



TMS2013

142nd Annual Meeting & Exhibition

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

Technical Program

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4:25 PM

Microstructure and Mechanical Properties of Ultrasonic Spot Welded Aluminum Alloy to High Strength Low Alloy Steel: *Vikas Patel*¹; Sanjeev Bhole¹; Daolon Chen¹; ¹Ryerson University

4:45 PM

An Analysis of the Tensile-Shear Fatigue Behavior of Lap-Joints Obtained by Ultrasonic Spot Welding and Ultrasonic Spot Welding Plus Adhesive Bonding: *Michele Carboni*¹; ¹Politecnico di Milano

2013 Functional Nanomaterials: Synthesis, Properties and Applications: Structural Nanomaterials I

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

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

Thursday AM
March 7, 2013

Room: 201
Location: Henry B. Gonzalez
Convention Center

Funding support provided by: Qualcomm, Inc.

Session Chairs: Nitin Chopra, The University of Alabama; Yongho Sohn, University of Central Florida

8:30 AM Introductory Comments Best Graduate Student Paper Award Ceremony

8:45 AM Invited

Bulk Nanostructured Metals with Multifunctional Properties: *Ruslan Valiev*¹; Ilchat Sabirov²; Alexander Zhilyaev³; Terence Langdon⁴; ¹Ufa State Aviation Technical University; ²IMDEA Materials Institute; ³Institute for Metals Superplasticity Problems, Russian Academy of Science; ⁴University of Southampton

9:20 AM Invited

Nano-Scale Grain Size Effects Observed on Aluminum Metal Matrix Composites: Strengthening, Stability and Growth: *Yongho Sohn*¹; Bo Yao¹; Clara Hofmeister¹; Catherine Kammerer¹; Bhaskar Maumdar²; Anit Giri³; Kyu Cho³; ¹University of Central Florida; ²New Mexico Institute of Mining and Technology; ³U.S. Army Research Laboratory

9:55 AM Break

10:15 AM Break

Structural Ordering in Fe-Au Nanoclusters: *Pinaki Mukherjee*¹; Matthew Kramer²; Jeffrey Shield¹; 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: *Mohsen Samadi Khoshkhoo*¹; Sergio Scudino²; Hamed Bahmanpour³; Alexander Kauffmann²; Jens Freudenberger²; Michael Zehetbauer⁴; Ronald Scattergood⁵; Carl Koch⁵; Jürgen Eckert²; 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

Nanocrystalline Diamond (NCD) Coatings on High Speed Steel and WC-Co Tools for Metal Forming Applications: *Somaiah Gowthama*¹; Maneesh Chandran¹; S S Bhattacharya¹; M S Ramachandra Rao¹; P Shanmugam²; R Natarajan²; 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 Mahapatra*¹; *Horst Adams*²; ¹Naval Air Systems Command; ²Adamco, Inc.

11:35 AM

Applying Precession Electron Diffraction (PED) to Nano-Twin Copper: *Subhasis Sinha*¹; 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 Mahato*¹; Pratyasha Mohapatra²; Siddharth Rawat¹; Kantesh Balani¹; ¹Indian Institute of Technology; ²National Institute of Technology

4th International Symposium on High-Temperature Metallurgical Processing: Sintering and Pelletization

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

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

Thursday AM
March 7, 2013

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

Session Chairs: Guanghui Li, Central South University; Xuwei Lv, Chongqing university

8:30 AM

Production of Crude Ferronickel from Sivrihisar Laterite Ores of Turkey: *Ender Keskinilic*¹; Saeid Pournaderi²; Ahmet Geveci²; Yavuz A. Topkaya²; ¹Atilim University; ²Middle East Technical University

8:50 AM

Sintering Process of Phosphorite from Leshan, China: *Enguang Guo*¹; Donghai Li¹; Cheng Pan¹; Mei Liu¹; *Xuwei Lv*¹; 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 Zhe*¹; Zhang Jianliang¹; Xing Xiangdong¹; Ren Shan¹; Gao Bing¹; 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 Han*¹; *Dongping Duan*¹; Xing Wang¹; Yunshu Guo¹; ¹Institute of Process Engineering, Chinese Academy of Sciences

9:35 AM

Effect of the Raw Material Characteristic of Iron Concentrates on Ballability: *Jian Pan*¹; Shouyan Yue¹; Deqing ZHU¹; Zheng He¹; ¹Central South University

9:50 AM

Study on Improving the Strength of Copper Concentrate Pellets by Adding Binders: Xiaohui Fan¹; Shan He¹; Lin Zhang²; Yanbin Tang²; Guohua Bai¹; Xuling Chen¹; Min Gan¹; ¹Central South University; ²Daye Nonferrous

10:05 AM Break

10:15 AM

Sintering Process of Chromite Concentrate: Pan Chen¹; Donghai Li¹; Cheng Pan¹; Mei Liu¹; Xuwei Lv¹; ¹Chongqing University

10:30 AM

Research on Strengthening Consolidation of Magnesium Bearing Hematite Pellets: Lishun Yuan¹; Xiaohui FAN¹; Min GAN¹; Guiming Yang¹; Xiaoxian Huang¹; Zhi-yun Ji¹; Zhi-yuan Yu¹; ¹Central South University

10:50 AM

Study on the Improvements of Reduction Swellability and Low Temperature Reduction Disintegration of Vanadium-Titanium Magnetite Oxidized Pellets: Yufeng Guo¹; Jianfeng Zhou¹; Tao Jiang¹; Feng Chen¹; Xiaolei Song¹; Minjun Tang¹; Linjiang Qing¹; ¹Central South University

11:10 AM

The New On-line Detecting Method of Sintering Mix and Its Basic Research: Yang Yong-bin¹; Tan Qi-bing¹; Li Qian¹; Jiang tao¹; Li Kai¹; Zhu Yuan-yuan¹; ¹Central South University

11:30 AM

Optimizing the Sintering Process of Low-Grade Ferromanganese Ores: Yuanbo Zhang¹; Wei Luo¹; Zhixiong You¹; Zijian Su¹; Guanghui Li¹; Tao Jiang¹; ¹Central South University

11:45 AM

Study for Influence of Prereduction Degrees on the Softening and Melting Properties of Sintering Ore: Rui Mao¹; ¹University of Science and Technology Beijing

12:00 PM

Mineralization Behavior of Iron Ore Sintering Process: Ying Li¹; Xiao-hui Fan²; Xu-ling Chen²; ¹The Central South University ; ²The Central South University

12:15 PM

Effects of Anthracite on Pelletization of Hematite Ore: Tao Jiang¹; Zhaokun Tang¹; Yuanbo Zhang¹; Mingjun Rao¹; Guanghui Li¹; ¹School of Minerals Processing and Bioengineering, Central South University

4th International Symposium on High-Temperature Metallurgical Processing: Treatment of Solid Slag/Wastes and Complex Ores

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

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

Thursday AM

March 7, 2013

Room: 008B

Location: Henry B. Gonzalez
Convention Center

Session Chairs: Abdolkarim Danaei, Ryerson University; Hongxu Li, University of Science and Technology

8:30 AM

Developments of Processing Technologies for Refractory Gold Ores: Lin Chen¹; Tianzu Yang¹; Weifeng Liu¹; Deyu Wang¹; ¹Central South University

8:50 AM

Chloridizing Roasting-Smelting Reduction Methods Applied to Recovery Copper and Iron from Copper Slags: Li Lei¹; Wang Hua¹; ¹Kunming University of Science and Technology

9:05 AM

Study on Iron Recovery and Desulfurization of Pyrite Cinder: Xiaohui Fan¹; Hongli Wen¹; Qiong Deng¹; Min Gan¹; Guangkun Shen¹; Shoujian Huang¹; ¹Central South University

9:25 AM

Effects of Lime Additions on the Sulphur Distribution between Red Mud Based Fluxes and Carbon Saturated Liquid Iron: Abdolkarim Danaei¹; ¹Ryerson University

9:40 AM

Reaction Process of Coal Based Reduction of Siderite Ore: Jian Pan¹; Zixing Xue¹; Deqing Zhu¹; Xianlin Zhou¹; Yanhong Luo¹; ¹Central South University

10:00 AM Break

10:10 AM

Research on Coal-Based Direct Reduction Enhancement of Vanadium Titanomagnetite: Yi Xia¹; Tao Jiang¹; Shaowu Yu¹; Xiangxin Xue¹; ¹Northeastern University

10:25 AM

Enhanced Reduction of CaF₂ and NaF on Vanadium Titanomagnetite Carbon Composite Pellets: Xing Xiangdong¹; Zhang Jianliang¹; Wang Zhe¹; Ren Shan¹; Cao Mingming¹; Liu Zhengjian¹; Lu Mingchun²; ¹University of Science and Technology of Beijing; ²Tianjin Iron & Steel Association

10:45 AM

Addition of Electric Arc Furnace Dust in Hot Metal at a Temperature of 1500 Degrees Celsius: Vicente Sobrinho¹; Jose Oliveira¹; Estefano Vieira¹; Felipe Grill²; Victor Telles²; Jorge Tenorio²; Denise Espinosa²; ¹IFES; ²USP

11:00 AM

An Investigation on Utilization of Ferrous Scrap by Cold-Bonded Pelletizing: Xiaohui FAN¹; Lishun Yuan¹; Min GAN¹; Wei LV¹; Yi WANG¹; Xuling Chen¹; ¹Central South University

11:20 AM

Research on the Lead Removal from Pyrite Cinder: Xuling Chen¹; Guangkun Shen¹; Xiaohui Fan¹; Qiong Deng¹; Hongli Wen¹; Min Gan¹; ¹Central South University

11:40 AM

The Directional Preparation of Colored Steel Slag Glass-ceramic: Yanbing Zong¹; Wenbin Dai¹; Jinbiao Bu¹; ¹University of Science and Technology Beijing

11:55 AM

Removal of Potassium and Sodium in Sintering of Iron Ores: Zeqiang Xie¹; Tao Jiang²; Qian Li²; ¹Kunming University of Science and Technology; ²Central South University

Advanced Materials and Reservoir Engineering for Extreme Oil & Gas Environments: Advance Materials & Innovative Solutions for Oil and Gas II

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

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

Thursday AM
March 7, 2013

Room: Lone Star Salon A
Location: Grand Hyatt

Session Chairs: Justin Cheney, Scoperta; Tatiana Hernandez, Schlumberger

8:30 AM **Introductory Comments** Justin Cheney, CTO, Scoperta

8:35 AM

Effect of High Pressure-Temperature on Conventional and Unconventional Reservoirs: Richard Lewis¹; ¹Schlumberger

9:05 AM

Phase Behavior and Corrosion Mechanisms of Reservoir Fluids Rich in Acid Gases at Extreme Conditions: Craig Borman¹; ¹Schlumberger

9:25 AM

Mechanical Properties of a Cold Worked Nickel Alloy with Nano Dispersions: Ed Hibner¹; Indranil Roy; Lee Pike; Virendra Singh; Manuel Marya; Xinghang Zhang; ¹National Specialty Alloys

9:45 AM

CERTIS High-integrity Reservoir Test Isolation System for HPHT Reservoirs: Christian Wilkinson¹; Indranil Roy¹; Stephane Hiron¹; ¹Schlumberger

10:05 AM **Break**

10:20 AM

The Use of Thermal Spray Technology in Downhole Applications: Justin Cheney¹; ¹Scoperta Inc

10:40 AM

Amorphous Coatings Produced by Spray Forming and Thermal Spray of Fe-Cr-Nb-B Glass Former Alloy: Claudio Kiminami¹; Ana Melle¹; Conrado Afonso¹; Claudemiro Bolfarini¹; Walter Botta¹; ¹Federal University of S. Carlos

11:00 AM

Wear Resistance of Spray Formed Supermartensitic Stainless Steel Modified with Boron: Guilherme Zepon¹; Claudemiro Bolfarini¹; ¹Federal University of São Carlos

11:15 AM

Corrosion Resistance of Fe-based Amorphous and Nanocrystalline Alloys: José Berger¹; ¹PPGCEM-UFSCar

11:30 AM

Thermodynamic Modeling Techniques for Use in Developing High Strength, High Hardness Nanocrystalline Steels: Shengjun Zhang¹; ¹Scoperta Inc.

11:50 AM

Formation of Fe-Based Nanostructured Metallic Coatings by Spray Forming: Claudemiro Bolfarini¹; Ana Branquinho¹; Hugo Germano¹; Claudio Kiminami¹; Walter Botta¹; ¹Universidade Federal de São Carlos

12:10 PM **Panel Discussion**

Advanced Materials for Power Electronics, Power Conditioning, and Power Conversion: Magnetic Materials for High Frequency Power Electronics

Sponsored by: TMS Electronic, Magnetic, and Photonic Materials Division, TMS: Energy Conversion and Storage Committee, TMS: Magnetic Materials Committee

Program Organizers: Paul Ohodnicki, National Energy Technology Laboratory; Clive Randall, Penn State University; Michael Lanagan, Penn State University; Michael McHenry, Carnegie Mellon University; Rachel Myers-Ward, Naval Research Laboratory

Thursday AM
March 7, 2013

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

Session Chair: Michael McHenry, Carnegie Mellon University

8:30 AM **Invited**

Nanocomposite Magnetic Alloys for Power Applications: Matthew Willard¹; Maria Daniil²; Keith Knippling¹; ¹U.S. Naval Research Laboratory; ²George Washington University

9:00 AM **Invited**

High frequency Inductor Materials: Lajos Varga¹; ¹Wigner Research Center for Physics of Hung. Acad. Sciences

9:30 AM **Break**9:50 AM **Invited**

Soft Magnetic Materials for High Power and High Frequency Power Electronics: John Xiao¹; Yang Zhou¹; Xiaoming Kou¹; Hao Zhu²; ¹University of Delaware; ²Spectrum Magnetics, LLC

10:20 AM

Synthesis, Structure, Property Correlations in FeCo-SiO₂ Nanogranular Thin Films for High Frequency Inductor Applications: Paul Ohodnicki¹; Vincent Sokalski²; Shen Shen²; ¹National Energy Technology Laboratory; ²Carnegie Mellon University

10:40 AM **Invited**

Element-Specific Magnetic Structure of Nanocrystallized Ribbons: Catherine Jenkins¹; Sam Kernion²; Vincent DeGeorge²; Michael McHenry²; ¹LBNI; ²Carnegie Mellon University

11:10 AM

Soft Magnetic Alloy-Polymer Composite for High-frequency Power Electronics Application: Jesus Calata¹; Guo-Quan Lu¹; Khai Ngo¹; ¹Virginia Tech

Alumina and Bauxite: Low Grade Alumina Sources

Sponsored by: TMS Light Metals Division, TMS: Aluminum Committee

Program Organizer: Pat Clement, Alcoa

Thursday AM
March 7, 2013

Room: 212B
Location: Henry B. Gonzalez
Convention Center

Session Chair: Jack Bender, BASF Corporation

8:30 AM Introductory Comments

8:40 AM

Innovative Technology for Alumina Production from Low-grade Raw Materials: *Andrey Panov*¹; Alexander Senyuta¹; ¹RUSAL Engineering & Technology Centre

9:00 AM

Improving Characterization of Low Grade Diasporic Bauxite to be Utilize in Jajarm Alumina Plant: *Mohammadtaghi Shadloo*¹; Mohammad Zarbayani²; Esmaeil Jorjani³; Mojtaba Aram⁴; ¹Iran Alumina Co.; ²General Mechanic Company; ³Science & Research Branch, Islamic Azad University; ⁴IMPRC

9:20 AM

The Processing of High Quartz Bauxite: Edgar Gasafi¹; *Alessio Scarsella*¹; Vladimir Hartmann¹; Hans-Werner Schmidt¹; ¹Outotec GmbH

9:40 AM

Appropriate Reduction and Fe-Al Separation of High Iron Gibbsite: *Zhenggen Liu*¹; Mansheng Chu¹; Jue Tang¹; Yuanting Han¹; Xianglong Wu¹; ¹Northeastern University

10:00 AM Break

10:15 AM

Influence of MgO and C/A and Cooling System on Alumina Leaching Property of Calcium Aluminate Slag: *Z. F. Tong*¹; YingJie Li YingJie Li²; Tao Chen²; ¹ Jiangxi University of Science and Technology; ²Jiangxi University of Science and Technology

10:35 AM

Calcification-Carbonation Method for Alumina Production by Using Low-Grade Bauxite: *Zhang Ting'an*¹; Zhu Xiaofeng¹; Lv Guozhi¹; Pan Lu¹; Liu Yan¹; Zhao Qiuyue¹; Li Yan¹; Dou Zhihe¹; He Jicheng¹; ¹Northeastern University

10:55 AM

Basic Research on Calcification Transformation Process of Low Grade Bauxite: *Zhu Xiaofeng*¹; Zhang Ting'an¹; Lv Guozhi¹; Liu Yan¹; Zhao Qiuyue¹; Li Yan¹; Dou Zhihe¹; ¹Northeastern University

11:15 AM

Research on the Phase Transformation and Separation Performance in Calcification-carbonation Method for Alumina Production: *Lv Guozhi*¹; Zhang Ting'an¹; Zhu Xiaofeng¹; Pan Lu¹; Qin Mingxiao¹; Liu Yan¹; Zhao Qiuyue¹; Dou Zhihe¹; Li Yan¹; ¹Northeastern University

11:35 AM Concluding Comments

Aluminum Alloys: Fabrication, Characterization and Applications: Emerging Technology

Sponsored by: TMS Light Metals Division, TMS: Aluminum Processing Committee

Program Organizers: Zhengdong Long, Kaiser Aluminum; Subodh Das, Phinix LLC; Tongguang Zhai, University of Kentucky; William Golumbskie, Naval Surface Warfare Center

Thursday AM
March 7, 2013

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

Session Chair: Subodh Das, Phinix LLC

8:30 AM

Cold Spray for Repair of Naval Components: *Jennifer Wolk*¹; Benjamin Bouffard¹; Frederick Lancaster²; Caroline Scheck¹; ¹Naval Surface Warfare Center; ²Naval Air System Command

8:50 AM Invited

New Insights into the Solute-Nanostructures in Advanced Al Alloys: *Gang Sha*¹; Simon Ringer¹; ¹The University of Sydney

9:10 AM

Transient Microstructural Thermomechanical Fatigue and Deformation Characteristics under Superimposed Mechanical and Thermal Loading in AlSi Based Automotive Diesel Pistons: *Roman Morgenstern*¹; Scott Kenningley¹; ¹Federal-Mogul Nuremberg GmbH

9:30 AM

Characterization of Friction Stir Processed Al-Sc-Zr Alloys: *M. Vargas*¹; G. Chermak²; K. Kandasamy²; P. Sanders³; J. Schultz²; A. Aning¹; S. Kampe³; ¹Virginia Tech; ²Aeroprobe Corporation; ³Michigan Tech

9:50 AM

Mechanical Behaviour of Cold Formed Metal-Polymer Laminate and the Interaction of Its Layers: *Feidhlim Ó Dubhlaing*¹; David Browne¹; Robin Rennicks²; Connor Rennicks²; ¹University College Dublin; ²Prodieco Pharmaceutical Components

10:10 AM

Mechanical Behavior of Aluminum Alloy Welds at Large Strains: Jennifer Hyde¹; Moise Bruhuis¹; Jidong Kang²; *Joseph McDermid*¹; ¹McMaster University; ²CANMET Materials

10:30 AM Break

10:50 AM

Effect of Intermediate Annealing on Microstructure and Properties of Roll-Bonded 4343/3xxx/4343 Aluminum Clad Sheets: *Kwangjun Euh*¹; Hyoungh-Wook Kim¹; Su-Hyeon Kim¹; Dong Bae Kim¹; Eunji Baek¹; Young-Mi Oh¹; ¹Korea Institute of Materials Science

11:10 AM

Development of ECAP Conform for Fabrication of Ling-Sized Aluminum Rods with Ultrafine-Grained Structure: *Georgy Raab*¹; Ruslan Valiev¹; Elvira Gimaltdinova¹; Viktor Frolov²; ¹Ufa State Aviation Technical University; ²Russian Engineering Company RUSAL

11:30 AM

Mechanical and Tribological Properties of AA2124-Graphene Self Lubricating Nanocomposite: Ahmed El-Ghazaly¹; Basamat Seif¹; *Hanadi Salem*¹; ¹American University in Cairo

11:50 AM

Joining Vacuum High Pressure Die Cast A356 under T4 Treatment to Wrought Alloy 6061: *Meng Wang*¹; Henry Hu¹; Yanda Zou¹; Gary Meng²; Patrick Cheng³; Yeou-li Chu³; ¹University of Windsor; ²AGS Agreatsun Welding Ltd; ³Ryobi Die Casting (USA), Inc.

Aluminum Processing: ICME in Aluminum Processing

Sponsored by: TMS Light Metals Division, TMS: Aluminum Committee

Program Organizer: Kai Karhausen, Hydro Aluminium Rolled Products GmbH

Thursday AM
March 7, 2013

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

Session Chair: To Be Announced

8:30 AM Invited

ICME for Lightweighting of Automobile Body Structures and Closures: *Paul Krajewski*¹; ¹TMS

9:10 AM Invited

Crucial Issues and Future Directions of Through-Process Modeling: *Günter Gottstein*¹; ¹RWTH Aachen University

9:50 AM Invited

Application of Combined Model Approaches to the Simulation of Microstructure Evolution During Processing of Aluminium Alloys: *Alexis Miroux*¹; *M. Ghosh*²; *S. Kurukuri*³; *R. Dutta*¹; *M. de Jong*⁴; *A. Bahrami*¹; *A. van den Boogaard*⁵; *P.E.J. Rivera-Diaz-Del-Castillo*⁶; *M.H.F. Sluiter*⁴; *A.J. den Bakker*⁷; ¹Materials Innovation Institute; ²Bengal Engineering and Science University; ³University of Waterloo; ⁴Delft University of Technology; ⁵University of Twente; ⁶Metallurgy University of Cambridge; ⁷Nedal Aluminium B.V.

10:10 AM Break

10:30 AM

Process Modelling of Extruded AA3xxx Aluminum Products: *Warren Poole*¹; *M Wells*; *Nick Parson*; ¹The University of British Columbia

11:10 AM Invited

Through-Process Simulation of Microstructure and Texture and the Resultant Properties During the Thermo-mechanical Processing of Aluminium Sheet: *Olaf Engler*¹; ¹Hydro Aluminium Rolled Products GmbH

11:30 AM Invited

Modelling the Evolution in Microchemistry and Microstructure during Thermo-mechanical Processing of Aluminium Alloys: *Knut Marthinsen*¹; *Bjørn Holmedal*; *Yanjun Li*; *Trond Furu*; ¹Norwegian Univ of Science and Technology

11:50 AM Invited

Uncertainty Quantification in Through-process Modeling of Aluminum Strip Production: *Markus Bambach*¹; *Johannes Lohmar*; *S Heppner*; *Kai Karhausen*; ¹RWTH Aachen Univ

Biological Materials Science Symposium: Molecular Biomimetics and Bioenabled Materials and Systems

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

Program Organizers: Candan Tamerler, University of Washington; Molly Gentleman, Texas A & M University; Po-Yu Chen, National Tsing Hua University; Kajal Mallick, University of Warwick; Rajendra Kumar Kasinath, University of Montana; Paul G. Allison, US Army Corp of Engineers

Thursday AM
March 7, 2013

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

Funding support provided by: Biomaterials Program, National Science Foundation

Session Chairs: Kalpana Katti, North Dakota State University; Rajendra Kasinath, Montana Tech

8:30 AM Invited

Materials Science and Engineering of Biomolecules on Surfaces: Tailoring the Self-Assembled Peptides on Graphite/Graphene: *Mehmet Sarikaya*¹; ¹University of Washington

9:00 AM Invited

Modeling Protein-Surface and Protein-Nanoparticle Interactions by Atomistic Simulations: *Stefano Corni*¹; ¹CNR Istituto Nanoscienze

9:30 AM Invited

Biomimetic Mineralization of Hydroxyapatite in Nanoclay Galleries: A Modeling and Experimental Study: *Kalpana Katti*¹; *Avinash Ambre*¹; *Anurag Sharma*¹; *Dinesh Katti*¹; ¹North Dakota State University

10:00 AM Break

10:20 AM

On the Possibility of Modulating Bacteriophage Virulence Employing Iron Doped Hydroxyapatite Biomaterials: *Rajendra Kasinath*¹; *Casey McConnell*¹; *Jovanka Voyich*²; *Marisa Pedulla*¹; ¹Montana Tech of the University of Montana; ²Montana State University

10:40 AM Invited

Self-Assembled Peptide Nanostructures for Template Directed Synthesis of One-Dimensional Inorganic Systems: *Mustafa Guler*¹; ¹Bilkent University

11:10 AM

Nanomechanical and Wear Behaviors of Remineralized Carious Human Enamel: *Hsiu-Ying Chung*¹; *Hsiu-Mei Lin*¹; ¹Feng Chia University

11:30 AM

Mimicking Biological Interfaces by Self Adhering Hybrid Nanostructures: *Deniz Yucsoy*¹; *Marketa Hnilova*¹; *Mustafa Gungormus*¹; *Mehmet Sarikaya*¹; *Candan Tamerler*¹; ¹University of Washington

11:50 AM Invited

Exploring Nature's Strategies for Creating Functional Materials: *Rajesh Naik*¹; ¹Air Force Research Laboratory

**Biological Materials Science Symposium:
Molecular, Cellular and Tissue Engineering**

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

Program Organizers: Candan Tamerler, University of Washington; Molly Gentleman, Texas A & M University; Po-Yu Chen, National Tsing Hua University; Kajal Mallick, University of Warwick; Rajendra Kumar Kasinath, University of Montana; Paul G. Allison, US Army Corp of Engineers

Thursday AM
March 7, 2013

Room: 215
Location: Henry B. Gonzalez
Convention Center

Funding support provided by: Biomaterials Program, National Science Foundation

Session Chairs: Paul Calvert, UMass Dartmouth; Molly Gentleman, Stony Brook

8:30 AM Keynote

Cranial Defects: Biomaterials and Tissue Engineering Approaches: Erhan Piskin¹; ¹Hacettepe University

9:10 AM

PDGF-Loaded Aligned Collagen Fibers Promote the Proliferation of Adipose-Derived Stem Cells: Xingguo Cheng¹; Christopher Tsao¹; Douglas Cornet²; Victor Sylvia²; Robert Christy³; ¹Southwest Research Institute; ²University of Texas Health Science Center at San Antonio; ³U.S. Army Institute of Surgical Research

9:30 AM Invited

Biomimetic Hydroxyapatite Reinforced Collagen Scaffolds: Robert Kane¹; Matthew Meagher¹; Holly Weiss¹; Yongxing Liu¹; Joshua Gargac¹; Glen Niebur¹; Diane Wagner¹; Ryan Roeder¹; ¹University of Notre Dame

10:00 AM Break
10:10 AM Invited

Graphene on Cell Stem Growth & Differentiation: Wong Cheng Lee¹; Candy Haley Y.X. Lim¹; Hui Shi¹; Lena A. L. Tang¹; Yu Wang¹; Kian Ping Loh¹; Chwee Teck Lim¹; ¹National University of Singapore

10:40 AM

Fabrication of a Nanobiomaterial from Renewable Resources as a Potential Scaffold in Vascular Tissue Engineering: Parisa Pooyan¹; Rina Tannenbaum²; Hamid Garmestani¹; ¹Georgia Institute of Technology; ²Boston University

10:55 AM

Shape and Stability of Substrate-Free Cell Films Generated by Mechanical Strain: Andreas Undisz¹; Erik Geuther¹; Andrea Voelpel¹; Bernd Sigusch¹; Markus Rettenmayr¹; ¹Friedrich-Schiller-University

11:15 AM Invited

Inkjet-Printed Gels for Tissue Engineering: Paul Calvert¹; Skander Limem; David Kaplan; ¹University of Massachusetts Dartmouth

11:45 AM

Parametric Characterisation of Porous 3D Bioscaffolds Fabricated by Adaptive Foam Reticulation Technique: James Winnett¹; Kajal Mallick¹; ¹University of Warwick

12:00 PM

A Three Dimensional Anisotropic Finite-strain Damage Model of an Incompressible Quadriphasic Mixture: Application for Fibrous Soft Tissue: Alireza Ostadhossein¹; Corina S. Drapaca¹; ¹Pennsylvania State University

12:20 PM

Silk Fibroin Based Antibacterial Bionanotextile as Wound Dressing: Semih Çalamak¹; Yeliz Tunç¹; Ceren Özkul¹; Meral Özalp¹; Kezban Ulubayram²; ¹Hacettepe University Faculty of Pharmacy; ²Hacettepe University Faculty of Pharmacy

Bulk Metallic Glasses X: Structures and Mechanical Properties IV

Sponsored by: TMS Structural Materials Division, TMS/ASM: Mechanical Behavior of Materials Committee

Program Organizers: Peter Liaw, The University of Tennessee; Hahn Choo, The University of Tennessee; Yanfei Gao, The University of Tennessee; Gongyao Wang, University of Tennessee

Thursday AM
March 7, 2013

Room: Bowie A
Location: Grand Hyatt

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

Session Chairs: Paul Voyles, University of Wisconsin, Madison; Yuri Petrusenko, National Science Center - Kharkov Institute of Physics & Technology

8:30 AM Invited

Mixed Icosahedral and Crystal-Like Short and Medium Range Structure in $Zr_{50}Cu_{45}Al_5$ Bulk Metallic Glass: Paul Voyles¹; Francois Payen¹; Nayomi Plaza¹; Jinwoo Hwang¹; Eren Kalay²; Matt Kramer²; ¹University of Wisconsin, Madison; ²Ames Laboratory

8:50 AM Invited

Static Measurements for α - and β -relaxation below T_g in a $Zr_{55}Cu_{30}Ni_5Al_{10}$ BMG: Osami Haruyama¹; Kazuhiro Yoshikawa¹; Hiroyuki Sawada¹; Yoshihiko Yokoyama²; Kazumasa Sugiyama²; ¹Tokyo University of Science; ²Tohoku University

9:10 AM Invited

Relaxation Phenomena in Bulk Metallic Glasses: From β -Relaxations to Nano-Shear Bands: Konrad Samwer¹; ¹University of Göttingen

9:30 AM

The Correlation between Shear Band/Microcrack Evolution and the Plasticity of a Ti-Based Bulk Metallic Glass Composite: Wang Yongsheng¹; Hao Guojian¹; Lin Junpin¹; ¹University of Science and Technology Beijing (USTB)

9:45 AM Invited

Role of the Boundary Shear-Transformation Zones During Compression-Compression Fatigue Experiments: Yuri Petrusenko¹; Alexander Bakai²; Sergij Bakai²; Peter Liaw³; Gongyao Wang³; Pei-Ling Sun⁴; ¹National Science Center - Kharkov Institute of Physics & Technology; ²National Science Center - Kharkov Institute of Physics & Technology; ³The University of Tennessee; ⁴Feng Chia University

10:05 AM Break
10:20 AM

Variability of Poisson's Ratio and Enhanced Ductility in Amorphous Metal: Klaus-Dieter Liss¹; DongDong Qu²; Kun Yan³; Mark Reid⁴; Jun Shen²; ¹Australian Nuclear Science and Technology Organisation; ²Harbin Institute of Technology; ³Australian Nuclear Science and Technology Organisation and University of Wollongong; ⁴University of Wollongong

10:35 AM Invited

Shear-Band Arrest during Inhomogeneous Flow of Bulk Metallic Glasses: Robert Maass¹; Peter Derlet²; Jörg Löffler¹; ¹ETH Zurich; ²Paul Scherrer Institute

10:55 AM Invited

Size Matters: Fabrication and Deformation of Nano-Sized Metallic Glass Structures: *Dongchan Jang*¹; David Chen¹; Kelly Guan¹; Julia Greer¹; ¹California Institute of Technology

11:15 AM

Deformation Mode Transition by Structural Rejuvenation in Zr-Cu-Al Bulk Metallic Glass: *Koichi Tsuchiya*¹; Fanqiang Meng²; Seiichiro Ii¹; Yoshihiko Yokoyama³; Kei Ozaki⁴; Osami Haruyama⁴; ¹NIMS; ²University of Tsukuba; ³Tohoku University; ⁴Tokyo University of Science

11:35 AM

Atomic Structural Evolution in Metallic Melts: Hongbo Lou¹; Xiaodong Wang¹; Qingping Cao¹; Jianzhong Jiang¹; ¹Zhejiang University

11:50 AM Invited

Shear Deformation Characteristic and Work Hardening of High Strength Amorphous and Nanocrystalline Ni-W Alloys: *Tohru Yamasaki*¹; Kazutaka Fujita²; ¹University of Hyogo; ²Ube National College of Technology

12:10 PM

Investigation of Porous Zr-Based Bulk Metallic Glass: You Junhua¹; WANG Houchun¹; ¹Shenyang University of Technology

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

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

Program Organizers: Jiann-Yang Hwang, Michigan Technological University; Chen-Guang Bai, Chongqing University; John Carpenter, DOE LANL; Shadia Ikhamyies, Al Isra University; Bowen Li, Michigan technological University; Mingming Zhang, ArcelorMittal Global R&D; Sergio Monteiro, State University of North Rio de Janeiro; Zhiwei Peng, Michigan Technological University

Thursday AM
March 7, 2013

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

Session Chairs: Chenguang Bai, Chongqing University; Matthew Andriese, Michigan Technological University

8:30 AM

A Minimum Pollution, Low Energy Process for the Recovery of Cobalt and Copper from Complex Sulphide Minerals: *Yotamu Hara*¹; ¹Leeds University

8:50 AM

Characteristics and Non-Isothermal Crystallization Kinetics of Spinel in Vanadium Slag Containing High Content of Chromium: Hai-Xing Fang¹; Hong-Yi Li¹; Tao Zhang¹; Chao Liu¹; Cui Li¹; Bing Xie¹; ¹Chongqing University

9:10 AM

Characterization and Dry High Intensity Magnetic Separation of Aswan Iron Ore: *M. Sadawy*¹; A. Latif¹; T. Taha¹; A. Amer¹; ¹Faculty of Engineering, Al-Azhar University, Cairo, Egypt

9:30 AM

Experiment Study on the Sintering Process Optimization of High Chromium Vanadium-Titanium Magnetite: *Yong Zhang*¹; Jianxing Liu¹; Gongjin Cheng¹; Zhenggen Liu¹; Mansheng Chu¹; Xiangxin Xue¹; ¹Northeastern University

9:50 AM

Influence of the Material Properties of Iron Ores on Granulation before Sintering: *Xiaobo Huang*¹; Chenguang Bai¹; Rende Zhang¹; Maojun Zhou²; Xuwei Lv¹; ¹College of Materials Science and Engineering, Chongqing University; ²Ironmaking plant, Baoshan Iron & Steel Co., Ltd.

10:10 AM

Physicochemical Properties of Slags Generated during the Copper Converting Process: *Huaiwei Zhang*¹; Xiaoyan Shi¹; Fei Sun¹; Xinlin Li¹; Xin Hong¹; ¹Shanghai University

10:30 AM

Pretreatment of Sulfur & Arsenic-Bearing Gold Concentrate by Double-layered Pellet Roasting Process: Jiang Tao¹; Li Xi-Shan¹; Cui Li-na¹; Ge Jie¹; Li Qian¹; Yang Yong-bin¹; ¹Central South University

10:50 AM

Reduction Mechanisms of Copper, Cobalt and Iron during Low Temperature Recovery from Mineral Sulphide Concentrates: *Yotamu Hara*¹; ¹Leeds University

11:10 AM

Microwave Dielectric Characterization of Silicon Dioxide: *Zhiwei Peng*¹; Jiann-Yang Hwang¹; Byoung-Gon Kim²; Matthew Andriese¹; Xinli Wang¹; ¹Michigan Technological University; ²Korea Institute of Geoscience and Mineral Resources

11:30 AM

The Effect of Temperature on Dielectric Permittivity and Microwave Absorption Properties of Anthracite in Microwave Field: Chenhui Liu¹; Libo Zhang¹; ¹Key Laboratory of Unconventional Metallurgy, Kunming University of Science and Technology

11:50 AM

Recovery of High Grade SnO₂ from Cassiterite Ore by Microwave Pretreatment, Leaching and Precipitation: *Gerald Onyedika*¹; Martin Ogwuegbu¹; ¹Federal University of Technology, Owerri

12:10 PM

Research on a Novel Technology of Interactive Roast of Complex Low-grade Bismuth Sulfide Ore and Pyrolusite: Chuan-fu Zhang¹; Zhi-Jian Wang¹; Chu-ping Xia¹; Jing Zhan¹; ¹Central South University

Characterization of Minerals, Metals and Materials 2013: Characterization of Soft Materials

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

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

Thursday AM
March 7, 2013

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

Session Chairs: Gerald Onyedika, Federal University of Technology, Owerri; T.T. Chen, CANMET

8:30 AM

Comparison between HDPE/Clay and HDPE/Piassava Fiber/Clay Treated by Electron-Beam Radiation: *Angel Ortiz*¹; Cordélia Mara Fazzio Escanhoela¹; Michelle Gomes¹; Rene Oliveira¹; Francisco Diaz²; Esperidiana Moura¹; ¹IPEN-CNEN/SP; ²Metallurgical and Materials Engineering Department

8:50 AM

Evaluation of the Diameter Dependence on the Tensile Strength of Bagasse Fiber by the Weibull Statistics: Amanda Luiza Martins¹; Veronica Candido¹; Raissa Gouvea¹; *Sergio Monteiro*²; ¹Military Institute of Engineering; ²State University of the Northern Rio de Janeiro - UENF

9:10 AM

Investigation on the Thermal Conductivity of Inorganic-Filler/Resin Composite: *Kenji Monden*¹; ¹Denki Kagaku Kogyo K.K.

9:30 AM

Weibull Analysis of the Correlation between the Elastic Modulus and the Diameter of Sponge-Gourd Fibers: *Sergio Monteiro*¹; Raissa Gouvea²; Veronica Candido²; Amanda Luiza Martins²; ¹Military Institute of Engineering; ²Military Institute of Engineering

9:50 AM

Weibull Analysis of the Elastic Modulus of Bamboo Fiber of the Specimen Dendrocalmus Giganteus: *Lucas Martins*¹; Sergio Monteiro²; Frederico Margem¹; Rômulo Loyola¹; ¹UENF; ²IME

10:10 AM

Characterization of Tensile Properties of Jute Fiber Reinforced Epoxy Composites: *Isabela Silva*¹; Alice Bevitori¹; Victor da Silva¹; Frederico Margem¹; Sergio Monteiro²; ¹UENF; ²IME

10:30 AM

Composite Based on Poly(Vinyl Alcohol), Starch and Sugarcane Bagasse Ashes: Dirce Jacomo¹; Jaciele Teixeira²; Valquíria Silva²; Rene Oliveira²; *Esperidiana Moura*³; Michelle Gomes²; Anibal Victor Abreu Castillo⁴; ¹CornProducts Brasil; ²Instituto de Pesquisas Energeticas E Nucleares - IPEN-CNEN/SP; ³Instituto de Pesquisas Energeticas E Nucleares - IPEN-CNEN/SP; ⁴Laboratorio Tecnologia del Uruguay

10:50 AM

Incipient and Progressive Damage in High-Density Polyethylene under Extreme Tensile Conditions: *Eric Brown*¹; Jevan Furmanski¹; Carl Trujillo¹; Daniel Martinez¹; George Gray¹; ¹Los Alamos National Laboratory

11:10 AM

Study Biodegradability, Physical, and Mechanical Properties of Thermoplastic Starch/ Polypropylene Blends: *Afsaneh Dorri Moghadam*¹; Reza Bagheri¹; ¹Sharif University of Technology, Iran

11:30 AM

Tensile Behavior of Epoxy Composites Reinforced with Continuous and Aligned Ramie Fibers: *Alice Bevitori*¹; Isabela Silva¹; Victor da Silva¹; Frederico Margem¹; Sergio Monteiro²; ¹UENF; ²IME

11:50 AM

Tensile Strength of Epoxi Matrix Composites Reinforced with Giant Bamboo Fibers (Dendrocalmus Giganteus): *Lucas Martins*¹; Sergio Monteiro²; Frederico Margem¹; Rômulo Loyola¹; ¹UENF; ²IME

Computational Thermodynamics and Kinetics: Phase Diagrams

Sponsored by: TMS Electronic, Magnetic, and Photonic Materials Division, TMS Materials Processing and Manufacturing Division, TMS: Alloy Phases Committee, TMS: Chemistry and Physics of Materials Committee, TMS/ASM: Computational Materials Science and Engineering Committee, TMS: Integrated Computational Materials Engineering Committee, TMS/ASM: Phase Transformations Committee, TMS: Process Technology and Modeling Committee

Program Organizers: Jörg Neugebauer, Max-Planck-Institut für Eisenforschung GmbH; Carelyn Campbell, NIST; Dongwon Shin, Oakridge National Lab; Zi Kui Liu, Penn State; Michael Demkowicz, Massachusetts Institute of Technology; Raymundo Arroyave, Texas A & M University; Shenyang Hu, Pacific Northwest National Laboratory

Thursday AM
March 7, 2013

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

Session Chairs: Bo Sundman, INSTN, CEA; Zi-Kui Liu, Penn State

8:30 AM Invited

The Open Calphad Initiative: *Bo Sundman*¹; Ursula Kattner²; Mauro Palumbo³; Suzana Fries³; ¹INSTN, CEA; ²National Institute of Standards and Technology; ³ICAMS, RUB

8:55 AM

A Tale of Two States and More: Modeling of New Generation of Lattice Stability from Zero Kelvin with Thermo-Calc 3.0: *Qing Chen*¹; Wei Xiong²; Magnus Jansson¹; Malin Selleby²; Anders Engström¹; ¹Thermo-Calc Software AB; ²KTH Royal Institute of Technology

9:10 AM

Low Temperature CALPHAD Based on the New Generation of Lattice Stabilities Down to Zero Kelvin: *Wei Xiong*¹; Qing Chen²; Moshour Rahaman³; Malin Selleby³; Andrei Ruban³; ¹University of Wisconsin - Madison; ²Thermo-Calc Software AB; ³KTH Royal Institute of Technology

9:25 AM

Thermodynamic Modeling of Laves-Phase Hardened Steels – The Fe-Cr-Nb-Si System: *Clemens Schmetterer*¹; Aurelie Jacob¹; Torsten Markus¹; ¹Forchungszentrum Juelich

9:40 AM

Ab-Initio Calculations and Reassessment of U-Nb System: *Thien Duong*¹; Alexander Landa²; Patrice Turchi²; Saurabh Bajaj³; Raymundo Arroyave¹; ¹Texas A&M University; ²Lawrence Livermore National Laboratory; ³California Institute of Technology

9:55 AM Break

10:20 AM Invited

Thermodynamic Modeling of Oxy-Fluoride System Containing CaO-SiO₂-Al₂O₃-MgO-Na₂O-F System and Its Applications to Mould Flux Design in Steelmaking Process: *In-Ho Jung*¹; Marie-Aline Van Ende¹; ¹McGill University

10:45 AM

Calculation of the Phase Equilibria in Nb-Ni-Ti Ternary System: *Guangxiang Tan*¹; Gui Na¹; Ming Zhu²; Xionggang Lu¹; Jieyu Zhang¹; Guangxin Wu¹; Chonghe Li¹; ¹Shanghai University; ²General Research Institute for Nonferrous Metals

11:00 AM

316Nb: Detailed Mechanisms of Sigma Phase Precipitation: Aurelien Perron¹; *François Buy*¹; Eric Suzon¹; Xavier Ledoux¹; Gwenaél Texier¹; Joseph Farré¹; François Cortial²; Philippe Petit³; ¹CEA; ²DCNS Research - CESMAN; ³Aubert & Duval

Cost Affordable Titanium IV: Processing: Property Relationship

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

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

Thursday AM
March 7, 2013

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

Session Chairs: K. S. Ravi Chandran, University of Utah; Rohit Bhagat, Warwick University

8:30 AM

The Initial Development of Next Generation, Military Grade Titanium Alloys for Armor Applications: *Tyrone Jones*¹; Katsuyoshi Kondoh²; ¹U.S. Army Research Laboratory; ²Osaka University

8:50 AM Invited

Beta Gamma Fine Fully Lamellar Materials: Breaking Ductility and Use Temperature Barriers: *Young-Won Kim*¹; Sang-Lan Kim²; Christopher Woodward³; ¹Gamteck; ²UES; ³AFRL

9:10 AM Invited

Electromagnetic Cold Crucible Technology for the Production of Large γ -TiAl Alloy Ingots with Directional Growth Structures: *Hongsheng Ding*¹; Ge Nie¹; Yongzhe Wang¹; Ruirun Chen¹; Jingjie Guo¹; Hengzhi Fu¹; ¹Harbin Institute of Technology

9:30 AM

The Potential for Discontinuously Reinforced Ti-TiBw Metal Matrix Composites in High Performance Structural Applications: *K. S. Ravi Chandran*¹; ¹University of Utah

9:50 AM Break**10:10 AM**

Economic Surface Treatment of Ti-Alloys to Improve Their Resistance Against Environmental High Temperature Attack: *Alexander Donchev*¹; Michael Schütze¹; Rossen Yankov²; Andreas Kolitsch²; ¹DFI; ²HZDR

10:30 AM

Mechanical Property Correlation with Microstructural Features in Bimodal and Fully Lamellar Microstructures Developed in the High-Strength, Near-Beta Titanium Alloy, TIMETAL®18: *Adam Young*¹; Robert Williams¹; Megan Harper²; Steve Fox²; Hamish Fraser¹; ¹Ohio State University; ²TIMET

10:50 AM

Development of Low Cost and Low Elastic Modulus of Ti-Al-Mo-Fe Alloys for Automotive Applications: *Chenglin Li*¹; Wenjun Ye¹; Xujun Mi¹; Songxiao Hui¹; Dong-Geun Lee²; Yongtai Lee²; ¹General Research Institute for Nonferrous Metals; ²Korea Institute of Materials Science

11:10 AM

Effect of Swirly Segregation of Mo on Omega Phase Precipitation Behavior and Tensile Property of Ti-12Mo Alloy: *Satoshi Emura*¹; Xiaohua Min¹; Seiichiro Ii¹; Koichi Tsuchiya¹; ¹National Institute for Materials Science

11:30 AM

Grain Refinement in Metastable Beta-type Titanium Alloys by Severe Plastic Deformation: *Wei Xu*¹; Xiaolin Wu¹; Lingfei Cao²; Darren Edwards³; Mihai Stoica⁴; Eckert Jürgen⁴; Kenong Xia¹; ¹University of Melbourne; ²Monash University; ³Defence Science and Technology Organisation; ⁴IFW Dresden

11:50 AM

Microstructure and Mechanical Properties of Low Cost Ti-Al-Cr-Fe Titanium Alloy: *Guo Wang*¹; *SongXiao Hui*¹; WenJun Ye¹; ¹State Key Laboratory for Fabrication & Processing of Nonferrous Metals, General Research Institute for Nonferrous Metals

12:10 PM

Recycling of Titanium Machining Chips by Equal Channel Angular Pressing: *Daniel McDonald*¹; Wei Xu²; Kenong Xia¹; ¹University of Melbourne and Defence Materials Technology Centre; ²University of Melbourne

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

Sponsored by: TMS Light Metals Division, TMS/ASM: Mechanical Behavior of Materials Committee

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

Thursday AM
March 7, 2013

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

Session Chair: Qizhen Li, University of Nevada, Reno

8:30 AM

Internal Stresses in High Strength 7xxx Alloy with Different Textures: Patrick Schloth¹; Julia Repper²; Weimin Gan³; Jean-Marie Drezet¹; Helena Van Swygenhoven²; *Steven Van Petegem*; ¹EPFL; ²Paul Scherrer Institut; ³Helmholtz-Zentrum Geesthacht (HZG) Out Station at FRM-II

8:50 AM

Influence of the Microstructure on the Fracture Strain of 6xxx Series Aluminum Alloys: *Aude Simar*¹; Kim Nielsen²; Liza Lecarme¹; Thomas Pardoën¹; ¹Universite catholique de Louvain; ²Technical University of Denmark

9:10 AM

Modelling the Mechanical Behaviour and Fracture of an Al-Zn-Mg Electron Beam Weld Based on a Multi-Scale Microstructural Analysis: Quentin Puydt¹; Sylvain Flouriot²; Sylvain Ringeval²; *Alexis Deschamps*¹; Guillaume Parry¹; Frédéric De Geuser³; ¹Grenoble Institute of Technology; ²CEA Valduc; ³SIMAP

9:30 AM

Predictions and Modeling of Failure Modes in Crystalline Layered Aluminum Composites: *Prasenjit Khanikar*¹; Qifeng Wu¹; Mohammed Zikry¹; ¹North Carolina State University

9:50 AM

Substructure Evolution during Grain Boundary Sliding in Al Bicrystals: *Rajesh Korla*¹; S Karthikeyan¹; A Chokshi¹; ¹Indian Institute of Science, Bangalore

10:10 AM Break

10:20 AM

Solute Effects in Strengthening and Grain Size Reduction in Mechanically Alloyed Al-Mn Alloys: *Kris Darling*¹; Anthony Roberts²; Heidi Maupin¹; Suveen Mathaudhu³; Laszlo Kecskes¹; ¹ARL; ²ORISE; ³ARO

10:40 AM

A Study of the Strengthening Mechanisms in Al-Based Nanostructured Alloys: *Stella Pedrazzini*¹; Marina Galano¹; Fernando Audebert¹; George D W Smith¹; Marcela Lieblich²; Asuncion Garcia-Escorial²; ¹Department of Materials, University of Oxford; ²CENIM-CSIC

11:00 AM

Characterization of Ti/Al Multilayered Composites Subjected to Perforation Testing: *Derrick Stokes*¹; Xiu-Ren Bu²; Jennifer Conway¹; Stanley Jones¹; Viola Acoff¹; ¹The University of Alabama; ²Clark Atlanta University

11:20 AM

Effects of Precipitation on Plastic Instabilities in AA 2198: *Henry Ovti*¹; Erica Lilleodden¹; ¹Helmholtz Zentrum Geesthacht

11:40 AM

Material Constitutive Parameter Identification for Aluminum Alloys Using Electromagnetic Forming Coupled with Numerical Simulation: *Jianhui Shang*¹; Steve Hatkevich¹; Larry Wilkerson¹; ¹American Trim LLC

12:00 PM

Improved Environmental Bending Fatigue Strength of Mg-Al-Mn Alloy by Super Vacuum Die Cast: *Wei Wen*¹; Yan Jin¹; Alan Luo²; Tongguang Zhai¹; ¹University of Kentucky; ²General Motors

Fatigue in Materials: Microstructure-Driven Modeling and In-Situ Fatigue Characterization: Advanced and Emerging Technologies in Fatigue Experimentation and Simulation

Sponsored by: TMS Structural Materials Division, TMS/ASM: Mechanical Behavior of Materials Committee

Program Organizers: Michael Sangid, Purdue University; Tongguang Zhai, University of Kentucky; Antonios Kotsos, Drexel University

Thursday AM
March 7, 2013

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

Session Chair: Michael Sangid, Purdue University

8:30 AM Keynote

Combined High Energy X-ray Diffraction Microscopy and Tomography Measurements On and Around Fracture Surfaces: *Robert Suter*¹; Xi Tan¹; Jonathan Lind¹; Shiu Fai Li¹; Christopher Hefferan¹; Ulrich Lienert²; ¹Carnegie Mellon University; ²Argonne National Laboratory

9:05 AM Invited

Understanding Microcrack Initiation Conditions Using Synchrotron X-Rays and Crystal-Scale Material Models: *Matthew Miller*¹; ¹Cornell University

9:30 AM Invited

Simulating the Mechanical Responses of Polycrystals under Cyclic Loading with a Focus on Comparisons with In Situ Loading Diffraction Experiments: *Paul Dawson*¹; ¹Cornell University

9:55 AM Break

10:15 AM Invited

In Situ Fatigue Monitoring in Magnesium Alloys: *Antonios Kotsos*¹; Kavan Hazeli¹; ¹Drexel University

10:40 AM Invited

Using Ultrasonic Fatigue Methods in the Very High Cycle Fatigue Regime: *J. Wayne Jones*¹; ¹University of Michigan

11:05 AM Invited

Characterization of Deformation Mechanisms Under Cyclic and Dwell Fatigue in a Polycrystalline Ni-based Superalloy: *Dan Wei*¹; Patrick Phillips²; Timothy Smith³; Dave Mourer¹; *Michael Mills*³; ¹GE Aviation; ²University of Illinois-Chicago; ³The Ohio State University

11:30 AM Invited

In-Situ TEM and XRD to Examine Fatigue Mechanisms of Nanocrystalline Metals: *Brad Boyce*¹; Henry Padilla¹; John Sharon¹; Blythe Clark¹; Daniel Kiener; Daniel Kiener²; ¹Sandia National Labs; ²Montanuniversität Leoben

11:55 AM

Characterizing and Simulating Fatigue Cracking Mechanisms in LSHR: *Albert Cerrone*¹; Joseph Tucker²; Clayton Stein²; Ashley Spear¹; Anthony Rollett²; Anthony Ingrassia¹; ¹Cornell University; ²Carnegie Mellon University

12:15 PM Concluding Comments

Friction Stir Welding and Processing VII: Friction Stir Processing

Sponsored by: TMS Materials Processing and Manufacturing Division, TMS: Shaping and Forming Committee

Program Organizers: Rajiv Mishra, University of North Texas; Murray Mahoney, Retired from Rockwell Scientific; Yutaka Sato, Tohoku University; Yuri Hovanski, Pacific Northwest National Laboratory; Ravi Verma, General Motors

Thursday AM
March 7, 2013

Room: Grand Ballroom C3
Location: Henry B. Gonzalez
Convention Center

Session Chairs: John Baumann, The Boeing Company; Judith Schneider, Mississippi State University; Saumyadeep Jana, PNNL

8:30 AM

Material Flow and Texture in Friction Extruded Wire: *Xiao Li*¹; Wei Tang¹; *Anthony Reynolds*¹; ¹University of South Carolina

8:50 AM Invited

Nano-Sized Grain Refinement Using Friction Stir Processing: *Brian Thompson*¹; Kevin Doherty²; Jianqing Su³; Rajiv Mishra³; ¹EWI; ²U.S. Army Research Laboratory; ³University of North Texas

9:10 AM

Friction Stir Processing for Mitigation of Sensitization in 5XXX Series Aluminum Alloys: *Anthony Reynolds*¹; Joel Chrisfield¹; ¹University of South Carolina

9:30 AM

Friction Stir Processing of Cast Aluminum Alloys: Seeking a Correlation between Process Parameters, Abnormal Grain Growth, and Fatigue Behavior: *Saamyadeep Jana*¹; Glenn Grant¹; Blair Carlson²; Rajiv Mishra³; ¹PNNL; ²General Motors R & D center; ³University of North Texas

9:50 AM

Double Sided Multipass Friction Stir Processing and Its Effect on the Superplastic Forming Behaviour of a 5086 Aluminum Alloy: *Pradeep Shivanna*¹; Vivek Pancholi¹; ¹Indian Institute of Technology Roorkee

10:10 AM Break**10:20 AM**

Modified Friction Stir Processing for Back Extruding Lightweight Alloy Tubes: *Fadi Abu-Farha*¹; ¹Clemson University

10:40 AM

Novel Applications of Friction Stir Welding and Processing in Aluminum and Magnesium Alloys: *YE CAO*¹; Andrew L. Biro¹; Diana Lados¹; ¹Worcester Polytechnic Institute, Integrative Materials Design Center

10:55 AM Invited

Fabrication of Carbon Nanotube Reinforced Aluminum Matrix Composites Via Friction Stir Processing: *Z.Y. Ma*¹; Z.Y. Liu¹; B.L. Xiao¹; W.G. Wang¹; ¹Institute of Metal Research, Chinese Academy of Sciences

11:15 AM

Processing and Characterization of Cu-Mo Composite Via Additive Friction Stir Fabrication: *Kumar Kandasamy*¹; Liam Renaghan¹; Zachary Morrey¹; Jeffrey Schultz¹; ¹Aeropro Corporation

11:35 AM

Flow Behavior of SiC Particles as Tracer Material during the Fabrication of MMCs by Friction Stir Processing: *Qing-yu Shi*¹; Kai Sun¹; Wei Wang¹; Xu Kang¹; ¹Tsinghua University

11:55 AM

Processing, Microstructure and Mechanical Property Correlation in Al-B4C Surface Composite Produced Via Friction Stir Processing: *Mageshwari Komarasamy*¹; Rajiv Mishra¹; John Baumann²; Glenn Grant³; Yuri Hovanski³; ¹University of North Texas; ²The Boeing Company; ³Pacific Northwest National Laboratory

12:10 PM

Effect of Friction Stir Processing on Room Temperature Forming of AZ31 Alloy: *Phalgun Nelaturu*¹; Rajiv Mishra¹; Glenn Grant²; Yuri Hovanski²; ¹University of North Texas; ²Pacific Northwest National Laboratory

12:25 PM

Fabrication of Light-Weight, High Thermal Conductivity Metal Matrix Composites Using Friction Stir Processing: Chi-Hoon Jeon¹; Ho-Cheol Suh²; *Yong-Ha Jeong*¹; Min-Sung Kim¹; Sung-Tae Hong¹; Young-Jin Yum¹; Seung-Hyun Hur¹; ¹University of Ulsan; ²Sejong Industrial co

Frontiers in Solidification Science: Atomistic Aspects and Nucleation

Sponsored by: TMS Materials Processing and Manufacturing Division, TMS: Solidification Committee

Program Organizers: Andre Phillion, University of British Columbia; Silvere Akamatsu, Institut des Nanosciences de Paris; Christoph Beckermann, The University of Iowa; Michel Rappaz, Ecole Polytechnique Federale de Lausanne

Thursday AM
March 7, 2013

Room: Lone Star Salon F
Location: Grand Hyatt

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

Session Chairs: Christoph Beckermann, University of Iowa; Nikolas Provatas, McGill University

8:30 AM Invited

Coalescence and Mechanical Behavior of Bicrystals during Late-Stage Solidification: Insights from Atomistic and Phase-Field-Crystal Simulations: Alain Karma¹; ¹Northeastern University

9:00 AM Invited

A Molecular Dynamics and Phase Field Crystal Study of Solute Trapping: Harith Humadi¹; *Jeffrey Hoyt*¹; Nikolas Provatas²; ¹McMaster University; ²McGill University

9:30 AM

Experimental Determination of Nucleation Rates: *Gerhard Wilde*¹; Joachim Bokeloh¹; ¹University of Muenster

9:50 AM Break**10:00 AM**

Step Free Energy Calculations for Faceted Solid-Liquid Interfaces in Stillinger-Weber Silicon: *Timofey Frolov*¹; Mark Asta¹; ¹University of California Berkeley

10:20 AM

Modelling of the Nucleation-Free Zone Formed during the Initial Transient of Grain Formation: *Arvind Prasad*¹; Lang Yuan²; Peter Lee²; David StJohn¹; ¹University of Queensland; ²The University of Manchester

10:40 AM

Atomic Observation of Sr in High Purity Melt Spun Al-5 wt%Si Based Alloys: *Jiehua Li*¹; Peter Schumacher¹; ¹The University of Leoben

11:10 AM

Effect of Antimony on Primary Graphite Growth in Cast Iron – From Ab-Initio Calculations to Experimental Observations: Ivan Bleskov¹; Koenraad Theuwsen¹; Damien Connetable¹; *Jacques Lacaze*¹; ¹Université de Toulouse

11:30 AM

Anisotropy of Mobility and Free Energy of Solid-Liquid Interface in Stoichiometric Ni-Zr Compounds: *S. R. Wilson*¹; M. I. Mendelev¹; ¹Ames Laboratory, USDOE

11:50 AM

Averaged Voronoi Polyhedron in the Diffusion Controlled Solidification Modeling: Andriy Burbelko¹; Jacek Poczatek¹; ¹AGH University of Science and Technology

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

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

Program Organizer: Chris Wolverton, Northwestern University

Thursday AM
March 7, 2013

Room: 205
Location: Henry B. Gonzalez
Convention Center

Session Chairs: Su-Huai Wei, NREL; Lin-Wang Wang, LBNL

8:30 AM Invited

Finite Temperature, Magnetic, and Many-Body Effects in Ab Initio Simulations of Alloy Thermodynamics: *Igor Abrikosov*¹; Björn Alling¹; Peter Steneteg¹; Lasse Hultberg¹; Olle Hellman¹; Igor Mosyagin¹; Andrey Lugovskoy²; Svetlana Barannikova³; ¹Linköping University; ²National Research Technological University MISiS; ³Institute of Strength Physics and Materials Science and Tomsk State University

9:00 AM Invited

Analytic Bond-Order Potential Including Magnetism and Charge Transfer for Modelling Steel: *Ralf Drautz*¹; David Pettifor²; ¹Ruhr-Universität Bochum; ²University of Oxford

9:30 AM Break

9:50 AM Invited

Heusler Compounds: From Spintronics to Topological Insulators: *Claudia Felser*¹; ¹Max Planck Institute

10:20 AM Invited

Magnetism Where You Least Expect It: *Priya Mahadevan*¹; ¹S.N.Bose National Centre for Basic Sciences

Magnesium-Based Biodegradable Implants Symposium: Advanced Materials and Processing

Sponsored by: TMS Electronic, Magnetic, and Photonic Materials Division, TMS Light Metals Division, TMS Structural Materials Division, TMS: Biomaterials Committee, TMS: Magnesium Committee

Program Organizers: Candan Tamerler, University of Washington; Wim Sillekens, European Space Agency

Thursday AM
March 7, 2013

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

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

Session Chairs: Jag Sankar, North Carolina A&T State University; Petra Maier, University of Applied Sciences Stralsund

8:30 AM Invited

Mg-Based Bulk Metallic Glasses for Use as Biodegradable Implants: *Jörg Löffler*¹; ¹ETH Zurich

9:00 AM

Growing and Characterization of Magnesium Single Crystal for Biodegradable Implant Applications: *Pravahan Salunke*¹; Madhura Joshi¹; Frank Witte²; Mark Schulz¹; Maren Pink³; Boyce Collins⁴; Vesselin Shanov¹; ¹University of Cincinnati; ²Hannover Medical School; ³Indiana University; ⁴North Carolina Agricultural and Technological State University

9:20 AM

Microstructure Design of Ultra-Fine-Grained Mg-Al Alloy for Bioabsorbable Implant Applications: *Toshiji Mukai*¹; Akiko Yamamoto²; Yoshinaka Shimizu³; ¹Kobe University; ²National Institute for Materials Science; ³Tohoku University

9:40 AM

Effects of Composition and Grain Size on Corrosion Behavior of CaO added Magnesium Alloys as Biodegradable Materials: *Wonseok Yang*¹; Hyun Kyu Lim¹; Young-Ok Yoon¹; Shae K. Kim¹; Do Hyang Kim²; ¹KITECH; ²Yonsei University

10:00 AM Break

10:20 AM

Effect of Processing on Mechanical Properties and Corrosion of Pure Mg and Binary Mg-Ca Alloys for Application As Biodegradable Implants: *O. Jay*¹; Jean-Jacques Blandin¹; I. Guillotte¹; P. Donnadieu¹; J. P. Petit¹; E. Toyserkani²; S. Esmacili²; ¹Université de Grenoble / CNRS; ²University of Waterloo

10:40 AM

Evolution of the Mechanical and the Corrosion Properties in AE21 and AE42

Magnesium Alloys after Processing through ECAP: *Peter Minárik*¹; Robert Král¹; Josef Pešicka¹; ¹Charles University in Prague, Faculty of Mathematics and Physics

11:00 AM

Influence of Thermo-Mechanical Processing on the Mechanical and Bio-Corrosion Behavior of AZ80-Based Magnesium Alloy for Stent Application: *Jake Edick*¹; Wim Sillekens²; ¹Boston Scientific; ²TNO

Magnesium Technology 2013: Grain Refinement, Twinning, and Composites

Sponsored by: TMS Light Metals Division, TMS: Magnesium Committee

Program Organizers: Norbert Hort, Helmholtz-Zentrum Geesthacht; Suveen Mathaudu, US Army Research Office; Neale Neelameggham, IND LLC; Martyn Alderman, Magnesium Elektron

Thursday AM
March 7, 2013

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

Session Chairs: Karl Kainer, Helmholtz-Zentrum Geesthacht; Bin Li, Mississippi State University

8:30 AM

Optimisation of the Process for Obtaining an UFG Structure in WE43 Alloy: *Stanislav Rusz*¹; Lubomir Cizek¹; Jan Dutkiewicz²; Bartłomiej Plonka³; Vit Michenka⁴; Stanislav Tylsar¹; Michal Salajka¹; Jan Kedron¹; Tibor Donic⁵; Eugenius Hadasik⁶; ¹VSB - Technical University of Ostrava; ²Polish Academy of Science; ³Institute of Non Ferrous Metals in Gliwice; ⁴Research Institute of Iron and Metallurgy Dobra; ⁵Technical University of Zilina; ⁶Silesian University of Technology Katowice

8:50 AM

Thermal Stability of Ultra-Fine Grained Magnesium Alloy Processed by Extrusion and ECAP: *Jitka Vrátná*¹; Miloš Janeček¹; ¹Charles University in Prague

9:10 AM

Tailoring Precipitates in Mg-6Zn-2Gd Based Alloy Subjected to High Pressure Torsion: *Jiehua Li*¹; Peter Schumacher¹; ¹The University of Leoben

9:30 AM

Interaction between a Mg₁₇Al₁₂ Precipitate and {1012} <1012> Twin Boundary in Magnesium Alloys: *Bin Li*¹; Suveen Mathaudhu²; ¹Center for Advanced Vehicular Systems; ²Army Research Laboratory

9:50 AM

Twin Boundary Migration Creating Zero Shear Strain: In-Situ TEM Observations and Atomistic Simulations: *Boyu Liu*¹; *Bin Li*²; Zhiwei Shan¹; ¹Xi'an Jiaotong University; ²Center for Advanced Vehicular Systems

10:10 AM Break**10:30 AM**

Nanoparticle Addition to Enhance the Mechanical Response of Magnesium Alloys Including Nanoscale Deformation Mechanisms: *Muralidharan Paramsothy*¹; Manoj Gupta¹; ¹National University of Singapore

10:50 AM

Properties of Extruded Disintegrable Metal Composites: *Bobby Salinas*¹; Zhiyue Xu¹; John Welch¹; ¹Baker Hughes

11:10 AM

Effect of Fiber Volume Fractions on Corrosion Resistance of Mg AM60 Alloy-based Composites in NaCl Solutions: *Xuezhi Zhang*¹; Xiaoping Niu²; Henry Hu¹; ¹University of Windsor; ²Promatek Research Center

11:30 AM

Synthesis of Disintegrable Metal Composite for Oilfield Applications: *Zhihui Zhang*¹; Bobby Salinas¹; Caleb Newman¹; Zhiyue Xu¹; ¹Baker Hughes

Materials and Fuels for the Current and Advanced Nuclear Reactors II: Structural Materials III

Sponsored by: TMS Structural Materials Division, TMS/ASM: Corrosion and Environmental Effects Committee, TMS/ASM: Nuclear Materials Committee

Program Organizers: Ramprasad Prabhakaran, Idaho National Laboratory; Dennis Keiser, Idaho National Laboratory; Raul Rebak, GE Global Research

Thursday AM
March 7, 2013

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

Session Chair: Walter Luscher, Pacific Northwest National Laboratory

8:30 AM

Effects of Oxide Particle Composition on Structure Property Relations in Reduced Activation Ferritic - Oxide Dispersion Strengthened Steels: *Jan Hoffman*¹; *T Ben Britton*²; David Armstrong²; Steve Roberts²; Michael Rieth¹; ¹Karlsruhe Institute of Technology; ²Department of Materials, University of Oxford

8:50 AM

Microstructural Assessment of Zr-Fe-Ce Alloys as an Inert Matrix for Nuclear Fuels: *Brian Barnhart*¹; Patrice Turchi²; Sean McDevitt¹; ¹Texas A&M University; ²Lawrence Livermore National Laboratory

9:10 AM

Vanadium Coating on F/M Steel for Mitigating the Fuel Cladding Chemical Interaction: *Wei-Yang Lo*¹; Yong Yang¹; ¹University of Florida

9:30 AM

Microstructure Study of 800H Alloy at Static and Dynamic Heating Conditions: *Behrang Poorganji*¹; Deepthi Tammana¹; Xingshou Wen¹; Laura Carroll²; Richard Wright²; T-L. (Sam) Sham³; Vijay. K Vasudevan¹; ¹University of Cincinnati; ²Idaho National Laboratory; ³Oak Ridge National Laboratory

9:50 AM

On the Evolution Late Blooming Phases in RPV Steels: Theoretical Foundations, Experimental Observations and Recent Insights: *G. Odette*¹; Peter Wells¹; Takuya Yamamoto¹; Nicholas Cunningham¹; Yuan Wu¹; ¹UC Santa Barbara

10:10 AM Break**10:30 AM**

Fission Product Diffusion in β -SiC Using Ion Implanted Multilayer Diffusion Couples: *Shyam Dwaraknath*¹; Gary Was¹; ¹University of Michigan

10:50 AM

Influence of Liquid Sodium on the Mechanical Behavior of Modified 9Cr-1Mo Steel: *Samuel Hemery*¹; Thierry Auger¹; Jean-Louis Courouau²; Fanny Balbaud-Celerier²; ¹CNRS; ²CEA

11:10 AM

Evaluation of Potential Diffusion Barrier Candidates for High-Burnup Metal Fuel Cladding Designs: *Grant Helmreich*¹; Carissa Humrickhouse-Helmreich¹; James Vollmer²; Rob Corbin²; Sean McDevitt¹; ¹Texas A&M University; ²TerraPower

11:30 AM

Structure and Properties of Oxide Dispersion Strengthened 18Cr Steel: *Vijay R.*¹; Nagini M.¹; Ramakrishna M.¹; Sundararajan G.¹; ¹International Advanced Research Centre for Powder Metallurgy and New Materials (ARCI)

Materials Science of Nuclear Waste Management II

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

Program Organizers: Kyle Brinkman, Savannah River National Laboratory (SRNL); Ming Tang, Los Alamos National Laboratory (LANL); Kevin Fox, Savannah River National Laboratory (SRNL); Peng Xu, Westinghouse Electric Company

Thursday AM
March 7, 2013

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

Session Chairs: Ming Tang, Los Alamos National Laboratory; Chris Stanek, Los Alamos National Laboratory

8:30 AM Invited

Steel-Based Alloy Waste Forms for Reprocessing Wastes: *William Ebert*¹; ¹Argonne National Laboratory

9:00 AM

Melt Processed Crystalline Ceramic Wasteforms for an Advanced Nuclear Fuel Cycle: *Kyle Brinkman*¹; Jake Amoroso¹; Kevin Fox¹; James Marra¹; Ming Tang²; ¹Savannah River National Laboratory (SRNL); ²Los Alamos National Laboratory (LANL)

9:20 AM

Hot Isostatic Pressing of Chlorine-Containing Plutonium Residues and Wastes: *Martin Stewart*¹; Sam Moricca¹; Eric Vance¹; Ewan Maddrell²; Charlie Scales²; Jeff Hobbs³; R. Authur Day¹; ¹Australian Nuclear Science and Technology Organisation; ²National Nuclear Laboratory; ³Sellafield Ltd.

9:40 AM

Comparison of Hydrogen Insertion Methods to Evaluate the Behavior of Zirconium-Based Cladding during Dry Storage: *Sean McDevitt*¹; Brent Heuser²; Delia Perez-Nunez¹; Samuel Kuhr¹; Jun-Li Lin²; Ryan Brito¹; John Martinez¹; William Sames¹; ¹Texas A&M University; ²University of Illinois and Urbana-Champaign

10:00 AM Break**10:15 AM**

Delayed Hydride Cracking Susceptibility of Spent Fuel Rods in Dry Storage: *Young Suk Kim*¹; ¹Korea Atomic Energy Research Institute

10:35 AM

Net-Shape Al/B4C Metal Matrix Composites (MMCs) for High Specific Stiffness and Neutron Absorption Applications: *Prashant Karandikar*¹; Matthew Duke¹; Allyn McCormick¹; Michael Aghajanian¹; ¹M Cubed Technologies, Inc.

10:55 AM

Isolation of Matrices for High-Level Radioactive Waste Using Metal Coatings Prepared by Chemical Vapor Deposition: *Boris Bryskin*¹; Alexander Kostylev²; Jorge Pokrovsky; Vladimir Romanovsky; Alexander Lumpov²; ¹Bryskin Metallurgical Consulting; ²Khlopin Radium Institute

11:15 AM

Effect of Alloy Composition on the Environmental cracking of Nickel Alloys in Bicarbonate and Chloride Solutions: Natalia Zadorozne¹; Ricardo Carranza²; C. Giordano²; Alicia Ares³; *Raul Rebak*⁴; ¹CONICET; ²Instituto Sabato; ³Universidad Nacional de Misiones; ⁴GE Global Research

11:35 AM

Encapsulation of Mg-Zr Fuel Cladding in Geopolymer Material: *David Lambertin*¹; Adrien Rooses¹; Fabien Frizon¹; Valerie Thiebaut¹; ¹CEA/DEN

11:55 AM

Neutron and X-Ray Imaging of Cement and Ceramic Wasteforms: *Daniel Brew*¹; Frikkie de Beer²; Peter McGlinn¹; Mabuti Radebe²; Robert Nshimirimana²; ¹ANSTO; ²South African Nuclear Energy Corporation

Microstructural Processes in Irradiated Materials: Nuclear Fuels & Zr-alloy Claddings

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

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

Thursday AM
March 7, 2013

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

Session Chairs: Brian Cockeram, Bechtel-Bettis; Thierry Wiss, European Commiss, Joint Res Ctr

8:30 AM Invited

Single Effect Studies for Assessing In-Pile Fuel Behavior: *Thierry Wiss*¹; Dragos Staicu¹; Arne Janssen¹; Vincenzo Rondinella¹; Rudy Konings¹; ¹EC - JRC - Institute for Transuranium Elements

9:00 AM

Microstructural Investigation of Kr Irradiated UO₂: *Lingfeng He*¹; Mahima Gupta¹; Clarissa Yablinsky¹; Jian Gan²; Marquis Kirk³; Todd Allen¹; ¹University of Wisconsin-Madison; ²Idaho National Laboratory; ³Argonne National Laboratory

9:20 AM

Investigation of Swift Heavy Ion Irradiation Defects in CeO₂: *Clarissa Yablinsky*¹; Jian Gan²; Ram Devanathan³; Todd Allen¹; ¹University of Wisconsin; ²Idaho National Laboratory; ³Pacific Northwest National Laboratory

9:40 AM

Ab Initio Molecular Dynamics Simulation of Interstitial Diffusion in Ni-Cr Alloys: *Leland Barnard*¹; Katharina Vortler¹; Izabela Szlufarska¹; Dane Morgan¹; ¹University of Wisconsin-Madison

10:00 AM Break**10:10 AM**

Thermodynamic Modeling of the U-Zr System - A Revisit: *Wei Xiong*¹; Wei Xie²; Chao Shen²; Dane Morgan³; ¹Department of Materials Science and Engineering, University of Wisconsin – Madison; ²Materials Science Program, University of Wisconsin – Madison; ³Materials Science Program & Department of Materials Science and Engineering, University of Wisconsin – Madison

10:30 AM

Microstructural Evolution of a Uranium-Zirconium Alloy at Low Fluences: *Maria Okuniewski*¹; Steven Hayes¹; Brandon Miller¹; Assel Aitkaliyeva¹; Jian Gan¹; James Madden¹; Gary Bell²; Ron Ellis²; Joel McDuffee²; Larry Ott²; ¹Idaho National Laboratory; ²Oak Ridge National Laboratory

10:50 AM

Development of Microstructure and Irradiation Hardening of Zircaloy during Low Dose Neutron Irradiation at Nominally 375-440°C: *Brian Cockeram*¹; K Leonard²; T.S. Byun²; Lance Snead²; Jim Hollenbeck¹; ¹Bechtel-Bettis; ²Oak Ridge National Laboratory

11:10 AM

Interactions between Gliding Dislocations and Irradiation Induced Loops in Recrystallized Zircaloy-4: In Situ TEM Tensile Tests and Dislocation Dynamic Simulations: *Julie Drouet*¹; Fabien Onimus¹; Laurent Dupuy¹; Frédéric Mompou²; Simon Perusin³; Antoine Ambard⁴; ¹CEA Saclay; ²CEMES; ³AREVA NP SAS Fuel Business Unit 10; ⁴EDF/R&D Les Renardières

11:30 AM

Theoretical Investigation of Microstructure Evolution and Deformation of Zirconium under Neutron Irradiation: *Alexander Barashev*¹; Stanislav Golubov¹; Roger Stoller¹; ¹Oak Ridge National Laboratory

11:50 AM

Accurate Computation of Point Defect Absorption Rates by Sinks: *Gopinath Subramanian*¹; Blas Uberuaga¹; Danny Perez¹; Carlos Tome¹; Arthur Voter¹; ¹LANL

Modeling and Experimental Validation of Multiscale Mechanical Behavior from Atomic Scale to Macro Scale: Dislocation Dynamics

Sponsored by: TMS Materials Processing and Manufacturing Division, TMS Structural Materials Division, TMS: Integrated Computational Materials Engineering Committee, TMS/ASM: Mechanical Behavior of Materials Committee, TMS: Nanomechanical Materials Behavior Committee, TMS: Process Technology and Modeling Committee, TMS: Shaping and Forming Committee

Program Organizers: Nathan Mara, Los Alamos National Laboratory; Jian Wang, Los Alamos National Laboratory; Brad Boyce, Sandia National Laboratories; Jennifer Carter, Case Western Reserve University; Anthony Rollett, Carnegie Mellon University; Jonathan Zimmerman, Sandia National Laboratories

Thursday AM
March 7, 2013

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

Session Chairs: Giacomo Po, University of California, Los Angeles; Marisol Koslowski, Purdue University

8:30 AM Invited

Recent Progress in Dislocation Dynamics: *Sylvie Aubry*¹; Athanasios Arsenlis¹; Wei Cai²; Steve Fitzgerald³; ¹LLNL; ²Stanford University; ³Culham Center for Fusion Energy

9:00 AM

Atomistics Analysis of Dislocation Structure and Mechanisms in Semi-Coherent Nanoscale Epitaxial Laminates: *Firas Akasheh*¹; Bin Li²; ¹Tuskegee University; ²Center of Advanced Vehcular Systems

9:20 AM Invited

Constrained Network Parametric Dislocation Dynamics (CNPDD) in Finite Volumes: *Giacomo Po*¹; Nasr Ghoniem¹; ¹UCLA

9:50 AM

Dislocation Microstructure Analysis of Multi-junctions in Large Scale Dislocation Dynamics Simulations of BCC Metals: *Meijie Tang*¹; Lei Cao²; Rich Cook¹; ¹LLNL; ²Purdue University

10:10 AM Break

10:20 AM Invited

Multiscale Simulation of Dislocation-Σ11 Grain Boundary Interaction in FCC Materials: *Wenshan Yu*¹; *Zhiqiang Wang*¹; ¹University of North Texas

10:50 AM Invited

Bridging Atomistic and Dislocation Dynamics across Time and Length Scales: *Marisol Koslowski*¹; ¹Purdue University

11:20 AM Invited

Size Effects in Plastic Deformation: Modeling and Experiment: *Richard LeSar*¹; ¹Iowa State University

11:50 AM

A Physics-Based Understanding of Size-Effects in FCC Single Crystals: *Jaafar El-Awady*¹; ¹Johns Hopkins University

Modeling and Experimental Validation of Multiscale Mechanical Behavior from Atomic Scale to Macro Scale: Mechanics at Multiscales

Sponsored by: TMS Materials Processing and Manufacturing Division, TMS Structural Materials Division, TMS: Integrated Computational Materials Engineering Committee, TMS/ASM: Mechanical Behavior of Materials Committee, TMS: Nanomechanical Materials Behavior Committee, TMS: Process Technology and Modeling Committee, TMS: Shaping and Forming Committee

Program Organizers: Nathan Mara, Los Alamos National Laboratory; Jian Wang, Los Alamos National Laboratory; Brad Boyce, Sandia National Laboratories; Jennifer Carter, Case Western Reserve University; Anthony Rollett, Carnegie Mellon University; Jonathan Zimmerman, Sandia National Laboratories

Thursday AM
March 7, 2013

Room: 211
Location: Henry B. Gonzalez
Convention Center

Session Chair: To Be Announced

8:30 AM Invited

Electrical Contact Degradation: A Multiscale Simulation Study: *Douglas Irving*¹; Christopher Freeze¹; Benjamin Gaddy¹; Xiaoyin Ji¹; ¹North Carolina State University

9:00 AM

Comparison of Deformation Behavior in Tantalum Carbides: *Gregory Thompson*¹; Nicholas De Leon¹; Billie Wang¹; Christopher Weinberger²; ¹University of Alabama; ²Sandia National Laboratories

9:20 AM

Massively Parallel Molecular Statics Simulations of the Percolation of Dislocations through a Random Array of Forest Dislocation Obstacles in FCC Nickel: *Satish Rao*¹; Dennis Dimiduk²; Michael uchic²; Triplicane Parthasarathy¹; Alexander Stukowski³; Jaafar El-Awady⁴; Christopher Woodward²; ¹UES Inc.; ²Air Force research Laboratory; ³Lawrence Livermore National Laboratory; ⁴Johns Hopkins University

9:40 AM Invited

Phase-Field Simulations of Stress-Induced Twinning and De-Twinning: *Shenyang Hu*¹; Chuck Henager¹; ¹Pacific Northwest National Laboratory

10:10 AM Break

10:20 AM Invited

Slip Planes in BCC Tantalum: Towards Resolving the Discrepancy between Modeling and Experiments: *Christopher Weinberger*¹; Lucas Hale¹; Garritt Tucker¹; Ping Lu¹; Jonathan Zimmerman¹; Stephen Foiles¹; ¹Sandia National Labs

10:50 AM

Molecular Dynamics Study on Fullerene-Deposited Thin Film on Si Substrate: *Minwoong Joe*¹; Kwang-Ryeol Lee¹; ¹Korea Institute of Science and Technology

11:10 AM

Multiscale Modeling and Experiments on Human Bone: *Dinesh Katti*¹; Kalpana Katti¹; Shashindra Pradhan¹; Chunju Gu¹; ¹North Dakota State University

11:30 AM Invited

Relating Hierarchical Structure to the Blackness of Butterfly Wings: *Tongxiang Fan*¹; ¹Shanghai Jiaotong University

12:00 PM

Modeling of Effective Thermal Conductivities of Pt-Cu Alloy Series as a Function of Temperature in the Liquid Region: *Shahid Mehmood*¹; ¹Quaid-e-Azam University Islamabad

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

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

Thursday AM
 March 7, 2013

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

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

8:30 AM Invited

Integrating Nano-sized Si into Three-Dimensional Structured Macroscopic Composites as High Capacity Anodes for Li-ion Batteries: *Donghai Wang*¹; Shuru Chen¹; Ran Yi¹; Fang Dai¹; Mikhail Gordin¹; ¹Penn State University

8:50 AM Invited

Graphene and Carbon Nanotube Composite Structures for Supercapacitors of High Energy Density: *Lu-Chang Qin*¹; Jie Tang²; ¹University of North Carolina at Chapel Hill; ²National Institute for Materials Science

9:10 AM Invited

Molecular Dynamics Simulation of Crack Propagation in Silicon Nanowires: *Alireza Ostadhosseini*¹; ¹Pennsylvania State University

9:30 AM Invited

Stretchable Power Sources for Flexible Electronics: *Bingqing Wei*¹; ¹University of Delaware

9:50 AM Invited

Solid-Electrolyte-Interphase (SEI) Layer: Formation and Dynamic Evolution: *Perla Balbuena*¹; ¹Texas A&M University, Artie McFerrin Department of Chemical Engineering

10:10 AM Break**10:30 AM Invited**

Synthesis and Functionalization of Nanoporous Carbon Materials for Energy-Related Applications: *Sheng Dai*¹; ¹Oak Ridge National Laboratory

10:50 AM Invited

The Key Roles of Interfaces on the High Performance of TiSnSb as a New Material for Negative Composite Electrodes of Li Ion Batteries: *Henri Wilhelm*¹; Cyril Marino²; Laure Monconduit²; Bernard Lestriez¹; ¹CNRS, Université de Nantes; ²CNRS, Université de Montpellier II

11:10 AM Invited

Theoretical Investigation of Cathode Catalysts for Alternative Li Batteries: *Ye Xu*¹; ¹Oak Ridge National Laboratory

11:30 AM Invited

Thin Film Patterned Sandwich Anode Structures for Li-Ion batteries: *Sameer Damlé*¹; Siladitya Pal¹; Spandan Maiti¹; Prashant Kumbal¹; ¹University of Pittsburgh

11:50 AM Invited

Ultrathin Surface Coatings for Enhanced Cycleability of Li-Ion Battery Electrodes at Elevated Temperature: *Ying Wang*¹; Jianqing Zhao¹; ¹Louisiana State University

12:10 PM Invited

Production of Nano-Structured Silicon Composite by Plasma Spraying with SiO for Negative Electrode of Lithium Ion Batteries: *Makoto Kambara*¹; Keiichi Homma¹; Toyonobu Yoshida¹; ¹The University of Tokyo

Neutron and X-Ray Studies of Advanced Materials VI: Centennial and Beyond: Strains and Dislocations

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

Thursday AM
 March 7, 2013

Room: 209
 Location: Henry B. Gonzalez
 Convention Center

Session Chairs: Peter Liaw, University of Tennessee; Jaimie Tile, Air Force Research Laboratory

8:30 AM Invited

Dislocation Structure in Different Texture Components of Highly Textured Zr-2 Rolled Plates Determined by Neutron Diffraction Line Profile Analysis: *Tamás Ungár*¹; Thomas Holden²; Bjørn Clausen³; Levente Balogh³; Gábor Csizsár¹; Bertalan Jóni¹; Donald Brown³; ¹Eötvös University Budapest; ²Northern Stress Technologies; ³Los Alamos National Laboratory

8:55 AM Invited

Phase Reversion during Compressive Loading of Shocked Alpha/Omega Zirconium: *Bjørn Clausen*¹; Eric Tulk¹; Ellen Cerreta¹; Juan Escobedo-Diaz¹; Thomas Sisneros¹; Donald Brown¹; Jonathan Almer²; ¹Los Alamos National Laboratory; ²Argonne National Laboratory

9:15 AM Invited

Microstructure Evolution of LPSO Structures in Mg-Y-Zn Alloys Examined by In-Situ SAXS: *Hiroshi Okuda*¹; Toshiki Horiuchi¹; Yoshihito Kawamura²; Michiaki Yamasaki²; ¹Kyoto University; ²Kumamoto University

9:35 AM

In-Situ Studies of the Deformation Characteristics of Intercritically Austempered Ductile Irons Using VULCAN: Alan Druschitz¹; Sayanti Banerjee; Ke An²; Dong Ma²; Alexandru Stoica²; ¹Virginia Polytechnic Institute and State University (Virginia Tech); ²Oak Ridge National Laboratory

9:45 AM Invited

Nanoscale Precipitation in a Nanostructured Ferritic Alloy by Small Angle Neutron Scattering and Atom Probe Tomography: *Z. W. Zhang*¹; L. Yao¹; X.-L. Wang¹; K. Littrell¹; Q. Li¹; M. Miller¹; ¹Oak Ridge National Labs

10:05 AM

Synchrotron X-Ray Diffraction Study of Fatigue-Induced Damage in Ni-Based Superalloy: *Chih-Pin Chuang*¹; Yan Gao²; Tim Hanlon²; Monica Soare²; Jon Almer³; Michael Hemphill¹; Peter Liaw¹; ¹University of Tennessee; ²GE Global Research Center; ³Advanced Photon Source

10:15 AM Break**10:20 AM Invited**

Influence of Strain Modes on the Texture Evolution and Martensitic Phase Transformation Kinetics in TRIP Steels: *Hahn Choo*¹; ¹Univ of Tennessee

10:40 AM

Texture Evolution in Rolled and Recrystallized Fe₈₁Ga₁₉ Sheets: Zhenghua He¹; Yuhui Sha¹; Fang Zhang¹; Feifei Lin¹; Liang Zuo¹; ¹Northeastern University

10:55 AM

The Influence of Inter- and Intragranular Long Range Strain Distributions on the Accuracy of Dislocation Densities Determined by Diffraction Line Profile Analysis: *Levente Balogh*¹; Bertalan Joni²; Anand Kanjarla¹; Ricardo Lebensohn¹; Carlos Tome¹; Tamas Ungar²; ¹Los Alamos National Laboratory; ²Lorand Eotvos University

11:15 AM

Introduction of Shanghai Synchrotron Radiation Facility and One Scientific Case Focused on Deformation Behavior of Nanostructured Cu/Ag Multilayered Films at Beamline 14B1: *Li Li*¹; Ru Su²; Zhihua Nie²; Yandong Wang²; ¹Shanghai Institute of Applied Physics; ²Beijing Institute of Technology

11:30 AM

Austenite Stability Effects in Medium-Mn TRIP Steels: *Paul Gibbs*¹; Emmanuel De Moor¹; Amy Clarke²; Donald Brown²; Bjørn Clausen²; Matthew Merwin³; Bruno De Cooman⁴; David Matlock¹; ¹Advanced Steel Processing and Products Research Center, Colorado School of Mines; ²Los Alamos National Laboratory; ³U. S. Steel Research and Technology Center; ⁴Graduate Institute of Ferrous Technology, Pohang University of Science and Technology

11:45 AM Invited

Amorphous Materials: Potential Avenues for Uncovering Their Atomic Structures: *Claire White*¹; ¹Los Alamos National Laboratory

12:05 PM

Texture, Stress and Grain Size Analysis by Two-dimensional XRD: *Bob He*¹; ¹Bruker AXS

12:20 PM

Neutron Diffraction Study of Strain/Stress States and Subgrain Defects in a Creep Deformed Single Crystal Superalloy: *Erdong Wu*¹; Guangai Sun²; Bo Chen²; Jian Zhang¹; Vincent Ji³; Vincent Klosek⁴; Marie-Helene Mathon⁴; ¹Institute of Metal Research, Chinese Academy of Science; ²Institute of Nuclear Physics and Chemistry; ³Université Paris-Sud 11; ⁴Laboratoire Léon Brillouin

Ni-Co 2013: Applications & Recycling

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

Thursday AM
March 7, 2013

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

Session Chairs: Xingbo Liu, West Virginia Univ; Jon Groh, GE Aviation

8:30 AM

Numerical Simulation of Temperature Field in Directional Solidification of Turbine Blade by Liquid Metal Cooling Method: Tang Ning¹; Xu Qingyan¹; *Liu Baicheng*¹; ¹Tsinghua University

8:55 AM

Temporal Evolution of the Morphology and Phase Composition in a Model Ni-Al-Mo Superalloy: Yiyu Tu¹; Elizaveta Plotnikov²; Ronald Noebe³; *David Seidman*²; ¹Southeast University; ²Northwestern University; ³NASA John H. Glenn Research Center

9:20 AM

Influence of Thermomechanical Treatment on Structure and Properties of a Cobalt Based Superalloy: *Pallab Sarkar*¹; Narahari S. Prasad¹; Mrinal Chatterjee¹; Narayana Rao Myneni¹; ¹Midhani

9:45 AM Break**10:05 AM**

Effect of Processing Conditions on Structure, Properties and Performance of a Nickel Base Cast Superalloy for High Temperature Applications: *Mrinal Chatterjee*¹; Pani Kishore A¹; Pallab Sarkar¹; Narayana Rao Myneni¹; ¹MIDHANI

10:30 AM

Development of Nickel Boron Alloys for Brazing Materials: *Kerem Tasyürek*¹; Murat Alkan¹; Onuralp Yücel¹; ¹Istanbul Technical University

10:55 AM

Microstructural Evolution and Mechanical Behaviour of Hot Deformed 37Ni- 27Fe- 25Cr Alloy: Maribel De la Garza Garza¹; *Adriana Garcia*¹; Martha Guerrero-Mata¹; Rafael Colás¹; Victor Paramo²; ¹FIME, UANL; ²Frisa Forjados S.A. de C.V.

11:20 AM

Electro-healing cracks in nickel: Xiangui Zheng¹; *Yinong Shi*¹; Ke Lu¹; ¹Shenyang National Laboratory for Materials Science, Institute of Metal Research, Chinese Academy of Sciences

Novel Synthesis and Consolidation of Powder Materials : Porous Structure Fabrication and Thermomechanical Processing

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

Thursday AM
 March 7, 2013

Room: Lone Star Salon C
 Location: Grand Hyatt

Session Chairs: Selçuk Kuyucak, Dept. of Natural Resources Canada; Soon-Jik Hong, Kongju National University

8:30 AM

Electrolytic Infiltration of Laser Sintered Porous Preforms: *Abhimanyu Bhat*¹; David Bourell¹; ¹University of Texas at Austin

8:50 AM Invited

Fabrication of Porous Metallic Compacts Using Electro-Discharge Sintering: Jae Young Cho¹; *Ki Buem Kim*¹; ¹Sejong University

9:20 AM

Pore Evolution during Thermomechanical Processing of Sintered Pure Ti: Lingwen Kong¹; *Xiaolin Wu*¹; Wei Xu¹; Shudong Luo²; Ya Feng Yang²; Ma Qian²; Kenong Xia¹; ¹The University of Melbourne; ²The University of Queensland

9:40 AM

Mechanical Behavior and Deformation Mechanisms of Polycrystalline Nickel with Controlled Nano/Micro Grain Volume Fractions: *Guy-Daniel Dutel*¹; David Tingaud¹; Damien Faurie¹; Patrick Langlois¹; Guy Dirras¹; ¹Université Paris 13

10:00 AM Break

10:20 AM Invited

Turning Machining Chips into Advanced Materials by Powder Metallurgy: *Deliang Zhang*¹; Jiamiao Liang²; Xun Yao²; Jianqiang Yan²; Liuyang Zhang²; ¹Shanghai Jiao Tong University, China/The University of Waikato, NZ; ²Shanghai Jiao Tong University, China

10:50 AM Invited

Experimental and Theoretical Analysis of Oxygen Solid Solution Strengthening Behavior of P/M Pure Ti Material: Takanori Mimoto¹; *Katsuyoshi Kondoh*¹; Li Shufeng¹; Hisashi Imai¹; Junko Umeda¹; ¹Osaka University

11:20 AM

Direct Powder Rolling of Titanium-Platinum (TiPt) Blended Elemental Powders: Silethelwe Chikosha¹; *Hilda Chikwanda*¹; ¹CSIR

11:40 AM

Commercially Pure Ti from Powder Forging and Direct Powder Consolidation by Severe Plastic Deformation: *Xiaolin Wu*¹; Wei Xu¹; Shudong Luo²; Ya Feng Yang²; Ma Qian²; Kenong Xia¹; ¹The University of Melbourne; ²The University of Queensland

Pb-free Solders and Emerging Interconnect and Packaging Technologies: Interfacial Reactions

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

Program Organizers: Nikhilesh Chawla, Arizona State University; Srinivas Chada, Whirlpool; Darrel Frear, Freescale Semiconductor; John Elmer, LLNL; Tae-Kyu Lee, Cisco Systems; Yan Li, Intel; Laura Turbini, Research In Motion; Kwang-Lung Lin, National Cheng Kung University; Sohoon Yoo, Korea Institute of Industrial Technology

Thursday AM
 March 7, 2013

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

Session Chair: To Be Announced

8:30 AM

Dependence of (Cu,Ni)₆Sn₅ Morphology on the Grain Structures of Ni Substrate in Sn-3.0Ag-0.5Cu/Ni Solder Joints: *Yi-Hsin Wu*¹; Jenq-Gong Duh²; ¹National Tsing Hua University; ²National Tsing Hua University

8:50 AM

Effect of Bump Height on Thermomigration Induced Kirkendall Voids on the Pb-Free Flip Chip Solder Joint and Three Dimensional Integrated Circuits Packaging: *Fan-Yi Ouyang*¹; Wei-Cheng Juh¹; ¹National Tsing Hua University

9:10 AM

Eliminating Kirkendall Voids during Solid State Aging between Solder and Nano-Twinned Copper with (111) Orientation: *Yi Cheng Chu*¹; Chih Chen¹; ¹Department of Materials Science & Engineering, National Chiao Tung University

9:30 AM

Optimization of the Ni(P) Thickness for an Ultrathin Ni(P)-Based Surface Finish in Soldering Applications: *Cheng-En Ho*¹; Chia-Wei Fan¹; Hsin-Hui Hua¹; Wei-Hsiang Wu¹; ¹Yuan Ze University

9:50 AM Break

10:10 AM

Reliability of Lead-Free BiAgX Pastes for High Temperature Die-Attach Application: *HongWen Zhang*¹; Runsheng Mao¹; Ning-Cheng Lee¹; Liang Yin²; ¹Indium Corporation; ²Universal Instrument Corporation

10:30 AM

Interfacial Reaction and Mechanical Evaluation in Pd-Containing Solder Joints Via Drop and High Speed Impact Test: *Hsiu-Min Lin*¹; Cheng-Ying Ho¹; Wen-Lin Chen¹; Yi-Hsin Wu¹; De-Hui Wang²; Tong-Xing Yong²; Jun-Ren Lin²; Zhi-Wei Lin²; Jenq-Gong Duh¹; ¹Materials Science and Engineering, National Tsing Hua University; ²Kinsus Interconnect Technology corporation

Phase Transformation and Microstructural Evolution: General Phase Transformations - Fe Based Alloys: Part I

Sponsored by: TMS Materials Processing and Manufacturing Division, TMS: Chemistry and Physics of Materials Committee, TMS/ASM: Computational Materials Science and Engineering Committee, TMS: Integrated Computational Materials Engineering Committee, TMS/ASM: Phase Transformations Committee, TMS: Process Technology and Modeling Committee, ASM: Alloy Phase Diagrams Committee

Program Organizers: Amy Clarke, Los Alamos National Laboratory; Sudarsanam Suresh Babu, Ohio State Univ; Rajarshi Banerjee, Univ of North Texas; John Morral, Ohio State Univ; Brian Gleeson, University of Pittsburgh; Carelyn Campbell, National Institute of Standards & Tech; Yongho Sohn, Univ of Central Florida; Yunzhi Wang, Ohio State University

Thursday AM
March 7, 2013

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

Session Chairs: Tadashi Furuhashi, Tohoku University; Paul Gibbs, Los Alamos National Laboratory

8:30 AM Invited

Atom Probe Tomography Examination of Carbon and Alloying Elements in Quench and Tempered Steels: *Amy Clarke*¹; Michael Miller²; Robert Field¹; David Alexander¹; Kester Clarke¹; George Krauss³; David Matlock³; ¹Los Alamos National Laboratory; ²Oak Ridge National Laboratory; ³Colorado School of Mines

9:00 AM Invited

Development of New Ferrous Alloys with High Al Content: *Dong Woo Suh*¹; ¹Pohang University of Science and Technology

9:30 AM

Evolution of Microstructure in Heavily Cold Drawn High-Strength Duplex Stainless Steels UNS S32205 and S32304: *Robert Moser*¹; Sam Raji²; Omar Rodriguez³; Robert McCullough⁴; Boris Renteria-Beleno³; Paul Allison¹; Preet Singh²; Marcelo Suarez³; Oscar Perales-Perez³; Daniel Schuetz²; Ruth Hidalgo-Hernandez¹; Lawrence Kahn²; Kimberly Kurtis²; ¹US Army Engineer Research and Development Center; ²Georgia Institute of Technology; ³University of Puerto Rico at Mayaguez; ⁴University of Alabama

9:50 AM Break

10:10 AM

Microstructure Evolution of Stainless TWIP Steels: *Linda Mosecker*¹; Alireza Saeed-Akbari¹; Wolfgang Bleck¹; ¹Department of Ferrous Metallurgy RWTH Aachen University

10:30 AM

Study of Microstructural Evolutions in Lean Duplex 2101 during Isothermal Aging: *Jean-Yves Maetzel*¹; Sophie Cazottes¹; Catherine Verdu¹; Xavier Kleber¹; ¹MATEIS-INSa de Lyon

10:50 AM

Ultrafine Grained High-Alloyed Austenitic TRIP/TWIP Steels: *Anja Weidner*¹; Alexandra Müller¹; Christian Segel¹; Horst Biermann¹; ¹TU Bergakademie Freiberg

11:10 AM

Controlled Setting of the Transformation Kinetics and the Structure Constituents in Low-Temperature Bainite Steels: *Mohamed Soliman*¹; Heinz Palkowski¹; ¹TU-Clausthal

11:30 AM

EBS-Analysis of Orientation Relationship Scatter in the FCC-BCC/BCT Martensitic Transformation in Fe-Based Alloys: *Eric Payton*¹; Victoria Yardley²; ¹Federal Institute for Materials Research and Testing; ²Ruhr-Universität Bochum

11:50 AM

Study of the Kinetic of Spinodal Decomposition and G Phase Precipitation in Ferrite of Long Term Thermally Aged Duplex Stainless Steels: *Jonathan Emo*¹; Cristelle Pareige¹; Sébastien Salliet²; Philippe Pareige¹; ¹Groupe de Physique des Matériaux; ²EDF

Phase Transformation and Microstructural Evolution: Phase Field, Phase Field Crystal, Diffusive Molecular Dynamics and Related Models: Part I

Sponsored by: TMS Materials Processing and Manufacturing Division, TMS: Chemistry and Physics of Materials Committee, TMS/ASM: Computational Materials Science and Engineering Committee, TMS: Integrated Computational Materials Engineering Committee, TMS/ASM: Phase Transformations Committee, TMS: Process Technology and Modeling Committee, ASM: Alloy Phase Diagrams Committee

Program Organizers: Amy Clarke, Los Alamos National Laboratory; Sudarsanam Suresh Babu, Ohio State Univ; Rajarshi Banerjee, Univ of North Texas; John Morral, Ohio State Univ; Brian Gleeson, University of Pittsburgh; Carelyn Campbell, National Institute of Standards & Tech; Yongho Sohn, Univ of Central Florida; Yunzhi Wang, Ohio State University

Thursday AM
March 7, 2013

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

Session Chairs: Heike Emmerich, University of Bayreuth; Ken Elder, Oakland University; Yunzhi Wang, Ohio State University

8:30 AM Introductory Comments

8:35 AM Invited

Diffusive Molecular Dynamics: *Ju Li*¹; ¹University of Pennsylvania

9:05 AM Invited

Phase Field Crystal Modelling of Strained Epitaxial Films: *Ken Elder*¹; ¹Oakland University

9:35 AM Break

9:50 AM Invited

Multilayer Thin Film Growth on Crystalline and Quasicrystalline Surfaces: A Phase-Field Crystal Study: *Mikko Haataja*¹; ¹Princeton University

10:20 AM Invited

Phase-Field Simulations of 3D Eutectic Growth Morphologies in Al-Si Cast Alloys: *Janin Eiken*¹; Markus Apel¹; ¹Access

10:40 AM

Calculations of Isothermal Elastic Constants in the Phase-Field Crystal Model: *Nirand Pisutha-Arnond*; *Victor Chan*¹; Ken Elder; Katsuyo Thornton; ¹University of Michigan, Ann Arbor

11:00 AM

Phase-Field Crystal Modeling of Clustering in Al-Mg-Si-(Cu) Alloys: *Vahid Fallah*¹; Shahrzad Esmaeili²; Nikolas Provatas³; ¹University of Waterloo; ²University of Waterloo; ³McGill University

11:20 AM

A Phase Field Crystal Study of Temperature Oscillations in Explosive Crystallization: *Jonathan Stolle*¹; Nikolas Provatas²; ¹McMaster University; ²McGill University

11:40 AM Invited

An Efficient Phase-Field Simulation for Solidification of Multicomponent Alloys: S.G. Kim¹; W.T. Kim²; Y.B. Park³; P.R. Cha⁴; H.Y. Seo⁵; J.T. Choi⁶; ¹Kunsan National University; ²Cheongju University; ³Suncheon National University; ⁴Kookmin University; ⁵Hyundai Steel

12:10 PM

Crystal Phase Field and Atom Probe Tomography Investigation of Spinodal Decomposition in Supersaturated Fe-C Martensites: *Frederic Danoix*¹; Hélène Zapolsky¹; Khalid Hoummada²; Sébastien Allain³; Mohamed Gouné⁴; ¹CNRS - Université de Rouen; ²IM2NP CNRS; ³Arceomittal Maizières Research SA; ⁴ICMCB - CNRS

Physical and Mechanical Metallurgy of Shape Memory Alloys: Processing, Powder Metallurgy

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

Thursday AM
 March 7, 2013

Room: Lone Star Salon B
 Location: Grand Hyatt

Session Chairs: Othmane Benafan, NASA Glenn; David Dunand, Northwestern University

8:30 AM

A Novel Superelastic Porous Material Made of a Single Entangled NiTi Wire: *Benjamin Gadot*¹; Sabine Rolland du Roscoat²; Laurent Orgéas³; David Rodney¹; Didier Bouvard¹; ¹INP Grenoble; ²Université Joseph Fourier; ³CNRS - Université Joseph Fourier

8:50 AM

3D Interconnected Channels in NiTiNb Foams: *Catherine Tupper*¹; Cate Brinson¹; David Dunand¹; ¹Northwestern University

9:10 AM

Experimental and Numerical Characterization of Hybrid Shape Memory Alloy (SMA) - MAX Phase Composites: *Ankush Kothalkar*¹; Brian Lester¹; Liangfa Hu¹; Miladin Radovic¹; Ibrahim Karaman¹; Dimitris Lagoudas¹; ¹Texas A&M University

9:30 AM

Mechanical Behaviors of Gradient Porous NiTi Shape Memory Alloy with Long Bone Structure: Ming Lai¹; Dan Zhou¹; Bin Yuan¹; Yan Gao¹; ¹South China University of Technology

9:50 AM

Effect of Pore Structure Regulation on Mechanical Properties and Superelasticity of Porous Ti-22Nb-6Zr Alloy for Biomedical Application: *Ming Lai*¹; Bin Yuan¹; Yan Gao¹; ¹South China University of Technology

10:10 AM Break**10:30 AM**

Superelastic Properties of Porous and Dense Cu-Al-Ni Alloys Created by Directional Solidification: *Bin Yuan*¹; Peiqi Zheng²; David Dunand²; ¹South China University of Technology; ²Northwestern University

10:50 AM

Electrochemical Behavior of Ti-Ni-Cu Shape Memory Alloy Ribbons Used for the fabrication of Sensors and Actuators: *Abdel Salam Makhlof*¹; ¹Central Metallurgical Research and Development Institute

11:10 AM

Structural, Magnetic, and Microstructural Properties of Rapidly Solidified Ni₅₄Fe₂₁Ga₂₅-xAlx Ribbons: *Imaddin Al-Omari*¹; K. Kumar²; S. Aich²; ¹Sultan Qaboos University; ²Indian Institute of Technology, Kharagpur

11:30 AM

Microstructural Evolution and Characterization of Ti₂Ni Phase in Melt-Spun Ti_{51.5}Ni_{48.5} Shape Memory Ribbons: *Sichuang Xue*¹; Wu Wang¹; Jinke Yu²; Qijie Zhai²; Hongxing Zheng¹; ¹Shanghai University; ²Shanghai Key Laboratory of Modern Metallurgy & Materials Processing

11:50 AM

Dislocations Induced by Crystal Symmetry Change during Martensitic Transformations: *Yipeng Gao*¹; Yunzhi Wang¹; ¹The Ohio State University

REWAS 2013: Enabling Materials Resource Sustainability: Enabling Sustainability through Recycling & End-of-Pipe Solutions II

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

Thursday AM
 March 7, 2013

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

Session Chairs: Jeffrey S. Spangenberg, Argonne National Laboratory; Harald Oosterhof, Umicore

8:30 AM Introductory Comments**8:35 AM**

Application of Membrane Distillation and Solvent Extraction for Water, Acid and Metal Recovery from Mining Waste Solutions: *Chu Yong Cheng*¹; ¹CSIRO Australia

9:00 AM

Metal Recovery by Bioleaching of Mining Sulfidic Wastes – Application to a European Case Study: *Anne-Gwénaëlle Guezennec*¹; Jérôme Jacob¹; Catherine Joulain¹; Sébastien Dupraz¹; Yannick Ménard¹; Patrick D'Hugues¹; ¹BRGM

9:25 AM

Recovery of Platinum from Dilute Chloride Media Using Biosorbents: *Biliter Zeytuncu*¹; M.Hakan Morcali¹; Onuralp Yucel¹; ¹Istanbul Technical University

9:45 AM Break**10:05 AM**

Bioextraction of Copper from Printed Circuit Boards: Influence of Initial Concentration of Ferrous Iron: *Luciana Yamane*¹; Denise Espinosa¹; Jorge Tenório¹; ¹Polytechnic School of São Paulo University

10:25 AM

Development of Environmentally Friendly Separation and Recovery Process of Rare Metals from Oil Desulfurization Spent Catalyst: *Junji Shibata*¹; Norihiro Murayama¹; ¹Kansai University

10:50 AM

A Novel Process for Recovering Valuable Materials from Spent Lithium-ion Batteries: *Gjergj Dodibala*¹; Kenji Murata²; Toyohisa Fujita³; ¹University of Tokyo; ²Nippon Koki Co. Ltd; ³The University of Tokyo

REWAS 2013: Enabling Materials Resource Sustainability: Enabling Sustainability through Systems Modelling and Design

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

Thursday AM
March 7, 2013

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

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

Session Chairs: Daniel Mueller, Norwegian Univ of Science and Technology; Anne Kvithyld, SINTEF

8:30 AM Introductory Comments**8:35 AM**

Assessing the Criticality of Metals: *Tom Graedel*¹; E.M. Harper¹; Nedal Nassar¹; ¹Yale University

9:00 AM

Towards Zero Waste Production in the Minerals and Metals Sector: *William Rankin*¹; ¹CSIRO

9:25 AM

Scenarios for the Development and Improvement of the Life Support Systems of the Arctic Zone of Russia: *Tsukerman Viacheslav*¹; *Stanislav Ivanov*¹; ¹KSC RAS

9:50 AM Break**10:10 AM**

Stochastic Modelling of Material- and Energy Properties in Recycling Systems: *Maaria Wierink*¹; *Kari Heiskanen*¹; ¹Aalto University

10:35 AM

Modeling to Evaluate Coordination and Flexibility in Aluminum Recycling Operations: *Elsa Olivetti*¹; Tracey Brommer¹; Snorre Fjeldbo²; Randolph Kirchain¹; ¹MIT; ²Hydro

11:00 AM

IO-MFA and Thermodynamic Approach for Metal Recycling: *Kenichi Nakajima*¹; Kazuyo Matsubae²; Yasushi Kondo³; Shinichiro Nakamura³; Tetsuya Nagasaka²; ¹National Institute for Environmental Studies; ²Tohoku University; ³Waseda University

11:25 AM

Development of Efficient Recycling System for Steel Alloying Elements in End of Life Vehicles: *Hajime Ohno*¹; Kazuyo Matsubae¹; Kenichi Nakajima²; Shinichiro Nakamura³; Tetsuya Nagasaka¹; ¹Tohoku University; ²National Institute for Environmental Studies; ³Waseda University

Symposium on High Entropy Alloys: Structures and Mechanical Properties

Sponsored by: TMS Structural Materials Division, TMS/ASM: Mechanical Behavior of Materials Committee, TMS: Alloy Phases Committee

Program Organizers: Peter Liaw, The University of Tennessee; Gongyao Wang, University of Tennessee; M. Gao, National Energy Technology Laboratory; S. Mathaudhu, U.S. Army Research Office

Thursday AM
March 7, 2013

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

Session Chairs: Yong Zhang, University of Science and Technology Beijing; Oleg Senkov, UES, Inc.

8:30 AM Invited

Microstructure-Property-Processing Relationships in a Series of Al-Cr-Fe-Mn-Ni High Entropy Alloys: *Abraham Munitz*¹; Gerald Bourne¹; James Cotton²; Michael Kaufman¹; ¹Colorado School of Mines; ²The Boeing Company

8:55 AM

Unusual Mechanical Properties of a Quinary, Equiatomic Single-Phase Solid-Solution Alloy: *Frederik Otto*¹; Hongbin Bei¹; Antonin Dlouhy²; Christoph Somsen³; Gunther Eggeler³; Easo George¹; ¹Oak Ridge National Laboratory; ²Institute of Physics of Materials; ³Ruhr-University Bochum

9:10 AM Invited

Microstructures and Mechanical Properties Al_xCrCuFeNi₂ High-Entropy Alloys by Cold Rolling and Heat Treatments: *Yong Zhang*¹; Sheng Guo Ma¹; Zhao Di Chen¹; ¹University of Science and Technology Beijing

9:35 AM

Effect of Cr, Mn and Cu on Phase Evolution and Densification of CoFeNiM (M=Cr, Mn, Cu) High Entropy Alloys: *Praveen S*¹; Murty B.S¹; Ravi Sankar Kottada¹; ¹Indian Institute of Technology Madras

9:50 AM Break**10:05 AM Invited**

Microstructure, Thermal Stability and Mechanical Properties of Refractory High Entropy Alloys: *Oleg Senkov*¹; Daniel Miracle¹; Christopher Woodward¹; ¹Air Force Research Laboratory, Materials and Manufacturing Directorate

10:30 AM

Elevated-Temperature Performance of a Brand New Refractory High-Entropy Alloy: *Chien-Chang Juan*¹; Jien-Wei Yeh¹; ¹National Tsing Hua University

10:45 AM Invited

Influence of Processing Parameters on the Microstructure and Mechanical Properties of Lightweight High Entropy Alloys: *Laszlo Kecskes*¹; Mark Atwater¹; Vincent Hammond¹; Hedwig Maupin¹; Kristopher Darling¹; ¹US Army Research Laboratory

11:10 AM

Age Hardening of the Al_{0.5}CoCrNiTi_{0.5} High Entropy Alloy: *Che-Fu Lee*¹; Tao-Tsung Shun¹; ¹Feng Chia University

11:25 AM

Tribological Properties of AlCoCrFeNiCu High Entropy Alloy: Tiebang Zhang¹; Yuan Yu¹; Jian Li²; Hongchao Kou¹; Rui Hu¹; *Jinshan Li*¹; ¹Northwestern Polytechnical University; ²Wuhan Research Institute of Materials Protection

Ultrasonic Welding II: Ultrasonic Welding: Metallic and Non-metallic Hybrid Joints

Sponsored by: TMS Light Metals Division, TMS Structural Materials Division, TMS: Advanced Characterization, Testing, and Simulation Committee, TMS: Materials Characterization Committee, TMS: Young Leaders Committee, ASM-MSCTS: Materials and Processing Committee, METSOC-CIM: Metal Processing and Fabrication Committee
Program Organizer: Frank Balle, University of Kaiserslautern

Thursday AM
 March 7, 2013

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

Session Chairs: Guntram Wagner, University of Kaiserslautern, Institute of Materials Science and Engineering; Frank Balle, University of Kaiserslautern, Institute of Materials Science and Engineering and State Research Focus Advanced Materials Engineering (AME)

8:30 AM

Comparison of Ultrasonic Spot and Torsion Welding for Al/Ti-Joints by Mechanical and Microstructural Characteristics: Daniel Trost¹; *Frank Balle*¹; Joseph Robson²; Philip Prangnell²; ¹University of Kaiserslautern; ²University of Manchester

8:50 AM

Formation and Distribution of Intermetallic Compounds in Ultrasonic Spot Welding of Aluminum and Copper: *Yansong Zhang*¹; ¹School of Mechanical Engineering, Shanghai Jiao Tong University

9:10 AM

Ultrasonic Welding of Bulk Carbon Nanotube Conductors to Metallic Interconnects: *Christopher Schauermaier*¹; Jack Alvarenga²; Jason Staub¹; Michael Forney¹; Ryan Foringer¹; Brian Landi¹; ¹Rochester Institute of Technology; ²Harvard University

9:30 AM

Experimental and Computational Analysis of Ultrasonically Multi-Spot Welded Hybrid Al/CFRP-Structures on Component Level: *Sebastian Schmeer*¹; Frank Balle²; Guntram Wagner²; Martin Maier¹; Dietmar Eifler²; ¹Institute for Composite Materials, Kaiserslautern (Germany); ²University of Kaiserslautern

9:50 AM Concluding Comments Organizer, Frank Balle, University of Kaiserslautern (Germany)

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

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

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

Thursday PM

March 7, 2013

Room: 201

Location: Henry B. Gonzalez
 Convention Center

Funding support provided by: Qualcomm, Inc.

Session Chairs: Nitin Chopra, The University of Alabama; Seong Jin Koh, University of Texas at Arlington

2:00 PM

Effect of Grain Boundary Engineering in Low Stacking Fault Energy Alloys on their Corrosion Resistance: *Indranil Roy*¹; Manuel Marya¹; Enrique Lavernia²; Farghalli Mohamed³; ¹Schlumberger; ²University of California, Davis; ³University of California, Irvine

2:20 PM

Characterization of Fe-W Nanoclusters Prepared by Inert Gas Condensation: *Mark Koten*¹; Williams Lefebvre²; Jeffrey Shield¹; ¹University of Nebraska - Lincoln; ²University of Rouen

2:40 PM

Ceramic Nanofibers and Carbon Nanotube Reinforced Ceramic Nanofiber Composites Prepared by the Forcespinning Method: *Alfonso Salinas*¹; Aleksey Altecov¹; Maricela Lizcano¹; Matiaz Alcoutlabi¹; Karen Lozano¹; ¹The University of Texas Pan American

3:00 PM

Next Generation Nanoindenter for Elevated Temperature Nanomechanical Testing: *Gregory Favarolo*¹; Nicholas Randall²; Bertrand Bellaton²; Bo Zhou²; ¹CSM Instruments; ²CSM Instruments

3:20 PM Break

3:40 PM

Strategies For Developing Bulk Materials NanoTechnology (BMN) into Industrial Products: *Daniel Branagan*¹; Brian Meacham¹; Sheng Cheng¹; Alla Sergueeva¹; ¹The NanoSteel Company

4:00 PM

Grain Refinement and Mechanical Properties of CP-Ti Processed by Warm Accumulative Roll Bonding: *Justin Milner*¹; Fadi Abu-Farha¹; Cristina Bunget¹; Vincent Hammond²; Thomas Kurfess³; ¹Clemson University; ²US Army Research Laboratory; ³Georgia Institute of Technology

4:20 PM

Crystallite Size Study of Room-Temperature Tetragonal Zirconia Stabilisation Nano-Confined by Using Electroless Nickel Cladding: *Rong-Tan Huang*¹; Shin-Ji Yang¹; Tsung-Shune Chin²; ¹National Taiwan Ocean University; ²Feng Chia University

4:40 PM

Sintering Behavior, Mechanical Properties and Wear Performance of Alumina-Magnesia Ceramic Cutting Tool: *Ayesha Arzumand*¹; Syeda Sumaiya²; AKM Rashid¹; ¹Bangladesh University of Engineering and Technology; ²University of Windsor

5:00 PM Concluding Comments

4th International Symposium on High-Temperature Metallurgical Processing: Microwave Heating, Energy and Environment

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

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

Thursday PM
March 7, 2013

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

Session Chairs: Zhiwei Peng, Michigan Technological University; Jianliang ZHANG, University of Science and Technology Beijing

2:00 PM

Microwave Reflection Loss of Ferric Oxide: *Zhiwei Peng*¹; Jiann-Yang Hwang¹; Byoung-Gon Kim²; Matthew Andriese¹; Xinli Wang¹; ¹Michigan Technological University; ²Korea Institute of Geoscience and Mineral Resources

2:20 PM

Process Optimization by Response Surface Method for Sintering of Chromite Fines by Microwave: *Jian Chen*¹; ¹Key Laboratory of Unconventional Metallurgy for Education Ministry, Kunming University of Science & Technology

2:40 PM

Life Cycle Assessment of Microwave Hot Air Systems: *Jin Chen*¹; Guo Chen¹; Jinhui Peng¹; ¹Kunming University of Science and Technology

3:00 PM

Chemical Enrichment of Precious Metals in Iron Sulfides Using Microwave Energy: *Matthew Andriese*¹; Jiann-Yang Hwang¹; Zhiwei Peng¹; Bowen Li¹; ¹Michigan Technological University

3:20 PM

Recent Progress on the Exhaust Gas Recirculation Technology of Iron Ore Sintering Process: *Zhengjian Liu*¹; Jianliang Zhang¹; ¹University of Science and Technology Beijing

3:30 PM Break

3:40 PM

Development of Bismuth Smelting Technology in China: *Tianzu Yang*¹; Jun Li¹; *Lin Chen*¹; Wanda Bin¹; Shu Bin¹; Weifeng Liu¹; ¹Central South University

4:00 PM

Recovery of Palladium and Rhodium from Spent Automobile Catalysts by Microwave Roasting: *CH Ran*¹; ¹Kunming University of Science and Technology

4:15 PM

Research on the Influence of Moulding Sand with Furan Resin on the Environment: *Mariusz Holtzer*¹; Rafal Danko¹; Artur Bobrowski¹; Sylwia Zymankowska-Kumon¹; Michal Kubecki²; ¹AGH University of Science and Technology; ²Institute for Ferrous Metallurgy

4:35 PM

Effects on the Quality of Direct Reduced Iron Made by Microwave Heating with Diverse Coals: *Linqing Dai*¹; Hongbo Zhu¹; Jinhui Peng¹; Libo Zhang¹; Dong Chen¹; ¹Kunming University of Science and Technology

4:45 PM

Prediction Method of Pre-Ignition Bed Pressure Drop in Composite Agglomeration Process: *Helei Zhang*¹; Heng Yu¹; Zhengwei Yu¹; Yuanbo Zhang¹; *Guanghui Li*¹; Tao Jiang¹; ¹School of Minerals Processing and Bioengineering, Central South University

5:05 PM

Co-Gasification Behavior of Metallurgical Coke with High and Low Reactivity: *Zuo Haibin*¹; Gao Bing¹; Zhang Jianliang¹; Wang Zhe¹; ¹University of Science and Technology Beijing

5:25 PM

Study on Swelling Behavior of Iron Ore Pellets in Direct Reduction with Coal Gas: *Zhucheng Huang*¹; Zhikai Liang¹; *Yi Lingyun*¹; Tao Jiang¹; ¹Central South University

5:40 PM

Microwave Absorbing Properties of the Cordierite-mullite: *Guo Chen*¹; Jin Chen¹; Shenghui Guo¹; Xiaojie Zhi¹; Jinhui Peng¹; ¹Kunming University of Science and Technology

Advanced Materials for Power Electronics, Power Conditioning, and Power Conversion: Capacitor and Packaging Materials for Advanced Power Electronics

Sponsored by: TMS Electronic, Magnetic, and Photonic Materials Division, TMS: Energy Conversion and Storage Committee, TMS: Magnetic Materials Committee

Program Organizers: Paul Ohodnicki, National Energy Technology Laboratory; Clive Randall, Penn State University; Michael Lanagan, Penn State University; Michael McHenry, Carnegie Mellon University; Rachel Myers-Ward, Naval Research Laboratory

Thursday PM
March 7, 2013

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

Session Chair: Michael Lanagan, Penn State

2:00 PM Invited

Fabrication of PLZT Dielectric Films for Power Inverters in Electric Drive Vehicles: *U. (Balu) Balachandran*¹; Manoj Narayanan¹; Shanshan Liu¹; Beihai Ma¹; ¹Argonne National Laboratory

2:30 PM Invited

High Dielectric Constant Polymeric Dielectric Materials with High Thermal Stability: *Shihai Zhang*¹; ¹Strategic Polymer Sciences, Inc.

3:00 PM Invited

High Energy Density and High Temperature Ceramic Multilayer Capacitors Based on Ferroelectrics: *Seongtae Kwon*¹; Edward Alberta¹; Wesley Hackenberger¹; ¹TRS Technologies

3:30 PM Break

3:50 PM

Development and Characterization of High Temperature, High Energy Density Dielectrics for Power Electronics Capacitor Applications: *Dennis Shay*¹; Niall Donnelly²; Clive Randall¹; ¹Penn State University; ²Recapping Inc.

4:10 PM

Electromigration of Sintered Nanoscale Silver Films at Elevated Temperature: *Jesus Calata*¹; Guo-Quan Lu¹; Khai Ngo¹; Luu Nguyen²; ¹Virginia Tech; ²Texas Instruments, Inc.

4:30 PM

High Field Electrical Conduction and Its Relation to Thermal Breakdown Strengths in Glass and Ceramic Capacitors: *Doo Hyun Choi¹*; Michael Lanagan¹; Clive Randall¹; ¹Penn State University

4:50 PM

Magnetic-Field Dependent Dielectric Constant of High-Frequency La-Sr-Ni Oxide: *Yang-Ki Hong¹*; Jaejin Lee¹; ¹University of Alabama

5:10 PM Invited

Potential Ceramic Dielectrics for Air Force Applications: *Charles Stutz¹*; ¹Air Force Research Laboratory

Biological Materials Science Symposium: Biomedical Materials Implants and Devices

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

Program Organizers: Candan Tamerler, University of Washington; Molly Gentleman, Texas A & M University; Po-Yu Chen, National Tsing Hua University; Kajal Mallick, University of Warwick; Rajendra Kumar Kasinath, University of Montana; Paul G. Allison, US Army Corp of Engineers

Thursday PM

March 7, 2013

Room: 214C

 Location: Henry B. Gonzalez
Convention Center

Funding support provided by: Biomaterials Program, National Science Foundation

Session Chairs: Candan Tamerler, University of Washington; Nima Rahbar, Worcester Polytechnic Institute

2:00 PM Keynote

Ice-templated Scaffolds for Bone Regeneration: *Antoni Tomsia¹*; ¹Lawrence Berkeley National Laboratory

2:40 PM

Self-Adaptive, Ultra-Compliant Shape Memory Alloys for Medical Implant Applications: *Ji Ma¹*; Ibrahim Karaman¹; ¹Texas A&M University

3:00 PM

Effects of Network Architecture and Fibre Microstructure on the Fracture Energy of Stainless Steel Fibre Networks Intended for a Fibrous Scaffold: *Suresh Neelakantan¹*; Wolfram Bosbach¹; Athina Markaki¹; ¹University of Cambridge

3:20 PM

Mechanical Properties and Biocompatibility of TNZ40 Beta Titanium Alloys: *Dong-Geun Lee¹*; Yongtai Lee¹; Xujun Mi²; Wenjun Ye²; ¹Korea Institute of Materials Science; ²General Research Institute for Nonferrous Metals

3:40 PM Break

3:50 PM Invited

Structure and Ionic Diffusion in Novel Bioactive Glasses: *Jincheng Du¹*; ¹University of North Texas

4:20 PM

Effect of Porous Size and Sintering Condition on Mechanical Property of Ti-based Porous Composite Fabricated by Spark Plasma Sintering: *Eri Miura-Fujiwara¹*; Takeyuki Kikuchi¹; Tohru Yamasaki¹; Yoshimi Watanabe²; Ego Kobayashi³; ¹University of Hyogo; ²Nagoya Institute of Technology; ³Tokyo Institute of Technology

4:40 PM

P/M Processed Titanium Foam for Biomedical Application Using Space Holder Technique: *Gaurav Gupta¹*; Mohit Sharma¹; Om Modi¹; ¹AMPRI bhopal

5:00 PM

An Investigation on the Structural Changes in Synthetic Enamel Mineral Using CW and Ultrafast Pulsed Near-IR Lasers: *Animesh Jha¹*; Gin Jose¹; Esam Elmadani¹; Monty Duggal¹; Tom Brown²; Wilson Sibbett²; Christine Crombie²; David Walsh²; Chris Leburn³; ¹University of Leeds; ²University of St Andrews; ³Heriot-Watt University

5:20 PM

Zirconia Properties Used for Dentistry Restorations: *Carlos Elias¹*; Heraldo dos Santos¹; Claudinei dos Santos²; Andrea Melo¹; ¹Instituto Militar de Engenharia; ²Universidade do Estado do Rio de Janeiro

5:40 PM

Nano-Scale Adhesion of Parylene C and Stainless Steel 316L: *Sina Youssefian¹*; Nima Rahbar²; ¹Worcester Polytechnic Institute; ²Worcester Polytechnic Institute

6:00 PM

Structural Competition and Phase Transformations in Binary Ti-Nb Alloys for Biomedical Applications: *Matthias Boenisch¹*; Christine Mickel¹; Ajit Panigrahi²; Michael Zehetbauer²; Thomas Waitz²; Annett Gebert¹; Mariana Calin¹; Werner Skrotzki³; Juergen Eckert¹; ¹IFW-Dresden; ²University of Vienna; ³TU Dresden

6:15 PM

Influence of Surface Treatment of Nitinol on Adhesion and Proliferation on Pre-Osteoblast Cells: *Waseem Haider¹*; Ryszard Rokicki²; ¹University of Texas Pan American; ²Electrobright

Characterization of Minerals, Metals and Materials 2013: Characterization for Extraction Applications

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

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

Thursday PM

March 7, 2013

Room: 206A

 Location: Henry B. Gonzalez
Convention Center

Session Chairs: Ailiang Chen, Central South University; Xuewei Lv, Chongqing University

2:00 PM

Co-Intensification of Bio-Oxidizing As-Bearing Gold Ores: *Li Qian¹*; Yuan Hong-jing¹; Yang Yong-bin¹; Jiang tao¹; Zhang Yan¹; Bai Guo-hua¹; ¹Central South University

2:20 PM

Preparation of Nano Copper Oxide Using Metal Powders Recovered from Waste Printed Circuit Boards: *Zhu Ping¹*; ¹Shanghai University

2:40 PM

The Effect of Flotation Reagents on the Gold Sorption Kinetics and Loading Capacity of Activated Carbon: *Mohammad Mehdi Salarirad¹*; Ali Behnamfar¹; ¹Amirkabir University of tech.

3:00 PM

Effect of Copper and Ammonia on Consumption of Thiosulfate in Gold Leaching Solutions: *Jiang Tao*¹; Wang Dan¹; Yang yong-bin¹; Li Qian¹; ¹Central South University

3:20 PM

Present and Development on the Process of Anode Slime Treatment in China: *Weifeng Liu*¹; Shuliang Wang²; Tianzu Yang¹; Lin Chen¹; Shu Bin¹; Wanda Bin¹; ¹Central South University; ²Lanzhou Jinchuan Advanced Materials Technology Co.,Ltd

3:40 PM

Nickel Recovery from Sukinda Chromite Overburden Using *Shewanella Putrefaciens*: *Lala Sukla*¹; Barada Mishra¹; Nilotpala Pradhan¹; Jacintha Esther¹; ¹Institute of Minerals and Materials Technology

4:00 PM

Composition Control of the Precursor of Fibrous Ni-Co Alloy Powders by Coordinated Coprecipitation: *Jing Zhan*¹; Chuan-fu Zhang¹; Yong-lin Yao¹; ¹Central South University

4:20 PM

The Contrastive Studies of Microwave and Conventional Roasting CuCl Residue from Zinc Hydrometallurgy: Lu Shuaidan¹; Yaqian Wei¹; *Shaohua Ju*¹; Jinhui Peng¹; Libo Zhang¹; ¹Key Laboratory of Unconventional Metallurgy, Kunming University of Science and Technology

4:40 PM

Organophilization of a Brazilian Kaolin Clay: *Maria das Graças Valenzuela*¹; Camila Matos²; Orley de Oliveira²; Isaac Sayeg²; Lucy de Sant'Anna²; Flavio Carvalho²; Francisco Valenzuela-Díaz²; ¹Centro Universitário Estácio Radial de São Paulo; ²Sao Paulo University

5:00 PM

Indium Extraction Process from Sulfuric Pressure Leaching Solution for Vacuum Furnace Germanium Slag: *Hongyang Cao*¹; Jimin Wang¹; Binxiu Wu²; Jian Wang²; Junhong Li²; ¹Guangzhou Research Institute of Non-Ferrous Metals; ²Shaoguan Smelter

5:20 PM

Research on Desilication Technology from Acid Leaching of High-Grade Silic Stone Coal: *Zhao Qiang*¹; ¹Changsha Research Institute of Mining and Metallurgy

5:40 PM

Reformulation of a Roofing Tiles Body: *Carlos Maurício Vieira*¹; Sergio Neves Monteiro¹; ¹State University of the North Fluminense

Characterization of Minerals, Metals and Materials 2013: Surface, Joint, and Processing of Metals

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

Program Organizers: Jiann-Yang Hwang, Michigan Technological University; Chen-Guang Bai, Chongqing University; John Carpenter, DOE LANL; Shadia Ikhamyies, Al Isra University; Bowen Li, Michigan technological University; Mingming Zhang, ArcelorMittal Global R&D; Sergio Monteiro, State University of North Rio de Janeiro; Zhiwei Peng, Michigan Technological University

Thursday PM
March 7, 2013

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

Session Chair: Ender Keskinilic, Atilim University

2:00 PM

Optimization of Process Parameters on the Siffusion Bonding of a Titanium Alloy with Titanium Alloy Sheet: *Chandrappa Kasigavi*¹; ¹Siddaganga Institute of Technology, Tumkur

2:20 PM

A Route to Fracture Prediction of Spot Welded Boron Steel in Automotive Applications: *Neill Raath*¹; Darren Hughes¹; David Norman²; Iain McGregor²; Anirban Gupta¹; Richard Dashwood¹; ¹University of Warwick; ²Tata Steel Automotive Engineering Research, Development & Technology

2:40 PM

Abrasion Behavior in Humid Condition In Tool Steels H-13 Y D-2: *Isaias Hilerio*¹; Daniel Muñoz¹; Alejandro Altamirano¹; Victor Cortés¹; ¹UAM Azcapotzalco

3:00 PM

Coating Characterization in CrN Deposited by Magnetron Sputtering Method on AISI 316 Steel: *Isaias Hilerio*¹; Miguel A. Barrón¹; Dulce Medina¹; Roberto Hernández¹; ¹UAM Azcapotzalco

3:20 PM

Grain Boundary Characterization of Crept Alloy 617: *Fan Zhang*¹; David Field¹; ¹Washington State University

3:40 PM

Microstructures and Microstructure Evolution for Inconel 718 Following Electron and Laser Beam Melt Fabrication and Heat Treatment: *K. N. Amato*¹; E. Martinez²; X. Pan³; L. Murr¹; J. Hernandez¹; S.M. Gaytan¹; C.A. Terrazas¹; E. Rodriguez¹; F. Medina¹; R.B. Wicker¹; ¹University of Texas at El Paso; ²The University of Texas at El Paso; ³Dalian University of Technology

4:00 PM

Microstructures for Niobium Fabricated by Electron Beam Melting: *Edwin Martinez*¹; Lawrence Murr¹; Jennifer Hernandez¹; X. Pan²; Krista Amato¹; P. Frigola³; Cesar Terrazas¹; Sara Gaytan¹; Emmanuel Rodriguez¹; Francisco Medina¹; Ryan Wicker¹; ¹University of Texas at El Paso; ²Dalian University of Technology; ³RadiaBeam Technologies

4:15 PM

Reduced Building-Vat-Size-Design for Process Parameter Development in Electron Beam Melting System: *Sara Gaytan*¹; Cesar Terrazas¹; Francisco Medina¹; Pedro Frigola²; Lawrence Murr²; Ryan Wicker¹; ¹UTEP; ²RadiaBeam

4:30 PM

Determination of Undercooled Liquid Heat Capacities by Levitation Drop Calorimetry: *Carl Tackes*¹; Ralph Napolitano¹; ¹Iowa State University/Ames Laboratory

Computational Thermodynamics and Kinetics: Steels and Oxides

Sponsored by: TMS Electronic, Magnetic, and Photonic Materials Division, TMS Materials Processing and Manufacturing Division, TMS: Alloy Phases Committee, TMS: Chemistry and Physics of Materials Committee, TMS/ASM: Computational Materials Science and Engineering Committee, TMS: Integrated Computational Materials Engineering Committee, TMS/ASM: Phase Transformations Committee, TMS: Process Technology and Modeling Committee

Program Organizers: Jörg Neugebauer, Max-Planck-Institut für Eisenforschung GmbH; Carelyn Campbell, NIST; Dongwon Shin, Oakridge National Lab; Zi Kui Liu, Penn State; Michael Demkowicz, Massachusetts Institute of Technology; Raymundo Arroyave, Texas A & M University; Shenyang Hu, Pacific Northwest National Laboratory

Thursday PM
March 7, 2013

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

Session Chairs: In-Ho Jung, McGill University; Richard Sisson, Worcester Polytechnic Institute

2:00 PM Invited

Modeling the Nitriding: *Richard Sisson*¹; Mei Yang; ¹WPI

2:25 PM

A New Treatment for the Kinetics of Isothermal Oxidation of Zinc Powders: *Qun Luo*¹; Qian Li¹; Jie-Yu Zhang¹; Kuo-Chih Chou²; ¹Shanghai University; ²University of Science and Technology Beijing

2:40 PM

Computation of Thermal Fields with Non-Stationary Model at Electron Beam Melting of Metals: *Katia Vutova*¹; Veliko Donchev²; Vania Vassileva²; ¹Institute of Electronics, Bulgarian Academy of Sciences; ²Institute of electronics, Bulgarian Academy of Sciences

2:55 PM

Gaseous Reduction of Iron Oxide Fines: Kinetic Parameters Estimation Using Global Minimization Algorithm: *Huiqing Tang*¹; Zhancheng Guo¹; ¹University of Science and Technology Beijing, Beijing

3:10 PM Break

3:25 PM

Kinetic Discussion on Deoxidation and Desulphurization of Molten Steel with Calcium Treatment: *Haiyan Tang*¹; Tongbo Zhang¹; Jingshe Li¹; Yanqi Song¹; ¹University of Science and Technology Beijing

3:40 PM

Experimental Grain Boundary Diffusivities in Magnesium Thin Films Using SIMS: *Ethan Ambroziak*¹; Nagraj Kulkarni²; Bruce Warmack²; Bala Radhakrishnan²; Boyd Evans III²; Kevin Coffey³; Yongho Sohn³; Jerry Hunter⁴; Jay Tuggle⁴; Graeme Murch⁵; Irina Belova⁵; ¹University of Wisconsin - Madison; ²Oak Ridge National Laboratory; ³University of Central Florida; ⁴Virginia Polytechnic Institute and State University; ⁵The University of Newcastle, Australia

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

Sponsored by: TMS Light Metals Division, TMS/ASM: Mechanical Behavior of Materials Committee

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

Thursday PM
March 7, 2013

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

Session Chair: Hongbin Bei, Oak Ridge National Laboratory

2:00 PM Invited

In-situ Neutron Diffraction Study of Microscopic Deformation Processes and the Microstructure Effect in Advanced High-Strength Steels: *Zhenzhen Yu*¹; Zhili Feng¹; Ke An¹; Ling Yang¹; Wei Zhang¹; Yanli Wang¹; Grigoreta Stoica¹; Alexandru Stoica¹; Li Sun²; Jeff Wang²; Xiaochuan Xiong²; Shawn Gayden²; Blair Carlson³; ¹Oak Ridge National Laboratory; ²General Motors China Science Lab; ³General Motors R&D Center

2:30 PM

Characterization of Beryllium Under Various Stress State Loading: *Carl Cady*¹; Donald Brown¹; Thomas Sisneros¹; Cheng Liul¹; Eric Brown¹; George Gray¹; ¹Los Alamos National Laboratory

2:50 PM

Friction Welding of γ -TiAl based Alloy Ti-47Al-3.5(Mn+Cr+Nb)-0.8(B+Si) in Investment Cast Condition - Process Development and Joint Properties: *Volker Ventzke*¹; Nikolai Kashaev¹; Heinz-Günter Brokmeier¹; Norbert Huber¹; ¹Helmholtz-Zentrum Geesthacht GmbH

3:10 PM

Effect of Nonproportional Loadings on Ductile Fracture: *Shamik Basu*¹; Amine Benzerga¹; ¹Texas A&M University

3:30 PM Break

3:40 PM

Computational Thermodynamic Calculations of Enthalpy for Constituent Phases and Effects on Deformation and Fracture: *John Chinella*¹; ¹U.S. Army Research Laboratory

4:00 PM

Phase-Field-Crystal Modeling for Crack Propagation of Ductile Materials: *Gao Yingjun*¹; ¹Guangxi University

4:20 PM

Modeling and Analysis of the Combined Roughness and Plasticity Induced Fatigue Crack Closure Process: *Justin Crapps*¹; Steve Daniewicz²; ¹Los Alamos National Lab; ²Mississippi State University

4:40 PM

Void Coalescence Modelling: Strain Hardening, Second Population and Shear Effects: *Thomas Pardoen*¹; Liza Lecarme¹; Damien Fabrègue²; Cihan Tekoglu³; Jean-Baptiste Leblond⁴; ¹UCL; ²INSA Lyon; ³TOBB University; ⁴Université Paris VI

5:00 PM

Factors Influencing Corrosion of Disintegrable Metal Composite in Downhole Applications: *Swetha Ganeshan*¹; Zhiyue Xu¹; Caleb Newman¹; ¹BHI

Magnesium-Based Biodegradable Implants Symposium: Coatings and Surface Modification

Sponsored by: TMS Electronic, Magnetic, and Photonic Materials Division, TMS Light Metals Division, TMS Structural Materials Division, TMS: Biomaterials Committee, TMS: Magnesium Committee

Program Organizers: Candan Tamerler, University of Washington; Wim Sillekens, European Space Agency

Thursday PM
March 7, 2013

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

Session Chairs: Candan Tamerler, University of Washington; Jacob Edick, Boston Scientific

2:00 PM Invited

NSF – Engineering Research Center (ERC) for Revolutionizing Metallic Biomaterials: Activities and Opportunities for Globalization: Jag Sankar¹; ¹NC A&T State University

2:30 PM

Bio-active Coatings on Magnesium Alloys for Biomedical Applications: Prashant Kumta¹; Abhijit Roy¹; Boeun Lee¹; Nicole Ostrowski¹; Satish Singh¹; Sangeetha Kunjukunju¹; Sung Jae Chung¹; ¹University of Pittsburgh

2:50 PM

Surface Modification of Mg by MgO-ZrO₂ Composite Coatings: Sankara Narayanan TSN¹; Il Song Park¹; Tae Sung Bae¹; Min Ho Lee¹; ¹Chonbuk National University

3:10 PM

Development of Biocompatible Metal and Ceramic Coatings for Biodegradable Magnesium Implants: Dhananjay Kumar¹; S Yarmolenko¹; Ram Gupta¹; Prashant Kumta¹; Kwado Darkwa-Mensah¹; ¹North Carolina A & T State Univ

3:30 PM Break

3:50 PM

Biocompatibility of Fluoride-Coated Mg/Ca Alloys in a Subcutaneous Mouse Model: Matthias Peuster¹; Juliane Seibt¹; Thomas Hassel²; Friedrich-Wilhelm Bach²; Andreas Drynda³; ¹University of Chicago; ²Leibnitz-University Hannover; ³University of Magdeburg

4:10 PM

Deposition of MgF₂ Coating on Mg by Chemical and Electrochemical Methods and Evaluation of Their Corrosion Resistance: Sankara Narayanan TSN¹; Il Song Park¹; Tae Sung Bae¹; Min Ho Lee¹; ¹Chonbuk National University

4:30 PM

Covalent Immobilization of Biomolecules on Magnesium Alloy AZ31: Joy Gray-Munro¹; K. Bissonnette; Sahajmeet Guraya¹; ¹Laurentian University

4:50 PM

Biodegradable Polymeric Coating on Surface Modified Magnesium Alloys for Controlled Degradation: Sushma Amruthaluri¹; Norman Munroe¹; Puneet Gill¹; ¹Florida International University

5:10 PM Concluding Comments Candan Tamerler / Wim Sillekens

Magnesium Technology 2013: Phase Formation

Sponsored by: TMS Light Metals Division, TMS: Magnesium Committee

Program Organizers: Norbert Hort, Helmholtz-Zentrum Geesthacht; Suveen Mathaudu, US Army Research Office; Neale Neelameggham, IND LLC; Martyn Alderman, Magnesium Elektron

Thursday PM
March 7, 2013

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

Session Chairs: Alok Singh, National Institute for Materials Science; Alan Luo, General Motors Global Research and Development

2:00 PM

Bounds to Hardening by Solid Solution, Precipitation and Short Range Order in Mg Binary Alloys: Carlos Caceres¹; Saeideh Abaspour¹; ¹The University of Queensland

2:20 PM

A New Magnesium Alloy System: TEXAS: Björn Wiese¹; Chamini Mendis¹; Carsten Blawert¹; Eric Nyberg²; Karl Kainer¹; Norbert Hort¹; ¹Helmholtz-Zentrum Geesthacht; ²Pacific Northwest National Laboratory

2:40 PM

Effect of Sn Additions on the Age Hardening Response, Microstructures and Corrosion Resistance of Mg-0.8Ca (wt%) Alloys: Chamini Mendis¹; Domonkos Tolnai¹; Carsten Blawert¹; Norbert Hort¹; ¹Helmholtz Zentrum Geesthacht

3:00 PM

Phase Stability Investigation of the Mg-Zn-Sm System: Xiangyu Xia¹; Amirreza Zadeh¹; Chuan Zhang²; Xiaojin Zeng³; Donald Stone¹; Alan Luo⁴; ¹Materials Science Program, University of Wisconsin Madison; ²Computherm LLC; ³Shanghai Jiaotong University; ⁴General Motor

3:20 PM

In Situ Synchrotron Diffraction of the Solidification of Mg-RE Alloys: Domonkos Tolnai¹; Chamini Mendis¹; Andreas Stark¹; Gábor Szakács¹; Björn Wiese¹; Karl Kainer¹; Norbert Hort¹; ¹Helmholtz Zentrum Geesthacht

3:40 PM Break

4:00 PM

Nucleation Kinetics of the γ -Phase in a Binary Mg-Al Alloy: Mehdi Lalpoor¹; J.S. Dzwonczyk¹; N. Hort²; S.E. Offerman¹; ¹TU-Delft/ Materials Innovation Institute; ²Helmholtz Zentrum Geesthacht

4:20 PM

Impurity Diffusion Coefficients of Al and Zn in Mg Determined from Solid-to-Solid Diffusion Couples: Catherine Kammerer¹; Nagraj Kulkarni²; Robert Warmack²; Kelly Perry²; Irina Belova³; Graeme Murch³; Yongho Sohn¹; ¹University of Central Florida; ²Oak Ridge National Laboratory; ³The University of Newcastle

4:40 PM

Effects of Alloying Elements and Cooling Rate on Morphology of Phases in CaO Added Mg-Al-Si Alloys: Young-Gil Jung¹; Hyun kyu Lim¹; Young-Ok Yoon¹; Shae K. Kim¹; Do Hyang Kim²; ¹KITECH; ²Yonsei University

5:00 PM

Microstructure and Phase Evolution in Mg-Gd and Mg-Gd-Nd Alloys with Additions of Zn, Y And Zr: Suzan Khawaled¹; Menachem Bamberger¹; Alexander Katsman¹; ¹Technion - Israel Institute of Technology

5:20 PM

Formation of a Honeycomb Network of Precipitates in Hot Rolled WE43 Mg-Based Alloy: *Deep Choudhuri*¹; Soumya Nag¹; Subhashish Meher¹; Nilesh Dendge¹; J Hwang¹; Rajarshi Banerjee¹; ¹University of North Texas

Microstructural Processes in Irradiated Materials: Novel Systems & Ceramics

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

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

Thursday PM
March 7, 2013

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

Session Chairs: Hidehiro Yasuda, Osaka University; Pascal Bellon, University of Illinois

2:00 PM Introductory Comments

2:10 PM Invited

On the Role of Interfaces on Radiation Damage Evolution in Oxide Heterocomposites: *Blas Ueberuaga*¹; ¹Los Alamos National Laboratory

2:40 PM

Proton Irradiation Study on Zirconium Carbide across Different Temperature and Stoichiometry: *Yina Huang*¹; ¹University of Wisconsin-Madison

3:00 PM

Ab-Initio Study of Defect Clustering in Irradiated Silicon Carbide: *Chao Jiang*¹; Dane Morgan¹; Izabela Szlufarska¹; ¹University of Wisconsin

3:20 PM Invited

Phase Field Modeling of Radiation Induced Segregation and Precipitation: *Pascal Bellon*¹; Venkatswara Manga¹; Dallas Trinkle¹; Robert Averback¹; Thomas Garnier¹; Maylise Nastar¹; ¹University of Illinois

3:50 PM Invited

MeV Electron-Irradiation-Induced Non-Equilibrium Phase Formations in Nanoparticles: *Hidehiro Yasuda*¹; ¹Osaka University

4:20 PM

MD Simulations of Radiation Effects on Thermal Properties of Multi-walled Carbon Nanotubes: *Jing Wang*¹; Di Chen¹; Lin Shao¹; ¹Texas A&M University

4:40 PM

Ab Initio Study of Radiation-Induced Amorphization Mechanisms in SiC and ZrC: *Ming-Jie Zheng*¹; Izabela Szlufarska¹; Dane Morgan¹; ¹University of Wisconsin - Madison

5:00 PM

Comparisons of Radiation Damage in He Ion and Proton Irradiated Immiscible Ag/Ni Nanolayers: *Kaiyuan Yu*¹; Yue Liu¹; Engang Fu²; Yongqiang Wang²; Michael Myers¹; Haiyan Wang¹; Lin Shao¹; Xinghang Zhang¹; ¹Texas A&M University; ²Los Alamos National Laboratory

5:20 PM

Microstructural Changes in α/β Ti and Zr alloys and Al-Mg-Si Alloy Due to Ion-Beam Irradiation: *Dhriti Bhattacharyya*¹; Pranesh Dayal¹; David Carr¹; Robert Harrison¹; Lyndon Edwards¹; Roman Voskoboinikov¹; ¹ANSTO

5:40 PM Concluding Comments

Modeling and Experimental Validation of Multiscale Mechanical Behavior from Atomic Scale to Macro Scale: Multiscale Behavior: Strength and Segregation

Sponsored by: TMS Materials Processing and Manufacturing Division, TMS Structural Materials Division, TMS: Integrated Computational Materials Engineering Committee, TMS/ASM: Mechanical Behavior of Materials Committee, TMS: Nanomechanical Materials Behavior Committee, TMS: Process Technology and Modeling Committee, TMS: Shaping and Forming Committee

Program Organizers: Nathan Mara, Los Alamos National Laboratory; Jian Wang, Los Alamos National Laboratory; Brad Boyce, Sandia National Laboratories; Jennifer Carter, Case Western Reserve University; Anthony Rollett, Carnegie Mellon University; Jonathan Zimmerman, Sandia National Laboratories

Thursday PM
March 7, 2013

Room: 211
Location: Henry B. Gonzalez
Convention Center

Session Chairs: Mark Tschopp, Mississippi State University; Arief Budiman, SunPower Corporation

2:00 PM Invited

Energetics and Length Scales of Point Defect and Element Segregation to Grain Boundaries in Fe: *Mark Tschopp*¹; Kiran Solanki²; Fei Gao³; Xin Sun³; ¹Mississippi State University; ²Arizona State University; ³PNNL

2:30 PM

Binary L12 - Intermetallics: A Statistical-Thermodynamic Modelling of Ordering Phenomena, Behavior and Properties: *Olga Semenova*¹; Regina Krachler¹; ¹University of Vienna

2:50 PM

Continuum Dislocation Dynamics Modelling of Mesoscale Deformation of Single Crystals: *Shengxu Xia*¹; Anter El-Azab¹; ¹Purdue University

3:10 PM

Geometrical Construction of $\langle \Sigma \rangle / \langle \Sigma_n \rangle$ m+1 - 90° Twist Quasi-Periodic Bi-Crystals and Their Quasi-Periodic Grain Boundaries in Cubic Crystals: *Mohammad Shamsuzzoha*¹; ¹University of Alabama

3:30 PM Break

3:40 PM

Laue Simulation from 3D Discrete Dislocation Dynamic Modelling: *Christophe Le Boullet*¹; *Steven Van Petegem*¹; Cecile Marichal¹; Jochen Senger²; Daniel Weygand²; Helena Van Swygenhoven²; ¹Paul Scherrer Institut; ²KIT

4:00 PM

Multi-Scale Constitutive Modeling for Ni3Al-Based Alloy: *Hongjian Zhang*¹; Weidong Wen¹; Haitao Cui¹; ¹Nanjing University of Aeronautics and Astronautics

4:20 PM Invited

Plasticity in the Nanoscale Cu/Nb Multilayers as Revealed by Synchrotron X-Ray Laue Microdiffraction: *Arief Budiman*¹; N. Li¹; N. Mara¹; M. Kunz²; N. Tamura²; A. Misra¹; ¹Los Alamos National Laboratory (LANL); ²Advanced Light Source (ALS)

4:50 PM

Influence of Iron on Strength of Aluminum Die Cast Alloys: *Mesut Varlioglu*¹; Goutam Mohapatra²; Satyam Sahay²; Mohamad El-Zein¹; ¹Deere & Company; ²John Deere India Pvt Ltd

5:10 PM

Improving Estimates of Fretting Wear Rates through Microscale Simulations: *Areg Hayrapetian*¹; Michael Demkowicz¹; ¹Massachusetts Institute of Technology

Ni-Co 2013: Ni and Co Hydrometallurgy

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

Thursday PM
March 7, 2013

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

Session Chairs: Violina Cocalia, Cytec Industries, Inc.; Harald Oosterhof, Umicore

2:00 PM

Continuous Co-Precipitation Behaviour and Stability of Arsenic(V) from Fe(II,III)-Al(III)-Ni(II) Sulphate Effluent Solutions: *Christoph Doerfel*¹; George Demopoulos¹; ¹McGill University

2:25 PM

Hydrochloric Acid Regeneration Via Calcium Sulfate Crystallization for Non-Ferrous Chloride Leaching Processes: *Thomas Feldmann*¹; George Demopoulos¹; ¹McGill University

2:50 PM

Hydrometallurgical Nickel Laterite Processing: A Review of Current SX Flowsheets and Industry Trends: *Adam Fischmann*¹; Shane Wiggett¹; Troy Bednarski¹; Violina Cocalia¹; Cyril Bourget¹; ¹Cytec Industries Inc.

3:15 PM

Studies on Refining Cobalt Salt Solution by Extraction Chromatography to Prepare High Purity Cobalt: Chen Song¹; Zhang Li¹; Lang Shuling¹; Cai Zhenping¹; Wang Lijun¹; ¹General Research Institute for Non-ferrous Metals

3:40 PM Break**4:00 PM**

When Laboratory Work and Operating Plant Don't Agree: Commercializing the Caron Ammonia-Ammonia Carbonate Ni Process: *Larry Southwick*¹; ¹L.M.Southwick & Assoc.

4:25 PM

Selective Production of Co & Ni Powders through Hydrothermal Reduction of Leach Solutions of A Synthetic Matte Containing Cu-Ni-Co-Fe-S: *Devabrata Mishra*¹; Kyung-Ho Park²; Kamala Sahu¹; Archana Agrawal¹; Chul-Wo Nam²; ¹National Metallurgical Laboratory (CSIR-NML); ²KIGAM

Phase Transformation and Microstructural Evolution: General Phase Transformations - Fe Based Alloys: Part II

Sponsored by: TMS Materials Processing and Manufacturing Division, TMS: Chemistry and Physics of Materials Committee, TMS/ASM: Computational Materials Science and Engineering Committee, TMS: Integrated Computational Materials Engineering Committee, TMS/ASM: Phase Transformations Committee, TMS: Process Technology and Modeling Committee, ASM: Alloy Phase Diagrams Committee

Program Organizers: Amy Clarke, Los Alamos National Laboratory; Sudarsanam Suresh Babu, Ohio State Univ; Rajarshi Banerjee, Univ of North Texas; John Morral, Ohio State Univ; Brian Gleeson, University of Pittsburgh; Carelyn Campbell, National Institute of Standards & Tech; Yongho Sohn, Univ of Central Florida; Yunzhi Wang, Ohio State University

Thursday PM
March 7, 2013

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

Session Chairs: Amy Clarke, Los Alamos National Laboratory; Sudarsanam Suresh Babu, The Ohio State University

2:00 PM Invited

Variant Selection in Heterogeneous Nucleation during Phase Transformations of Steels: *Tadashi Furuhashi*¹; Goro Miyamoto¹; ¹Institute for Materials Research, Tohoku University

2:30 PM

Microstructural Characterisation of Bainitic Bearing Steel: *Abdur Bhatti*¹; Pedro Rivera-Diaz-del-Castillo¹; ¹Cambridge University

2:50 PM

Microstructure Evolution and Mechanical Properties of Hot-rolled Medium Mn TRIP Steel: Zhihui Cai¹; *Hua Ding*¹; Xin Xue¹; Qibin Xin¹; Jun Jiang¹; ¹Northeastern University

3:10 PM

Phase Transformation and Mechanical Properties of a 0.16C-1.5Mn-1.5Al TRIP Steel: *Yongfeng Shen*¹; Y.D. Wang¹; Y.D. Liu¹; x. Sun¹; L. Zuo¹; ¹Northeastern University

3:30 PM Break**3:50 PM**

A Molecular Dynamics Simulation Study of the Austenite-Ferrite Transformation in Polycrystalline Fe: *Huajing Song*¹; Jeff Hoyt¹; ¹McMaster University

4:10 PM

Phase Transformation in a Nanostructured ODS Steel Investigated with X-Ray Diffraction: *Steven Van Petegem*¹; Patrick Schloeth²; P. Susila³; Helena Van Swygenhoven¹; ¹Paul Scherrer Institut; ²EPFL; ³Indian Institute of Technology Madras

4:30 PM

Precipitation and Abnormal Grain Growth in Low Alloy Steels: *Mohammad Abdur Razzak*¹; Michel Perez²; Thomas Sourmail²; Sophie Cazottes; Marion Frotey²; ¹INSA Lyon; ²ASCOMETAL

4:50 PM

Optimising Precipitation Hardening in High Strength Steels: *Alfonse Chamisa*¹; W Rainforth¹; Eric Palmiere¹; ¹University of Sheffield

5:10 PM

Phase Transformation and Microstructure Evolution in 304 Stainless Steel during Cryogenic Laser Shock Peening: *Chang Ye*¹; Gary Cheng²; ¹University of Cincinnati; ²Purdue University

Phase Transformation and Microstructural Evolution: Phase Field, Phase Field Crystal, Diffusive Molecular Dynamics and Related Models: Part II

Sponsored by: TMS Materials Processing and Manufacturing Division, TMS: Chemistry and Physics of Materials Committee, TMS/ASM: Computational Materials Science and Engineering Committee, TMS: Integrated Computational Materials Engineering Committee, TMS/ASM: Phase Transformations Committee, TMS: Process Technology and Modeling Committee, ASM: Alloy Phase Diagrams Committee

Program Organizers: Amy Clarke, Los Alamos National Laboratory; Sudarsanam Suresh Babu, Ohio State Univ; Rajarshi Banerjee, Univ of North Texas; John Morral, Ohio State Univ; Brian Gleeson, University of Pittsburgh; Carelyn Campbell, National Institute of Standards & Tech; Yongho Sohn, Univ of Central Florida; Yunzhi Wang, Ohio State University

Thursday PM
March 7, 2013

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

Session Chairs: W.T. Kim, Cheongju University; Ingo Steinbach, Ruhr-University; Mikko Haataja, Princeton University

2:00 PM Invited

Phase Field for Alloy Design: *Ingo Steinbach*¹; ¹Ruhr-University

2:30 PM Invited

Phase-Field Modeling for Advanced Alloy Design: *Heike Emmerich*¹; ¹University of Bayreuth

3:00 PM

Application of the Phase-Field Model to Four-Phase Reactions in Ternary Alloys: *Julia Kundin*¹; Heike Emmerich¹; ¹University Bayreuth

3:20 PM

Phase-Field Simulation and Nugget Microstructure Analysis of AZ31 Magnesium Alloy Welds: *David Montiel*¹; Lei Liu²; Lin Xiao³; Norman Zhou²; Nikolas Provatas³; ¹McMaster University; ²University of Waterloo; ³McGill University

3:40 PM Break

4:00 PM Invited

Phase Field Modeling of Microstructure Engineering in Spinodal-Type Magnetic Materials: *Yongmei Jin*¹; Stephen Hackney¹; ¹Michigan Technological University

4:30 PM

Phase Field Study of Grain Growth and Texture Evolution: Elastic Loading Effect: *Dong-Uk Kim*¹; Seong-Gyoon Kim²; Won Tae Kim³; Pil-Ryung Cha¹; ¹Kookmin University; ²Kunsan National University; ³Chongju University

4:50 PM

Phase Field Modelling of Simultaneous Formation of Ferrite and Bainite in Low-Carbon Steels: *Morteza Toloui*¹; Matthias Militzer²; ¹Centre for Metallurgical Process Engineering, University of British Columbia; ²Centre for Metallurgical Process Engineering, University of British Columbia

5:10 PM

Phase Field Modelling of Intercritical Annealing in Dual-Phase Steels: *Benqiang Zhu*¹; Matthias Militzer¹; ¹University of British Columbia

5:30 PM

Phase Field Simulation of Austenite Decomposition: *Adam Giessmann*¹; Oleg Shchygol¹; Ingo Steinbach¹; ¹Ruhr University Bochum

Symposium on High Entropy Alloys: Other Properties

Sponsored by: TMS Structural Materials Division, TMS/ASM: Mechanical Behavior of Materials Committee, TMS: Alloy Phases Committee

Program Organizers: Peter Liaw, The University of Tennessee; Gongyao Wang, University of Tennessee; M. Gao, National Energy Technology Laboratory; S. Mathaudhu, U.S. Army Research Office

Thursday PM
March 7, 2013

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

Session Chairs: Karin Dahmen, University of Illinois at Urbana Champaign; Michael Kaufman, Colorado School of Mines

2:00 PM Invited

Extracting Materials Properties from Crackling Noise and Slip Avalanche Statistics of Slowly-Sheared Materials: *Karin Dahmen*¹; Xie Xie²; James Antonaglia¹; Marina Laktionova³; Elena Tabachnikova³; Zhi Tang²; Junwei Qiao⁴; Julia Greer⁴; Jien Wei Yeh⁶; Jonathan Uhl⁷; Peter Liaw²; ¹University of Illinois at Urbana Champaign; ²University of Tennessee at Knoxville; ³National Academy of Sciences of Ukraine; ⁴Taiyuan University of Technology; ⁵Caltech; ⁶National Tsing Hua University; ⁷private

2:25 PM Invited

A Combinatorial Approach to the Investigation of Metal Systems That Form Both High Entropy Alloys and Bulk Metallic Glasses: Brian Welk¹; Peter Liaw²; Mark Gibson³; Hamish Fraser⁴; ¹The Ohio State University; ²The University of Tennessee; ³CSIRO

2:50 PM

On the Solidification and Phase Stability of a Co-Cr-Fe-Ni-Ti High-Entropy Alloy: *Yao-Jen Chang*¹; Che-Wei Tsai¹; An-Chou Yeh¹; Jien-Wei Yeh¹; ¹Dept of Materials Science and Engineering, National Tsing Hua University

3:05 PM Invited

Liquid Phase Separation in Transition Element High Entropy Alloys: Abraham Munitz¹; Rodinei Gomes¹; Gerald Bourne¹; James Cotton²; Michael Kaufman¹; ¹Colorado School of Mines; ²Boeing Research and Development

3:30 PM Break

3:45 PM Invited

Entropy in Solids: *Zi-Kui Liu*¹; ¹The Pennsylvania State University

4:10 PM

Minor Phase and Defect Effects on Fatigue Behavior of Wrought Al_{0.5}CoCrCuFeNi High-Entropy Alloys: *Zhi Tang*¹; M. Hemphill¹; T. Yuan²; G. Wang¹; J. Yeh³; C. Tsai³; P. Liaw¹; ¹The University of Tennessee; ²Ohio University; ³National Tsing Hua University

4:25 PM Invited

Other Sources of Entropy in Alloys: *Brent Fultz*¹; ¹California Institute of Technology

4:50 PM Invited

Phase Separation and Intermetallic Formation in "High-Entropy" Alloys: *Chad Parish*¹; Michael Miller¹; Louis Santodonato¹; Zhi Tang²; Peter Liaw²; ¹Oak Ridge National Laboratory; ²University of Tennessee