2013 Functional Nanomaterials: Synthesis, Properties and Applications: Nanomaterials General II

Sponsored by: TMS Electronic, Magnetic, and Photonic Materials Division, TMS: Nanomaterials Committee

Program Organizers: Seong Jin Koh, University of Texas at Arlington; Nilin Chopra, University of Alabama; Jiyoung Kim, University of Texas at Dallas; Yuanbing Mao, University of Texas-Pan American; Ashwin Ramasubramaniam, University of Massachusetts; Gregory Thompson, University of Alabama

Wednesday AM Room: 201
March 6, 2013 Location: Henry B. Gonzalez Convention Center

Funding support provided by: Qualcomm, Inc.

Session Chairs: Gregory Thompson, University of Alabama; Ashwin Ramasubramaniam, University of Massachusetts Amherst

8:30 AM Introductory Comments

8:35 AM Invited

8:40 AM

8:45 AM Flexoelectricity: Pradeep Sharma1; 'University of Houston

9:00 AM Synthesis and Magnetoostrictive Properties of Nanostructured Fe - Tb Alloys: Pekka Ruuskanen1; 'Tampere University of Technology

9:30 AM A Novel Electrochemical Process for Assembling Hierarchically Aligned Carbon Nanotube-Collagen Composite Macrostructures: Vasiliki Poenitzsch1; Xingguo Cheng1; 'Southwest Research Institute

9:50 AM Sub-10 nm Cobalt Nanowires Building via Phase Separation: Synthesis, Simulation, and Characterization: Yuan Tian1; Zhaping Xu1; Daniel Schmidt1; Tanjore Jayaraman1; Chad Briley1; Jeffrey Shield1; Mathias Schubert1; Eva Franke-Schubert1; 'University of Nebraska-Lincoln

10:10 AM Break

10:30 AM Fluorescence from Polymers in Uniaxially Stretched Melt Spun Scintillation Fiber Mats: Stephen Young1; Rohit Uppal1; Dayakar Penumadu1; David Harper1; 'University of Tennessee, Knoxville

10:50 AM Graphene as an Electron Mediator in Tantalum Oxynitride Based Composites Z-Scheme Photocatalytic Water Splitting: Zheng Wang1; Hou Jia1; Shuqiang Jiao1; Kai Huang1; Hongmin Zhu1; 'University of Science and Technology Beijing

11:10 AM Structural and Magnetic Properties of Pr2Co7-xFe14 Phase Synthesized by Mechanical Alloying: Lotfi Bessais1; Riadh Fersi1; Najeh Miliki1; 'CNRS; 'University of Tunis

11:30 AM Methodology to Colloid Stability in Aqueous Silver Nanoparticles from Redox Method for Power Electronics Interconnections: Jaremi Lara-Rodrigues1; Pedro Quintero1; 'UPRM

11:50 AM Tailoring the Third Dimension in Layered Materials: Direct Synthesis of Layered Intercalation Compounds and Colloidal Single-Layer Nanosheets: Jingfang Yu1; Lichen Xiang1; Benjamin Martin1; Cody Gummelt1; Abraham Clearfield1; Zhiping Luo1; Luyi Sun1; 'Texas State University-San Marcos; 'Texas A&M University; 'Fayetteville State University

12:10 PM Vacuum Synthesis and Luminescence Properties of Terbium-Activated Gadolinium Oxysulfide Nanophosphor: Fei Wang1; Dachun Liu1; Bin Yang1; Yongnian Dai1; 'Kunming University of Science and Technology

4th International Symposium on High-Temperature Metallurgical Processing: Roasting, Reduction and Smelting

Sponsored by: TMS Extraction and Processing Division, TMS: Energy Committee, TMS: Materials Characterization Committee, TMS: Pyrometallurgy Committee

Program Organizers: Tao Jiang, Central South University; Jiann-Yang Wang, Michigan Technological University; Phillip Mackey, Consultant; Onuralp Yücel, ITU; Guifeng Zhou, Wuhan Iron and Steel

Wednesday AM Room: 008B
March 6, 2013 Location: Henry B. Gonzalez Convention Center

Session Chairs: Jungshin Kang, The University of Tokyo; Jinhui Peng, Kunming University of Science and Technology

8:30 AM Cost Benefits of EAF Bottom Purging Systems Due to Metallurgical Improvements: Marcus Kirschen1; Ashraf Hanna1; Karl-M Zettl1; 'RHI AG

8:50 AM Reduction Process Of Zinc From Concentrates With CO2 Reduced Emission: Edgar Blanco1; 'FLSmidth Minerals

9:05 AM Researches on Reduction Roasting of Low-grade Manganese Oxide Ores Using Biomass Charcoal as Reductant: Yuanbo Zhang1; Daoxian Duan1; Zhiyong You1; Guanghui Li1; Xiaohui Fan1; Tao Jiang1; 'Central South University

9:25 AM Reduction Behavior of Pellets Balled with Bentonite: Tao Jiang1; Guihong Han1; Yanfang Huang1; Guanghui Li1; Yuanbo Zhang1; 'Central South University

9:40 AM Vanadium Distribution Between Blast Furnace Slag and Hot Metal: Jia-Rong Yan1; Bing Xie1; Xiao-Yi Zeng1; Qing-Yun Huang1; Hong-Yi Li1; 'Chongqing University

9:55 AM Break

10:05 AM Development of Antimony Smelting Technology in China: Weifeng Liu1; Tianzu Yang1; Lin Chen1; Shu Bin1; Wanda Bin1; 'Central South University

10:25 AM Effect of Reduction Conditions on Pre-reduction Behaviors of Self-fluxed Pellets in COREX Process: Deqing Zhu1; Zifu Gao1; Jian Pan1; 'Central South University
10:45 AM Upgrade of Titanium Ore by Selective Chlorination: Jungshin Kang1; Toru Okabe1; ‘The University of Tokyo

11:00 AM Calcination Factors of Rubidium Extraction from Low-grade Muscovite Ore: Shan Zhiqiang1; Shu Xinqian1; ‘China University of Mining and Technology

11:20 AM Enhancing the Reduction Ratio of Panzhihua Limenite Concentrate with Coke and Ferrosilicon: Run Huang1; Xuwei Lv1; Kai Zhang1; Chenguang Bai1; Liangying Wen1; ‘College of Materials Science and Engineering, Chongqing University

11:30 AM Reduction and Separation of High Iron Content Manganese Ore and its Mechanism: Zhucheng Huang1; Bin Chai1; Yi Lingyun1; Tao Jiang1; ‘Central South University

11:50 AM Sticking of Iron Ore Pellets in Direct Reduction with Coal Gas: Behavior and Prevention: Zhucheng Huang1; Yi Lingyun1; Tiehui Li1; Tao Jiang1; ‘Central South University

12:00 PM Enhancement of Carbothermal Reduction of Panzhihua Titanomagnetite Concentrates by Borax Additive: Tu Hu1; Chenguang Bai1; Xuwei Lv1; Zhigang Lun1; ‘Chongqing University

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

Wednesday AM Room: Lone Star Salon A
March 6, 2013 Location: Grand Hyatt

Session Chairs: Manuel Marya, Schlumberger; Nitin Chopra, University of Alabama

8:30 AM Introductory Comments and Plenary Overview Lecture: Hani Elshahawi, Deepwater Technology Advisor, Shell Exploration & Production, Co.

8:55 AM Keynote Oilfield Corrosion Overview and Research Collaborations: Brajendra Mishra1; ‘Colorado School of Mines

9:25 AM Progress on Nano Fluid-based Enhancement of Transport Phenomena for Enhanced Oil Recovery Applications: M.M. Ohadi1; K.Y. Choo; ‘University of Maryland

9:45 AM Fluorescent Nanoparticle Tracers for Oil Exploration and Production: Emmanuel Giannelis1; ‘Cornell University

10:05 AM Break

10:20 AM Engineering Nanoparticles as Improved Oil Recovery and Flow Assurance Agents Under Harsh Reservoir Conditions: Chun Huh1; Steven Bryant; Keith Johnston; ‘University of Texas at Austin

10:40 AM Keynote Analysis of Polymer Materials by Compact and Portable NMR: Bernhard Blumich1; ‘RWTH Aachen Univ

11:10 AM Invited Dynamics of Nanoparticle-Based Complex Fluids in Porous Media: Jacinta Conrad1; Kai He1; Firoozeh Babaye Khorasani1; Ramanan Krishnamoorti1; ‘University of Houston

11:30 AM Asphaltenes to Valuable to Burn – New Hybrid Materials: Russell Chianelli1; ‘Univ of Texas at El Paso

11:50 AM Development of a First Numerical Approach with an Experimental Confrontation for Diffusion Kinetics and Thermo-diffuso Mechanical Behavior of PVDF/CO2 System: Severine Boyer1; Jean-Claude Grandidi1; Gaëlle Rambert1; Cedric Baudet1; Marie-Helene Klopffer1; Laurent CANGEMI1; ‘CRS/ISAE-ENSMA; 2PRIME Institute, ISAE-ENSMA; 3IFP Energies Nouvelles

12:10 PM In-Service Detection of Damage Severity for Pipeline Steel Inspection: Angelique Lasseigne1; ‘Generation 2 Materials Technology, LLC

12:30 PM Novel Reactive Elastomer Composites for Zonal Isolation Packers: On the Swelling Kinetics and Stiffening Mechanism: Meng Ou1; Dingzhi Han1; Travis Hohenberger1; Frederick Lemme1; Agathe Robisson1; ‘Schlumberger-Doll Research; ‘Schlumberger Reservoir Completions

Sponsored by: TMS Electronic, Magnetic, and Photonic Materials Division, TMS: Energy Conversion and Storage Committee, TMS: Magnetic Materials Committee
Program Organizers: Paul Ohodnicki, National Energy Technology Laboratory; Clive Randall, Penn State University; Michael Lanagan, Penn State University; Michael McHenry, Carnegie Mellon University; Rachel Myers-Ward, Naval Research Laboratory

Wednesday AM Room: 007A
March 6, 2013 Location: Henry B. Gonzalez Convention Center

Session Chairs: Jennifer Hite, Naval Research Laboratory; David Meyer, Naval Research Laboratory

8:30 AM Invited Growth of Thick 4H-SiC Epilayers and Defect Reduction: Hidekazu Tsuchida1; Tetsuya Miyazawa1; Xuan Zhang1; Masahiro Nagano1; Ryohei Tanuma1; Isao Kamata1; Masahiko To1; ‘Central Research Institute of Electric Power Industry (CRIEPI)
9:00 AM Invited
On-Axis Homoeptaxial Growth of 4H-SiC PiN Structure for High Power Applications: Jawad ul Hassan; Ian Booker; Louise Lilja; Peder Bergman; Anders Halen; M Fagerlind; Erik Janzen; 1Linköping University; 2Royal Institute of Technology; 3Chalmers University of Technology

9:20 AM Invited
BPD Conversion in a Thin SiC Buffer Layer: Rachael Myers-Ward; Nadeem Mahadik; Robert Stahlbush; Virginia Wheeler; Luke Nyakiti; Anindya Nath; Charles Eddy; Kurt Gaskill; 1NRL

9:50 AM Invited
Surface Reactions of Nitrogen on SiC: Wejie Lu; Sorrie Ceessay; Roland Barbosa; Xingguang Zhu; Leonard Feldman; 1Air Force Research Laboratory; 2Université Libre de Bruxelles; 3Rutgers University

10:10 AM Break

10:30 AM Invited
Controlling Gallium Nitride Polarity on Native Substrates: Jennifer Hite; Mark Twigg; Jaime Freitas; Michael Mastro; Igor Vergaftman; Jerry Meyer; Shawn O'Connor; Nicholas Condon; Francis Kub; Steven Bowman; Charles Eddy; 1Naval Research Laboratory

11:00 AM Invited
Elements of Power Conversion Integration in Group-III Nitride Heterojunctions: Christian Wetzel; 1Rensselaer Polytechnic Institute

Wednesday AM Room: Bowie B
March 6, 2013 Location: Grand Hyatt

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

Session Chair: To Be Announced

8:30 AM Invited
Surface Engineering of Corrosion, Environmental Fracture, Cavitation & Impingement Resistant Materials: Joseph Farmer; Alexander Rubenchik; Sarath Menon; Terry McNelley; Lloyd Hackel; Lawrence Livermore National Laboratory; 2United States Naval Postgraduate School; 3Curtis-Wright

8:50 AM Invited
Ultrastable Nanoscale Ag Surfaces: A New Paradigm in Surface Oxidation Prevention: Ritesh Sachan; Vanessa Ramos; Abhinav Malasi; Brock Bartley; Gerd Duscher; Ramki Kalyanaraman; University of Tennessee

9:10 AM Effect of Adding 0.2%Zr in D-gun Sprayed Cr3C2 - (NiCr) Coating at High Temperature: Deepa Mudgal; Surendra Singh; Satya Prakash; 1Indian Institute of Technology, Roorkee

9:25 AM Hot Corrosion Studies of Wire Arc-Spray Coatings on 310S Stainless Steel in an Actual Environment of a Coal Fired Boiler: Vishwambhar Shukla; R. Jayaganthan; V K Tewari; 1Indian Institute of Technology, Roorkee

9:40 AM Development of Ni-P-TiO2 Nano-Composite Coatings to Resist Environmental Degradation: Preeti Makkar; Ramesh Agarwala; Vijaya Agarwala; 1IIT Roorkee

9:55 AM Break

10:10 AM Invited
Spark Plasma Sintering of Cryomilled Al-Si Claddings onto Al Substrates: Mathieu Brochu; Jason Milligan; McGill University

10:30 AM Effect of Bath Temperature on Corrosion Behavior of Hot-dipped 55%Al-Zn-1.6%Si Coated Steel Sheet in NaCl Solution: Zengpeng Yang; Qian Li; Moucheng Li; Jiemy Zheng; Xianxia Yuan; 1Shanghai University; 2Shanghai Jiao Tong University

10:45 AM Microstructure and Wear Properties of Ni-Cu-Cr-Al Multi-component Coatings Prepared by Plasma Spraying: Pranod SL; Prathap Chandran; Cheng Zhang; Arvind Agarwal; Daniel Fabijanic; Srinivasa Bakshi; 1Indian Institute of Technology Madras; 2Florida International University; 3Deakin University

11:00 AM Electrochemical Studies of Electroless Nickel Phosphorus Coating on Carbon Steel in NaCl and NaOH Solutions: Cui Lin; Nazila Dadvand; Georges Kipouros; Nanchang Hankhong University; 2Dalhousie University

11:15 AM Deposition of Zinc-Zinc Phosphate Composite Coatings on Steel by Cathodic Electrochemical Treatment: C Kavitha; Sankara Narayanan TSN; R Ravichandran; CSIR-National Metallurgical Laboratory; 2Chonbuk National University; 3University of Madras

11:30 AM Improving Corrosion Resistance by Alodine EC2 Coating on Aluminum Alloys: Jianhui Shang; Steve Hatkevich; Larry Wilkerson; American Trim LLC
9:20 AM
Improve the Classification System in Hydro Alunorte Lines 4/5: Cleto Junior; Emerson Moraes; Joaquim Ribeiro; Hans Haraldsen; Everton Santos; José Chartouni; Darlan Gomes; Cesar Magro; ‘Hydro Alunorte

9:40 AM
Increase in the Stability of Gravimetric Classification System of Precipitation at Hydro Alunorte: Victor Cruz; Emerson Moraes; Cleto Azevedo Junior; Denise Rodrigues; Adjane Sousa; Alex Furtado; Dauton Silva; ‘Hydro Alunorte

10:00 AM Break

10:15 AM
Experience with Commissioning New Generation Gas Suspension Calciner: Benny Raahauge; Susanne Wind; ‘FL Smidth

10:35 AM
Bayer Process Efficiency Improvement: Songqing Gu; ‘Chalco

10:55 AM
HyClass(TM) Technology for Improvement of Trihydrate Classification in the Bayer Process: Jing Wang; Iaqueline Herrera; Shawn Kostelak; Kody Frederic; ‘Nalco an Ecolab Company; ‘Noranda

11:15 AM Concluding Comments

Aluminum Alloys: Fabrication, Characterization and Applications: Thermal Mechanical Processing
Sponsored by: TMS Light Metals Division, TMS: Aluminum Processing Committee
Program Organizers: Zhengdong Long, Kaiser Aluminum; Subodh Das, Phinix LLC; Tongguang Zhai, University of Kentucky; William Columbfiskie, Naval Surface Warfare Center

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

Session Chair: Xiyu Wen, University of Kentucky

8:30 AM Invited
Effects of Homogenization Treatment Conditions on the Recrystallization Behavior of Al-1.2Mn Aluminum Alloy Sheets: Pizhi Zhao; Xinglin Chen; Wei Chen; Yonghao Zhang; ‘Suzhou Research Institute for Nonferrous Metals

8:50 AM
Textures, Particle Structures and Mn Solution in Al Matrix of Continuous Cast AA3004 and AA3003 Al Alloys After Cold Rolling and Annealing: Xuyu Wen; Jingwu Zhnag; Shridas Ningileri; Tongguang Zhai; ‘University of Kentucky; ‘Yanshan University, P. R. China; ‘Secat Inc.

9:10 AM
Toward a Recrystallized Microstructure in Extruded AA6005A Alloy: Abbas Bahrami; Andrew den Bakker; Alexis Mirosev; Jiti Sietsma; ‘Materials Innovation Institute (M2i), Technical University of Delft (TuDelft); ‘Nedal Aluminium B.V.; ‘Materials Innovation Institute (M2i); ‘Technical University of Delft (TuDelft)

9:30 AM
Grain Subdivision and Its Effect on Texture Evolution in an Aluminum Alloy Under Plane Strain Compression: Q. Ma; W. Mao; B. Li; P.T. Wang; M.F. Horstemeyer; ‘Mississippi State University; ‘University of Science and Technology Beijing

9:50 AM Break

10:10 AM
Fatigue Analysis of Ultrafine Grained Al 1050 Alloy Produced by Cyclic Forward Backward Extrusion: Hamid Alhosseini; Mohsen Asle Zaeemi; ‘Missouri University of Science and Technology

10:30 AM
A Study of Precipitates Formed during Homogenization in Modified AA6061 Aluminum Alloy: Liang Chen; Wei Wen; Yi Han; Hai Zhang; Tongguang Zhai; ‘University of Kentucky; ‘Suzhou Research Institute for Nonferrous Metals

10:50 AM
Effect of Overheated Solution Treatment on Microstructure and Room Temperature Tensile Properties of 2218 Peak-Aged Al-Cu Alloy: Wang Po-Han; Sau-Ta Chen; Truan-Sheng Lui; Li-Hui Chen; Fei Yi Hung; ‘National Cheng Kung University

11:10 AM
Effects of Extrusion Ratios and Isothermal Holding Time on Microstructure Evolution of Al-Mg-Si Semisolid Billet Fabricated by Modified SIMA Process: Yen-Yu Hou; Fei-Yi Hung; ‘Truan-Sheng Lui; ‘Li-Hui Chen; ‘National Cheng Kung University

11:30 AM
Effect of Zn Content and Process Parameters on Corrosion Behaviour of Twin-Roll Cast Aluminum Brazing Alloys: Murat Dünder; Mert Günyüz; Cemil Isıksaçan; Anil Pastirmaci; ‘Assan Aluminum A.S.

11:50 AM
Deformation Characteristics of a 2139 Aluminum Alloy: David Snyder; ‘Illinois Institute of Technology

Aluminum Processing: Aluminum Processing I
Sponsored by: TMS Light Metals Division, TMS: Aluminum Committee
Program Organizer: Kai Karhausen, Hydro Aluminium Rolled Products GmbH

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

Session Chair: To Be Announced

8:30 AM
Strategic Directions of Aluminum Processing: Adrian Ioana; ‘University Politehnica of Bucharest

8:50 AM
Experimental Study on the Nanosecond Laser Ablation of Aluminum Alloy 6111: Partisa Farahmand; Radovan Kovacevic; ‘Southern Methodist University

9:10 AM
Microstructure Changes in Accumulative Roll-Bonding Processed Twin-Roll Cast AA8006 Aluminum Sheets during Annealing: Miroslav Cieslar; Michaela Pokova; ‘Charles University in Prague

9:30 AM Break

9:50 AM
Surface Crack Characterization of Twin Roll Caster Shells and Its Influence on As-Cast Strip Surface Quality: Murat Dünder; Baris Beyhan; Onur Birbasar; Hatic Mollaoglu Altunayar; Cemil Isıksaçan; ‘Assan Alüminyum A.S.
10:10 AM
Effect of Grain Size and Microstructure on Corrosion Resistance of Al-Mg Alloy Processed Through Cryorolling: Dharmendra Singh1; Nageswararao Palakurty1; Jayagathan R1; 1IIT Roorkee

10:30 AM
Ageing Behavior and Mechanical Properties of Cryorolled AI 6061-3 Vol. % SiC Composite: Nageswararao Palakurty1; Jayagathan R1; 1IIT Roorkee

10:50 AM
Study of Wire Fabrication of Aluminum Treated with Diboride Particles: David Florian-Algarin1; O. Marcelo Suarez2; 1University of Puerto Rico Mayaguez (UPRM)

Aluminum Reduction Technology: Potline Operation II: Equipment
Sponsored by: TMS Light Metals Division, TMS: Aluminum Committee
Program Organizer: Mark Cooksey, CSIRO

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

Session Chair: Renaud Santerre, Rio Tinto Alcan

8:30 AM Introductory Comments

8:35 AM
Solutions to Address Arc Welding Problems in an Operating Potline: Yuan El Ghouli1; John Anderson2; 1Rio Tinto Alcan; 2Diverse Technologies

9:00 AM
Replacement of Damaged Electrical Insulators on Live Cross-Over Busbars Inside a Tunnel: A Methodology Based on Risk Assessment and Numerical Simulation: Daniel Richard1; André Yelle1; Olivier Charette1; Andre Felipe Schneider1; Jean-François Nadeau1; Mickael Glière1; Yannick Drouet1; Philippe Brème1; 1Hatch Ltd.

9:25 AM
A Thermal-Mechanical Approach for the Design of Busbars Details: André Yelle1; Olivier Charette1; Daniel Richard1; Charles Turcotte1; 1Hatch Ltd.

9:50 AM Break

10:00 AM
Study of Technology and Equipment on Magnetic Induction Intensity Weaken for Aluminum Reduction Cells Welding in the Condition of Pot Line Current: Ziqian Wang1; Bin Cao1; Tao Yang1; Jun Huang1; Meng Li1; 1Guiyang Aluminum Magnesium Design Research Institute Company Limited

10:25 AM
Potline Shutdown and Restart Secured Solutions: Anne-Gaëlle Hequet1; 1ECL.

10:50 AM
Effect of Watering and Non-Watering Cooling Rates on the Mechanical Properties of an Aluminum Smelter’s Potshell: Ayoola Brimmo1; Mohamed Hassan1; Mohamed Ibrahim2; Youssef Shatilla1; 1Masdar Institute; 2Emartes Aluminum

11:15 AM
Mathematical Model of Cooling of a Stopped Pot and Its Validation: Mohamed Hassan1; Ayoola Brimmo1; Mohamed Ibrahim2; Youssef Shatilla1; 1Masdar Institute; 2Emartes Aluminum

Biological Materials Science Symposium: Innovative Thin Films and Coatings for Biological Interactions (Joint session with Biological, Electrical and Functional Thin Films and Coating Symposium)
Sponsored by: TMS Electronic, Magnetic, and Photonic Materials Division, TMS Structural Materials Division, TMS: Biomaterials Committee
Program Organizers: Candan Tamerler, University of Washington; Molly Gentleman, Texas A & M University; Po-Yu Chen, National Tsing Hua University; Kajal Mallick, University of Warwick; Rajendra Kumar Kasinath, University of Montana; Paul G. Allison, US Army Corp of Engineers

Wednesday AM Room: 214C March 6, 2013 Location: Henry B. Gonzalez Convention Center

Funding support provided by: Biomaterials Program, National Science Foundation

Session Chairs: Roger Narayan, University of North Carolina at Chapel Hill; Candan Tamerler, University of Washington

8:30 AM
Interfacial Fracture Toughness Measurement of Soft Biological Adhesives: Ahmad Khayer Dastjerdi1; Michael Pagano1; Mari T. Kaatinnen1; Marc D. McKee1; Francois Barthela1; 1McGill University

8:50 AM
Investigation of the Microscopic Material Content Variation in Bone by Electron Probe Microanalyzer (EPMA): Pei Chun Chou1; Po-Yu Chen1; National Tsing Hua University

9:10 AM
Processing, Microstructure Characterization and Biological Performance of Hierarchical Surface Coatings for Titanium: Ellen Sauter1; 1Grant Crawford1; 2South Dakota School of Mines and Technology

9:25 AM
Characterization of (Ti,Mg)N Thin Film Coatings Produced Via Physical Vapor Deposition: Sakip Onder1; Gamze Torun Kose1; Fatma Nese Kok1; Kursat Kazman1; Mustafa Urgen1; 1Istanbul Technical University, MOBGRAM; 2Yeditepe University, Genetics and Bioengineering; 3Istanbul Technical University, Metallurgical and Material Engineering

9:45 AM
Bio-Inspired Multi-Layered Nanocomposites Synthesized with High Volume Fractions of Oriented Inorganic Fillers: Robert Mose1; Kevin Torres-Cancel1; Omar Rodriguez2; Ruth Hidalgo-Hernandez2; Mei Chandler1; Paul Allison1; Charles Weiss1; John Newman1; Oscar Suarez2; Oscar Perales-Perez2; Philip Malone1; 1US Army Engineer Research and Development Center; 2University of Puerto Rico at Mayaguez

10:05 AM Break

10:20 AM
Bio-Inspired Polyelectrolyte Multilayers as Templates for the Deposition of Thin Calcium Phosphate Coatings: Guy Ladam1; Khalil Abdelkebir1; Fabien Gaudrière1; Béatrice Labat1; Sandrine Morin-Grognet1; Hasson Atmani1; 1University of Rouen
10:40 AM
Effect of Chemical Treatments on the Mechanical Properties of Poly-lactic Acid (PLA) and Hemp Biocomposites: Shubhashini Oza1; Andrew Carlson1; Na Lu1; 1University of North Carolina at Charlotte

10:55 AM
Titanium/Polymer Sandwich for Medical Applications: Heinz Palkowski1; Mohamed Harhash1; Le Van Quang2; Lia Rimondini1; Adele Carradò1; 1Clausthal University of Technology; 2IPCMS; ‘Universita’ del Piemonte Orientale “Amedeo Avogadro”

11:15 AM
Morphological Study and Cell Viability on Calcium-phosphate Layer on 316L-polyolefin System: Quang Van Le1; Andrea Cochis1; Lia Rimondini1; Geneviève Pourroy1; Vesna Stanić1; Heinz Palkowski1; Adele Carradò1; 1IPCMS, UMR 7504 UDS-CNRS; 2‘Universita’ del Piemonte Orientale “Amedeo Avogadro”; 3‘Universita’ del Piemonte Orientale “Amedeo Avogadro”; 4Brookhaven National Laboratory; 5Institute of Metallurgy

11:35 AM
Particle Size Effects on the Morphology and Bioactivity of Flame-Sprayed Titanium Alloy-Bioactive Glass Composite Coatings: Greg Nelson1; John Nyckha1; Andre McDonald1; 1University of Alberta

11:55 AM
Structural Characterization and Mechanical Evaluations of Abalone Nacre-inspired Multilayer Coatings Synthesized by RF Sputtering and Pulsed Laser Deposition: Chang-Yu Sun1; Yu-Chen Chan1; Jyh-Wei Lee1; Jenq-Gong Duh1; Po-Yu Chen1; 1National Tsing Hua University; 2Ming Chi University of Technology

12:10 PM Invited
Micro- and Nanostructured Surfaces for Implants: Cenk Aktaş1; Marina Martínez1; JuSeok Lee1; 1INM - Leibniz-Institut für Neue Materialien

12:30 PM Concluding Comments

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

Wednesday AM Room: Lone Star Salon D
March 6, 2013 Location: Grand Hyatt

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

Session Chairs: Despina Louca, University of Virginia; Jamie Kruzic, Oregon State University

8:30 AM Invited
The Effects of Fatigue on the Local Structure and Its Dynamics: Despina Louca1; 1University of Virginia

8:50 AM Invited
A Shear-Band Toughened Monolithic Metallic Glass Under Cyclic Loading: Bernd Gludovatz1; Marios Demetriou1; William Johnson1; Robert Ritchie1; 1Lawrence Berkeley National Laboratory; 2California Institute of Technology; 3University of California Berkeley

9:10 AM Invited
Effect of Loading Frequency on Corrosion Fatigue Crack Growth of Zr-Based Bulk Metallic Glass in the Region Near Threshold: Yoshikazu Nakat1; Toyohiko Koyama1; Bo He1; 1Kobe University

8:30 AM Invited
R-Curve Behavior of Zr-Ti-Cu-Al Bulk Metallic Glass with Extraordinary Fracture Toughness: Jian Xu1; Qiang He1; Evan Ma1; 1Institute of Metal Research, Chinese Academy of Sciences; 2The Johns Hopkins University
8:50 AM  
Brazing and Interfacial Reaction of Titanium with Zr-Ti-based Metallic Glass Filler Metal: Duck Hwan Yoon; Jin Kyu Lee; 1Kongju National University

9:05 AM Invited  
Thermal and Thermomechanical Analysis of (Ce0.72Cu0.28)78.5Al10Fe10Si1.5 Bulk Metallic Glass: Arif Mubarok; 1University of Massachusetts; 2University of Connecticut

9:25 AM  
Variable Plasticity in Molded Metallic Glass Nanowires: Daniel Mugagnosc; Golden Kumar; Roman Ehrbar; Mo-Rigen He; Jan Schrörs; Daniel Gianola; 1University of Pennsylvania; 2Texas Tech University; 3Yale University

9:40 AM Invited  
Time-Dependent Mechanical Behavior, Biodegradability, and Cytocompatibility of Amorphous Mg72Zn23Ca5 and Crystalline Mg70Zn23Ca5Pd2 Materials: Eva Pellicer; Sergio Gonzalez; Andreu Blanquer; Leonar Barrios; Elena Ibañez; Jordi Sort; Carme Nogués; 1UAB

10:00 AM Break

10:15 AM Invited  
Intrinsic and Extrinsic Effects on the Mechanical Behavior of BMGs: Golden Kumar; 1Teaxs Tech University

10:35 AM Invited  
Shear Band Multiplication of Bulk Metallic Glass by Surface Modification: Cut Rullyani; 1, W. D. Li; 2, Y. F. Gao; 2, P. Liaw; 2, Chia-Chi Yu; 2National Taiwan University of Science and Technology; 1University of Tennessee

10:55 AM  
Modeling Deformation Behavior of Metallic Glasses Spanning a Wide Range of Temperature and Strain Rate: Pengyang Zhao; Ju Li; Yunzhi Wang; 1The Ohio State University; 2Massachusetts Institute of Technology

11:10 AM Invited  
Effects of Alloying Elements on Thermal Stability and Properties of Fe-Based Fe-P-C-B Metallic Glasses: Wei Zhang; Canfeng Fang; Yanhui Li; Shin-ichi Yamaura; 1School of Materials Science and Engineering, Dalian University of Technology; 2Institute for Materials Research, Tohoku University

11:30 AM  
Correlation between Chemical Heterogeneity and Mechanical Properties in Cu-Zr-Al-(Y, Gd) Bulk-Forming Metallic Glasses: Jin Woo Kim; Chae Woo Ryu; Eun Soo Park; Ryan Ott; 1Seoul National University; 2Ames Laboratory

11:45 AM Invited  
Early Stage Oxidation Behavior of Metallic Glasses: Ka Ram Lim; Min Young Na; Kang Chul Kim; Won Tae Kim; Do Hyang Kim; 1Yonsei University; 2Cheongju University

12:05 PM  
Surface Modification in the Bulk Metallic Glasses by Laser Shock Peening: Xie Xie; 1Yunfeng Cao; James Antonaglia; Gongyao Wang; Yung Shin; 2Yang Ren; Karin Dahmen; 2Peter Liaw; 2University of Tennessee; 3Purdue University; 4University of Illinois at Urbana Champaign; 5Argonne National Laboratory

12:20 PM Invited  
Variability and Partitioning of Shear Modulus in Metallic Glass: Yong Yang; 1Li Shuan; 2Weihua Wang; 3C. T. Liu; 1City University of Hong Kong; 2Key Lab of Extreme Conditions, Institute of Physics, Chinese Academy of Science

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8:30 AM  
Hydrometallurgical Process for the Separation and Recovery of Product from Waste Serpentine Mine: Zhu Ping; 1Shanghai University

8:50 AM  
LaCoO3: The Efficient Catalyst to Purify Pollutant Gases: Farhad Fazilollahi; Hossein Atashi; Majid Sarkari; 1University of Sistan and Baluchestan

9:10 AM  
Characteristics and Applications of Copper Stamp Sand: Bowen Li; Jian-Gang Wang; Domenic Popko; 1Michigan Technological University; 2Lesktech Ltd

9:30 AM  
Characterization of the Clay Soil of the Neighborhood Codin, Located in Campos (RJ), to Produce Soil-Cement Blocks: Afonso Azevedo; Jonas Alexandre; Gustavo Xavier; 1UNENF

9:50 AM  
Study of Mortars Used in the Projection Mechanized: Afonso Azevedo; Jonas Alexandre; 1UNENF

10:10 AM  
Research on Extraction Process of Zinc from Zinc Containing Wastewater: Jiang Tao; Hou Li-Cheng; Yang Yong-Bin; Li Qian; 1Central South University

10:30 AM  
Study on Treatment of Coking Wastewater by Three-Dimensional Fluid Bed Electrode Reactor Combined with Fenton Process: Lei Zhang; 1WISCO

10:50 AM  
Study on Correlation between COD and TOC of Coking Wastewater: Chao Liu; 1College of Environmental Science & Engineering, Huazhong University of Science & Technology

11:10 AM  
Treatment Process for Zinc Containing Wastewater by Ammonia: Jiang Tao; Hou Li-Cheng; Yang Yong-Bin; Li Qian; 1Central South University

11:30 AM  
Photocatalytic Activity of TiO2-Doped Diopside: He Yang; Dong Liu; Zejian Yang; Xiangxin Xue; Tao Jiang; Yong Yong; 1Northeastern University
Characterization of Minerals, Metals and Materials 2013: Green Materials  
*Sponsored by*: TMS Extraction and Processing Division, TMS: Materials Characterization Committee  
*Program Organizers*: Jiann-Yang Hwang, Michigan Technological University; Chen-Guang Bai, Chongqing University; John Carpenter, DOE LANL; Shadia Ikmayeis, Al Isra University; Bowen Li, Michigan technological University; Mingming Zhang, ArcelorMittal Global R&D; Sergio Monteiro, State University of North Rio de Janeiro; Zhwei Peng, Michigan Technological University  

**Wednesday AM**  
**March 6, 2013**  
**Room**: 206A  
**Location**: Henry B. Gonzalez Convention Center  

**Session Chairs**: Sergio Monteiro, State University Northern Rio De Janeiro; Shujing Zhu, WISCO R&D

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8:30 AM  
**Incorporation of Granite Waste Diamond Wire in Cementitious Matrices**: Leonardo Pedroti1; Carlos Mauricio Vieira1; Sergio Monteiro1; Jonas Alexandre1; Gustavo Xavier1; ‘UENF’

8:50 AM  
**Study on the Hydraulic Ash-Slag Cementitious Composites (HA-SC) Solidification of Dredged Sludge**: Zhu Shu Jing1; ‘R&D of Wisco’

9:10 AM  
**Characterization of Fluorescent Lamp Glass Waste Powders for Incorporation into Clayey Ceramics**: Alline Morais1; Sergio Monteiro1; Jonas Alexandre1; Gustavo Xavier1; Patricia Pereira1; Carlos Mauricio Vieira1; ‘State University of the North Fluminense’

9:30 AM  
** Investigation on Mineral, Microstructure and Activity of Coal Gangue in Shanxi Province, China**: Yingyi Zhang1; Ling Xu1; Lili Liu1; Xidong Wang1; Zuotai Zhang1; ‘Peking University, China’

9:50 AM  
**Evaluation of Sisal Fibers Components by Infrared Spectroscopy**: Frederico Margem1; Artur Camposo1; Romulo Loiola1; Sergio Monteiro1; ‘UENF’; ‘IME’

10:10 AM  
**Simplex Network Modeling for Press-Molded Ceramic Bodies Incorporated with Granite Waste**: Leonardo Pedroti1; Carlos Mauricio Vieira1; Sergio Monteiro1; Jonas Alexandre1; Gustavo Xavier1; ‘UENF’

10:30 AM  
**Tensile Behavior of Epoxy Composites Reinforced with Continuous and Thinner Buriti Fibers**: Frederico Margem1; Giulio Alteo1; Romulo Loiola1; Sergio Monteiro1; Noan Simonassi1; ‘UENF’; ‘IME’

10:50 AM  
**Influence of the Red Mud Content In Mechanical Properties of Natural Fiber-Reinforced Polymeric Composites**: Mauro Oliveira1; ‘Universidade Federal do Pará’

11:10 AM  
**Flexural Mechanical Characterization of Polyester Composites Reinforced with Continuous Banana Fibers**: Frederico Margem1; Foluke De Assis1; Romulo Loiola1; Sergio Monteiro1; Jean Margem1; ‘UENF’; ‘IME’

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Characterization of Nuclear Reactor Materials and Components with Neutron and Synchrotron Radiation: Characterization of Nuclear Reactor Materials and Components with Neutron and Synchrotron Radiation  
*Sponsored by*: TMS Structural Materials Division, TMS/ASM: Nuclear Materials Committee  
*Program Organizers*: Meimei Li, Argonne National Laboratory; Jon Almer, Argonne National Laboratory; Donald Brown, Los Alamos National Laboratory; Matthew Kerr, Knolls Atomic Power Laboratory; Paula Mosbrucker, Kinetics Inc.

**Wednesday AM**  
**March 6, 2013**  
**Room**: 202B  
**Location**: Henry B. Gonzalez Convention Center  

**Session Chairs**: Meimei Li, Argonne National Laboratory; Jonathan Almer, Argonne National Laboratory

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8:30 AM Invited  
**Zirconium Hydride Characterization Using Synchrotron X-Ray Diffraction**: Miguel Vicente Alvarez1; Javier Santisteban2; Pablo Vizcaino3; Alejandro Flores1; Abraham Banchik1; Jonathan Almer1; ‘Centro Atómico Bariloche’; ‘Centro Atómico Ezeiza - CNEA’; ‘Advanced Photon Source, Argonne National Laboratory’

9:00 AM Question and Answer Period

9:05 AM  
**Synchrotron Studies on the Stress Relaxation near a Notch in Zr-2.5Nb**: Shuai Wan1; Mark Daymond2; Paula Mosbrucker2; ‘Queen’s University’; ‘Kinetics Inc.’

9:20 AM Question and Answer Period

9:25 AM  
**Effect of Stress on Hydride Precipitation Temperature and Hydride Texture in Zr2.5Nb Pressure Tubes**: Pablo Vizcaino1; Javier Santisteban2; Miguel Vicente-Alvarez1; Abraham Banchik1; Jon Almer1; ‘Comision Nacional de Energia Atómica’; ‘Argonne National Laboratory’

9:40 AM Question and Answer Period

9:45 AM Break

10:00 AM Invited  
**Synchrotron X-Ray Characterizations of Nuclear Materials Using the MARS Beamline: Brief Review of Current Studies**: Bruno Staud1; Pier Lorenzo Solar1; Sandrine Schultig1; Isabelle Llorens1; Marc Soullah1; Marie-Laure Lescoat2; Denis Menut1; Jean-Luc Béchade1; Nicolas Jouquères1; Olivier Bouty1; Sylvain Peuget1; Rémi Delorme1; Philippe Martin1; Christophe Valot1; Sebastiano Cannelli1; ‘SynchrotronSOLEIL’; ‘CEA’

10:30 AM Question and Answer Period

10:35 AM  
**Effect of Loading Methodology on Internal Strains Measured**: Travis Skippon1; Bjorn Clausen2; Mark Daymond1; ‘Queen’s University’; ‘Los Alamos National Laboratory’

10:50 AM Question and Answer Period

10:55 AM  
**In Situ Characterization of Grade 92 Steel during Tensile Deformation Using High Energy X-Ray Diffraction and Small Angle X-Ray Scattering**: Leyan Wang1; Meimei Li1; Jonathan Almer1; ‘Argonne National Laboratory’

11:10 AM Question and Answer Period
11:15 AM
High-Energy Synchrotron Radiation Study on Anisotropic Loading Behavior of Alloy 230 for VHTR Applications: Kun Mo1; Hsiao-ming Tung1; Jonathan Almert2; Meimei Li3; Xiang Chen1; Weiying Chen1; James Stubbins1; 1University of Illinois; 2Argonne National Laboratory; 3Oak Ridge National Laboratory

11:30 AM Question and Answer Period

11:35 AM
Thermo-mechanical Treatment of Ultrafine Grained T91 Alloy: Miao Song1; Xinghang Zhang2; Karl Hartwig3; 1Material Science and Engineering Program, Texas A&M University; 2Department of Mechanical Engineering, Texas A&M University

11:50 AM Question and Answer Period

11:55 AM
Monte Carlo and Molecular Dynamics Study of Atomistic Ordering and Properties in Uranium-Zirconium Alloy: Alex Moore1; Chaitanya Deo1; 1Georgia Institute of Technology

12:10 PM Question and Answer Period

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

Session Chairs: Francesca Tavazza, NIST; Richard Hennig, Cornell University

8:30 AM Invited
Design of Damage Resistant Glasses Guided by Computer Simulation: Liping Huang1; 1Rensselaer Polytechnic Institute

9:05 AM
A Van Der Waals DFT Study of Nano-Decorated Graphene Based Nanostructures for Hydrogen Storage: Janet Wong1; Chandra Veer Singh1; 1University of Toronto

9:25 AM
Magnetic Anisotropy of L10-CoPt Thin Film on Piezoelectric Substrate: Heechae Choi1; Kwang-Ryeol Lee1; 1Korea Institute of Science and Technology

9:45 AM Break

10:00 AM Invited
Shape Memory Metamaterials with Tunable Thermo-Mechanical Response Via Hetero-Epithelial Integration: Alejandro Strachan1; Karthik Guda Vishnu2; Keith Morrison1; 1Purdue University; 2Pennsylvania State University

10:35 AM A Genetic Algorithm Approach to Design the Micro-Structure for TRIP-Assisted Steel: Shengyen Li1; Ruixuan Zhu1; Ibrahim Karaman1; Raymundo Arroyave1; 1Texas A&M University

10:55 AM
Model Based Redesign of MX Carbonitrides Strengthened Austenitic Heat Resistant Steels: Qi Lu1; Wei Xu1; Sybrand van der Zwaag2; 1Delft University of Technology

11:15 AM
Properties of Zirconia Gadolinia Ytterbia Yttria Thermal Barrier Coating Studied by First Principles Simulation: Liuxi Tan1; Shengmin Guo1; Ebrahim Khoosravi1; Shizhong Yang1; Lei Zhao1; 1Southern University and A&M College; 2Louisiana State University

Cost Affordable Titanium IV: The Production and Processing of Titanium Powder

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

Program Organizers: M. Ashraf Imam, Naval Research Lab; Sam Froes, University of Idaho (Retired); Ramana Reddy, The University of Alabama

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

Session Chairs: Zhigang Fang, University of Utah; Kartik Rao, Metalysis

8:30 AM
The Production of Titanium Alloy Powder: James Withers1; V. Shapovalov1; R. Storm1; R. O. Loutfy1; 1MER Corporation

8:50 AM Invited
Processing of Titanium Powder into Consolidated Parts & Sheet: Kamal Akhtar1; Damien Mangabhui1; Kerem Araci1; Nigel Stone1; Delphine Cantin1; Yukinori Yamamoto1; Thomas Muth1; 1International Titanium Powder; 2CSIRO; 3Oak Ridge National Laboratory

9:10 AM Invited
Enhancing the Cost Effectiveness of High Performance Titanium Alloy Component Production by Powder Metallurgy: Deliang Zhang1; Mingtu Jia1; Stiliana Raynova1; Fei Yang1; Brian Gabbitas1; 1The University of Waikato

9:30 AM Break

9:50 AM Invited
Impurity Scavenging from Powder Metallurgy Titanium Alloys by Rare Earth Elements: Ma Qian1; Ming Yan1; 1The University of Queensland

10:10 AM Invited
Development and Optimization of Rolled Product Forms Using Blended-Elemental Powder-Based Ti-6Al-4V Alloy: Sami El-Soudani1; Kuan-Yu (Oscar) Yu1; Ernie Crist1; Fusheng Sun1; Vladimir Moxson1; Vlad Duz2; 1The Boeing Company; 2RTI International Metals, Inc.; 3Advanced Materials, Inc.

10:30 AM
Rolled Product Form Development and Optimization Using Blended-Elemental Powder-Based Billets of Ti-6Al-4V Alloy: Sami El-Soudani1; John Fanning3; Megan Harper2; Stephen Fox2; Vladimir Moxson1; Vlad Duz2; 1The Boeing Company; 2Timet, Inc.; 3Advanced Materials, Inc.

10:50 AM
Comparison of Properties and Microstructure of Ti-6Al-7Nb Alloy Processed by Different Powder Metallurgy Routes: Leandro Bolzoni1; Hari Babu Nadendla1; Elisa Maria Ruiz-Navas2; Elena Gordo1; 1Brunel University; 2Universidad Carlos III de Madrid

11:10 AM
Effect of Powder Compact Holding Time on the Microstructure and Properties of Ti-6Al-4V Alloy Produced by Powder Compact Extrusion of a Powder Mixture of HDH Titanium and Al-V Master Alloy: Fei Yang1; Deliang Zhang1; Brian Gabbitas1; Huiyang Lu1; 1The University of Waikato
11:30 AM
Solid State Processing Routes for Low-Cost Titanium Powder to Produce Sheet and Complex Forgings: Nick Weston; Fatos Derguti; Martin Jackson; University of Sheffield

Deformation, Damage, and Fracture of Light Metals and Alloys: Deformation, Damage, and Fracture of Light Metals and Alloys Session IV
Sponsored by: TMS Light Metals Division, TMS/ASM: Mechanical Behavior of Materials Committee
Program Organizers: Ke An, Oak Ridge National Laboratory; Qizhen Li, University of Nevada, Reno

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

Session Chair: Ke An, Oak Ridge National Laboratory

8:30 AM Invited
There's Plenty of Room at the Bottom...for Mg-Alloys: Suneeth Mathaudhu; U.S. Army Research Office

9:00 AM
Direct Observations and Characterization of Twinning in Magnesium: Benjamin Morrow; Ellen Cerreta; Rodney McCabe; Carlos Tome; Los Alamos National Laboratory

9:20 AM
Inhomogeneity of Slip Activity in Grains Oriented for Exclusively Non-basal Slip in Polycrystalline AZ31: Ali Khosravani; Raja K. Mishra; Surya Kalindindi; Roger Doherty; David Fullwood; Materials Science and Engineering Department, Drexel University; General Motors Research and Development Centre; Materials Science and Engineering Department, Mechanical Engineering and Mechanics, Drexel University; Mechanical Engineering Department, Brigham Young University

9:40 AM
Deformation Behavior of Nanocrystalline Mg-Y Alloy: Dalong Zhang; Baolong Zheng; Yizhang Zhou; Suneeth Mathaudhu; Enrique Lavernia; University of California-Davis; U.S. Army Research Office

10:00 AM Break

10:10 AM Invited
Deformation Behavior of Magnesium Alloys Investigated using Diffraction Measurements and Self-Consistent Modeling: Bjørn Clausen; Huamiao Wang; Martin Lentz; Peidong Wu; Sean Agnew; Carlos Tomé; Los Alamos National Laboratory; McMaster University; Technische Universität Berlin; University of Virginia

10:40 AM
Quasi-Static and Cyclic Mechanical Behavior of 41-50 Magnesium Single Crystal: Qizhen Li; University of Nevada, Reno

11:00 AM
Modelling Microplastic Flow in an hpdc Mg-Al Alloy: Bao Zhang; Carlos Caceres; The University of Queensland

11:20 AM
Atomistic Simulations of Deformation Mechanisms in Light-Weight hcp Mg-Li Alloys: Shivraj Karewar; Niraj Gupta; Alfredo Caro; Srinivasan Srinivasan; University of North Texas; Los Alamos National Laboratory

11:40 AM
Quantification of Lattice Defects in Severe-plastic Deformed Metals: Yoji Miyajima; Tokyo Institute of Technology

Electrode Technology for Aluminium Production: Anode Quality and Performance
Sponsored by: TMS Light Metals Division, TMS: Aluminum Committee
Program Organizers: Les Edwards, Rain CII Carbon; Hans Darmstadt, Rio Tinto Alcan; Sunil Bhajun, Qatalum; Juraj Chmelar, Hydro; Matvey Golubev, Rusal; Protech Patel, Light Metals Research Centre; Elaine Sum, Rio Tinto Alcan; Marc Gagnon, Aluminerie Alouette

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

Session Chair: Matvey Golubev, Rusal; ITC

8:30 AM Introductory Comments

8:35 AM
Pilot Scale Anodes for Raw Material Evaluation and Process Improvement: Lorentz Pettter Lossius; Juraj Chmelar; Inge Holden; Hogne Linga; Michal Tkac; Hydro Primary Metal Technology; Hydro Aluminium Årdal Carbon

9:00 AM
Relationships between Coke Properties and Anode Properties – Round Robin 19: Lorentz Pettter Lossius; Marvin Libin; Les Edwards; Julien Wyss; Norsk Hydro ASA; Rain CII Carbon; R&D Carbon

9:25 AM
Application of the Artificial Neural Network (Ann) in Predicting Anode Properties: Dipankar Bhattacharyya; Duygu Kocaefe; Yasar Kocaefe; Brigitte Morais; Marc Gagnon; University of Quebec at Chicoutimi; Aluminerie Alouette Inc.

9:50 AM
A Model for Predicting the Electrical Resistivity of Baked Anodes: Dipankar Bhattacharyya; Duygu Kocaefe; Yasar Kocaefe; Brigitte Morais; Marc Gagnon; University of Quebec at Chicoutimi; Aluminerie Alouette Inc.

10:15 AM Break

10:25 AM
The Role of Electrode Quality in Metal Purity: Stephen Lindsay; Alcoa, Inc.

10:50 AM
Electrochemical Characterization of Anode Performance: Rebecca Thorne; Camilla Sommerseth; Espen Sandnes; Ole Kjos; Thor Anders Aarhus; Lorentz Lossius; Hogne Linga; Arne Ratvik; Norwegian University of Science and Technology (NTNU); Hydro Aluminium; SINTEF

11:15 AM
High Capacity Thermobalance Anode Reactivity Testing: Frank Cannova; Nick Janssen; Jim Baker; Barry Sadler; BP; Net Carbon Consulting

11:40 AM
Diagnosing Changes in Baked Anode Properties using a Multivariate Data-driven Approach: Julien Lassau-Gauthier; Carl Duchesne; Jayson Tessier; REGAL - Université Laval; Alcoa
Electrode Technology for Aluminium Production: Cathode Materials and Wear
Sponsored by: TMS Light Metals Division, TMS: Aluminum Committee
Program Organizers: Les Edwards, Rain Cill Carbon; Hans Darmstadt, Rio Tinto Alcan; Sunil Bhajun, Qatalum; Juraj Chmelar, Hydro; Malvev Gobudev, Rusal; Pretesh Patel, Light Metals Research Centre; Elaine Sum, Rio Tinto Alcan; Marc Gagnon, Aluminerie Alouette

Wednesday AM
March 6, 2013
Room: Grand Ballroom C2
Location: Henry B. Gonzalez Convention Center

Session Chair: Pretesh Patel, Light Metals Research Center

8:30 AM Introductory Comments

8:35 AM Evolution of the Thermo-Mechanical Properties of Ramming Paste from Ambient to Operating Temperature in Hall-Heroult Cell: Stephane Tremblay1; Lyne St-Georges1; Laszlo Kiss1; Lyès Hacini2; Daniel Marceau1; Bénédicte Allard3; 1Université du Québec à Chicoutimi; 2Rio Tinto Alcan; 3Carbone Savoie

9:00 AM New Compaction Method for the Production of Large Ramming Paste Samples for 3D Mechanical Characterization: Pierre-Olivier St-Arnaud1; Donald Picard1; Maxime Noël1; Houshang Alamdari1; Donald Ziegler2; Mario Fafard1; 1Université Laval; 2Alcoa Canada

9:25 AM Technology for Manufacturing Cathodes Used in Aluminum Reduction in China: Hongjie Yang1; Fengqin Liu1; Xiaopei Yang1; 1Chalco

9:50 AM The Effect Of Cryolite On The Formation of Aluminum Carbide at the Carbon Aluminum Interface: Bronislav Novak1; Kati Tschöpe2; Arne Petter Ratvik1; Tor Grande1; 1Norwegian University of Science and Technology; 2SINTEF Materials and Chemistry

10:15 AM Break

10:25 AM Critical Reflections on Laboratory Wear Tests for Ranking Commercial Cathode Materials in Aluminium Cells: Kati Tschöpe1; Anne Store1; Egil Skybakmoen1; Asbjørn Solheim1; Tor Grande2; Arne Petter Ratvik2; 1SINTEF Materials and Chemistry; 2Norwegian University of Science and Technology (NTNU)

10:50 AM Model for Excessive Cathode Wear by a “Carbon Pump” at the Cell Bottom: Asbjørn Solheim1; Kati Tschöpe1; 1SINTEF; 2NTNU

11:15 AM Characterization of Porous Structure and Its Correlation to Sodium Expansion of Graphite Cathode Materials Using Image Analysis: Xiang Li1; Jilai Xue1; 1University of Science and Technology Beijing

11:40 AM Studies on the Resistance to Alkali Metal Penetration of Binders for TiB2-C Composite Cathode Materials: Fang Zhao1; Zhang Kai1; Lai Yan-qing1; LI Lin-ho1; ZHU Jun1; 1School of Metallurgical Engineering; Xi’an University of Architecture and Technology; 2Central South University

Energy Technologies and Carbon Dioxide Management: Energy Education
Sponsored by: TMS Extraction and Processing Division, TMS Light Metals Division, TMS: Energy Committee, TMS: Education Committee
Program Organizers: Soobhankar Pati, MOxST Inc.; Animesh Jha, University of Leeds; Jaroslaw Drellich, Michigan Technological University; Neale Neelameggham, Ind LLC; Cong Wang, Saint-Gobain High Performance Materials; Leon Prentice, CSIRO

Wednesday AM
Room: 006C
March 6, 2013
Location: Henry B. Gonzalez Convention Center

Session Chair: Art Morris, Thermart Software

8:30 AM Introductory Comments

8:35 AM Global Look at Energy Education and Training: Arvind Thekdi1; 1Consultant

9:05 AM Software for Energy Education: Art Morris1; Semih Perdahcioglu2; 1Thermart Software; 2University of Twente

9:35 AM Courses on Sustainability Issues in Materials Engineering: Jeffrey Fergus1; 1Auburn University

10:05 AM Break

10:35 AM Overview of Industrial Energy Training and Software: Cynthia Belt1; 1Consultant

10:55 AM Report on Subcommittee on Sustainability in Materials Education: Jeffrey Fergus1; Chris Twigge-Molecey2; 1Auburn University; 2Hatch

11:25 AM Teaching about Energy Sources at the University of Illinois (and How to Bring the Subject to Life): David Ruzic1; 1University of Illinois


12:25 PM Invited Perspectives on Energy Education and the Role of TMS: Garry Warren1; 1Univ of Alabama
Fatigue and Fracture of Thin Films and Nanomaterials: Micromechanical Testing for Nanomaterials Failure

Sponsored by: TMS Materials Processing and Manufacturing Division, TMS Structural Materials Division, TMS/ASM:
Mechanical Behavior of Materials Committee, TMS:
Nanomechanical Materials Behavior Committee

Program Organizers: Megan Cordill, Erich Schmid Institute of Materials Science; Daniel Kiener, Montana University of Leoben; Xinghang Zhang, Texas A & M University; Daniel Gianola, University of Pennsylvania; Corinne Packard, Colorado School of Mines

Wednesday AM Room: Bowie C
March 6, 2013 Location: Grand Hyatt

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

Session Chairs: Daniel Kiener, Montanunversieta Leoben; Megan Cordill, Erich Schmid Institute of Materials Science

8:30 AM Invited
Grain Boundary Fracture at the Micron Scale: a Combined Experimental and FEM Approach: Daniel Kupka1; Norbert Huber1; Erica Littleoden1; Helmholz-Zentrum Geesthacht

9:00 AM Nanoscale Time-Dependent Plasticity of 1-D Nanomaterials: Yong-Jae Kim1; Won Woo Lee1; In-Chul Choi1; Won Il Park1; Jae-il Jung1; Hanyang University

9:20 AM In-Situ ACOM-TEM Nanomechanical Testing of <111> Textured Ultrafine Grained Al Thin Films: Plasticity and Fracture Mechanisms: Hosni Idrissi1; Aaron Kobler2; Behnam Amin-ahmadi1; Michael Coulombier1; Jean-Pierre Raskin1; Christian Kibeli1; Thomas Pardoen1; Dominique Schryvers1; EMAT. University of Antwerp; Institute of Nanotechnology (INT); Institute of Mechanics, Materials and Civil Engineering, Université catholique de Louvain; Information and Communications Technologies, Electronics and Applied Mathematics (ICTEAM), Université catholique de Louvain

9:40 AM Direct Observation of Toughening Mechanism of Nano-Twins in Strombus Gigas Conch Shell: Youn Ah Shin1; Subin Lee1; Jiseong Im1; Ga-Young Shin1; Kyung Song1; Sang Ho Oh1; Pohang University of Science and Technology (POSTECH)

10:00 AM Break

10:20 AM Invited
Mechanical Deformation and Failure of Low Dimensional Carbon Nanomaterials: Jun Lao1; Rice University

10:50 AM Size-Dependent Elastic and Plastic Behavior in Pd Nanowhiskers: Lisa Chen1; Gunther Richter2; John Sullivan2; Dan Gianola1; University of Pennsylvania; Max Planck Institute for Intelligent Systems; Sandia National Laboratories

11:10 AM Mechanical Characterization of Boron Carbide Nanowires: Youfei Jiang1; Zhe Guan1; Terry Xu1; The University of North Carolina at Charlotte

11:30 AM Mechanical Stability of Quasi One-Dimensional Nanostructures (Nanowires): Charlotte Ensslen1; Reiner Mönig1; Andreas Sedlmayr1; Oliver Kraft1; Karlsruhe Institute of Technology

Fatigue in Materials: Microstructure-Driven Modeling and In-Situ Fatigue Characterization: Fatigue Property Enhancement and Life Prediction

Sponsored by: TMS Structural Materials Division, TMS/ASM:
Mechanical Behavior of Materials Committee
Program Organizers: Michael Sangid, Purdue University; Tongguang Zhai, University of Kentucky; Antonios Kontsos, Drexel University

Wednesday AM Room: 207B
March 6, 2013 Location: Henry B. Gonzalez Convention Center

Session Chair: Antonios Kontsos, Drexel University

8:30 AM Keynote
Microstructure-Sensitive Mesoscopic Modeling Fatigue Crack Formation and Early Growth in Polycrystals: Gustavo Castelluccio1; William Musinski1; David McDowell1; Georgia Institute of Technology

9:05 AM Invited
A Geometric Approach to Probabilistic Simulation of Microstructurally Small Fatigue Crack Processes in AA 7075-T651: Anthony Ingraffea1; Cornell University

9:30 AM Invited
Recent Advances in Fatigue Life Prediction: Michael Sangid1; Purdue University

9:55 AM Break

10:15 AM Invited
History and Future of Fatigue Initiation Analysis in Aerospace Structures: Mary Lee Gambone1; Rolls-Royce Corporation

10:40 AM Invited
Probabilistic Modeling of Accelerated Fatigue Life Using Step-Stress Loading: D Gary Harlow1; Lehigh University

11:05 AM Invited
Life-Cycle Performance of Turbine Rotor Materials: A Probabilistic Life-Limit Perspective: James Larsen1; Sushant Jha2; Christopher Szczepanski1; Reji John1; Andrew Rosenberger1; Michael Eaton1; Patrick Golden1; Dennis Buchanan1; Jay Jira1; Siamack Mazdiyasni1; Air Force Research Laboratory; Universal Technology Corporation; University of Dayton Research Institute

11:30 AM Invited
Probabilistic Sensitivity Analysis in Minimum Fatigue Life Prediction of a Shot Peened Titanium Alloy: Reji John1; Sushant Jha2; James Larsen1; Air Force Research Laboratory; Universal Technology Corporation

11:55 AM Life Prediction for Turbopropulsion Systems Under Dwell Fatigue Conditions: Kwai Chan1; Michael Enright1; Jonathan Moody1; Ben Hocking1; Simeon Fitch1; Southwest Research Institute; Elder Research Inc
12:15 PM
Microstructure-Based Fatigue Life Prediction Tool for Gearbox Components: Raja Pulikollu1; Nathan Bolander1; Sandeep Vijayakar2; Tony Shen1; Matthew Spies1; Eric Ames1; 1Sentient Science Corporation; 2Advanced Numerical Solutions LLC; 1The Boeing Company; 1U.S. Army Aviation Applied Technology Directorate

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

Wednesday AM Room: Grand Ballroom C3 March 6, 2013 Location: Henry B. Gonzalez Convention Center

Session Chairs: Ravi Verma, General Motors; Anthony Reynolds, University of South Carolina; Mitsuo Fujimoto, Kawasaki Heavy Industries, Ltd

8:30 AM Keynote
The Benefits and Opportunities for Friction Stir Welding and Processing within the Automotive Industry: Blair Carlson1; 1General Motors

8:55 AM Invited
Effect of Tool Pin Features and Geometries on Quality of Weld during Friction Stir Welding: Md. Reza-E-Rabby1; Wei Tang1; Anthony Reynolds1; 1University of South Carolina

9:15 AM
Aluminum Tailor-Welded Blanks for Automotive Applications: Yuri Hovanski1; JohnCarsley1; Blair Carlson1; Siva Pilli1; Susan Hartfield-Wunsch1; Mark Eisenmenger1; 1Pacific Northwest National Laboratory; 1General Motor Research & Development; 1General Motors; 1TWB Company

9:35 AM
Effect of Friction Stir Processing on Armor Grade Materials: Timothy Johnson1; Todd Curtis2; Bharat Jasthi1; Eric East1; Christian Widener1; Michael West1; 1South Dakota School of Mines and Technology; 1Zone Four Engineering, LLC; 1Arbegast Advanced Materials Processing Laboratory

9:55 AM Break

10:05 AM
The Characterization of the Microstructural Zones and the Spatial Variations of the Mechanical Properties in Friction-Stir Welded 2139 Aluminum Alloy: Jian Yu1; Brian Justusson1; Chian-Fong Yen1; 1ARL; 1University of Michigan

10:25 AM
Effect of Process Parameters on the Microstructure and Mechanical Properties of Friction Stir Welded 5050-T3 Al-Li Alloy: Harpreet Sidhu1; Rajiv Mishra1; Anthony Reynolds2; Lucie Johannes1; John Baumann1; 1University of North Texas; 1University of South Carolina; 1NASA-Johnson Space Center; 1The Boeing Company

10:40 AM
Analysis of Mechanical and Metallurgical Properties of Friction Stir Butt Welded AA2024: Sarah Jurak1; Dwight Burford1; Michael McCoy1; 1Wichita State University

10:55 AM
An Innovative Process Applied to the Joining of Steel to Aluminum in a Lap-Joint Configuration: Camille van der Rest1; Aude Simar1; Pascal Jacques1; 1Université catholique de Louvain

11:15 AM
Mechanical and Microstructural Properties of FSW Lap Joints: Egoitz Aldanondo1; Ekaizt Arrut1; Pedro Alvarez1; Alberto Echeverria1; 1IK4-LORTEK

11:35 AM
Mechanical Properties of Repaired 7075-T73 Friction Stir Weld Butt Welds: Christian Widener1; John Franklin1; Bharat Jasthi1; Michael West1; 1South Dakota School of Mines and Technology; 1Arbegast Advanced Materials Processing Laboratory

11:55 AM
Refill Friction Stir Spot Welding of Aluminum Alloys for Aviation by Using Shoulder First Plunging Method: Hideki Okada1; 1Kawasaki Heavy Industries, LTD.

12:15 PM
Process Development of Integral Fasteners Using Friction Stir Spot Welding with “C-Frame” End Effect or on an Aircraft Cabin Door Made from AA6061-T6 and AA2024-T3: Alan Handyside1; Vishwanath Iyer1; Ron Preston1; Enkhsaikhan Boldsaikhan1; Michael McCoy1; 1Wichita State University

12:35 PM
Effect of Post-weld Aging on the Corrosion Resistance and Mechanical Properties of Friction Stir Welded Aluminum Alloy 7475-T73: Bharat Jasthi1; Erik Klineckman1; Todd Curtis1; Christian Widener1; Michael West1; Robert Ruokolainen1; Ashish Dasgupta1; 1Advanced Materials Processing and Joining Laboratory, South Dakota School of Mines and Technology; 1South Dakota School of Mines and Technology; 1Focus: HOPE

12:55 PM
Effect of a Two-stage Tool Probe on the Mechanical Strength and Macrostructure of Friction Stir Spot Welded Aerospace Alloys AA 7075 and AA 2024: A. Vishwanath Iyer1; Enkhsaikhan Boldsaikhan1; Dwight Burford1; Michael McCoy1; 1Wichita State University

1:10 PM
Investigation of Microstructural Evolution in the Transition Zone of Multipass Friction Stir Processed Al-Mg Alloy: Pradeep Shivanna1; Vivek Pancholi1; 1Indian Institute of Technology Roorkee
Frontiers in Solidification Science: Microstructure Formation I: Experimental
Sponsored by: TMS Materials Processing and Manufacturing Division, TMS: Solidification Committee
Program Organizers: Andre Phillion, University of British Columbia; Silvère Akamatsu, Institut des Nanosciences de Paris; Christoph Beckermann, The University of Iowa; Michel Rappaz, Ecole Polytechnique Federale de Lausanne

Wednesday AM  Room: Lone Star Salon F
March 6, 2013  Location: Grand Hyatt

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

Session Chairs: Christopher Gourlay, Imperial College London; Ulrike Hecht, Access e.V.

8:30 AM Invited
Effects of Grain and Interphase Boundary Energy Anisotropy on Directional Solidification Microstructures: Gabriel Faivre1; Sabine Bottin-Rousseau1; Silvère Akamatsu1; 1UPMC

9:00 AM
Cooperative Growth of Primary and Peritectic Phases in Cu-Sn Alloys Solidified at Low Speed: Pseudo-Steady State Regime: Jonas Valloton1; Jonathan Dantzig2; Mathis Flapp1; Michel Rappaz1; 1EPFL; 2EPFL/UJIC; CNRS/Ecole Polytechnique

9:20 AM
Characterization of Fluid Flow Inside Electromagnetically-Levitated Molten Iron-Cobalt Droplets for ISS Experiment for ISS Experiments: Jonghyun Lee1; Xiao Xiao1; Douglas Matson1; Robert Hyers1; 1Tufts University; 2University of Massachusetts

9:40 AM Break

9:55 AM
Enhanced Growth Kinetics in Undercooled FeCo Alloys - Adiabatic Remelting of the Mushy-Zone: Douglas Matson1; Jackson Dolan1; 1Tufts University; 2University of Massachusetts

10:15 AM
Crystal Orientation and Morphology Selection in Al-Ag-Cu Ternary Eutectic: Amber Genau1; Lorenz Ratke1; 1University of Alabama at Birmingham; 2German Aerospace Center (DLR)

10:35 AM
Nucleation of Twinned Dendrites in Al-Zn-Cr Alloys: Can Icosahedral Solid Clusters Play a Role?: Güven Kurtuldu1; Philippe Jarry1; Michel Rappaz1; 1Computational Materials Laboratory, Ecole Polytechnique Fédérale de Lausanne, Switzerland; 2Constellium CRV, France

10:55 AM Invited
Ultra-Fast Calorimetry for Studies of Crystallization in Chalcogenides for Phase-Change Memory: A. L. Greer1; 1University of Cambridge

11:25 AM
Application of Fast Scanning Calorimetry in the Rapid Solidification of Tin Particles Embedded in Al Matrix: Weipeng Zhang1; Bingge Zhao1; QiJie Zhai1; Yulai Gao1; 1School of Materials Science and Engineering, Shanghai University

11:45 AM
Undercooling Dependence on Liquid Overheating by Differential Fast Scanning Calorimetry: Bin Yang1; John Perepezko1; Evgeny Zhuravlev1; Yulai Gao1; Christoph Schichk1; 1University of Rostock; 2University of Wisconsin-Madison; 3Shanghai University

12:05 PM
Size Dependent Nucleation of Single Tin Particles by Differential Fast Scanning Calorimetry: Bin Yang1; A. S. Abyzov1; Evgeny Zhuravlev1; Yulai Gao1; J. W. P. Schmelzer1; Christoph Schichk1; 1University of Rostock; 2National Science Center, Kharkov Institute of Physics and Technology; 3Shanghai University

High Temperature Electrochemistry: Electrochemistry and Materials Properties
Sponsored by: TMS Extraction and Processing Division, TMS: Pyrometallurgy Committee
Program Organizers: Prabhat Tripathy, Idaho National Laboratory; Guy Fredrickson, Idaho National Lab

Wednesday AM  Room: 006D
March 6, 2013  Location: Henry B. Gonzalez Convention Center

Session Chairs: Dihua Wang, Wuhan University; Laurent Cassayre, Laboratoire de Genie Chimique

8:30 AM
Ultrahigh-Purity Materials (>99.9999%) by Electrefining: Meng Tao1; 1Arizona State University

9:00 AM
Influence of FeF2 Content on the Corrosion of Ni-Cased Alloys (NiCrW and NiCrMo) in Molten Fluorides: Laurent Cassayre1; Thierry Auger1; Céline Cabaret1; Isabelle Drouelle1; Jérémie Lezac1; Laurent Massot1; Mathieu Gibilaro1; Pierre Chamelot1; 1Laboratoire de Génie Chimique; 2MSSMAT; 3CEA; 4Institut de Chimie Moléculaire et des Matériaux d’Orsay

9:30 AM
Effect of Electrical Conductivity and Porosity of Cathode on Electro-deoxidation Process of Ilmenite Concentrate: Xuyang Liu1; Meilong Hu1; Chenguang Bai1; Xuewei Lv1; 1Chongqing University; 2Chongqing Technology Beijing University

10:00 AM Break

10:20 AM
Oxygen – Permeable Solid/Melt Composite Membranes: Valery Belousov1; 1Baikov IMET RAS

10:50 AM
Zirconia Sensor Device for In-Situ Monitoring of Metal Powder Oxidation States: Jarrod Earden1; Soumendra Basu1; Srikant Gopalan1; Uday Pal1; 1Boston University

11:20 AM
The Kinetics and Mechanism of Catastrophic Oxidation of Copper: Anton Klimashin1; 1Baikov IMET RAS

11:50 AM
On the Preparation of Mg2Ni Alloy by a New Electrochemical Method: Fuat Erden1; Ishak Karakaya1; Metehan Erdogan1; 1Middle East Technical University

12:10 PM
The Influence of F- Ions on the Electrodeposition of Titanium in Molten Fluoride-chloride Salt: Xiaobo Zhu1; Qiyu Wang1; Jianxun Song1; Shuqiang Jiao1; HongMin Zhu1; 1University of Science and Technology Beijing
Hume-Rothery Award Symposium: Electronic Structure Theory of Stability and Bonding in Alloys: Alloy Theory II (Joint Session with Computational Thermodynamics and Kinetics)

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

Wednesday AM  Room: 205
March 6, 2013  Location: Henry B. Gonzalez Convention Center

Session Chairs: Alan Ardell, UCLA; Gus Hart, BYU

8:30 AM Invited
High Entropy Alloys a New Class of Structural Materials: Magnetism and Magnetic Interactions: G. Malcolm Stocks1; Markus Daene2; Junqi Yin1; Markus Eisenbach1; Aurelian Rusanu1; Khorgokhuu Odbadrakh1; James Morris1; Claudia Troparevsky4; 1ORNL; 2LLNL

9:00 AM Invited
Hybrid Methods for Hybrid Materials: Stefan Müller1; 1Hamburg University of Technology

9:30 AM Break

9:50 AM Invited
Effect of Epitaxial Strain on Phase Stability and Domain Structures in Thin Films: Long Qing Chen1; 1Penn State University

10:20 AM Invited
Thermodynamic and Kinetic Properties of High Temperature Materials from First Principles: Anton Van der Ven1; 1University of Michigan

10:50 AM Invited
Charges States and Their Implications on CALPHAD Modeling: Zi-Kui Liu1; 1The Pennsylvania State University

Hybrid and Hierarchical Composite Materials: Characterization and Structure-Property Relationships

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

Wednesday AM  Room: 215
March 6, 2013  Location: Henry B. Gonzalez Convention Center

Session Chairs: Tomoko Sano, U.S. Army Research Laboratory; Chang Soo Kim, University of Wisconsin -Milwaukee

8:30 AM Synthesis and Characterization of Inorganic Fulleren Type WS2 and Carbon Nanostructures Composites: Claudia Luhrs1; Michael Moberg1; Ashley Masson1; Luke Brewer1; Sarah Monen1; 1Naval Postgraduate School

8:50 AM Development of Cyclic Damage in CFRP under Variable Loading Conditions: Alan Plumtree1; 1University of Waterloo

9:10 AM Strain-rate Sensitivity in the Bending Strength of a Forged Turbostratic-Carbon Fiber Composite: Eric Brannigan1; Alan Jankowski2; 1Texas Tech University

9:30 AM
Effect of Buckypaper Reinforcement on the Hypervelocity Impact Response of Polyethylene Fiber Composites: Suman Khatiwada1; Enrique Barrera2; 1Rice University

9:50 AM Break

10:05 AM
Characterizing Thin Polyurea Layers Subjected to High Rate Loading: Charles Randow1; Daniel Casem1; Jason Robinetti1; 1US Army Research Lab

10:25 AM
Enhanced Permeability of 3D Woven Lattice Material with Experimental Testing and Modeling: Longyu Zhao1; Seunghyun Ha1; Keith Sharp1; Andrew Gelmacher1; Alex Kinsey1; Yong Zhang1; Dine Erdeniz1; David Dunand1; Kevin Henker1; Jamie Guest1; Timothy Weihs1; 1Johns Hopkins University; 3TEX, Inc., NC USA; 1Naval Research Laboratory; 1Northwestern University

10:45 AM
Composite Crush Response of Hybrid 3D Woven Composites: Mark Pankow1; Chian-Fong Yen1; Anthony Waas1; 1Army Research Laboratory; 1University of Michigan

11:05 AM
High Rate Through-the-Thickness Response of Hybrid 3D Woven Composites: Brian Justusson1; Mark Pankow1; Anthony Waas1; Chian-Fong Yen1; 1University of Michigan; 1United States Army Research Laboratories

Magnesium-Based Biodegradable Implants Symposium: Performance Assessment and Evaluation

Sponsored by: TMS Electronic, Magnetic, and Photonic Materials Division, TMS Light Metals Division, TMS Structural Materials Division, TMS: Biomaterials Committee, TMS: Magnesium Committee
Program Organizers: Candan Tamerler, University of Washington; Wim Sillekens, European Space Agency

Wednesday AM  Room: 214D
March 6, 2013  Location: Henry B. Gonzalez Convention Center

Funding support provided by: Biological Materials Science Symposium
AND Magnesium Technology Symposium

Session Chairs: Wim Sillekens, ESA - European Space Agency; Jörg Löfler, ETH Zurich

8:30 AM Introductory Comments Candan Tamerler / Wim Sillekens

8:40 AM Keynote
How to Standardize Testing of Biodegradable Metals?: Frank Witte1; 1Hannover Medical School

9:20 AM
Corrosion Characterization of Biodegradable Mg Alloys: Yeohueung Yun1; Yongsook Jang1; Boyce Collins1; Zongqing Tan1; Zhongyun Dong1; Jag Sankarl; 1NC A & T State University; 1University of Cincinnati
9:30 AM Invited
Soft Magnetic Fe-Based Amorphous and (Nano)Composite Alloys with Very Good Mechanical Properties: Mihai Stoica; IFW Dresden

10:00 AM Break

10:15 AM
Investigation of Domain Structure of Alnico Magnets with Magneto-Optical Kerr Effect (MOKE): Andriy Palasyuk; Erick Blomberg; Haley Dillon; Fran Laabs; Lin Zhou; Ruslan Prozorov; Matthew Kramer; R. McCallum; Iver Anderson; Ames Laboratory

10:35 AM
Constant Permeability of Fe-B-Si-Nb Crystal-Glassy Composite Bulk Alloy by B2O3 Flux Melting and Casting: Teruo Bitoh; Shogo Izumi; Akita Prefectural University

10:55 AM
A Density Functional Theory (DFT) Study of 4d Transition Metal Based Full Heusler Compound Co2YSi: Dibya Rai; Mizoram University

Materials and Fuels for the Current and Advanced Nuclear Reactors II: Structural Materials I
Sponsored by: TMS Structural Materials Division, TMS/ASM: Corrosion and Environmental Effects Committee, TMS/ASM: Nuclear Materials Committee
Program Organizers: Ramprashad Prabhakaran, Idaho National Laboratory; Dennis Keiser, Idaho National Laboratory; Raul Rebak, GE Global Research

Wednesday AM
Room: 202A
Location: Henry B. Gonzalez Convention Center

Session Chair: Kumar Sridharan, University of Wisconsin

8:30 AM Invited
Nondestructive Evaluation in the Nuclear Power Industry: James Wall; EPRI

9:10 AM
Thermal Embrittlement of Ferritic Stainless Steels: Julie Tucker; George Young; Michael Miller; Knolls Atomic Power Laboratory; Oak Ridge National Laboratory

9:30 AM
Stainless Steel Corrosion Fatigue Retardation Behavior at Long Rise Times: Elaine West; Nathan Lewis; Knolls Atomic Power Laboratory

9:50 AM
Nanoscale Characterization of Precursor to a Large Best Practice Heat of 14YWT: Nicholas Cunningham; Yuan Wu; David Gragg; Kirk Fields; G. Robert Odette; David Hoelzer; Stuart Maloy; UC Santa Barbara; Oak Ridge National Laboratory; Los Alamos National Laboratory

10:10 AM Break

10:30 AM
Microstructure Study of 9Cr-1Mo Ferritic-Martensitic Steel during Creep at the Wide Range of Stress: Behrang Poorganji; Deephita Tammana; Peter Nagy; Vijay. K Vasudevan; University of Cincinnati

10:50 AM
Creep-Fatigue Behavior of Alloy 617 and Alloy 230 at 850°C: Xiang Chen; Mikhail Sokolov; Sam Sham; Donald Erdman; Jeremy Busby; James Stubbins; Oak Ridge National Laboratory; University of Illinois at Urbana-Champaign

11:10 AM
Creep Behavior of High Temperature Alloys as Structural Materials in Generation IV Nuclear Power Plant: Xingshuo Wen; Laura Carrol; Richard Wright; T-L. (Sam) Sham; Vijay Vasudevan; University of Cincinnati; Idaho National Laboratory; Oak Ridge National Laboratory

11:30 AM
Parametric Study on Mechanical Property of Ni Based Alloy for Application to VHTR: Dong-Jin Kim; KAERI

11:50 AM
The Oxidation Behavior of Hastelloy X and Its Welds at 1223K (950°C): W.S. Chen; Wu Kai; W.L. Tsay; J.J. Kai; Institute of Materials Engineering, National Taiwan Ocean University; Department of Engineering and System Science, National Tsing Hua University

Materials Processing Fundamentals: Process Metallurgy of Non-Ferrous Metals
Sponsored by: TMS Extraction and Processing Division, TMS: Process Technology and Modeling Committee
Program Organizers: Lifeng Zhang, University of Science and Technology Beijing; Antoine Allanoire, Massachusetts Institute of Technology; Cong Wang, Saint-Gobain High Performance Materials; James Yurko, Materion Brush Beryllium and Composites; Justin Crapps, ExxonMobil

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

Session Chair: James Yurko, Materion Brush Beryllium and Composites

8:30 AM
A Simple Method to Measure Wettability and Surface Energy of TiO2 Coatings: Jonathan Schuster; Mario Rosenberger; Carlos Schvezov; Universidad Nacional de Misiones

8:50 AM
Fabrication and Property Evaluation of Mo Sputtering Target by Spark Plasma Sintering Process: JungHan Ryu; Hyun Kuk Park; Jun-Ho Jang; Ik-Hyun Oh; Hyeon Taek Son; Korea Institute of Industrial Technology

9:10 AM
TMAM Wet Etching of Silicon Micro- and Nano-Fins for Selective Sidewall Epitaxy of III-Nitride Semiconductors: Lianci Liu; Denis Myasishchev; Vladimir Kuryatkov; Sergey Nikishin; Harlan Harris; Mark Holz; Texas Tech University; Texas A&M University

9:30 AM
Mathematical Modeling of Thermal and Residual Stress Evolution of Direct Metal Deposition (DMD): Hyung Chae; Jyotirmoy Mazumder; University of Michigan

9:50 AM
Metallurgical Characterisation of Direct Laser Deposited IN718: Zewen Huang; Rengen Ding; Ian Mitchell; Gavin Baxter; Mark Nordin; Paul Bowen; The University of Birmingham; Rolls-Royce plc

10:10 AM Break
11:40 AM

KF-AlF3 System: Investigating Current Efficiency of Aluminum Electrolysis in NaF

10:10 AM

Break

11:00 AM

Closed-Loop Control and FEM-Based Thermal Management on Laser Curing of Powder Coatings: Shaung Liu; Mark Poullos; Mark Poullos; Fanrong Kong; Radovan Kovacevic; Southern Methodist University; PhotoFusion Company

11:20 AM

Purification of Indium by Vacuum Distillation: Yong Deng; Bin Yang; DongSheng Li; Baoqiang Xu; Heng Xiong; Kunming University of Science and Technology

11:40 AM

Investigating Current Efficiency of Aluminum Electrolysis in NaF-KF-AlF3 System: Huanhuan Ma; Jilai Xue; Jigang Li; Yanan Zhang; University of Science and Technology Beijing


Sponsored by: TMS Materials Processing and Manufacturing Division, TMS/ASM: Computational Materials Science and Engineering Committee

Program Organizers: Pascal Bellon, University of Illinois; Alfredo Caro, LANL; Long Qing Chen, Penn State University; Anet El-Azab, Florida State University; Ming Tang, Lawrence Livermore National Laboratory

Wednesday AM

March 6, 2013

Room: 218

Location: Henry B. Gonzalez Convention Center

Session Chairs: Alphonse Finel, CNRS/ONERA; Anet El-Azab, Purdue University

8:30 AM

Invited Phase Field Modeling of Microstructure: Alphonse Finel; Maeva Cottura; Pierre-Antoine GESLIN; Benoit APPOLAIRE; Yann Le Bouar; ONERA-CNRS

9:00 AM Invited

Modeling Deformation Mechanisms in Ni-Based Superalloys: Ning Zhou; Hallee Deutchman; Mike Mills; Yunzi Wang; Ohio State University

9:30 AM

Applications of Field Dislocation Mechanics: Saurabh Puri; Amit Acharya; Dennis Dimiduk; Sathish Rao; UES, Inc; Carnegie Mellon University; Air Force Research Laboratory

9:50 AM

Mesoscale Modeling of the Tensile Responses of BCC Fe and Mo in the Athermal Regime: Roman Madec; Ladislav Kubin; CEA, DAM, DIF; LEM (CNRS/ONERA)

10:10 AM

Break

10:30 AM

Modeling of Coherency Loss Mechanisms: Pierre-Antoine GESLIN; Benoit Appolaires; Alphonse Finel; ONERA-CNRS

10:50 AM

Invited Dislocation Simulations of the Structure and Properties of Grain Boundaries and Interfaces: David Strolovitz; Siu Sin Quek; Adele Lim; Shuyang Dai; Xiang Yang; University of Pennsylvania; Institute of High Performance Computing; Hong Kong University of Science and Technology

11:20 AM

Slip Mechanisms in BCC Single Crystals: In-Situ Laue Diffraction: Cecile Marichal; Helena Van Swygenhoven; Steven Van Petegem; Emad Oveis; Cecile Hebert; Paul Scherrer Institute; EPFL

11:40 AM

Power-Law Creep from Discrete Dislocation Dynamics Simulations: Amine Benzerger; Shyam Keralavarma; Texas A&M University; Ecole Polytechnique Fédérale de Lausanne

Microstructural Processes in Irradiated Materials: Austenitic & Duplex Stainless Steels

Sponsored by: TMS Structural Materials Division, TMS/ASM: Nuclear Materials Committee

Program Organizers: Thak Sang Byun, Oak Ridge National Laboratory; Dane Morgan, University of Wisconsin-Madison; Yasuyoshi Nagai, Tohoku University; Zhijie Jiao, University of Michigan-Ann Arbor; Christine Guéneau, CEA-Saclay

Wednesday AM

March 6, 2013

Room: 203A

Location: Henry B. Gonzalez Convention Center

Session Chairs: Christophe Domain, EDF R&D; Frank Garner, Radiation Effects Consulting

8:30 AM Invited

Second-Order Microstructure Evolution Phenomena in Austenitic and High-Nickel Alloys Growing to First Order Importance at Higher Damage Levels Associated with PWR Plant Life Extension: Frank Garner; Paula Freyer; Y. Isobe; Larry Greenwood; Maxim Gussev; Radiation Effects Consulting; Westinghouse Electric Company; Nuclear Fuel Industries; Pacific Northwest National Laboratory; Oak Ridge National Laboratory

9:00 AM

Effect of Ni and Cr Alloying on Microstructural Evolution of BOR60-Irradiated Type 304 Stainless Steels: Lizhen Tan; Jeremy Busby; Oak Ridge National Laboratory

9:20 AM

Observation of Grain Boundary Segregation in Ion-Irradiated Stainless Steels 316 and Comparison with the Rate Theory Model of a Multicomponent System: Gyeong-Geon Lee; Yong-Bok Lee; Hyung-Ha Jin; Junhyun Kwon; Korea Atomic Energy Research Institute

9:40 AM

High Dose Heavy Ion Irradiation of Austenitic Stainless Steels Simulating a Neutron Irradiation: Jan Michalicka; Zhijie Jiao; Gary Was; Janelle Wharry; Research Centre Rez; University of Michigan

11:00 AM

Aging of Supersaturated Ni3Mo Solid Solution Prepared by High Energy Milling: K. Khalifallah; A. Aning; C. Bolfarin; Virginia Tech; Federal University of Sao Carlos; Polytechnique Fédérale de Lausanne

11:20 AM

Applications of Field Dislocation Mechanics: Saurabh Puri; Dennis Dimiduk; Sathish Rao; UES, Inc; Carnegie Mellon University; Air Force Research Laboratory

11:40 AM

Modeling Deformation Mechanisms in Ni-Base Superalloys: Ning Zhou; Hallee Deutchman; Mike Mills; Yunzi Wang; Ohio State University

12:00 PM

Dislocation Avalanche Behavior in Ni Microcrystals for Varying Strain Rates and Deformation Stages: Dennis Dimiduk; Michael Uehchi; Stefanos Papanikolaou; Jaafar El-Awady; Paul Shade; Air Force Research Laboratory; Yale University; Johns Hopkins University

12:20 PM

Effect of Ni and Cr Alloying on Microstructural Evolution of BOR60-Irradiated Type 304 Stainless Steels: Lizhen Tan; Jeremy Busby; Oak Ridge National Laboratory

12:40 PM

Observation of Grain Boundary Segregation in Ion-Irradiated Stainless Steels 316 and Comparison with the Rate Theory Model of a Multicomponent System: Gyeong-Geon Lee; Yong-Bok Lee; Hyung-Ha Jin; Junhyun Kwon; Korea Atomic Energy Research Institute

1:00 PM

High Dose Heavy Ion Irradiation of Austenitic Stainless Steels Simulating a Neutron Irradiation: Jan Michalicka; Zhijie Jiao; Gary Was; Janelle Wharry; Research Centre Rez; University of Michigan

1:20 PM

Effect of Ni and Cr Alloying on Microstructural Evolution of BOR60-Irradiated Type 304 Stainless Steels: Lizhen Tan; Jeremy Busby; Oak Ridge National Laboratory

1:40 PM

Observation of Grain Boundary Segregation in Ion-Irradiated Stainless Steels 316 and Comparison with the Rate Theory Model of a Multicomponent System: Gyeong-Geon Lee; Yong-Bok Lee; Hyung-Ha Jin; Junhyun Kwon; Korea Atomic Energy Research Institute

2:00 PM

High Dose Heavy Ion Irradiation of Austenitic Stainless Steels Simulating a Neutron Irradiation: Jan Michalicka; Zhijie Jiao; Gary Was; Janelle Wharry; Research Centre Rez; University of Michigan
10:00 AM
Intergranular Cracking at RT of Austenitic Fe-Cr-Ni Alloys Exposed to PWR Conditions: Young Suk Kim; Sung Soo Kim; Dae Whan Kim; 1Korea Atomic Energy Research Institute

10:20 AM Break

10:30 AM
Slip Transfer through Grain Boundaries in Irradiated 304 Stainless Steel: Bai Cui; Josh Kacher; Ian Robertson; 1University of Illinois at Urbana-Champaign

10:50 AM
Relationship between Grain Boundary Character and Crack Initiation of He Irradiated Fe-15Cr-20Ni Ternary Alloy: Kiyohiro Yabuuchi; Kazuma Abe; Shuhei Nogami; Akira Hasegawa; 1Tohoku University

11:10 AM
Effect of Local Environment on Vacancy Properties in BCC FeCr and FCC FeNiCr Alloys by DFT Calculations and Consequences on Diffusion Properties: Christophe Domain; Jean Baptiste Piochaud; Davide Costa; Gilles Adjanor; Pär Olsson; Charlotte Becquart; 1EDF R&D; 2UMET CNRS EM2VM; 3KTH

11:30 AM
Influence of Ion Irradiation Coupled with He Implantation on the Swelling Microstructure of Austenitic Stainless Steels: Xiaoqiang Li; Franck Fortuna; Aurélie Gentils; 1Paris-sud University

11:50 AM
The Potential for Low-Temperature Swelling in Austenitic Stainless Steels: Roger Stoller; Alexander Barashev; Stanislav Golubov; 1Oak Ridge National Laboratory; 2University of Tennessee

12:10 PM Invited
Thermodynamic Modelling of Volatile Fission Products during SFR Fuel Irradiation: Jean-Christophe Damas; Tam Ngoe Pham Thi; Vincent Bouineau; Jean-Paul Piron; Nathalie Dupin; Christine Gueneau; Stephane Gosse; Pierre Benigni; Jacques Roger; Philippe Maugis; 1CEA Cadarache; 2CEA Saclay; 3UMR CNRS 6242 & Aix-Marseille University

10:00 AM
Modeling and Experimental Validation of Multiscale Mechanical Behavior from Atomic Scale to Macro Scale: Defects at the Atomic Scale
Program Organizers: Nathan Mara, Los Alamos National Laboratory; Jian Wang, Los Alamos National Laboratory; Brad Boyce, Sandia National Laboratories; Jennifer Carter, Case Western Reserve University; Anthony Rollett, Carnegie Mellon University; Jonathan Zimmerman, Sandia National Laboratories

Wednesday AM Room: 211
March 6, 2013 Location: Henry B. Gonzalez Convention Center

Session Chairs: Douglas Spearot, University of Arkansas; Dallas Trinkle, University of Illinois, Urbana-Champaign

8:30 AM Invited
A Concurrent Atomistic-Continuum Methodology for Passing Waves, Heat and Defects from the Atomistic to the Continuum Region: Youping Chen; Liming Xiong; Shengfeng Yang; 1University of Florida

9:00 AM
A DFT Investigation of the Early Stages of Nanoindentation: the Chemical and Mechanical Interactions between a Diamond Indenter and a Ni Slab: Francesca Tavazza; Chandler Becker; Lyle Levine; 1National Institute of Standards and Technology

9:20 AM
Ab Initio DFT Modeling of the Dislocation and Its Mobility in TiN Ceramic: Satyesh Yadav; Rampi Ramprasad; Richard Hoagland; Jian Wang; Amit Misra; Joe Yasi; Dallas Trinkle; Xiang-Yang Liu; 1Los Alamos National Lab; 2University of Connecticut; 3University of Illinois at Urbana-Champaign

9:40 AM Invited
Atomic Simulations of Grain Boundary Associated Distortion in Metallic Materials: Douglas Spearot; Shawn Coleman; 1University of Arkansas

10:10 AM Break

10:20 AM Invited
Decomposing Atomic-Scale Deformation into Elastic and Plastic Parts and the Automated Identification of Grain Boundary Dislocations: Alexander Stukowski; 1Darmstadt University of Technology

10:50 AM
Microstructure and Crack Size Effects on Fatigue Crack Growth Behavior of Non-Ferrous and Ferrous Structural Materials: Anastasios Garras; Diana Lados; 1Worcester Polytechnic Institute

11:10 AM
Ordering of Point Defects on Deformable Elastic Lattices: Roman Groger; 1Academy of Sciences of the Czech Republic

11:30 AM Invited
Predicting Strength and Cross-Slip of Magnesium Alloys: First-Principles, Solute Distribution, and Deformation: Dallas Trinkle; Joseph Yasi; Louis Hector; 1University of Illinois, Urbana-Champaign; 2General Motors Technical Center
12:00 PM
Estimation of Dislocation Nucleation Stresses from Nanoindentation by Combined Multiscale Modeling and Experiment: Li Ma1; Francesca Tavazza1; Chandler Becker1; Douglas Smith1; Lyle Levine1; 1NIST

Modeling of Multi-Scale Phenomena in Materials Processing - III: Fluid Dynamics and Solidification
Program Organizers: Adrian Sabau, Oak Ridge National Laboratory; Anthony Rollett, Carnegie Mellon University; Laurentiu Nastac, The University of Alabama; Jonathan Madison, Sandia National Laboratories; Mei Li, Ford Motor Company

Wednesday AM  Room:  216
March 6, 2013  Location:  Henry B. Gonzalez Convention Center
Session Chairs:  Adrian Sabau, Oak Ridge National Laboratory; Lifeng Zhang, Missouri University of Science and Technology

8:30 AM Introductory Comments

8:35 AM
Numerical Simulating Study on the Solidification Process of Continuous Casting Billet: Tongbo Zhang1; Jingshe Li1; Hongbo Yang1; Fangfang Song1; Ting Huang1; 1USTB
9:00 AM
Numerical Simulation of Cavitation under Ultrasonic Treatment: Jinosu Kang1; Yisen Hu1; 1Tsinghua University
9:25 AM
Optimum Effect of Factors Influencing on Sacrificial Cathodic Protection for Steel Wall: Saad Kaskah1; 1Ministry of Industry
9:50 AM Break
10:20 AM
Self-Adapting Withdrawal Technology by Numerical Simulation to Optimize Directional Solidification Process of Superalloy Casting: Hang Zhang1; Qing Yan Xu1; Bai Cheng Liu1; 1Tsinghua University
10:45 AM
Modeling on the Fluid Flow and Inclusion Motion in a Continuous Casting FC-Mold: Qiangjiang Wang1; Lifeng Zhang1; 1University of Science and Technology Beijing
11:10 AM
Numerical Simulation of Temperature Field and Pressure in Super Large Regenerative Rotary Hearth Furnace: Qiang Li1; Huimin Lu1; Lian Zhou1; 1Beihang University

Nanostructured Materials for Lithium Ion Batteries and for Supercapacitors:
Nanostructured Materials for Lithium Ion Batteries and for Supercapacitors Session V
Sponsored by: TMS Electronic, Magnetic, and Photonic Materials Division, TMS: Energy Conversion and Storage Committee
Program Organizer: David Mitlin, University of Alberta and NINT NRC

Wednesday AM  Room:  007B
March 6, 2013  Location:  Henry B. Gonzalez Convention Center
Session Chairs:  David Mitlin, University of Alberta and NINT NRC; Reza Shahbazian-Yassar, Michigan Technological University; Peter Kalisvaart, University of Alberta; Zhi Li, University of Alberta

8:30 AM Invited
Pseudocapacitive Properties of Nanostructured Transition Metal Oxides: Bruce Dunn1; Veronica Augustyn1; Jason Kim1; Iris Rauda1; Sarah Tolbert1; 1UCLA
8:50 AM Invited
Fracture and Delamination in Thin Film Si Electrodes: Hamed Haftbaradaran1; Huaqiang Gao1; 1Brown University
9:10 AM
Microstructural Characterization of Damage Mechanisms of Graphite Electrodes in Lithium-ion Cells: Almet Alpas1; A. Reza Riahi1; Sandeepr Bhattacharya1; 1University of Windsor
9:30 AM Invited
Nanoarchitecture Electrodes for Energy Storage: Christopher Johnson1; 1Argonne National Laboratory
9:50 AM Break
10:10 AM Invited
Structure of the Graphite Anode Solid Electrolyte Interphase in Lithium Ion Batteries: Brett Lucht1; 1University of Rhode Island
10:30 AM Invited
Silicon Carbide Nanostructures for Micro-Supercapacitor Applications: Roya Mahouadian1; John Alper1; Carlo Carraro1; 1University of California at Berkeley
10:50 AM Invited
Nanostructured Vanadium Oxide for Supercapacitor Electrodes: Allison Engstrom1; Fiona Doyle1; 1University of California, Berkeley
11:10 AM Invited
High Energy Density Anode Materials Based on SiO-SnCo/FeC for Lithium Batteries: Ali Abouimrane1; Bo Liu1; Yang Ren1; Zhigang Fang1; Khalil Amine1; 1Argonne National Laboratory; 2University of Utah
11:30 AM Invited
Graphene Fabrication and Lithium Ion Batteries Applications: Fuqiang Huang1; 1Shanghai Institute of Ceramics, Chinese Academy of Sciences
11:50 AM Invited
Nanostructured LiNi0.5Mn1.5O4 Cathode Material with Improved Rate Capability for Lithium Ion Battery: Yi-Chun Jin1; Jenq-Gong Duh1; 1National Tsing Hua University
Neutron and X-Ray Studies of Advanced Materials VI: Centennial and Beyond: Mesoscale Studies
Sponsored by: TMS Structural Materials Division, TMS/ASM:
Mechanical Behavior of Materials Committee
Program Organizers: Rozaliya Barabash, Oak Ridge National Laboratory; Xun-Li Wang, City University of Hong Kong; Jamie Tiley, US Air Force Research Laboratory; Gernot Kostorz, ETH Zurich; Brent Fultz, California Institute of Technology; Peter Liew, Univ of Tennessee

Wednesday AM
March 6, 2013
Room: 209
Location: Henry B. Gonzalez Convention Center

Session Chairs: Emil Zolotyabko, Technion; Rozaliya Barabash, ORNL

8:30 AM Keynote
Slip Mechanisms in BCC Single Crystals: In-Situ Laue Diffraction: Helena Van Suygenhoven1; Cécile Marichal1; Steven Van Petegem1; Paul Scherrer Institut

8:50 AM Invited
Advances in 3D Micro-Diffraction with Small Beams: Jon Tischler1; Wenjun Liu1; Ruqing Xu1; B.C. Larson2; John Budai2; Argonne National Laboratory; Oak Ridge National Laboratory

9:10 AM Invited
A Tunable Multi-Color “Rainbow” Filter for Improved Stress and Dislocation Field Mapping in Polycrystals Using X-Ray Laue Microdiffraction: Odile Robach1; Jean-Sébastien Micha1; Olivier Ulrich1; Olivier Geaymond2; Olivier Sicardy2; Jürgend Härtwig2; François Rieutord; CEA-Grenoble / INAC; CNRS / SPrAM; CNRS / Institut Néel; CEA-Grenoble / LITEN; ESRF

9:30 AM Invited
Validating Microstructural Models Using 3D Sub-Micrometer-Resolution X-Ray Characterization: Ilye Levine1; Peter Geantil2; Ben Larson1; Jon Tischler1; Wenjun Liu1; Francesca Tavazza1; Mike Kasner2; National Institute of Standards and Technology; University of Southern California; Oak Ridge National Laboratory; Argonne National Laboratory

9:50 AM Break

10:00 AM Invited
Metals Behavior at Very High Temperature: Klaus-Dieter Liss1; Kun Yan1; Lisa Thoennessen1; Saurabh Kabra1; David Carr1; Mark Reid1; Ali Dehghan-Manshadi1; Robert Harrison1; Rian Dippenaar1; Australian Nuclear Science and Technology Organisation; Australian Nuclear Science and Technology Organisation and University of Wollongong; University of Wollongong

10:20 AM Invited
Quantification of Preferred Orientation in Crystals by Using the March-Dollase Approach: Emil Zolotyabko1; Technion

10:40 AM Invited
X-Ray Diffraction Contrast Tomography: A Combined 3D Imaging and Diffraction Methodology for Characterization of Polycrystalline Materials: Yoann Guilhem1; Peter Reischig2; Nicola Vigano2; Andrew King2; Wolfgang Ludwig2; Université de Lyon; ESRF

11:00 AM
In Situ Studies of Large Deformation of Monoclinic NiTi: Twinning vs. Slip: Aaron Stebner1; Caltech

11:20 AM Invited
Spatially-Resolved X-Ray Microdiffraction Studies Inside Individual Grains and Domains: John Budai1; Jonathan Tischler1; Wenjun Liu1; Anthony Rollert1; Jason Fowlkes1; Alexander Tselev1; Evgeny Strelecov1; Andrei Kolmakov1; Oak Ridge National Laboratory; Carnegie Mellon University; Southern Illinois University at Carbondale

11:40 AM Invited
In Situ Characterization of Twin Nucleation in Ti Using 3DXRD: Thomas Bieler1; Leyun Wang2; Armand Beauvoin; Peter Keneski1; Ulrich Lienert1; Michigan State University; Argonne National Laboratory; University of Illinois

12:00 PM Invited
Residual Stress Determination in Cast Bi-Metallic Joints: Thomas Watkins1; Donald Erdman1; Adrian Sabau1; Wei Zhang1; Timothy Skszek2; Xiaoping Niu1; ORNL; Vehma International; Promatek Research Centre

12:20 PM Invited
New Capabilities for the Analysis of Nanocrystalline Powders Using the WPPPM Approach: Matteo Leoni1; Paolo Scard1; University of Trento

12:40 PM
Simulation of X-Ray Diffraction Peak Broadening in Dislocated Materials: Riccardo Gatti1; Benoit Devincre1; LEM CNRS-ONERA UMR 104

Ni-Co 2013: Ores and Processing
Program Organizer: Thomas Battle, Midrex Technologies

Wednesday AM
March 6, 2013
Room: 007D
Location: Henry B. Gonzalez Convention Center

Session Chairs: Corby Anderson, Colorado School of Mines; Phillip Mackey, P J Mackey Technology Inc

8:30 AM
Mineralogical Characterization of Cobaltic Oxides from the Democratic Republic of Congo: Yves Vanbrabant1; Christian Burlet1; Pierre Louis1; Royal Belgian Institute for Natural Sciences; PEL Consult

8:55 AM
Nickel and Nitric: William Drinkard1; Drinkard Metalox Inc.

9:20 AM
PolyMet Mining Corporation’s NorthMet Process Development: David Dreisinger1; PolyMet Mining

9:45 AM Break

10:05 AM
Talvivaara Nickel Mine – from a Project to a Mine and Beyond: Lauri Palma1; Marja Riekkola-Vanhanen1; Talvivaara Mining Company Pte
10:30 AM
The Sintering Character of Limonitic Nickel Laterite: Hongxu Li; Chao Wu; Yu Chen; Zhiqian Zhang; Chao Li; 1University of Science and Technology

10:45 AM

11:10 AM
The Starved Acid Leaching Technology (SALT) for Recovery of Nickel and Cobalt from Saprolites and Caron Plant Residues: David Dreisinger; James Clucas; 1Search Minerals Inc.

8:30 AM
Science and Applications of Gradient Alloys Fabricated through Additive Manufacturing: Douglas Hofmann; John-Paul Borgonia; 1NASA JPL/Caltech

8:50 AM Invited
Selective Laser Melting of Low Modulus Titanium Alloys for Biomedical Applications: Lai-Chang Zhang; Timothy Sercombe; 1Edith Cowan University; 2The University of Western Australia

9:20 AM Invited
Near-Net-Shape Consolidation of Lightweight PM Materials: James Knapp; 1Materion Brush Beryllium & Composites

9:50 AM
Microstructural and Mechanical Properties of Sintered and Extruded TiNi Alloys by Using TiNi Pre-Alloyed Powder with TiO, Particles: Takayuki Yonezawa; Tomohiro Yoshimura; Junko Umeda; Katsuyoshi Kondo; Ryouichi Souba; 1Osaka University; 2Joining and Welding Research Institute, Osaka University; 3TERUMO Corporation

10:10 AM Break

10:30 AM Invited
High Density Powder Forming Using Dynamic Pressing DMC Technology: Bhanu Chelluri; Edward Knoth; 1IAP Research Inc

11:00 AM Invited
Consolidation of Blended Magnesium and Ceramic Powders by Microwave Heating: M. Ashtraf Imam; Arne Fliflet; Ralph Bruce; Peter Pao; Jerry Feng; 1Naval Research Lab; 2Vanderbilt University

11:30 AM
Sensitivity of the Tensile Ductility of Powder Metallurgy a, a+ß and Nearly α Ti Alloys to Oxygen: Ya-Feng Yang; K Kondo; Ma Qian; 1University of Queensland; 2Osaka University
Phase Transformation and Microstructural Evolution: General Phase Transformations: Materials
Program Organizers: Amy Clarke, Los Alamos National Laboratory; Sudarsanam Suresh Babu, Ohio State Univ; Rajarshi Banerjee, Univ of North Texas; John Morral, Ohio State Univ; Brian Gleeson, University of Pittsburgh; Carelyn Campbell, National Institute of Standards & Tech; Yongho Sohn, Univ of Central Florida; Yunzhi Wang, Ohio State University

Wednesday AM  Room: 204B  Location: Henry B. Gonzalez Convention Center
Session Chairs: Adam Creuziger, National Institute of Standards and Technology; Kester Clarke, Los Alamos National Laboratory

8:30 AM  Formation of the Nb2C Phase in the Nb-1Zr-0.1C Alloy: A Case of Interstitial Ordering: Raghvendra Tewari1; B. Vishwanadhi2; Gautam Dey1; 1Bhabha Atomic Research Centre
8:50 AM  In Situ Raman Analysis of the Indentation Induced Phase Transformation of Crystalline and Amorphous Silicon: Yvonne Gerbig1; Chris Michaels1; Aaron Forster1; Santiago Solares2; Robert Cook3; 1NIST; 2University of Maryland
9:10 AM  Uncertainty Analysis in Orientation Distribution Functions: Adam Creuziger1; Komal Syed2; Thomas Gnaeupel-Herold; 1National Institute of Standards and Technology; 2University of Maryland
9:30 AM  Optical, Structural, and Electrical Properties of Vanadium Dioxide Grown on Sapphire Substrates with Different Orientations: Mohammad Nazari1; Yong Zhao1; Yanhan Zhu2; Aytron Bernussi1; Zhaoyang Fan1; Mark Holtz3; 1Texas Tech University
9:50 AM  Thermodynamic in γ→ε Phase Transformation and γ→α′ Phase Transformation in Fe-Mn Alloy during Near-rapid Solidification: Qin Peng1; Changjiang Song2; Wenbin Xia2; Qijie Zhai2; 1RWTH Aachen; 2Shanghai University
10:10 AM  Microstructural Evolution of Alloy Steels: Simone Novarino1; Giorgio Scavino1; Graziano Ubertalli1; Paolo Matteis1; Donato Firrao1; 1Politecnico di Torino

Phase Transformation and Microstructural Evolution: Non-conventional Phase Transformation Paths: Part III
Program Organizers: Amy Clarke, Los Alamos National Laboratory; Sudarsanam Suresh Babu, Ohio State Univ; Rajarshi Banerjee, Univ of North Texas; John Morral, Ohio State Univ; Brian Gleeson, University of Pittsburgh; Carelyn Campbell, National Institute of Standards & Tech; Yongho Sohn, Univ of Central Florida; Yunzhi Wang, Ohio State University

Wednesday AM  Room: 204A  Location: Henry B. Gonzalez Convention Center
Session Chairs: Hamish Fraser, The Ohio State University; Srikumar Banerjee, Bhabha Atomic Research Centre

8:30 AM Invited Atomic Level Observations of Phase Transformations Occurring during Surface Hardening of TiAl: Fritz Appel1; 1Helmholtz Zentrum Geesthacht
9:00 AM  Control of γ-TiAl Lamellae Precipitation from Supersaturated a-TiAl Single Crystal by Local Plastic Straining: Yuichiro Koizumi1; Toshihiro Yamazaki2; Akihiko Chiba1; Hiroaki Nishiyama2; 1Tohoku University; 2Hokkaido University
9:20 AM  Effect of Initial Microstructure on Fracture Toughness of 1200 MPa-Class High Strength Steel with Ultrafine Elongated Grain Structure: Maysam Jafari1; Warren Garrison2; Kaneaki Tsuzaki2; 1Carnegie Mellon University; 2National Institute for Materials Science (NIMS)
9:40 AM  Effect of Microstructure on the Nitrogen Distribution in a Gas Nitrided Carbon Steel: Masato Yuya1; 1Sumitomo Metal Industries Ltd.
10:00 AM Break
10:10 AM  BCC-HCP Transition in Fe: Effect of Stress on Transition Mechanisms and Lattice Preferred Orientations: Sebastien Merkel1; Anhao Linco2; Sylvain Petitgirard1; Philippe Cardin2; 1Universite Lille 1; 2Universite J. Fourier Grenoble; 3ESRF
10:30 AM  Microstructural Evolution of Cu/Nb Nanolaminates during Sliding Wear: Fuzeng Ren1; Aaron Dahlke2; Pascal Bellon1; Nathan Mara1; Irene Beyerlein1; 1University of Illinois at Urbana-Champaign
10:50 AM  Self-Organized Nanolayering Induced by Sliding Wear in Cu-Ag: Fuzeng Ren1; Salman Arshad2; Pascal Bellon1; Robert Averback1; 1University of Illinois at Urbana-Champaign
11:10 AM  Strain-Induced Martensitic Transformation in Tensile/Compression Cyclic Deformations of Biomedical Co-Cr-Mo-N Alloy: Takuya Mitsunobu1; Yuichiro Koizumi1; Byoung-Soo Lee1; Akihiko Chiba1; 1Tohoku University

LEARN  •  NETWORK  •  ADVANCE
11:30 AM
Grain Size Evolution under Tribological Loading as a Function of Sliding Energy Density: Christian Greiner; Peter Gumbsch; 1Karlsruhe Institute of Technology

11:50 AM
Microstructure and Texture Evolution of Cu-Nb Nano-Laminates Subjected To HPT: Elvan Ekiz; Timothy Lach; Pascal Bellon; Robert Averback; Nathan Mara; Mohsen Pouryazdan; Horst Hahn; 1University of Illinois Urbana Champaign; 2Los Alamos National Laboratory; 3Karlsruhe Institute of Technology

12:10 PM
Scaling Behavior of Shear Induced Mixing with Length Scale: Salman Arshad; Timothy Lach; Mohsen Pouryazdan; Horst Hahn; Pascal Bellon; Shen Dillon; Robert Averback; 1University of Illinois at Urbana-Champaign; 2Karlsruhe Institut für Technologie (KIT) Institut für Nanotechnology

Physical and Mechanical Metallurgy of Shape Memory Alloys: Magnetic and Fe-based Shape Memory Alloys
Sponsored by:TMS/ASM: Phase Transformations Committee
Program Organizers: Haluk Karaca, University of Kentucky; Ibrahim Karaman, Texas A&M University; Olhamne Benafan, NASA Glenn Research Center; Ryosuke Kainuma, Tohoku University; Hans Jurgen Maier, Univ of Paderborn

Wednesday AM  Room: Lone Star Salon B
March 6, 2013  Location: Grand Hyatt

Session Chairs:  Ibrahim Karaman, Texas A&M University; Yasukazu Murakami, Tohoku University

8:30 AM
TEM Studies on Antiphase Boundaries in Magnetic Shape Memory Alloys: Yasukazu Murakami1; Hyun Soon Park2; Daisuke Shindo2; Ryosuke Kainuma2; 1Tohoku University; 2RIKEN

9:00 AM
Segmented Twin Boundaries in 10M Modulated Ni-Mn-Ga Martensite: Robert Chulist1; Ladislav Straka2; Nataliya Lanska2; Aleksandr Soroka2; Carl-Georg Oertel1; Alexei Sozinov3; Werner Skrotzki3; 1TU Dresden; 2Aalto University School of Science and Technology; 3AdaptaMat Ltd.

9:20 AM
Crystallography and Magnetic Field Induced Strain by Co Doping NiCoMnGa Heusler Alloy: Takao Sakon1; Yoshihisa Adachi2; Hiroyuki Nojiri1; Takeshi Kanomata4; 1Ryukoku University; 2Yamagata University; 3Tohoku University; 4Tohoku Gakuin University

9:40 AM
Intra-Variant Boundary in Non-Modulated Ni-Mn-Ga: Brittany Munitfering1; Libor Kovarik2; Robert Pond3; Nigel Browning3; Peter Mullner1; 1Boise State University; 2Pacific Northwest National Laboratory; 3University of Exeter

10:00 AM Break

10:20 AM
Metamagnetic Behavior in Polycrystalline NiCoMnAl Thin Film Alloys: Steven Rios; Daniel Bufford; Ibrahim Karaman; Xinghang Zhang; 1Texas A&M University

10:40 AM
Observation of Strain Glass Transitions in Various Shape Memory Alloys: James Monroe; Ibrahim Karaman; Ryosuke Kainuma; 1Texas A&M University; 2Tohoku University

11:00 AM
Effects of Alloy Composition and Heat Treatment on Martensitic Transformation in Fe-Ni-Co-Ti-B Alloys: Doyoup Lee; Toshihiro Omoi; Ryosuke Kainuma; 1Tohoku University

11:20 AM
The Effect of Nano-Precipitates on Superelastic Properties of FeNiCoAlTa Shape Memory Alloy Single Crystals: Ji Ma; Billy Hombuckel; Gregory Thompson; Ibrahim Karaman; Zhipeing Luo; 1Texas A&M University; 2University of Alabama

11:40 AM
Cyclic Deformation Behavior of Aged FeNiCoAlTa Single Crystals: Philipp Krooß; Thomas Niendorf; Ibrahim Karaman; Yuri Chumlyakov; Hans Maier; 1University of Paderborn; 2Texas A&M University; 3Tomsk State University

12:00 PM
Characterization of the Shape Memory Behavior of Single Crystalline FeNiCoAlNb Shape Memory Alloys: Li-Wei Tseng; Ji Ma; Ibrahim Karaman; Zhipeing Luo; Yli-Chung Chou; 1Texas A&M University; 2Siberian Physical Technical Institute

12:20 PM
Superelastic Response of a Single Crystalline FeMnAlNi Shape Memory Alloy: Li-Wei Tseng; Ji Ma; Ibrahim Karaman; Zhipeing Luo; 1Texas A&M University; 2Tomsk State University

RE iteration

Sponsored by: Chinese Society for Metals, The Mining and Materials Processing Institute of Japan (MMIJ), TMS Extraction and Processing Division, TMS: Recycling and Environmental Technologies Committee
Program Organizers: Christina Meskers, Umicore Precious Metals Refining; Y. I. Chumlyakovc2; 1Texas A&M university; 2Siberian Physical Technical Institute

Wednesday AM  Room: 006A
March 6, 2013  Location: Henry B. Gonzalez Convention Center

Funding support provided by: Xstrata; SINTEF; Outotec; Umicore, and CR3, the Center for Resource Recovery and Recycling

Session Chairs: William Rankin, CSIRO; Diana A. Lados, Worcester Polytechnic Institute

8:30 AM
Introductory Comments

8:35 AM
A Green Urban Mobility System Solution from the EU Ingrid Project: Fabrizio D’Errico; Marco Romeo; Adamo Serenci; 1Politecino di Milano; 2CiaoTech - PNO Consultants Group; 3Mc Phy Energy

9:00 AM
Recycling-Oriented Product Characterization for Electric and Electronic Equipment as a Tool to Enable Recycling of Critical Metals: Susanne Rotter; Perrine Chancerel; Maximilian Ueberschaar; 1TU-Berlin

9:25 AM Break
9:45 AM Critical Analysis of Existing Recyclability Assessment Methods for New Product in Order to Define a Reference Method: Elisabeth Maris; Daniel Froelich; 'Institut Arts et Metiers Paris

10:10 AM Rock Smelting of Copper Ores with Waste Heat Recovery: Terry Norgate; Sharif Jahanshahi; Nawshad Haque; 'CSIRO

10:35 AM Re-Processing of Mining Waste: An Alternative Way to Secure Metal Supplies of European Union

11:00 AM Potential of Steelmaking Slag as New Phosphorous Resource in Terms of Total Materials Requirement: Eiji Yamasue; Kazuyo Matsubae; Kenichi Nakajima; Tetsuya Nagasaka; 'Kyoto University; 'Tohoku University; 'National Institute for Environmental Studies

11:25 AM Assessing a Reclaimed Concrete Up-Cycling Scheme through Life-Cycle Analysis: Sylvain Guignot; Yannick Menard; 'BRGM

REWAS 2013: Enabling Materials Resource Sustainability: Enabling Sustainability through the Physics of Metals & Materials Processing

Sponsored by: Chinese Society for Metals, The Mining and Materials Processing Institute of Japan (MMIJ), TMS Extraction and Processing Division, TMS: Recycling and Environmental Technologies Committee Program Organizers: Christina Meskers, Umicore Precious Metals Refining; Anne Kvitbyld, SINTEF; Markus Reuter, Outotec Oyj; Randolph Kirchain, Massachusetts Institute of Technology; Mark Schlesinger, Missouri University of Science and Technology; Gregory Krumdick, Argonne National Laboratory; Cong Wang, Saint-Gobain High Performance Materials; Gabrielle Gaustad, Rochester Institute of Technology; Diana A. Lados, Worcester Polytechnic Institute; Brajendra Mishra, Colorado School of Mines; Jeffrey S. Spagenberger, Argonne National Laboratory

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

Funding support provided by: Xstrata; SINTEF; Outotec; Umicore, and CR3, the Center for Resource Recovery and Recycling

Session Chairs: Gabriella Tranell, Norwegian University of Science & Technology; Arjan Ciftja, SINTEF; Shadia Ikhmayies, Al Isra University; Yulia Meteleva-Fischer, Materials innovation institute (M2i) / Delft University of Technology

8:30 AM Introductory Comments

8:35 AM Removal of Heavy Metals from Water by Fly Ash from Coal and Steel Dust, Laboratory Tests: Francisco Carrillo-Pedroza; Ma de Jesus Soria-Aguilar; Antonia Martinez-Luevanos; 'Universidad Autonoma de Coahuila

9:00 AM Cyanide and Copper Recovery from Barren Solution of the Merrill Crowe Process: Jose Parga; Jesus Valenzuela; 'Technology Institute of Saltillo; 'Universidad de Sonora

9:25 AM Northern Regions of Russia as Alternative Sources of Pure Water for Sustainable Development: Challenges and Solutions: Viacheslav Tsukerman; Anton Gudkov; Stanislav Ivanov; 'KSC RAS

9:50 AM Break

10:10 AM Selective Extraction of Vanadium from the APV-Precipitated Waste Water: Cui Li; Hong-Yi Li; Chun-Bin Tu; Tao Zhang; Hai-Xing Fang; Bing Xie; 'Chongqing University

10:30 AM Study of Modified Semi-Coke on the Advanced Treatment of Coking Wastewater’s Oil: Chao Liu; Jiang Huang; 'Development & Research Center of WISCO

10:55 AM Pt-doped TiO2 Nanoparticles for Photocatalytic Degradation of Phenols in Wastewater: Mohamed Barakat; 'KAU University

Solar Cell Silicon: Silicon Production and Refining

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

Program Organizers: Gabriella Tranell, Norwegian University of Science and Technology; Arjan Ciftja, SINTEF; Shadia Ikhmayies, Al Isra University; Yulia Meteleva-Fischer, Materials innovation institute (M2i) / Delft University of Technology

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

Session Chairs: Gabriella Tranell, Norwegian University of Science & Technology; Yulia Meteleva-Fischer, Materials innovation institute (M2i) / Delft University of Technology

8:40 AM Reactive Molecular Dynamic Studies on the Reaction Mechanisms of Carbothermal Silicon Production: Jan-Philipp Mai; Gabriele Raabe; Juergen Koehler; 'JPM Silicon GmbH; 'University of Braunschweig - Institute of Technology

9:00 AM Production of Silicon from Silica: Solid-Oxide-Membrane Based Electrolys Process: Yihong Jiang; JiaPeng Xu; Brian Lo; Uday Pal; Soumendra Basu; 'Boston University

9:20 AM Carbochlorination Reduction of Silica OXides: Mei Song; Meliong Hu; Lu Liu; Qingyu Deng; Xuewei Lv; Chenguang Bai; 'Chongqing University

9:40 AM Quantifying Fracture Behavior of Polycrystalline Silicon Grown via Fluidized Bed Reactor: Mohamad Zhib; David Bahr; Matthew Miller; 'Washington State University; 'REC Silicon

10:00 AM Break

10:20 AM Challenges in the Solar Grade Silicon Production through Metallurgical Processes: Jafar Saffarian; Gabriella Tranell; 'Norwegian University of Science and Technology

10:40 AM Solar Grade Silicon Purification Using Liquid Phase Migration Technique: Kunitsu Matsunaga; Takeshi Yoshikawa; Kazuki Morita; 'The University of Tokyo
11:00 AM  Allo"wing Refining of Metallurgical Grade Silicon with Rare Earth Elements: Yulia Mteleza-Fischer; Yongxiang Yang; Rob Boom; Bert Kraaijveld; Henk Kuntzel; 1Materials innovation institute (M2i) / Delft University of Technology; 2Delft University of Technology; 3RGS development B.V.

11:20 AM  Removal of Boron from Silicon by Reactive Gas Refining: Øyvind S"ortland; Merete Tangstad; 1NTNU

11:40 AM  Effect of Oxygen and carbon on Lifetime in Cz Silicon Pulled from Top-Cuts of Casted Multicrystalline Ingots: Song Zhang; Eivind Øvrelid; 1Norwegian University of Science and Technology; 2SINTEF

12:00 PM  Effect of Impurities in Monocrystalline Silicon for Solar Cells: Michael Knudson; Mari Juel; Eivind Øvrelid; Marisa Di Sabatino; 1NTNU; 2SINTEF

Session Chairs: Yoshihiko Yokoyama, Tohoku University; Hongbin Bei, Oak Ridge National Laboratory

Symposium on High Entropy Alloys: Alloy Development and Applications
Sponsored by: TMS Structural Materials Division, TMS/ASM: Mechanical Behavior of Materials Committee, TMS: Alloy Phases Committee
Program Organizers: Peter Liaw, The University of Tennessee; Hongyao Wang, University of Tennessee; M. Gao, National Energy Technology Laboratory; S. Mathaudhu, U.S. Army Research Office

Wednesday AM  Room: 203B
Location: Henry B. Gonzalez Convention Center

8:30 AM Invited
Automatic Fabrication of High-Entropy Alloys and Their Properties: Yoshihiko Yokoyama; Xie Xie; James Antonaglia; Michael Hemphill; Tang Zhi; Tao Yuan; Gongyao Wang; Che-Wei Tsai; Jien-Wei Yeh; Andrew Chuan; Karin Dahmen; Peter Liaw; Tohoku University; University of Tennessee; University of Illinois at Urbana Champaign; Ohio University; National Tsing Hua University

8:55 AM
Search for Lower Density High Entropy Alloys: James Cotton; Abraham Munitz; Ryan Oliver; Rodinei Gomes; Gerald Bourme; Michael Kaufman; Boeing Research and Development; Colorado School of Mines; University of Wisconsin-Milwaukee

9:10 AMInvited
Assessing High Temperature Structural Application Potential of FCC Based HEAs: Young-Won Kim; Sang-Lan Kim; Christopher Woodward; ‘Gamteck; ‘UES; ‘AFRL

9:35 AM Invited
High Entropy Alloys in the Fe7W6 Frank-Kasper Phase Forming Family: Michael Widom; 1Carnegie Mellon University

10:00 AM Break

10:15 AM Invited
Families of Multiple-Component Single-Phase Solid-Solution High Entropy Alloys: Hongbin Bei; 1Oak Ridge National laboratory

10:40 AM Invited
High-Entropy Glassy Alloys Designed from TiNi Structure Using Digitalized Crystallographic Database: Akira Takeuchi; Junjiqiang Wang; Na Chen; Wei Zhang; Yoshihiko Yokoyama; Kunio Yubuta; WPI-Advanced Institute for Materials Research, Tohoku University; Institute for Materials Research, Tohoku University

11:05 AM
High-Entropy Alloy to Nitride Coatings Deposited by Reactive DC Sputtering: Kuo-Cheng Yang; Chun-Yang Cheng; Szu-Chien Tseng; An-Chou Yeh; Jien-Wei Yeh; National Tsing Hua University

11:20 AM
Non-Equilibrium and Equilibrium Phases in AlCoCrFeNi High-Entropy Alloys: Zhi Tang; Oleg Senkov; Chad Parish; Lou Santodonato; Daniel Miracle; Gongyao Wang; Chuan Zhang; Fan Zhang; Peter Liaw; The University of Tennessee; Air Force Research Laboratory; Oak Ridge National Laboratory; CompTherm LLC

Synergies of Computational and Experimental Materials Science II: Mechanical Behavior: Fatigue and Failure
Sponsored by: TMS Materials Processing and Manufacturing Division, TMS/ASM: Computational Materials Science and Engineering Committee, TMS: Integrated Computational Materials Engineering Committee
Program Organizers: Katsuyu Thornton, University of Michigan; Thomas Buchheit, Sandia National Laboratories; Anthony Rollett, Carnegie Mellon University; David Rowenhorst, Naval Research Lab

Wednesday AM  Room: 217A
Location: Henry B. Gonzalez Convention Center

8:30 AM Introductory Comments

8:35 AM Invited
On an Integrated Experimental and Computational Approach to Derive Phenomenological Equations to Predict Fracture Toughness in Titanium Alloys: Iman Ghamarian; Brian Welk; Hamish Fraser; P. Collins; University of North Texas; The Ohio State University

9:05 AM
Microstructure-Based Probabilistic Modeling of Life-Limiting Fatigue Mechanisms: Sushant Jha; Christopher Szczepanski; Robert Brockman; Craig Przybyla; Reji John; James Larsen; Air Force Research Laboratory/Universal Technology Corporation; University of Dayton Research Institute

9:25 AM Invited
Combining X-Ray Microtomography with the Finite Elements Method to Study Damage and Cracking in Structural Materials: Henry Proudhon; Jia Li; Yoann Guilhem; Lucien Laiarinandrasana; Thilo Morgenevier; Wolfgang Ludwig; Arjen Roos; Samuel Forest; MINES ParisTech; Universite de Lyon; ONERA

9:55 AM Break

10:10 AM Invited
10:40 AM Invited
Determination of High Strain Rate Behavior of Steel Using Finite Element Analysis and High Strain Rate Experimentation: Jeremy Schreiber; Tim Eden; Ivi Smid; Penn State

11:00 AM Invited
Failure Mode Prediction of a Resistance Spot Weld in Advanced High Strength Steels: Lili Zheng; Yani Wang; Srdjan Simunovic; Wei Zhang; Zhili Feng; Oak Ridge National Laboratory

11:20 AM Invited
Modeling Bending of α-Titanium with Embedded Crystal Plasticity and Analytical Yield Surface Formulations in Implicit Finite Elements: Marko Knezevic; Ricardo Lebensohn; Oana Cazacu; Benoit Revil-Baudard; Gwenaëlle Proust; Sven Vogel; Michael Nixon; Materials Science and Technology Division, Los Alamos National Laboratory; Department of Mechanical and Aerospace Engineering, University of Florida; School of Civil Engineering, University of Sydney; Los Alamos Neutron Science Center, Los Alamos National Laboratory; AF Research Laboratory, Munitions Directorate

11:40 AM Invited
Correlating Microstructural Features with Dynamic Nucleation: Veronica Livescu; John Bingert; Thomas Mason; Daniel Mason; Curt Bronkhorst; Los Alamos National Laboratory; Brigham Young University

Three-Dimensional Materials Science VII: Specialty Session on Three-Dimensional Tools
Sponsored by: TMS Structural Materials Division, TMS: Advanced Characterization, Testing, and Simulation Committee
Program Organizers: Jonathan Madison, Sandia National Laboratories; Michael Groeber, Air Force Research Laboratory

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

Session Chairs: Jonathan Madison, Sandia National Laboratories; David Rowenhorst, Naval Research Laboratory

8:30 AM Introductory Comments

8:40 AM Invited
RoboMet.3D: A Fully Automated, Serial Sectioning System for 3D Microstructural Investigations: Murali Gorantla; UES, Inc

9:05 AM Invited
Using the TriBeam to Quantitatively Analyze CuW Composites: McLean Echlin; Alessandro Mottura; Tresa Pollock; UC Santa Barbara; University of Birmingham

9:30 AM Invited
An Open-Source Engine for the Processing of Electron Backscatter Patterns: Philippe Pinard; Marin Lagacé; Pierre Hovington; Raynald Gauvin; Silvia Richter; RWTH Aachen University; Institut de recherche d’Hydro-Québec; McGill University

9:55 AM Break

10:05 AM Invited
Development and Application of Novel Tools and Techniques for the Three-Dimensional Characterization of Numerous Complex Materials: John Sosa; Daniel Huber; Vikas Dixit; Peter Collins; Hamish Fraser; The Ohio State University; University of North Texas

10:30 AM Invited
Stochastic Segmentation of Material Images and Image Stacks: Emine Gulsoy; Michael Jackson; Mary Comer; Jeff Simmons; Marc De Graaf; Northwestern University; BlueQuartz Software; Purdue University; Air Force Research Laboratory; Carnegie Mellon University

10:55 AM Invited
Digital Representation Environment for the Analysis of Microstructure in 3D (DREAM.3D): Michael Groeber; AFRL; BlueQuartz Software

11:20 AM Invited
Fast Fourier Transform-Based Micromechanical Modeling of Polycrystals with Direct Input from 3-D Microstructural Images: Ricardo Lebensohn; Los Alamos National Laboratory

11:45 AM Invited
3D Image Based Modelling for Materials Applications: Philippe Young; Kerim Genc; Ali Abdul-Aziz; Simon Richards; University of Exeter; Simpleware Ltd.; NASA Glenn Research Center

12:10 PM Invited
Studying Complex Microstructure Geometry and Topology with HEDM: An Adaptive, Forward Modeling Approach: S.F. Lf; Joel Bernier; Bryan Reed; Mukul Kumar; J. Lind; C.M. Hefferan; Robert Suter; Ulrich Lienert; Lawrence Livermore National Lab

2013 Functional Nanomaterials: Synthesis, Properties and Applications: Low-Dimensional Nanomaterials II
Sponsored by: TMS Electronic, Magnetic, and Photonic Materials Division, TMS: Nanomaterials Committee
Program Organizers: Seong Jin Koh, University of Texas at Arlington; Nitin Chopra, University of Alabama; Jiyoung Kim, University of Texas at Dallas; Yuanbing Mao, University of Texas-Pan American; Ashwin Ramasubramaniam, University of Massachusetts; Gregory Thompson, University of Alabama

Wednesday PM
Room: 201
Location: Henry B. Gonzalez Convention Center

Funding support provided by: Qualcomm, Inc.

Session Chairs: Jiyoung Kim, University of Texas; Yuanbing Mao, University of Texas-Pan American

2:00 PM
Carbon Encapsulated Platinum Nanoparticles: Growth, Characterization, and Applications: Nitin Chopra, Junchi Wu; University of Alabama

2:20 PM
Green Synthesis of Anisotropic CdSe Nanoparticles under Ambient Condition Via a Non-Phosphine Based Method: Vuyelwa Ncapayi; Oluwafemi Oluwatobi; Odey Akpa; Sandile Songca; Walter Sisulu University

2:40 PM
Synthesis of Rhenium Nanoparticles by Gamma Irradiation: Jessika Rojas; Carlos Castano; Missouri University of Science and Technology

3:00 PM
Non-Exponential Decay of Quantum Dot Photoluminescence: Karel Kral; Miroslav Mensik; Inst. Phys. ASCR, v.v.i.; Institute of Macromolecular Chemistry, ASCR

3:20 PM Break
3:00 PM
Enhanced Electrochemical Performance of Oxide-carbon Composite Nanofibers with Tunable Morphology: Qiang Li; Alexey Altecor; Karen Lozano; Yuanbing Mao; \textsuperscript{1}University of Texas Pan-America

4:00 PM
Fluorinated Graphene as a Low-k Dielectric for Graphene Devices: Srikar Jandhyala; Greg Mordi; David Hinojos; Hyunjung Shin; Robert Wallace; Jiyoung Kim; \textsuperscript{1}University of Texas at Dallas; \textsuperscript{2}Kookmin University

4:20 PM
Application of Graphene Oxide to the Construction of Electrochemical Biosensor for Environmental Monitoring: Li Dan; Haixia Tong; Xin Li; Zhenyu An; Wenqi Li; Wei Liu; Xiaofeng Zhang; Qian Wang; \textsuperscript{1}Changsha University of Science and Technology

4:40 PM
Electrochemical Biosensors Based on T-ZnO Nanostructures and ZnO Nanowires for Highly Sensitive and Real-time Detection of Glucose and Uric Acid: Yanguang Zhao; Xiaolin Yan; Yue Zhang; \textsuperscript{1}University of Science & Technology Beijing(USTB)

5:00 PM
Concluding Comments Best Graduate Student Paper Award Talks

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Sponsored by: TMS: Materials Innovation Committee
Program Organizers: Edward Herderick, EWI; Jud Ready, Georgia Institute of Technology

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

Funding support provided by: Georgia Institute of Technology.

Session Chairs: Edward Herderick, EWI; Jud Ready, Georgia Institute of Technology

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2:00 PM
Introductory Comments

2:05 PM
Invited
International Space Station as an Innovation Laboratory: Materials Research and Beyond: Julie Robinson; \textsuperscript{1}NASA Johnson Space Center -- International Space Station

2:35 PM
Question and Answer Period

2:40 PM
Invited
The National Network for Manufacturing Innovation: Frank Gayle; \textsuperscript{1}NIST

3:10 PM
Question and Answer Period

3:15 PM
Invited
New Approaches to Manufacturing Innovation in DOE: Robert Ivester; \textsuperscript{1}Department of Energy

3:45 PM
Question and Answer Period

3:50 PM
Invited
Integrated Computational Materials Engineering (ICME): A Study on ICME Implementation in the Aerospace, Automotive, and Maritime Industries: Tresa Pollock; \textsuperscript{1}University of California Santa Barbara

4:20 PM
Question and Answer Period

4:25 PM
Panel Discussion

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4th International Symposium on High-Temperature Metallurgical Processing: Simulation and Modeling

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

Wednesday PM
Room: 008B
March 6, 2013
Location: Henry B. Gonzalez Convention Center

Session Chairs: Mansoor Barati, University of Toronto; Xiaohui Fan, Central South University

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2:00 PM
Simulations for Optimising Plant Flowsheets for Brownfield Improvements: Andrew Campbell; \textsuperscript{1}Michael Reed; \textsuperscript{1}WorleyParsons

2:20 PM
Study on Appraisal Model of Iron Ores Based on Multi-level Fuzzy Comprehensive Evaluation: Xia-hui Fan; Ying Li; Xu-ling Chen; \textsuperscript{1}The Central South University

2:40 PM
The Numerical Simulation and Application of Oxygen Lance in 120t BOF of PANSTEEL: Yong Chen; \textsuperscript{1}Xin-teng Liang; Jian-hua Zeng; Gui-jun Li; \textsuperscript{1}PANsteel Group Research Institute Co., Ltd.; \textsuperscript{2}PANsteel Group Research Institute Co., Ltd.; \textsuperscript{3}Vanadium Recovery & Steelmaking Plant of PZH Steel

3:00 PM
CFD Model Development for Gaseous Reduction of Iron Ore Fines Using Multilayer Moving-fluidized Bed: Huaqing Tang; \textsuperscript{1}University of Science and Technology Beijing,Beijing

3:15 PM
Modelling the Hardening of Steel AISI 5115 by the Method Kuyucak: Eliana Agaliotis; Mario Rosenberger; \textsuperscript{1}Carlos Schvezov; Gustavo Sanchez Sarmiento; \textsuperscript{1}UNaM - CONICET; \textsuperscript{2}UNaM; \textsuperscript{3}UBA

3:30 PM
Deformation Simulation of Copper Plates of Slab Continuous Casting Mold: Xiang-Ning Meng; \textsuperscript{1}Northeastern University

3:50 PM
Break

4:00 PM
An Estimation Model for the Viscosities of CaF$_2$-CaO-Al$_2$O$_3$ Slags: Shi Guanyong; \textsuperscript{1}Zhang Ting-an; \textsuperscript{1}Niu Leping; \textsuperscript{1}Dou Zhihe; \textsuperscript{1}Northeastern University

4:20 PM
Numerical Simulation of Slag Foaming in BOS Converter Steelmaking with Population Balance Modeling: Md Sattar; \textsuperscript{1}Jamal Nasert; \textsuperscript{1}Geoffrey Brooks; \textsuperscript{1}Swinburne University of Technology

4:35 PM
Thermodynamic Modeling of the CaO-FetO-CaF$_2$ System for Application in Electroslag Remelting: Dmitri Nassyrov; In-Ho Jung; \textsuperscript{1}McGill University

4:55 PM
Determination of Liquidus Temperatures from Viscosity for CaO-Al$_2$O$_3$ Based Slags: Jifang Xu; \textsuperscript{1}Lei Tang; \textsuperscript{3}Minqi Sheng; \textsuperscript{3}Jianchao Li; \textsuperscript{1}Jiuyi Zhang; \textsuperscript{1}Kang Wan; \textsuperscript{2}Souochw University; \textsuperscript{1}Shanghai University; \textsuperscript{1}Vocalional and Industry Institute of Hebei
5:15 PM
Numerical Simulation of Electromagnetic Fields in Microwave Gas Heating Plant: Influence of the Dielectric Properties: Xiaohiao Shang1; Juanfu Chen1; Nanshang Shen1; Yifeng Shi2; Bangqi Zhang1; Guo Chen1; Jinhui Peng2; 1Faculty of Mechanical and Electrical Engineering, Kunming University of Science and Technology; 2Faculty of Mechanical and Electrical Engineering, Kunming University of Science and Technology; 3Yunnan Copper Industry (Group) Co Ltd; 4Yunnan Copper and Electrical Engineering, Kunming University of Science and Technology, Kunming University of Science and Technology; 5Key Laboratory of Unconventional Metallurgy, Kunming University of Science and Technology; ‘Key Laboratory of Unconventional Metallurgy, Kunming University of Science and Technology

5:35 PM
Research and Application of Intelligence Control System for Rotation Speed of Main Exhaust Fan in Sintering Plant: Li Qiang1; ‘TISCO

5:40 PM
Numerical Modelling of Oxygen Enriched Top-Blown Smelting Reduction Furnace: Qing Shan1; Wang Hua1; Yang Ni1; Li Wentao1; Wang Junyong1; ‘Kunming University of Science and Technology

Advanced Materials and Reservoir Engineering for Extreme Oil & Gas Environments: Materials Challenges in Hostile Environments Sponsored by: TMS Materials Processing and Manufacturing Division, TMS Structural Materials Division, TMS Electronic, Magnetic, and Photonic Materials Division, TMS: Nanomaterials Committee

Program Organizers: Indranil Roy, Schlumberger; Brajendra Mishra, Colorado School of Mines; Manuel Marya, Schlumberger Technology Corporation; Kuo-Chiang Chen, Schlumberger; Partha Ganguly, Schlumberger; Richard Lewis, Schlumberger; Suveen Mathaudo, U.S. Army Research Office; Nitin Chopra, The University of Alabama; Xinghong Zhang, Texas A&M University; Greg Kusinski, Chevron; John Meng, BP America Inc.; Jefferson Rodrigues, Petrobras; Justin Cheney, Scoperta

Wednesday PM
March 6, 2013
Room: Lone Star Salon A
Location: Grand Hyatt

Session Chairs: Rashmi Bhavsar, Schlumberger; JEFFERSON DE OLIVEIRA, Petrobras - CENPES

2:00 PM Introductory Comments Rashmi Bhavsar, Global Materials Metier Manager and Advisor, Schlumberger

2:10 PM Keynote
Microstructure of the Heat Affected Zone of X80 Welds for Arctic Applications: Warren Poole1; Matthias Militzer1; ‘The University of British Columbia

2:40 PM

3:00 PM Invited
Stability and Reactivity of Iron Sulfide Films in Sour Environments: William Herbert1; Aravind Krishnamoorthy1; Minh Dinh1; Sidney Yip1; Krystyn Van Vliet1; Bilge Yildiz1; ‘Massachusetts Institute of Technology

3:20 PM
Concentration of Corroding Species Affecting pH of Active Solutions and Its Effect on Corrosion Rates: Experiments and Modeling: Jefferson Rodrigues1; Indranil Roy2; ‘Petrobras; ‘Schlumberger

3:40 PM Break

3:55 PM Keynote
Materials Challenges in Hostile Environments for Hydrocarbon Recovery: Rashmi Bhavsar1; ‘Schlumberger

4:25 PM
High Strength Nickel Alloys for Extreme Oil and Gas Environments: Raul Rebak1; ‘GE Global Research

4:45 PM
Getting There and Staying There-Challenges to Materials in the HPHT Drilling and Completion Environments: Michael Freeman1; ‘M-I SWACO

5:05 PM
Effect of Tempering Treatment on Recovery Kinetics of Quenched and Tempered Steels: Santiago Serebrinsky1; Nicolás Romualdi1; Roberto Casanovas1; Martin Valdez1; Gustavo Kissner1; ‘Tenaris

5:25 PM
Assessing Susceptibility of Downhole Alloys to Embrittlement in Completions Brines: Tatiana Hernandez1; Indranil Roy; Virendra Singh; Manuel Marya; ‘Schlumberger

5:45 PM Concluding Comments

Advanced Materials for Power Electronics, Power Conditioning, and Power Conversion: Wide Bandgap Semiconductor Device Processing and Characterization Sponsored by: TMS Electronic, Magnetic, and Photonic Materials Division, TMS: Energy Conversion and Storage Committee, TMS: Magnetic Materials Committee Program Organizers: Paul Ohodnicki, National Energy Technology Laboratory; Clive Randall, Penn State University; Michael Lanagan, Penn State University; Michael McHenry, Carnegie Mellon University; Rachel Myers-Ward, Naval Research Laboratory

Wednesday PM
March 6, 2013
Room: 007A
Location: Henry B. Gonzalez Convention Center

Session Chairs: Rachael Myers-Ward, Naval Research Laboratory; Jennifer Hite, Naval Research Laboratory

2:00 PM Advisories: This Session Begins at 2:30 p.m.

2:30 PM
Characterization of ALD Beryllium Oxide as a Potential High-κ Gate Dielectric for AlGaN/GaN High Electron Mobility Transistors (HEMTs): Derek Johnson1; Jung Yim2; Christopher Bielawski2; Todd Hudnall1; Sanjay Banerjee1; H. Harris1; ‘Texas A&M University; ‘University of Texas at Austin; ‘Texas State University

2:50 PM
Effect of Oxidation on GaN Studied by Photoluminescence and Raman Spectroscopy: Gulten Karaoglan1; Vladimir Kuryatkov1; Sergey Nikishin1; Mark Holtz1; Mary Coan1; Derek Johnson1; Jung Woo2; Iman Rezareznazad2; Rusty Harris1; ‘Texas Tech University; ‘Texas A&M University

3:10 PM Invited
Advanced Dielectric Integration in GaN High Frequency Devices: David Meyer1; ‘Naval Research Laboratory

3:40 PM Break
4:00 PM
High-Temperature Si Electronics Based on Record-High Schottky Barriers: Meng Tao; 1Arizona State University

4:20 PM Invited
High Energy Dielectrics for Pulse Power and Power Electronic Applications: Mike Lanagan; 1; Clive Randall; 2Penn State University

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

Wednesday PM  Room: Bowie B
March 6, 2013  Location: Grand Hyatt

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

Session Chair: To Be Announced

2:00 PM
The Hardening Mechanism of Electrodeposited Nanocrystalline Ni-P Alloys During Post-electrodeposition Ageing: Hiroyuki Miyamoto; Yoshike Kasazaki; Hiroshi Fujiwara; 1Doshisha University

2:20 PM
Electrodeposition, Structure and Composition of Ternary Zn-Ni-P Alloys: Nikolai Boshkov; Vassil Bachvarov; Miglena Peshova; 1Institute of Physical Chemistry, Bulgarian Academy of Sciences

2:40 PM
Growth and Structural Characterization of Dual Layer Nano-Microcrystalline Composite Diamond Coatings Deposited on WC-Co substrates: Ravikumar Dumpala; Maneesh Chandran; Kumaran Ramamoothy; Ramamoothy Balakrishnan; Sri Ramachandra Rao Mamidanna; 1Indian Institute of Technology Madras

3:00 PM
Surface Modification of Hard Alloys by High Current Pulsed Electron Beam Irradiation: Sheng Zhi Hao; Yue Zhang; Yang Xu; Chuang Dong; 1Dalian University of Technology

3:20 PM
Surface Pretreatment of Galvanized Steel Sheets Relevant to Adhesion Performance of UV Curable Coatings: Liu Fengguo; Wang Ying; Xue Xiangxin; 1Northeastern University

3:40 PM Break

3:55 PM
Protective Silica-Based Coating for Aluminum 6092/SiCp Metal Matrix Composite in Chloride Media: Abdel Salam Mahloudj; Feras Alfosalih; Zuhair Gasem; 1Central Metallurgical Research and Development Institute; 2King Fahd University of Petroleum & Minerals, Dhahran, Saudi Arabia

Alumina and Bauxite: Impurities
Sponsored by: TMS Light Metals Division, TMS; Aluminum Committee
Program Organizer: Pat Clement, Alcoa

Wednesday PM  Room: 212B
March 6, 2013  Location: Henry B. Gonzalez Convention Center

Session Chair: Ajai Kumar, Sherwin Alumina Company, LLC

2:00 PM Introductory Comments

2:10 PM
Metallic Impurities from the Mine to Metal Products: Stephen Lindsay; 1Alcoa, Inc.

2:30 PM
The Control of Fluoride Concentration in ETI Aluminum Bayer Refinery Liquor: Erol Savkiloglu; Carl Carton; Kemal Dinç; Meral Baygül; Serkan Erugrul; Seyit Avcu; 1ETI Alüminyum; 2Carton Consulting

2:50 PM
Beneficiation of High Silica Bauxite Ores of India – An Innovative Approach: Mukesh Kumar; Bimalananda Senapaty; C. Sateesh Kumar; 1Vedanta Aluminium Limited

3:10 PM
Morphological Investigation of Sodium Oxalate Crystals Grown in Aqueous Sodium Hydroxide Solution: Weng Fu; James Vaughan; 1University of Queensland

3:30 PM
Impurities in Raw Gas and Secondary Alumina: Svetlana Kalyavina; Arne Petter Ratvik; Thor Anders Aarhaug; 1NTNU; 2SINTEF

3:50 PM Concluding Comments

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

Wednesday PM  Room: 213A
March 6, 2013  Location: Henry B. Gonzalez Convention Center

Session Chair: Tongguang Zhai, University of Kentucky

2:00 PM
Grain Boundary Plane Distribution in Aluminum and Aluminium Alloys: Valerie Randle; Lisa Hill; 1Swansea University

2:20 PM
Microchemistry of Grain Boundary Precipitates and Correlations with Stress Corrosion Cracking Resistance in Al 7079: Ramasis Goswami; Ronald Holtz; Stanley Lynch; 1Naval Research Laboratory; 2Defence Science and Technology Organisation

2:40 PM
Growth Ledges on Silver-Segregated θ’ (Al2Cu) Precipitates: Julian Rosalie; Laure Bourgeois; 1National Institute for Materials Science; 2Monash University
3:00 PM
On the Aging Behavior of AA2618 DC Cast Alloy: Peng Shen1; Emad Elgallad1; Xinjiang Chen1; 1University of Quebec at Chicoutimi

3:20 PM
Exploring the Spatial Distribution of β Phase Precipitation and Corrosion in 5xxx Alloys: Daniel Satoko1; Joshua Shaffer2; Surya Kalidindi3; 1Drexel University; 2Materials Resources, LLC; 3Georgia Institute of Technology

3:40 PM Break

4:00 PM
Influence of Elastic Stress Aiding on the Precipitation Free Zones of an AA7075 Aluminum Alloy: Jiaqiu Huang1; Wei Guo1; Meng Yang1; Hui Li1; Xi Yu Wen1; 1Yanshan University; 2University of Kentucky

4:20 PM
The Effect of Cold Work on the Precipitation and Recrystallization Kinetics in Al-Sc-Zr Alloys: C.T. McNamara1; S. Kampe1; P.G. Sanders1; D.J. Swenson1; 1Michigan Technological University

4:40 PM
An Investigation of β-Phase Precipitation in Al-Mg Alloys during In-Situ TEM Heating/Straining Experiments: Daniel Scotto D’Antunno1; Jennifer Gaies1; William Columbiski2; Mitra Taheri1; 1Drexel University; 2Drexel University

5:00 PM
A Novel Solution Heat Treatment of 7075-Type Alloy: Mohamed Ibrahim1; Agnes Samuel1; Salem Alkahtani1; Fawzy Samuel1; 1UQAC; 2Salman bin Abdulaziz University

5:20 PM
Experimental Study of the Al-rich Corner of the Al-Si-Ti System at 500°C: Yang Li1; Qun Luo1; Jieyu Zhang1; Qian Li1; 1Shanghai University

5:40 PM
The Microstructure Evolution and Mechanical Property of Al-Si alloy with Sr Addition with Different Heat Treatment: Meng Wang1; Jingwu Zhang1; 1University of Quebec at Chicoutimi

Aluminum Processing: Aluminum Processing II
Sponsored by: TMS Light Metals Division, TMS: Aluminum Committee
Program Organizer: Kai Karhausen, Hydro Aluminium Rolled Products GmbH

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

Session Chair: To Be Announced

2:00 PM
The Effect of Magnesium Content on Microstructure Evolution During Hot Deformation of Aluminum Alloys: Trevor Watt1; Shinya Yasuda1; Koji Ichitani1; Ken Takata1; Alex Carpenter1; Jakub Jodlowski1; Eric Taleff1; 1The University of Texas at Austin; 2Furukawa-Sky Aluminum Corp.; 3Nippon Steel Corp.; 4Southwest Research Institute; 5Schlumberger Technology Center

2:20 PM
High Strength Nanostructured Al-Zn-Mg-Cu-Zr Alloy Manufactured by High-Pressure Torsion: Chao An1; Huimin Lu1; Shilai Yuan1; 1Beihang University

2:40 PM
Corrosion Behavior of 2024 Aluminum Alloy Anodized in Sulfuric Acid Containing Inorganic Inhibitor: Maysam Mohammadi1; Ali Yazdani1; Farzad Mohammadi1; Akram Alfantazi1; 1University of British Columbia; 2Shiraz University

3:00 PM Laboratory Simulation of Wear during Hot Extrusion of Aluminum: Goran Kugler1; Milan Tercej1; 1University of Ljubljana, NTF-OMM

3:20 PM Break

3:40 PM
The Production of Wrought Alloy AlSi30Cu1,5Mg1,2Ni1,5Fe0,8 with Ultrafine Structure: Marcin Szymanski1; Boguslaw Augustyn1; Wojciech Szymanski1; Dawid Kapinos1; 1Institute of Non-Ferrous Metals

4:00 PM
The Calculation of Wrought Aluminum Alloys Series 6xxx with Vanadium for Automotive Industry: Marzena Lech-Grega1; Wojciech Szymanski1; Bartlomiej Ponka1; Sonia Boczkal1; Maciej Gawlik1; Mariusz Bigaj1; Piotr Korczak1; 1Institute of Non-Ferrous Metals

Session Chair: Michael Gershenzon, Alcoa

2:00 PM Introductory Comments

2:05 PM
A Study of Low Voltage PFC Emissions at DUBAL: Michel Reverdy1; Abdalla Zarouni1; Ali Al Zarouni1; K Venkatasubramaniam1; 1DUBAL

2:30 PM
Continuous PFC Emissions Measured on Individual 400kA Cells: David Wong1; Jerry Marks1; 1University of Auckland; 2J Marks & Associates LLC

2:55 PM
PFC and CO2 Emissions from an Australian Aluminium Smelter Using Time-Integrated Stack Sampling and GC-MS, GC-FID Analysis: Paul Fraser1; Paul Steele1; Mark Cooksey1; 1CSIRO

3:20 PM
Investigation on Formation Mechanism of Non-Anode Effect Related PFC Emissions from Aluminum Reduction Cells: Xiping Chen1; Wangxing Li1; Chris Bayliss2; 1Zhengzhou Research Institute of Chalco; 2the International Aluminium Institute

3:45 PM Break

3:55 PM
On the Mechanism Behind Low Voltage PFC Emissions: Jonar Thonstad1; Sverre Rolseth1; Rudolf Keller2; 1Norwegian Univ. Sc. Technology; 2SINTEF Materials and Chemistry

4:20 PM
Frequency Response Analysis of Anode Current Signals as a Diagnostic Aid for Detecting Approaching Anode Effects in Aluminum Smelting Cells: Cheuk-Ti Cheung1; Chris Menictas1; Jie Bao1; Maria Skyllas-Kazacos1; Barry Welch1; 1The University Of New South Wales
4:45 PM  
Reduction Strategies for PFC Emissions from Chinese Smelters: Xiping Chen; Wangxing Li; Chris Bayliss; Zhengzhou Research Institute of Chalco; The International Aluminium Institute

5:10 PM  
Off-gas Analysis of Laboratory-Scale Electrolysis Experiments with Anodes of Various Compositions: Ole Kjus; Thor Anders Aarhaug; Egil Skybakmoen; Asbjorn Solheim; Henrik Gudbrandsen; SINTEF

5:35 PM  
Hydrolysis of Carbonyl Sulphide (COS) on Sintering Grade Alumina: Aleksandr Mikhailin; Neal Dando; Michael Gershenson; Alcoa

Battery Recycling: Battery Recycling  
Sponsored by: TMS Extraction and Processing Division, TMS Light Metals Division, TMS: Energy Conversion and Storage Committee, TMS: Recycling and Environmental Technologies Committee
Program Organizers: Gregory Krumdick, Argonne National Laboratory; Linda Gaines, Argonne National Laboratory; John Sullivan, Argonne National Lab

Wednesday PM Room: 006A
March 6, 2013 Location: Henry B. Gonzalez Convention Center

Session Chairs: Gregory Krumdick, Argonne National Laboratory; John Sullivan, Argonne National Laboratory

2:00 PM Introductory Comments

2:05 PM  
A Sustainable Design for a Spent Lithium-Ion Battery Pre-Recycling Process: Xue Wang; Gabrielle Gaustad; Callie Babbitt; Chelsea Bailey; Rochester Institute of Technology

2:30 PM  
Best Practices and Emerging Trends Shaping Future Battery Collection and Recycling Initiatives: Marcus Boozhich; Energizer Battery Manufacturing, Inc.

2:55 PM  
Cost, Energy, Emissions, and Resource Assessment of the Production of Automotive Batteries: Michael Wang; John Sullivan; Danilo Santini; Jennifer Dunn; Kevin Gallagher; Linda Gaines; Argonne National Laboratory

3:20 PM  
Dismantling (H)EV Battery Packs, an Integral Part of Umicore’s Recycling Solution: Mark Caffrey; Umicore USA

3:45 PM Break

4:00 PM  
Recovery and Refunctionalization of LiFePO4 Cathode from End-of-Life Commercial Lithium Ion Batteries: Matthew Ganten; Gabrielle Gaustad; Callie Babbitt; Brian Landi; Golisano Institute for Sustainability, Rochester Institute of Technology; Chemical Engineering, Rochester Institute of Technology

4:25 PM  
Modeling of Synergistic Effect of Cyanex 302 and D2EHPA on Separation of Nickel and Cadmium from Sulfate Leach Liquors of Spent Ni–Cd Batteries: Ehsan Vahidi; Ataollah Babakhani; Fereshteh Rashchi; Alireza Zakeri; University of Tehran; Iran University of Science and Technology

4:50 PM  
Recycling of Exhaust Batteries in Lead-Foam Electrodes: Girolamo Costanza; Maria Elisa Tata; University of Rome “Tor vergata”

5:15 PM  
Chloride Leaching of Spent Lead-Acid Battery Paste: Mohammad Mehdi Salarirad; Atefe Sarvi; Narges Bokaian; Amirakib University of Tech.

5:40 PM  
Technical Status and Progress of Lead Recycling of Battery: Weifeng Li; Li-hua Jiang; Jing Zhan; Chuang-fu Zhang; Central South University

Biological Materials Science Symposium: Hierarchical Composites and Biological Materials (Joint session with Hybrid and Hierarchically Structured Composites)  
Sponsored by: TMS Electronic, Magnetic, and Photonic Materials Division, TMS Structural Materials Division, TMS: Biomaterials Committee
Program Organizers: Candan Tamerler, University of Washington; Molly Gentleman, Texas A & M University; Po-Yu Chen, National Tsing Hua University; Kajal Mallick, University of Warwick; Rajendra Kumar Kasinath, University of Montana; Paul G. Allison, US Army Corp of Engineers

Wednesday PM Room: 215
March 6, 2013 Location: Henry B. Gonzalez Convention Center

Funding support provided by: Biomaterials Program, National Science Foundation

Session Chairs: Tomoko Sano, US Army Research Laboratory; Po-Yu Chen, National Tsing Hua University

2:00 PM Invited  
Insect Joints: Hierarchical Biocomposites with Superior Mechanical and Tribological Properties: Mustafa Akbulut; Texas A&M

2:30 PM  
Hierarchical Structure and Mechanical Design of Natural Dermal Armors: Chang-Yu Sun; Po-Yu Chen; National Tsing Hua University

2:50 PM  
Finite Element Modeling of Multilayered Structures of Fish Scales: Mei Chandler; Paul Allison; Rogie Rodriguez; Wayne Hodo; Robert Moser; Alan Kennedy; US Army Engineer Research and Development Center, Geotechnical and Structures Laboratory; University of Puerto Rico-Mayaguez; US Army Engineer Research and Development Center, Environmental Laboratory

3:10 PM  
Axial Compression of a Hollow Cylinder Filled with a Foam: A Porcupine Quill Study: Wen Yang; Joanna McKittrick; University of California, San Diego

3:30 PM Break

3:40 PM Invited  
Bioinspired Composites Fabricated by Magnetic Freeze Casting: Joanna McKittrick; Michael Porter; Pei-Chun Chiu; Po-Yu Chen; Marc Meyers; University of California, San Diego
4:10 PM  
Nature Inspired “Nacre-like” Ceramic-Polymer (SiC-PMMMA) Composites: Valentina Nagler1; Bernd Gladovatz1; Antoni Tomcia1; Robert Ritchie1; 1Lawrence Berkeley National Laboratory; 2University of California Berkeley

4:30 PM  
Statistical Model of Fracture in Double Network Gels: Mark Jhon1; 1Institute of High Performance Computing

4:50 PM  
Effect of Loading Rate on the Mechanical Response of Penetration Experiments on the Biological Multilayered Material System, Atractosteus Spatula Scales: P. G. Allison1; M.Q. Chandler1; B.A. Williams1; R.D. Moser1; A.J. Kennedy1; 1US Army Engineer Research & Development Center

5:10 PM  
The Structure and Mechanics of a High-performance Armor: Fish Scales: Deju Zhu1; Lawrence Szewciw1; Franck Vernerey1; Francois Barthelat1; 1McGill University

5:30 PM  
Water-lubricated Surface as Deadly Trap: Composite Structure and Surface Properties of Insect-Eating Pitcher Plants: Chiao-Peng Hsu1; Po-Yu Chen1; 1National Tsing Hua University

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

Wednesday PM  
Room: 214C  
Location: Henry B. Gonzalez Convention Center  
Funding support provided by: Biomaterials Program, National Science Foundation

Session Chairs: Mohan Edirisinghe, University College of London; Jamie Kruzie, Oregon State University

2:00 PM  Keynote  
Biocompatible Nanoparticle Materials in Cancer Research: Xiaoyuan Chen1; 1National Institute of Biomedical Imaging and Bioengineering, National Institutes of Health

2:40 PM  
Nanoparticle X-Ray Contrast Agents: Ryan Roeder1; Cole Lisa1; Matthew Meagher1; Tracy Vargo-Gogola1; Ryan Ross1; 1University of Notre Dame

3:00 PM  
Peptide-enabled Hybrid Gold Nanoprobes for Targeted Cell Bioimaging and Biosensing: Marketa Hnilova1; Nichole Shaw1; Meera Shenoy2; James Park1; Hilal Yazici1; Carolyn Gresswell1; Mustafa Gunogmus1; Mehmet Sarikaya1; Candan Tamerler1; 1University of Washington

3:15 PM  Invited  
Nanoparticles for Enzymatic Therapies: Sadik Esener1; Inanc Ortac1; Michael Benchimol1; 1UCSD

3:45 PM  Break

3:55 PM  Invited  
Interferometric Reflectance Imaging Sensor: Detection and Classification of Nanoparticles and Viral Pathogens: Selim Unlu1; Carlos Lopez1; 1Boston University

4:25 PM  
Matrix-Chaperone Technology: Coated MicroSpheres for the Preservation of Biospecimens Dry, at Ambient Temperature: Michael Hogan1; Tammy Beckham1; 1Texas A&M

4:45 PM  Invited  
Antibacterial Nanosized Silver Substituted Hydroxyapatite with Enhanced Mechanical Properties: Sumit Goenka1; Jatin Bhatt1; 1Shanghai University

5:15 PM  
Hierarchically Ordered Nanostructures from Functionalized Nano Building Blocks: Rahul Mavinkurve1; Jermaine Coffman1; Michael Klem1; Rajendra Kasinath1; 1Montana Tech of the University of Montana

5:35 PM  Invited  
Graphene Penetrates Cell Membranes Through Atomically Thin Corners and Edges: Huajian Gao1; 1Brown University

6:05 PM  
Fibronectin Adhesion on Polystyrene Tissue Culture Plates: Sina Youssefian1; Shawn Regis1; Sankha Bhomick1; Nima Rahbar1; 1Worcester Polytechnic Institute; 2University of Massachusetts - Dartmouth

6:20 PM  
Effect of Host Media on Microbial Influenced Corrosion Due to Desulfovibrio Desulfurican: Ajay Singh1; 1IIT Roorkee

6:40 PM  
Vermiculite Powder Carrying Copper and Silver: A New Antibacterial Material: Bowen Li1; Jinn-Yang Hwang1; Susan Bagley1; 1Michigan Technological University

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

Wednesday PM  
Room: Lone Star Salon D  
Location: Grand Hyatt

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

Session Chairs: Dan Miracle, AF Research Laboratory; Karin Dahmen, University of Illinois at Urbana Champaign

2:00 PM  
A Topological Approach to the Discovery of New High Glass-forming Alloys - The Effective Radius Ratio Method: Kevin Laws1; Daniel Miracle1; Karl Shamlaye1; Jake Cao1; John Scicluna1; Michael Ferry1; 1School of Materials Science and Engineering, University of New South Wales; 2United States Air Force Research Laboratory, Materials and Manufacturing Directorate
2:15 PM Invited
Ab Initio Calculations on Zr-Cu-Al Bulk Metallic Glasses: Wai-Yin Ching; Yungfeng Shi; Despina Louca; Gongyao Wang; Peter Liaw; 1University of Missouri-Kansas City; 2Rensselaer Polytechnic Institute.; 3University of Virginia; 4University of Tennessee

2:35 PM
Analysis of Glass Forming Ability in Aluminum-Based Metallic Glasses Through Atomistic Modeling: David Riegner; Logan Ward; Wolfgang Windl; Katherine Flores; 1The Ohio State University; 2Washington University

2:50 PM Invited
A Computationally-Driven, Combinatorial Approach to Designing Metallic Glass Alloys: Logan Ward; Peter Tiai; Wolfgang Windl; Kevin Law; Katharine Flores; 2The Ohio State University; 3Washington University; 4University of New South Wales

3:10 PM
Localized Phase Transformation in Amorphous Fe-Si-B Ribbons Using Laser Processing: Atom Probe Analysis and Thermal Model Study: Shrawana Katkam; Anun Devaraj; Mark Bowden; Daniel Perea; Hitesh Vora; Jun Hwang; Rajarsi Banerjee; Suntharampillai Thevuthasan; Narendra Dahotre; 1University of North Texas; 2Pacific Northwest National Laboratory

3:25 PM Break

3:40 PM Invited
The Effects of Potential and Chemical Ordering on Fragility of Liquids: James Morris; Takeshi Egami; 1Oak Ridge National Laboratory; 2University of Tennessee

4:00 PM Invited
Simple Models for Plastic Deformation and the Statistics of Serrations in the Stress Versus Strain Curves of Bulk Metallic Glasses: Karin Dahmen; James Antonaglia; Xie Xie; Matthew Wraith; Junwei Qiao; Y Zhang; Jonathan Uhl; Peter Liaw; 1University of Illinois at Urbana Champaign; 2University of Tennessee at Knoxville; 3Taiyuan University of Technology; 4University of Science and Technology of Beijing; 5Private

4:20 PM Invited
Intrinsic Ductility of Glassy Solids: Yinfeng Shi; 1Rensselaer Polytechnic Institute

4:40 PM
Atomistic Modeling of Shear Delocalization of Metallic Glasses under High Compressive Stress: Narumasa Miyazaki; Masato Wakeda; Fanqiang Meng; Koichi Tsuichiya; Shigenobu Ogata; 1University of Osaka; 2University of Tsukuba; 3National Institute for Materials Science

4:55 PM
Predicting the Production of Glass Former Alloys by Mathematical Simulation of Spray Forming: Claudemiro Bolfarini; Regis Cava; Walter Botta; Claudio Kiminami; 1Universidade Federal de São Carlos

5:05 PM
Oxygen-Assisted Deformation Processes in Zr-Cu-Al Metallic Glasses Via First-principle Molecular Dynamics Simulation: Chun-Yi Wu; Yunche Wang; Pei-Ling Sun; 1National Cheng Kung University; 2Feng Chia University

5:20 PM Invited
Notch Effect on Deformation and Fracture Behaviours of Bulk Metallic Glasses: Zhefeng Zhang; Ruitao Qu; 1Institute of Metal Research, Chinese Academy of Sciences

5:40 PM
Shear Banding Evolution of Metallic Glasses: Rui Tao Qu; 1Selacs Academy
4:55 PM
Study on Fracture Strength Reliability of Mg-Zn-Ca Bulk Metallic Glasses: You Junhua1; Bai Xiaojun1; 1Shenyang University of Technology

Cast Shop for Aluminum Production: Aluminum Cast Shop IV
Sponsored by: TMS Light Metals Division, TMS: Aluminum Committee
Program Organizer: Gyan Jha, Tri-Arrows Aluminum

Wednesday PM  Room: 212A
March 6, 2013  Location: Henry B. Gonzalez Convention Center

Session Chair: Gyan Jha, Tri-Arrows Aluminum

2:00 PM
Influence of Die and Casting Temperatures and Titanium and Strontium Contents on the Technological Properties of Die-Cast A356 in the As-Cast and T6 Condition: Sebastian Fischer1; Veronika Groten1; Johannes Brachmann1; Carolin Fix1; Thomas Vossel1; Andreas Bührig-Polaczek1; 1RWTH Aachen University

2:20 PM
Mechanism of Microstructure Changes of Al-Si Casting Alloy Applying Ultrasonic Vibration: Jie Song1; Qingyou Han1; 1Purdue University

2:40 PM
Modeling and Simulation of Microstructure Evolution in Solidification and Solution Treatment of Hypoeutectic Al-Si Alloy: Shi Feng1; Tsinghua University

3:00 PM
The Influence of Tramp Elements to Heterogeneous Modification of Aisi7Mg-Alloys under High Purity Condition: Veronika Groten1; Andreas Bührig-Polaczek1; 1RWTH Aachen University

3:20 PM Break

3:40 PM
Horizontal Single Belt Strip Casting (HSBC) of Al-Mg-Se-Zr Alloys: Mert Celikin1; Donghui Li1; Luis Calzado1; Mihaela Isac1; Roderick Guthrie1; 1McGill Metals Processing Centre

4:00 PM
Quality Improvement of Aluminium Alloy Castings by Application of a New Casting Facility instead of a Conventional Sand Casting Process: Xiaojun Dai1; Mark Jolly1; Binxu Zeng1; 1Cranfield University

4:20 PM
Preventing Molten Aluminium Water Explosions through the Use of Organic Coatings: Alex Lowery1; George Stavnes1; 1Wisconsin Alumni Research Foundation

4:40 PM
The Particle Pushing Problem and Its Theory of Aluminum Alloy: Meng Wang1; Qingyou Han1; 1Purdue University

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

Wednesday PM  Room: 206B
March 6, 2013  Location: Henry B. Gonzalez Convention Center

Session Chair: Shadia Ikhmayies, Al Isra University

2:00 PM
A Comparison between the Properties of SnO2:F Thin Films Prepared by Using Different Doping Compounds: HF and NH4F: Shadia Ikhmayies1; 1Al Isra University

2:20 PM
Ab-Initio Calculations of the Optical Properties of d-NbN Single Crystal: Shadia Ikhmayies1; Bothina Hamad1; Jamil Khalifeh1; 1Al Isra University; 1University of Jordan

2:40 PM
Interface Phase Formation and their Mechanical Properties of Annealed U-Zr Binary Diffusion System: Chao-Chen Wei1; Robert Balero1; Lin Shao1; 1Texas A&M University

3:00 PM
Phase Equilibrium and Characterization Studies of Pentaglycerol, Tris(Hydroxymethyl)Aminomethane and 2-Amino-2-Methyl-1,3-Propanediol Ternary Systems: Wen-Ming Chien1; Ivan Gantan1; Amrita Mishra1; Vamsi Kamisetty1; Prathyusha Mekala1; 1University of Nevada, Reno

3:20 PM
Photoluminescence of n-Type CdS Thin Films: Shadia Ikhmayies1; 1Al Isra University

3:40 PM
Photoluminescence of P-Type CdTe Thin Films: Shadia Ikhmayies1; 1Al Isra University

4:00 PM
Structural and Electronic Properties of d-NbN Single Crystal: First Principles Calculations: Shadia Ikhmayies1; Bothina Hamad1; Jamil Khalifeh1; 1Al Isra University; 1University of Jordan

4:20 PM
Electrochemical Characterization of Lead-Calcium Alloy in Agitated Zinc Electrowinning Electrolyte: Maysam Mohammadi1; Farzad Mohammadi1; Akram Alfantzai1; 1University of British Columbia

4:40 PM
Effects of Rare Earth Pr on the Mechanical and Electrochemical Properties of Pb-based Alloys: Liangxing Jiang1; Bo Hong1; Xiaoying Yu1; Xiaocong Zhong1; Junfeng Gai1; Hongliang Zhang1; Yanqing Lai1; Yexiang Liu1; 1Central South University
5:00 PM
Synthesis and Characterization of Pb Free Piezoelectric Ceramics - Barium Zirconate Titanate – Barium Calcium Titanate: Paul Praveen; Kranti Kumar; T.V. Jayaraman; A R James; Dilbaker Das; 1School of Engineering Sciences and Technology, University of Hyderabad; 2Department of Mechanical and Materials Engineering, University of Nebraska; 1Defence Metallurgical Research Laboratory, Hyderabad, India

5:20 PM
Vacuum Hot Pressing Sintering of the High-Dense BN-Ni Composites: Wang Chao; 1Northeastern University

Sponsored by: TMS Extraction and Processing Division, TMS: Materials Characterization Committee
Program Organizers: Jiann-Yang Hwang, Michigan Technological University; Chen-Guang Bai, Chongqing University; John Carpenter, DOE LANL; Shadia Ikhnayes, Al Isha University; Bowen Li, Michigan technological University; Mingming Zhang, ArcelorMittal Global R&D; Sergio Monteiro, State University of North Rio de Janeiro; Zhiwei Peng, Michigan Technological University
Wednesday PM
Room: 206A
Location: Henry B. Gonzalez Convention Center

Session Chairs: Jian Li, CANMET; Lifeng Zhang, University of Science and Technology Beijing

2:00 PM
Characterizing Primary Dendritic Microstructures to Quantify the Processing-Structure-Property Relationship in Single Crystal Nickel-Based Superalloys: Mark Tschopp; Andrew Oppedal; Jon Miller; Michael Groeber; Andrew Rosenberger; Kiran Solanki; 1Mississippi State University; 2AFRL; 3Arizona State University

2:20 PM
Creep Cavitation and Fracture in Single Crystal Superalloy: Jinqian Zhao; Jiarong Li; Shizhong Liu; 1Beijing Institute of Aeronautical Materials

2:40 PM
Deformation Mechanisms at Varying Temperatures in Alloy 718 Nickel Base Superalloy: Donald McAllister; Duchao Lv; Patrick Phillips; Ning Zhou; Ben Peterson; Yunchi Wang; Michael Mills; 1The Ohio State University; 2University of Illinois at Chicago; 3GE Global Research Center; 4Honeywell Aerospace

3:00 PM
Effects of Microstructure on High Temperature Crack Growth under Sustained Load in a Nickel Based Superalloy: Youngmin Li; Hangyu Li; Zewen Huang; Gavin Baxter; Paul Bowen; 1University of Birmingham; 2Rolls-Royce plc

3:20 PM
Investigation of Negative Creep in a Polycrystalline Ni-based Superalloy: Hallee Deutchman; Jay Tiley; Robert Hayes; Michael Mills; 1The Ohio State University; 2Materials and Manufacturing Directorate, Wright Patterson US Air Force Base; 3Metals Technology, Inc

3:40 PM
Metallurgical Characterization of Two Different Samples of Waspaloy, Presenting Variation on Chemical Composition, Microstructure, and Hardness: Miguel Neri; Alberto Martinez-Villafane; Caleb Carreno-Gallardo; Alma Gonzalez-Escarcega; Octavio Covarrubias-Alvarado; 1CIMAV, S.C.; 2FRISA FORJADOS S.A. de C.V.

4:00 PM
The Impact of γ’ Precipitate Evolution on the Mechanical Properties of Microstructural Gradients in the Low Solvus High Refractory (LSHR) Nickel Base Superalloy: Samuel Kahr; Babu Viswanathan; Jaimie Tiley; Hamish Fraser; 1The Ohio State University; 2Air Force Research Laboratory

4:20 PM
Combined Cavitation and Slurry Erosion of 16Cr-5Ni Martensitic Stainless Steel: H J Amarendra; Gajanan Chaudhari; Sameer Nath; 1Indian Institute of Technology Roorkee

5:00 PM
Microstructure and Mechanical Properties of Bulk Nanocrystalline 304 Stainless Steel Prepared by an Aluminothermic Reaction Casting and Followed Annealing: Peiqing Lu; Ting Shi; Chengang Chu; 1Lanzhou University of Technology

5:20 PM
SCW Corrosion Resistance of Candidate Stainless Steels: Jian Li; Wenyue Zheng; Pentilla S.; Pei Liu; Catherine Bibby; 1CanmetMATERIAls; 2NTT

Computational Thermodynamics and Kinetics: Phase Field Simulations
Program Organizers: Jörg Neugebauer, Max-Planck-Institut für Eisenforschung GmbH; Careylyn Campbell, NIST; Dongwon Shin, Oakridge National Lab; Zi Kui Liu, Penn State; Michael Demkowicz, Massachusetts Institute of Technology; Raymundo Arroyave, Texas A & M University; Shenyang Hu, Pacific Northwest National Laboratory
Wednesday PM
Room: 207A
Location: Henry B. Gonzalez Convention Center

Session Chairs: Shenyang Hu, Pacific Northwest National Laboratory; James Warren, NIST

2:00 PM Invited
A Phase-Field Crystal Model Coupled to a Vapor Phase: Edwin Schwallbach; James Warren; Kuo-An Wu; Peter Voorhees; 1NIST; 2National Tsing Hua University; 3Northwestern University
2:25 PM
An Arbitrary Lagrangian-Eulerian (ALE) Method for Thermal and Dispersed-Phase Analysis of Nano Fluid Using CFD-A Hybrid Approach for Cooling Purpose: France Kumar Behera; Konark Institute of Science and Technology

2:40 PM
A PFC Study of Thermodynamical Quantities on Rapid Solidification and Solute Trapping: Harith Humadi; Jeff Hoyt; Nikolaos Provatas; McMaster University; McGill University

2:55 PM
Phase-Field Simulations of Magnetic Response in Irradiated Fe-Cr Alloys with Distributed Cr Rich Precipitates: Yulan Li; Shenyang Hu; John McClay; Charles Henager; Robert Montgomery; Pacific Northwest National Laboratory

3:10 PM Break

3:35 PM Invited
Computational Study of Microstructure and Property Relations in Ferroelectric Polycrystals: Yu Wang; Jie Zhou; Michigan Tech

4:00 PM
Fluctuations in Phase Field Crystal Models Using Capillary-Wave Theory: Nana Ofori-Opoku; Jeffrey Hoyt; Nikolaos Provatas; McMaster University; McGill University

4:15 PM
Effects of Additive Elements on Lamellar Structure Formation in C40-NbSi2/C11b-MoSi2 Duplex Silicide: A First Principles Based Phase-Field Study: Toshihiro Yamazaki; Yuichiro Koizumi; Akihiko Chiba; Koji Hagihara; Takayoshi Nakano; Koretaka Yuge; Kyosuke Kishida; Haruyuki Inui; Tohoku University; Osaka University; Kyoto University

3:00 PM
Developing a Cost Affordable Technology Via PM HIP of Ti Alloys: Victor Samarov; Synertech PM Inc.

3:20 PM Break

3:40 PM
Controlled Atmosphere Sintering of Hydrides: An Alternative Route to Produce Ultrafine Grained Titanium by Powder Metallurgy Processes: Brady Butler; James Paramore; Pei Sun; Zhigang Fang; US Army Research Lab

4:00 PM
Effects of Lubrication on Density Gradient of Titanium Powder Compact: Jia Lou; Brian Gabbitas; Deliang Zhang; University of Waikato

4:20 PM
Fracture Toughness of Powder Metallurgy and Wrought Titanium Alloys – A Review: Ajit Singh; Brian Gabbitas; Deliang Zhang; University of Waikato

4:40 PM
TiCuSi and TiCuSiBAlloys Produced by Powder Forging and Heat Treatment: Xiaolin Wu; Wei Xu; Ya Feng Yang; Shudong Luo; Ma Qian; Kenong Xia; The University of Melbourne; The University of Queensland

5:00 PM
Effects of Processing Parameters on Macrozone Formation in Ti-6Al-4V Alloys: Kai Zhang; Xinhua Wu; Colleen Bittles; Chris Davies; Monash Univ

5:20 PM
The Effect of P2O5 Content on the Crystallization Behaviors of Ti-Bearing Blast Furnace Slag Using Single Hot Thermocouple Technique: Sun Qi; Z.T. Zhang; Peking University

Cost Affordable Titanium IV: Low Cost Powder Processing and Characterization
Sponsored by: TMS Structural Materials Division, TMS: Titanium Committee

Program Organizers: M. Ashraf Imam, Naval Research Lab; Sam Froes, University of Idaho (Retired); Ramana Reddy, The University of Alabama

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

Session Chairs: Peter Collins, University of North Texas; Kamal Akhtar, International Titanium Powder

2:00 PM Invited
Recent Progress in the Development of Titanium alloys Processed using Low Cost ADMA TiH₂ Powder: Curt Lavender; Vincet Joshi; Vladimir Moxori; Vlad Dae; Pacific Northwest National Laboratory; ADMA Advanced Materials

2:20 PM Invited
Critical Experimental Results for Cost Affordable Titanium – From Powder to Applications: Peter Collins; Graciela Penso; Peyman Samimi; Juah Song; Thomas Ales; Pete White; University of North Texas

2:40 PM Invited
Sintering of Ti in Hydrogen – Striving for High Performance-to-Cost Ratio: Zhigang Fang; Pei Sun; University of Utah

Deformation, Damage, and Fracture of Light Metals and Alloys: Deformation, Damage, and Fracture of Light Metals and Alloys Session V
Sponsored by: TMS Light Metals Division, TMS/ASM: Mechanical Behavior of Materials Committee

Program Organizers: Ke An, Oak Ridge National Laboratory; Qizhen Li, University of Nevada, Reno

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

Session Chair: Suveen Mathaudhu, U.S. Army Research Office

2:00 PM Invited
Influence of the Grain Size and Initial Texture on the Yield and Hardening Behaviors of a Mg Alloy: Hahn Choo; Yi Wang; Univ of Tennessee

2:30 PM
Characterization of Deformation Anisotropy and Damage in AZ31 alloy: Babak Kondori; Amine Benzerqa; Texas A&M University

2:50 PM
Effects of Initial Texture on Surrounding Plasticity around Fatigue Crack-tip in a Wrought Magnesium Alloy Using In-Situ Synchrotron X-ray Diffraction Measurements: Wei Wu; Chih-Pin Chuang; Ke An; Yanfei Gao; Peter Liaw; The University of Tennessee; Oak Ridge National Laboratory
3:10 PM
ECAP Deformations of Mg Single Crystals: Hiromoto Kitahara; Fumiaki Maruno; Masayuki Tsushida; Shinji Ando; 1Kumamoto University

3:30 PM
Investigation and Characterization of the Mechanical and Thermal Properties of Ultra-Light Mg-Li-Al Alloys: Ryan Hooper; Zachary Bryan; Abhinav Seetharamiah; Michele Manuel; 1University of Florida

3:50 PM Break

4:00 PM
Mechanical Properties and Microstructure of Pure Magnesium Experienced Rolling and Annealing: Qizhen Li; Bing Tian; 1University of Nevada, Reno

4:20 PM
Orientation Dependence of Bending Deformation Behavior in Magnesium Single Crystals: Shinji Ando; Hiromoto Kitahara; 1Kumamoto University

4:40 PM
Atomic-Scale Growth Mechanism of {-1012}-Type Twins in Magnesium: Ben Xu; David Rodney; Laurent Capolungo; 1INP Grenoble; 2Georgia Tech Lorraine

5:00 PM
Effect of Microstructural Factors on Damping Capacity in Pure Magnesium: Hiroyuki Watanabe; Yasuyoshi Sasakura; Toshiji Mukai; 1Osaka Municipal Technical Research Institute; 2Kobe University

5:20 PM
Dynamic Micro-Strain Observation of the Ultrafine-Grained Al-Mg Alloy Using Digital Image Correlation Technique: Yuzheng Zhang; Troy Topping; Enrique Lavernia; Steven Nutt; 1University of Southern California; 2University of California, Davis

Electrode Technology for Aluminium Production: CBF Environmental & Anode Electrical Connections
Sponsored by: TMS Light Metals Division, TMS: Aluminum Committee
Program Organizers: Les Edwards, Rain CII Carbon; Hans Darmstadt, Rio Tinto Alcan; Sunil Bhajun, Qatalum; JuraJet Chemier, Hydro; Matvey Golubev, Rusal; Preteshe Patel, Light Metals Research Centre; Elaine Sum, Rio Tinto Alcan; Marc Gagnon, Aluminerie Alouette

Wednesday PM
March 6, 2013
Room: Grand Ballroom C2
Location: Henry B. Gonzalez Convention Center

Session Chair: Marc Gagnon, Alouette

2:00 PM Introductory Comments and Session Chair Introduction

2:05 PM
Fume Treatment Systems Based on RTO Technology for Carbon Baking Furnaces: Matthias Hagen; Bernd Schricker; 1LTB

2:30 PM
AHEX-A New, Combined Waste Heat Recovery and Emission Control System for Anode Bake Furnaces: Anders Sorhagen; Sivert Ose; Geir Wedde; 1Alstom

2:55 PM
Successful Start-Up of the Fume Treatment Centre at Boyne Smelter Carbon Bake Furnace #4: Jonathan Higley; Glenn Cordon; Peter Klut; Rick Oliana; Erik Dupon; Edo Engel; 1Boyne Smelters Limited; 2Danieli Corus BV; 3Danieli Corus Technical Services

3:20 PM
Thermo-Electro-Mechanical Characterization of Anode Interfaces at Operating Conditions: Hughes Fortin; Marie-Hélène Martin; Nédélec Kande; Guillaume Gauvin; Donald Ziegler; Mario Fafard; 1Hydro-Quebec; 2Alcoa; 3Université Laval

3:45 PM Break

3:55 PM
A Fully Coupled Thermal-Electrical-Mechanical Transient FEA Model for a 3D Anode Assembly: Dayalan Gunasegaram; David Molenaar; 1CSIRO

4:40 PM
Experimental and Numerical Investigation of Voltage Drop in Anode Assemblies: Ebrahim Jedd; Daniel Marceau; Laszlo Kiss; Lyne St-Georges; Denis Laroche; Lyès Hacini; 1Université du Québec à Chicoutimi; 2Rio Tinto Alcan

4:45 PM
Optimization of the Anode-Stub Contact: Effect of Casting Temperature, Contact Stress, Temperature and Surface Roughness: Bjarte Oye; Anne Store; Elin Haugland; Jorund Hop; 1SINTEF; 2Hydro Aluminium

5:10 PM
Experimental Investigation of Factors Affecting the Electrical Performance of the Stub to Carbon Connection: David Molenaar; Tony Kilpatrick; Alex Montalto; 1CSIRO; 2RMIT University

Electrode Technology for Aluminium Production: Inert Anodes, Cell Materials and Alternative Processes
Sponsored by: TMS Light Metals Division, TMS: Aluminum Committee
Program Organizers: Les Edwards, Rain CII Carbon; Hans Darmstadt, Rio Tinto Alcan; Sunil Bhajun, Qatalum; JuraJet Chemier, Hydro; Matvey Golubev, Rusal; Preteshe Patel, Light Metals Research Centre; Elaine Sum, Rio Tinto Alcan; Marc Gagnon, Aluminerie Alouette

Wednesday PM
March 6, 2013
Room: 213B
Location: Henry B. Gonzalez Convention Center

Session Chair: Elaine Sum, Rio Tinto Alcan

2:00 PM Introductory Comments

2:05 PM
Mechanically Alloyed Cu-Ni-Fe-Y Material as Inert Anode for Al Production: Valery Ouvarov; 1INRS University

2:30 PM
Cold Spray Deposition of Mechanically Alloyed Cu-Ni-Fe Material for Application as Inert Anodes for Aluminium Production: Gregory Goupil; Sebastien Helle; Eric Iriessou; Dominique Poirier; Jean Gabriel Legoux; Daniel Guay; Lionel Roué; 1INRS-EMT; 2CNRC
2:55 PM
Initial 1000A Aluminum Electrolysis Testing in Potassium Cryolite-Based Electrolyte: John Hryn; Olga Tkacheva; Jeff Spangenberger; ANL

3:20 PM
Electrochemical Behavior of Cermet Anodes in Na3AlF6-K3AlF6-Based Low-Melting Electrolytes for Aluminum Electrolysis: Guihua Wang; Xiaofei Sun; University of Science and Technology Beijing

3:45 PM Break

3:55 PM
Production of Aluminum Sulfide through Carbosulfidation Utilising H2S: Md Huda; M Rhamdhani; G Brooks; B Monaghan; L Prentice; Swinburne University of Technology; University of Wollongong; CSIRO

4:20 PM
Microstructural Evolution of Cast Iron Used for Cathode Roding in Aluminum Electrolysis Cell: Alireza Hekmat-Ardakan; Gervais Soucy; Loig Rivoalanda; Université de Sherbrooke; Rio Tinto Alcan

5:10 PM Concluding Comments

4:45 PM
Preparing Al-Sc-Zr Alloys in Aluminum Electrolysis Process: Yi Qian; Jilai Xue; University of Science and Technology Beijing

Energy Technologies and Carbon Dioxide Management: Carbon Footprint Analysis
Sponsored by: TMS Extraction and Processing Division, TMS Light Metals Division, TMS: Energy Committee, TMS: Education Committee
Program Organizers: Soobhankar Pati, Moxst Inc.; Animesh Jha, University of Leeds; Jaroslav Drellich, Michigan Technological University; Neale Neelameggham, Ind LLC; Cong Wang, Saint-Gobain High Performance Materials; Leon Prentice, CSIRO

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

Session Chairs: Neale Neelameggham, Ind LLC; Leon Prentice, CSIRO

2:00 PM Introductory Comments

2:05 PM
Carbon Footprint - A Tool to Identify Improvement Areas in GHG Reduction: Narasimharaghavan Puliyan Krishnaswamy; Neha Sahu; Bharat Aluminium Co. Ltd.; A Unit of Vedanta Resources Plc., BALCO Nagar, Korba

2:25 PM
Measuring the CO2 Captured on Bauxite Residue Carbonation: Luis Venancio; Jose Antonio Souza; Emanuel Macedo; Otacilio Dias; Iara Santos; Federal University of Para

2:45 PM
Study on Capture, Recovery and Utilization of Carbon Dioxide: Lian Zhou; Huimin Lu; Panpan Wang; Bethang University

3:05 PM
Carbon Footprint and Carbon Deficit Analysis of Iron and Steel Industry from 1991 to 2010 in China: Xin Lu; Hao Bai; Hebin Zhu; Fuming Wang; University of Science and Technology Beijing

3:55 PM
The Life Cycle Assessment of Metal Materials Used for Automobile Body Materials and Castings: Hongxu Li; Zhiqian Zhang; Xiangxin Hao; University of Science and Technology

4:15 PM
It Is Rocket Science: the Engineering and Impact of Carbothermal Magnesium Technology: Leon Prentice; CSIRO

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

Wednesday PM Room: Bowie C Location: Grand Hyatt

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

Session Chairs: Megan Cordill, Erich Schmid Institute of Materials Science; Xinghang Zhang, Texas A & M University

2:00 PM Invited
Exploring the Ductility of Nanocrystalline Metals: Brad Boyce; John Sharon; Sandia National Labs

2:30 PM
Synthesis, Characterization and Mechanical Behavior of Nanocrystalline Al-O Thin Films: Mo-Rigen He; Patrick Malone; Gang Feng; Saritha Samudrala; Julie Cairney; Daniel Gianola; University of Pennsylvania; Villanova University; University of Sydney

2:50 PM
Mechanical Behavior of Nanostructured Cu/Fe Multilayers: Youxing Chen; Yue Liu; Xinghang Zhang; Texas A&M University

3:10 PM Interface Structures in Al/Nb and Cu/Nb Nanocomposites: M Polyakov; A Hedge; University of Southern California

3:30 PM Break

3:50 PM Invited
Nanoindentation of Mineralized Tissues: Current Experimental Methods and Analysis: Virginia Ferguson; Sara Campbell; Colorado School of Mines; University of Colorado, Boulder

4:20 PM
Failure of Nanoscale Tensile Samples Observed by Quantitative In Situ TEM Testing: Daniel Kiener; Petra Kaufmann; Andrew Minor; University of Leoben; University California Berkeley

4:40 PM
Microspecimen Testing of the Mechanical Properties of Nanoporous Metals: Nicolas Briot; Tobias Kennerknecht; Chris Ebert; John Balk; University of Kentucky; Fraunhofer Institute for Mechanics of Materials
Fatigue in Materials: Microstructure-Driven Modeling and In-Situ Fatigue Characterization: Fatigue in Advanced Materials & Environmental Effects

Sponsored by: TMS Structural Materials Division, TMS/ASM: Mechanical Behavior of Materials Committee Program Organizers: Michael Sangid, Purdue University; Tongguang Zhai, University of Kentucky; Antonios Kontsos, Drexel University

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

Session Chair: Tony Zhai, University of Kentucky

2:00 PM Invited
Understanding Fatigue and Corrosion-Fatigue Behavior by In Situ 3D X-ray Synchrotron Tomography: Nikhilash Chawla1; 1Arizona State University

2:25 PM Invited
Fatigue Behavior of Bulk-Metallic Glasses: Peter Liaw1; Gongyao Wang2; Yoshihiko Yokoyama3; Xiaoping Jin4; Leon Keer5; Akhisa Inoue6; 1University of Tennessee; 2Advanced Research Center of Metallic Glasses; 3Northwestern University

2:50 PM
In-Situ Characterization of Fatigue Behavior of Metastable Austenitic Steels Using Electromagnetic Acoustic Transducers: Dietmar Effler1; Marek Smaga2; Andreas Sorich3; Iris Altpeter4; Gerd Dobmann5; 1University of Kaiserslautern, Institute of Materials Science and Engineering; 2Fraunhofer Institute for Non-Destructive Testing,

3:10 PM Invited
A Two-Parameter Model for Fatigue Strength Estimation of High-Strength Steels in Very-High-Cycle-Fatigue Regime: Chengqi Sun1; Youshi Hong2; 1Institute of Mechanics, Chinese Academy of Sciences

3:35 PM Break

3:55 PM Invited
Effect of Heat Treatment on Fatigue Behavior and Mechanical Properties of Al 7021-T6: Yasser Ahmed1; 1German University in Cairo

4:20 PM
Micro Heterogenous Fatigue Cracking Behavior in Dual Phase Materials: Guocai Chai1; 2Sandvik Materials Technology

4:40 PM
Micro Structural Model to Analyze Fatigue Behavior on Open Cell Metal Foam: Hernan Pinto1; Sanjay Arwade2; 1Pontificia Universidad Católica de Valparaíso; 2University of Massachusetts Amherst

5:00 PM
Effect of Tempering on the Fatigue Resistance of a 5160 Spring Steel: Diego Lozano1; Rafael Mercado-Solis2; 1University Autónoma de Nuevo León

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

Wednesday PM
Room: Grand Ballroom C3
March 6, 2013
Location: Henry B. Gonzalez Convention Center

Session Chairs: Blair Carlson, General Motors; Kevin Doherty, US Army Research Laboratory; Brian Thompson, EWI

2:00 PM Invited
Friction Stir Spot Welding of Aluminum to Magnesium Alloy Sheets: Wei Yuan1; Harsha Badarinarayan2; 1Hitachi America Ltd.

2:20 PM
On Friction Stir Welding of Mg–Zn-Zr-RE Alloy using Threaded Tools for Aerospace Application: Mamun Mahapatra1; S.P. Madavan2; Kumar Pradeep3; 1Indian Institute of Technology Roorkee

2:40 PM
Effect of Process Conditions on Friction Stir Spot Welding of ZEK100 Mg Alloy: Harish Rao1; J Jordan2; 1The University of Alabama

3:00 PM
Evolution of Micro-Texture in Friction Stir Processed Mg-4Y-3RE Alloy: Nilesh Dende1; Nilesh Kumar2; Deep Choudhuri3; J Hong4; Rajiv Mishra5; Rajarshi Banerjee6; 1University of North Texas

3:15 PM
Magnesium-based Surface Composite Via Friction Stir Processing: Shamiparna Das1; Rajiv Mishra2; Kevin Doherty3; Kyu Cho4; Bruce Davis5; Rick DeLorme6; 1University of North Texas; 2U.S. Army Research Laboratory; 3Magnetum Elektron; 4Magnetum Elektron North America Inc.; 5U.S. Army Research Laboratory, Materials and Manufacturing Science Division

3:30 PM Break

3:45 PM
Effect of Initial Microstructure on the Microstructural Evolution and Joint Efficiency of a WE43 Alloy during Friction Stir Welding: Sivanesh Palanivel1; Rajiv Mishra2; B. Davis3; R. DeLorme4; 1University of North Texas; 2U.S. Army Research Laboratory, Materials and Manufacturing Science Division

4:00 PM
Microstructure in Dissimilar Friction Spot Weld of Al to Mg Alloys Observed by Stop-Action Technique: Uceu Suhuddin1; Vanessa Fischer1; Jorge dos Santos2; 1Helmholtz-Zentrum Geestacht

4:20 PM
Microstructure and Mechanical Properties of Dissimilar Friction Stir Welds between AA6061 and AZ31 Alloy Sheets: Kwang-jin Lee1; Sang-Hyuk Kim2; Kee-Do Woo3; 1Korea Institute of Industrial Technology; 2Chonbuk National University

4:40 PM
Effect of Corrosion in NaCl-Based Solutions on the Mechanical Properties of Friction-Stir Welded AZ31B Sheet: Joseph McDermid1; Joseph Kish2; Jennifer Thuss3; 1McMaster University
5:00 PM
Metallurgical Characterization of Friction Stir Welded Aluminum Matrix Composites: Isaac Dinaharan1; Santhiyagu Joseph Vijay1; Kumaravel Kalaiselvan2; B Ashok Kumar2; Natarajan Murugan2; Karunya University; 1K.S.Rangasamy College of Technology; 2Erode
Builder Educational Trust’s Group of Institutions; 3Coimbatore Institute of Technology

5:20 PM
Microstructural Gradients and Intermetallic Compounds in Friction Stir Welding of Dissimilar Metals: Erin Patterson1; Yuri Hovanski1; David Field1; 1Washington State University; 2Pacific Northwest National Laboratory

5:35 PM
Optimization of Wear Rate of Friction Stir Welded Al-B4C Composite: Kalaiselvan Kumaravel1; Murugan Natarajan1; 1K.S.Rangasamy College of Technology

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

Wednesday PM
Room: Lone Star Salon F
March 6, 2013
Location: Grand Hyatt

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

Session Chairs: Silvere Akamatsu, CNRS - UPMC; Alain Karma, Northeastern University

2:00 PM Invited
Modelling Late Stage Solidification: Nikolas Provatas1; Rameez Ashraf2; David Montiel2; Nana Ofori-Opoku2; Vahid Fallah2; Jonathan Stolle2; McGill University; 1McMaster University; 2Waterloo

2:30 PM Invited
Phase-Field Simulations and Geometrical Analysis of Cellular Solidification Fronts: Mathis Plapp1; Yiwen Ma1; 1CNRS/Ecole Polytechnique

3:00 PM
Phase-Field Approaches to Anisotropic Eutectic Solidification: Laszlo Granasy1; Tamas Pusztai1; Gyula Toth1; 1Wigner Research Centre for Physics

3:20 PM
Phase-Field Simulation of Dendrite Fragmentation: Christoph Beckermann1; 1University of Iowa

3:40 PM Break

3:50 PM
Phase Field Modeling of Spiral Eutectic Dendrites: Tamás Pusztai1; László Rátkai2; Attila Szállás1; László Gránasy1; 1Wigner Research Centre for Physics

4:10 PM Invited
Liquid Metal Embrittlement: Linking Small Scale Wetting Phenomena and Mesoscopic Pattern Formation: Robert Spatschek1; Claas Hueter2; Fabian Twiste2; Efin Bruner2; Joerg Neugebauer2; Max-Planck-Institut fuer Eisenforschung; 1Forschungszentrum Juelich

4:40 PM
Mesoscopic Modeling of Thermosolutal Equiaxed Dendrites: Valerio De Felice1; Miha Založnik1; Hervé Combeau1; Christoph Beckermann2; Institut Jean Lamour; 3University of Iowa

5:00 PM
Computational Study of Competitive Grain Growth and Dendritic Microstructure Selection in Alloy Directional Solidification: Damien Tourret1; Alain Karma1; 1Northeastern University

5:20 PM
Combined Phase Field – Lattice Boltzmann Simulation of Dendritic Solidification with Fluid Flow and Solid Particle Motion: Dmitry Medvedev1; Oleg Slepyglo1; Fatollah Varnik1; Ingo Steinbach1; ICAMS, Ruhr University Bochum

5:40 PM
A Three-dimensional Lattice Boltzmann-Cellular Automaton Model for Dendritic Solidification under Convection: Mohsen Eshraghi1; Bohumir Jelinek1; Sergio Felicelli1; 1Mississippi State University

Hume-Rothery Award Symposium: Electronic Structure Theory of Stability and Bonding in Alloys: Semiconductor Alloys
Sponsored by: TMS Electronic, Magnetic, and Photonic Materials Division, TMS: Alloy Phases Committee
Program Organizer: Chris Wolverton, Northwestern University

Wednesday PM
Room: 205
March 6, 2013
Location: Henry B. Gonzalez Convention Center

Session Chairs: Stephan Lany, NREL; Stefan Mueller, Technische Universität Hamburg-Harburg (TUHH)

2:00 PM Invited
Understanding of the Electronic, Optical, and Defect Properties of Cu2ZnSn(S,Se)4 Alloys for Thin-Film Solar Cell Absorbers: Su-Huai Wei1; 1National Renewable Energy Lab

2:30 PM Invited
Semiconductor Alloy Calculations: Electronic Structures, Isoelectronic Defect States and Atomic Structure Ordering: Lin-Wang Wang1; Lawrence Berkeley National Laboratory

3:00 PM Invited
All-Electron Electronic Structure Accuracy for Real Materials and Molecules: Volker Blum1; Matthias Scheffler1; Fritz Haber Institute

3:30 PM Break

3:50 PM Invited
Thermodynamic Theory of Epitaxial Alloys: First-Principles Mixed-Basis Cluster Expansion of (In, Ga)N Alloy Film: Zhe Liu1; 1Monash University

4:20 PM Invited
Thermal Conductance at Atomically Clean and Disordered Silicon/Aluminum Interfaces: Kwseon Kim1; Sreekant Narumanchi1; Woon-Ih Choi1; 1National Renewable Energy Lab
Magnesium-based Biodegradable Implants Symposium: Alloy Development
Sponsored by: TMS Electronic, Magnetic, and Photonic Materials Division, TMS Light Metals Division, TMS Structural Materials Division, TMS: Biomaterials Committee, TMS: Magnesium Committee
Program Organizers: Candan Tamerler, University of Washington; Wim Sillekens, European Space Agency

Wednesday PM  Room: 214D
March 6, 2013  Location: Henry B. Gonzalez Convention Center

Funding support provided by: Biological Materials Science Symposium AND Magnesium Technology Symposium

Session Chairs: Jaroslaw Drelich, Michigan Tech; Frank Witte, Hannover Medical School

2:00 PM
Density-Functional Theory (DFT) Study on the Alloying Element Effects of Biodegradable Magnesium Alloys: Maryam Nezafati1; Chang-Soo Kim2; 1University of Wisconsin Milwaukee

2:20 PM
Design and Investigation of the Oxidation Behavior and Degradation Rates of Self-Passivating Mg Alloys: Ida Berglund1; Harpreet Brar2; Jordan Ball3; Josephine Allen4; Benjamin Keselowsky5; Malisa Sartimoranont6; Michele Manuel1; 2University of Florida

2:40 PM
Magnesium-based Alloys for Application in Biomedical Implants: Telma Matias1; Claudemiro Bolfarini2; Bruno Ramasco3; Gabriel Asato4; 1Universidade Federal de São Carlos

3:00 PM
Improved Cell Viability, Corrosion Behavior, and Mechanical Properties of Mg-Zn and Mg-Y Based Polycrystalline Alloys for Orthopedic Applications: Prashant Kumta1; Daeho Hong2; Da-Tren Chou3; Partha Saha4; Oleq Velikokhatnyi5; 1University of Pittsburgh

3:20 PM
Study on the Cell Viability and Cell Adhesion of MgZnCa Alloys: Christopher Smith1; Zhigang Xu2; Jenora Waterman3; Jagannathan Sankar4; 1North Carolina A&T State University

3:40 PM  Break

4:00 PM
Influence of Neodymium and Heat Treatment on the Mechanical and Corrosive Properties of Cast Mg10Gd Base Alloy: Petra Maier1; Chamini Mendi2; Gerhard Tober3; Christian Ruback4; Maria Kuttig5; Norbert Hort6; 1Helmholtz-Zentrum Geesthacht

4:20 PM
Biodegradable Mg-Zn-Y Alloys with Long-Period Stacking Ordered Structure: Mechanical Properties and In Vitro Degradation Rate: Jian Xue1; Xu Zhao2; Ling-ling Shi3; 1Institute of Metal Research, Chinese Academy of Sciences

4:40 PM
Development of Biodegradable Mg Alloys for Orthopedic Applications: Hyung-Soon Han4; Young-Yul Kim5; Yu-Chan Kim6; Hyun-Kwang Seok7; Seok-Jo Yang8; 1Korea Institute of Science and Technology; 2The Catholic University; 3Chungnam National University

5:00 PM
In Vivo Evaluation of Mg Alloy Scaffold for Bone Tissue Engineering: Xingguo Cheng1; 1Southwest Research Institute

5:20 PM
MgNd2 – A Future Resorbable Magnesium Based Implant Material?: Jan-Marten Seitz1; Danielle Fau2; Rainer Eifler3; Jessica Stahl4; Manfred Kietzmann5; Friedrich-Wilhelm Bach6; The Leibniz Universität Hannover; 1University of Pennsylvania; 2Stiftung Tieraerztliche Hochschule Hannover

5:40 PM
Biodegradable Magnesium Alloys for Cardiovascular Applications: Waseem Haider1; Edgar Munoz2; Kevin Corona3; Zia ur Rahman4; Luis Pompa5; 1University of Texas Pan American

Magnesium Technology 2013: Wrought Materials II
Sponsored by: TMS Light Metals Division, TMS: Magnesium Committee
Program Organizers: Norbert Hort, Helmholtz-Zentrum Geesthacht; Suveen Mathaudhu, US Army Research Office; Neale Neelameggham, IND LLC; Martyn Alderman, Magnesium Elektron

Wednesday PM  Room: 214A
March 6, 2013  Location: Henry B. Gonzalez Convention Center

Session Chairs: Julian Rosalie, National Institute for Materials Science; Jennifer Hay, Agilent Technologies

2:00 PM
Investigation of Mechanical Properties and Deformation Behavior of CaO Added Mg-6Zn-1.2Y Sheets: Hyun Kyu Lim1; Young-Ok Yoon2; Shae K. Kim3; 1Korea Institute of Industrial Technology

2:20 PM
Recrystallization Behavior of a MgAlCa Alloy during Thermomechanical Processing And Subsequent Heat Treatment: Victoria Miller1; Tresa Pollock2; 1University of California Santa Barbara

2:40 PM
Temperature-Dependent Forming Limit Surface (FLS) for Warm/Hot Forming of Magnesium Alloy Sheets: Fadi Abu-Farha1; 1Clemson University

3:00 PM
The Influence of Deformation Mechanisms on Rupture of AZ31b Magnesium Alloy Sheet at Elevated Temperatures: Aravindha Antonisamy1; Alexander Carpenter2; Jon Carter3; Louis Hector4; Eric Taleff5; 1University of Texas at Austin; 2General Motors Corporation

3:20 PM
Influence of Temperature and Rolling Speed on Twin Roll Cast Strip: Gerrit Kurz1; Lennart Stutz2; Dietmar Letzig3; Karl Kainer4; 1Helmholtz-Zentrum Geesthacht

3:40 PM  Break

4:00 PM
Mathematical Modeling of the Effect of Roll Diameter on the Thermo-Mechanical Behavior of Twin Roll Cast AZ31 Magnesium Alloy Strips: Amir Hadadzadeh1; Mary Wells2; 1University of Waterloo

4:20 PM
A Multi-Stage Approach for Predicting Fatigue Damage in Friction Stir Spot Welded Joints of Mg AZ31 Alloy: Harish Rao1; J Jordon2; 1The University of Alabama
4:40 PM Friction Stir Forging (FSF) and Friction Stir Back Extrusion (FSBE) of Mg AZ31B-F: A Preliminary Investigation: Fadi Abu-Farha1; 1Clemson University

5:00 PM Microstructure Modification and Performance Improvement of Mg-RE Alloys by Friction Stir Processing: Yujuan Wu1; L. M Peng1; F.Y. Zheng1; X.W. Li1; D.J. Li1; W.J. Ding1; 1Shanghai Jiao Tong University

5:20 PM Increasing Volume Fraction of Precipitates and Strength of a Mg-Zn-Y Alloy by Pre-Aging Deformation: Julian Rosatte2; Hidetoshi Somekawa1; Alok Singh1; Toshiji Mukai2; 1National Institute for Materials Science; 2Kobe University

5:40 PM Inverse Strain Rate Sensitivity of Bendability of an AZ31 Sheet in Three-Point Bending: Bin Li1; Stephen Horstemeyer1; Andrew Oppedal1; Paul Wang1; Mark Horstemeyer1; 1Center for Advanced Vehicular Systems

Magnetic Materials for Energy Applications -III:

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

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

Session Chairs: Jeff Shield, University of Nebraska, Lincoln; Yongmei Jin, Michigan Tech

2:00 PM Invited Interfaces at the Atomic Scale in Nd-Fe-B Permanent Magnets: Thomas Woodcock1; Gino Hrkac2; Quentin Ramaas2; Thomas Schreff2; Oliver Guttleisch2; 1IFW Dresden; 2University of Sheffield; 2SuperSTEM Facility; St. Pölten University of Applied Sciences; 2TU Darmstadt

2:35 PM Performance and Endurance of Nd-Fe-B Sintered Magnets in E-Motor Application Conditions: Martina Moore1; Ralph Sueptitz1; Margitta Uhlemann1; Annett Gebert1; Ludwig Schultz1; Oliver Guttleisch2; 1IFW Dresden; 2TU Darmstadt

2:55 PM Development of High Energy Product Permanent Magnets through Different Additions in Sm-Co System: Xiujuan Jiang1; Najia Zoghieib2; Jeffrey Shield1; 1University of Nebraska-Lincoln

3:15 PM Grain Boundary Micromagnetism Characterization of Nd-Fe-B Sintered Magnet by Synchrotron Radiation Magnetic Circular Dichroism: Tetsuya Nakamura1; Tomoki Fukagawa1; Sepehr Hosseini1; Takeshi Nishii1; Tomohito Maki1; Yoshinori Kotani1; Yasuo Narumi2; Hiroyuki Nogiri1; Kazuhiro Hono2; Toyohiko Kinoshita1; Satoshi Hirosa2; 1Japan Synchrotron Radiation Research Institute (JASRI); 1Hitachi Metals, Ltd.; 2National Institute for Materials Science; 2Institute for Materials Research, Tohoku University

3:45 PM Break

4:00 PM Investigation of Coercivity Mechanisms in High Performance (Nd,Dy)-Fe-B Permanent Magnets with Core-Shell Structure: Konrad Löwe1; T. Woodcock2; Christoph Brombacher2; Matthias Katter2; Oliver Guttleisch2; 1Technical University Darmstadt; 2IFW Dresden; 3TU Dresden; 4Vacuumschmelze GmbH & Co. KG

4:30 PM Single Grain and Textured Sub-Micron Particles of Nd2Fe14B for the Preparation of High Energy Density Nanocomposite Magnets: Santosh Pai1; Ludwig Schultz2; Oliver Guttleisch2; 1IFW Dresden; 2TU Darmstadt

4:50 PM Tuning the Electrical Resistivity in Hot-Deformed Nd-Fe-B Magnets: Simon Sawatzki2; Imants Dirba1; Ludwig Schultz2; Oliver Guttleisch2; 1TU Darmstadt; 2IFW Dresden

5:10 PM The Temperature Dependence of Magnetic Properties in(Mn2+0.13Co0.87·Fe1-xTixC)100-x Ferrimagnets: Xiujuan Jiang1; Jeffrey Shield1; 1University of Nebraska-Lincoln

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

Wednesday PM Room: 202A Location: Henry B. Gonzalez Convention Center

Session Chair: Stuart Maloy, Los Alamos National Laboratory

2:00 PM Invited Materials Corrosion in Molten Fluoride Salts: Kumar Sridharan1; Robert Sellers1; Guiqiu Zheng1; Guoping Cao1; Mark Anderson1; Todd Allen1; 1University of Wisconsin

2:40 PM Characterization on the Advanced Core and Cladding Steels after Electro Magnetic Pulse Welding: Yong Jiong1; Todd Allen1; Sindo Chou2; 1University of Florida; 2University of Wisconsin-Madison

3:00 PM Influence of Dissolved Oxygen, Grain Growth and Segregation on the Transport Properties of Zircaloy: J. B. Henderson1; 1Netzsch Instruments North America LLC

3:20 PM Influence of Thermal Aging on Microstructure and Mechanical Properties of CLAM Steel: Lixin Huang1; Yi Yin Shan2; Wei Yan2; Wei Wang2; Ke Yang1; 1College of Materials Science and Engineering, Yanshan University; 2Institute of Metal Research, Chinese Academy of Sciences

3:40 PM Break

4:00 PM Microhardness of Hafnium Aluminide Composite Material for Nuclear Reactor Applications: Donna Guillen1; Bryan Forssmann2; 1Idaho National Laboratory; 2Boise State University-Idaho Falls
4:20 PM
FRACTURE RESISTANCE OF A ZIRCONIUM ALLOY WITH REORIENTED HYDRIDES:
Kwai Chan1; Xiuhu He1; Yi-Ming Pan1; 1Southwest Research Institute

4:40 PM
DIFFUSIONAL INTERACTIONS BETWEEN HT9 ALLOY IN CONTACT WITH VANADIUM AND ZIRCONIUM: E. Perez1; J. Cole1; J. Gan1; R. Fielding1; 1Idaho National Laboratory

5:00 PM
CHARACTERISTICS OF ZIRCALOY-4 JOINTS BRAZED BY A BE-FREE ZR-BASE AMORPHOUS SPUTTER COATING: Min Jia Li1; 1Korea Atomic Energy Research Institute

5:20 PM
JOINING OF 20Cr-4.5Al ODS STEEL AND MODIFIED 9Cr-1Mo STEEL BY FRICTION WELDING: MICROSTRUCTURAL INVESTIGATION: Jinsung Jang1; Seok Hoan Jeong1; Boyoung Lee1; Chang Hee Han1; Sük Hoon Kang2; 1Korea Atomic Energy Research Institute

5:40 PM
EFFECT OF CALCIUM ON THE SOLUBILITY OF ZINC OXIDE IN THE SODIUM HYDROXIDE SOLUTION: Chen Ai Liang1; Zhu Wei Xiong1; Xu Dong1; Chen Xing2; Liu Xu Heng1; 1Hydrometallurgy

5:00 PM
COMPREHENSIVE COMPARISON STUDY OF DIFFERENT METALLURGICAL WASTE FOR PREPARATION OF GLASS-CERAMICS: Yanbing Zong1; Xibian Ai1; Quanniu Liu1; 1State Key Laboratory of Advanced Metallurgy, University of Science and Technology Beijing

MATERIALS SCIENCE OF NUCLEAR WASTE MANAGEMENT
Sponsored by: TMS Structural Materials Division, TMS/ASM: Nuclear Materials Committee

Program Organizers: Kyle Brinkman, Savannah River National Laboratory (SRNL); Ming Tang, Los Alamos National Laboratory (LANL); Kevin Fox, Savannah River National Laboratory (SRNL); Peng Xu, Westinghouse Electric Company

Wednesday PM Room: 202B
March 6, 2013 Location: Henry B. Gonzalez Convention Center

Session Chairs: Kyle Brinkman, Savannah River National Laboratory; Peng Xu, Westinghouse Electric Company

2:00 PM Invited
Simulation of Alpha-Decay Damage in Nuclear Waste Ceramics using Ion Irradiation: William Weber1; 1University of Tennessee

2:30 PM Invited
Thermodynamic Stability of Ceramic Waste Forms Incorporating Strontium and Cesium and the Chemical Effect of Radioactive Decay: Alexandra Navrotsky1; 1UC Davis

3:00 PM
ION IRRADIATION-INDUCED AMORPHIZATION IN VANADATE-PHOSPHATE Apatites: Jie Lian1; Zhihong Dong1; Rodney Ewing1; 1Rensselaer Polytechnic Institute; 2Nanyang Technological University; 3University of Michigan

3:30 PM
RADIATION STABILITY STUDY ON GLASS CERAMIC AND CRYSTALLINE CERAMIC WASTE FORMS FOR AN ADVANCED NUCLEAR FUEL CYCLE: Ming Tang1; Anna-Ewen Kossoy-Simakov1; Gordon Jarvinen1; Jarrod Crum3; Laura Turo1; Kyle Brinkman1; Kevin Fox1; James Marra2; 1Los Alamos National Laboratory; 2Pacific Northwest National Laboratory; 3Savannah River National Laboratory

3:40 PM Break

3:50 PM
STRUCTURE AND STABILITY OF WADEITE ANALOGUES FOR RADIOACTIVE Cs DISPOSAL: Hongwu Xu1; 1LANL

4:10 PM
VALENCE AND COORDINATION OF IRON AND MANGANESE IN SIMULATED SB6 NUCLEAR WASTE GLASSES: Sergey Stefansky1; Andrey Shiriyaev1; Yan Zubavichus1; Alex Chol2; James Marra2; 1SIA Radon; 2Institute of Physical Chemistry and Electrochemistry RAS; 3NRC “Kurchatov Institute”; 4Savannah River National Laboratory

4:30 PM Invited
ACCELERATED CHEMICAL AGING OF CRYSTALLINE NUCLEAR WASTE FORMS: Chris Stanek1; Blas Uheruaga1; Brian Scott1; Laura Wolfsberg1; Meiring Nortier2; Wayne Taylor1; Nigel Marks2; 1Los Alamos National Laboratory; 2Curtin University of Technology
Microstructural Processes in Irradiated Materials: Fusion Materials

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

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

Session Chairs: Roger Stoller, Oak Ridge National Laboratory; Steven Zinkle, Oak Ridge National Laboratory

2:00 PM Invited Radiation Effects on a High Strength, High Conductivity Copper Alloy: Steven Zinkle1; 1Oak Ridge National Laboratory

3:30 PM Effect of Grain Boundary Characters on Sink Efficiency: Weizhong Han1; Michael Demkowicz2; Engang Fu1; Yongqiang Wang1; Amit Misra1; 1Los Alamos National Lab; 2MIT

2:50 PM Correlation between Irradiation Hardening and Microstructural Evolution in High Purity Reference V-4Cr-4Ti Alloy for Fusion Reactor: Takuya Nagasaka1; Takeshi Miyazawa1; Masanori Yamazaki1; 1National Institute for Fusion Science; 2Research Institute for Applied Mechanics, Kyushu University; 3The Graduate University for Advanced Studies; 4International Research Center for Nuclear Materials Science, Institute for Materials Research, Tohoku University

3:10 PM A Replica Technique for Extracting Precipitates from Neutron-Irradiated or Thermal-Aged Vanadium Alloys for TEM Analysis: Ken-ichi Fukumoto1; Masahiro Iwasaki1; 1RINE/Univ. of Fukui; 2Univ. of Fukui

3:30 PM Microstructures of Heavily Neutron-Irradiated SiC/SiC Composites: Yuji Kato1; Keith Leonard1; Peng Dou1; Lance Sneed2; 1Oak Ridge National Laboratory

3:50 PM Break

4:00 PM Invited Multiple Simultaneous Ion Beam (MSIB) Examination of Inertial Fusion Energy Candidate Materials: Michael Flesler1; Luke Hsiung1; William Choi2; Peter Housemann2; Estelle Meslin2; Jaime Marian2; David Hoelzer2; 1LLNL; 2UC Berkeley; 3CEA-Saclay; 4ORNL

4:30 PM The Microstructure Development of Dispersion-Strengthened Tungsten due to Neutron Irradiation: Makoto Fukuda1; Akira Hasegawa1; Shuhei Nogami1; Kiyohiro Yabuuchi1; 1Tohoku University

4:50 PM Theoretical and Experimental Study of Spatial Effects in 3He Implantation in W: André De Backer1; Christophe Ortiz2; Christophe Domain3; Marie France Barthe4; Charlotte Bocquart5; 1UMET, UMR 8207, EM2VM; 2Laboratorio Nacional de Fusión por Confinamiento Magnético – CIEMAT; 3EDF, EM2VM; 4CNRS, UPR3079 CEMHTI

5:10 PM The Change in Mechanical Properties of Tungsten after Self-Ion Irradiation: James Gibson1; David Armstrong1; Steve Roberts1; 1Oxford University

5:30 PM Deuterium Retention in Ion Damaged Tungsten with and without the Presence of Helium: Yongqiang Wang1; Chunping Xu1; Joseph Barton2; Nate Mara1; Russ Doerner1; George Tyran1; 1Los Alamos National Laboratory; 2University of California
4:10 PM Invited
Interfaces on Shock-Induced Damage in Two-Phase Metals: Copper-Lead
Lead: Saryu Fensin1; Steven Valone1; Ellen Cerreta1; George Gray1; Adam Farrow1; Carl Trujillo1; 1Los Alamos National Laboratory

4:40 PM
Modeling of Size Effects on Behavior of Thin Sheet Metals for Bipolar Plate Manufacturing: Muammer Koc1; Sasawat Mahabunpachai1; 1Istanbul Sehir University; 2MTEC

5:00 PM
Molecular Dynamics Study of Strain Rate Sensitivity of Deformation Mechanisms in Nanocrystalline BCC Tantalum: Laura Smith1; Diana Farkas1; Jonathan Zimmerman1; Lucas Hale1; 1Virginia Polytechnic Institute and State University; 2Sandia National Laboratories

5:20 PM
Study of Cyclic Deformation of Mg Single Crystal in [0001] Direction Utilizing In Situ Optical Microscopy: Qin Yu1; Jian Wang1; Yanyao Jiang1; 1Department of Mechanical Engineering, University of Nevada, Reno; 2Materials Science and Technology Division, Los Alamos National Laboratory

5:40 PM
Laser Induced Projectile Impact Test for High-Strain Rate Characterization of Nanomaterials: Jae-Hwang Lee1; Edwin Thomas1; 1Rice University

Modeling and Experimental Validation of Multiscale Mechanical Behavior from Atomic Scale to Macro Scale: Polycrystalline Multiscale Plasticity

Program Organizers: Nathan Mara, Los Alamos National Laboratory; Jian Wang, Los Alamos National Laboratory; Brad Boyce, Sandia National Laboratories; Jennifer Carter, Case Western Reserve University; Anthony Rollett, Carnegie Mellon University; Jonathan Zimmerman, Sandia National Laboratories

Wednesday PM
Location: Henry B. Gonzalez Convention Center

2:00 PM Invited
High Energy X-ray Diffraction Microscopy Tracking of Internal Polycrystal Responses to Tensile Deformation: Robert Suter1; Shiu Fai Li1; Jonathan Lind1; Reetu Pokharel1; Christopher Hefferan1; Xi Tan1; Ulrich Lienert1; Anthony Rollett1; 1Carnegie Mellon University

2:30 PM
Combining Laue Microdiffraction and Digital Image Correlation for Improved Measurements of the Elastic Strain Field with Micrometer Spatial Resolution: Johann Peitl1; Olivier Castelnaud1; Michel Bornert1; Fengguo Zhang1; Odile Robach1; JS Micha1; olivier ulrich1; Christophe Le Bourlot1; damien Faurie1; Felix hofmann1; A Korsunsky1; 1PIMM-CNRS; 2Arts et Metiers ParisTech; 3Ecole des ponts ParisTech; 4CEA Grenoble; 5LSPM; 6University of Oxford

2:50 PM
A Single Crystal Yield Model for Tantalum Based on Atomic Simulations: Lucas Hale1; Jonathan Zimmerman1; Christoph Weinerberger1; 1Sandia National Laboratories

3:10 PM Invited
Modeling the Crystallographic Texture of Cu/Nb Layered Composites by Accumulated Roll Bonding: Curt Bronkhorst1; Benjamin Hansen1; Hashem Mourad1; John Carpenter1; Jason Mayeur1; Irene Beyerlein1; Rodney McCabe1; Nathan Mara1; Stephen Sintay1; 1Los Alamos National Laboratory

3:40 PM Break

3:50 PM
Modeling Mechanical Response and Texture Evolution of α-Uranium as a Function of Strain Rate and Temperature Using Polycrystal Plasticity: Marko Knezevic1; Rodney McCabe1; Carlos Tomé1; Ricardo Lebensohn1; Bogdan Mihaila1; 1Materials Science and Technology Division, Los Alamos National Laboratory

4:10 PM Invited
Stress States Associated with Twin Nucleation, Propagation and Detwinning: Anand Kanjarla1; Stephen Niezgoda1; H. Wang1; Jian Wang1; P.D. Wu1; Carlos Tome1; 1Los Alamos National Laboratory

4:40 PM
Understanding Micro-Mechanical Deformation in Zirconium with Nanoindentation, Micro-Cantilevers and High Resolution Electron Backscatter Diffraction: T Ben Britton1; Icheng Gong1; Edmund Tarleton1; Angus Wilkinson1; Steve Roberts1; 1Department of Materials, University of Oxford

5:00 PM Invited
Validating Crystal Plasticity Finite Element Simulations with DIC and EBSD Experiments: Corbett Battaile1; Hojun Lim1; Christopher Weinerberger1; Jay Carroll1; Thomas Buchheit1; Brad Boyce1; 1Sandia National Laboratories

5:30 PM
Revisiting PSBs Modeling: Ladislas Kubin1; Maxime Sauzay1; 1LEM, CNRS-ONERA; 2CEA, SRMA

Nanostructured Materials for Lithium Ion Batteries and for Supercapacitors: Nanostructured Materials for Lithium Ion Batteries and for Supercapacitors Session VI
Sponsored by: TMS Electronic, Magnetic, and Photonic Materials Division, TMS: Energy Conversion and Storage Committee
Program Organizer: David Mitlin, University of Alberta and NINT NRC

Wednesday PM
Location: 007B

2:00 PM Invited
Stress, Fracture, and Coupled Mechanical-chemical Degradation in Lithium Ion Battery Electrodes: Yang-Tse Cheng1; Rutooj Deshpande1; Juchuan Li1; Mark Verbrugge1; 1University of Kentucky; 2General Motors Research and Development Center

Nanostructured Materials for Lithium Ion Batteries and for Supercapacitors Session VI
2:20 PM Invited
Inkjet-Printed Graphene for Micro-Supercapacitor: Linh Le; Matthew Ervin; De Kong; Brian Fuchs; James Zunino; Woo Lee; Stevens Institute of Technology; U.S. Army Research Lab; Picatinny Arsenal

2:40 PM Invited
Nanostructured Co3O4 Electrodes for Na-Ion Battery Applications from Solution Plasma Spray Technique: Xuan Zhou; Ramesh Kumar Guduru; Raghavender Tummala; Pravansu Mohanty; University of Michigan-Dearborn

3:00 PM Invited
Predicting and Imaging Nanocrystals in Metal Alloy Electrodes: Michael Fleischauer; A.D.W. Todd; P.P. Ferguson; National Institute for Nanotechnology; National Research Council; Université de Moncton

3:20 PM Invited
Break

3:40 PM Invited
Spray Pyrolysis for Synthesis of Nanostructured, High Energy xLi2MnO3·(1-x)LiMO2 (M= Mn, Ni, Co) Cathode Materials: Richard Axelbaum; Xiaofeng Zhang; Miklos Lengyl; Ilias Belharouak; Gal Atlas; Washington University in St. Louis; Argonne National Laboratory

4:00 PM Invited
Multinuclear Solid and Liquid State NMR Studies of Battery Materials: Steve Greenbaum; Hunter College of CUNY

4:20 PM Invited
In Situ Stress Study of Porous V2O5 Films as Li-ion Battery Electrodes: DaeWei Liu; Clement Edouard; Brian Sheldon; Alfred University; Brown University

4:40 PM Invited
MXene - A New Family of Two Dimensional Materials for Use in Lithium Ion Batteries and Lithium Ion Capacitors: Michael Naguib; YoHan Dallagnese; Olha Mashtalir; Jeremy Come; Pierre-Louis Taberna; Volker Presser; Patrice Simon; Michel Barsoum; Yury Gogotsi; Drexel University; Université Paul Sabatier

5:00 PM Invited
Novel Design of Nanostructured Si Anode on Nanohair Array Polymer Substrate: Min-Suk Jung; Young-Chang Joo; Myoung-Woon Moon; In-suk Choi; Seoul National University; Korea Institute of Science and Technology

5:20 PM
Si Thin Film Electrode on TiNi Shape Memory Alloy (Current Collector) with Martensitic Phase: Yeon-min Im; Sang-hun Lee; Jungphil Noh; Gyu-bong Cho; Tae-hyun Nam; Gyeongsang National University

5:40 PM
Synthesis of Nanosheet TiO2(B) with Open Structure for Applications in High-Rate Lithium-ion Batteries: Ming-Yan Hou; Yu-Sheng Lin; Jenq-Gong Duh; Department of Materials Science and Engineering, National Tsing Hua University

Neutron and X-Ray Studies of Advanced Materials VI: Centennial and Beyond: Diffraction Studies of Phase Transitions
Sponsored by: TMS Structural Materials Division, TMS/ASM: Mechanical Behavior of Materials Committee
Program Organizers: Rozaliya Barabash, Oak Ridge National Laboratory; Xun-Li Wang, City University of Hong Kong; Jaimie Tiley, US Air Force Research Laboratory; Gernot Kostorz, ETH Zurich; Brent Fultz, California Institute of Technology; Peter Liaw, Univ of Tennessee

Wednesday PM
Location: Henry B. Gonzalez Convention Center

Session Chairs: Thomas Watkins, ORNL; Brent Fultz, CALTECH

2:00 PM Keynote
Strain in Semiconductor Nano-Structures using X-ray Bragg Coherent Diffraction Imaging: Vincent Favre-Nicolin; Francesca Mastropietro; Joel Emyery; Gerardina Carbone; Francois Andreieu; Julien Claudon; Jean-Michel Gerard; CEA-Université de Grenoble; Université Aix-Marseille; CEA; ESRF; CEA-LETI

2:20 PM
Probing the Local Structure of the Lead-Free Piezoelectric Na0.5Bi1.5TiO3 by X-Ray and Neutron Scattering: Jens Kreisel; CRP Lippmann & Luxembourg University

2:35 PM Invited
What Neutrons Tell Us about Magnetic Shape Memory Materials?: Volodymyr Chernenko; Jose Manuel Barandiaran; Patricia Lzpaiza; Jon Gutierrez; University of Basque Country (UPV/EHU)

2:55 PM
Time-Resolved High-Energy Small-Angle X-ray Scattering of the γ Precipitates in a Polycrystalline Nickel-Base Superalloy: David Collins; Thomas Connolley; Leigh Connor; Howard Stone; University of Oxford; Diamond Light Source; University of Cambridge

3:10 PM Invited
Using Small Angle Scattering and Atom Probe Tomography as Complementary Tools for Characterising Precipitate Microstructures at the Nanoscale: Alexis Deschamps; Frederic De Geuser; Vicente Araullo-Peters; Julie Cairney; Laurent Couturier; Baptiste Gault; Christophe Sigli; Grenoble Institute of Technology; CNRS, SIMAP; University of Sydney; McMaster University; Constellium Voreppe research Centre

3:30 PM Invited
Monitoring Nanomaterials in Situ Elaboration, Structure, Morphology and Operating Activity by Synchrotron X-Rays Scattering: Gilles Renaud; CEA-Grenoble

3:50 PM Break

4:00 PM
Phonon Anharmonicity of Zirconia and Yttrium-Stabilized Zirconia at Elevated Temperatures: A Neutron Scattering Study: Chen Li; Hillary Smith; Jorge Munoz; Lisa Mauger; Doug Abernathy; Brent Fultz; Caltech; Oak Ridge National Lab

4:15 PM
Polymer Crystallization in Processing Conditions: Synchrotron SAXS and WAXS Analysis with Millisecond Time Resolution: Giuseppe Portale; Dario Cavallo; Gerrit Peters; Giovanni Alfonso; Luigi Balzano; Wim Bras; DUBBLE-CRG, European Synchrotron Radiation Facility; Eindhoven University of Technology; University of Genova; DSM Research

WEDNESDAY PM
Ni-Co 2013: Pyrometallurgy - Smelting


Program Organizer: Thomas Battle, Midrex Technologies

Wednesday PM
March 6, 2013
Location: TMS Exhibit Hall 202D

Session Chairs: Antoine Allanore, MIT - DMSE/ Sadoway Group; Rodney Jones, Mintek

2:00 PM
HPQXAL of Furnace and Converter Slags - What Have We Learned?: Ilya Perederiy1; Vladimiro Popangelakis2; Vale; 2: University of Toronto

2:25 PM
Nickel, Cobalt and Copper Recovery from Sea Nodules by Direct Smelting Process: Kamala Sahu1; S. Agarwal1; D. Mishra1; A. Agrawal1; K. M. Godiwalla1; R. K. Jana1; 1CSIR-National Metallurgical Laboratory

2:45 PM
Water Atomization of Iron-Nickel Alloys: Rodney Jones2; 1Mintek

3:10 PM
Alternative Coolants and Cooling System Designs for Safer Freeze Lined Furnace Operation: Mark Kennedy1; Mark Weaver2; Per Nos3; Mia Brun4; 1Norwegian University of Science and Technology; 2Alcoa Technical Center; 3Termek Technology; 4Elkem AS Research

3:30 PM
Break

3:50 PM
Outotec’s Ausmelt Top Submerged Lance (TSL) Technology for the Nickel Industry: Ross Andrews1; Robert Matuszewicz1; Lauri Aspola1; Stephen Hughes1; 1Outotec

4:10 PM
Processing of Ni/Cu Bulk Concentrates in a Sustainable Way by Outotec Direct Nickel Flash Smelting Process: Satu Jyrkonen1; Matti Luomala1; Janne Karonen1; Paivi Suikkannen1; Kaarlo Haavanlammi1; 1Outotec (Finland) Oy; 2Boliden Harjavaltta Oy

4:30 PM
Nickel-Chromium-Boron Alloys Production by Aluminothermic Processes: Ozge Caglar Yilmaz1; Murat Alkan1; Onuralp Yücel1; 1Istanbul Technical University

Novel Synthesis and Consolidation of Powder Materials: Metal Injection Moulding and Advanced Powder Processing

Sponsored by: TMS Materials Processing and Manufacturing Division, TMS: Powder Materials Committee

Program Organizers: Ma Qian, The University of Queensland; Iver Anderson, The Ames Laboratory

Wednesday PM
Room: Lone Star Salon C
March 6, 2013
Location: Grand Hyatt

Session Chairs: Ping Li, University of Science and Technology Beijing; Stefan Gulizia, CSIRO Materials Science and Engineering

2:00 PM Invited
Room and High Temperature Properties of Injection Moulded Superalloy Compacts: Hideshi Miura1; Syunsuke Morinaka1; Toshiko Osada1; Hyungoo Kang1; Fujio Tsumori1; 1Kyushu University

2:30 PM
Rheological Properties of Feedstock Composed of Titanium Alloy Powder and Polyethylene Glycol-based Binder System for Metal Injection Moulding: Gnanavinthan Thanavanagam1; Deliang Zhang1; Kim Pickering1; 1Waikato Centre for Advanced Materials, School of Engineering, The University of Waikato

2:50 PM Invited
Advances in Lubrication Technology in PM to Promote Higher Sintered Densities: Francis Hanejko1; 1Hoeganaes Corporation

3:20 PM
Break

3:40 PM Invited
Effect of Surfactants in Pre-Mixing Powders for Oxide Dispersion Strengthened Steel Processing: Selçuk Kayukçal1; Carlo Tesone1; Jian Li1; 1CannetMATERIALS

4:10 PM
Characterization and Consolidation of Mechanically Modified Titanium Powders for Cold Spray Application: Stefan Gulizia1; mahnaz jahedi2; darren fraser2; 1CSIRO Materials Science & Engineering/Future Manufacturing Flagship; 2CSIRO Materials Science & Engineering
Sn-Based Pb-Free Electronic Solders
Effects of POSS-Silanol Addition on the Whisker Formation in Sn-Ag
2:40 PM
The Effect of Current Stressing on Solder Grain Growth and Orientation: Ye-Lung Lin1; Chih Chen1; 1National Chiao Tung University
4:40 PM
An EBSD Investigation of the Effect of Sn Orientation on Electromigration in Idealized SnAgCu Interconnects: Christopher Kinney1; Xiaoranny Linares1; Kyu-Oh Lee2; J.W. Morris3; 1University of California, Berkeley; 2Intel Corporation

Phase Transformation and Microstructural Evolution: Non-conventional Phase Transformation Paths: Part IV
Program Organizers: Amy Clarke, Los Alamos National Laboratory; Sudarsanan Suresh Babu, Ohio State Univ; Rajarshi Banerjee, Univ of North Texas; John Morral, Ohio State Univ; Brian Gleeson, University of Pittsburgh; Caryl C. Campbell, National Institute of Standards & Tech; Yongho Sohn, Univ of Central Florida; Yunzhi Wang, Ohio State University
Wednesday PM Room: 204A Location: Henry B. Gonzalez Convention Center
Session Chairs: Dong-Woo Suh, Pohang Institute of Science and Technology (POSTECH); Marc De Graef, Carnegie Mellon University

Pb-free Solders and Emerging Interconnect and Packaging Technologies: Sn Whiskering and Electromigration
Sponsored by: TMS Electronic, Magnetic, and Photonic Materials Division, TMS: Electronic Packaging and Interconnection Materials Committee
Program Organizers: Nikhil Chawla, Arizona State University; Srinivas Chada, Whirlpool; Darrel Frear, Freescale Semiconductor; John Elmer, LLNL; Tan-Kyu Lee, Cisco Systems; Yan Li, Intel; Laura Turbini, Research In Motion; Kwang-Lung Lin, National Cheng Kung University; Soo-Hoon Yoo, Korea Institute of Industrial Technology
Wednesday PM Room: 217B Location: Henry B. Gonzalez Convention Center
Session Chair: To Be Announced

2:00 PM
Tin Whisker and Hillock Growth Mechanism Via Grain Boundary Sliding Coupled with Shear Induced Grain Boundary Migrations: Pyul Sarobol1; John Blendell1; Carol Handwerker1; 1Purdue University
2:20 PM
Correlating Whisker/Hillock Growth with Compressive Stress in Sn during Thermal Cycling: Fei Pei1; Nittin Jadhav1; Eric Chason1; 1Brown University
2:40 PM
Effect of Plastic Deformation on Sn Whisker Growth in Electroplated Sn and Sn-Ag: Jaewon Chang1; Sung Kang2; JaeHo Lee2; Keun-Soo Kim3; Hyuck Mo Lee3; 1KAIST; 2IBM T.J. Watson Research Center; 3Hongik University; 4Hoseo University
3:00 PM
Effects of POSS-Silanol Addition on the Whisker Formation in Sn-Based Pb-Free Electronic Solders: Sihan Liu1; Yutian Shu1; 1Northwestern University
3:20 PM
Break
3:40 PM
Two-Dimensional Simulation of Intermetallic Compound Growth during the Lead-Free Soldering under the Influence of Electromigration: Min Soo Park1; Sean Gibbons1; Raymundo Arroyave1; 1Texas A&M University
4:00 PM
The Behavior of Zn-Rich Phase in Sn-9Zn Solder Alloys under Current Stressing: Jian-Yang He1; Tsung-Chieh Chiua1; Albert T. Wu1; Kwang-Lung Lin1; 1National Cheng Kung University; 2National Central University
4:20 PM Modeling Precipitate Microstructure Evolution during Continuous Cooling: Qing Chen1; Heng-Jeng Jou2; Gustaf Sterner3; Kaisheng Wu4; Johan Bratberg5; Anders Engström6; Paul Mason7; 1Thermo-Calc Software AB; 2QuesTek Innovations LLC; 3Thermo-Calc Software, Inc

4:40 PM Phase Transformation as a Result of Mechanical Loading and Turning of Metastable Austenitic Steels: Marek Smaga1; Robert Skorupska2; Dietmar Eifler3; Patrick Mayer4; Jan C. Aurich5; 1Institute of Materials Science and Engineering, University of Kaiserslautern; 2Institute of Materials Science & Enggr, University of Kaiserslautern; 3Institute for Manufacturing Technology & Production Systems, University of Kaiserslautern

5:00 PM TEM Observation of FCC 9R Phase Transformation in Nanocrystalline Pd Thin Films during Hydriding/Dehydriding Cycles: Hosni Idrissi1; Behnam Amin-ahmadi2; Montserrat Galceran3; Renaud Delmelle1; Marie-Stéphane Colla1; Jean-Pierre Raskin2; Stéphane Goder3; Joris Proost1; Thomas Pardoen1; Dominique Schryvers1; 1EMAT. University of Antwerp; 2Service 4 MAT, Université libre de Bruxelles (ULB); 3IMMC. Université catholique de Louvain; 1ICTEAM, Université catholique de Louvain

Phase Transformation and Microstructural Evolution: Scale and Subsurface Phase Transformations during High-Temperature Oxidation
Program Organizers: Amy Clarke, Los Alamos National Laboratory; Sudarsanam Suresh Babu, Ohio State Univ; Rajarshi Banerjee, Univ of North Texas; John Morral, Ohio State Univ; Brian Gleeson, University of Pittsburgh; Carelyn Campbell, National Institute of Standards & Tech; Yoshio Sohn, Univ of Central Florida; Yunzhi Wang, Ohio State University

Wednesday PM Room: 204B Location: Henry B. Gonzalez Convention Center

Session Chairs: Brian Gleeson, University of Pittsburgh; John Morral, The Ohio State University

3:10 PM Investigation of Oxygen Contents in Various Phases in Gamma-TiAl by Laser-Pulsed Atom Probe Tomograph: Gopal Das1; Michael Miller2; 1P&W; 2Oak Ridge National Laboratory

3:30 PM Break

3:50 PM Invited Internal Oxidation – from Wagner to Interdiffusion Genome: John Ageren1; 1Royal Institute of Technology

4:20 PM Phase Field Modeling of Metal Oxidation Kinetics and Its Microstructure Dependence: Tian-Le Cheng1; Youhui Wen1; 1National Energy Technology Laboratory

4:40 PM Phase Field Modeling of Tetragonal to Monoclinic Phase Transformation at Zirconium Oxide: Mahmood Mamivand1; Mohsen Asle Zaeem2; Haitham El Kadiri1; 1Mississippi State University; 2Missouri University of Science and Technology

5:00 PM Phase Transformations in the Sub-Oxide Layer during the Oxidation of Beta-21s Beta Titanium Alloy: Asle Zaeem1; Kristopher Mahdak2; Hamidreza Mohseni3; Soumya Nag1; Jaimie Tiley2; Rajarshi Banerjee3; 1University of North Texas; 2Air Force Research Laboratory

5:20 PM Phase Evolution Characterization of a Multi-Component Oxide Welding Slag and Its Effect on Weld Properties: Badri Narayan1; Amir Avishai2; 1The Lincoln Electric Company; 2Case Western Reserve University

Physical and Mechanical Metallurgy of Shape Memory Alloys: Multiscale Modeling and Applications
Sponsored by: TMS/ASM: Phase Transformations Committee Program Organizers: Haluk Karaca, University of Kentucky; Ibrahim Karaman, Texas A&M University; Othmane Benafan, NASA Glenn Research Center; Yunzhi Wang, The Ohio State University; Hans Jurgen Maier, Univ of Paderborn

Wednesday PM Room: Lone Star Salon B Location: Grand Hyatt

Session Chairs: Yunzhi Wang, The Ohio State University; Darren Hartl, Texas A&M University

2:00 PM Invited Evolution of Scale and Subsurface Alloy Microstructures During Oxidation of Chromia-Forming Alloys in CO2: David Young1; Thomas Gheno1; Daniel Monceau2; 1University of New South Wales; 2ENSIACET

2:30 PM Environmental and Compositional Factors Affecting the Establishment of a Stable Alumina Scale: Xu Liu1; Brian Gleeson1; 1University of Pittsburgh

2:50 PM Comparison of the High-Temperature Oxidation Behavior of Subsolus and Supersolus Treated Advanced Powder Metallurgy Disk Alloys: Chantal Sudbrack1; Jonathan Yu2; Timothy Gorman3; Tim Gabb1; David Hull1; 1NASA Glenn Research Center; 2Stanford University; 3University of Dayton

3:00 PM Modeling Shape Memory Alloy Single Crystalline Responses Using an Anisotropic Yield Surface: Darren Hartl1; Bjorn Kiefer2; Andreas Menzel3; 1Texas A&M University; 2Technical University Dortmund
2:55 PM Invited
Having Productive Conversations About Sustainability: Pitfalls and Pathways: Jason Jay
1; 1MIT Sloan Initiative for Sustainable Business and Society

3:20 PM Break

3:40 PM Invited
Resource Efficient Metal and Material Recycling: Markus Reuter
1; Antoinette van Schaik; Outotec Oyj

4:05 PM Invited
Education, Materials, Sustainability: Joining the Dots: Philippe Radovic
1; Granta Design Ltd.

4:30 PM Invited
Toward a Closed-Loop Society: Ideas, Education, and Consumer Awareness: Shinichiro Nakamura
1; Waseda University

Solar Cell Silicon: Slag-based Refining of Silicon and Solar Cell Advances
Sponsored by: TMS Extraction and Processing Division, TMS Light Metals Division, TMS: Energy Conversion and Storage Committee, TMS: Recycling and Environmental Technologies Committee
Program Organizers: Gabriella Tranell, Norwegian University of Science and Technology; Arjan Ciftja, SINTEF; Shadia Ikhmayies, Al Isra University; Yulia Meteleва-Fischer, Materials innovation institute (M2i) / Delft University of Technology

Wednesday PM Room: 007C
March 6, 2013 Location: Henry B. Gonzalez Convention Center

Session Chairs: Arjan Ciftja, SINTEF; Shadia Ikhmayies, Al Isra University

2:00 PM
Thermodynamic Calculations for the Removal of B from Liquid Si Using Molten Slag: In-Ho Jung
1; Yumin Zhang
1; McGill University

2:20 PM
Reductive Removal of Phosphorus in Silicon Using CaO-CaF2 Slag: Hiroaki Kasuwada
1; Yutaka Yanaba
1; Takeshi Yoshikawa
1; Kazuki Morita
1; Institute of Industrial Science, The University of Tokyo

2:40 PM
Boron and Phosphorus Distribution Equilibria among the Molten Si, Slag and Metal Phases: Kai Tang
1; Egil Krystad
1; Gabriella Tranell
1; Merete Tangstad
1; SINTEF Materials and Chemistry; Norwegian University of Science and Technology

3:00 PM
Distribution of Boron between Silicon and CaO-MgO-SiO2 Slags: Lars Klemet Jakobsson
1; Merete Tangstad
1; NTNU

3:20 PM
The Kinetics of boron removal from silicon by oxidative slag refining in the SiO2-CaO slag system: Egil Krystad
1; Gabriella Tranell
1; NTNU

3:40 PM Break

4:00 PM
Progress in Developing an Automated Repairing System for Solar Cells by Laser Enabled Silicon Post-Processing: Joerg Schmauder
1; Radovan Kopeckek
1; Radim Barinka
1; Pavlina Barinkova
1; Axier Bollar
1; Dimitris Koumanakos
1; Nerea Otero
1; Pablo Romero
1; ISC Konstanz
1; Solar Tec s.r.o.; 1Ingenieria y Soluciones en Energias Alternativas S.L.; 1G. Zarlas – D. Koumanakos O.E.; 1AIMEN Technology Centre
4:20 PM
Potential of Silicon Solar Cells from Metallurgical Process Route:
Tania Vodenitcharova1; Kristian Peter1; Erik Enebak1; Anne-Karin Soiland1; ISC Konstanz e.V.; Elkem Solar AS

4:40 PM
Segregation of Impurities in Silicon for Solar Cells: Marissa Di Sabatino1; Antoine Autruffe1; Chiara Modanese1; Lars Arnborg1; NTNU

5:00 PM
Stress and Fracture of Silicon Solar Cells as Revealed by Synchrotron X-Ray Microdiffraction: Arief Budiman1; Arief Budiman1; Alexander Caldwell1; C. Bonelli1; M. Kunz1; N. Tamura1; D. Verstraeten2; SunPower Corporation; TOTAL Gas & Power; Advanced Light Source (ALS)

5:20 PM
Antireflective Silicon Nanostructures Fabricated by Cheap Chemical Etchant and Coated by Atomic Layer Deposited Al2O3 Layer: Zhihao Yue1; Hongjie Shen1; Nanjing University of Aeronautics and Astronautics

5:40 PM
Scale Length Effect on the Fracture Strength of Silicon Wafers: Tania Vodenitcharova1; Oscar Borroto-Lopez1; Mark Hoffman1; University of New South Wales

Symposium on High Entropy Alloys: Modeling and Other
Sponsored by: TMS Structural Materials Division, TMS/ASM: Mechanical Behavior of Material Committee, TMS: Alloy Phases Committee
Program Organizers: Peter Liaw, The University of Tennessee; Gongyao Wang, University of Tennessee; Michael Gao, National Energy Technology Laboratory; S. Mathaudhu, U.S. Army Research Office

Wednesday PM
Room: 203B
Location: Henry B. Gonzalez Convention Center

Session Chairs: Takeshi Egami, The University of Tennessee; Michael Gao, National Energy Technology Lab

2:00 PM Invited
Properties of High-Entropy Alloys under Irradiation: Takeshi Egami1; 1University of Tennessee

2:25 PM Invited
Preparation and Simulation of FCC High Entropy Alloys: Douglas Irving1; Carl Koch1; Changning Niu1; Alexander Zaddach1; North Carolina State University

2:50 PM
Ordering Behavior in the Al(x)CoCrCuFeNi High-Entropy Alloys: Louis Santodonato1; Yang Zhang2; Michael Gao3; Shawl Glad4; Mikhail Feygenson5; Zhi Tang6; Joerg Neufeld7; Richard Weber8; Peter Liaw9; ORNL and UT; Oak Ridge National Laboratory; National Energy Technology Laboratory; The University of Tennessee; Materials Development Inc.

3:05 PM Invited
Atomistic Simulation of High-Entropy Alloys: Yongqiang Cheng1; Oak Ridge National Lab

3:30 PM
Break

3:45 PM Invited
Computational Thermodynamics Aided High-Entropy Alloy Design: Chuan Zhang1; Fan Zhang1; Shuanglin Chen1; Weisheng Cao1; Jun Zhu1; Zhi Tang2; Peter Liaw2; CompuTherm LLC; University of Tennessee

4:10 PM
Comparative Studies of the Ground State Properties for NbMoTaW and V Nb Mo Ta W Alloys: Oleg Starovoytov1; Michael Gao2; Shengmin Guo3; Shizhong Yang4; Southern University and A&M College; National Energy Technology Laboratory; Louisiana State University

4:25 PM Invited
Statistical Fatigue-Life Modeling for High-Entropy Alloys: Tao Yuan1; Michael Hemphill2; Zhi Tang3; Gongyao Wang4; Zhou Chuan5; CheWei Tsai6; Jien-Wei Yeh6; Peter Liaw7; Ohio University; University of Tennessee, Knoxville; National Tsing Hua University

4:50 PM Invited
Oxidation Behavior of TaNbHfZrTi Alloy: A First Principles Simulation Study: Shizhong Yang1; Michael Gao2; Shengmin Guo3; Southern University and A&M College; National Energy Technology Laboratory; Louisiana State University

Ultrasonic Welding II: Ultrasonic Welding: Design Principles and Light Metal Joints
Program Organizer: Frank Balle, University of Kaiserslautern

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

Session Chairs: Guntram Wagner, University of Kaiserslautern, Institute of Materials Science and Engineering; Frank Balle, University of Kaiserslautern, Institute of Materials Science and Engineering and State Research Focus Advanced Materials Engineering (AME)

2:00 PM Introductory Comments

2:15 PM
A Design Procedure for Sonotrodes Based on Dynamic Finite Elements and Laser Triangulation Measurements: Massimiliano Annani1; Michele Carboni1; Politecnico di Milano

2:35 PM
Fatigue Behavior of Dissimilar Ultrasonic Spot Welds in Lap-Shear Specimens of Magnesium and Steel Sheets with Adhesive: William Lai1; Jwo Pan1; Tsung-Yu Pan1; Zhili Feng1; Michael Santella1; University of Michigan; Oak Ridge National Laboratory

2:55 PM
Temperature Distribution in Ultrasonic Spot Welding of Al/Al and Al/Mg Sheets Via Infrared Thermography Method: Yansong Zhang1; School of Mechanical Engineering, Shanghai Jiao Tong University

3:15 PM Break

3:45 PM
Ultrasonic Torsion Welding of Light Metals – Process Monitoring and Property Analysis: Jens Magin1; Frank Ball1; Institute of Materials Science and Engineering, University of Kaiserslautern (Germany)

4:05 PM Invited
Microstructural Investigation of Aluminum and Titanium Welds after Ultrasonic Torsion Welding: Kinga Unocicz1; Frank Balle1; ORNL; Institute of Materials Science and Engineering, University of Kaiserslautern, Germany
Sponsored by: TMS Electronic, Magnetic, and Photonic Materials Division, TMS: Nanomaterials Committee
Program Organizers: Seong Jin Koh, University of Texas at Arlington; Nitin Chopra, The University of Alabama; Jiyoung Kim, University of Texas at Dallas; Yuanbing Mao, University of Texas-Pan American; Ashwin Ramasubramaniam, University of Massachusetts; Gregory Thompson, University of Alabama

Thursday AM
March 7, 2013
Room: 201
Location: Henry B. Gonzalez Convention Center

Funding support provided by: Qualcomm, Inc.

Session Chairs: Nitin Chopra, The University of Alabama; Yongho Sohn, University of Central Florida

8:30 AM Introductory Comments Best Graduate Student Paper Award Ceremony

8:45 AM Invited
Bulk Nanostructured Metals with Multifunctional Properties: Ruslan Valiev1; Ilechat Sabinov2; Alexander Zhilyaev3; Terence Langdon4; 1Ufa State Aviation Technical University; 2IMDEA Materials Institute; 3Institute for Metals Superplasticity Problems, Russian Academy of Science; 4University of Southern California

9:20 AM Nano-Scale Grain Size Effects Observed on Aluminum Metal Matrix Composites: Strengthening, Stability and Growth: Yongho Sohn1; Bo Yao1; Clara Hoffmeister1; Catherine Kammberger1; Bhaskar Maumdar2; Anit Giri1; Kyu Cho1; 1University of Central Florida; 2New Mexico Institute of Mining and Technology; 3University of California Davis

9:55 AM Break

10:15 AM Break

Structural Ordering in Fe-Au Nanoclusters: Pinaki Mukherjee1; Matthew Kramer2; Jeffrey Shield3; 1University of Nebraska- Lincoln and Nebraska Center for Materials and Nanoscience; 2Ames Laboratory and Iowa State University

10:35 AM Bulk Nanostructured Cu and Cu-based Alloys: Production, Characterization, Mechanical Properties and Deformation Behavior: Moshen Samadi Khoshkhooy1; Sergio Scudino1; Hamed Bahmanpour2; Alexander Kauffmann2; Jens Freudenberg2; Michael Zehetbauer2; Ronald Scattergood2; Carl Koch3; Jürgen Eckert3; 1Leibniz Institute for Solid State and Materials Research (IFW); 2Leibniz Institute for Solid State and Materials Research (IFW); 3University of California Davis; 4University of Vienna; 5North Carolina State University

10:55 AM Nano-Crystalline Diamond (NCD) Coatings on High Speed Steel and WC-Co Tools for Metal Forming Applications: Somaiah Gowthama1; Maneesh Chandran2; S S Bhattacharya3; M S Ramachandra Rao4; P Shanmugam5; R Natarajan6; 1Indian Institute of Technology Madras; 2Tube Investments of India limited, Chennai

11:15 AM Deformation Behavior of a New Aluminum Alloy Matrix Base Nanocomposite: Rabindra Mahapatra1; Horst Adams1; 2Naval Air Systems Command; 3Adamco, Inc.

11:35 AM Applying Precession Electron Diffraction (PED) to Nano-Twin Copper: Subhasis Sinha2; Matthew Kramer2; Anthony Rollett1; 1Carnegie Mellon University; 2Ames Laboratory, Iowa State University

11:55 AM Effect of Carbon Nanotube Reinforcement on the Phase Transformation of Zirconia: Neelima Mahato1; Pratyasha Mohapatra1; Siddharth Rawat2; Kantesh Bhalani2; 1Indian Institute of Technology; 2National Institute of Technology

4th International Symposium on High-Temperature Metallurgical Processing: Sintering and Pelletization
Sponsored by: TMS Extrusion and Processing Division, TMS: Energy Committee, TMS: Materials Characterization Committee
Program Organizers: Tao Jiang, Central South University; Jiann-Yang Huang, Michigan Technological University; Phillip Mackey, Consultant; Onuralp Yücel, ITU; Guifeng Zhou, Wuhan Iron and Steel

Thursday AM
March 7, 2013
Room: 008A
Location: Henry B. Gonzalez Convention Center

Session Chairs: Guanghui Li, Central South University; Xuewei Lv, Chongqing university

8:30 AM Production of Crude Ferronickel from Sivrihisar Laterite Ores of Turkey: Ender Keskinlik1; Saeid Pournaderi2; Ahmet Geveci2; Yavuz A. Topkaya2; 1Attim University; 2Middle East Technical University

8:50 AM Sintering Process of Phosphorite from Leshan,China: Enguang Guo1; Donghai Li2; Cheng Pan3; Mei Liu4; Xuewei Lv5; 1Chongqing university

9:05 AM Comprehensive Effect of Coke Breeze and Limestone Particle Size on Sinter Performance in Sintering of a Coarse Hematite Iron Ore: Wang Zhe1; Zhang Jianliang1; Xing Xiangdong1; Ren Shan2; Gao Bing2; Zhang Xueqi2; 1University of Science and Technology of Beijing; 2Tianjin Iron and Steel Group Co., LTD

9:20 AM Mechanisms of Iron and Slag Separation in Carbon Composite Iron Ore Pellets at Lower Temperature: Hongliang Han1; Dongping Du2; 1University of Science and Technology of Beijing; 2Tianjin Iron and Steel Group Co., LTD

9:35 AM Effect of the Raw Material Characteristic of Iron Concentrates on Ballability: Jian Pan1; Shouyuan Yue1; Deqing ZHU1; Zheng He2; 1Central South University