can[2]; A. Murat Avci[1]; Oktay Uysal[1]; Dilek Elmali[2]; Emel Özel[2]; Ender Suvaci[2]; [1]ENTEKNO Materials Ltd. Co.; [2]Anadolu University

C-24: Induced Band Gap in Doped Graphene: *Julia Chu*[1]; Yan Liu[1]; Nuggehalli Ravindra[1]; [1]New Jersey Institute of Technology

C-25: Structural and Ferroic Properties of (Bi1-xNdx)(Fe1-yCoy)O3 Compositions: *Anuar Mincache*[1]; Ivair Santos[1]; Luiz Cotica[1]; Ruyan Guo[2]; Amar Bhalla[2]; [1]Department of Physics, State University of Maringá; [2]University of Texas at San Antonio

C-26: Dielectric and Electral Characterization of Spark-Plasma Sintered PZT Ceramics: *Ricardo Gotardo*[1]; William Nascimento[2]; Roney da Silva[3]; José Eiras[3]; [1]UTFPR; [2]UFPR; [3]UFSCAR

C-27: Effect of Microwave Calcination on Structural, Dielectric and Ferroelectric Properties of PZT Ceramics: *Sangeeta Singh*[1]; G Dipti[2]; JK Juneja[3]; Chandra Prakash[4]; [1]GVM Girls College; [2]Thapar University; [3]Hindu College; [4]Solid State Physics Laboratory

C-28: A Diffraction-based Geometrical Model to Determine the Ferroelectric State in Multiferroics: *Valdirlei Freitas*[1]; Luiz Cótica[2]; Ducinei Garcia[3]; José Eiras[3]; Amar Bhalla[4]; Ivair Santos[2]; [1]Universidade Estadual do Centro-Oeste - Unicentro; [2]Universidade Estadual de Maringá; [3]Universidade Federal de São Carlos; [4]University of Texas at San Antonio

C-29: Integrated Circuits with Ball Contacts on the Flexible Polyimide Board: *Natalya Korobova*[1]; Dolgovykh Yuriy[1]; Timoshenkov Sergey[1]; Pogalov Anatoliy[1]; Blinov Gennadiy[1]; [1]National Research University MIET

C-30: Curie-Weiss Low Fractal Modification: *Vojislav Mitic*[1]; Vesna Paunovic[1]; Ljubisa Kocic[1]; [1]University of Nis, Faculty of Electronic Engineering

C-31: Effect of Sintering Temperature on Electrical Properties of BZT Ceramics: *JK Juneja*[1]; Parveen Kumar[2]; Chandra Prakash[3]; [1]Hindu College; [2]GVM Girls College; [3]Solid State Physics Laboratory

C-32: Electrical Properties of Microwave Sintered BPZT Ceramics: *Parveen Kumar*[1]; Sangeeta Singh[1]; JK Juneja[2]; Chandra Prakash[3]; [1]GVM Girls College; [2]Hindu College; [3]Solid State Physics Laboratory

C-33: Enhancement in Properties of Microwave Sintered Ferrite–ferroelectric Composites: Renu Rani[1]; *KK Raina*[1]; Chandra Prakash[2]; [1]Thapar University; [2]Solid State Physics Laboratory

C-34: Critical Temperatures of Ferroelectric Relaxor PLZT Ceramics Determined by Electro-optical Characterization: *Flávio Milton*[1]; Ériton Botero[2]; José Eiras[1]; Ducinei Garcia[1]; Fernando Badillo[2]; [1]Ferroelectric Ceramic Group; [2]federal University of Grande Dourados

C-35: Structural and Ferroelectric Characterization of Multilayer PZT Thin Film: *Md. Rahman*[1]; Amar Bhalla[1]; Ruyan Guo[1]; [1]University of Texas at San Antonio

C-36: Synthesis and Characterization of x ($Co_{0.80}Ni_{0.20}Fe_2O_4$) + (1-x) ($Pb_{1.0125}La_{0.005}Zr_{0.55}Ti_{0.45}O_3$) Multiferroic Composites: *G Dipti*[1]; KK Raina[1]; RK Kotnala[2]; Chandra Prakash[3]; [1]Thapar University; [2]National Physical Laboratory; [3]Solid State Physics Laboratory

C-37: Effect of Rare Earth Additives on the Microstructure and Dielectric Properties of PLMN-PT Ceramics: *Fernando Londono*[1]; Ducinei Garcia[2]; Jose Eiras[2]; [1]Universidad de Antioquia; [2]UFSCar

C-38: Equilibrium Lattice Relaxation and Misfit Dislocations in Step-Graded InxGa1-xAs/GaAs (001) and AlxGa1-xAs/GaAs (001) Metamorphic Buffer Layers: *Tedi Kujofsa*[1]; John Ayers[1]; [1]University of Connecticut

C-39: Analysis of Linearly-Graded InGaAs/GaAs (001) Metamorphic Buffers Using Various hkl Diffraction Profiles: *Paul Rago*[1]; John Ayers[2]; [1]Phonon Corporation; [2]University of Connecticut

C-40: Dielectric Properties of Biodegradable Poly(Butylene Succinate) Composite Incorporated with Barium Strontium Titanate Powder: *Hathaikarn Manuspiya*[1]; Kittichin Plungpongpan[1]; Apirat Laobuthee[2]; [1]Chulalongkorn University; [2]Kasetsart University

C-41: Fabrication of GLAD Assisted NiO Homojunction Photodiode for Ultra-violet Detection: Manisha Tyagi[1]; Monika Tomar[1]; *Vinay Gupta*[1]; [1]University of Delhi

C-42: Study of Dielectric Dispersion of Metal Oxide Thin Films and Biomolecules Using Surface Plasmon Resonance Technique: Ayushi Paliwal[1]; *Anjali Sharma*[1]; Monika Tomar[1]; Vinay Gupta[1]; [1]University of Delhi

MS&T'14 Poster Session — Energy

Wednesday AM
October 15, 2014

Room: Exhibition Hall
Location: David L. Lawrence Convention Center

D-1: $BaxSr_2$-$xFeTiO_6$ Based Complex Perovskites for the High Temperature Thermoelectric Applications: Pankaj Kumar[1]; Sandeep Kumar[1]; *Tanmoy Maiti*[1]; [1]IIT Kanpur

D-2: Beta-alumina Powder Aging Influence in the Electrolyte Properties: *Lorena Caliman*[1]; Douglas Gouvea[1]; [1]USP - Universidade de São Paulo

D-3: Bulk-nanograined Fe-doped SiO_2 as Anode Material for Lithium-ion Batteries: *Rinlee Butch Cervera*[1]; Catherine Garrido[1]; Blessie Basilia[2]; [1]University of the Philippines; [2]Department of Science and Technology

D-4: Characterization of Point Defect Chemistry in Scintillator Materials by Tracer Diffusion: *Katherine Colbaugh*[1]; Amrita Mishra[2]; S. Dumpala[2]; Scott Broderick[2]; Krishna Rajan[2]; James McGuffin-Cawley[1]; [1]Case Western Reserve University; [2]Iowa State University

D-5: Effect of Electrolyte on Electrochemical Performance of $NaTi_2(PO_4)_3$ as Anode Materials for Aqueous Sodium-ion Battery: *Wei Wu*[1]; Sneha Shanbhag[2]; Ann Rutt[1]; Jiang Chang[1]; Jay Whitacre[1]; [1]Carnegie Mellon University; [2]Aquion Energy

D-6: Effect of Microstructure on the Internal Oxidation of Two-phase Iron-yttrium Alloys: *Steve Kachur*[1]; Bryan Webler[1]; [1]Carnegie Mellon University

D-7: Electronically Conducting Polymeric Binders for Thick Format Aqueous Electrodes: *Alex Mohamed*[1]; [1]Carnegie Mellon University

D-8: Etching Characteristic of Anode Aluminum Foil in H_2SO_4 and HCl Solutions: *Peng Ning*[1]; He Dong[1]; Liang Bo[1]; [1]University of Science and Technology Bejing

D-9: Green Extraction Technology Catalytic Upgrading of the Gaseous Products of Oil Shale Retorting to Convert CO , CO_2, HC to Methane and Energy with Exothermic Reaction to Reduce GHG to Zero and Improve Energy Return: *Osama Akoubeh*[1]; [1]NON

D-10: Hydrogen Production Performance of Tubular SOEC Stack with LSCF Electrode: *Sang-Kuk Woo*[1]; Doo-Won Seo[1]; Young-Hm Na[1]; Sun-Dong Kim[1]; [1]Korea Insitute of Energy Research

D-11: Hydrogen Storage Properties of Nanostructured Calcium Nitride: *Hayao Imamura*[1]; Naotaka Shimomura[1]; Sota Nagamine[1]; Maiko Shimizu[1]; Yoshihisa Sakata[1]; [1]Yamaguchi University

D-12: Lifespan of Aspilia Africana Dye Sensitised Solar Cell Using Benzoic Acid: *Adenike Boyo*[1]; Olasunkanmi Kesinro[2]; Saheed Oseni[2]; [1]Lagos State University ; [2]Lagos State University

D-13: Low Temperature Sintering of Silicon Carbide through a Liquid Polymer Precursor: *Ryan Read*[1]; Jung-Kun Lee; [1]University of Pittsburgh

D-14: Microstructural Characterization of Zr-Cu-Fe-Al Bulk Metallic Glass Irradiated by High-energy Ar^+ Ion: *Bin Yang*[1]; [1]University of Science and Technology Beijing

D-15: Microstructure and Creep Strength of a Nitride-strengthened Reduced Activation Martensitic Heat-resistant Steel: Qiangguo Zhou[1]; *Wei Yan*[1]; Wei Wang[1]; Yiyin Shan[1]; Ke Yang[1]; [1]Institute of Metal Research, Chinese Academy of Sciences

D-16: Multi-doped CeO2 as Cathode Materials for Low Temperature Solid Oxide Fuel Cells: *Rajalekshmi Chockalingam*[1]; Suddhasatwa Basu[1]; Edward Sabolsky[2]; [1]Department of Chemical Engineering, Indian Institute of Technology; [2]Department of Mechanical and Aerospace Engineering, West Virginia University

D-17: Multiphase Ceramics for Enhanced Mechanical Properties of Nuclear Fuel: *Kara Phillips*[1]; Austin Travis[1]; Keyur Karandikar[2]; Olivia Graeve[2]; Martha Mecartney[1]; [1]University of California, Irvine; [2]University of California, San Diego

D-18: Synthesis of LiMn2O4 for Use in Aqueous-electrolyte Energy-storage Devices Using Low-cost MnO Precursor: *Andrew Polonsky*[1]; [1]Aquion Energy

D-19: Synthesis of Mineral Matrices Based on Enriched by Zirconium Pyrochlore for Immobilize Actinide-containing Waste: *Kirill Podbolotov*[1]; Tatiana Barinova[2]; [1]Belarusian State Technological University; [2]Institute of Structural Macrokinetics and Materials Science RAS

D-20: The Creep Property of CLAM Steel at 600°C: Lixin Huang[1]; Xue Hu[1]; Wei Yan[1]; *Wei Wang*[1]; Yiyin Shan[1]; Ke Yang[1]; [1]Institute of Metal Research, Chinese Academy of Sciences

D-21: The Stats Charger: *Sukesh Pandian*[1]; [1]University Technology Petronas

D-22: Thermochemical and Thermophysical Characterization of Granite, Clay and Salt Materials by Various Thermal Analysis Methods: Ekkehard Post[1]; *Dave Shepard*[2]; [1]NETZSCH Geraetebau GmbH; [2]NETZSCH Instruments North America, LLC

D-23: Thin Film Deposition and Conductivity of Garnet Oxide $Li7La_3Zr_2O_{12}$ for Solid State Li-ion Batteries: *Derek Schwanz*[1]; Ernesto Marinero[1]; [1]Purdue University

MS&T'14 Poster Session — Fundamentals & Characterization

Wednesday AM
October 15, 2014

Room: Exhibition Hall
Location: David L. Lawrence Convention Center

E-1: A Primer in the Photoelastic Method for Failure Analysis: *Andrew Havics*[1]; [1]pH2, LLC

E-2: Abnormal Grain Growth in the Potts Model Incorporating Grain Boundary Complexion Transitions that Increase the Mobility of Individual Boundaries: *William Frazier*[1]; Anthony Rollett[1]; Gregory Rohrer[1]; [1]Carnegie Mellon University

E-3: Altering of Nanoscale Properties of Oxide Layer on Titanium by Changing Anodization Parameters: *Ahmet Ucisik*[1]; Neslihan Sarica[2]; H. Nishikawa[3]; Cuma Bindal[4]; Zafer Ozturk[5]; [1]Atilim University, Ankara; [2]Bogazici University and Sakarya University; [3]Osaka University; [4]Sakarya University; [5]Gebze Institute of Technology

E-4: Alternative Routes for Determination of Fracture Toughness of a Thin Sheet Micro-alloyed Steel - An Experimental Approach: *Joydeb Chaudhury*[1]; [1]Freelance Researcher

E-5: Analysis of Capacitance-voltage-temperature (C-V-T) Characteristics of GaN HEMTs: *Miao Zhao*[1]; [1]Key Laboratory of Microelectronics Device & Integrated Technology, Institute of Microelectronics of the Chinese Academy of Sciences,

E-6: Analyzing Deformation Behavior in Ductile Metallic Glass Matrix Composites Using Fast Fourier Transform Based Continuum Modeling: *Michael Gibbons*[1]; David Riegner[1]; Kelly Kranjc[2]; Nicholas Hutchinson[1]; Allen Hunter[3]; Douglas Hofmann[4]; Jennifer Carter[5]; Emmanuelle Marquis[3]; Katherine Flores[2]; Stephen Niezgoda[1]; Wolfgang Windl[1]; [1]The Ohio State University; [2]Washington University in St. Louis; [3]University of Michigan; [4]California Institute of Technology; [5]Case Western Reserve University

E-7: Characterizing Arc Erosion in Cycled Thermal Protection Switches: Kevin Marr[1]; *Paul Verghese*[1]; William Braff[1]; Timothy Morse[1]; [1]Exponent, Inc.

E-8: Characterizing Grain Boundary Networks by Computational Homology: *Brian Lin*[1]; Anthony Rollett[1]; Gregory Rohrer[1]; [1]Carnegie Mellon University

E-9: Cluster Formulas for Beta Ti Bioalloys with Low-young's Modulus: *Qing Wang*[1]; Chuang Dong[1]; [1]Dalian University of Technology

E-10: Competing Mechanisms between Continuous and Discontinuous Precipitation of Gamma Prime Precipitation in Ternary Nickel Base Alloys: *Tanaporn Rojhirunsakool*[1]; Soumya Nag[1]; Rajarshi Banerjee[1]; [1]University of North Texas

E-11: Computer System for Design of the Hot Rolling-laminar Cooling Sequence for AHSS Strips: Lukasz Rauch[1]; Krzysztof Bednarski[1]; *Maciej Pietrzyk*[1]; [1]AGH University of Science and Technology

E-12: Concentration Dependence of Grain Boundary Diffusion: *Rodin Alexey*[1]; Nikolai Dolgopolov[1]; [1]National University of Science and Technology "MISiS"

E-13: Confinement Effects for Ionic Carriers in $BaZrO_3$ Ultrathin Films: *Eugene Kotomin*[1]; Marco Arrigoni[2]; Deniss Gryaznov[3]; Tor Bjorheim[4]; Joachim Maier[2]; [1]Max Planck Institute ; [2]Max Planck Institute; [3]ISSP, University of Latvia; [4]University of Oslo

E-14: Corrosion Assisted Cracking and the Failure of a Woman's Shoe: *Tim Jur*[1]; [1]Engineering Design & Testing Corp

E-15: Density Functional Study of the Formation of Long Periodic Stacking Order Structures in Mg-Zn-Y: *William Wang*[1]; Shunli Shang[1]; Yi Wang[1]; Kristopher Darling[2]; Laszlo Kecskes[2]; Suveen Mathaudhu[3]; Xidong Hui[4]; Zi-Kui Liu[1]; [1]The Pennsylvania State University; [2]US Army Research Laboratory; [3]US Army Research Office; [4]University of Science and Technology Beijing

E-16: Effect of P2O5 on the Grain Boundary Structure and Grain Growth Behavior in $BaTiO_3$: *Seung-Yoon Moon*[1]; Suk-Joong Kang[1]; [1]KAIST

E-17: Effects of Ternary Alloying Atoms on the Interfacial Energy of Coherent γ/ γ' Interfaces in the Ni-Al System: *Xuan Liu*[1]; Yong-Jie Hu[1]; Yi Wang[1]; Zi-Kui Liu[1]; [1]Penn State University

E-18: Electrochemical Synthesis and Morphostructural Study of the Cuprite Thin Film: *Meryem El Hajji*[1]; Abdelali Hallaoui[1]; Lahcen Bazzi[1]; Abdeljalil Benlhachemi[1]; Omar Jbara[2]; Ahmed Tara[2]; Bahcine Bakiz[3]; [1]Materials and Environment Laboratory, Faculty of Sciences, Agadir; [2]Engineering and Materials Science Laboratory (LISM), UFR Sciences, University of Reims; [3]Microelectronic Materials and Nanosciences Institute of Provence, CNRS UMR 7334, University South Toulon-Var

E-19: Evaluation of the Durability of TiN, TiNbN and ZrN Coatings on Stainless Steels for Medical Instrumentation: *Oscar Quintana*[1]; Bernice Aboud[1]; Anthony Sliger[1]; [1]DePuy Synthes Joint Reconstruction

E-20: External Electric field Dependence of Band Gap in Bilayer Graphene Oxides: *Yan Liu*[1]; Nuggehalli Ravindra[1]; [1]New Jersey Institute of Technology

E-21: Failure Analysis of Bicycle Components: *Dan Grice*[1]; Brett Miller[1]; [1]IMR Test Labs

E-22: Failure Analysis of Pitman Arm, Influence of Microstructure on Failure: *Pavel Podany*[1]; Petr Martinek[1]; Jana Miskova[1]; [1]COMTES FHT a.s.

E-23: Fracture at a Welded Connection on a Pressure Vessel and an Analysis that Exonerates the Fabricator: *Tim Jur*[1]; [1]Engineering Design & Testing Corp

E-24: Grain Boundary Response to Nanoindentation in Commercially Pure Tantalum: *Bret Dunlap*[1]; Philip Eisenlohr[1]; Claudio Zambaldi[2]; David Mercier[2]; Yang Su[1]; Thomas Bieler[1]; Martin Crimp[1]; [1]Michigan State University; [2]Max-Planck-Institut für Eisenforschung

E-25: Hydrogen-assisted Rolling-contact Fatigue in Bearings for Wind Turbines: A Numerical Study: *Jesus Toribio*[1]; Viktor Kharin[1]; Miguel Lorenzo[1]; Diego Vergara[1]; [1]University of Salamanca

E-26: Hydrogen Embrittlement of Cold Drawn Prestressing Steel: Influence of the Straining History during Drawing: *Jesus Toribio*[1]; Miguel Lorenzo[1]; Diego Vergara[1]; [1]University of Salamanca

E-27: Laboratory Activities Related to Marine Failure Analysis: *Carlo Dellabiancia*[1]; Lorenzo Rolla[1]; Cristian Schiffini[1]; [1]CTS Centro Tecnologico Sperimentale

E-28: Low Frequency Noise Measurements as a Characterization Tool for Reliability Assessment in AlGaN/GaN High-electron-mobility Transistors (HEMTs): *Miao Zhao*[1]; [1]Key Laboratory of Microelectronics Device & Integrated Technology, Institute of Microelectronics of the Chinese Academy of Sciences,

E-29: Martensitic Phase Transformation of a″-Fe16(CN)2: *Md AI Mehedi*[1]; Yanfeng Jiang[1]; Jian-Ping Wang[1]; [1]University of Minnesota

E-30: Materials Design for Radiation Resistant Microstructures Based on the Grain Boundary Network: *Mukul Kumar*[1]; Thomas Lagrange[1]; Vasily Bulatov[1]; Shiu Fai Li[1]; Jonathan Lind[1]; Jeremy Mason[1]; Joseph McKeown[1]; Bryan Reed[1]; Ming Tang[1]; [1]Lawrence Livermore National Laboratory

E-31: MesoScale Deformation Mechanisms in Nickel-based Superalloys as Studied by Micro-laue Diffraction: *Aaron Thompson*[1]; Jennifer Carter[1]; [1]Case Western Reserve University

E-32: Metallurgical Analysis of a Corroded Super Duplex Stainless Steel Flange: Tie Liu[1]; *Richard Wu*[1]; Daqin Xu[1]; [1]Det Norske Veritas Pte. Ltd.

E-33: Micro Structural Analysis of Nickel Base Superalloy In738LC in Different Aging Times: *Babak Jahani*[1]; [1]University of North Dakota

E-34: Morphology of Bulk Hexagonal Boron Nitride Crystals Grown from Ni-Cr Flux: *Tim Hoffman*[1]; Yichao Zhang[1]; Neelam Khan[2]; Robert Szoszkiewicz[1]; James Edgar[1]; [1]Kansas State University; [2]Georgia Gwinnett College

E-35: Nanoindentation Studies of Diamond-like Carbon Coated SiAlON Ceramics: *Sreekumar Chockalingam*[1]; Rajalekshmi Chockalingam[2]; Konstantinos Sierros[2]; Edward Sabolsky[2]; [1]National Physical Laboratory; [2]Department of Mechanical and Aerospace Engineering, West Virginia University

E-36: Numerical Simulation of Wave Propagation and Dispersion in Sensing Block and Hopkinson Bar Test: *Khlif Mohamed*[1]; [1]ENIS

E-37: On the Theory of Ostwald Ripening. The Relaxation Stage: *Dmitri Alexandrov*[1]; [1]Ural Federal University

E-38: Phase Diagram Study of Au-Al-Pd at 500°C: *Ker-Chang Hsieh*[1]; Jyun Lin Li[1]; [1]Sun Yat-Sen University

E-39: Phase Transformations and Microstructural Evolution in the U-10wt.%Mo Alloy with Various Zr Additions: *Nicholas Eriksson*[1]; Youngjoo Park[1]; Dennis Keiser[2]; Yongho Sohn[1]; [1]University of Central Florida; [2]Idaho National Laboratory

E-40: Quantifying Nanoindentation Deformation Processes near Grain Boundaries in Alpha-titanium Using Microscopic Characterization and Crystal Plasticity Modeling: *Yang Su*[1]; Claudio Zambaldi[2]; David Mercier[2]; Philip Eisenlohr[1]; Thomas Bieler[1]; Martin Crimp[1]; [1]Michigan State University; [2]Max Plank Institute for Iron Research

E-41: Root Cause Analysis of Stainless Steel Fuel Manifold Failure Coming from a Medium-Power Industrial Gas Turbine: *Michal Jasiczek*[1]; Marco Zuchi[2]; Maciej Zarnik[2]; Edyta Kosieniak[2]; Marco Innocenti[2]; [1]Warsaw Institute of Aviation; [2]General Electric Oil & Gas

E-42: Slip Transfer Analysis and In-situ Characterization of Deformation Twinning in Commercial Purity Titanium: *Harsha Phukan*[1]; Leyun Wang[2]; Chen Zhang[1]; Thomas Bieler[1]; Armand Beaudoin[3]; Jun Sang Park[4]; [1]Michigan State University; [2]Institute of Materials Research, Helmholtz-Zentrum Germany; [3]University of Illinois at Urbana-Champaign; [4]Argonne National Laboratory

E-43: Study of Modified Interface PIN Diode for Hetero Junction Solar Cell: *Hojin Yun*[1]; Young Uk Ko[1]; Jin Un An[1]; Ga-Won Lee[1]; [1]Chungnam National University

E-44: Study of Precipitate Coherency Loss and Coherent Strain Effect in Particle Pinning Using Phase-field-Crystal Model: *Nan Wang*[1]; Youhai Wen[2]; Longqing Chen[1]; [1]Pennsylvania State University [2]National Energy Technology Laboratory

E-45: Temperature Dependence of the Grain Boundary Energy in Yttria-doped Alumina: *Madeleine Kelly*[1]; Stephanie Bojarski[1]; Gregory Rohrer[1]; [1]Carnegie Mellon University

E-46: The Formation and Growth Behaviour of Intermetallic Phases during Interdiffusion between Low-carbon Steel and Aluminium Alloy: *Lei Xu*[1]; Li Wang[1]; Yingchun Chen[1]; Joseph Robson[1]; Philip Prangnell[1]; [1]University of Manchester

E-47: The Outside Judgment and Intention for the Creep Experiments in Industrial Companies and Makers: Kawamura Tadashi[1]; [1]Ritsumeikan University Ki-yu-kai

E-48: Toward Copper Complexions in Alumina: *Michael Kracum*[1]; Zhiyang Yu[1]; Animesh Kundu[1]; Martin Harmer[1]; Helen Chan[1]; [1]Lehigh University

E-49: Wettability and Surface Tension of Innovative Thermochromic/PVC Coatings Determined from Contact Angle Measurement: *Jianying Hu*[1]; Xiong Yu[1]; [1]Case Western Reserve University

E-50: Effect of Grain Boundary Diffusion on Growth Kinetics of Intermetallic Compounds between Al Alloy and Other Alloys: *Li Wang*[1]; Yin Wang[1]; Lei Xu[1]; Chaoqun Zhang[1]; Joseph Robson[1]; Philip Prangnell[1]; [1]The University of Manchester

E-51: Electron Channeling Contrast Imaging of Dislocations in Hot-compressed Mg-Al-Ca Alloy: *Shirin Kaboli*[1]; Raynald Gauvin[1]; [1]McGill Univerity

E-52: Role of Interfacial Structure on the Stress Evolution and Polymorphic Phase Transformation in Metallic Multilayers: *Li Wan*[1]; Xiao-xiang Yu[1]; Gregory Thompson[1]; [1]University of Alabama

E-53: Defects and Optical Attenuation in Sapphire Fibers in Extreme Environments: *Mark Hornak*[1]; Nikolas Antolin[1]; Oscar Restrepo[1]; Christian Petrie[1]; Thomas Blue[1]; Wolfgang Windl[1]; [1]The Ohio State University

E-54: Heteroepitaxial Growth of Boron Phosphide on 3C-SiC/Si(100) and AlN/Sapphire(0001)Substrates: *Balabalaji Padavala*[1]; Clint Frye[1]; James Edgar[1]; Zihao Ding[2]; Ruifen Chen[2]; Michael Dudley[2]; Balaji Raghothamachar[2]; Jason Schmitt[3]; [1]Kansas State University; [2]Stony Brook University; [3]Nitride Solutions Inc

E-55: Epitaxial $Y_2Zr_2O_7$ Thin Films: Improved Ionic Conductivity at the Film/Substrate Interface: *Giuliano Gregori*[1]; Elisa Gilardi[1]; Joachim Maier[1]; [1]Max Planck Institute for Solid State Research

MS&T'14 Poster Session — Green Manufacturing & Sustainability

Wednesday AM
October 15, 2014

Room: Exhibition Hall
Location: David L. Lawrence Convention Center

F-1: Cu@Cu2O@CuO Graded Nanowire Heterostructures for CO2 Photoreduction: *Chen Huai*[1]; Doug Perovic[1]; Geoffrey Ozin[1]; [1]University of Toronto

F-2: Effects on Biomass Char Addition on Combustion Process of Pulverized Coal: *Bingchang Li*[1]; [1]Shaanxi Energy Vocational and Technological College

F-3: Low-temperature Flotation Experiment of Recovering Fluorite in Scheelite Flotation Tailings: Yimin Zhu[1]; *Dangsheng Wei*[1]; Xiaofeng Zhang[1]; Kecheng Jiao[1]; Jing Zhou[1]; Wensheng Chen[2]; [1]Hunan Research for Nonferrous Metals; [2]Hunan Nonferrous Chenzhou Fluoride Chemical Co., LTD

F-4: On the Fabrication of a Biopolymer-based Nanocomposites: *Jose Salcedo Perez*[1]; Oscar Suárez[1]; Sujeily Soto[1]; [1]University of Puerto Rico, Mayagüez Campus

F-5: Process Research on Difficult Separation Gold Antimony: Yimin Zhu[1]; *Jing Zhou*[1]; Yanhong Zhou[2]; Xishan Li[3]; [1]Hunan Research for Nonferrous Metals; [2]Central South University; [3]Hunan Chenzhou Mining Limited by Share Ltd.

F-6: Pyrolysis of Polysiloxane Slurry Including Metal Fillers: *Ken'ichiro Kita*[1]; Tatsuki Ohji[1]; Naoki Kondo[1]; [1]AIST, The National Institute of Advanced Industrial Science and Technology

F-7: Research of Blast Furnace Injecting Waste Tyre Mixing with Coal: *Bingji Yan*[1]; Jianliang Zhang[1]; Hongwei Guo[1]; Feng Liu[1]; [1]University of Science and Technology Beijing

F-8: Research on Using Blast Furnace Slag to Produce Building Stone: *Bingji Yan*[1]; Jianliang Zhang[1]; Hongwei Guo[1]; Zhiwen Shi[1]; Feng Liu[1]; [1]University of Science and Technology Beijing

F-9: Single-ion Adsorption of Cu(II) and Hg(II) onto Iron-modified Montmorillonite Incorporated in Polycaprolactone Nanofibers: *John Kenneth Cruz*[1]; Gelli Anne Dusaban[1]; Lance De Jesus[1]; Leslie Joy Diaz[1]; [1]University of the Philippines

F-10: Storage of Carbon Dioxide in Hydrates: Measurements for the Phase Equilibrium Conditions in the Presence of Additives: *Yan-Ping Chen*[1]; Muoi Tang[2]; Li-Jen Chen[1]; Shiang-Tai Lin[1]; [1]National Taiwan University; [2]Chinese Culture University

F-11: Study and Modeling of Creep Behavior of Chitin Carbon Nanotubes Composites: *Sujeily Soto*[1]; O. Marcelo Suarez[1]; Jose Salcedo[1]; Katiria Esquilin[1]; Manny Dejesus[1]; [1]University of Puerto Rico

F-12: Wolframite and Cassiterite Separation Technique: *Yimin Zhu*[1]; Jing Zhou[1]; Jinlei Wei[2]; [1]Hunan Research for Nonferrous Metals; [2]Jiangxi University of Science and Technology

MS&T'14 Poster Session — Iron and Steel (Ferrous Alloys)

Wednesday AM
October 15, 2014

Room: Exhibition Hall
Location: David L. Lawrence Convention Center

G-1; A Kinetic Model of Hot Metal Desulphurization by Injecting Mg and Its Application: *Liangcai Zhong*[1]; Huang Li[1]; Shan Wei[1]; Boyu Chen[2]; Canrong Wang[2]; [1]Northeastern University; [2]Sanming Iron & Steel Company

G-2: A Method to Predict Remaining Life of High Temperature Components Using EBSD Based Strain Analysis and Non-linear Ultrasonics: *Sai Vadlamani*[1]; [1]University of Illinois at Chicago

G-3: Application of Tracers to Investigate Source of Slag Inclusions in Surface Defects of SPHC Steel: Xiaojie Gao[1]; Jingshe Li[1]; Chengsong Liu[1]; Shufeng Yang[1]; [1]University of Science Technology Beijing

G-4: Effect of Low Density Pulsed Current on the Migration Behavior of Inclusions in Molten Steel: *Wenbin Dai*[1]; Xinli Wang[1]; Xinzhong Tian[2]; Jingkun Yu[1]; [1]Northeastern University; [2]Xingtai Iron & Steel Corp, Ltd.

G-5: Effect of PC Ash on Coke Reactivity and Microstructure: Jian Guo[1]; Jian-liang Zhang[1]; Hong-wei Guo[1]; Chang-le Zheng[1]; Xin-yu Li[1]; Mao-cheng He[1]; [1]University of Science and Technology Beijing

G-6: Effect of Pre–deformation on Fracture Behavior Transition Due to Strain-rate Change in Fe–5%Si Alloy: *Takashi Mizuguchi*[1]; Ryota Oouchi[1]; [1]Kagawa University

G-7: Effect of Rolling Process and Heat Input on Toughness of SMAW Welded A516 Steel Heat Affected Zone: *Kahila Baghchesaraee*[1]; [1]Semnan University

G-8: Effect of Stamp-charging Technology on Coke Properties: Bing Gao[1]; [1]University of Science and Technology Beijing

G-9: Experimental Research on the Corrosion Inhibition of the Compound Formula for BF Soft Water: *Jiao Kexin*[1]; Jian-liang Zhang[1]; Hai-bin Zuo[1]; Jian Guo[1]; Chang-le Zheng[1]; [1]USTB

G-10: Heterogeneous Nucleation of Graphite Nodules Formed in Medium Carbon Steel after a Graphitising Anneal: *Aqil Inam*[1]; David Edmonds[1]; Rik Brydson[1]; [1]University of the Punjab

G-11: Influence of Various Heating Rates and CeO_2 Addition on the Pulverized Coal Combustion: Chai Yifan[1]; Zhang Jianliang[1]; Qi Chenglin[1]; Ning XiaoJun[1]; Zheng Changle[1]; [1]University of Science and Technology Beijing

G-12: Large Eddy Simulation on Flow Structure in a Dissipative Ladle Shroud: *Wanliang Yang*[1]; Jingshe Li[1]; Jiangshan Zhang[1]; Yang Wang[1]; [1]University of Science and Technology Beijing

G-13: New Steel for Fabrication Forged Forming Rolls: *Orlov Grigory*[1]; Shestakova Elena[1]; Potapov Aleksey[1]; [1]Ural Federal University

G-14: Optimization of Nodular Cast Iron Stave with Elliptical Cooling Pipe: Jun Hong[1]; Hai-bin Zuo[1]; Jian-liang Zhang[2]; Meng Shen[3]; Jin-yan Tie[3]; [1]State Key Laboratory of Advanced Metallurgy,University of Science and Technology Beijing; [2]School of Metallurgical and Ecological Engineering,University of Science and Technology Beijing; [3]Hebei Tianyu High-Tech Metallurgical Casting Co.,Ltd.

G-15: Overcoming Brittleness in Ultrahigh Carbon Steel: From Ancient Weaponry to Modern Industry: *Matthew Hecht*[1]; Bryan Webler[1]; Yoosuf Picard[1]; [1] Carnegie Mellon University

G-17: Para-versus Equilibrium Growth Kinetics of Cementite in Plain Carbon Steels: *Sadhan Ghosh*[1]; [1]Indian Institute of Technology Roorkee

G-18: Phase Field Study on Variant Selection of Reversed Austenite in Fe-Ni Alloy: *Pengcheng Song*[1]; Yanzhou Ji[1]; Longqing Chen[1]; Zhigang Yang[1]; Chi Zhang[1]; [1]The Pennsylvania State University

G-19: Physical Metallurgy Behavior of Ti Containing High Strength Steel Sheet under Intensive Cooling: *Xinhua Pei*[1]; Shuai Tang[2]; [1]Shanghai Meishan Iron & Steel Company Limited; [2]The State key Laboratory of Rolling and Automation, Northeastern University, China

G-20: Preparation of NO Silicon Steels with Columnar Microstructure Using Temper Rolling Process at Elevated Temperature: *Frantisek Kovac*[1]; Ivan Petryshynets[1]; [1]Institute of Materials Research

G-21: Reduction Behavior of Carbon Composite Iron Ore Briquette: *Jeong Han*[1]; Kang-Min Kim[1]; Kwon Jae-Hong[1]; [1]Inha University

G-22: Reoxidation of Inclusions in Low Carbon Aluminum-killed Steel: *Jia Tan*[1]; Bryan Webler[1]; [1]Carnegie Mellon University

G-23: Simulation and Analysis on Burnout of Coppery Tuyere Small Sleeve in Blast Furnace: Chai Yifan[1]; Zhang Jianliang[1]; Ning Xiaojun[1]; Hong Jun[1]; Qi Chenglin[1]; Zheng Changle[1]; [1]University of Science and Technology Beijing

G-24: Simulation of Oxygen Pressure Influence on Fluid Flows in Top Blown Converter: *Wei Liu*[1]; Jingshe Li[1]; Hongbo Yang[1]; Shufeng Yang[1]; Xiangzhou Gao[1]; [1]University of Science and Technology Beijing

G-25: The Influence of Semicharcoal Used as Sintering Fuel on Sinter Performance: Wang Zhe[1]; Yu Tao[1]; Wang Runbo[1]; Gao Bing[1]; [1]University of Science and Technology of Beijing

G-26: Thermal Test and Heat Transfer Analysis of Nodular Cast Iron Cooling Stave: Hai-bin Zuo[1]; Jun Hong[1]; Jian-liang Zhang[2]; Meng Shen[3]; Jin-yan Tie[3]; [1]State Key Laboratory of Advanced Metallurgy,University of Science and Technology Beijing; [2]School of Metallurgical and Ecological Engineering,University of Science and Technology Beijing; [3]Hebei Tianyu High-tech Metallurgical Casting Co.Ltd.

G-27: Research on the Low Temperature Reduction Degradation of Dust-sludge-carbon Composite Pellets: *Xiang Yuan*[1]; Jianliang Zhang[1]; Rui Mao[1]; Zhengjian Liu[1]; Fei Wang[1]; [1]University of Science and Technology Beijing

MS&T'14 Poster Session — Materials-Environment Interactions

Wednesday AM
October 15, 2014

Room: Exhibition Hall
Location: David L. Lawrence Convention Center

H-1: Corrosion Protection of Carbon Steel by ND-YAG Laser: Basheer Abdulhussein[1]; *Shatha Sameh*[1]; [1]University of Technology

H-2: Discussion of the Formation of Whisker Corrosion Productions in Stress Corrosion Process of High-strength Aluminum Alloys: Liqun Zhu[1]; Qing Yang[1]; Weiping Li[1]; Huicong Liu[1]; Bo Chen[2]; Xubin Ye[2]; Jianzhong Liu[2]; [1]Beihang University; [2] AVIC Beijing Institute of Aeronautical Materials

H-3: Effect of Calcia on the Sintering of Yttria and Its Corrosion Resistance to Molten Titanium: Jingkun Yu[1]; Chengwan Cui[2]; Xinzhong Tian[3]; Liangcai Zhong[1]; Xinli Wang[1]; *Wenbin Dai*[1]; [1]Northeastern University; [2]China First Heavy Industries; [3]Xingtai Iron & Steel Corp,.LTD.

H-4: Effect of CaO Addition on the High-temperature Oxidation of AZ31 Magnesium Alloys: *Soon Yong Park*[1]; Min Jung Kim[1]; Dong Bok Lee[1]; [1]Sungkyunkwan University

H-5: Inhibition Effect of Phenylamine on the Corrosion of Austenitic Stainless Steel Type 304 in Dilute Sulphuric Acid: *Roland Loto*[1]; Cleophas Loto[2]; Patricia Popoola[1]; [1]Tshwane University of Technology; [2]Covenant University

H-6: Optimization of Ferritic Steel Porous Supports for Protonic Fuel Cells Working at 600°C: *Vinothini Venkatachalam*[1]; Sebastian Molin[1]; Ming Chen[1]; Smirnov Ivan[2]; Per-Olof Larsson[2]; Peter Vang Hendriksen[1]; Nikolaos Bonanos[1]; [1]Technical University of Denmark; [2]Höganäs AB

H-7: Oxidation Induced Order-disorder Transformation in Cu-Pt: *Lianfeng Zou*[1]; Judith Yang[2]; Guangwen Zhou[1]; [1]Binghamton University; [2] University of Pittsburgh

H-8: Spatial Variability and Modeling of Oil Steel Tank Corrosion Estimated from Geostatistics: *M. Sadawy*[1]; Ashraf Ismael[1]; Mohamed Gouda[1]; [1]Faculty of Engineering, Al-Azhar University

H-9: Synthesis of Nanocomposites Hybrid-based Polyurethane and Organophilic Clays for Anticorrosion Coatings: *André Rodrigues*[1]; Ariosvaldo Sobrinho[2]; Rejane Dantas[3]; Maria Brasileiro[1]; [1]UFCA; [2]UFCG; [3]UFERSA

H-10: The Effect of Welding Materials on $1Cr_{18}Ni_9Ti$ and $2Cr_{13}$ Steel Welding Joints' Microstructure and Electrochemical Properties: *Yong-Tao Zhao*[1]; [1]Materials Science and Engineering School, Inner Mongolia University of Technology

H-11: Thermodynamic Investigations of the Co-Cr-Al Bond Coat System: *Xuan Liu*[1]; Thomas Gheno[2]; Zi-Kui Liu[1]; Brian Gleeson[2]; [1]Penn State University; [2]University of Pittsburgh

POSTERS

MS&T'14 Poster Session — Nanomaterials

Wednesday AM
October 15, 2014

Room: Exhibition Hall
Location: David L. Lawrence Convention Center

J-1: Core-shell Particles Synthesis & Ceramics Made Thereof: *Yanling Gao*[1]; Vladimir Shvartsman[1]; Doru C. Lupascu[1]; [1]Universität Duisburg-Essen

J-2: Development and Characterization of Graphene-polyaniline (GNS/PANI) Nanocomposite for Conductive Inks Applications: *Ali Ramazani*[1]; Vahid Shirazi Khanamiri[2]; Nasser Arsalani[2]; [1]University of Michigan; [2]University of Tabriz

J-3: First Principle Study on the Interactions between the Liquid Nitrogen and Al/Mg-based Lightweight Nano Alloys during Powder Metallurgy (PM) Process: *Marjan Nezafati*[1]; Chang-Soo Kim[1]; [1]University of Wisconsin Milwaukee

J-4: High Laser Thermal Damage Resistance of Chemically Modified Graphene/Carbon Nanotube Hybrid Spray Coatings: *Lamuel David*[1]; Ari Feldman[1]; Elisabeth Mansfield[1]; John Lehman[1]; Saksham Pahwa[1]; Gurpreet Singh[1]; [1]Kansas State University

J-5: Lithiation/Delithiation Behavior of Graphene Films Prepared by Atmospheric Pressure Chemical Vapor: *Lamuel David*[1]; Saksham Pahwa[1]; Gurpreet Singh[1]; [1]Kansas State University

J-6: Microwave-assisted One Step Synthesis of Graphite-supported Molybdenum Carbide Nanoparticles and Their Application to Electrochemical Cell: *Youngsoo Jung*[1]; Bo Ding[1]; Sun-Dong Kim[2]; Sang-Kuk Woo[2]; Jung-Kun Lee[1]; [1]University of Pittsburgh; [2]Korea Institute of Energy Research

J-7: Modeling Mechanical Properties of a 2D SWCNT Network: *Ankit Gupta*[1]; Elizabeth Holm[1]; [1]Carnegie Mellon University

J-8: Polymer-derived Ceramic Functionalized Molybdenum disulfide as a Stable Lithium-ion Battery Electrode: *Lamuel David*[1]; Romil Bhandavat[1]; Uriel Barrera[1]; Saksham Pahwa[1]; Gurpreet Singh[1]; [1]Kansas State University

J-9: Preparation by Microwave Processing and Photocatalytic Properties of Dysprosium Doped TiO_2 Photocatalytic Materials: Hong-wei Wang[1]; Ke-you Ma[1]; Bingchang Li[1]; [1]Shaanxi Energy Vocational and Technological College

J-10: Preparation of Functional Electropun Fibers by Combined of Electrospinning and Controlled Radical Polymerization: *Burcu Oktay*[1]; Nilhan Kayaman Apohan[1]; [1]Marmara University

J-11: Production of CuAg/ZnO Nanocomposite Particles by Ultrasonic Spray Pyrolysis: Burcak Ebin[1]; Onur Balci[2]; *Sebahattin Gurmen*[3]; [1]Nanokomp Advanced Materials Co. Ltd.; [2]University of Kahramanmaras Sutcu Imam; [3]Istanbul Technical University

J-12: Structural, Optical and LPG Gas Sensing Properties of Dysprosium Doped SnO_2 Nanocrystals: *Ravi Chand Singh*[1]; Gurpreet Singh[1]; Anita Hastir[1]; [1]Guru Nanak Dev University Amritsar

J-13: Surface Treatments to Tailor the Wettability of Carbon Nanotube Arrays: *Lvmeng He*[1]; Anil Karumuri[1]; Sharmila Mukhopadhyay[1]; [1]Wright State University

J-14: Synthesis and Re-assembly of Electrochemically-active Nanosheet Oxides: *Trevyn Hey*[1]; Jian Liu[1]; Scott Misture[1]; [1]Alfred University

J-15: Synthesis of $CoFe_2O_4$/$BaTiO_3$ Composite Via Different Routes and Characterization: Irina Anusca[1]; Yanling Gao[1]; Morad Etier[1]; Vladimir V. Shvartsman[1]; Doru C. Lupascu[1]; [1]University of Duisburg-Essen

J-16: Synthesis of SiOC Intercalated Graphene Paper and Electrochemical Performance as LIB Electrode: *Lamuel David*[1]; Uriel Barrera[1]; Saksham Pahwa[1]; Gurpreet Singh[1]; [1]Kansas State University

J-17: The Effect of Oxide Buffer Layer on Carbon Thin Film for Controllable Multi-walled Carbon Nanotube Growth: *Betty Quinton*[1]; Kevin Leedy[2]; Jacob Lawson[3]; Bang Tsao[3]; James Scofield[2]; Neil Merret[2]; Qiuhong Zhang[3]; Kevin Yost[2]; Sharmila Mukhopadhyay[4]; [1]WSU/AFRL; [2]AFRL; [3]UDRI; [4]WSU

J-18: UV Curable Urethane Acrylate Based Nanocomposite Coatings: *Asli Beyler Çigil*[1]; Emrah Cakmakci[1]; Memet Kahraman[1]; [1]Marmara University

J-19: Simulation of Magnetic Induction in and around Magnetic Nanoparticles: *KC Prabhat*[1]; Marc De Graef[1]; [1]Carnegie Mellon University

MS&T'14 Poster Session — Processing & Product Manufacturing

Wednesday AM
October 15, 2014

Room: Exhibition Hall
Location: David L. Lawrence Convention Center

K-1: Al_2O_3/Ti Graded Composite Fabricated by Spark Plasma Sintering (SPS).: *Shai Meir*[1]; Sergey Kalabukhov[1]; Shmuel Hayun[1]; Naum Frage[1]; [1]Ben Gurion University of the Negev

K-2: An Investigation on the Tribological Behavior of MMT-modified Epoxy/Basalt Composites: *Sangwoo Lee*[1]; Kyong Yop Rhee[1]; [1]Kyunghee University

K-3: Biosorption and Desorption of Nickel on Oil Cake: Batch and Column Studies: *Zeid Alothman*[1]; Moonis Khan[1]; [1]King Saud University

K-4: Characterization of Alumina: Metals Dissimilar Joining by Brazing: *Sang-Kuk Woo*[1]; Min-Soo Suh[1]; Se Young Kim[1]; Sun-Dong Kim[1]; [1]Korea Insitute of Energy Research

K-5: Dynamic Mechanical Behavior of Magnesium under Compressive Loading: *Qizhen Li*[1]; [1]University of Nevada, Reno

K-6: Effect of Variation of Pressure and n Value on the Superconducting Properties of $Hg_{0.8}Tl_{0.2}Ba_2Can\text{-}1CunO_2n+2+d$: *Ghazala Hermiz*[1]; Ebtisam Al-Beyaty[2]; [1]Baghdad University-College of Science; [2]Diyala University

K-7: Experimental Validation of Design-optimized Additive Manufactured Components with Variable-density Cubic Cellular Structure: *Jakub Toman*[1]; Pu Zhang[1]; Albert To[1]; Markus Chmielus[1]; [1]University of Pittsburgh

K-8: Influence of Oxide, Nitrate and Carbide Additions on Fracture Toughness of PZT/Sr Piezoelectric Ceramics: *Maria Aparecida Santos*[1]; Mauricio Lemos[1]; Cassiano Rocha[1]; Felipe Mendes[1]; Marcia C. C. Santos[1]; Jairo Melo[1]; [1]Brazilian Navy Research Institute - IPqM

K-9: Mechanical, Thermodynamic Properties and Effects of Alloying Elements for Co-base γ' Precipitates: A First Principles Study: Weiwei Xu[1]; Yi Wang[2]; Cuiping Wang[1]; Xingjun Liu[1]; Zi-Kui Liu[2]; [1]Department of Materials Science and Engineering, College of Materials, Xiamen University; [2]Department of Materials Science and Engineering, Pennsylvania State University

K-10: Microstructure and Deformation Behavior of As-extruded Mg-3Zn-xLi Based Alloy: *Jung-Han Kim*[1]; Yong-Ho Kim[1]; Hyo-Sang Yoo[1]; Jeong-won Choi[1]; Hyeon-Taek Son[1]; [1]Korea Institute of Industrial Technology

K-11: Microstructure and Strength of Rapidly Solidified and Extruded Al-1Fe-1Ni-5Mg Alloy: *Anna Kula*[1]; Ludwik Blaz[1]; Makoto Sugamata[2]; [1]AGH-University of Science and Technology; [2]Nihon University

K-12: Microstructure Conditioning of Self-lubricating hBN-Ni Particles Using High- and Low-energy Ball Milling for Cold Spray Coatings on Aluminum: Maryam Neshastehriz[1]; *Ivi Smid*[1]; Al Segall[1]; Tim Eden[1]; [1]Penn State

K-13: Microstructure, Thermal Conductivity and Extrusion Formability of Mg-Sn-Ca Based Alloys: *Hyeon-Taek Son*[1]; Yong-Ho Kim[1]; Jung-Han Kim[1]; Jung-Won Choi[1]; Hyo-Sang Yu[1]; [1]Korea Institute of Industrial Technology

K-14: New Piezoelectric Film Materials for MEMS Electronic Devices: *Natalya Korobova*[1]; Timoshenkov Sergey[1]; Mukimov Damir[1]; [1]National Research University MIET

K-15: Numerical Analysis of Multi-directional Precision Forging of Steel Connecting Rods: *Rudimylla Septimio*[1]; Sergio Button[1]; [1]Unicamp

K-16: Particle Size Influence of the Ferroelectric Phase Stability on the PMN-PT Based Composites Prepared by SPS: *Diego Seiti Viana*[1]; José Eiras[1]; Ducinei Garcia[1]; [1]Federal University of Sao Carlos

K-17: Pressure-less Spark Plasma Sintering and Its Conventinal Coopartners: *David Salamon*[1]; Radek Kalousek[1]; Karel Maca[1]; [1]Brno University of Technology

K-18: Progress towards Nitinol-based Stimuli-responsive Devices: *Andrew King*[1]; Ryan Dempsey[1]; David Lipke[1]; [1]Alfred University

K-19: Research on the Effects of Sintering Process with Stand-support Plates in Different Widths: Zuo Haibin[1]; Yu Wentao[1]; Zhang Jianliang[1]; [1]University of Science and Technology Beijing

K-20: Research on the Substitution Ratio of Limestone for Active Lime in BOF Steelmaking Process: *Jianli Li*[1]; Wutao Jin[1]; Jun Wang[1]; Longwu Qiu[1]; Zhengliang Xue[1]; Xiao Xie[2]; [1]Wuhan University of Science and Technology; [2]Wuhan NARI Limited Liability Company of State Grid Electric Power Research Institute

K-21: Small Scale Production of Nitinol through Vacuum Arc Melting and Indirect Extrusion: *John Bobanga*[1]; Alfred Austen[2]; John Lewandowski[3]; Maria Daniil[3]; Richard Tomazin[3]; [1]Case Western Reserve University ; [2]Innovare Inc. ; [3]Case Western Reserve University

K-22: Solution Processing of N-type Doped ZnO: Hanne Damm[1]; *An Hardy*[1]; Marlies Van Bael[1]; [1]UHasselt

K-23: Strengthen Reduction Process of Vanadium Titano-magnetite Adding NaF under High Temperature: *Xu Jiang*[1]; [1]Xianyang Vocational Technical College

K-24: Study of Different Joining Processes for Ti_3Al Alloy and It's Application in Multi-layer Structure Forming: *Huiyuan Xu*[1]; [1]Bamtri

K-25: Synthesis and Characterization of a New Organic–inorganic Type Composite Cation Exchanger Poly-o-toluidine Zr(IV) Tungstate: Analytical Applications for the Removal of Toxic Metal Ions: *Zeid Alothman*[1]; Mu Naushad[1]; [1]King Saud University

K-26: Synthesis, Characterization and Electrochemical Properties of Iron-zirconia Solid Solution Nanoparticles Using Colloidal-gel Route: *Guilllermo Herrera*[1]; Noemi Montoya[2]; Antonio Domenech-Carbo[2]; Javier Alarcon[2]; [1]UNAM; [2]Universitat de Valencia

K-27: Upcycling through the Use of Material Extrusion 3D Printing: *Joel English*[1]; Carmen Rocha[1]; Angel Torrado Perez[1]; Corey Shemelya[1]; David Roberson[1]; [1]University of Texas at El Paso

K-28: Wear Behavior of Fe30Ni20Mn25Al25: *Yuan Lu*[1]; Ian Baker[1]; Francis Kennedy[1]; Paul Munroe[2]; [1]Thayer School of Engineering, Dartmouth College; [2]Materials Science and Engineering, University of New South Wales

K-29: Zn2+ Solubilization and Segregation Influence in SnO_2 Nanopowders Growth Prepared Via Pechini's Method: *Deise Cristina Rosário*[1]; Douglas Gouvea[1]; [1]University of São Paulo

MS&T'14 Poster Session — Special Topics

Wednesday AM
October 15, 2014

Room: Exhibition Hall
Location: David L. Lawrence Convention Center

M-1: Architectural Porcelain Enamel; Past, Present and Future: *Cullen Hackler*[1]; [1]Porcelain Enamel Institute Inc

M-2: Effect of Microwave Sintering on the Microstructural and Physical Characteristics $CoFe_2O_4$-PZT Particulate Composite: *Claudia Fernandez Perdomo*[1]; Fabio Zabotto[1]; Ducinei Garcia[1]; Ruth Kiminami[1]; [1]Federal University of Sao Carlos

M-3: Microwave Sintering of Doped-CeO_2 Nanomaterials: *Katarzyna Sabolsky*[1]; Aneeruddha Bulbule[1]; Sreekumar Chockalingam[1]; Rajalekshmi Chockalingam[1]; Edward Sabolsky[1]; Stan Morrow[2]; [1]West Virginia University; [2]Hadron Technologies Inc.

M-4: Surface Analysis and Materials Characterization for the Study of the Ceramic Tiles HRSI from the Space Shuttle Thermal Protective Systems: *Hanna Szczepanowska*[1]; Thomas Renegar[2]; [1]Smithsonian Institution; [2]National Institute of Standards and Technology

M-5: Transformation of Supersaturated a-Ni Solid Solution in the Peritectoid Two-phase Region: *Ibrahim Khalfallah*[1]; Alex Aning[1]; [1]Virginia Tech

M-6: Wax Modeling Features and the Role of Molding in the Study of Ancient Bronzes: *Jeff Maish*[1]; [1]J. Paul Getty Museum

MS&T'14 Poster Session — Surface Modification

Wednesday AM
October 15, 2014

Room: Exhibition Hall
Location: David L. Lawrence Convention Center

L-1: Cathode Plasma Electrolytic Depositing Metal, Alloy and Composite Coatings: *Cheng Quan*[1]; Guanghong Zhao[1]; Yedong He[1]; [1]Beijing Key Laboratory for Corrosion, Erosion and Surface Technology, University of Science and Technology Beijing

L-2: Characterization and Modeling of Polymer-conjugated Enzyme and Membrane Systems: *Rachel Ferebee*[1]; Ilhem Hakem[1]; Michael Bockstaller[1]; [1]Carnegie Mellon University

L-3: Characterization of Thin Films Deposited from Benzene Using Microwave Plasma Polymerization: *Nuri Zreiba*[1]; Lubna Elzawi[1]; [1]University of Tripoli

L-4: Deposition and Thermal Cycling of Ytterbium Disilicate EBCs: *Bradley Richards*[1]; Haydn Wadley[1]; [1]University of Virginia

L-5: Development of Polyaniline-polycarbonate Composite Coatings for Anti-corrosive Applications on Mild Steel: *Kavisha Tekade*[1]; Rajesh Rathod[2]; [1]University of Texas at Arlington; [2]VNIT

L-6: Effect of Deposition Parameters on Ni-diamond Monolayer Coatings by Sediment Co-deposition: *Jiaqian Qin*[1]; Intharat Pichonsadja[1]; Suebsakul Yospitak[1]; Yannan Xue[2]; Xinyu Zhang[2]; Adisak Thueploy[1]; Sarintorn Limpanart[1]; Yuttanant Boonyongmaneerat[1]; Riping Liu[2]; [1]Chulalongkorn University; [2]Yanshan University

L-7: Efficient Method of Structural and Electronic Properties Modification of Amorphous As-S-Se Chalcogenide Films: *Natalya Korobova*[1]; Almasov Nurlan[2]; Prikhodko Oleg[2]; Timoshenkov Sergey[1]; Tsendin Konstantin[3]; [1]National Research University MIET; [2]al-Farabi Kazakh National University; [3]Ioffe Physico-Technical Institute

L-8: Electrophoretic Deposition of TiO_2 - Graphene Oxide Composite Films as Photoanodes for Cathodic Protection of Steel Substrates: *Jong Myung Park*[1]; Tae Ho Yun[1]; [1]Graduate Institute of Ferrous Technology, POSTECH

L-9: High-temperature Oxidation Resistance of (Al_2O_3-YAG)/8YSZ Laminated Coating Toughened by Dispersive Pt Nanoparticals: Shunjie Deng[1]; Yedong He[1]; Jin Zhang[1]; [1]University of Science and Technology Beijing

L-10: Monitoring of Velocity, Temperature and Size of Droplets during the Flight from the Gun of the APS Thermal Spray Process to the Substrate, Sprayng Different Steel Alloys: *Rodolpho Vaz*[1]; Ramón Paredes[2]; Anderson Pukasiewicz[3]; Andre Capra[1]; [1]LACTEC; [2]UFPR; [3]UTFPR

L-11: Optimization of Parameters with WC/Ni based Alloying Powder in Laser Cladding of Steels Using a High Power Direct Diode Laser: *Mohammed Sayeed*[1]; [1]SMU

L-12: Studies and Investigation on the Structural and Mechanical Properties of Pseudo Alloys Coatings Obtained by Thermal Spraying: *Antoniu Alexandru Cernaianu*[1]; [1]University Politehnica Bucharest

L-13: Study of Corrosion Behavior of Ni-P and Ni-Zn-P Layers Coated on Al Substrate: *Chouchane Karima*[1]; Levesque Alexandra[2]; Aaboubi Omar[3]; Chopart Jean Paul[3]; Mesrati Nadir[4]; [1]Université de Khemis Miliana; [2]LISM Université de Reims ; [3]LISM Université de Reims; [4]LSGM- ENP

L-14: The Development of HfO_2-rare Earth Based Oxide Materials and Barrier Coatings for Thermal Environmental Barrier Coating Systems: *Dongming Zhu*[1]; Bryan Harder; [1]NASA Glenn Research Center

L-15: Thermal Barrier Coating Made of Porous Al_2O_3 Toughened by Pt Nanoparticles: Peng Wang[1]; Yedong He[1]; Jin Zhang[1]; [1]University of Science and Technology Beijing

L-16: Thin Film Deposition by Using PIII&D and iMS: *Carina Mello*[1]; Rogerio Oliveira[1]; Mario Ueda[1]; Aline Oliveira[2]; [1]Instituto Nacional de Pesquisas Espaciais; [2]Universidade Federal de Sao Paulo

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