

# Plenary Session

Monday, June 3, 2013

9:00 AM-12:10 PM

Room: Crown

Session Chair(s): Hua-Tay Lin

**9:00 AM**

**Opening Remarks and Introduction**

H.T. Lin, ORNL

**9:10 AM**

**(PACRIM10-PL-001-2013) The Evolving R&D Model: Driving Energy Transformation through Advances in Materials Science (Invited Speaker)**

Jeffrey Wadsworth\*, Battelle Memorial Institute, USA

**9:50 AM**

**(PACRIM10-PL-002-2013) Research Activities for Future challenges in Global Energy and Environment in TOYOTA Central R&D Labs., Inc.(TCRDL) (Invited Speaker)**

Tomoyoshi Motohiro\*, TOYOTA Central R&D Labs.,Inc., Japan

**10:30 AM**

Break

**10:50 AM**

**(PACRIM10-PL-003-2013) Glass and Ceramics for Energy Applications (Invited Speaker)**

Madapusi K. Badrinarayan\*, Corning Incorporated, USA

**11:30 AM**

**(PACRIM10-PL-004-2013) Technology Trend in Lithium ion battery for Electric Vehicle and Energy Storage System Application (Invited Speaker)**

Hong-Kyu Park\*, LG Chem, Republic of Korea

# Symposium 1: Advanced Characterization and Modeling of Ceramic Interfaces

Monday, June 3, 2013

## Modeling and Control of Ceramic Interfaces

1:20 PM-5:40 PM

Room: Continental

Session Chair(s): Naoya Shibata, Masato Yoshiya

**1:20 PM**

**(PACRIM10-S01-001-2013) Prediction and Observation of Interface Structure Dependent Grain Growth Behavior in Ceramics (Invited Speaker)**

Suk-Joong L. Kang\*, KAIST, Republic of Korea

**1:50 PM**

**(PACRIM10-S01-002-2013) Design of fracture resistant ceramics by interfacial engineering (Invited Speaker)**

Michael J. Hoffmann\*, Stefan Fuenfschilling, Susanne Wagner, Theo Fett, Karlsruhe Institute of Technology, Germany

**2:20 PM**

**(PACRIM10-S01-003-2013) The Roles of Grain Boundary Complexion in Embrittlement and Stabilization of Nanocrystalline Alloys**

Yuanyao Zhang, Naixie Zhou, Jian Luo\*, University of California, San Diego, USA

**2:40 PM**

**(PACRIM10-S01-004-2013) Evaluation of**

**Segregation and Grain Growth in Ni-W and Ni-Bi Alloys**

Yuanyao Zhang\*, Jian Luo, University of California, San Diego, USA

**3:00 PM**

**(PACRIM10-S01-005-2013) High-Temperature Creep of Fully-Dense Boron Carbide (B4C) Polycrystals prepared by Spark-Plasma Sintering (SPS)**

Bibi Malmal Moshtaghioun\*, Diego Gomez-Garcia, Miguel Castillo Rodriguez, Arturo Dominguez-Rodriguez, University of Seville, Spain

**3:20 PM**

Break

**3:40 PM**

**(PACRIM10-S01-006-2013) The effect of interface and micro-crack on physical property and performance of ceramic materials**

Justin Gao\*, Corning Incorporated, USA

**4:00 PM**

**(PACRIM10-S01-007-2013) Geometric Size & Microstructure Effects on Mechanical Properties of Inorganic Nanofilms**

Sangil Hyun\*, Youngho Park, Eunhae Koo, Korea Inst. of Ceramic Engineering & Technology, Republic of Korea

**4:20 PM**

**(PACRIM10-S01-008-2013) Develop Ternary Grain Boundary Diagrams for Ternary Alloys**

Naixie Zhou\*, Jian Luo, Xiaomeng Shi, Clemson University, USA

**4:40 PM**

**(PACRIM10-S01-009-2013) Dynamics of Interfaces in Massive-Like Phase Transition of Carbon-Steel**

Manabu Watanabe\*, Kenta Nakajima, Nobufumi Ueshima, Masato Yoshiya, Tomoya Nagira, Hideyuki Yasuda, Osaka University, Japan

**5:00 PM**

**(PACRIM10-S01-010-2013) Interplay among Interface, Magnetic and Elastic energies upon Variant Selection in L10-type Ferromagnetic Alloys**  
Nobufumi Ueshima\*, Masato Yoshiya, Hideyuki Yasuda, Osaka University, Japan

**5:20 PM**

**(PACRIM10-S01-011-2013) Interface Affected Cascading In Nuclear Materials and Role of Fractal Dimensions**

You Sung Han, Vikas Tomar\*, Purdue University, USA

Tuesday, June 4, 2013

## Advanced Characterization of Ceramic Interfaces

8:30 AM-12:00 PM

Room: Continental

Session Chair(s): Albina Borisevich, Si-Young Choi

**8:30 AM**

**(PACRIM10-S01-012-2013) Grain Boundary Character, Segregation and Atomic Structures in Oxide Ceramics (Invited Speaker)**

Yuichi Ikuhara\*, The University of Tokyo/ Japan Fine Ceramics Center/ Tohoku University, Japan

**9:00 AM**

**(PACRIM10-S01-013-2013) Interface structure and configuration of mismatch dislocations in the Perovskite thin films (Invited Speaker)**

Xiuliang Ma\*, Institute of Metal Research, Chinese Academy of Sciences, China

**9:30 AM**

**(PACRIM10-S01-014-2013) Quantifying octahedral tilts in perovskite films at the nanoscale (Invited Speaker)**

Jinwoo Hwang, Junwoo Son, Susanne Stemmer\*, University of California, Santa Barbara, USA

**10:00 AM**

Break

**10:10 AM**

**(PACRIM10-S01-015-2013) In-situ TEM Investigations of Grain Boundary Formation through Electric Field Assisted Sintering (Invited Speaker)**

Klaus van Benthem\*, University of California-Davis, USA

**10:40 AM**

**(PACRIM10-S01-016-2013) Dynamic observations of dislocation-grain boundary interaction in SrTiO<sub>3</sub> by *in situ* TEM nanoindentation**

Shun Kondo\*, Tasuku Mitsuma, Eita Tochigi, Naoya Shibata, Yuichi Ikuhara, The University of Tokyo, Japan

**11:00 AM**

**(PACRIM10-S01-017-2013) Atomic structure and band gap of CuInSe<sub>2</sub> grain boundary**

Hiroyuki Yamaguchi\*, University of Tokyo, Japan; Hidenori Hiramatsu, Hideo Hosono, Tokyo Institute of Technology, Japan; Teruyasu Mizoguchi, University of Tokyo, Japan

**11:20 AM**

**(PACRIM10-S01-018-2013) Atomic-scale Structure of a (112)[1-10] Tilt Grain Boundary in TiO<sub>2</sub>**

Rong Sun\*, University of Tokyo, Japan; Mitsuhiro Saito, Tohoku University, Japan; Ryo Ishikawa, University of Tokyo, Japan; Zhongchang Wang, Susumu Tsukimoto, Tohoku University, Japan; Naoya Shibata, Yuichi Ikuhara, University of Tokyo, Japan

**11:40 AM**

**(PACRIM10-S01-019-2013) Structure, composition, and electrical property of an iron-doped alumina single grain boundary**

Kohei Kato\*, Yukio Sato, Kazutaka Obara, Nobuaki Takahashi, Naoya Shibata, Yuichi Ikuhara, The University of Tokyo, Japan

# Interface Structures and Properties in Ferroic Materials

1:20 PM-5:10 PM

Room: Continental

Session Chair(s): Klaus van Benthem, Xiuliang Ma

**1:20 PM**

**(PACRIM10-S01-020-2013) Effects of Interfaces and Surfaces on Domain Dynamics and Stabilities during Ferroelectric Switching (Invited Speaker)**

Xiaoqing Pan\*, University of Michigan, USA

**1:50 PM**

**(PACRIM10-S01-021-2013) Tracking Interacting Order Parameters at Ceramic Interfaces With Quantitative STEM (Invited Speaker)**

Albina Borisevich\*, Young-Min Kim, Oak Ridge National Laboratory, USA; Anna N Morozovska, Eugene Eliseev, National Academy of Sciences of Ukraine, Ukraine; Jun He, Sokrates T Pantelides, Vanderbilt University, USA; Stephen J Pennycook, Sergei V Kalinin, Oak Ridge National Laboratory, USA

**2:20 PM**

**(PACRIM10-S01-022-2013) Transition metal oxide superlattices (Invited Speaker)**

Jaichan Lee\*, Euiyoung Choi, Ji Won Seo, Minsu Choi, Yun Li, Taekjib Choi, Hyunjung Shin, Sungkyunkwan University, Republic of Korea; Meng Gu, University of California, USA; Chengyu Song, Computing Georgia Institute of Technology, USA; Yayoi Takamura, University of California, USA; Nigel D Browning, Lawrence Berkeley National Laboratory, USA; Yun Sang Lee, Yun-Kyung Seo, Soongsil University, Republic of Korea; Warren Pickett, University of California, USA; Christos Panagopoulos, Nanyang Technological University, Singapore

**2:50 PM**

**(PACRIM10-S01-023-2013) A study on ferroelectric**

**domain-walls using bicrystal fabrication technique**

Atsutomo Nakamura\*, Nagoya University, Japan; Eita Tochigi, Yukio Sato, Teruyasu Mizoguchi, Naoya Shibata, Yuichi Ikuhara, University of Tokyo, Japan; Katsuyuki Matsunaga, Nagoya University, Japan

**3:10 PM**

Break

**3:30 PM**

**(PACRIM10-S01-024-2013) Interface structure and property of multiferroic Fe/BaTiO<sub>3</sub> thin films**

Yinlian Zhu\*, Yunlong Tang, Xue Wang, Xiuliang Ma, Institute of Metal Research, Chinese Academy of Sciences, China

**3:50 PM**

**(PACRIM10-S01-025-2013) Atomic-Resolution Study of Ceramic Oxide Interfaces using Annular Bright-Field Imaging and Electron Energy-Loss Spectroscopy in an Aberration-Corrected Scanning Transmission Electron Microscope (Invited Speaker)**

Robert F Klie\*, Qiao Qiao, Patrick Phillips, University of Illinois at Chicago, USA; Hanghui Chen, Sohrab Ismail-Beigi, Charles Ahn, Fred Walker, Yale University, USA; Ravindranath Droopad, Texas State University, USA

**4:20 PM**

**(PACRIM10-S01-026-2013) Gigantic Strain Induced by Electric Fields in Core/Shell Structured Alkaline Niobates Polycrystals (Invited Speaker)**

Si-Young Choi\*, Korea Institute of Materials Science, Republic of Korea

**4:50 PM**

**(PACRIM10-S01-027-2013) Novel atomic-resolution STEM for ceramic interface characterization**

Naoya Shibata\*, The University of Tokyo, Japan; Scott D Findlay, Monash University, Australia; Yuichi Ikuhara, The University of Tokyo, Japan

Wednesday, June 5, 2013

## Advanced Theoretical Modeling of Ceramic Interfaces

8:30 AM-12:10 PM

Room: Continental

Session Chair(s): Jingyang Wang, Katsuyuki Matsunaga

**8:30 AM**

**(PACRIM10-S01-028-2013) Multi-axial tensile "experiment" and failure behavior in complex metallic and ceramic crystals (Invited Speaker)**

Wai-Yim Ching\*, University of Missouri, Kansas City, USA

**9:00 AM**

**(PACRIM10-S01-029-2013) Theoretical and experimental investigations of mechanical and thermal properties of Y-Lu-Si-O-N compounds (Invited Speaker)**

Jingyang Wang\*, Shenyang National Laboratory for Materials Science, Institute of Metal Research, Chinese Academy of Sciences, China

**9:30 AM**

**(PACRIM10-S01-030-2013) Heat Transport in Nano-Layered Oxides with Homo- or Hetero-Interfaces (Invited Speaker)**

Masato Yoshiya\*, Yohei Miyauchi, Masahiro Tada, Susumu Fujii, Hideyuki Yasuda, Osaka University, Japan

**10:00 AM**

Break

**10:20 AM**

**(PACRIM10-S01-031-2013) Theoretical Investigation on Interface Structure and Bonding of Metal Atoms Supported on Oxide Surfaces (Invited Speaker)**

Katsuyuki Matsunaga\*, Nagoya University, Japan

**10:50 AM**

**(PACRIM10-S01-032-2013) Ab Initio Modeling of Interfaces in Inorganic and Hybrid Materials**

Christian Bonhomme\*, Thierry Azais, Christel Gervais, Florence Babonneau, UPMC, France

**11:10 AM**

**(PACRIM10-S01-033-2013) Atomistic Analyses of Grain Boundary Segregation and its Contribution to Ionic Conductivity in M2O3-doped Zirconia**

Tatsuya Yokoi\*, Yuya Yoshizawa, Tomoya Nagira, Masato Yoshiya, Hideyuki Yasuda, Osaka University, Japan

**11:30 AM**

**(PACRIM10-S01-034-2013) Lithium ion diffusion in LiLaTiO4 ceramics: a computational study**

Jincheng Du\*, Chao-hsu Chen, University of North Texas, USA

**11:50 AM**

**(PACRIM10-S01-035-2013) Ionic Liquids Confined in Porous Chalcogenides: a Molecular Simulation Study**

Guido Ori\*, Institut Charles Gerhardt - ENSCM - Université Montpellier 2 - CNRS, France; Massimo Celino, ENEA, Italy; Carlo Massobrio, Institut de Physique et de Chimie des Matériaux de Strasbourg, France; Benoit Coasne, Massachusetts Institute of Technology, USA

# Symposium 2: Ceramics by Genome

Thursday, June 6, 2013

## Functional Ceramics

8:30 AM-10:20 AM

Room: Continental

Session Chair(s): Wai-Yim Ching

**8:30 AM**

**(PACRIM10-S02-001-2013) Tailored Functionality in Ceramic Materials (Invited Speaker)**

Ralf Riedel\*, TU Darmstadt, Germany

**9:00 AM**

**(PACRIM10-S02-002-2013) Informatics for Ceramic Crystal Chemistry (Invited Speaker)**

Krishna Rajan\*, Iowa State University, USA

**9:30 AM**

**(PACRIM10-S02-003-2013) Materials map for band gap versus dielectric constants; searching for dream dielectrics (Invited Speaker)**

Kanghoon Yim, Yong Youn, Seungwu Han\*, Seoul National University, Republic of Korea

**10:00 AM**

Break

## Structural Ceramics

10:20 AM-12:00 PM

Room: Continental

Session Chair(s): Anil Misra

**10:20 AM**

**(PACRIM10-S02-004-2013) A high throughput genome approach for screening mechanical properties of MAX phase compounds (Invited Speaker)**

Wai-Yim Ching\*, Sitaram Aryal, University of Missouri, Kansas City, USA

**10:50 AM**

**(PACRIM10-S02-005-2013) Puzzling WB3 and WB4**

Xiyue Cheng\*, Peitao Liu, Haiyang Niu, Xing-Qiu Chen, Dianzhong Li, Yiyi Li, Institute of Metal Research, Chinese Academy of Sciences, China

**11:10 AM**

**(PACRIM10-S02-006-2013) Accelerating materials property discoveries for high-temperature structural applications through ab-initio molecular dynamics simulations (Invited Speaker)**

Ridwan Sakidja\*, University of Wisconsin-Madison, USA

**11:40 AM**

**(PACRIM10-S02-007-2013) Temperature dependent mechanical properties of Mo-Si-B compounds via ab-initio molecular dynamics**

Chamila Chathuranga Dharmawardhana\*, SitaRam Aryal, University of Missouri - Kansas City, USA; Ridwan Sakidja, University of Wisconsin-Madison, USA; Wai-Yim Ching, University of Missouri - Kansas City, USA

## Methods in Genome Related Research

1:20 PM-3:40 PM

Room: Continental

Session Chair(s): Masanori Kohyama

**1:20 PM**

**(PACRIM10-S02-008-2013) Genome approach for advanced nano-layered transition-metal carbides and nitrides (Invited Speaker)**

Jingyang Wang\*, Shenyang National Laboratory for Materials Science, Institute of Metal Research, Chinese Academy of Sciences, China

**1:50 PM**

**(PACRIM10-S02-009-2013) Micromechanics based second gradient continuum mechanics theory for damage modeling of cohesive granular materials (Invited Speaker)**

Anil Misra\*, University of Kansas, USA

**2:20 PM**

**(PACRIM10-S02-010-2013) Depth of complexity necessary to describe ceramics: Case study of SrTiO<sub>2</sub>N and BaTiO<sub>2</sub>N**

Yoyo Hinuma\*, Isao Tanaka, Kyoto University, Japan

**2:40 PM**

**(PACRIM10-S02-011-2013) Stability of a Class of 2.5-Dimensional Oxides and Their Properties**

Akuto Yumura, Masato Yoshiya\*, Yasuda Hideyuki, Osaka University, Japan

**3:00 PM**

**(PACRIM10-S02-012-2013) Rational control of order-disorder transition in cubic-Bi<sub>2</sub>O<sub>3</sub> alloys**

Kazuki Shitara\*, Atsuto Seko, Yukinori Koyama, Isao Tanaka, Kyoto University, Japan

**3:20 PM**

Break

## **Surfaces, Interfaces and Glasses**

3:40 PM-5:30 PM

Room: Continental

Session Chair(s): Jingyang Wang

**3:40 PM**

**(PACRIM10-S02-013-2013) Atomic-scale characterization of ceramic interfaces by advanced transmission electron microscopy (Invited Speaker)**

Naoya Shibata\*, The University of Tokyo / JST-PRESTO, Japan

**4:10 PM**

**(PACRIM10-S02-014-2013) Multiscale Simulation of Si/SiO<sub>x</sub> interface (Invited Speaker)**

Kwang-Ryeol Lee\*, Korea Institute of Science and Technology, Republic of Korea

**4:40 PM**

**(PACRIM10-S02-015-2013) Designing Damage Resistant Glasses Guided by Computer Simulations (Invited Speaker)**

Liping Huang\*, Rensselaer Polytechnic Institute, USA

**5:10 PM**

**(PACRIM10-S02-016-2013) Ab initio study on the deformation and densification of a near-perfect continuous random network model of amorphous SiO<sub>2</sub>**

Wai-Yim Ching\*, Neng Li, University of Missouri, Kansas City, USA

Friday, June 7, 2013

## **Spectroscopy and Other Approaches in Genome Research**

8:30 AM-10:20 AM

Room: Continental

Session Chair(s): Isao Tanaka

**8:30 AM**

**(PACRIM10-S02-017-2013) Local-Energy and Local-Stress Calculations and XANES/ELNES Calculations by the PAW Method (Invited Speaker)**

Masanori Kohyama\*, Shingo Tanaka, AIST, Japan; Tomoyuki Tamura, Nagoya Institute of Technology, Japan; Yoshinori Shiihara, University of Tokyo, Japan; Shoji Ishibashi, AIST, Japan

## Energy and Bio-ceramics

**9:00 AM**

**(PACRIM10-S02-018-2013) First-principles calculations of XANES/ELNES spectra of TiO-SiO glasses**

Tomoyuki Tamura\*, Nagoya Institute of Technology, Japan; Shingo Tanaka, Masanori Kohyama, National Institute of Advanced Industrial Science and Technology, Japan

**9:20 AM**

**(PACRIM10-S02-019-2013) Elastic, Electronic and XANES Spectral Calculations of Doped Hydroxyapatite (HAP) Crystals**

Sita Ram Aryal\*, University of Missouri, Kansas City, USA; Katsuyuki Matsunaga, Nagoya University, Japan; Paul Rulis, Wai-Yim Ching, University of Missouri, Kansas City, USA

**9:40 AM**

**(PACRIM10-S02-020-2013) Modification of Planar Defects by Impurity Segregation and Resultant Properties of TiO<sub>2</sub>-x**

Tatsuya Yokoi\*, Yohei Miyauchi, Masato Yoshiya, Hideyuki Yasuda, Osaka University, Japan

**10:00 AM**

Break

10:20 AM-11:10 AM

Room: Continental

Session Chair(s): Kwang-Ryeol Lee

**10:20 AM**

**(PACRIM10-S02-021-2013) Data mining of lithium super-ionic conducting oxides from first principles (Invited Speaker)**

Isao Tanaka\*, Koji Fujimura, Atsuto Seko, Yukinori Koyama, Kyoto University, Japan; Akihide Kuwabara, JFCC, Japan

**10:50 AM**

**(PACRIM10-S02-022-2013) Theoretical Defect Energetics of Carbonate Ions in Hydroxyapatite**

Katsuyuki Matsunaga\*, Tomonori Kubota, Kazuaki Toyoura, Atsutomo Nakamura, Nagoya University, Japan



# Symposium 3: Novel, Green, and Strategic Processing and Manufacturing Technologies

Thursday, June 6, 2013

## Advanced Composite and Hybrid Processes

8:30 AM-12:10 PM

Room: Hanover

Session Chair(s): Eugene Medvedovski, Nahum  
Travitzky

**8:30 AM**

**(PACRIM10-S03-001-2013) Easy machinable SiC  
ceramics (Invited Speaker)**

Pavol Sajgalik\*, Miroslav Hnatko, Zoltan Lences,  
Frantiska Frajkorova, Evelyn Bolanos, Institute of  
Inorganic Chemistry, Slovak Academy of Sciences,  
Slovakia

**8:50 AM**

**(PACRIM10-S03-002-2013) Electromagnetic  
properties of structural ceramics and composites  
(Invited Speaker)**

Xiaowei Yin\*, Litong Zhang, Laifei Cheng,  
Northwestern Polytechnical University, China;  
Nahum Travitzky, Peter Greil, University of  
Erlangen-Nuernberg, Germany

**9:10 AM**

**(PACRIM10-S03-003-2013) In situ fabrication of  
graphene/SiC nanocomposites by spark plasma  
sintering**

Pilar Miranzo\*, Cristina Ramirez, Benito Román-  
Manso, Institute of Ceramics and Glass, CSIC, Spain;

Humberto R Gutiérrez, University of Louisville,  
USA; Mauricio Terrones, The Pennsylvania State  
University, USA; Carmen Ocal, Institut de Ciència de  
Materials de Barcelona (CSIC), Spain; M. Isabel  
Osendi, Manuel Belmonte, Institute of Ceramics  
and Glass, CSIC, Spain

**9:30 AM**

**(PACRIM10-S03-004-2013) WO3**

**nanowire/graphene composite film with highly  
improved electrochromic performance in visible-  
near infrared spectroscopy**

Guo fa Cai, Gao neng Fan, Jia heng Zhang, Ding  
Zhou, Chang dong Gu, Xiu li Wang, Jiang ping Tu\*,  
State Key Laboratory of Silicon Materials, Key  
Laboratory of Advanced Materials and Applications  
for Batteries of Zhejiang Province and Department  
of Materials Science and Engineering, China

**9:50 AM**

**(PACRIM10-S03-005-2013) Synthesis and  
Characterization of SiC-Carbon Nanocomposites**

Zhenbao Li\*, Xiaoqian Wang, Yiguang Wang,  
Northwestern Polytechnical University, China;  
Linan An, University of Central Florida, USA

**10:10 AM**

Break

**10:30 AM**

**(PACRIM10-S03-006-2013) Processing of Ceramic-  
Metal Composites (Invited Speaker)**

Nahum Travitzky\*, Peter Greil, University of  
Erlangen-Nuremberg, Germany

**10:50 AM**

**(PACRIM10-S03-007-2013) Thermal reduction of  
Si3N4-GO composites by spark plasma sintering**

Maria Isabel Osendi\*, Cristina Ramirez, Pilar  
Miranzo, Manuel Belmonte, Spanish National  
Research Council (CSIC), Spain; Filipe M Figueiredo,  
University of Aveiro, CICECO, Portugal; Sofia M  
Vega-Diaz, Shinshu University, Japan; Mauricio  
Terrones, The Pennsylvania State University, USA

**11:10 AM**

**(PACRIM10-S03-008-2013) Thermal Diffusion Coatings for Wear-Resistant Components for Oil and Gas Industry**

Eugene Medvedovski\*, Fred A Chinski, Jim Stewart, Endurance Technologies Inc., Canada

**11:30 AM**

**(PACRIM10-S03-009-2013) Silicon carbide coating by using polycarbosilane**

Ken'ichiro Kita\*, Tatsuki Ohji, Naoki Kondo, National Institute of Advanced Industrial Science and Technology (AIST), Japan

**11:50 AM**

**(PACRIM10-S03-010-2013) Ultra-High Temperature Coatings for Oxidation Protection of C/SiC Composites**

Xiangyu Zhang\*, Shaoming Dong, Le Gao, Zhen Wang, Yusheng Ding, Ping He, Haijun Zhou, Yanmei Kan, Chunjing Liao, Shanghai Institute of Ceramics, Chinese Academy of Sciences, China

## Design-oriented Manufacturing and Processing

1:20 PM-6:00 PM

Room: Hanover

Session Chair(s): Zoltan Lences, Tadachika Nakayama

**1:20 PM**

**(PACRIM10-S03-011-2013) Synthesis of Morphologically Special Nanostructures through 3D Oriented Aggregation Controlled Growth (Invited Speaker)**

Lian Gao\*, Shanghai Jiao Tong University, China

**1:40 PM**

**(PACRIM10-S03-012-2013) Activated carbon based feedstock systems for near net-shape production of green bodies for SiSiC ceramics via liquid silicon infiltration (LSI) process**

Steffen Weber\*, German Aerospace Center,

Germany; Frank Sommer, Frank Kern, University of Stuttgart, Germany; Dietmar Koch, Heinz Voggenreiter, German Aerospace Center, Germany; Rainer Gadow, University of Stuttgart, Germany

**2:00 PM**

**(PACRIM10-S03-013-2013) Field-Induced Orientation of Ceramics Particles in Hybrid Materials Using Microscopic Mold**

Tadachika Nakayama\*, Takeshi Fujihara, Hong Baek Cho, Weihua Jiang, Tsuneo Suzuki, Hisayuki Suematsu, Koichi Niihara, Nagaoka University of Technology, Japan

**2:20 PM**

**(PACRIM10-S03-014-2013) Flash sintering of YSZ-alumina composite**

Kiran S Naik\*, University of Trento, Italy; Rishi Raj, University of Colorado at Boulder, USA; Vincenzo M Sglavo, University of Trento, Italy

**2:40 PM**

**(PACRIM10-S03-015-2013) Optimized Shaping Process for Transparent Spinel Ceramic**

Alfred Kaiser\*, LAEIS GmbH, Luxembourg; Thomas Hutzler, Andreas Krell, Fraunhofer Institute for Ceramic Technologies and Systems, Germany; Robert Kremer, ALPHA CERAMICS GmbH, Germany

**3:00 PM**

**(PACRIM10-S03-016-2013) Synthesis and sintering of ZnS powders for infrared optical applications**

Yiyu Li, Yiquan Wu\*, Alfred University, USA

**3:20 PM**

Break

**3:40 PM**

**(PACRIM10-S03-017-2013) Europium and Cerium-Doped Ternary Silicon Nitride-Based Phosphors - Electronic Structure and Luminescent Properties**

Zoltan Lences\*, Monika Hrabalova, Ismail Ibrahim, Lubomir Benco, Pavol Sajgalik, Institute of Inorganic Chemistry, Slovak Academy of Sciences, Slovakia

University, Thailand

Friday, June 7, 2013

## Novel Synthesis and Processing

8:30 AM-11:50 AM

Room: Hanover

Session Chair(s): Vojislav Mitic, Do Kyung Kim

**8:30 AM**

**(PACRIM10-S03-024-2013) Ice-templated Porous LiFePO<sub>4</sub> Cathodes for High Performance Lithium Ion batteries**

Wook Ki Jung, San Moon, Dong Seok Kim, Do Kyung Kim\*, Korea Advanced Institute of Science and Engineering (KAIST), Republic of Korea

**8:50 AM**

**(PACRIM10-S03-025-2013) Highly closed porous thermal insulators from gelation freezing route**

Manabu Fukushima\*, Yu-ichi Yoshizawa, National Institute of Advanced Industrial Science and Technology (AIST), Japan

**9:10 AM**

**(PACRIM10-S03-026-2013) Fabrication of Porous Reaction Bonded Silicon Carbide with Multi-Layered Pore Structures**

Gyoungsun Cho\*, Sung-Ho Yun, Sang Whan Park, KIST, Republic of Korea

**9:30 AM**

**(PACRIM10-S03-032-2013) Porous Si<sub>3</sub>N<sub>4</sub> ceramics prepared via nitridation of Si powder**

Yu-Ping Zeng\*, D. Yao, D. Jiang, Shanghai Institute of Ceramics, Chinese Academy of Sciences, China

**9:50 AM**

**(PACRIM10-S03-027-2013) Sintering and characterization of asymmetric CGO bi-layers for oxygen membranes**

**4:00 PM**

**(PACRIM10-S03-018-2013) Preparation of Silicon Nitride Ceramics with High Thermal Conductivity and High Fracture Toughness via a Reaction Sintering Route**

You Zhou\*, Tatsuki Ohji, Hideki Hyuga, Yu-ichi Yoshizawa, Norimitsu Murayama, Kiyoshi Hirao, National Institute of Advanced Industrial Science and Technology (AIST), Japan

**4:20 PM**

**(PACRIM10-S03-019-2013) Low cost silicon nitride fabricated from beta powder**

Naoki Kondo\*, Mikinori Hotta, Tatsuki Ohji, National Institute of Advanced Industrial Science and Technology (AIST), Japan

**4:40 PM**

**(PACRIM10-S03-020-2013) Fabrication of highly dense pure SiC ceramics via the HTPVT method**

JianFeng Yang\*, Bobo Liu, Peiyun Dai, Xi'an Jiaotong University, China

**5:00 PM**

**(PACRIM10-S03-021-2013) Automated & Hand Held Systems for the Elemental Analysis & Sorting of Glass**

Martin Weiss\*, BT Wolfgang Binder GmbH, Austria; Ken Smith, Olympus NDT, USA

**5:20 PM**

**(PACRIM10-S03-022-2013) Green Portland Cement Production Using Nanometric Catalysts for Low Temperature CaSO<sub>4</sub> Decomposition**

Octavio Dominguez\*, Instituto de Metalurgia, Mexico; Luisa Flores-Velez, Faculty of Chemistry UASLP, Mexico; Roberto Torres, Mexichem Fluor, Mexico

**5:40 PM**

**(PACRIM10-S03-023-2013) Use of the HDPE Catalyst Production By-product as a Filler in Papermaking**

Wantanee Buggakupta\*, Kuntinee Suvarnakich, Somporn Chairrekij, Auchata Niravittanon, Thawanrat Apisampinwong, Chulalongkorn

Andreas Franz-Josef Kaiser\*, Søren P Foghmoes, Jürgen Malzbender, Goran Pecanac, Vincenzo Esposito, Julie Glasscock, Peter V Hendriksen, Danish Technical University (DTU), Denmark

**10:10 AM**

Break

**10:30 AM**

**(PACRIM10-S03-028-2013) Soft Processing of Advanced Ceramic Films and Coatings Beyond the Synthesis of Nano-Particles (Invited Speaker)**

Masahiro Yoshimura\*, National Cheng Kung University, Taiwan

**10:50 AM**

**(PACRIM10-S03-029-2013) Hydrothermal Synthesis of  $Ba_{1-x}M_xTiO_3$  Nanopowder and its Characterization**

Changyeon Baek, San Moon, KAIST, Republic of Korea; Chang-Hak Choi, SAMSUNG Electromechanics, Republic of Korea; Do Kyung Kim\*, KAIST, Republic of Korea

**11:10 AM**

**(PACRIM10-S03-030-2013) BaTiO<sub>3</sub>- Ceramics Consolidation: New Approach to Structure Control**

Vojislav Mitic\*, V. Paunovic, University of Nis, Serbia; S. Jankovic, Mathematical Institute, SASA, Serbia; Lj. Kocic, M. Miljkovic, University of Nis, Serbia; V. Pavlovic, Institute of Technical Sciences of SASA, Serbia

**11:30 AM**

**(PACRIM10-S03-031-2013) Properties of SiC ceramics from gelcasting and pressureless sintering**

Jingxian Zhang\*, Dongliang Jiang, Qingling Lin, Zhongming Chen, Zhengren Huang, Shanghai Institute of Ceramics, China

# Symposium 4: Polymer Derived Ceramics and Composites

Monday, June 3, 2013

## Chemistry of PDCs

1:20 PM-3:40 PM

Room: Garden

Session Chair(s): Ralf Riedel

**1:20 PM**

**(PACRIM10-S04-001-2013) Conversion of Polysilazanes into Hybrid and Ceramic Materials (Invited Speaker)**

Yoshiyuki Sugahara\*, Waseda University, Japan

**1:50 PM**

**(PACRIM10-S04-002-2013) PDC-Carbon Hybrids**

Yigal Blum\*, SRI International, USA

**2:10 PM**

**(PACRIM10-S04-003-2013) "Click" elaboration of multielement composites ZrC/SiC using the polymer-derived ceramics route**

Romain Lucas\*, Fabien Bouzat, Yann Leconte, Alexandre Maître, Sylvie Foucaud, Laboratory SPCTS, France

**2:30 PM**

**(PACRIM10-S04-004-2013) Synthesis of Non-oxide Ceramic Powder by Simple Spray Granulation**

Jiabei He\*, Yiguang Wang, Linan An, Science and technology on Thermostructure Composite Materials Laboratory, China

**2:50 PM**

**(PACRIM10-S04-005-2013) Chemical Design of Nanostructured Polymer-Derived Ceramics (Invited Speaker)**

Gabriela Mera\*, Ralf Riedel, Technische Universität

Darmstadt, Germany

**3:20 PM**

Break

## Chemistry and Thermodynamics of PDCs

3:40 PM-6:00 PM

Room: Garden

Session Chair(s): Yigal Blum

**3:40 PM**

**(PACRIM10-S04-006-2013) Thermodynamics of Polymer Derived Ceramics and Composites: New Experimental Insights (Invited Speaker)**

Amir Hossein Tavakoli\*, Alexandra Navrotsky, University of California, USA

**4:10 PM**

**(PACRIM10-S04-007-2013) Phase Composition and Crystallization of Metal-Modified Silicon Oxycarbides: A Thermodynamic Assessment**

Emanuel Ionescu\*, TU Darmstadt, Germany; Alexandra Navrotsky, University of California at Davis, USA; Ralf Riedel, TU Darmstadt, Germany

**4:30 PM**

**(PACRIM10-S04-008-2013) Polymer-Derived Nitrides (Invited Speaker)**

Mirna Bechelany, Wenly Zhong, Chrystelle Salameh, Georges Moussa, Samuel Bernard\*, Philippe Miele, Institut Européen des Membranes, France

**5:00 PM**

**(PACRIM10-S04-009-2013) Comparison of the microstructures of SiCN and SiBCN ceramics**

Stefania Hapis\*, Hans-Joachim Kleebe, Technische Universität Darmstadt, Geomaterial Science Institute, Germany; Yan Gao, Gabriela Mera, Ralf Riedel, Technische Universität Darmstadt, Materials Science Institute, Germany

**5:20 PM**

**(PACRIM10-S04-010-2013) Carbon Mobility in SiCO and SiCN Polymer-Derived Ceramics**

Hans-Joachim Kleebe\*, Katharina Nonnenmacher, Technische Universität Darmstadt, Geomaterial Science Institute, Germany; Jochen Rohrer, Technische Universität Darmstadt, Materials Modelling Division, Germany; Emanuel Ionescu, Ralf Riedel, Technische Universität Darmstadt, Materials Science Institute, Germany

**5:40 PM**

**(PACRIM10-S04-011-2013) Structural Evolution of Free-Carbon Phase in Polymer-Derived Ceramics**

Kewei Wang\*, Baisheng Ma, Yiguang Wang, Northwestern Polytechnical University, China; Linan An, University of Central Florida, USA

Tuesday, June 4, 2013

## Modeling and Nano-Structure of PDCs

8:30 AM-10:10 AM

Room: Garden

Session Chair(s): Peter Kroll

**8:30 AM**

**(PACRIM10-S04-012-2013) Modeling structure and properties of amorphous silicon boron nitride ceramics (Invited Speaker)**

Christian Schoen\*, Max Planck Institute for Solid State Research, Germany

**9:00 AM**

**(PACRIM10-S04-013-2013) Controlled Volume Fraction Si<sub>3</sub>N<sub>4</sub>/SiC Nanocomposites from Polysilazane-Derived Ceramics**

Kevin T Strong\*, Rajendra K Bordia, University of Washington, USA

**9:20 AM**

**(PACRIM10-S04-014-2013) Solute Atoms and Grain Boundary Segregated Atoms in Covalent**

**Bonded Crystals (Invited Speaker)**

Yuichi Ikuhara\*, The University of Tokyo/ Japan Fine Ceramics Center/ Tohoku University, Japan

**9:50 AM**

Break

## Energy and Functional Applications I

10:10 AM-12:00 PM

Room: Garden

Session Chair(s): Isabel Kinski

**10:10 AM**

**(PACRIM10-S04-015-2013) Research and development of Si-O-C anode for rechargeable lithium ion batteries (Invited Speaker)**

Kiyoshi Kanamura\*, Tokyo Metropolitan University, Japan; Hiroshi Fukui, Dow Corning Toray Company Ltd., Japan; Yongcheng Jin, Motoko Nagasaki, Eizo Nagahisa, Tokyo Metropolitan University, Japan

**10:40 AM**

**(PACRIM10-S04-016-2013) The possibility of SiOC/C and Si-C/C derived from poly(phenylcarbosilane) as anode material for lithium ion battery**

Yoon Joo Lee\*, Younghee Kim, Ji Yeon Ryu, Soo Ryong Kim, Woo Teck Kwon, KICET, Republic of Korea

**11:00 AM**

**(PACRIM10-S04-017-2013) Polymer-derived SiOC/Carbon nanotube Shell/Core Composite as a Stable Li-ion Battery Anode**

Romil Bhandavat, Gurpreet Singh\*, Kansas State University, USA

**11:20 AM**

**(PACRIM10-S04-018-2013) Understanding Li Insertion in Polymer-Derived SiCO Ceramics**

Peter Kroll\*, UT Arlington, USA

**11:40 AM**

**(PACRIM10-S04-019-2013) A novel process for in situ growth of carbon nanotubes in cellular polymer derived ceramics and their electrical properties**

Yuqing Peng\*, Kaishi Wang, Rajendra K Bordia, University of Washington, USA

## Energy and Functional Applications II

1:20 PM-3:30 PM

Room: Garden

Session Chair(s): Emanuel Ionescu

**1:20 PM**

**(PACRIM10-S04-020-2013) Polymer Derived Ceramic Nanocomposites with Tailored Functionalities for Energetic and Environmental Applications (Invited Speaker)**

Mahdi Seifollahi Bazarjani\*, Aleksander Gurlo, Ralf Riedel, Technische Universitaet Darmstadt, Germany

**1:50 PM**

**(PACRIM10-S04-021-2013) Complex Impedance of Polymer-Derived Ceramics**

Baisheng Ma\*, Kewei Wang, Yiguang Wang, Northwestern Polytechnical University, China; Linan An, University of Central Florida, USA

**2:10 PM**

**(PACRIM10-S04-022-2013) Dielectric properties of polymer derived Fe-SiCN ceramics in X-band**

Quan Li\*, Xiaowei Yin, Wenyan Duan, Binglei Hao, Science and Technology on Thermostructural Composite Materials Laboratory, Northwestern Polytechnical University, China

**2:30 PM**

**(PACRIM10-S04-023-2013) Photoluminescent properties of polymer derived ceramics at near stoichiometric SiO<sub>2</sub>-x(SiC)-y(H) compositions**

Masaki Narisawa\*, Taketoshi Kawai, Osaka

Prefecture University, Japan; Seiji Watase, Kimihiro Matsukawa, Osaka Municipal Technical Research Institute, Japan; Akihiro Iwase, Osaka Prefecture University, Japan

**2:50 PM**

**(PACRIM10-S04-024-2013) Silicate and Silicon Oxynitride Phosphors from Preceramic Polymers and Nano-sized Fillers**

Enrico Bernardo, Enrico Storti, Paolo Colombo\*, University of Padova, Italy

**3:10 PM**

Break

## Processing of PDCs: Coatings

3:30 PM-6:00 PM

Room: Garden

Session Chair(s): Paolo Colombo

**3:30 PM**

**(PACRIM10-S04-025-2013) Polymer-Derived Advanced Ceramic Coatings (Invited Speaker)**

Guenter Motz\*, University of Bayreuth, Germany

**4:00 PM**

**(PACRIM10-S04-026-2013) In-Plane Stress in Sol-Gel-Derived Oxide Thin Films (Invited Speaker)**

Hiromitsu Kozuka\*, Kentaro Ohno, Ryohei Kojima, Shunsuke Nakanishi, Hiroaki Uchiyama, Yuta Ishikawa, Tadaomi Kurisu, Takatoshi Akase, Tetsuya Iwase, Kansai University, Japan

**4:30 PM**

**(PACRIM10-S04-027-2013) Control of surface energy of silicon oxynitride films derived from perhydropolysilazane**

Kaishi Wang\*, Xiaohao Zheng, University of Washington, USA; Martin Günthner, University of Bayreuth, Germany; Fumio Ohuchi, Brian D Flinn, University of Washington, USA; Günter Motz, University of Bayreuth, Germany; Rajendra K Bordia, University of Washington, USA

**4:50 PM**

**(PACRIM10-S04-028-2013) High emissivity coatings based on polysilazanes for flexible thin-film solar cells**

Martin Günthner\*, Markus Pscherer, University of Bayreuth, Germany; Christian Kaufmann, Helmholtz Centre Berlin for Materials and Energy (HZB), Germany; Günter Motz, University of Bayreuth, Germany

**5:10 PM**

**(PACRIM10-S04-029-2013) Advanced Coatings based on Polyphenylcarbosilanes (Invited Speaker)**

Younghee Kim\*, Yoon Joo Lee, Woo Teck Kwon, Soo Ryong Kim, Jong Il Kim, Korea Institute of Ceramic Engineering and Technology, Republic of Korea

**5:40 PM**

**(PACRIM10-S04-030-2013) Polymer-Assisted Deposition Epitaxial Molybdenum Nitride Films**

Hongmei Luo\*, New Mexico State University, USA; Guifu Zou, Soochow University, China

Wednesday, June 5, 2013

## Processing of PDCs: Porous Ceramics and Membranes I

8:30 AM-10:20 AM

Room: Garden

Session Chair(s): Yuji Iwamoto

**8:30 AM**

**(PACRIM10-S04-031-2013) Carbon Materials by Chlorine Treatment of PDCs (Invited Speaker)**

Volker Presser\*, INM Leibniz Institute for New Materials, Germany

**9:00 AM**

**(PACRIM10-S04-032-2013) Fabrication of porous ceramics via 3D indirect printing**

Andrea Zocca, Cynthia Gomes, Jens Guenster, BAM Federal Institute for Materials Research and Testing, Germany; Paolo Colombo\*, University of Padova, Italy

**9:20 AM**

**(PACRIM10-S04-033-2013) Controlled Pore Morphology of Foamed Silicon Carbide from Allylhydridopolycarbosilane**

Shelly Arreguin\*, Rajendra K Bordia, University of Washington- Seattle, USA

**9:40 AM**

**(PACRIM10-S04-034-2013) Siliconboronoxycarbide (SiBOC) foams from methyl borosiloxane**

Tobias Fey, Sreejith Krishnan\*, Peter Greil, University Erlangen-Nuremberg, Germany

**10:00 AM**

Break

## Processing of PDCs: Porous Ceramics and Membranes II

10:20 AM-12:10 PM

Room: Garden

Session Chair(s): Samuel Bernard

**10:20 AM**

**(PACRIM10-S04-035-2013) Characterisation and simulation of graded cellular polymer derived ceramics (Invited Speaker)**

Tobias Fey\*, Bruno-Ceron Nicolat, Friedrich Wolff, Andrea Dakkouri-Baldauf, Helmut Münsted, Peter Greil, University Erlangen-Nuremberg, Germany

**10:50 AM**

**(PACRIM10-S04-036-2013) Organic-inorganic layered membrane for selective hydrogen permeation together with dehydration**

Keita Miyajima, Tomokazu Eda, Balagopal N Nair, Noritake Co., Limited, Japan; Yuji Iwamoto\*, Graduate School of Engineering, Nagoya Institute of Technology, Japan



**11:10 AM**

**(PACRIM10-S04-037-2013) Synthesis and characterization of organoamino group-functionalized amorphous silica**

Yuji Iwamoto\*, Takaaki Hiramatsu, Takahiro Onishi, Akira Kawai, Sawao Honda, Graduate School of Engineering, Nagoya Institute of Technology, Japan

**11:30 AM**

**(PACRIM10-S04-038-2013) Synthesis of hierarchical porous SiCO monoliths from preceramic polymer impregnated with porous templates**

Xuehua Yan\*, Institute for Advanced Materials, China; Jianmei Pan, School of Materials Science and Engineering, China; Xiaonong Cheng, Institute for Advanced Materials, China; Chenghua Zhang, Guifang Xu, School of Materials Science and Engineering, China

**11:50 AM**

**(PACRIM10-S04-039-2013) Non-oxide Porous Si-C-N Ceramics Fabricated Using Random Copolymers as Precursors**

Xiaoqian Wang\*, Northwestern Polytechnical University, China; Jie Kong, Yiguang Wang, Linan An, University of Central Florida, USA

Thursday, June 6, 2013

## Processing of PDCs: Fibers

8:30 AM-10:30 AM

Room: Garden

Session Chair(s): Guenter Motz

**8:30 AM**

**(PACRIM10-S04-040-2013) Preparation and Properties of polymer-derived boron nitride fibers**

Yingde Wang\*, Yongpeng Lei, Yongcai Song, National University of Defence Technology, China

**8:50 AM**

**(PACRIM10-S04-041-2013) SiC and SiC/Al<sub>2</sub>O<sub>3</sub> nanofibers from electrospinning**

Fengjiao Liu\*, Fei Peng, Clemson University, USA

**9:10 AM**

**(PACRIM10-S04-042-2013) Electrospinning of ceramic nanofibers from preceramic polymers**

Anran Guo, Martina Roso, Modesti Michele, Paolo Colombo\*, University of Padova, Italy

**9:30 AM**

**(PACRIM10-S04-043-2013) Influence of polymer architecture of different polysilazanes on the processing of ceramic SiCN fibers**

Octavio Flores\*, Walter Krenkel, Günter Motz, University of Bayreuth, Germany

**9:50 AM**

**(PACRIM10-S04-044-2013) Effect of the pyrolysis atmosphere on the preparation of BN fiber from poly[(alkylamino)borazine]**

Yongpeng Lei\*, Chengmin Su, Guangxiang Yi, Yingde Wang, National University of Defense Technology, China

**10:10 AM**

Break

## Processing of PDCs: Composites and Nano- composites I

10:30 AM-11:50 AM

Room: Garden

Session Chair(s): Pavol Sajgalik

**10:30 AM**

**(PACRIM10-S04-045-2013) Polymer precursors to ceramics for composite structures in extreme environments (Invited Speaker)**

Olivier Sudre\*, Teledyne Scientific Company, USA

**11:00 AM**

**(PACRIM10-S04-046-2013) Processing of Ultra-High Temperature Ceramic Matrix Composites via Polymer-Derived Ceramics (Invited Speaker)**

Michael Cinibulk\*, AFRL, USA; Carmen Carney, UES, Inc., USA; Clifford Leslie, AFRL, USA; Hyun Jun Kim, UES, Inc., USA; Kelli Walker, AFRL, USA

**11:30 AM**

**(PACRIM10-S04-047-2013) Carbon Nanotube Reinforced Polymer Derived Ceramic nanocomposites**

Kun Yang\*, Laifei Cheng, Northwestern Polytechnical University, China; Linan An, Gang Shao, University of Central Florida, USA

## **Processing of PDCs: Composites and Nano- composites II**

1:20 PM-3:20 PM

Room: Garden

Session Chair(s): Raj Bordia

**1:20 PM**

**(PACRIM10-S04-048-2013) Functionalization of nitride engineering ceramics by polymer derived sintering aids (Invited Speaker)**

Pavol Sajgalik\*, Zoltan Lences, Institute of Inorganic Chemistry, Slovak Academy of Sciences, Slovakia; Ralf Riedel, Hans Joachim Kleebe, Technische Universität Darmstadt, Germany

**1:50 PM**

**(PACRIM10-S04-049-2013) Preceramic Polymer-Derived Sialon as Sintering Aid for Silicon Nitride**

Zoltan Lences\*, Institute of Inorganic Chemistry, Slovak Academy of Sciences, Slovakia; Enrico Bernardo, Giulio Parciannelo, Paolo Colombo, Universita di Padova, Italy; Pavol Sajgalik, Institute of Inorganic Chemistry, Slovak Academy of Sciences, Slovakia

**2:10 PM**

**(PACRIM10-S04-050-2013) Alkaline Earth-Modified Polysiloxane-Derived SiOC-Bonded SiC Ceramics (Invited Speaker)**

Young-Wook Kim\*, Jung-Hye Eom, Byung Jun Jung, University of Seoul, Republic of Korea

**2:40 PM**

**(PACRIM10-S04-051-2013) Preceramic polymers filled with highly-aligned platelets**

Giulio Parciannelo\*, Ulrich Vogt, Andreas Züttel, EMPA - Swiss Federal Laboratories for Materials Science and Technology, Switzerland

**3:00 PM**

**(PACRIM10-S04-052-2013) Si-based ceramic nanocomposites (NCs) prepared from preceramic polymers**

Mirna Bechelany\*, Centre Européen de la Céramique, SPCTS, France; Bernard Samuel, Miele Philippe, Institut Européen des Membranes, France

# Symposium 5: Advanced Powder Processing and Manufacturing Technologies

Wednesday, June 5, 2013

## Composite Structure Control by Powder Processing

8:30 AM-10:20 AM

Room: Stuart

Session Chair(s): Sujanto Widjaja, Tetsuo Uchikoshi

**8:30 AM**

**(PACRIM10-S05-001-2013) Powder Processing Approaches for Advanced Structural Composites (Invited Speaker)**

Andre R Studart\*, ETH Zurich, Switzerland

**9:00 AM**

**(PACRIM10-S05-002-2013) Thermal degradation control study of carbon fiber/polyamide 6 composite using hexagonal boron nitride powder**  
Daisuke Shimamoto\*, Yusuke Imai, Yuji Hotta, AIST, Japan

**9:20 AM**

**(PACRIM10-S05-003-2013) Electrically Conductive Y-TZP/TiN Ceramic Composites with Reduced Amount of Conductive Phase**

Kristoffer Krnel\*, Ana Lazar, Tomaz Kosmac, Jozef Stefan Institute, Slovenia

**9:40 AM**

**(PACRIM10-S05-004-2013) Control of Dispersion and Agglomeration of CNTs for Their Networking: Mechanical and Electrical Properties of CNT/Alumina Composites**

Mitsuaki Matsuoka\*, Junichi Tatami, Toru

Wakihara, Yokohama National University, Japan

**10:00 AM**

Break

## Advanced Powder Processing for Functional Ceramics

10:20 AM-11:50 AM

Room: Stuart

Session Chair(s): Sujanto Widjaja, Tetsuo Uchikoshi

**10:20 AM**

**(PACRIM10-S05-005-2013) Novel Powder Processing for Lithium-ion Battery Applications (Invited Speaker)**

Ching Huang\*, Hosokawa Micron Powder Systems, USA

**10:50 AM**

**(PACRIM10-S05-006-2013) Synthesis, Development and Characterization of Novel Nanoparticle Ferrite Materials**

Chris DiAntonio\*, Tom Chavez, Bernadette Hernandez-Sanchez, Sandia National Laboratories, USA

**11:10 AM**

**(PACRIM10-S05-007-2013) Rapid Synthesis of Granules of LiCoO<sub>2</sub> Nanoparticles by One-Step Mechanical Method**

Akira Kondo\*, Hiroya Abe, Makio Naito, Osaka University, Japan; Jun Yoshida, Shinji Nakanishi, Hideki Iba, TOYOTA MOTOR CORPORATION, Japan

**11:30 AM**

**(PACRIM10-S05-008-2013) Electrophoretic Deposition of Orientation-Controlled Zeolite L Layer on Porous Ceramic Substrate**

Tetsuo Uchikoshi\*, National Institute for Materials Science, Japan; Chika Matsunaga, Kumamoto University, Japan; Tohru S Suzuki, Yoshio Sakka, National Institute for Materials Science, Japan; Motohide Matsuda, Kumamoto University, Japan

Thursday, June 6, 2013

## Nano/Microstructure Control by Powder Processing I

8:30 AM-10:20 AM

Room: Stuart

Session Chair(s): Ching Huang, Satoshi Tanaka

**8:30 AM**

**(PACRIM10-S05-009-2013) Texture developing and some properties of feeble magnetic ceramics by colloidal processing in a strong magnetic field (Invited Speaker)**

Yoshio Sakka\*, Tohru S Suzuki, Tetsuo Uchikoshi, NIMS, Japan

**9:00 AM**

**(PACRIM10-S05-010-2013) ZrO<sub>2</sub> Nanoparticle-based Material Sintering and 3D Microstructure Characterization**

Kathy Lu\*, Zhenbo Xia, Wenle Li, Virginia Tech, USA

**9:20 AM**

**(PACRIM10-S05-011-2013) Two-dimensional orientation in piezoelectric ceramics prepared using platelet particles and a strong magnetic field**

Tohru S Suzuki\*, National Institute for Materials Science, Japan; Yasunari Miwa, Shinichiro Kawada, Masahiko Kimura, Murata Manufacturing Co., Ltd, Japan; Tetsuo Uchikoshi, Yoshio Sakka, National Institute for Materials Science, Japan

**9:40 AM**

**(PACRIM10-S05-012-2013) Fabrication of translucent c-axis oriented strontium barium niobate by rotating magnetic field and subsequent hot isostatic pressing**

Takuma Takahashi, Keizo Uematsu, Satoshi Tanaka\*, Nagaoka University of Technology, Japan

**10:00 AM**

Break

## Advanced Powder Processing for Porous Ceramics

10:20 AM-11:10 AM

Room: Stuart

Session Chair(s): Ching Huang, Satoshi Tanaka

**10:20 AM**

**(PACRIM10-S05-013-2013) Gas adsorbents for clean energy (Invited Speaker)**

Farid Akhtar\*, Stockholm University, Sweden

**10:50 AM**

**(PACRIM10-S05-014-2013) Electrostatic Dry Coating of Porous Composites for Li Ion Battery**

Hiroya Abe\*, Akira Kondo, Makio Naito, Osaka University, Japan; Takashi Wakimoto, Masayuki Yamaguchi, Honda Engineering Co.,Ltd, Japan

## Grinding and Dispersion Control

11:10 AM-11:50 AM

Room: Stuart

Session Chair(s): Ching Huang, Satoshi Tanaka

**11:10 AM**

**(PACRIM10-S05-015-2013) Boundary factors between ceramic suspension and paste with water-soluble polymer**

Yuji Hotta\*, Kimiyasu Sato, National Institute of Advanced Industrial Science and Technology, Japan

**11:30 AM**

**(PACRIM10-S05-016-2013) Improvement of DEM simulation for analysis of grinding process**

Shingo Ishihara\*, Tohoku University, Japan; Rikio Soda, JSPS, Japan; Junya Kano, Tohoku University, Japan

# Nano/Microstructure Control by Powder Processing II

1:20 PM-3:40 PM

Room: Stuart

Session Chair(s): Yuji Hotta, Di Zhang

**1:20 PM**

**(PACRIM10-S05-017-2013) Research on advanced bioinspired materials derived from natural materials (Invited Speaker)**

Di Zhang\*, Wang Zhang, Jiajun Gu, Qinglei Liu, Huilan Su, Shenming Zhu, Shanghai Jiao Tong University, China

**1:50 PM**

**(PACRIM10-S05-018-2013) Improvement on the Microwave Absorption Property of Alumina Powder by Mechanically Surface Treatment and Its Hydration Behavior**

Takashi Shirai\*, Chika Takai, Masayoshi Fuji, Nagoya Institute of Technology, Japan

**2:10 PM**

**(PACRIM10-S05-019-2013) The Effects of Na<sub>2</sub>O, SiO<sub>2</sub> and Co-Additions on the Sintering Kinetics and Microstructural Evolution of 99.8% Pure Specialty Alumina Powders**

Ismail O Ozer, Elizabeth R. Kupp, Penn State University, USA; Charles Compson\*, Erik Koep, Almatris, Inc., USA; Marcel Spreij, Almatris, Inc., Germany; Gary L Messing, Penn State University, USA

**2:30 PM**

**(PACRIM10-S05-020-2013) Evaluation of Internal Coarse Defects in Powder Compact and Ceramics by Micro X-ray Computed Tomography**

Satoshi Tanaka\*, Keizo Uematsu, Nagaoka University of Technology, Japan

**2:50 PM**

**(PACRIM10-S05-021-2013) Fabrication of highly porous monolith prepared by gelation freezing route (Invited Speaker)**

Manabu Fukushima\*, Yu-ichi Yoshizawa, National Institute of Advanced Industrial Science and Technology (AIST), Japan

**3:20 PM**

Break

## Nanoparticle and Powder Design and Synthesis

3:40 PM-6:00 PM

Room: Stuart

Session Chair(s): Yuji Hotta, Di Zhang

**3:40 PM**

**(PACRIM10-S05-022-2013) Synthesis and Characterization of Rare Earth Doped Sapphire and Transparent Alumina**

Robert Pavlacka\*, Tigran Sanamyan, Gary Gilde, Mark Dubinskiy, US Army Research Laboratory, USA; Giselle Maxwell, Shasta Crystals, USA

**4:00 PM**

**(PACRIM10-S05-023-2013) High Purity Rare-Earth Doped Oxides Nano-Powders for High-Power Solid State Lasers**

Woohong (Rick) Kim\*, Colin Baker, Guillermo Villalobos, Jesse Frantz, Brandon Shaw, Naval Research Laboratory, USA; Bryan Sadowski, Aggrwal Ishwar, Sotera Defense Solution, USA; Jasbinder Sanghera, Naval Research Laboratory, USA

**4:20 PM**

**(PACRIM10-S05-024-2013) Synthesis and Microstructure Development in Yttria-Magnesia Ceramics for Infrared Transparency**

J. A Miller\*, I. E Reimanis, Colorado School of Mines, USA

**4:40 PM**

**(PACRIM10-S05-025-2013) Quaternary Ammonium Hydroxides-Assisted Solvothermal Synthesis of Monodispersed ITO Nanoparticles with Cubic Shape**

Kiyoshi Kanie\*, Takafumi Sasaki, Masafumi Nakaya,  
Atsushi Muramatsu, Tohoku University, Japan

**5:00 PM**

**(PACRIM10-S05-026-2013) Improved transparent thermal insulation using hollow silica nanoparticles**

Chika Takai\*, Masayoshi Fuji, Takashi Shirai,  
Nagoya Institute of Technology, Japan

**5:20 PM**

**(PACRIM10-S05-027-2013) Synthesis of B-SiC powders by a modified carbothermal reduction process using SiO<sub>2</sub>-C hybrid precursors with various C/Si mole ratios**

Sang Whan Park\*, Sung Il Yoon, Mi Rae Yum, KIST,  
Republic of Korea

**5:40 PM**

**(PACRIM10-S05-028-2013) Self Catalyzed HfB<sub>2</sub> and ZrB<sub>2</sub> Sol-Gel Precursors by Rapid Ultrasonication of Hf and Zr Oxychloride Hydrates with Controlled Chemistry and Particle Morphology**

Luke Sky Walker\*, Erica L Corral, The University of  
Arizona, USA

Friday, June 7, 2013

## **Low Cost and Energy-saving Processing of Advanced Ceramics**

8:30 AM-10:20 AM

Room: Stuart

Session Chair(s): Junichi Tatami, Makio Naito

**8:30 AM**

**(PACRIM10-S05-029-2013) Anti-bacterial Ceramic Glaze using Silver for Sanitary Ware (Invited Speaker)**

Norifumi Isu\*, LIXIL Corp., Japan

**9:00 AM**

**(PACRIM10-S05-030-2013) Fabrication of geopolymer bonded SiC based composites from rice husks**

Jin Li\*, Takashi Shirai, Masayoshi Fuji, Nagoya  
Institute of Technology, Japan

**9:20 AM**

**(PACRIM10-S05-031-2013) Effect of boron carbide in polycarbosilane**

Ken'ichiro Kita\*, Naoki Kondo, National Institute of  
Advanced Industrial Science and Technology (AIST),  
Japan

**9:40 AM**

**(PACRIM10-S05-032-2013) High-Pressure Self-propagating High-temperature Synthesis (SHS) of Silicon Nitride**

Sidney Lin\*, Patrick Duruewuru, Phu Dinh, Lamar  
University, USA

**10:00 AM**

Break

## **Advanced Powder Processing for Non-oxides Ceramics**

10:20 AM-12:00 PM

Room: Stuart

Session Chair(s): Junichi Tatami, Makio Naito

**10:20 AM**

**(PACRIM10-S05-033-2013) Effect of SiC Polytype on Crystal Structures of Carbon Derived from SiC**

Min-Gun Jeong\*, Dae-Soon Lim, Seo Hyun Yoon,  
Eung Seok Lee, Korea University, Republic of Korea

**10:40 AM**

**(PACRIM10-S05-034-2013) In situ consolidated, Spark Plasma Sintered and thermally sprayed Ti<sub>3</sub>SiC<sub>2</sub>-Cu composites: microstructure formation and phase stability issue**

Dina Dudina\*, Institute of Solid State Chemistry  
and Mechanochemistry SB RAS, Russian

Federation; Vyacheslav Mali, Alexander Anisimov, Igor Batraev, Vladimir Ulianitsky, Lavrentiev Institute of Hydrodynamics SB RAS, Russian Federation; Natalia Bulina, Michail Korchagin, Oleg Lomovsky, Institute of Solid State Chemistry and Mechanochemistry SB RAS, Russian Federation

**11:00 AM**

**(PACRIM10-S05-035-2013) Synthesis of Tungsten Carbide (WC) nanoparticles**

Gourav Singla\*, K. Singh, O. P Pandey, Thapar University, India

**11:20 AM**

**(PACRIM10-S05-036-2013) Development of a Oxide Additive Free, Spark Plasma Sintered, High Strength Silicon Nitride System**

William Pinc\*, Luke S Walker, Anne C Ellis, Leah R Herlihy, Erica L Corral, University of Arizona, USA

**11:40 AM**

**(PACRIM10-S05-037-2013) Improvement of strength of Si<sub>3</sub>N<sub>4</sub> ceramics using smaller granules**

Junichi Tatami\*, Hiroaki Kayama, Shiori Sueyasu, Toru Wakihara, Katsutoshi Komeya, Yokohama National University, Japan

# **Symposium 6: Synthesis and Processing of Materials Using Electric Fields/Currents: A Symposium Honoring Prof. Zuhair Munir**

Monday, June 3, 2013

## **Fundamentals Investigations in Current Assisted Densification I**

1:20 PM-5:40 PM

Room: Hanover

Session Chair(s): Javier Garay, Manshi Ohyanagi

**1:20 PM**

**(PACRIM10-S06-001-2013) Processing of Materials under the Influence of Electric Fields (Invited Speaker)**

Zuhair A Munir\*, University of California, USA

**1:50 PM**

**(PACRIM10-S06-002-2013) Flash Spark-Plasma Sintering of SiC powder**

Eugene Olevsky\*, Steven Rolfing, Yen-Shan Lin, San Diego State University, USA; Andrey Maximenko, Moscow Engineering Physics University, Russian Federation

**2:10 PM**

**(PACRIM10-S06-003-2013) Electric current activated/assisted sintering (ECAS): 20 years impact on science and technology**

Salvatore Grasso\*, Queen Mary University of London, United Kingdom; Yoshio Sakka, NIMS, Japan; Mike Reece, Nanoforce Technology Limited,

United Kingdom

**2:30 PM**

**(PACRIM10-S06-004-2013) Grain Growth during Spark Plasma Sintering of Alumina**

Byungnam Kim\*, Koji Morita, Hidehiro Yoshida, Yoshio Sakka, National Institute for Materials Science, Japan; Keijiro Hiraga, Kitami Institute of Technology, Japan

**2:50 PM**

**(PACRIM10-S06-005-2013) Spark Plasma Sintering and Mechanical Behavior of Pure Tungsten with Improved Microstructures (Invited Speaker)**

Lin Huang, Troy D Topping, Tao Hu, UC Davis, USA; Ryan Carpenter, Deepak Kapoor, US Army, USA; Enrique J Lavernia\*, Julie M Schoenung, UC Davis, USA

**3:20 PM**

Break

**3:40 PM**

**(PACRIM10-S06-006-2013) Electrical breakdown behavior of cubic zirconia single crystals and polycrystals**

John Downs\*, Vincenzo M Sglavo, University of Trento, Italy

**4:00 PM**

**(PACRIM10-S06-007-2013) Localized Overheating of Tooling during Spark-Plasma Sintering**

Diletta Giuntini\*, Eugene Olevsky, San Diego State University, USA; Chris Haines, Darold Martin, Deepak Kapoor, US Army ARDEC, USA; Cristina Garcia, San Diego State University, USA

**4:20 PM**

**(PACRIM10-S06-008-2013) Spark Plasma Sintering of Annular Zirconium Carbide Powder Pellets: Processing and Simulation**

Xialu Wei\*, Wei Li, José A Alvarado-Contreras, Eugene A Olevsky, San Diego State University, USA; Marc A Meyers, University of California, San Diego, USA



**4:40 PM**

**(PACRIM10-S06-009-2013) Electro-thermal measurements and finite element method simulations of a spark plasma sintering device**

Claude Estournès\*, Anthony Pavia, Charles Manière, CIRIMAT, France; Lise Durand, François Ajustron, CEMES, France; Vincent Bley, LAPLACE, France; Geoffroy Chevallier, Alain Peigney, CIRIMAT, France

**5:00 PM**

**(PACRIM10-S06-010-2013) Empirical modeling of the Density-Temperature relationship in Current Activated Pressure Assisted Densification**

Alexander Davis Dupuy\*, Yasuhiro Kodaera, Javier E Garay, University of California, Riverside, USA

**5:20 PM**

**(PACRIM10-S06-011-2013) First approach of the specific phenomena during Spark Plasma Sintering of metals**

Pierre Guyot\*, Nicolas Pradeilles, Vincent Rat, Jean-Francois Coudert, Alexandre Maitre, SPCTS CNRS UMR7315, France

Tuesday, June 4, 2013

## Fundamentals Investigations in Current Assisted Densification II

8:30 AM-10:30 AM

Room: Hanover

Session Chair(s): Takashi Goto, Eugene Olevsky

**8:30 AM**

**(PACRIM10-S06-012-2013) SPS Fabrication of Novel Glass materials Based on Order-disorder Transition(ODT) (Invited Speaker)**

Lianjun Wang\*, Wan Jiang, Donghua University, China; Lidong Chen, Shanghai Institute of Ceramics, China

**9:00 AM**

**(PACRIM10-S06-013-2013) The feasibility of flash sintering in contrasting ceramic systems**

Eugenio Zapata Solvas\*, CSIC, Spain; Sebastian Bonilla, University of Oxford, United Kingdom; Diego Gómez-García, Arturo Domínguez-Rodríguez, University of Seville, Spain; Peter Wilshaw, Richard I Todd, University of Oxford, United Kingdom

**9:20 AM**

**(PACRIM10-S06-014-2013) The role of the pressure parameter in the Current Activated Pressure Assisted Densification (CAPAD) of nanocrystalline materials**

A. Dupuy, J. Alaniz, C. Hardin, Y. Kodaera, Javier E. Garay\*, University of California, USA

**9:40 AM**

**(PACRIM10-S06-015-2013) Surface and Interface Effects during Densification of Ceramic Nanoparticles by Spark Plasma Sintering (Invited Speaker)**

Rachman Chaim\*, Technion-Israel Institute of Technology, Israel

**10:10 AM**

Break

## Consolidation of Nanocrystalline Materials I

10:30 AM-11:50 AM

Room: Hanover

Session Chair(s): Takashi Goto, Eugene Olevsky

**10:30 AM**

**(PACRIM10-S06-016-2013) YAG transparent ceramics produced by SPS from nanopowders prepared by co-precipitation method**

Frederic Bernard\*, Universite de Bourgogne, France; Caroline Marlot, Elodie Barraud, French-German ISL, France; Sophie Le Gallet, Foad Naimi, Universite de Bourgogne, France; Marc Eichorn, French-German ISL, France

**10:50 AM**

**(PACRIM10-S06-017-2013) Processing of light producing/controlling transparent ceramics using current activated pressure assisted densification**

Yasuhiro Kodera\*, Andrew T Wieg, Elias H Penilla, Jason R Morales, Javier E Garay, UC Riverside, USA

**11:10 AM**

**(PACRIM10-S06-018-2013) Probing localized electricity in insulating/conductive ceramic nanocomposites by scanning impedance microscopy (SIM)**

Ching-Huan Alex Lee\*, Hao-Chih Liu, Po-Jui Su, Jow-Lay Huang, National Cheng Kung University, Taiwan

**11:30 AM**

**(PACRIM10-S06-019-2013) Fabrication of Transparent MgAl<sub>2</sub>O<sub>4</sub> Spinel by Optimizing Loading Schedule during Spark-Plasma-Sintering**

Koji Morita\*, Byung-Nam Kim, Hidehiro Yoshida, National Institute for Materials Science, Japan; Keiji Hiraga, Kitami Institute of Technology, Japan; Yoshio Sakka, National Institute for Materials Science, Japan

## Consolidation of Nanocrystalline Materials II

1:20 PM-3:40 PM

Room: Hanover

Session Chair(s): O. Graeve, Frederic Bernard

**1:20 PM**

**(PACRIM10-S06-020-2013) Advanced usage of SPS technology for producing innovative materials (Invited Speaker)**

Frederic Bernard\*, Sophie Le Gallet, Universite de Bourgogne, France

**1:50 PM**

**(PACRIM10-S06-021-2013) Kinetics of the Structural Ordering of Stacking Disordered SiC during Spark Plasma Sintering**

Manshi Ohyanagi\*, Tesuya Tanaka, Natsuki

Yamasaki, Ryukoku University, Japan; Zuhair Munir, University of California, Davis, USA

**2:10 PM**

**(PACRIM10-S06-022-2013) Field-assisted sintering of YSZ films on conductive substrates**

Stephen Johnson\*, Ganesh Venugopal, Andrew Hunt, nGimat LLC, USA

**2:30 PM**

**(PACRIM10-S06-023-2013) CAPAD processing of Rare earth doped Zirconia for high temperature light emission applications**

Corey Hardin\*, Elias Penilla, Yasuhiro Kodera, Javier Garay, UC Riverside, USA

**2:50 PM**

**(PACRIM10-S06-024-2013) Spark Plasma Sintering: from the identification of the sintering mechanisms to the industrial fabrication of thermoelectrical materials (Invited Speaker)**

Guillaume Bernard-Granger\*, CEA, France; Christian Guizard, Saint-Gobain CREE, France

**3:20 PM**

Break

## Property Evaluation of Materials Processing using Electric Currents I

3:40 PM-6:00 PM

Room: Hanover

Session Chair(s): O. Graeve, Frederic Bernard

**3:40 PM**

**(PACRIM10-S06-025-2013) Optimization of Field Assisted Sintering Technique in Fabrication of Nanostructured BaTiO<sub>3</sub>**

Todd Monson\*, Sandia National Labs, USA; Josh Yee, Martin Fraga, University of California, Davis, USA; Nancy Yang, Sandia National Labs, USA; Enrique Lavernia, University of California, Davis, USA

**4:00 PM**

**(PACRIM10-S06-026-2013) Non-Equilibrium Processing of Transparent Luminescent Ceramics via Current Activated Pressure Assisted Densification (CAPAD)**

Elias Penilla\*, Yasuhiro Kodera, Javier Garay, University of California Riverside, USA

**4:20 PM**

**(PACRIM10-S06-027-2013) Properties of WCCo/Diamond Composites Produced by PPS Method Intended for Drill Bits for Machining of Building Stones**

Marcin Rosinski\*, Warsaw University of Technology, Poland

**4:40 PM**

**(PACRIM10-S06-028-2013) AFM based studies of current path during spark plasma sintering with local impedance measurement on Si<sub>3</sub>N<sub>4</sub> and Al<sub>2</sub>O<sub>3</sub> nanocomposites microstructure**

Wei-Lun Ho\*, Bernard, Haochih Liu, Ching-Huan Lee, Jow-Lay Huang, National Cheng Kung University, Taiwan

**5:00 PM**

**(PACRIM10-S06-029-2013) Spark Plasma Sintering: an effective tool for rapid development of thermal barriers**

Claude Estournès\*, Mathieu Boidot, Serge Selezneff, Djar Oquab, CIRIMAT, France; Jean-Yves Guedou, SNECMA, France; Daniel Monceau, CIRIMAT, France

**5:20 PM**

**(PACRIM10-S06-030-2013) Microstructure design by Spark Plasma Sintering for tailored properties in ferroelectric multi-materials**

Catherine Elissalde\*, U-Chan Chung, CNRS-Univ. Bordeaux-ICMCB, France; Claude Estournès, CIRIMAT-PNF2-Univ. Paul Sabatier, France; Dominique Bernard, Julien Lesseur, Dominique Michau, Mario Maglione, CNRS-Univ. Bordeaux-ICMCB, France

**5:40 PM**

**(PACRIM10-S06-031-2013) Barium Strontium Titanate Ceramics with High Energy Storage Density Prepared by Spark Plasma Sintering**

Yong Jun Wu\*, Yu Hui Huang, Nan Wang, Xiang Ming Chen, Zhejiang University, China

Wednesday, June 5, 2013

## Property Evaluation of Materials Processing using Electric Currents II

8:30 AM-11:50 AM

Room: Hanover

Session Chair(s): Yasuhiro Kodera, Rachman Chaim

**8:30 AM**

**(PACRIM10-S06-032-2013) Phase stability and boundary structure of unique iron-based amorphous metal composites: processing and modeling (Invited Speaker)**

O. A. Graeve\*, University of California, USA; M. S. Saterlie, P. J. Colmenares, H. Fathi, L. E. Jones, Alfred University, USA

**9:00 AM**

**(PACRIM10-S06-033-2013) The role of processing parameters on the microstructure and properties of Mg-based thermoelectric materials**

Anthony Fong\*, Yasuhiro Kodera, Javier Garay, University of California, Riverside, USA

**9:20 AM**

**(PACRIM10-S06-034-2013) Probing conductance heterogeneity of insulating/conductive ceramic nanocomposites at the nanoscale by scanning impedance microscopy**

Ching-Huan Alex Lee\*, Haochih B. Liu, Po-Jui Su, National Cheng Kung University, Taiwan; Hua-Tay Lin, Oak Ridge National Laboratory, USA; Jow-Lay Huang, National Cheng Kung University, Taiwan

**9:40 AM**

**(PACRIM10-S06-035-2013) Rare earth doped polycrystalline nitrides for photoluminescent applications**

Andrew T Wieg\*, Yasuhiro Kodera, Javier E Garay, University of California Riverside, USA

**10:00 AM**

Break

**10:20 AM**

**(PACRIM10-S06-036-2013) Synthesis of transparent Lu-based oxides by SPS and their optical properties (Invited Speaker)**

Takashi Goto\*, Liqiong An, Akihiko Ito, IMR Tohoku University, Japan

**10:50 AM**

**(PACRIM10-S06-037-2013) Enhanced Non-Linear Optical Properties of Transparent Oxide Ceramics Produced by Current Activated Pressure Assisted Densification (CAPAD)**

Elias Penilla\*, Pablo Martinez-Torres, University of California Riverside, USA; Gabriel R Castillo-Vega, Santiago Camacho-Lopez, CICESE, Mexico; Guillermo Aguilar, Javier Garay, University of California Riverside, USA

**11:10 AM**

**(PACRIM10-S06-038-2013) Enhanced in-situ functionally graded Si<sub>3</sub>N<sub>4</sub>-based materials**

Manuel Belmonte\*, Pilar Miranzo, Isabel Osendi, Institute of Ceramics and Glass (ICV-CSIC), Spain

**11:30 AM**

**(PACRIM10-S06-039-2013) Densification and mechanical property of TiN-TiB<sub>2</sub>-cBN composite prepared by spark plasma sintering using SiO<sub>2</sub>-coated cBN powder**

Mettaya Kitiwan\*, Akihiko Ito, Takashi Goto, Tohoku University, Japan

# **Symposium 7: Multifunctional Metal Oxide Nanostructures and Heteroarchitectures for Energy and Device Applications**

Thursday, June 6, 2013

## **Nanomaterials for Photocatalysis, Solar Hydrogen and Thermoelectrics**

8:30 AM-10:30 AM

Room: Crown

Session Chair(s): Hidehiro Kamiya, Sanjay Mathur

**8:30 AM**

**(PACRIM10-S07-001-2013) Designing of Semiconducting Metal Oxides for efficient photochemical energy conversion (Invited Speaker)**

Lianzhou Wang\*, University of Queensland, Australia

**9:00 AM**

**(PACRIM10-S07-002-2013) The Effects of Niobium Dopant and PO<sub>2</sub> on the Thermoelectric Properties of Beta-gallia Rutile Intergrowths**

Michael Alberga\*, Doreen D Edwards, Alfred University, USA

**9:20 AM**

**(PACRIM10-S07-003-2013) On quantum confinement effects and interfacial electronic structure engineering for efficient solar hydrogen generation (Invited Speaker)**

Lionel Vayssieres\*, Xian Jiaotong University, China

**9:50 AM**

**(PACRIM10-S07-004-2013) Ternary CdS<sub>1-x</sub>Sex Quantum Dots Sensitized Solar Cells with Tunable Bandgaps**

Zhenhua Chen\*, Wenqin Peng, Kun Zhang, Jing Zhang, Liyuan Han, National Institute for Materials Science, Japan

**10:10 AM**

Break

## **Integration of Functional Metal Oxide Nanostructures in Sensors and Devices**

10:30 AM-12:00 PM

Room: Crown

Session Chair(s): Liyuan Han, Shuzi Hayase

**10:30 AM**

**(PACRIM10-S07-005-2013) Functional oxide nanoarchitectures for high performance gas sensors (Invited Speaker)**

Jong-Heun Lee\*, Korea University, Republic of Korea

**11:00 AM**

**(PACRIM10-S07-006-2013) Double-channel Light Sensing Device Based on ZnO:Cu Nanocrystalline Films**

Liping Zhu\*, Liang Hu, Zhejiang University, China

**11:20 AM**

**(PACRIM10-S07-007-2013) Free carrier induced effects in sol-gel derived ferromagnetic BaTiO<sub>3</sub> nanoparticles**

Ramakanth Suryavamshi, James Raju K C\*, UNIVERSITY OF HYDERABAD, India

**11:40 AM**

**(PACRIM10-S07-008-2013) Electron transfer mediator's encapsulated TiO<sub>2</sub>-Pd-ormosil modified electrode applied in electro-analysis of ascorbic acid**

Arvind Prakash\*, Prem C Pandey, IIT(BHU), India

**3:00 PM**

**(PACRIM10-S07-013-2013) CdS quantum dot sensitised solar cells based on ferricyanide/ferrocyanide redox electrolyte**

Rosemarie Evangelista\*, Satoshi Makuta, Yasuhiro Tachibana, RMIT University, Australia

**3:20 PM**

Break

**3:40 PM**

**(PACRIM10-S07-014-2013) Transparent conductive oxide less back contact dye-sensitized solar cells (TCO-less DSC) (Invited Speaker)**

Shuzi Hayase\*, Kyushu Institute of Technology, Japan

**4:10 PM**

**(PACRIM10-S07-015-2013) Preparation of Nanoporous Transparent Antimony-Doped Tin Oxide and Its Inorganic-Bio Hybrids for Potential Energy Applications**

Alex M Volosin\*, Arizona State University, USA; Dominik Schmitt, Johannes Gutenberg University of Mainz, Germany; Sudhanshu Sharma, Indian Institute of Technology - Gandhi Nagar, India; Dong-Kyun Seo, Arizona State University, USA

**4:30 PM**

**(PACRIM10-S07-016-2013) Highly transparent conducting Zn<sub>1-x</sub>Mg<sub>x</sub>O:F thin films with tunable optical and electrical properties**

Yanmin Guo\*, Liping Zhu, Zhejiang University, China

## **Nanostructured Metal Oxides in Excitonic Solar Cells**

1:20 PM-4:50 PM

Room: Crown

Session Chair(s): Jong-Heun Lee, Taro Toyoda

**1:20 PM**

**(PACRIM10-S07-009-2013) Photovoltaic Characteristics and Photoexcited Carrier Dynamics of Multilayered Quantum Dot-Sensitized Solar Cells (Invited Speaker)**

Taro Toyoda\*, Qing Shen, The University of Electro-Communications, Japan

**1:50 PM**

**(PACRIM10-S07-010-2013) Organic conjugated polymer/metal oxide nanohybrid materials for solar cell applications**

Satoshi Makuta, Hemlata Patil, RMIT University, Australia; Yasuhiro Tachibana\*, Osaka University, Japan

**2:10 PM**

**(PACRIM10-S07-011-2013) Synthesis and Characterization of Nanoporous Zr<sub>x</sub>Ti<sub>1-x</sub>O<sub>2</sub> Monoliths and Transparent Thin Films for Solar Cell Fabrication**

Daniel Gustav Mieritz\*, Dong-Kyun Seo, Arizona State University, USA

**2:30 PM**

**(PACRIM10-S07-012-2013) Highly Efficiency Dye-sensitized Solar Cells (Invited Speaker)**

Liyuan Han\*, National Institute for Materials Science, Japan

Friday, June 7, 2013

## **Synthesis, Functionalization and Assembly of Metal Oxide Nano-materials**

8:30 AM-10:40 AM

Room: Crown

Session Chair(s): Lionel Vayssieres, Lianzhou Wang

**8:30 AM**

**(PACRIM10-S07-017-2013) Theoretical Modelling of the Adsorption of Citrate onto Zinc Oxide Surfaces: Implications for Shape Controlled Growth**

Catherine Sutton\*, George V Franks, Gabriel da Silva, The University of Melbourne, Australia

**8:50 AM**

**(PACRIM10-S07-018-2013) Precursor-derived Magnéli phases as a promising route to the nano-structured oxide thermoelectrics**

Isabel Kinski\*, Susan Conze, Fraunhofer IKTS, Germany; Igor Veremchuk, Max-Planck-Institut, Germany; Alexander Michaelis, Fraunhofer IKTS, Germany; Yuri Grin, Max-Planck-Institut, Germany

**9:10 AM**

**(PACRIM10-S07-019-2013) Transparent Silicone Polymer Composite Films with Silica and Functional Nanoparticles (Invited Speaker)**

Motoyuki Iijima, Sayaka Omori, Madoka Kimura, Tokyo University of Agriculture and Technology, Japan; Keisuke Hirano, Nitto Denko Corporation, Japan; Hidehiro Kamiya\*, Tokyo University of Agriculture and Technology, Japan

**9:40 AM**

**(PACRIM10-S07-020-2013) Nanocasting Synthesis of Mesoporous Delafossite CuCrO<sub>2</sub> and Spinel CuCr<sub>2</sub>O<sub>4</sub>**

Peng Zhang\*, Lian Gao, Shanghai Jiao Tong University, China; Eric McFarland, University of California, Santa Barbara, USA

**10:00 AM**

**(PACRIM10-S07-021-2013) Phase control and ferroelectricity in Al-Fe-O thin films prepared by PLD technique**

Yosuke Hamasaki\*, Takao Shimizu, Hiroki Taniguchi, Tomoyasu Taniyama, Mitsuru Itoh, Tokyo Institute of Technology, Japan

**10:20 AM**

**(PACRIM10-S07-022-2013) Synthesis of  $\gamma$ -MnOOH and  $\beta$ -MnO<sub>2</sub> nanowires and their electrochemical capacitive behavior**

Indra Bhushan Singh\*, CSIR-Advanced Materials and Process Research Institute (AMPRI), India; Su M Park, Ulsan National Institute of Science and Technology (UNIST), Republic of Korea

# Symposium 8: Engineering Ceramics and Ceramic Matrix Composites: Design, Development, and Applications

Monday, June 3, 2013

## Properties and Characterization I

1:20 PM-6:10 PM

Room: Windsor Complex

Session Chair(s): Guo-Jun Zhang, Dileep Singh

**1:20 PM**

**(PACRIM10-S08-001-2013) Synthesis of sol-gel based nano alumina particles and their mixing with clay for fluoride removal purposes (Invited Speaker)**

Indra Bhushan Singh\*, CSIR-Advanced Materials and Processing Research Institute(AMPRI), Bhopal, India

**1:50 PM**

**(PACRIM10-S08-002-2013) Microstructure and Mechanical Properties of Si<sub>3</sub>N<sub>4</sub> Nanoceramics by Carbothermal Reduction and Spark Plasma Sintering**

Ching-Yu Chen\*, Ching-Huan Lee, National Cheng Kung University, Taiwan; Horng-Hwa Lu, National Chin Yi University of Technology, Taiwan; Jow-Lay Huang, National Cheng Kung University, Taiwan

**2:10 PM**

**(PACRIM10-S08-003-2013) Core-shell Al-Si<sub>3</sub>N<sub>4</sub> composite particles for manufacturing alumina-based composites**

Malgorzata Sopicka-Lizer\*, Daniel Michalik, Jerzy Mylanski, Tomasz Pawlik, Bartosz Hekner, Silesian

University of Technology, Poland

**2:30 PM**

**(PACRIM10-S08-004-2013) Synthesis and microstructure of reaction hot-pressing Al<sub>4</sub>SiC<sub>4</sub> bulk ceramic**

Xiaoxiao Huang\*, Harbin Institute of Technology, China

**2:50 PM**

**(PACRIM10-S08-005-2013) Preparation of Zirconium Phosphate Bonded Silicon Nitride Porous Ceramics Reinforced by In-Situ Reacted Silicon Nitride Nanowires**

Fei Chen\*, Feiyu Li, Qiang Shen, Lianmeng Zhang, Wuhan University of Technology, China

**3:10 PM**

Break

**3:30 PM**

**(PACRIM10-S08-006-2013) Microstructure development and mechanical property of Tungsten Carbide/Alumina composite**

Wei-Hsio Chen\*, Pramoda K Nayak, National Cheng Kung University, Taiwan; Hao-Tung Lin, Kun Shan University, Taiwan; Yang-Yuan Chen, Academia Sinica, Taiwan; Jow-Lay Huang, National Cheng Kung University, Taiwan

**3:50 PM**

**(PACRIM10-S08-007-2013) Preparation and characterization of TiO<sub>2</sub> and Al<sub>2</sub>O<sub>3</sub> thick films by laser CVD using CO<sub>2</sub> and Nd:YAG lasers**

Ming Gao\*, Akihiko Ito, Takashi Goto, Institute for Materials Research, Tohoku University, Japan

**4:10 PM**

**(PACRIM10-S08-008-2013) Synthesis and Characteristics of Heteroatom-doping Carbon Nanotube Array**

Qi Zhen\*, Shaoming Dong, Yanmei Kan, Yue Leng, Shanghai Institute of Ceramics, Chinese Academy of Sciences, China



**4:30 PM**

**(PACRIM10-S08-009-2013) Roll-to-Roll silver nanowires as transparent electrode layer in P3HT-PCBM based solar cell**

Byung-Yong Wang, Korea Institute of Science and Technology, Republic of Korea; Dae-Soon Lim, Korea University, Republic of Korea; Jun-Sup Kim, PNT Co. Ltd, Republic of Korea; Young-Jei Oh\*, Korea Institute of Science and Technology, Republic of Korea

**4:50 PM**

**(PACRIM10-S08-010-2013) Mechanisms of wet foam stabilization to porous ceramics**

Ashish Pokhrel\*, Seo D Nam, Jung G Park, Ik Jin Kim, Processing and Application of Inorganic Materials (PAIM), Hanseo University, Republic of Korea

**5:10 PM**

**(PACRIM10-S08-011-2013) Study on the plasma erosion resistance of ZrO<sub>2</sub>p(3Y)/BN-SiO<sub>2</sub> composite ceramics**

Xiaoming Duan\*, Dechang Jia, Zhihua Yang, Yang Yu, Yu Zhou, Daren Yu, Yongjie Ding, Harbin Institute of Technology, China

**5:30 PM**

**(PACRIM10-S08-012-2013) Laser lift-off processing for flexible piezoelectric energy harvester based on PZT thin films**

Chong Yun Kang\*, Young Ho Do, Min Gyu Kang, Woo Suk Jung, Electronic Materials Research Center, Korea Institute of Science and Technology, Republic of Korea; Seok Jin Yoon, Research Planning & Coordination Division, Korea Institute of Science and Technology, Republic of Korea

8:30 AM-12:00 PM

Room: Windsor Complex

Session Chair(s): Walter Krenkel, Randall Hay

**8:30 AM**

**(PACRIM10-S08-013-2013) Cf/SiC Ceramic Matrix Composites Fabricated by in situ Reaction Method (Invited Speaker)**

Shaoming Dong\*, Bin Wu, Xiangyu Zhang, Yusheng Ding, Zhen Wang, Shanghai Institute of Ceramics, Chinese Academy of Sciences, China

**9:00 AM**

**(PACRIM10-S08-014-2013) Properties of Cf/SiC Composites with Different Reinforcement Arrangement**

Yusheng Ding\*, Jinshan Yang, Shaoming Dong, Shanghai Institute of Ceramics, Chinese Academy of Sciences, China

**9:20 AM**

**(PACRIM10-S08-015-2013) Preparation of C/SiC Ceramic Matrix Composite Containing Boron-bearing Species**

Fan Zhou\*, Shaoming Dong, Zhen Wang, Bin Wu, Shanghai Institute of Ceramics, Chinese Academy of Sciences, China

**9:40 AM**

**(PACRIM10-S08-016-2013) Properties of C/C-SiC Composites Prepared by a Novel Silicon Infiltration Method**

Haijun Zhou\*, Shaoming Dong, Yusheng Ding, Zhen Wang, Liangrun Zhang, Shanghai Institute of Ceramics, Chinese Academy of Sciences, China

**10:00 AM**

Break

**10:20 AM**

**(PACRIM10-S08-017-2013) Ceramic Matrix Composites Manufactured by Multistep Densification of Si-O-C Fibre Preform**

Laurence Maille\*, Marie Anne Dourges, Simon Le Ber, Patrick Weisbecker, René Pailler, Laboratory for Thermostructural Composites, France

Tuesday, June 4, 2013

## Properties and Characterization II

**10:40 AM**

**(PACRIM10-S08-018-2013) Phase Transformation Mechanisms for Transformation Plasticity of Rare-Earth Orthophosphate Fiber-Matrix Interphases during Fiber Push-Out in Ceramic Matrix Composites**

Randall Hay\*, Air Force Research Lab, USA; Pavel Mogilevsky, Emmanuel Boakye, UES, Inc., USA

**11:00 AM**

**(PACRIM10-S08-019-2013) Fracture Criterion of Short Carbon Fiber-Dispersed SiC Matrix Composite under Mixed Mode Condition**

Inoue Ryo\*, Kakisawa Hideki, Kagawa Yutaka, The University of Tokyo, Japan

**11:20 AM**

**(PACRIM10-S08-020-2013) Effect of Z-fiber density on the tension property of 2D Z-pinned C/SiC composites**

Huajie Xu\*, Litong Zhang, Laifei Cheng, Science and Technology on Thermostructural Composite Materials Laboratory, China

**11:40 AM**

**(PACRIM10-S08-021-2013) Processing, mechanical and thermal properties of Lu-Si-O-N ceramics**

Zhilin Tian\*, Luchao Sun, Jingyang Wang, Shenyang National Laboratory for Materials Science, Institute of Metal Research, Chinese Academy of Sciences, China

## Ultra High Temperature Ceramics and Composites

1:20 PM-5:40 PM

Room: Windsor Complex

Session Chair(s): Yanchun Zhou, Shaoming Dong

**1:20 PM**

**(PACRIM10-S08-022-2013) High Performance SRBSN (Sintered Reaction Bonded Silicon Nitride) (Invited Speaker)**

Hai-Doo Kim\*, Korea Institute of Materials Science, Republic of Korea

**1:50 PM**

**(PACRIM10-S08-023-2013) Employing Mechanical Alloying plus Hot Pressing Method to Prepare Nanocrystalline Si-B-C-N Composite Ceramic**

Zhihua Yang\*, Dechang Jia, Pengfei Zhang, Xiaoming Duan, Yu Zhou, Peifeng Zhang, Harbin Institute of Technology, China; Yangai Liu, China University of Geosciences, China

**2:10 PM**

**(PACRIM10-S08-024-2013) Ultra-High Temperature Ceramic (UHTC) Composites with Sol-gel Processing: Materials for Extreme Environments (Invited Speaker)**

Yi-Bing Cheng\*, Caen Ang, Tim Williams, David Vowles, Monash University, Australia; Aaron Seeber, CSIRO, Australia; Chris Wood, Sonya Slater, DSTO, Australia; Huang Ting Wang, Kun Wang, Monash University, Australia

**2:40 PM**

**(PACRIM10-S08-025-2013) MAX Phase Containing CMCs fabricated by Reactive Melt Infiltration (Invited Speaker)**

Franziska Lenz, Nico Langhof, Walter Krenkel\*, University of Bayreuth, Germany

**3:10 PM**

Break

**3:30 PM**

**(PACRIM10-S08-026-2013) Microstructural development and mechanical properties of TiB<sub>2</sub>-TiC composite prepared by two-step pressureless sintering (Invited Speaker)**

Yu Zhou\*, Yujin Wang, Harbin Institute of Technology, China

**4:00 PM**

**(PACRIM10-S08-027-2013) Properties of Carbon Fiber Reinforced ZrC-SiC Ceramic Matrix Composites Prepared by Polymer Infiltration and Pyrolysis Method**

Liangrun Zhang\*, Shaoming Dong, Haijun Zhou, Ping He, Le Gao, Shanghai Institute of Ceramics, Chinese Academy of Sciences, China

**4:20 PM**

**(PACRIM10-S08-028-2013) Sintering Mechanism and Microstructural Evolution of the MAS/BN Composites by Hot Press Sintering**

Dechang Jia\*, Delong Cai, Zhihua Yang, Xiaoming Duan, Yu Zhou, Harbin Institute of Technology, China

**4:40 PM**

**(PACRIM10-S08-029-2013) Oxidation Behavior of Cf/SiC Composites Protected by SiC-ZrC-LaB6 Multi-component Coatings**

Le Gao\*, Xiangyu Zhng, Shaoming Dong, Yusheng Ding, Yanmei Kan, Ping He, Zhen Wang, Haijun Zhou, Shanghai Institute of Ceramics, Chinese Academy of Sciences, China

**5:00 PM**

**(PACRIM10-S08-030-2013) Impact Resistance of Uncoated and EBC Coated SiC/SiC Composites**

Ramakrishna T Bhatt\*, Ohio Aerospace Institute, USA; Dennis Fox, NASA Glenn Research Center, USA

**5:20 PM**

**(PACRIM10-S08-031-2013) Processing of Electrically Conductive Liquid-Phase Sintered Silicon Carbide Ceramics**

Young-Wook Kim\*, Kwang-Young Lim, University of Seoul, Republic of Korea

Wednesday, June 5, 2013

**Applications in Aeronautics,  
Space, Automotive,  
Microelectronics, Energy and  
Environmental Systems**

8:30 AM-12:00 PM

Room: Windsor Complex

Session Chair(s): Dietmar Koch, Hagen Klemm

**8:30 AM**

**(PACRIM10-S08-032-2013) CMC Technology Advancements for Gas Turbine Engine Applications (Invited Speaker)**

Joseph Grady\*, NASA Glenn Research Center, USA

**9:00 AM**

**(PACRIM10-S08-033-2013) Design and testing of a C/C-SiC nozzle extension manufactured via filament winding technique and liquid silicon infiltration**

Fabian Breede\*, German Aerospace Center (DLR), Germany

**9:20 AM**

**(PACRIM10-S08-034-2013) Process development for manufacturing and design of nonoxide CMC (Invited Speaker)**

Dietmar Koch\*, Enrico Klatt, Fabian Breede, Martin Friess, German Aerospace Center, Germany

**9:50 AM**

**(PACRIM10-S08-035-2013) Long-Term Properties and Degradation of Ceramics for Gas Turbines**

Mark van Roode\*, Mark van Roode & Associates, USA; Arun K Bhattacharya, Solar Turbines Incorporated, USA; Mattison K Ferber, Oak Ridge National Laboratory, USA

**10:10 AM**

Break

**10:30 AM**

**(PACRIM10-S08-036-2013) Low-cost fabrication of CMC by injection molding**

Hagen Klemm\*, Müller-Köhn Axel, Moritz Tassilo, FhG IKTS Dresden, Germany

**10:50 AM**

**(PACRIM10-S08-037-2013) Development and Practical Applications of Indentation Based Techniques to Measure Stresses in Multi-Material Systems (Invited Speaker)**

Rajan Tandon\*, Sandia National Lab, USA

**11:20 AM**

**(PACRIM10-S08-038-2013) Residual strains in structural stone: a degradation mechanism**  
Victoria Shushakova\*, Universität Göttingen, Germany; Edwin R. Fuller, NC State University, USA; Siegfried Siegesmund, Universität Göttingen, Germany; Florian Heidelberg, Universität Bayreuth, Germany

**11:40 AM**

**(PACRIM10-S08-039-2013) Temperature Dependence of Resistivity of MoSi<sub>2</sub>-Si Composite Thin Films**  
Ryo Kanai, Ryosuke Kitani\*, Yuuki Sato, Shinzo Yoshikado, Doshisha University, Japan

Thursday, June 6, 2013

## Joining and Environmental Effects

8:30 AM-11:40 AM

Room: Windsor Complex

Session Chair(s): Yi-Bing Cheng, Michael Halbig

**8:30 AM**

**(PACRIM10-S08-040-2013) Joining of SiC ceramics through reaction bonding method (Invited Speaker)**

Dongliang Jiang\*, Jingxian Zhang, Shanghai Institute of Ceramics, China

**9:00 AM**

**(PACRIM10-S08-041-2013) Integration of SiC-Based Ceramic Composites using REABOND Technology**

Michael C Halbig\*, NASA Glenn Research Center, USA; Mrityunjay Singh, Craig E Smith, Ohio Aerospace Institute, USA

**9:20 AM**

**(PACRIM10-S08-042-2013) Design and lifetime optimization of ceramic-metal braze joints for**

**high temperature applications**

Alexander Bezold\*, RWTH Aachen University,, Germany; Geng Chen, RWTH Aachen University, Germany; Anke Kaletsch, Johanna Hummes, Christoph Broeckmann, RWTH Aachen University, Germany

**9:40 AM**

**(PACRIM10-S08-043-2013) Microstructure and Properties of C/SiC/GH783 Joint Brazed with Cu-Ti + Mo**

Shangwu Fan\*, Xing Wang, Laifei Cheng, Litong Zhang, Northwestern Polytechnical University, China

**10:00 AM**

Break

**10:20 AM**

**(PACRIM10-S08-044-2013) Improving the strength of ZrB<sub>2</sub>-SiC joint with in situ TiB whiskers array**

Tiesong Lin\*, Weiqi Yang, Peng He, Harbin Institute of Technology, China

**10:40 AM**

**(PACRIM10-S08-045-2013) Effect of oxidation on the thermal radiation properties of 2D C/SiC composites**

Fuyuan Wang\*, Laifei Cheng, Litong Zhang, Northwestern Polytechnical University, China

**11:00 AM**

**(PACRIM10-S08-046-2013) Investigation of MoSi<sub>2</sub> melt infiltrated RSiC and its oxidation behavior**

Hanning Xiao\*, Wenming Guo, Jixiang Yin, Hunan University, China

**11:20 AM**

**(PACRIM10-S08-047-2013) Microstructure observation and oxidation behavior of SiBCN-based composites**

Zhen Wang\*, Shaoming Dong, Bin Wu, Jianbao Hu, State Key Laboratory of High Performance Ceramics and Superfine Microstructure, China

# Symposium 9: Materials for Extreme Environments

Thursday, June 6, 2013

## Design of New Materials with Fascinating Properties

1:20 PM-3:30 PM

Room: Windsor Complex

Session Chair(s): Yanchun Zhou, Luke Walker

**1:20 PM**

**(PACRIM10-S09-001-2013) High Performance HfB<sub>2</sub>-SiC Ceramics Doped with WC: Densification Mechanism, Microstructure Evolution and Mechanical Properties (Invited Speaker)**

Guo-Jun Zhang\*, Shanghai Institute of Ceramics, China

**1:50 PM**

**(PACRIM10-S09-002-2013) High temperature oxidation resistant ultra high temperature ceramic matrix composites by reverse infiltrated and coated carbon-carbon composites**

Luke Sky Walker\*, Erica L Corral, The University of Arizona, USA

**2:10 PM**

**(PACRIM10-S09-003-2013) Synthesis of Novel Hafnium-Containing Ultrahigh-Temperature Ceramic Nanocomposites**

Emanuel Ionescu\*, Jia Yuan, Bernd Mainzer, Ralf Riedel, TU Darmstadt, Germany

**2:30 PM**

**(PACRIM10-S09-004-2013) Preparation and properties of laminated HfC-SiC ceramic composites by tape casting and hot pressing**

Liuyi Xiang\*, Laifei Cheng, Fengjuan Zuo, Northwestern Polytechnical University, China

**2:50 PM**

**(PACRIM10-S09-005-2013) Microstructure and mechanical properties of ZrC-Nb composites**

Yujin Wang\*, Ying Meng, Peng Jia, Yu Zhou, Harbin Institute of Technology, China; Xiyan Zhang, Changchun University of Science and Technology, China

**3:10 PM**

Break

## New Methods for Joining and Testing

3:30 PM-5:50 PM

Room: Windsor Complex

Session Chair(s): Eric Neuman, Guo-Jun Zhang

**3:30 PM**

**(PACRIM10-S09-006-2013) Plasma Arc Welding of Diboride Ceramics**

Derek King\*, Greg Hilmas, William Fahrenholtz, Missouri University of Science and Technology, USA

**3:50 PM**

**(PACRIM10-S09-007-2013) Joining of Zr-based UHTC Composite with Reactive Metals**

Kei Nishimura\*, Noritaka Saito, Kyushu University, Japan; Andreas M Glaeser, University of California, Berkeley, USA; Kunihiko Nakashima, Kyushu University, Japan

**4:10 PM**

**(PACRIM10-S09-008-2013) Transient Liquid Phase Bonding and Wettability of HfB<sub>2</sub>-MoSi<sub>2</sub> Composites with Nb based Alloy**

Noritaka Saito\*, Hiroyuki Ikeda, Andreas M Glaeser, Kunihiko Nakashima, Kyushu University, Japan

**4:30 PM**

**(PACRIM10-S09-009-2013) Ultra High Temperature Mechanical Testing of ZrB<sub>2</sub>-ZrC Based Ceramics**

Eric William Neuman\*, Gregory E Hilmas, William G

Fahrenholtz, Missouri University of S & T, USA

**4:50 PM**

**(PACRIM10-S09-010-2013) Ablative property of laminated ZrB<sub>2</sub>-SiC ceramics under oxyacetylene torch**

Fengjuan Zuo, Laifei Cheng\*, Liuyi Xiang, Litong Zhang, Northwest Polytechnical University, China

**5:10 PM**

**(PACRIM10-S09-011-2013) Oxidation behavior of Zr<sub>2</sub>(AlSi)<sub>4</sub>C<sub>5</sub>/SiC composite and its improvement**

Xinpo Lu\*, Yanchun Zhou, Aerospace Research Institute of Materials & Processing Technology, China; Zenghua Gao, Institute of Metal Research, China

**5:30 PM**

**(PACRIM10-S09-012-2013) Ultra-High Temperature Ceramic Oxidation Behavior Using Multiple High Temperature and Oxygen Rich Testing Facilities**

Melia Miller-Oana\*, Paul Neff, Amber Powell, University of Arizona, USA; Vanessa Murray, Tim Minton, Montana State University, USA; Luke Walker, Erica Corral, University of Arizona, USA

Friday, June 7, 2013

## Physical, Mechanical Properties and Oxidation Behavior

8:30 AM-11:00 AM

Room: Windsor Complex

Session Chair(s): Kei Nishimura, Sylvia Johnson

**8:30 AM**

**(PACRIM10-S09-013-2013) Thermal Properties of ZrB<sub>2</sub> as a Function of Pore Volume Fraction**

Jason Michael Lonergan\*, William G Fahrenholtz, Greg Hilmas, Missouri University of Science & Technology, USA

**8:50 AM**

**(PACRIM10-S09-014-2013) The Thermal Conductivity of ZrB<sub>2</sub> as a function of Hf, Mg, and Al Diboride Additions**

Gregory John Kenneth Harrington\*, Greg E Hillmas, William G Fahrenholtz, Missouri University of Science and Technology, USA

**9:10 AM**

**(PACRIM10-S09-015-2013) Physical properties of spark plasma sintered ultra-high temperature ceramics**

Eugenio Zapata Solvas\*, CSIC, Spain; Doni D Jayaseelan, Imperial College London, United Kingdom; Peter Brown, Dstl, United Kingdom; William E Lee, Imperial College London, United Kingdom

**9:30 AM**

**(PACRIM10-S09-016-2013) Effects of Additives on the Mechanical Properties of ZrB<sub>2</sub> Densified Using Spark Plasma Sintering**

David Pham\*, Luke S Walker, Erica L Corral, University of Arizona, USA

**9:50 AM**

**(PACRIM10-S09-017-2013) In-depth investigation on the high temperature oxidation mechanism of Ti<sub>3</sub>AlC<sub>2</sub> using TG, XRD and HRTEM (Invited Speaker)**

Yanchun Zhou\*, Aerospace Research Institute of Materials & Processing Technology, China; Xiaohui Wang, Institute of Metal Research, CAS, China

**10:20 AM**

**(PACRIM10-S09-018-2013) Dynamic Non-Equilibrium Thermal Gravimetric Analysis of Ultra-High Temperature Ceramics**

Melia Miller-Oana\*, Luke Walker, Erica Corral, University of Arizona, USA

**10:40 AM**

**(PACRIM10-S09-019-2013) Formation mechanism of Ti<sub>3</sub>SiC<sub>2</sub> fabricated by reactive melt infiltration**

Xiaomeng Fan\*, Xiaowei Yin, Lei Wang, Northwestern Polytechnical University, China

# Symposium 10: Advanced Ceramic Coatings: Processing, Properties, and Applications

Thursday, June 6, 2013

## Advanced Thermal and Environmental Barrier Coatings I

8:30 AM-12:00 PM

Room: Tudor

Session Chair(s): To Be Announced

**8:30 AM**

**(PACRIM10-S10-001-2013) Thermodynamics of Rare Earth Silicate EBC Compositions (Invited Speaker)**

Nathan Jacobson\*, NASA Glenn Research Center, USA

**9:10 AM**

**(PACRIM10-S10-002-2013) Thermal and Environmental Barrier Coatings (T/EBCs) for High Temperature Applications by Directed Vapor Deposition (Invited Speaker)**

Balvinder Gogia\*, Derek Hass, Directed Vapor Technology Intl, USA

**9:40 AM**

**(PACRIM10-S10-003-2013) Progress in the development of environmental barrier coatings to prevent hydrothermal corrosion**

Charles Lewinsohn\*, Hyrum Anderson, Josh Johnston, Ceramatec, Inc., USA; Dongming Zhu, NASA, USA

**10:00 AM**

Break

**10:20 AM**

**(PACRIM10-S10-004-2013) Thermal Stability and Mechanical Behavior of Flake-reinforced Oxide Coatings for CMC Surface Protection (Invited Speaker)**

Hideki Kakisawa\*, Takuya Matsumoto, Yutaka Kagawa, University of Tokyo, Japan

**10:50 AM**

**(PACRIM10-S10-005-2013) Thermal Barrier Coatings (TBCs) With Reduced Erosion Rates via Unique Phase Architectures (Invited Speaker)**

Douglas E. Wolfe\*, Michael P Schmitt, The Pennsylvania State University, USA; Dongming Zhu, Bryan J Harder, NASA Glenn Research Center, USA; Amarendra K Rai, Rabi Bhattacharya, UES, Inc., USA

**11:20 AM**

**(PACRIM10-S10-006-2013) Compliant Layered Environmental Barrier Coating With Improved Performance in Cycling Conditions Under Water Vapour Rich Atmosphere**

Eugenio García\*, Joana Mesquita-Guimaraes, Pilar Miranzo, Maria Isabel Osendi, Institute of Ceramics and Glass (ICV-CSIC), Spain; Cristian V Cojocaru, Rogerio S Lima, National Research Council of Canada (NRC), Canada

**11:40 AM**

**(PACRIM10-S10-007-2013) Structure design for the impact resistance of environmental barrier coatings**

Yiguang Wang\*, Northwestern Polytechnical University, China

## Advanced Thermal and Environmental Barrier Coatings II

1:20 PM-3:20 PM

Room: Tudor

Session Chair(s): To Be Announced

# Multifunctional Coatings, Processing and Advanced Surface Characterization

**1:20 PM**

**(PACRIM10-S10-008-2013) Characterization of Thermal Conductivity of ZrO<sub>2</sub>-Y<sub>2</sub>O<sub>3</sub> Coatings Fabricated by EB-PVD (Invited Speaker)**

Byung-Koog Jang\*, National Institute for Materials Science, Japan; Jiangang Sun, Argonne National Laboratory, USA; Seongwon Kim, Yoon-Suk Oh, Hyung-Tae Kim, Korea Institute of Ceramic Engineering and Technology, Republic of Korea; Norio Yamaguchi, Hideaki Matsubara, Japan Fine Ceramics Center, Japan

**1:50 PM**

**(PACRIM10-S10-009-2013) Advanced Thermal Barrier Coating Performance Under Simultaneous CMAS and Thermal Gradient Cycling Load**

Daniel Emil Mack\*, Maria O Jarligo, Doris Sebold, Fariba Tarasi, Tanja Wobst, Robert Vassen, Forschungszentrum Jülich GmbH, Germany

**2:10 PM**

**(PACRIM10-S10-010-2013) Control of Mass-transfer through Grain Boundaries in Alumina Protective Layer by Dopant Configurations in further EBCs (Invited Speaker)**

Satoshi Kitaoka\*, Tsuneaki Matsudaira, Masashi Wada, Makoto Tanaka, Takafumi Ogawa, Japan Fine Ceramics Center, Japan; Yutaka Kagawa, The University of Tokyo, Japan

**2:40 PM**

**(PACRIM10-S10-011-2013) Surface modification of hard coatings on silicon carbide substrate for glass molding process**

Yangjie Yan\*, Shanghai Institute of Ceramics, Chinese Academy of Sciences, China; Yinsheng Li, Graduate University of the Chinese Academy of Sciences, China; Zhengren Huang, Xuejian Liu, Shanghai Institute of Ceramics, Chinese Academy of Sciences, China

**3:00 PM**

Break

3:20 PM-5:50 PM

Room: Tudor

Session Chair(s): To Be Announced

**3:20 PM**

**(PACRIM10-S10-012-2013) Development of new observation system used for deformation measurement of ceramics matrix composites at high temperature**

Yali Dong\*, Hideki Kakisawa, Yutaka Kagawa, The University of Tokyo, Japan

**3:40 PM**

**(PACRIM10-S10-013-2013) High Performance Radiation Energy Reflection EBCs: Effect of Surface/Interface Morphology of Oxide Multilayers**

Masahiro Yamazoe\*, Hideki Kakisawa, Yutaka Kagawa, University of Tokyo, Japan; Satoshi Kitaoka, Japan Fine Ceramics Center, Japan

**4:00 PM**

**(PACRIM10-S10-014-2013) Anti-Reflective Surface Structures In Spinel Ceramic Windows**

Catalin M Florea\*, Sotera Defense Solutions, USA; Lynda E Busse, Shyam S Bayya, Leslie B Shaw, US Naval Research Lab, USA; Ishwar D Aggarwal, Sotera Defense Solutions, USA; Jasbinder S Sanghera, US Naval Research Lab, USA

**4:20 PM**

**(PACRIM10-S10-015-2013) Nano-structured Coatings Made of Y<sub>2</sub>O<sub>3</sub> for a New Plasma-facing Material**

Sung-Min Lee\*, Yoon-Suk Oh, Hyung-Tae Kim, Korea Institute of Ceramic Engineering and Technology (KICET), Republic of Korea



**4:40 PM**

**(PACRIM10-S10-016-2013) Growth of La<sub>0.7</sub>Sr<sub>0.3</sub>MnO<sub>3</sub> film by dc sputtering for spintronics application (Invited Speaker)**  
Diptiranjan Sahu\*, University of the Witwatersrand, South Africa

**5:10 PM**

**(PACRIM10-S10-017-2013) Fabrication of Li<sub>3</sub>Fe<sub>2</sub>(PO<sub>4</sub>)<sub>3</sub> and Li<sub>4</sub>Ti<sub>5</sub>O<sub>12</sub> thin film for transparent Li ion battery**  
Hiroki Nagai\*, Hiroki Hara, Mitsuhiro Enomoto, Chihiro Mochizuki, Ichiro Takano, Mitsunobu Sato, Kogakuin Univ., Japan

**5:30 PM**

**(PACRIM10-S10-018-2013) Development of sol-gel nano-structured zirconia coating on ferritic steel and their hot corrosion studies in alkali salt deposits system at high temperature**  
Indra Bhushan Singh\*, Gazala Ruhi, O. P Modi, S. Das, CSIR-Advanced Materials and Process Research Institute (AMPRI), India

Friday, June 7, 2013

## **Tribological, Wear- and Erosion-resistant Coatings**

8:30 AM-10:20 AM

Room: Tudor

Session Chair(s): To Be Announced

**8:30 AM**

**(PACRIM10-S10-019-2013) Erosion Resistant Coatings for the Suppression of Leading Edge Curl Deformation**

Douglas E. Wolfe\*, George M Slota, Guy S Showers, The Pennsylvania State University, USA

**9:00 AM**

**(PACRIM10-S10-020-2013) Structure and properties of some PVD coatings on ceramic**

**cutting inserts for dry and high speed cutting processes (Invited Speaker)**

Ying Long, Qimin Wang, Shanghua Wu\*, Guangdong University of Technology, China

**9:30 AM**

**(PACRIM10-S10-021-2013) Synthesis and characterization of WC-Co by planetary ball-milling and spark plasma sintering**

Han Chan Lee\*, Kyoung Il Moon, Cheol Woong Byun, KITECH, Republic of Korea

**9:50 AM**

**(PACRIM10-S10-022-2013) Effect of nitriding time for nitrided austenitic stainless steel at high temperature as 723K**

HyunJun Park\*, Kyoung Il Moon, KITECH, Republic of Korea; Jong Wan Park, Han Yang University, Republic of Korea

**10:10 AM**

Break

## **Advanced Hybrid Coatings and New Processing Methods**

10:20 AM-11:50 AM

Room: Tudor

Session Chair(s): To Be Announced

**10:20 AM**

**(PACRIM10-S10-023-2013) Developing multi-component coatings for structural applications by a hybrid HIPIMS technique (Invited Speaker)**

Qimin Wang\*, Guangdong University of Technology, China; Kwang Ho Kim, Pusan National University, Republic of Korea

**10:50 AM**

**(PACRIM10-S10-024-2013) Microstructural and Mechanical Evaluations of Innovative Hybrid Multilayer Coatings Inspired by Abalone Nacre**

Chang-Yu Sun\*, Yu-Chen Chan, Tsung-Hao Hsu, Hsi-Ming Yang, Jyh-Wei Lee, Jenq-Gong Duh, Po-Yu Chen, National Tsing Hua University, Taiwan

**11:10 AM**

**(PACRIM10-S10-025-2013) Sol-Gel-Derived  
Ceramic Thin Films on Plastics: A Versatile  
Technique Utilizing Transfer Process**

Hirimitsu Kozuka\*, Fukui Takafumi, Mitsuru  
Takahashi, Hiroaki Uchiyama, Shohei Tsuboi, Kansai  
University, Japan

**11:30 AM**

**(PACRIM10-S10-026-2013) RF sputtering of PTFE  
films applying substrate bias power**

Young Sik Song\*, KITECH, Republic of Korea;  
JongRyoul Kim, Hanyang University, Republic of  
Korea

# Symposium 11: Geopolymers – Low Energy, Environmentally Friendly, Inorganic Polymeric Ceramics

Monday, June 3, 2013

## Processing and Characterization

1:20 PM-5:00 PM

Room: Tudor

Session Chair(s): Waltraud Kriven

**1:20 PM**

**(PACRIM10-S11-001-2013) Geopolymer Porosity Control Using Surface Modification and Templating (Invited Speaker)**

Brayden Edward Glad\*, Waltraud M Kriven, University of Illinois at Urbana-Champaign, USA

**1:50 PM**

**(PACRIM10-S11-002-2013) Synthesis and Characterization of Hierarchically Porous Geopolymers and Their Composites for Environmental Applications (Invited Speaker)**

Dinesh Medpelli\*, Jung-Min Seo, Dong-Kyun Seo, Arizona State University, USA

**2:20 PM**

**(PACRIM10-S11-003-2013) New Nanostructured Geopolymer Materials and Zeolites Through Formation of Emulsion Blends With Biorenewable Oil (Invited Speaker)**

Dong-Kyun Seo\*, Dinesh Medpelli, Jung-Min Seo, Danielle M Ladd, Arizona State University, USA

**2:50 PM**

**(PACRIM10-S11-004-2013) The characterisation of nano-porosity in geopolymers by positron annihilation techniques (Invited Speaker)**

Paul Guagliardo\*, The University of Western Australia, Australia; Waltraud Kriven, University of Illinois at Urbana-Champaign, USA

**3:20 PM**

Break

**3:40 PM**

**(PACRIM10-S11-005-2013) Characterisation of cotton fibre-reinforced geopolymer composites**

Thamer Alomayri, It-Meng (Jim) Low\*, Curtin University, Australia

**4:00 PM**

**(PACRIM10-S11-006-2013) Effects of high-temperature heat treatment on the mechanical properties of unidirectional carbon fiber reinforced aluminasilicate geopolymer matrix composites (Invited Speaker)**

Dechang Jia\*, Peigang He, Yu Zhou, Harbin Institute of Technology, China

**4:30 PM**

**(PACRIM10-S11-007-2013) The Effect of Speciality Fibres and Fillers on the Thermal Properties of Fly Ash based Geopolymers (Invited Speaker)**

Les Vickers\*, Arie van Riessen, William D Rickard, Centre for Materials Research, Australia

Tuesday, June 4, 2013

## Microstructure and Mechanical Properties

8:30 AM-11:50 AM

Room: Tudor

Session Chair(s): Arie van Riessen

**8:30 AM**

**(PACRIM10-S11-008-2013) Mechanical Properties of Carbon Fiber Reinforced Potassium Geopolymer (Invited Speaker)**

Shinhu Cho\*, Waltraud Kriven, University of Illinois at Urbana-Champaign, USA

**9:00 AM**

**(PACRIM10-S11-009-2013) Mechanical properties measurements of geopolymers (Invited Speaker)**

Xiaofeng Fan\*, Eldon D Case, Michigan State University, USA; Shinhu Cho, Waltraud M Kriven, University of Illinois at Urbana-Champaign, USA

**9:30 AM**

**(PACRIM10-S11-010-2013) The Influence of Fibre Type and their Aspect Ratio on the Toughness of Geopolymer Composites (Invited Speaker)**

Arie van Riessen\*, Les Vickers, William D Rickard, Curtin University, Australia

**10:00 AM**

Break

**10:20 AM**

**(PACRIM10-S11-011-2013) Development of Thai fly ash blended with Thai rice husk ash geopolymers (Invited Speaker)**

Chayanee Tippayasam, Jamjuree Paramee, Kasetsart University, Thailand; Thammarat Panyathanmaporn, National Metal and Materials Technology Center, Thailand; Cristina Leonelli, University of Modena and Reggio Emilia, Italy; Duangrudee Chaysuwan\*, Kasetsart University, Thailand

**10:50 AM**

**(PACRIM10-S11-012-2013) Geopolymers and alkali-activated slags - The importance of thermodynamics in controlling structure and durability (Invited Speaker)**

John L Provis\*, Susan A Bernal, Rupert J Myers, University of Sheffield, United Kingdom

**11:20 AM**

**(PACRIM10-S11-013-2013) Effects of alkali activated materials on the corrosion behaviour of embedded steel reinforcements (Invited Speaker)**

Maria Chiara Bignozzi\*, Cristina Chiavari, Stefania Manzi, University of Bologna, Italy; Arie van Riessen, Curtin University, Australia

# Symposium 12: Advances in Electroceramics

Tuesday, June 4, 2013

## Fundamental and Processing of Electronic Ceramics and Oxide Thin Films

8:30 AM-10:20 AM

Room: Crystal

Session Chair(s): Dragan Damjanovic

**8:30 AM**

**(PACRIM10-S12-001-2013) ZnO-based materials for the active layer of thin film transistors (Invited Speaker)**

Hoo-Jeong Lee\*, Sungkyunkwan University, Republic of Korea

**9:00 AM**

**(PACRIM10-S12-002-2013) Enhancing the Electronic Conductivity of Vanadium-Tellurite Glasses by Tuning the Redox State**

Jonas Kjeldsen\*, Yuanzheng Yue, Aalborg university, Denmark

**9:20 AM**

**(PACRIM10-S12-003-2013) BaTiO<sub>3</sub>-ceramics micro structures new fractal frontiers**

Vojislav Mitic\*, V. Paunovic, University of Nis, Serbia; B. Jordovic, University of Kragujevac, Serbia; P. Petkovic, S. Djordjevic, University of Nis, Serbia

**9:40 AM**

**(PACRIM10-S12-004-2013) Glasses and glass ceramics as dielectrics for high power capacitors**

Martin Letz\*, Schott AG, Germany

**10:00 AM**

Break

## Ferroelectric Thin Films and MEMS Devices

10:20 AM-12:00 PM

Room: Crystal

Session Chair(s): Bryan Huey

**10:20 AM**

**(PACRIM10-S12-005-2013) Processing of Piezoelectric MEMS Across Length Scales (Invited Speaker)**

Susan Trolier-McKinstry\*, Raegan Johnson-Wilke, Derek Wilke, Ryan Keech, Smitha Shetty, Charles Yeager, Penn State, USA; Daniel Schwartz, Vincenzo Cotroneo, Paul Reid, Smithsonian Astrophysical Observatory, USA; Matt Copel, Glenn Martyna, Dennis News, Tom Shaw, Tom Theis, IBM, USA

**10:50 AM**

**(PACRIM10-S12-006-2013) Breaking of macroscopic centric symmetry in unpoled ferroelectric ceramics and in paraelectric phase of ferroelectric ceramics (Invited Speaker)**

Alberto Biancoli, Dragan Damjanovic\*, Swiss Federal Institute of Technology in Lausanne, Switzerland

**11:20 AM**

**(PACRIM10-S12-007-2013) Effect of bottom electrode on the electrical properties of Ca-doped Barium Zirconate Titanate thin films by RF magnetron sputtering**

Hisao Suzuki\*, Yuto Kamai, Naonori Sakamoto, Desheng Fu, Naoki Wakiya, Shizuoka University, Japan

**11:40 AM**

**(PACRIM10-S12-008-2013) Design of Micromachined High Frequency Ultrasonic Transducers Based on Lead Zirconate Titanate Thick Films**

Takashi Iijima\*, National Institute of Advanced Industrial Science and Technology, Japan; Naoto Kochi, Soichiro Okamura, Tokyo University of Science, Japan

## Advanced Processing

1:20 PM-3:40 PM

Room: Crystal

Session Chair(s): Minoru Osada

**1:20 PM**

**(PACRIM10-S12-009-2013) Dielectric and Ferroelectric Behaviour of Sol-Gel-Derived SrTiO<sub>3</sub>/Na<sub>0.5</sub>Bi<sub>0.5</sub>TiO<sub>3</sub>/SrTiO<sub>3</sub>-Layered Thin Films (Invited Speaker)**

Danilo Suvorov\*, Tina Šetinc, Špela Kunej, Matjaz Spreitzer, Jozef Stefan Institute, Slovenia

**1:50 PM**

**(PACRIM10-S12-010-2013) Low Temperature Growth of Oxide Thin Film by Photo-Induced Chemical Solution Deposition for New Devices (Invited Speaker)**

Tetsuo Tsuchiya\*, Tomohiko Nakajima, Kentaro Shinoda, National Institute of Advanced Industrial Science and Technology (AIST), Japan

**2:20 PM**

**(PACRIM10-S12-011-2013) Electrical and Optical Properties of Fluorine-doped Tin Oxide Thin Films with Different Preferred Crystal Orientations**

Chang-Yeoul Kim\*, Korea Institute of Ceramic Eng. & Tech, Republic of Korea; Doh-Hyung Riu, Seoul National Univ. of Tech., Republic of Korea

**2:40 PM**

**(PACRIM10-S12-012-2013) Piezoresponse Force Microscopy Studies of NKN-Based Lead-Free**

**Piezoelectric Thin Films**

Sebastjan Glinsek\*, Seung-Hyun Kim, Kuhn Lindsay, Alice Leung, Angus Kingon, Brown University, USA

**3:00 PM**

**(PACRIM10-S12-013-2013) Drawing of Ag Fine Pattern on Ceramic Substrate for ON-demand Repair by Laser Assisted Ink-jet Printing**

Jun Akedo\*, Hiroki Tsuda, National Institute of Advanced Industrial Science & Technology, Japan

**3:20 PM**

Break

## Fundamental and Multi-ferroic Materials and Their Applications

3:40 PM-5:50 PM

Room: Crystal

Session Chair(s): Susan Trolrier-McKinstry

**3:40 PM**

**(PACRIM10-S12-014-2013) Structural phase transition and multiferroicity in slow step sintering processed doped BiFeO<sub>3</sub> ceramics (Invited Speaker)**

Diptiranjan Sahu\*, University of the Witwatersrand, South Africa

**4:10 PM**

**(PACRIM10-S12-015-2013) Switching Steps in Polydomain Ferroelectrics (Invited Speaker)**

Linghan Ye, James Bosse, Alejandro Llubes, University of Connecticut, USA; Morgan Trassin, University of California, Berkeley, USA; Ramamoorthy Ramesh, Bryan D Huey\*, University of Connecticut, USA

**4:40 PM**

**(PACRIM10-S12-016-2013) Electronic property of RFe<sub>2</sub>O<sub>4</sub> (green ferrite) (Invited Speaker)**

Naoahi Ikeda\*, Tomoko Nagata, Takashi Kambe, Jun Kano, Fukunaga Mamoru, Okayama University, Japan

**5:10 PM**

**(PACRIM10-S12-017-2013) Enhancement of the Electromechanical and Electrocaloric Response Near the Critical Point in Relaxor Ceramic Materials**

Zdravko Kutnjak\*, Jozef Stefan Institute, Slovenia; Brigita Rozic, Centre of Excellence NAMASTE, Slovenia; Barbara Malic, Hana Ursic, Janez Holc, Marija Kosec, Rasa Pirc, Jozef Stefan Institute, Slovenia; Qiming M Zhang, The Pennsylvania State University, USA

**5:30 PM**

**(PACRIM10-S12-018-2013) Effect of Semi-conductive Behavior of NZFO on the Dielectric Properties of Percolative BTO/NZFO Composite Ceramics**

Bin Xiao\*, Ning Ma, Piyi Du, Zhejiang University, China

**9:00 AM**

**(PACRIM10-S12-020-2013) Control of sensing properties of oxide nanowires by manipulating the energy band structure between nanoparticles and nanowires**

Gun-Joo Sun\*, Sun-Woo Choi, Sang Sub Kim, Inha University, Republic of Korea

**9:20 AM**

**(PACRIM10-S12-021-2013) Preparation and characterization of (K, Na)NbO<sub>3</sub> lead-free piezoelectric nanorods**

Li-Qian Cheng\*, Ke Wang, Jing-Feng Li, Tsinghua University, China

**9:40 AM**

**(PACRIM10-S12-022-2013) Percolative High- $\kappa$  and Low-loss BaTiO<sub>3</sub> Composite Films Fabricated by Aerosol Deposition**

Yoon-Hyun Kim\*, Minoru Osada, Waseda University, Japan; Hong-Ki Kim, Song-Min Nam, Kwangwoon University, Republic of Korea

**10:00 AM**

Break

Wednesday, June 5, 2013

## Nanomaterials and Composites

8:30 AM-10:20 AM

Room: Crystal

Session Chair(s): Jun Akedo

**8:30 AM**

**(PACRIM10-S12-019-2013) 2D Oxide Nanoheets from Layered Materials: New Solution to Nanodielectrics (Invited Speaker)**

Minoru Osada\*, Takayoshi Sasaki, National Institute for Materials Science, Japan

## Dielectric Materials and Applications I

10:20 AM-12:00 PM

Room: Crystal

Session Chair(s): To be Announced

**10:20 AM**

**(PACRIM10-S12-023-2013) Development of Ferroelectric Films on Nickel Foils for Power Electronics in Electric Drive Vehicles**

U. (Balu) Balachandran\*, Manoj Narayanan, Shanshan Liu, Beihai Ma, Chan Young Park, Tae Lee, Stephen E Dorris, Argonne National Laboratory, USA

**10:40 AM**

**(PACRIM10-S12-024-2013) Electrical and Reliability Characteristics of Mn-doped Nano BaTiO<sub>3</sub>-Based Ceramics prepared by chemical coating method**

Xiaohui Wang\*, Huiling Gong, Tsinghua University, China; Jinyong Kim, inanotech.com, China; Longtu Li, Tsinghua University, China

**11:00 AM**

**(PACRIM10-S12-025-2013) Effects of secondary phases on dielectric properties of Ba<sub>1-x</sub>AxTiO<sub>3</sub> (A = Mg, Ca and x = 0.2-0.4at%) synthesized by solution combustion technique**

Oratai Jongprateep\*, Tunchanoke Khongnakhon, Kasetsart University, Thailand

**11:20 AM**

**(PACRIM10-S12-026-2013) Effects of Ca-substitution on dielectric properties of Ba<sub>5</sub>SmTi<sub>3</sub>Nb<sub>7</sub>O<sub>30</sub> filled tungsten bronze ceramics**

Li Kun\*, Zhejiang University, China

**11:40 AM**

**(PACRIM10-S12-027-2013) Giant dielectric response and small polaronic hopping in Sm<sub>1.5</sub>Sr<sub>0.5</sub>NiO<sub>4</sub>-based ceramics**

Xiao-Qiang Liu\*, Bo Wen Jia, Xiang Ming Chen, Zhejiang University, China

**Flexible Substrates (Invited Speaker)**

Seung-Hyun Kim\*, Alice Leung, Brown University, USA; Seon-Bae Kim, Dong-Joo Kim, Auburn University, USA; Angus I Kingon, Brown University, USA

**9:10 AM**

**(PACRIM10-S12-029-2013) Ferroelectric and elastic properties of PMN based ceramics in low temperature range (Invited Speaker)**

Guorong Li\*, Lizhu Huang, Shanghai Institute of Ceramics, Chinese Academy of Sciences, China; Abdel Hadi Kassiba, Institute of Le Mans Molecules and Materials, Université du Maine, France; Jinsong Zhu, Nanjing University, China; Desheng Fu, Shizuoka University, Japan; Jiangtao Zeng, Shanghai Institute of Ceramics, Chinese Academy of Sciences, China

**9:40 AM**

**(PACRIM10-S12-030-2013) Temperature Dependence of Ultraonic Velocity in A Lead Zirconate Titanate Ceramic**

Pin Yang\*, Tony Liu, Sandia National Laboratories, USA

**10:00 AM**

Break

Thursday, June 6, 2013

## **Piezoelectric Materials and Devices**

8:40 AM-10:20 AM

Room: Crystal

Session Chair(s): Takaaki Tsurumi

**8:40 AM**

**(PACRIM10-S12-028-2013) Biocompatible Energy Scavenging Devices Using Multifunctional Piezoelectric Thin Films Coupled with Conducting**

## **Dielectric Materials and Applications II**

10:20 AM-12:00 PM

Room: Crystal

Session Chair(s): Wei Ren

**10:20 AM**

**(PACRIM10-S12-031-2013) Enhanced Capacitive Energy Density Via Reduced Field Tuning**

Geoff L Brennecka\*, Harlan J Brown-Shaklee, Sandia National Laboratories, USA; Natthaphon Raengthon, David P Cann, Oregon State University, USA



**10:40 AM**

**(PACRIM10-S12-032-2013) Leakage current properties of bismuth layer-structured ferroelectric films prepared by aerosol deposition method**

Muneyasu Suzuki\*, Jun Akedo, National Institute of Advanced Industrial Science and Technology, Japan

**11:00 AM**

**(PACRIM10-S12-033-2013) Formation of Tough Foundation Layer for Electrical Plating on Insulator using Aerosol Deposition Method of Cu-Al<sub>2</sub>O<sub>3</sub> mixed powder**

Naoki Seto\*, Shingo Hirose, Hiroki Tsuda, Jun Akedo, National Institute of Advanced Industrial Science and Technology, Japan

**11:20 AM**

**(PACRIM10-S12-034-2013) Effect of AE<sup>2+</sup>-doping (AE= Ca, Sr) on Resistivity of BaTiO<sub>3</sub>-(Bi<sub>1/2</sub>Na<sub>1/2</sub>)TiO<sub>3</sub> Ceramics**

Hiroaki Takeda\*, Hiromu Sugiyama, Hitomi Akustu, Mohammad A Zubair, Takuya Hoshina, Takaaki Tsurumi, Tokyo Institute of Technology, Japan

**11:40 AM**

**(PACRIM10-S12-035-2013) High temperature capacitors based on BaTiO<sub>3</sub> - Bi(Zn<sub>1/2</sub>Ti<sub>1/2</sub>)O<sub>3</sub> ceramics**

David Cann\*, Natthaphon Raengthon, Oregon State Univ, USA; Harlan Brown-Shaklee, Geoff Brennecka, Sandia National Lab, USA

## **Piezoelectric Materials (Lead-free I)**

1:20 PM-3:40 PM

Room: Crystal

Session Chair(s): Hajime Nagata

**1:20 PM**

**(PACRIM10-S12-036-2013) The high strain lead-free piezoelectric thick films (Invited Speaker)**

Jiwei Zhai\*, Fang Fu, Tongji University, China;

Zhengkui Xu, City University of Hong Kong, China; Xi Yao, Tongji University, China

**1:50 PM**

**(PACRIM10-S12-037-2013) New opportunities in alkali niobate ceramics processed in low oxygen partial pressure (Invited Speaker)**

Keisuke Kobayashi\*, Hiroyuki Shimizu, Yutaka Doshida, Youichi Mizuno, Taiyo Yuden Co., Ltd., Japan; Clive A Randall, The Pennsylvania State University, USA

**2:20 PM**

**(PACRIM10-S12-038-2013) Lead-free Piezoelectric Films for Transducer Applications**

Wei Ren\*, Xi'an Jiaotong University, China

**2:40 PM**

**(PACRIM10-S12-039-2013) Crystal structure and dielectric properties of (Na<sub>0.5</sub>K<sub>0.5</sub>)NbO<sub>3</sub>-(Bi<sub>0.5</sub>Na<sub>0.5</sub>)ZrO<sub>3</sub> solid solution**

Ruiping Wang\*, Hiroshi Bando, National Institute of Advanced Industrial Science and Technology, Japan; Mitsuru Itoh, Tokyo Institute of Technology, Japan

**3:00 PM**

**(PACRIM10-S12-040-2013) Piezoelectric Enhancement of Relaxor-based Lead-free Piezoelectric Ceramics by Nano/macro-complex Domain Configuration**

Satoshi Wada\*, Rtutaro Mitsui,, Ichiro Fujii, Kouichi Nakashima, Shintro Ueno, Nobuhiro Kumada, University of Yamanashi, Japan

**3:20 PM**

Break

## **Optical Properties and Their Applications**

3:40 PM-5:50 PM

Room: Crystal

Session Chair(s): Sang Sub Kim

**3:40 PM**

**(PACRIM10-S12-041-2013) Electro-Optical Effect in Ferroelectrics: Interpretation of Origins and Film Application (Invited Speaker)**

Takaaki Tsurumi\*, Jong-Min Oh, Kotaro Takeda, Takuya Hoshina, Hiroaki Takeda, Tokyo Institute of Technology, Japan

**4:10 PM**

**(PACRIM10-S12-042-2013) Synthesis and Thin Film Deposition of Ni-Co Oxide Spinel with Optoelectronic Properties**

Shu-Yi Tsai\*, Kuan-Zong Fung, Yang-Hao Hsu, National Cheng Kung University, Taiwan; Hui-Yun Bor, Chao-Nan Wei, Chung-Shan Institute of Science and Technology(CSIST), Taiwan

**4:30 PM**

**(PACRIM10-S12-043-2013) Improved pyroelectric performances of PMNT single crystals used for infrared detectors**

Haosu Luo\*, Shanghai Institute of Ceramics, China

**4:50 PM**

**(PACRIM10-S12-044-2013) Multiple functions of the Mn doped CaZnOS in the Electro-Mechano-Optical conversions**

Dong Tu\*, Kyushu University, Japan; Chao-Nan Xu, Yuki Fujio, National Institute of Advanced Industrial Science and Technology (AIST), Japan

**5:10 PM**

**(PACRIM10-S12-045-2013) Effect of Zn/Ga ratio on persistent luminescence in Bi<sup>3+</sup> or/and Cr<sup>3+</sup> doped ZnGa<sub>2</sub>O<sub>4</sub> phosphors**

Yixi Zhuang\*, Setsuhisa Tanabe, Kyoto University, Japan

Friday, June 7, 2013

## Electrical or Magnetic Devices

8:30 AM-10:40 AM

Room: Crystal

Session Chair(s): Haosu Luo

**8:30 AM**

**(PACRIM10-S12-046-2013) Growth of large-size TSLAG single crystal for high power laser optical isolators (Invited Speaker)**

Takeshi Kizaki\*, Akiharu Funaki, Tsubasa Hatanaka, Kunihiro Naoe, Fujikura Ltd, Japan; Villora Garcia, Kiyoshi Shimamura, National Institute for Materials Science, Japan

**9:00 AM**

**(PACRIM10-S12-047-2013) Interface Control of Oxide fibers for Chemical Sensors**

Sang Sub Kim\*, Inha University, Republic of Korea

**9:20 AM**

**(PACRIM10-S12-048-2013) Zirconia-electrolyte-based impedancemetric sensors using Sr-doped LaMnO<sub>3</sub> (LSM) electrodes for measuring NO<sub>x</sub> in combustion exhaust streams**

Leta Yar-Li Woo\*, Robert S Glass, Lawrence Livermore Nat'l Lab, USA; Robert F Novak, Jaco H Visser, Ford Motor Company, USA

**9:40 AM**

**(PACRIM10-S12-049-2013) Effects of Simultaneous Addition of Antimony and Yttrium Oxides to Bi-based Zinc Oxide Varistors on the Electrical Characteristics**

Yuya Kojima\*, Takayuki Watanabe, Yuuki Sato, Shinzo Yoshikado, Doshisha University, Japan

**10:00 AM**

**(PACRIM10-S12-050-2013) Effects of Thermal Annealing for Barium or Strontium and Silicon-added Bismuth Based Zinc Oxide Varistors on the Electrical Properties and the Grain Boundary Structure**

Atsuko Kubota\*, Yuuki Sato, Shinzo Yoshikado, Doshisha University, Japan

**10:20 AM**

Break

# Piezoelectric Materials (Lead-free II)

10:40 AM-11:50 AM

Room: Crown

Session Chair(s): Hiroaki Takeda

**10:40 AM**

**(PACRIM10-S12-051-2013) Historical Overview and Current Developments of Lead-free Piezoelectric Ceramics (Invited Speaker)**

Hajime Nagata\*, Tadashi Takenaka, Tokyo University of Science, Japan

**11:10 AM**

**(PACRIM10-S12-052-2013) Bismuth Titanate Ceramics Modified by Rare Earth Elements**

Yanmei Kan\*, Shaoming Dong, Peiling Wang, Shanghai Institute of Ceramics, Chinese Academy of Sciences, China

**11:30 AM**

**(PACRIM10-S12-053-2013) SrBi<sub>2</sub>(Ta<sub>1-x</sub>Nb<sub>x</sub>)<sub>2</sub>O<sub>9</sub> Ferroelectric Ceramic in Hot-Press Sintering**

Wen Wang\*, Harbin Institute Technology, China

# Symposium 13: Microwave Materials and Their Applications

Monday, June 3, 2013

## Effect of Structure and Microstructure on Microwave Characteristics

1:20 PM-4:40 PM

Room: Stuart

Session Chair(s): Xiang Ming Chen, Danilo Suvorov

**1:20 PM**

**(PACRIM10-S13-001-2013) Microstructural Features in High Frequency Ceramics (Invited Speaker)**

Danilo Suvorov\*, Boštjan Jančar, Jozef Stefan Institute, Slovenia

**1:50 PM**

**(PACRIM10-S13-002-2013) Antiferroelectricity and Its Origin in the Prototypical Lead Zirconate (Invited Speaker)**

Alexander K. Tagantsev\*, Swiss Federal Institute of Technology (EPFL), Switzerland

**2:20 PM**

**(PACRIM10-S13-003-2013) Internal strain and dielectric losses on the pseudo-tungstenbronze  $Ba_{6-3x}R_{8+2x}Ti_{18}O_{54}$  (R = Sm, Nd, Pr, and La) solid solutions with different R ions (Invited Speaker)**

Hitoshi Ohsato\*, Nagoya Industrial Science Research Institute, Japan; Jeong-seog Kim, Hoseo University, Republic of Korea; Masaki Imaeda, Nagoya Institute of Technology, Japan

**2:50 PM**

Break

**3:10 PM**

**(PACRIM10-S13-004-2013) Structure Stability and Microwave Dielectric Properties of Double Perovskite Ceramics -(1-x)BaMg<sub>1/2</sub>W<sub>1/2</sub>O<sub>3</sub>+xBaY<sub>2/3</sub>W<sub>1/3</sub>O<sub>3</sub> (Invited Speaker)**

Jian Jiang Bian\*, JiaYin Wu, Shanghai University, China

**3:40 PM**

**(PACRIM10-S13-005-2013) Effect of the Microstructure on the Microwave Dielectric Properties of Bi<sub>12</sub>TiO<sub>20</sub> Ceramics (Invited Speaker)**

Sahn Nahm\*, Mi-Ri Joung, Byoung-Jik Jeong, Sang-Hyo Kweon, Jin-Seong Kim, Korea University, Republic of Korea; Ji-Won Choi, Korea Institute of Science and Technology, Republic of Korea; Seong-Ju Hwang, Ewha Womans University, Republic of Korea

**4:10 PM**

**(PACRIM10-S13-006-2013) Effects of cation substitution on the structure, microstructure and microwave dielectric properties in Ca-based complex perovskite systems (Invited Speaker)**

Maosen Fu\*, Northwestern Polytechnical University, China; Xiaoqiang Liu, Xiangming Chen, Zhejiang University, China

## Tunable Dielectrics for Microwave Electronics I

4:40 PM-6:20 PM

Room: Stuart

Session Chair(s): Hitoshi Ohsato

**4:40 PM**

**(PACRIM10-S13-007-2013) The Beauty of Buffer Layers: Materials Property Tuning for Novel Microwave Device Applications (Invited Speaker)**

Melanie Cole\*, Eric Ngo, Mat Ivill, S. Gary Hirsch, Cliff Hubbard, Ryan Toonen, U.S. Army Research Laboratory, WMRD, USA

**5:10 PM**

**(PACRIM10-S13-008-2013) Barium Zirconate Titanate Thin Films with High Permittivity from Molecular-designed Precursor Solution (Invited Speaker)**

Hisao Suzuki\*, Shizuoka University, Japan

**5:40 PM**

**(PACRIM10-S13-009-2013) Inkjet printing of tunable microwave devices**

Andreas Friederich\*, Christian Kohler, Karlsruhe Institute of Technology, Germany; Mohammad Nikfalazar, Mohsen Sazegar, Rolf Jakoby, Technische Universität Darmstadt, Germany; Joachim R Binder, Werner Bauer, Karlsruhe Institute of Technology, Germany

**6:00 PM**

**(PACRIM10-S13-010-2013) Preparation of Silver Nanoparticle dispersed Pb(Zr,Ti)O<sub>3</sub> Thin Film with High Permittivity and Tunability under Low Voltage**

Tao Hu, Piyi Du\*, Zhejiang University, China

Tuesday, June 4, 2013

## Tunable Dielectrics for Microwave Electronics II

8:30 AM-9:50 AM

Room: Stuart

Session Chair(s): Michael Hill

**8:30 AM**

**(PACRIM10-S13-011-2013) Mechanism and Control of High Tunability of (100) Oriented (Pb,Sr)TiO<sub>3</sub> Thin Films (Invited Speaker)**

Piyi Du\*, Ning Ma, Zan Zheng, Zhejiang University, China

**9:00 AM**

**(PACRIM10-S13-012-2013) Interface Engineered Ferroelectric Heterostructures (Invited Speaker)**

Chonglin Chen\*, University of Texas at San Antonio, USA

**9:30 AM**

**(PACRIM10-S13-013-2013) Microstructure and microwave properties of low temperature sintered BST thick-films and their applicability to co-firing processes**

Christian Kohler\*, Andreas Friederich, Karlsruhe Institute of Technology (KIT), Germany; Di Wang, Karlsruhe Institute of Technology, Germany; Mohammad Nikfalazar, Mohsen Sazegar, Rolf Jakoby, Technische Universität Darmstadt, Germany; Joachim R Binder, Karlsruhe Institute of Technology (KIT), Germany

## Ceramic Materials and Technology for Microwave and Millimeter Wave Devices

9:50 AM-12:10 PM

Room: Stuart

Session Chair(s): Chonglin Chen

**9:50 AM**

**(PACRIM10-S13-014-2013) A new class of Microwave Garnets with high Dielectric Constants (Invited Speaker)**

David Bowie Cruickshank\*, Michael D Hill, Skyworks TransTech, USA

**10:20 AM**

**(PACRIM10-S13-015-2013) There is no secret ingredient in super-Q BaMg<sub>1/3</sub>Ta<sub>2/3</sub>O<sub>3</sub> microwave ceramic (Invited Speaker)**

Taras Kolodiazhnyi\*, National Institute for Materials Science, Japan

**10:50 AM**

**(PACRIM10-S13-016-2013) Low Loss Ceramic-polymer Composites for Microwave Antenna and Wireless Sensor Applications**

Li Zhang, Zhenxing Yue\*, Longtu Li, Tsinghua University, China

**11:10 AM**

**(PACRIM10-S13-017-2013) Phase evolution and controllable shrinkage induced by dispersant in BaAl<sub>2</sub>Si<sub>2</sub>O<sub>8</sub> low-permittivity microwave dielectric ceramics**

Wen Lei, Xiao-Hong Wang, Ran Ang, Wen-Zhong Lu\*, Huazhong University of Science and Technology, China

**11:30 AM**

**(PACRIM10-S13-018-2013) Titanate glass-ceramics for mobile applications in the GHz range**

Hubertus Braun\*, Martin Letz, Schott AG, Germany; Martun Hovhannisyan, TU Darmstadt, Germany; Hans-Joachim Elmers, University of Mainz, Germany; Oliver Leisten, Sarantel Ltd., United Kingdom

**11:50 AM**

**(PACRIM10-S13-019-2013) Mg-Modified Ba((Co<sub>0.6</sub>Zn<sub>0.4</sub>)<sub>1/3</sub>Nb<sub>2/3</sub>)O<sub>3</sub> Microwave Dielectric Ceramics**

Pian-pian Ma\*, Lei Yi, Lei Li, Xiangming Chen, Zhejiang University, China

## Characterization, LTCC and Other Issues

1:20 PM-5:30 PM

Room: Stuart

Session Chair(s): Eung Soo Kim, Rick Ubic

**1:20 PM**

**(PACRIM10-S13-020-2013) HakCol and ErCalc: Free software to calculate permittivity from resonant frequency (Invited Speaker)**

Rick Ubic\*, Boise State University, USA

**1:50 PM**

**(PACRIM10-S13-021-2013) Embedded Capacitor for Flexible Electronics using Post-LTCC Technology (Invited Speaker)**

Yoshihiko Imanaka\*, Hideyuki Amada, Fumiaki Kumasaka, Fujitsu Laboratories Ltd., Japan

**2:20 PM**

**(PACRIM10-S13-022-2013) Effects of Nucleation Agents on Microwave Dielectric Properties of CaMgSi<sub>2</sub>O<sub>6</sub> Glass-Ceramics**

BoKyeong Choi\*, Gui Nam Sun, Eung Soo Kim, Kyonggi University, Republic of Korea

**2:40 PM**

**(PACRIM10-S13-023-2013) Effects of Crystallization Behaviors on Microwave Dielectric Properties of (Ca<sub>1-x</sub>Mg<sub>x</sub>)SiO<sub>3</sub> Glass-Ceramics**

Chang Jun Jeon\*, Eung Soo Kim, Kyonggi University, Republic of Korea

**3:00 PM**

**(PACRIM10-S13-024-2013) Crystal chemistry of point defects in perovskites**

Kevin Tolman\*, Rick Ubic, Boise State University, USA; Steven Letourneau, Waltraud Kriven, University of Illinois at Urbana-Champaign, USA

**3:20 PM**

Break

**3:40 PM**

**(PACRIM10-S13-025-2013) Affecting Factors on the Microwave Dielectric Properties of Ceramics / Polymer Composites (Invited Speaker)**

Eung Soo Kim\*, Kyonggi University, Republic of Korea

**4:10 PM**

**(PACRIM10-S13-026-2013) Thin glass characterization in the radio frequency range**

Alfred Ebberg, West Coast University of Applied Sciences, Germany; Ulrich Fotheringham\*, Schott AG, Germany; Ivan Ndip, Gerhard Fotheringham, Christian Tschoban, Fraunhofer Institute for Reliability and Microintegration, Germany; Isa Pieper, Fraunhofer Institute for Silicon Technology, Germany

**4:30 PM**

**(PACRIM10-S13-027-2013) Electromagnetic Wave Absorption Properties of Al-doped ZnO/ZrSiO<sub>4</sub> Composite Ceramics**

Kong Luo\*, Yin Xiaowei, Northwestern  
Polytechnical University, China

**4:50 PM**

**(PACRIM10-S13-028-2013) Dielectric properties  
and ferroelectric phase transition in Ba<sub>1-x</sub>Ca<sub>x</sub>TiO<sub>3</sub>  
ceramics**

Xiaona Zhu\*, Xiangming Chen, Wei Zhang, Zhejiang  
University, China

**5:10 PM**

**(PACRIM10-S13-029-2013) Effect of A and B site  
vacancies on structure in Sr<sub>0.9x</sub>Nd<sub>0.9-</sub>  
0.6xMg<sub>1.3y</sub>Ti<sub>0.825-0.65y</sub>O<sub>3</sub> and NdMg<sub>0.5-</sub>  
2yTi<sub>0.5+y</sub>O<sub>3</sub>**

Steven Letourneau\*, Waltraud M Kriven, University  
of Illinois at Urbana-Champaign, USA; Rick Ubic,  
Boise State University, USA

# Symposium 14: Oxide Materials for Nonvolatile Memory Technology and Applications

Tuesday, June 4, 2013

## Oxide Materials for Nonvolatile Memory I

1:20 PM-3:40 PM

Room: Tudor

Session Chair(s): Dinghua Bao

**1:20 PM**

**(PACRIM10-S14-001-2013) Growth/Dissolution of Conductive Filaments in Oxide-Solid-Electrolyte-Based RRAM (Invited Speaker)**

Qi Liu, Ming Liu\*, Shibing Long, Hangbing Lv, Institute of Microelectronics, Chinese Academy of Sciences, China

**1:50 PM**

**(PACRIM10-S14-002-2013) Thin amorphous rare-earth scandate for nonvolatile resistive random access memory application (Invited Speaker)**

Wen-Zhi Chang, Jinn P. Chu\*, National Taiwan University of Science and Technology, Taiwan; Sea-Fue Wang, National Taipei University of Technology, Taiwan

**2:20 PM**

**(PACRIM10-S14-003-2013) Structural Influence on Resistive Switching in Hafnium based Resistive RAM Devices: a Molecular Dynamics Study**

Giulia Broglia\*, Monia Montorsi, Luca Larcher, Andrea Padovani, University of Modena and Reggio Emilia, Italy

**2:40 PM**

**(PACRIM10-S14-004-2013) Characteristics of ZrO<sub>2</sub>-based flexible resistive switching memory fabricated by RF-magnetron sputtering**

Chun-Chieh Lin, Huei-Bo Lin, Chien-Le Chang\*, National Dong Hwa University, Taiwan

**3:00 PM**

**(PACRIM10-S14-005-2013) Nanoscale Resolved Phase Change Dynamics**

James L Bosse, University of Connecticut, USA; Ilja Grishin, Joshua Leveillee, Lancaster University, United Kingdom; Oleg V Kolosov, Bryan D Huey\*, University of Connecticut, USA

**3:20 PM**

Break

## Oxide Materials for Nonvolatile Memory II

3:40 PM-6:00 PM

Room: Tudor

Session Chair(s): Ming Liu

**3:40 PM**

**(PACRIM10-S14-006-2013) HfO<sub>2</sub> Thin Films for Resistive Switching Memory Technology (Invited Speaker)**

Tseung-Yuen Tseng\*, National Chiao Tung University, Taiwan

**4:10 PM**

**(PACRIM10-S14-007-2013) Resistive switching properties of spinel structure oxide thin films (Invited Speaker)**

Dinghua Bao\*, Wei Hu, Ni Qin, Sun Yat-Sen University, China

**4:40 PM**

**(PACRIM10-S14-008-2013) Research of Sub-10nm Transition Metal Oxide Resistive Non-Volatile Memory (R-RAM) (Invited Speaker)**



Fu-Liang Yang\*, ChiaHua Ho, National Nano Device Laboratories, NARL, Taiwan

**5:10 PM**

**(PACRIM10-S14-009-2013) Stable Resistive Switching Characteristics of Al<sub>2</sub>O<sub>3</sub> Layer Inserted in HfO<sub>2</sub> Based RRAM Devices**

Chun-Yang Huang\*, Jheng-Hong Jieng, Tseung-Yuen Tseng, National Chiao Tung University, Taiwan

Wednesday, June 5, 2013

## Oxide Materials for Nonvolatile Memory III

8:30 AM-10:20 AM

Room: Tudor

Session Chair(s): Sunggi Baik

**8:30 AM**

**(PACRIM10-S14-010-2013) Nonvolatile Memories using Single Electron Tunneling Effects in Si Quantum Dots inside Tunnel Silicon Oxide (Invited Speaker)**

Ryuji Ohba\*, Center for Semiconductor Research & Development, Toshiba Co., Japan; Mitani Yuichiro, Research & Development Center, Toshiba Co., Japan

**9:00 AM**

**(PACRIM10-S14-011-2013) One-by-one electron charging/discharging in nanocrystal flash memories (Invited Speaker)**

Jeanlex Soares de Sousa\*, Universidade Federal do Ceará, Brazil; Robby Peibst, Institute for Solar Energy Research Hamelin (ISFH), Germany; Gil A Farias, Universidade Federal do Ceará, Brazil; Jean-Pierre Leburton, University of Illinois at Urbana-Champaign, USA; Karl R Hofmann, Leibniz Universität Hannover, Germany

**9:30 AM**

**(PACRIM10-S14-012-2013) Ferroelectric tunnel junctions (Invited Speaker)**

Vincent Garcia\*, Andre Chanthbouala, Arnaud Crassous, Ryan Cherifi, Soren Boyn, Stephane Fusil, Unite Mixte CNRS/Thales, France; Xavier Moya, University of Cambridge, United Kingdom; Hiroyuki Yamada, Unite Mixte CNRS/Thales, France; Stephane Xavier, Thales Research and Technology, France; Cyrile Deranlot, Karim Bouzehouane, Eric Jacquet, Unite Mixte CNRS/Thales, France; Neil D Mathur, University of Cambridge, United Kingdom; Julie Grollier, Manuel Bibes, Agnes Barthelemy, Unite Mixte CNRS/Thales, France

**10:00 AM**

Break

## Oxide Materials for Nonvolatile Memory IV

10:20 AM-12:00 PM

Room: Tudor

Session Chair(s): Ryuji Ohba

**10:20 AM**

**(PACRIM10-S14-013-2013) Texture Control of PbTiO<sub>3</sub> Thin Films for Ferroelectric Storage Media**

Daehong Kim, POSTECH, Republic of Korea; Yong Kwan Kim, Samsung Electronics Co., Republic of Korea; Sunggi Baik\*, POSTECH, Republic of Korea

**10:40 AM**

**(PACRIM10-S14-014-2013) Resistive Switching and Rectification Characteristics with CoO/ZrO<sub>2</sub> Double Layers**

Tsung-Ling Tsai\*, Jia-Woei Wu, Tseung-Yuen Tseng, National Chiao Tung University, Taiwan

**11:00 AM**

**(PACRIM10-S14-015-2013) Improvement of resistive switching properties of Ti/ZrO<sub>2</sub>/Pt with embedded Germanium**

Chun-An Lin\*, Debashis Panda, Tseung-Yuen Tseng, National Chiao Tung University, Taiwan

# Symposium 15: Solid Oxide Fuel Cells and Hydrogen Technology

Monday, June 3, 2013

## Electrolytes

1:20 PM-6:00 PM

Room: Bayside/Strand

Session Chair(s): Fatih Dogan, Masanobu Awano

**1:20 PM**

**(PACRIM10-S15-001-2013) Reversible Solid Oxide Fuel Cells for Power Generation and Electrolysis using Mixed Ionic-Electronic Conducting (MIEC) Electrolytes (Invited Speaker)**

Anil Virkar\*, University of Utah, USA; Greg Tao, Materials and Systems Research, Inc., USA

**1:50 PM**

**(PACRIM10-S15-002-2013) A Future Energy Technology: Direct and Reversible Solid Oxide Fuel Cells (Invited Speaker)**

Nguyen Q Minh\*, University of California, San Diego, USA

**2:20 PM**

**(PACRIM10-S15-003-2013) Fe and Mn doped CeO<sub>2</sub> for improved anodic performance of LaGaO<sub>3</sub> base electrolyte (Invited Speaker)**

Tatsumi Ishihara\*, Young-Wan Ju, Tae Ho Shin, Shintaro Ida, Kyushu University, Japan

**2:50 PM**

**(PACRIM10-S15-004-2013) Atomic Layer Deposition of Ceramic Electrolytes for High Performance SOFCs (Invited Speaker)**

Kyung Sik Son, Kiho Bae, Korea University, Republic of Korea; Tugut Gur, Fritz Prinz, Stanford University, USA; Joon Hyung Shim\*, Korea University, Republic of Korea

**3:20 PM**

Break

**3:40 PM**

**(PACRIM10-S15-005-2013) Phase compatibility and fuel cell performance of Bi-V-O and Bi-V-Ca-O ionic materials**

Yu-Wei Lai\*, Wen-Cheng J. Wei, National Taiwan University, Taiwan

**4:00 PM**

**(PACRIM10-S15-006-2013) (Bi,Sr)FeO<sub>3</sub> perovskites as cathode for intermediate-temperature solid oxide fuel cells**

Wen-Cheng Wei, Te-Jung Huang\*, National Taiwan University, Taiwan

**4:20 PM**

**(PACRIM10-S15-007-2013) High temperature thermal expansion of LaSrTiFeO<sub>3-δ</sub> in air and reducing atmosphere**

Woosuck Shin, Koji Inukai\*, Nagoya Institute of Technology, Japan; Koji Inukai, Hiroyuki Iwai, Yosuke Takahashi, Noritake Co.,Ltd., Japan; Woosuck Shin, Electroceramics Processing Research Group, Japan

**4:40 PM**

**(PACRIM10-S15-008-2013) Structural, thermal and electrical study of Bi<sub>1-x</sub>Sr<sub>x</sub>FeO<sub>3</sub> (0.40 ≤ x ≤ 0.55) system for Solid oxide fuel cells applications**

Samita Thakur\*, K. Singh, O. P Pandey, Thapar University, India

**5:00 PM**

**(PACRIM10-S15-009-2013) Electrochemical Performance of single step fabricated Intermediate Temperature Solid Oxide Fuel Cells**

Visweshwar Sivasankaran\*, Lionel Combemale, Gilles Caboche, Universite de Bourgogne, France; Marie Cecile Pera, FEMTO-ST Institute TECHN-HOM, France

**5:20 PM**

**(PACRIM10-S15-010-2013) Cell Performance of SOFC using CH<sub>4</sub>-CO<sub>2</sub> mixed gas**

Soichiro Sameshima\*, Naoki Furukawa, Yoshihiro Hirata, Kagoshima University, Japan

**5:40 PM**

**(PACRIM10-S15-011-2013) Effects of Local Strain on Oxide Ionic Conductivity in Cu- and Ga-doped Pr<sub>2</sub>NiO<sub>4+δ</sub> film laminated on Sm-doped CeO<sub>2</sub>**

Junji Hyodo\*, Shintaro Ida, Kyushu University, Japan; John A Kilner, International Institute for Carbon Neutral Energy Research, Japan; Tatsumi Ishihara, Kyushu University, Japan

Tuesday, June 4, 2013

## Electrodes

8:30 AM-12:00 PM

Room: Bayside/Strand

Session Chair(s): Nguyen Minh, Yoshikazu Suzuki

**8:30 AM**

**(PACRIM10-S15-012-2013) Development of the Advanced Ceramic Reactor (Invited Speaker)**

Koichi Hamamoto, Yoshinobu Fujishiro, Toshio Suzuki, Toshiaki Yamaguchi, Hirofumi Sumi, Masanobu Awano\*, National Institute of Advanced Industrial Science and Technology (AIST), Japan

**9:00 AM**

**(PACRIM10-S15-013-2013) Different Cathode Interactions and Performance Behaviors in Solid Oxide Fuel Cells (Invited Speaker)**

Kathy Lu\*, Wenle Li, Zhenbo Xia, Virginia Tech, USA

**9:30 AM**

**(PACRIM10-S15-014-2013) Advanced and durable cathodes enable an SOFC to operate at lower temperature (Invited Speaker)**

Sihyuk Choi, Seonyoung Yoo, Ulsan National Institute of Science and Technology (UNIST), Republic of Korea; Jeeyoung Shin, Dong-Eui University, Republic of Korea; Guntae Kim\*, Ulsan

National Institute of Science and Technology (UNIST), Republic of Korea

**10:00 AM**

Break

**10:20 AM**

**(PACRIM10-S15-015-2013) Solid Oxide Metal-air Battery - A New Energy Storage Mechanism (Invited Speaker)**

Kevin Huang\*, Xuan Zhao, Yunhui Gong, Xue Li, University of South Carolina, USA

**10:50 AM**

**(PACRIM10-S15-016-2013) Highly Stable Nanostructured Composite Electrodes for Solid Oxide Fuel Cells (Invited Speaker)**

Fatih Dogan\*, Aligul Buyukaksoy, Ayhan Sarikaya, Vladimir Petrovsky, Missouri University of Science and Technology, USA

**11:20 AM**

**(PACRIM10-S15-017-2013) Fabrication of Anode Supported SOFC with Apatite type Lanthanum Silicate Paste Films**

Ryohei Mori\*, Fuji Pigment Co.Ltd, Japan; Hideki Yoshioka, Hyogo Prefectural Institute of Technology, Japan

**11:40 AM**

**(PACRIM10-S15-018-2013) Solid Oxide Fuel Cell Cathode Enhancement**

Greg G Tao\*, Materials & Systems Research Inc., USA

## Stacks, Interconnects, Sealants, Hydrogen Production

1:20 PM-6:00 PM

Room: Bayside/Strand

Session Chair(s): Prabhakar Singh, Kathy Lu

**1:20 PM**

**(PACRIM10-S15-019-2013) Degradation of Solid Oxide Fuel Cell Air Electrode (Invited Speaker)**

Prabhakar Singh\*, Manoj Mahapatra, Boxun Hu, Na Li, Michael Keane, University of Connecticut, USA

**1:50 PM**

**(PACRIM10-S15-020-2013) Progress of Residential Fuel Cell Systems and Technologies in Japan (Invited Speaker)**

Yasunobu Mizutani\*, Toho Gas Co., Ltd., Japan

**2:20 PM**

**(PACRIM10-S15-021-2013) Research and Development Activities of Fuel Cells in the Pohang Region, Korea (Invited Speaker)**

Nigel Sammes\*, Jong Shik Chung, POSTECH, Republic of Korea

**2:40 PM**

**(PACRIM10-S15-022-2013) Synthesis and characterization of TiO<sub>2</sub> powders by electro-spray pyrolysis method (Invited Speaker)**

Yoshikazu Suzuki\*, University of Tsukuba, Japan; Susumu Tohno, Kyoto University, Japan

**3:00 PM**

**(PACRIM10-S15-023-2013) Evaluation of interfacial shear strength of sol-gel derived spinel oxide coating applied on Fe-16Cr alloy for solid oxide fuel cells**

Wenyang Zhang\*, Kaishi Wang, Rajendra K Bordia, University of Washington, USA

**3:20 PM**

Break

**3:40 PM**

**(PACRIM10-S15-024-2013) Unraveling the oscillation reaction of Ni catalyst during partial oxidation of methane**

Daehee Lee\*, Dongha Kim, Yonsei University, Republic of Korea; Joosun Kim, Korea Institute of Science and Technology, Republic of Korea; Jooho Moon, Yonsei University, Republic of Korea

**4:00 PM**

**(PACRIM10-S15-025-2013) Elucidation of Hydrogen Interaction with Carbon Nano-Structures and the Formation of Nanocomposites for Energy Storage and Conversion Devices**

Joseph A Teproovich\*, Ragaiy Zidan, Hector Colon-Mercado, Savannah River National Laboratory, USA; Scott Greenway, Greenway Energy, USA

**4:20 PM**

**(PACRIM10-S15-026-2013) Development of non-oxide ceramic membranes for high temperature hydrogen separation**

Aziz Cherifi\*, Laetitia Chareyre, Sophie Cerneaux, Vincent Rouessac, David Cornu, Ecole Nationale Supérieure de Chimie de Montpellier, France

**4:40 PM**

**(PACRIM10-S15-027-2013) New glass-ceramics sealant for SOEC/SOFC**

Kuldeep Sharma, Bhabha Atomic Research Centre, India; Francois O Mear\*, Lille 1 University, France; Govind P Kothiyal, Bhabha Atomic Research Centre, India; Daniel Coillot, Lille 1 University, France; Hélène Nonnet, CEA-DEN-Marcoule, France; Lionel Montagne, Lille 1 University, France

**5:00 PM**

**(PACRIM10-S15-028-2013) High Temperature Viscous Sealing Glasses for Solid Oxide Fuel Cells: Development, Properties, and Performance**

Cheol-Woon Kim\*, Joe Szabo, Ray Crouch, Rob Baird, MO-SCI Corporation, USA; Jen Hsien Hsu, Casey Townsend, Richard K Brow, Missouri University of Science and Technology, USA

**5:20 PM**

**(PACRIM10-S15-029-2013) Stable glass-ceramic sealants for solid oxide fuel cells**

Ashutosh Goel\*, Sterlite Technologies Ltd., India; Jose Ferreira, University of Aveiro, Portugal

**5:40 PM**

**(PACRIM10-S15-030-2013) Interfacial interactions  
between an alkali-free borosilicate viscous sealing  
glass and aluminized ferritic stainless steel**

Jen-Hsien Hsu\*, MISSOURI S&T, USA; Cheol-Woon  
Kim, MO-SCI Corp., USA; Richard K Brow, Casey  
Townsend, MISSOURI S&T, USA; Joe Szabo, Ray  
Crouch, Rob Baird, MO-SCI Corp., USA

# Symposium 16: Direct Thermal to Electrical Energy Conversion Materials and Applications

Monday, June 3, 2013

## Oxide Thermoelectric Materials

1:20 PM-3:40 PM

Room: Coastal

Session Chair(s): Sidney Lin

**1:20 PM**

**(PACRIM10-S16-001-2013) Photo-Seebeck effect in transition-metal oxides (Invited Speaker)**

Ichiro Terasaki\*, Ayaka Horikawa, Ryuji Okazaki, Partha S Mondal, Yukio Yasui, Nagoya University, Japan

**1:50 PM**

**(PACRIM10-S16-002-2013) BiCuSeO-based ceramics with promising thermoelectric performance (Invited Speaker)**

Jing-Feng Li\*, Fu Li, Tsinghua University, China

**2:20 PM**

**(PACRIM10-S16-003-2013) An investigation into reduced polycrystalline  $Sr_xBa_{1-x}Nb_2O_6$  for use as a high-temperature thermoelectric**

Christopher Dandeneau\*, Fumio S Ohuchi, Rajendra K Bordia, University of Washington, USA

**2:40 PM**

**(PACRIM10-S16-004-2013) Thermoelectric Properties and the doping effects of Bi-based magnetic oxide**

Takeshi Yokota\*, Koji Ichikawa, Manabu Gomi, Nagoya Institute of Technology, Japan

**3:00 PM**

**(PACRIM10-S16-005-2013) Tailoring the Microstructural and Structural Characteristics of the  $(ZnO)_x In_2O_3$  Ceramics Toward Enhanced Thermoelectric Characteristics**

Slavko Bernik\*, Center of Excellence NAMASTE, Slovenia; Mateja Košir, Jozef Stefan Institute, Slovenia; Nina Daneu, Center of Excellence NAMASTE, Slovenia; Aleksander Rečnik, Jozef Stefan Institute, Slovenia

**3:20 PM**

Break

## High Performance Bulk Thermoelectric Materials I

3:40 PM-6:00 PM

Room: Coastal

Session Chair(s): Tie-Jun Zhu

**3:40 PM**

**(PACRIM10-S16-006-2013) Complex Zintl Compounds for Discovering new High Efficiency Thermoelectric Materials (Invited Speaker)**

G. Jeffrey Snyder\*, Caltech, USA

**4:10 PM**

**(PACRIM10-S16-007-2013) Thermal stability and strategy for improving performance of  $Mg_2Si_{1-x}Sn_x$  thermoelectric materials (Invited Speaker)**

Xinfeng Tang\*, Wei Liu, Wuhan University of Technology, China; Ctirad Uher, University of Michigan, USA

**4:40 PM**

**(PACRIM10-S16-008-2013) Copper-based Thermoelectric Materials (Invited Speaker)**

Xun Shi\*, Shanghai Institute of Ceramics, China

**5:10 PM**

**(PACRIM10-S16-009-2013) High ZT of nanostructured p-type  $Bi_2-xSbxTe_3$  and n-type  $Bi_2Te_3-ySey$  synthesized using hydrothermal method and evacuated-and-encapsulated**

sintering (Invited Speaker)

Chia-Jyi Liu\*, National Changhua University of Education, Taiwan

**5:40 PM**

**(PACRIM10-S16-010-2013) Design and control of point defects in Mg<sub>2</sub>(Si, Sn) solid solution**

Guangyu Jiang\*, Zhejiang University, China

Tuesday, June 4, 2013

## High Performance Bulk Thermoelectric Materials II

8:30 AM-10:20 AM

Room: Coastal

Session Chair(s): Chan Park

**8:30 AM**

**(PACRIM10-S16-011-2013) Thermoelectric Generation Technology Progress in Korea (Invited Speaker)**

Heewoong Lee\*, Minwook Oh, Sudong Park, Bongseo Kim, Bokki Min, Korea Electrotechnology Research Institute, Republic of Korea

**9:00 AM**

**(PACRIM10-S16-012-2013) Synthesis and Properties of Zintl Phase Thermoelectric Materials (Invited Speaker)**

Susan Kauzlarich\*, University of California, Davis, USA

**9:30 AM**

**(PACRIM10-S16-013-2013) Development of novel borides, silicides, and oxides, as effective high temperature thermoelectric materials (Invited Speaker)**

Takao Mori\*, National Institute for Materials Science (NIMS) (&Univ. of Tsukuba), Japan

**10:00 AM**

Break

## Thermoelectric Materials: Skutterudites

10:20 AM-12:00 PM

Room: Coastal

Session Chair(s): James Salvador

**10:20 AM**

**(PACRIM10-S16-014-2013) Synthesis and optimization of the thermoelectric properties of p-type skutterudites (Invited Speaker)**

George S. Nolas\*, Yongkwan Dong, Kaya Wei, University of South Florida, USA; Pooja Puneet, Terry Tritt, Clemson University, USA; Joshua Martin, National Institute of Standards and Technology, USA

**10:50 AM**

**(PACRIM10-S16-015-2013) Are light bands or heavy bands favored for p-type Skutterudites? (Invited Speaker)**

Jihui Yang\*, Shanyu Wang, Jiong Yang, Univ. of Washington, USA; Wenqing Zhang, Shanghai Institute of Ceramics, Chinese Academy of Sciences, China

**11:20 AM**

**(PACRIM10-S16-016-2013) Melt Spun Skutterudites: Thermoelectric and Mechanical Properties**

Daniel Ross Thompson\*, Optimal Inc., USA; James R Salvador, General Motors R&D, USA; Andrew A Wereszczak, Hsin Wang, Oak Ridge National Laboratory, USA; David J Miller, David N Brown, Molycorp International, Singapore

**11:40 AM**

**(PACRIM10-S16-017-2013) The role of Ga in Ba<sub>0.30</sub>GaxCo<sub>4</sub>Sb<sub>12+x</sub> filled skutterudites**

Xianli Su\*, Xinfeng Tang, Wuhan University of Technology, China; Ctirad Uher, University of Michigan, USA

## Nanoscale and Thin Film Thermoelectric Materials I

1:20 PM-3:40 PM

Room: Coastal

Session Chair(s): Takao Mori

### **1:20 PM**

**(PACRIM10-S16-018-2013) Enhanced Thermoelectric Performance in Structure-Engineered Nanowires (Invited Speaker)**

Wooyoung Lee\*, Yonsei University, Republic of Korea

### **1:50 PM**

**(PACRIM10-S16-019-2013) Strategies for Improving the Performance of Thermoelectric Oxide Thin Films & Superlattices (Invited Speaker)**

Husam Alshareef\*, Sarath Kumar, Anas Abutaha, King Abdullah University of Science & Technology (KAUST), Saudi Arabia; Terry Tritt, Clemson University, USA

### **2:20 PM**

**(PACRIM10-S16-020-2013) Studies of Nanostructured Thermoelectric Materials and Devices for Power Generation and coolers**

Yuan Deng\*, Yao Wang, Ming Tan, Wei Zhu, Yongming Shi, Lili Cao, Beihang University, China

### **2:40 PM**

**(PACRIM10-S16-021-2013) Morphology Control of Nanostructures in High Performance Na-doped PbTe-PbS Thermoelectric Materials**

Jiaqing He\*, Xi'an Jiaotong University, China; Steven Girard, Ivan Blum, Northwestern University, USA; Jin-Cheng Zheng, Xiamen University, USA; Lidong Zhao, David Seidman, Mercouri Kanatzidis, Vinayak Dravid, Northwestern University, USA

### **3:00 PM**

Break

## Thermoelectric Materials: Devices, Testing, and Materials

3:40 PM-6:00 PM

Room: Coastal

Session Chair(s): Daniel Thompson

### **3:40 PM**

**(PACRIM10-S16-022-2013) Skutterudite Materials and Devices (Invited Speaker)**

Jeff Sharp\*, Alan Thompson, Robin McCarty, Marlow Industries, Inc, USA

### **4:10 PM**

**(PACRIM10-S16-023-2013) Development of high-efficiency segmented thermoelectric couples (Invited Speaker)**

Thierry Caillat\*, Samad Firdosy, Billy Li, Chen-Kuo Huang, Nicholas Keyawa, Harut Anjunyan, Jong-Ah Paik, David Uhl, Pawan Gogna, Jordan Chase, Jean-Pierre Fleurial, NASA Jet Propulsion Laboratory, USA

### **4:40 PM**

**(PACRIM10-S16-024-2013) Alternative tubular thermoelectric heat exchanger achieving efficient heat exchange and high electric power generation**

Kouhei Takahashi\*, Tsutomu Kanno, Akihiro Sakai, Hiromasa Tamaki, Hideo Kusada, Yuka Yamada, Panasonic Corporation, Japan

### **5:00 PM**

**(PACRIM10-S16-025-2013) TiS<sub>2</sub>-based organic/inorganic superlattice: a flexible thermoelectric material**

Chunlei Wan\*, Tomohiro Itou, Hitoshi Sasaki, Feng Dang, Kunihiro Koumoto, Nagoya University, Japan

### **5:20 PM**

**(PACRIM10-S16-026-2013) Mechanical deformation effects on thermoelectric performance of p-type (Bi<sub>x</sub>Sb<sub>1-x</sub>)<sub>2</sub>Te<sub>3</sub>**

Sung-Jin Jung\*, Korea Unstitutue of Science and



Technology (KIST), Republic of Korea; Dow-Bin Hyun, Korea Institute of Science and Technology (KIST), Republic of Korea; Hyung-Ho Park, Yonsei University, Republic of Korea; Jin-Sang Kim, Seung-Hyub Baek, Korea Institute of Science and Technology (KIST), Republic of Korea

**5:40 PM**

**(PACRIM10-S16-027-2013) Thermoelectric properties of Titanium-substituted half-Heusler FeVSb compound**

Fu Chenguang\*, Zhu TieJun, Zhao Xinbing, Zhejiang University, China

Wednesday, June 5, 2013

## **Thermoelectric Materials: Theory, Testing and New Materials**

8:30 AM-10:20 AM

Room: Coastal

Session Chair(s): Jihui Yang

**8:30 AM**

**(PACRIM10-S16-028-2013) Theoretical Reviews on the Transport Properties of P-Type Skutterudites (Invited Speaker)**

Jiong Yang, Jihui Yang, University of Washington, USA; Wenqing Zhang\*, Shanghai Institute of Ceramics, Chinese Academy of Sciences, China

**9:00 AM**

**(PACRIM10-S16-029-2013) Skutterudite based thermoelectric modules: Fabrication and Conversion Efficiency (Invited Speaker)**

James Robert Salvador\*, General Motors R&D, USA; Joshua Moczygemba, Alan J Thompson, Jeff Sharp, Robin M Mc Carty, Marlow Inc., USA; David Brown, David Miller, Molycorp Inc., Singapore; Jan D König, Fraunhofer Institute, Germany; Jung Y Cho, Zuxin Ye, Optimal Inc., USA

**9:30 AM**

**(PACRIM10-S16-030-2013) High Performance Thermoelectrics Based On Natural Mineral Tetrahedrite (Invited Speaker)**

Donald Morelli\*, Michigan State University, USA

**10:00 AM**

Break

## **Various Aspects of Thermoelectric Materials Research**

10:20 AM-12:10 PM

Room: Coastal

Session Chair(s): Arash Dehkordi

**10:20 AM**

**(PACRIM10-S16-031-2013) Commercializing Thermoelectrics - From a User's Perspective (Invited Speaker)**

Lon Edward Bell\*, BSST LLC, USA

**10:50 AM**

**(PACRIM10-S16-032-2013) Thermoelectric Nanocomposites Based on Thermally Stable Alloys With  $ZT \sim 1$  (Invited Speaker)**

Joseph Poon\*, University of Virginia, USA; Terry Tritt, Clemson University, USA; Di Wu, University of Virginia, USA; Ali Lahwal, Clemson University, USA; Lee Williams, Nanosonic, Inc., USA

**11:20 AM**

**(PACRIM10-S16-033-2013) Neutron scattering on microstructure network and phonon density of states in thermoelectric materials (Invited Speaker)**

Hye Kang\*, Clemson University, USA; Wenjie Xie, Wuhan University of Technology, China; Meaghan Riemer, Dale Hitchcock, Isaac Bredeson, Jian He, Clemson University, USA; Xinfeng Tang, Wuhan University of Technology, China; Mark Laver, Paul Scherrer Institut, Switzerland; Boualem Hammouda, National Institute of Standards and

Technology, USA; Chris Stock, Rutherford Appleton Laboratory, United Kingdom

**11:50 AM**

**(PACRIM10-S16-034-2013) Experimental Investigation of the Viability of the van der Pauw Method for Measuring the Electrical Resistivity of Thermoelectric Materials**

Terry Michael Tritt\*, Spencer Waldrop, Jared Williams, Dale Hitchcock, Jennifer Graff, Daniel Thompson, Husam N Alshareef, Clemson University, USA

Thursday, June 6, 2013

## Nanoscale and Thin Film Thermoelectric Materials II

8:30 AM-10:20 AM

Room: Coastal

Session Chair(s): Hye Jung Kang

**8:30 AM**

**(PACRIM10-S16-035-2013) Thermoelectric Films Deposited by Aerosol Deposition (Invited Speaker)**

Dong-Soo Park\*, Woon-Ha Yoon, Jungho Ryu, Jong-Jin Choi, Byung-Dong Hahn, Jong-Woo Kim, Cheolwoo Ahn, Korea Institute of Materials Science, Republic of Korea

**9:00 AM**

**(PACRIM10-S16-036-2013) Nanostructure formation in Bi-Te based thermoelectric materials: Approaches to minimize lattice thermal conductivity (Invited Speaker)**

Kyuhyoung Lee\*, Sangil Kim, Sungwoo Hwang, Jongwook Roh, Daejin Yang, Jungyoung Cho, Weonho Shin, Sangmock Lee, Samsung Advanced Institute of Technology, Republic of Korea

**9:30 AM**

**(PACRIM10-S16-037-2013) Thermoelectric Properties of n-type Bi<sub>2</sub>Te<sub>2.7</sub>Se<sub>0.3</sub> - In<sub>4</sub>Se<sub>3</sub> Composites (Invited Speaker)**

Jin-Sang Kim\*, SeungHyup Baek, DowBin Hyun, Korea Institute of Science and Technology, Republic of Korea

**10:00 AM**

Break

## Oxide Thermoelectric Materials and Theory

10:20 AM-12:00 PM

Room: Coastal

Session Chair(s): Terry Tritt

**10:20 AM**

**(PACRIM10-S16-038-2013) Self-propagating High-temperature Synthesis of Doped Calcium Cobaltate Thermoelectric Powders (Invited Speaker)**

Sidney Lin\*, Sanjeev K Nalli, Phu D Dinh, Lamar University, USA

**10:50 AM**

**(PACRIM10-S16-039-2013) Oxide Materials in Thermoelectrics: Beyond a Simple Picture of Ionic Compounds (Invited Speaker)**

Michitaka Ohtaki\*, Kyushu University, Japan

**11:20 AM**

**(PACRIM10-S16-040-2013) Origins of Large Thermoelectric Power Factor in Pr-doped SrTiO<sub>3</sub> Ceramics: An Insight into Superior Electronic Transport**

Arash Dehkordi\*, Sriparna Bhattacharya, Clemson University, USA; Husam N Alshareef, King Abdullah University of Science and Technology (KAUST), Saudi Arabia; Terry M Tritt, Clemson University, USA

**11:40 AM**

**(PACRIM10-S16-041-2013) Reduced Strontium Titanate Thermoelectric Materials**

Lisa A Moore\*, Charlene M Smith, Corning, Inc., USA

# Symposium 17: Photovoltaic Materials and Technologies

Thursday, June 6, 2013

## Sensitized Solar Cell Materials and Systems I

1:20 PM-3:40 PM

Room: Coastal

Session Chair(s): Tohru Sekino, Sang-Im Yoo

**1:20 PM**

**(PACRIM10-S17-001-2013) Materials and interface considerations for stable high efficiency dye sensitized solar cells (Invited Speaker)**

Robert P.H. Chang\*, Northwestern University, USA

**1:50 PM**

**(PACRIM10-S17-002-2013) Nano Titanium Carbide Based Composites as Alternative Counter Electrode Materials for Dye-Sensitized Solar Cells (Invited Speaker)**

Yi-Bing Cheng\*, Jiangjing He, Yong Peng, Jenny Pringle, Monash University, Australia; Noel Duffy, CSIRO, Australia

**2:20 PM**

**(PACRIM10-S17-003-2013) New composite materials for solar energy conversion (Invited Speaker)**

Federico Rosei\*, INRS, Canada

**2:50 PM**

**(PACRIM10-S17-004-2013) Integration of CdTe-ZnO nanocomposite sensitizers into thin film photovoltaics (Invited Speaker)**

S. Devalle, W. J Huang, R. J Beal, J. B Kana-Kana, K. Simmons-Potter, B.G. Potter\*, University of Arizona, USA

**3:20 PM**

Break

## Sensitized Solar Cell Materials and Systems II

3:40 PM-6:00 PM

Room: Coastal

Session Chair(s): Yi-Bing Cheng, Robert Chang

**3:40 PM**

**(PACRIM10-S17-005-2013) Nanostructured TiO<sub>2</sub> and Related Materials for Sustainable Energy Applications: Processing, Microstructure and Photovoltaic Applications (Invited Speaker)**

Yoshikazu Suzuki\*, University of Tsukuba, Japan

**4:10 PM**

**(PACRIM10-S17-006-2013) The effect of various ammonium salts on the morphological control of the TiO<sub>2</sub> nanoparticles used in Dye Sensitized Solar Cell**

Shih-Yu Ho\*, Sheng-Han Tsai, Sasipriya Kathirvel, Chaochin Su, National Taipei University of Technology, Taiwan; Wen-Ren Li, National Central University, Taiwan

**4:30 PM**

**(PACRIM10-S17-007-2013) Nanostructure Developments of TiO<sub>2</sub> Nanocrystals and Aerogels and Their Dye-Sensitized Solar Cell Application**

Chang-Yeoul Kim\*, Yu-Sik Park, Korea Institute of Ceramic Eng. & Tech, Republic of Korea

**4:50 PM**

**(PACRIM10-S17-008-2013) Fabrication and Evaluation of Titanium Dioxide Films Prepared by Electrophoresis Using Nanosized Particles**

Ryo Kawakami\*, Yuuki Sato, Shinzo Yoshikado, Doshisha University, Japan

**5:10 PM**

**(PACRIM10-S17-009-2013) Synthesis and characterization of TiO<sub>2</sub> nanotubes added with ZnO for dye sensitized solar cells (Invited Speaker)**

Sung Hun Cho, Gobinda Gyawali, Tae Ho Kim, Sun Moon University, Republic of Korea; Tohru Sekino, Tohoku University, Japan; Soo Wahn Lee\*, Sun Moon University, Republic of Korea

**5:40 PM**

**(PACRIM10-S17-010-2013) Fabrication of dye sensitized solar cells employing open and close ended TiO<sub>2</sub> nanotubes photoanode**

Sasipriya Kathirvel\*, Ho Shih-Yu, Hsu Chingwen, Su Chaochin, National Taipei University of Technology, Taiwan; Li Wen-Ren, National Central University, Taiwan

Friday, June 7, 2013

## Thin Films for Solar Energy Applications

8:30 AM-10:20 AM

Room: Coastal

Session Chair(s): B.G. Potter, Chang-Yeoul Kim

**8:30 AM**

**(PACRIM10-S17-011-2013) Thermal Stability and Evolved Gas Analysis of Selected Semiconductor Materials by a Simultaneous Thermal Analysis Instrument with Mass Spectrometer Skimmer System (Invited Speaker)**

Ekkehard Post\*, NETZSCH Geraetebau GmbH, Germany; Lloyd MacPherson, NETZSCH Instruments N.A. LLC, USA

**9:00 AM**

**(PACRIM10-S17-012-2013) VO<sub>2</sub> Thermochromic Smart Windows (Invited Speaker)**

Yanfeng Gao\*, Hongjie Luo, Shanghai University, China; Minoru Kanehira, Shanghai Institute of Ceramics, CAS, China

**9:30 AM**

**(PACRIM10-S17-013-2013) Electrical and optical properties of Al-doped ZnO thin films prepared by RF magnetron sputtering (Invited Speaker)**

Joong Won Kim, Min Joon Park, Sang-Im Yoo\*, Seoul National University, Republic of Korea

**10:00 AM**

Break

## Materials Design and Characterization for Photovoltaic Applications

10:20 AM-12:00 PM

Room: Coastal

Session Chair(s): Yoshikazu Suzuki, Soo Lee

**10:20 AM**

**(PACRIM10-S17-014-2013) Synthesis of homogenous tungsten bronze nanomaterials with excellent multi-functionality by a water controlled-release solvothermal process (Invited Speaker)**

Shu Yin\*, Chongshen Guo, Qiang Dong, Tsugio Sato, IMRAM, Tohoku University, Japan

**10:40 AM**

**(PACRIM10-S17-015-2013) Interfacial character and electronic passivation in amorphous thin-film alumina for Si photovoltaics**

L. R Hubbard, J. B Kana-Kana, B.G. Potter\*, University of Arizona, USA

**11:00 AM**

**(PACRIM10-S17-016-2013) Rare-earth doped downshifting glass ceramics for photovoltaic applications**

Hien-Yoong Hah\*, Russell Leonard, Sharon Gray, Charles Johnson, Jacqueline Johnson, UTSI, USA

**11:20 AM**

**(PACRIM10-S17-017-2013) The Synthesis of TiO<sub>2</sub>-based Nanotube Modified by Carbon Nanotube and its Electrical Properties**

Sehoon Kim\*, Tohru Sekino, Satoshi Tsukuda, Shun-ichiro Tanaka, Tohoku University, Japan

**11:40 AM**

**(PACRIM10-S17-018-2013) Modification of Titania  
Nanotubes and Their Photovoltaic Properties as  
Solar Cells**

Tohru Sekino\*, Sehoon Kim, Dong Jin Park, Tohoku  
University, Japan; Soo Wahn Lee, Sunmoon  
University, Republic of Korea; Shun-ichiro Tanaka,  
Tohoku University, Japan

# Symposium 18: Ceramics for Next Generation Nuclear Energy

Wednesday, June 5, 2013

## Silicon Carbide Technology for Nuclear Energy

8:30 AM-10:20 AM

Room: Pacifica/Tide

Session Chair(s): Akira Kohyama, Christian Deck

**8:30 AM**

**(PACRIM10-S18-001-2013) Thermochemical Compatibility of Refractory metals with SiC/SiC composite for the use of a "sandwich" pin cladding in GFR (Invited Speaker)**

James Braun\*, Cédric Sauder, Christine Guéneau, Fanny Balbaud, Sylvie Poissonnet, Didier Hamon, CEA Saclay, France

**9:00 AM**

**(PACRIM10-S18-002-2013) Advances in Fabrication of SiC-SiC Composites for Nuclear Applications**

Christian Deck\*, H. E Khalifa, C. Hill, G. Jacobsen, C. A Back, General Atomics, USA

**9:20 AM**

**(PACRIM10-S18-003-2013) Behavior of Silicon Carbide Materials in High-Temperature Steam Environments Pertinent to Severe Accident Scenarios in Light water Reactors**

Kurt Terrani\*, Bruce Pint, James Keiser, Lance Snead, Oak Ridge National Laboratory, USA

**9:40 AM**

**(PACRIM10-S18-004-2013) Characterization of Defect in Si<sup>3+</sup> Ion-irradiated Single Crystal 3C-SiC and SA-Tyrannohex SiC Fibre-bonded Composite at High Temperatures**

Chun-Yu Ho\*, Shuo-Cheng Tsai, National Tsing Hua University, Taiwan; Hua-Tay Lin, Oak Ridge National Laboratory, USA; Fu-Rong Chen, Ji-Jung Kai, National Tsing Hua University, Taiwan

**10:00 AM**

Break

## Silicon Carbide Composites for Fuel Cladding

10:20 AM-11:50 AM

Room: Pacifica/Tide

Session Chair(s): James Braun, Yutai Katoh

**10:20 AM**

**(PACRIM10-S18-005-2013) "SCARLET" Project for R & D of SiC/SiC Fuel Cladding by NITE method (Invited Speaker)**

Akira Kohyama\*, Hirotatsu Kishimoto, Yutaka Kohno, Muroran Institute of Technology, Japan

**10:50 AM**

**(PACRIM10-S18-006-2013) SiC/SiC Fuel Cladding by NITE process for Innovative LWR -Concept and Process Development of Fuel Pin Assembly Technologies**

Hirotatsu Kishimoto\*, Muroran Institute of Technology, Japan; Tamaki Shibayama, Hokkaido University, Japan; Daisuke Hayasaka, Akira Kohyama, Muroran Institute of Technology, Japan

**11:10 AM**

**(PACRIM10-S18-007-2013) SiC/SiC Fuel Cladding by NITE process for Innovative LWR -Cladding forming process development**

Naofumi Nakazato\*, Hirotatsu Kishimoto, Yutaka Kohno, Akira Kohyama, Muroran Institute of Technology, Japan

**11:30 AM**

**(PACRIM10-S18-008-2013) Characterization of NITE-SiC/SiC composites by acoustic emission**

Takashi Nozawa\*, Japan Atomic Energy Agency, Japan; Hisashi Serizawa, Osaka University, Japan;

Akira Kohyama, Muroran Institute of Technology, Japan; Hiroyasu Tanigawa, Japan Atomic Energy Agency, Japan

## Thursday, June 6, 2013

# Material Design and Characterization

8:30 AM-10:20 AM

Room: Pacifica/Tide

Session Chair(s): Takashi Nozawa, Christina Back

### **8:30 AM**

**(PACRIM10-S18-009-2013) Millimeter Wave Diagnostics of Gen IV Reactor Materials (Invited Speaker)**

S. K. Sundaram\*, Alfred University, USA; Paul P Woskov, Massachusetts Institute of Technology, USA

### **9:00 AM**

**(PACRIM10-S18-010-2013) Evaluation of Joined Tubular Components for Accident Tolerant Fuel Cladding**

Hesham Khalifa\*, C. P Deck, C. Hill, C. A Back, General Atomics, USA

### **9:20 AM**

**(PACRIM10-S18-011-2013) Investigation of Interfacial Mechanical Properties of Ceramic Composites with Micro-pillar Samples**

Chunghao Shih\*, Yutai Katoh, Keith J Leonard, Hongbin Bei, Edgar Lara-Curzio, Oak Ridge National Laboratory, USA

### **9:40 AM**

**(PACRIM10-S18-012-2013) Development and evaluation of joining methods for silicon carbide for nuclear applications**

Yutai Katoh\*, Lance Snead, Ting Cheng, Jim Kiggans, Oak Ridge National Laboratory, USA; Monica Ferraris, Politecnico di Torino, Italy; Takaaki Koyanagi, Tatsuya Hinoki, Kyoto University, Japan;

Charles Henager, Pacific Northwest National Laboratory, USA; Robert Shinavski, Hyper-therm High-Temperature Composites, USA

### **10:00 AM**

Break

## Materials and Fuels Synthesis

10:20 AM-11:40 AM

Room: Pacifica/Tide

Session Chair(s): Kurt Terrani, Erik Luther

### **10:20 AM**

**(PACRIM10-S18-013-2013) Spark Plasma Sintering of Vanadium Carbide**

Wei Li\*, San Diego State University, USA; Oleg Izhvanov, Christina A Back, General Atomics, USA; Eugene A Olevsky, San Diego State University, USA

### **10:40 AM**

**(PACRIM10-S18-014-2013) Fabrication of Uranium Oxide with Controlled Features**

Erik Luther\*, Ken McClellan, Rafael Leckie, Jack Kennison, Pallas Papin, Denny Guidry, Thomas Wynn, Los Alamos National Lab, USA

### **11:00 AM**

**(PACRIM10-S18-015-2013) Innovative synthesis of mesostructured materials containing actinides using a colloidal sol-gel route**

Alban Gossard\*, Guillaume Toquer, Jeremy Causse, Jérôme Maynadié, ICSM, France; Stéphane Grandjean, CEA/DEN/MAR, France; Agnès Grandjean, ICSM, France

### **11:20 AM**

**(PACRIM10-S18-016-2013) Fabrication of High Purity Uranium Carbide & Nitride Microspheres**

Jonas Opperman\*, Oleg Izhvanov, Christina Back, General Atomics, USA

# Symposium 19: Advances in Photocatalytic Materials for Energy and Environmental Applications

Monday, June 3, 2013

## Photocatalytic Materials for Energy and Environment I

1:20 PM-6:00 PM

Room: Pacifica/Tide

Session Chair(s): To Be Announced

**1:20 PM**

**(PACRIM10-S19-001-2013) Improving Hematite-Based Photoelectrochemical Water Splitting by Forming Homo- and Hetero-junctions (Invited Speaker)**

Matthew T Mayer, Chun Du, Yongjing Lin, Dunwei Wang\*, Boston College, USA

**1:50 PM**

**(PACRIM10-S19-002-2013) Effect of Atmosphere and Doping on the Crystallization and Phase Stability in Electrosynthesized TiO<sub>2</sub> Nanofibers**

Hani Albetran, It-Meng (Jim) Low\*, Curtin University, Australia

**2:10 PM**

**(PACRIM10-S19-003-2013) Photocatalytic activity of TiO<sub>2</sub> and SrTiO<sub>3</sub> nanoparticles precisely controlled in size and shape**

Atsushi Muramatsu\*, Takeshi Kimijima, Masafumi Nakaya, Kiyoshi Kanie, Tohoku University, Japan

**2:30 PM**

**(PACRIM10-S19-004-2013) Engineering the band structure of anatase TiO<sub>2</sub> microspheres with a gradient doping for photocatalytic solar energy conversion (Invited Speaker)**

Gang Liu\*, Institute of Metal Research, Chinese Academy of Sciences, China

**3:00 PM**

Break

**3:20 PM**

**(PACRIM10-S19-005-2013) Ultra-thin films and coatings for applications in sustainable energy conversion and storage (Invited Speaker)**

Gunnar Westin\*, Uppsala University, Sweden

**3:50 PM**

**(PACRIM10-S19-006-2013) Solar hydrogen using co-catalyst doped niobia nanosheets and nanotubes**

Ken-ichi Katsumata\*, Keisuke Kojima, Nobuhiro Matsushita, Kiyoshi Okada, Tokyo Institute of Technology, Japan

**4:10 PM**

**(PACRIM10-S19-007-2013) Synthesis of Nitrogen Doped Nanocrystalline TiO<sub>2</sub> Powders and Their Applications on Indoor Air Purification**

Wenbin Cao\*, University of Science and Technology Beijing, China; Yi Lu, The 306th Hospital of PLA, China

**4:30 PM**

**(PACRIM10-S19-008-2013) Control of Fluid Friction on the Surface Coated with TiO<sub>2</sub> Photocatalyst under UV Illumination (Invited Speaker)**

Akira Nakajima\*, Tokyo Institute of Technology, Japan; Munetoshi Sakai, Kanagawa Academy of Science and Technology, Japan; Toshihiro Isobe, Yasushi Morii, Daito Kobayashi, Sachiko Matsushita, Tokyo Institute of Technology, Japan



**5:00 PM**

**(PACRIM10-S19-009-2013) Nanostructured TiO<sub>2</sub> thin film electrode for determination of chemical oxygen demand of nitrogenous organic compounds in wastewater (Invited Speaker)**

Shanqing Zhang\*, Griffith University, Australia

Tuesday, June 4, 2013

## Photocatalytic Materials for Energy and Environment II

8:30 AM-11:50 AM

Room: Pacifica/Tide

Session Chair(s): To Be Announced

**8:30 AM**

**(PACRIM10-S19-010-2013) A porous BiVO<sub>4</sub> photoanode for solar hydrogen production from natural seawater (Invited Speaker)**

Wenjun Luo, Congping Wu, Ruiqiong Wang, Zhigang Zou\*, Ecomaterials and Renewable Energy Research Center, China

**9:00 AM**

**(PACRIM10-S19-011-2013) Electronic and Optical Properties of Nitrogen-doped Layered Manganese Oxides (Invited Speaker)**

Giacomo Giorgi, Koichi Yamashita\*, The University of Tokyo, Japan

**9:30 AM**

**(PACRIM10-S19-012-2013) Creating active sites in mesostructure of MCM-41 for efficient photocatalytic hydrogen generation under visible light**

Shaohua Shen\*, Jie Chen, Zheng Liu, Liejin Guo, Xi'an Jiaotong University, China

**9:50 AM**

**(PACRIM10-S19-013-2013) Comparative study on photocatalytic decomposition activity and photoinduced hydrophilicity of brookite-**

**heteropolyacid hybrid films**

Kunchaya Pruethiarenun\*, Toshihiro Isobe, Sachiko Matsushita, Akira Nakajima, Tokyo Institute of Technology, Japan

**10:10 AM**

Break

**10:30 AM**

**(PACRIM10-S19-014-2013) 2D nanosheet-based photocatalysts for visible light-induced generation of H<sub>2</sub> and O<sub>2</sub> (Invited Speaker)**

Seong-Ju Hwang\*, Ewha Womans University, Republic of Korea

**11:00 AM**

**(PACRIM10-S19-015-2013) Nanocapacitors of Self-Assembled Oxide Nanocubes for Energy Efficient Memory Devices (Invited Speaker)**

Sean Li\*, The University of New South Wales, Australia

**11:30 AM**

**(PACRIM10-S19-016-2013) Photocatalytic Activity Of Self Assembled Oxide Nanosheets H<sub>2</sub>(Ca,Na)Nbno<sub>3n+1</sub>(n=2,3,4,5)**

Jian Liu\*, Sam Miller, Victoria Blair, Scott Misture, Alfred University, USA

## Photocatalytic Materials for Energy and Environment III

1:20 PM-6:00 PM

Room: Pacifica/Tide

Session Chair(s): To Be Announced

**1:20 PM**

**(PACRIM10-S19-017-2013) Limited-layered MoS<sub>2</sub> as Co-catalyst on Graphene Sheets for High Efficient Photocatalytic Hydrogen Evolution (Invited Speaker)**

Gongxuan Lu\*, Lanzhou Institute of Chemical Physics, China

**1:50 PM**

**(PACRIM10-S19-018-2013) Self-Assembly Based Hybrid Carbon and Plasmonic Nanostructures for Energy and Environmental Applications (Invited Speaker)**

Dong Ha Kim\*, Ewha Womans University, Republic of Korea

**2:20 PM**

**(PACRIM10-S19-019-2013) Artificial Photosynthesis: Photocatalytic Conversion of CO<sub>2</sub> into Solar Fuels (Invited Speaker)**

Yong Zhou\*, Nanjing University, China

**2:40 PM**

**(PACRIM10-S19-020-2013) Investigation of Water Treatment by Photocatalytic Ozonation over WO<sub>3</sub> under Visible Light Irradiation**

Takayuki Mano\*, Syunsuke Nishimoto, Yoshikazu Kameshima, Michihiro Miyake, Okayama University, Japan

**3:00 PM**

Break

**3:20 PM**

**(PACRIM10-S19-021-2013) Semiconductor quantum dot for solar energy conversion devices (Invited Speaker)**

Yasuhiro Tachibana\*, RMIT University, Australia

**3:50 PM**

**(PACRIM10-S19-022-2013) Enhanced visible light photocatalytic activity of flower-like SnIn<sub>4</sub>S<sub>8</sub> microspheres loaded with Ag nanoparticles (Invited Speaker)**

Xinyong Li\*, Dalian University of Technology, China

**4:20 PM**

**(PACRIM10-S19-023-2013) Designed Photoelectrode and Charge Transport in Dye Sensitized Solar Cells based on submicrospheres**

Linhua Hu\*, Jiang Sheng, Songyuan Dai, Institute of Plasma Physics, Chinese Academy of Sciences, China

**4:40 PM**

**(PACRIM10-S19-024-2013) Dye-sensitized Solar Cells Based on Hierarchically Structured Titania Anodes**

Jianxi Yao\*, State Key Laboratory of Alternate Electrical Power System with Renewable Energy Sources, China; Zihua Tian, Renewable Energy School, North China Electric Power University, China

**5:00 PM**

**(PACRIM10-S19-025-2013) Hydrothermal Synthesis and Photoluminescence of Tb<sup>3+</sup> and La<sup>3+</sup> Doped Sm<sub>2</sub>Zr<sub>2</sub>O<sub>7</sub> Nanocrystals**

HaiBo Jin\*, Pengwan Chen, Beijing Institute of Technology, China

**5:20 PM**

**(PACRIM10-S19-026-2013) Superhydrophobic-superhydrophilic pattern with high wettability contrast on porous TiO<sub>2</sub> film**

Shunsuke Nishimoto\*, Michiaki Becchaku, Yoshikazu Kameshima, Michihiro Miyake, Okayama University, Japan

**5:40 PM**

**(PACRIM10-S19-027-2013) Direct Detection of Nanoscale Variations in V<sub>oc</sub>, I<sub>sc</sub>, and Photoconductivity**

Yasemin Kutes, James Bosse, Alexandra Merkouriou, University of Connecticut, USA; Jose Luis Cruz-Campa, Erik Spoerke, Sandia National Laboratories, USA; Brandon A Aguirre, David Zubia, University of Texas at El Paso, USA; Bryan D Huey\*, University of Connecticut, USA

# Symposium 20: Ceramics Enabling Environmental Protection: Clean Air and Water

Thursday, June 6, 2013

## Ceramics Enabling Environmental Protection: Clean Air and Water

1:20 PM-6:00 PM

Room: Pacifica/Tide

Session Chair(s): Aleksander Pyzik, Michael Lance

**1:20 PM**

**(PACRIM10-S20-001-2013) Direct Decomposition of Toxic Nitrogen Monoxide on C-type Cubic Rare Earth Oxides Ceramics (Invited Speaker)**

Nobuhito Imanaka\*, Osaka University, Japan

**1:50 PM**

**(PACRIM10-S20-002-2013) Membrane water recovery from IC engine exhaust for enabling consumer transparent technologies which enhance engine efficiency (Invited Speaker)**

Melanie Moses DeBusk\*, Brian Bischoff, James Klett, Stuart Daw, James Hunter, Eric Nafziger, Oak Ridge National Laboratory, USA

**2:20 PM**

**(PACRIM10-S20-003-2013) Investigation of ceramic membrane for water treatment using natural materials (Invited Speaker)**

In-Hyuck Song\*, Jang-Hoon Ha, Jae-Woong Ko, Young-Jo Park, Hai-Doo Kim, Korea Institute of Materials Science, Republic of Korea; Young-Wook Kim, The University of Seoul, Republic of Korea

**2:40 PM**

**(PACRIM10-S20-004-2013) Fabrication of the Hardened Bodies from Japanese Volcanic Ash using an Alkali-activated Cement (Geopolymer) Technique**

Shinobu Hashimoto\*, Hayami Takeda, Haruka Kanie, Sawao Honda, Yuji Iwamoto, Nagoya Institute of Technology, Japan

**3:00 PM**

**(PACRIM10-S20-005-2013) Influence of microstructure on Properties of Porous Alumina for Support Substrates of Ceramic Membranes**

Sawao Honda\*, Norimasa Nishihara, Nagoya Institute of Technology, Japan; Tomokazu Eda, Hirokazu Watanabe, Keita Miyajima, Noritake Corporation Limited, Japan; Shinobu Hashimoto, Nagoya Institute of Technology, Japan; Benoit Nait Ari, David S Smith, CENTRE EUROPEEN DE LA CERAMIQUE, France; Yuji Iwamoto, Nagoya Institute of Technology, Japan

**3:20 PM**

Break

**3:40 PM**

**(PACRIM10-S20-006-2013) CO<sub>2</sub> sequestration by microbubbling using lotus ceramics (Invited Speaker)**

Kiyoshi Okada\*, Catalin Popa, Ken-ichi Katsumata, Toshihiro Isobe, Nobuhiro Matsushita, Akira Nakajima, Tokyo Institute of Technology, Japan; Taisuke Kurata, Kurata Refractories, Japan

**4:10 PM**

**(PACRIM10-S20-007-2013) Thermomechanical Behavior in  $\beta$ -eucryptite and its Composites (Invited Speaker)**

Ivar Reimanis\*, Colorado School of Mines, USA

**4:40 PM**

**(PACRIM10-S20-008-2013) Enhanced Catalytic Performance of V<sub>2</sub>O<sub>5</sub>-WO<sub>3</sub>/TiO<sub>2</sub> Honeycomb Catalysts for NO<sub>x</sub> Removal Applications**

Shu-Yi Tsai\*, Kuan-Zong Fung, Chia-Hsien Tsai, Chi-Yang Liu, National Cheng Kung University, Taiwan;

Chih-Cheng Chen, Far East University, Taiwan; J.-M. Ye, Chi-Wei Young, China Steel Corporation, Taiwan

**5:00 PM**

**(PACRIM10-S20-009-2013) Elaborating of bio-sourced nanocarbon membrane for water-filtration applications**

Oula El Korhani, Université Montpellier II, France; Aziz Cherifi\*, Ecole Nationale Supérieure de Chimie de Montpellier, France; Doumit Zaouk, Lebanese University, Lebanon; Sophie Cerneaux, David Cornu, Ecole Nationale Supérieure de Chimie de Montpellier, France; Randa Khoury, Antonio Khoury, Lebanese University, Lebanon

**5:20 PM**

**(PACRIM10-S20-010-2013) Preparation and Evaluation of ZSM-5 Bulk Bodies by a One-pot Hydrothermal Method**

Michihiro Miyake\*, Eisaku Igi, Yoshikazu Kameshima, Shunsuke Nishimoto, Okayama University, Japan

**5:40 PM**

**(PACRIM10-S20-011-2013) Reliability of Ceramic Membranes of BSCF for Oxygen Separation in a Pilot Membrane Reactor**

Ewald Michael Pfaff\*, Mehmet Özel, Alexander Bezold, RWTH University, Germany

# Symposium 21: Advanced Materials and Technologies for Electrochemical Energy Storage Systems

Monday, June 3, 2013

## Electrochemical Energy Storage I

1:20 PM-6:00 PM

Room: Surf

Session Chair(s): Ilias Belharouak, Palani Balaya

**1:20 PM**

**(PACRIM10-S21-001-2013) Development of Conductive binder for Si and Sn Anodes (Invited Speaker)**

Mingyan Wu, Shidi Xun, Sang-Jae Park, Xiangyun Song, Vince Battaglia, Wanli Yan, Lin-Wang Wang, Gao Liu\*, Lawrence Berkeley National Laboratory, USA

**1:50 PM**

**(PACRIM10-S21-002-2013) Nanocomposite anodes for Li-ion batteries prepared by ball milling (Invited Speaker)**

Alexey M. Glushenkov\*, Deakin University, Australia

**2:15 PM**

**(PACRIM10-S21-003-2013) High-Performance Sn@Carbon Nanocomposite Anode for Lithium Batteries (Invited Speaker)**

Fausto Croce\*, Ida Meschini, Università G.d'Annunzio-Chieti/Pescara, Italy; Francesco Nobili, Marilena Mancini, Roberto Marassi, Roberto Tossici, Università degli Studi di Camerino, Italy; Alberto Savoini, ENI, Italy

**2:40 PM**

**(PACRIM10-S21-004-2013) Improved rate capability of TiO<sub>2</sub> as an anode material for Li ion batteries**

Mojtaba Samiee\*, Jian Luo, University of California San Diego, USA

**3:00 PM**

**(PACRIM10-S21-005-2013) Investigation of electrochemical and structural changes during discharge of iron trifluoride with lithium**

Hillary Smith\*, Hongjin T Tan, Laura K Kim, Brent Fultz, California Institute of Technology, USA

**3:20 PM**

Break

**3:40 PM**

**(PACRIM10-S21-006-2013) Characterization on Li<sub>1.2</sub>Ni<sub>0.2</sub>Mn<sub>0.6</sub>O<sub>2</sub> for Lithium-ion batteries (Invited Speaker)**

Bing Joe Hwang\*, Wei-Nein Su, Sunny Hy, National Taiwan University of Science and Technology, Taiwan; Jing-Ming Chen, National Synchrotron Radiation Research Center, Taiwan

**4:05 PM**

**(PACRIM10-S21-007-2013) Re-investigation on Li<sub>2</sub>MnO<sub>3</sub> cathode for lithium ion batteries**

Wei Kong Pang\*, Jian-Liang Chen, She-huang Wu, Tatung University, Taiwan

**4:25 PM**

**(PACRIM10-S21-008-2013) A Combined Computational/Experimental Study on Li[Li<sub>1/6</sub>Ni<sub>(3-x)</sub>/12Mn<sub>(7-x)</sub>/12Co<sub>x</sub>/6]O<sub>2</sub> (x=0,1) Cathode Materials for Lithium Ion Batteries**

Haodong Liu\*, Ying S Meng, UC San Diego, USA

**4:45 PM**

**(PACRIM10-S21-009-2013) LiNi<sub>0.5</sub>Mn<sub>1.5</sub>O<sub>4</sub>-Li<sub>4</sub>Ti<sub>5</sub>O<sub>12</sub> Batteries and Materials (Invited Speaker)**

Shih-Chieh Liao\*, GuanYu Ko, Cheng-Zhang Lu, Ting-ju Yeh, Chia-Erh Liu, Jin-Ming Chen, Industrial Technology Research Institute, Taiwan

**5:10 PM**

**(PACRIM10-S21-010-2013) In-situ investigation of Stress Development in Electrode Materials for Li-ion Batteries (Invited Speaker)**

Amartya Mukhopadhyay\*, Ravi Kali, Sankalp Agarwal, IIT Bombay, India; Anton Tokranov, Brian Sheldon, Fei Guo, Robert Hurt, Brown University, USA; Xingcheng Xiao, General Motors Global R&D Center, USA

**5:35 PM**

**(PACRIM10-S21-011-2013) Preparation of P(VDF-HFP)/SBA-15 composite polymer membranes for lithium polymer batteries based on LiNi<sub>1/3</sub>Co<sub>1/3</sub>Mn<sub>1/3</sub>O<sub>2</sub> (Invited Speaker)**

Chun-Chen Yang\*, Zuo-Yu Lian, Ming Chi University of Technology, Taiwan

Tuesday, June 4, 2013

## Electrochemical Energy Storage II

8:30 AM-12:00 PM

Room: Surf

Session Chair(s): She-huang Wu, Daniel Abraham

**8:30 AM**

**(PACRIM10-S21-012-2013) Understanding Performance and Performance Degradation of High-Energy Lithium-ion Cells (Invited Speaker)**

Daniel Abraham\*, Ye Zhu, Yan Li, Martin Bettge, Argonne National Laboratory, USA

**9:00 AM**

**(PACRIM10-S21-013-2013) Towards Understanding The Oxygen Reaction Mechanisms in Li-Excess Cathode Materials for Li-ion Battery**

Sunny Hy\*, National Taiwan University of Science and Technology, Taiwan; Jing-Ming Chen, National Synchrotron Radiation Research Center, Taiwan; Bing-Joe Hwang, National Taiwan University of Science and Technology, Taiwan

**9:20 AM**

**(PACRIM10-S21-014-2013) Li-ion cell and material study by Isothermal and Differential Scanning Calorimetry**

Peter J Ralbovsky\*, Netzsch Instruments, USA

**9:40 AM**

**(PACRIM10-S21-015-2013) Improving cycling performance of LiNi<sub>0.5</sub>Mn<sub>1.5</sub>O<sub>4</sub> cathode material by surface modification**

Je-Jang Shiu\*, Wei Kong Pang, She-huang Wu, Tatung University, Taiwan

**10:00 AM**

Break

**10:20 AM**

**(PACRIM10-S21-016-2013) High Energy X-ray Diffraction for Advanced Material Development**

Zonghai Chen\*, Yang Ren, Argonne National Laboratory, USA

**10:40 AM**

**(PACRIM10-S21-017-2013) The Effect of Particle Size and Morphology on the Electrochemical and Physical Properties of Li-excess**

Li[Li<sub>2</sub>/12Ni<sub>3</sub>/12Mn<sub>7</sub>/12]O<sub>2</sub> Cathode Material  
Michael Verde\*, Haodong Liu, Kyler Carroll, Shirley Meng, University of California, San Diego, USA

**11:00 AM**

**(PACRIM10-S21-018-2013) Computational investigation on the layer-spinel interface properties for cathode materials in lithium ion batteries**

Danna Qian\*, Ying S Meng, UC San Diego, USA

**11:20 AM**

**(PACRIM10-S21-019-2013) Metal-oxide network for lithium-ion battery anodes and cathodes**

Yun Xu, Ling Fei, Hongmei Luo\*, New Mexico State University, USA

**11:40 AM**

**(PACRIM10-S21-020-2013) The Role of Li<sub>3</sub>PO<sub>4</sub>-Based Surface Amorphous Films on Modifying LiCoO<sub>2</sub> Cathodes**

Jiajia Huang\*, Jian Luo, University of California San Diego, USA

## Electrochemical Energy Storage III

1:20 PM-6:00 PM

Room: Surf

Session Chair(s): Marca Doeff, Steve Greenbaum

**1:20 PM**

**(PACRIM10-S21-021-2013) New Perspectives of Energy Storage Materials (Invited Speaker)**

Shirley Meng\*, University of California San Diego, USA

**1:50 PM**

**(PACRIM10-S21-022-2013) Nuclear magnetic resonance studies of electrolytes for sodium-ion and sodium-air batteries (Invited Speaker)**

Steve Greenbaum\*, Marc B Berman, Xavier S Bogle, Hunter College of CUNY, USA

**2:20 PM**

**(PACRIM10-S21-023-2013) Structure, electrochemical and physical properties of layered sodium transition metal oxide: Na<sub>2/3</sub>Co<sub>2/3</sub>Mn<sub>1/3</sub>O<sub>2</sub>**

Hsieh-Tsung Li\*, National Taiwan University of Science and Technology, Taiwan; Jyh-Fu Lee, Hwo-Shuenn Sheu, National Synchrotron Radiation Research Center, Taiwan; Dany Carlier, Bing-Joe Hwang, National Taiwan University of Science and Technology, Taiwan

**2:40 PM**

**(PACRIM10-S21-024-2013) Electrochemical Performance of the Sodium-Ion Intercalating Anode Na<sub>2</sub>Ti<sub>6</sub>O<sub>13</sub>**

Ashish Rudola\*, Saravanan Kuppan, Devaraj Sappani, Palani Balaya, National University of

Singapore (NUS), Singapore

**3:00 PM**

**(PACRIM10-S21-025-2013) New energy storage with high power and low cost: A combination of computational and experimental study of cathode materials for Na-ion batteries**

Jing Xu\*, Dae Hoe Lee, Ying S Meng, University of California, San Diego, USA

**3:20 PM**

Break

**3:40 PM**

**(PACRIM10-S21-026-2013) Development of Sodium Ion Batteries for Grid Storage Applications (Invited Speaker)**

Marca Doeff\*, Mona Shirpour, Jordi Cabana, Lawrence Berkeley National Laboratory, USA

**4:10 PM**

**(PACRIM10-S21-027-2013) Carboxylate based anode materials for rechargeable sodium batteries (Invited Speaker)**

Ali Abouimrane\*, Wei Weng, Hussameldin Eltayeb, Yanjie Cui, Jens Niklas, Oleg Poluektov, Khalil Amine, Argonne National Laboratory, USA

**4:35 PM**

**(PACRIM10-S21-028-2013) Material Challenges for All-Solid Lithium-Sulfur Batteries (Invited Speaker)**

Chengdu Liang\*, Zhan Lin, Zengcai Liu, Nancy Dudney, Adam Rondinone, Oak Ridge National Laboratory, USA

**5:00 PM**

**(PACRIM10-S21-029-2013) Na<sub>2</sub>S-P<sub>2</sub>S<sub>5</sub> superionic glass-ceramic electrolytes for sodium batteries at room temperature**

Param Jha\*, O. P Pandey, K. Singh, Thapar University, India

**5:20 PM**

**(PACRIM10-S21-030-2013) Charge-discharge performance of all-solid-state battery using Li<sub>7</sub>La<sub>3</sub>Zr<sub>2</sub>O<sub>12</sub> electrolyte with honeycomb structure**

Teruaki Nishioka\*, Naoto Saito, Jungo Wakasugi, Hirokazu Munakata, Tokyo Metropolitan University, Japan; Soshu Kirihara, Osaka University, Japan; Kiyoshi Kanamura, Tokyo Metropolitan University, Japan

**5:40 PM**

**(PACRIM10-S21-031-2013) Morphology and Conductivity of Thio-LISICON Thin Films**

Trevor DiMartino\*, University of Colorado at Boulder, USA; Christopher Apblett, Sandia National Labs, USA; Conrad Stoldt, University of Colorado at Boulder, USA

Wednesday, June 5, 2013

## Electrochemical Energy Storage IV

8:30 AM-12:00 PM

Room: Surf

Session Chair(s): Shirley Meng, Gao Liu

**8:30 AM**

**(PACRIM10-S21-032-2013) Interphases in Li ion Batteries (Invited Speaker)**

Kang Xu\*, US Army Research Lab, USA

**8:55 AM**

**(PACRIM10-S21-033-2013) Are All-Solid-State Batteries a Reliable Solution to Safety Issues? (Invited Speaker)**

Laurent Castro, Center for Materials Elaboration and Structural Studies, France; Gauthier Jouan, Laboratoire de Réactivité et Chimie des Solides, France; Agnieszka Kubanska, Laurence Tortet, Matériaux Divisés, Interfaces, Réactivité, Electrochimie, France; Vincent Seznec, Virginie Viallet, Laboratoire de Réactivité et Chimie des Solides, France; Renaud Bouchet, Laboratoire d'Electrochimie et de Physicochimie des Matériaux, France; Mickael Dollé\*, Center for Materials Elaboration and Structural Studies, France

**9:20 AM**

**(PACRIM10-S21-034-2013) Densification of lithium phosphate-based solid electrolytes by SPS**

Gauthier Jouan\*, Université Picardie Jules Verne-CNRS, France; Laurent Castro, CNRS, France; Agnieszka Kubanska, Laurence Tortet, Université de Provence-CNRS, France; Renaud Bouchet, Université Joseph Fourier-CNRS, France; Mickael Dollé, CNRS, France; Matthieu Morcrette, Jean-Marie Tarascon, Virginie Christiane Viallet, Vincent Seznec, Université Picardie Jules Verne-CNRS, France

**9:40 AM**

**(PACRIM10-S21-035-2013) Elaboration of controlled size  $\text{Li}_{1.5}\text{Al}_{0.5}\text{Ge}_{1.5}(\text{PO}_4)_3$  crystallites from glass-ceramics**

Laurence Tortet\*, Agnieszka Kubanska, Oliver Schäf, Matériaux Divisés, Interfaces, Réactivité, Electrochimie, France; Laurent Castro, Mickael Dollé, Center for Materials Elaboration and Structural Studies, France; Renaud Bouchet, Laboratoire d'Electrochimie et de Physicochimie des Matériaux, France

**10:00 AM**

Break

**10:20 AM**

**(PACRIM10-S21-036-2013) Organic Ionic Plastic Crystal Electrolytes for Lithium Batteries (Invited Speaker)**

Junhua Huang\*, Iko Burgar, Youssof Shekibi, CSIRO, Australia; Douglas MacFarlane, Monash University, Australia; Maria Forsyth, Deakin University, Australia; Anthony Hollenkamp, CSIRO, Australia

**10:45 AM**

**(PACRIM10-S21-037-2013) Using time-resolved structural analysis to direct improvements in lithium-ion battery technology (Invited Speaker)**

Neeraj Sharma\*, University of New South Wales, Australia



**11:10 AM**

**(PACRIM10-S21-038-2013) Borane and borates compounds as electrolyte additives for LiFePO<sub>4</sub> cathode (Invited Speaker)**

Chia Chin Chang\*, Kuan-Yi Lee, Yi-Fang Jung, Tsui-Hua Tsao, Yu-Hsiu Su, Te-Kang Chen, National University of Tainan, Taiwan

**11:35 AM**

**(PACRIM10-S21-039-2013) Unique Charge Transport Features in Lithium Battery Electrodes (Invited Speaker)**

Miran Gaberscek\*, Robert Dominko, Joze Moskon, National Institute of Chemistry, Slovenia

# Symposium 22: Glasses and Ceramics for Nuclear and Hazardous Waste Treatment

Monday, June 3, 2013

## Nuclear Waste Glass Corrosion

1:20 PM-6:00 PM

Room: Crystal

Session Chair(s): Joseph Ryan

**1:20 PM**

**(PACRIM10-S22-001-2013) Insight into glass dissolution in residual rate regime: importance of glass composition**

Stephane Gin\*, Benjamin Parruzot, Patrick Jollivet, Diane Rebiscoul, Nicole Godon, CEA, France; Joe Ryan, Pacific Northwest National Laboratory, USA

**1:40 PM**

**(PACRIM10-S22-002-2013) Testing and Modeling Coupled Glass Dissolution and Alteration Phase Precipitation**

William L Ebert\*, Jeffrey A Fortner, Argonne National Laboratory, USA

**2:00 PM**

**(PACRIM10-S22-003-2013) Glass-Water Interfacial Reactions: Effect of High Valence Cation on Glass Dissolution in the Na<sub>2</sub>O-Al<sub>2</sub>O<sub>3</sub>-B<sub>2</sub>O<sub>3</sub>-HfO<sub>2</sub>-SiO<sub>2</sub> system**

Eric Pierce\*, Oak Ridge National Laboratory, USA; Sebastien Kerisit, Sarah Burton, Charles Windisch, Pacific Northwest National Laboratory, USA

**2:20 PM**

**(PACRIM10-S22-004-2013) Glass Dissolution Rates Measured in the Presence of Alteration Phases**

William L Ebert\*, Argonne National Laboratory, USA; Charles Crawford, Savannah River National Laboratory, USA; Jeffrey Fortner, Argonne National Laboratory, USA; James Marra, Savannah River National Laboratory, USA

**2:40 PM**

**(PACRIM10-S22-005-2013) Rapid glass dissolution reaction coupled to aluminosilicate precipitation**

Jeffrey A Fortner\*, William L Ebert, Argonne National Lab, USA

**3:00 PM**

**(PACRIM10-S22-006-2013) Characterization of Solids from Long-term Corrosion Testing**

James C Marra\*, Charles Crawford, Savannah River National Laboratory, USA; William Ebert, Jeffrey Fortner, Argonne National Laboratory, USA

**3:20 PM**

Break

**3:40 PM**

**(PACRIM10-S22-007-2013) A time-dependent picture of hydration layer evolution via isotopic tracing mechanisms**

Joseph V Ryan\*, Daniel K Schreiber, Zihua Zhu, James J Neeway, Alex V Mitroshkov, Pacific Northwest National Laboratory, USA

**4:00 PM**

**(PACRIM10-S22-008-2013) Temporal Dynamics of Alteration Layer Formation on Nuclear Waste Glasses**

Kelly Ann Murphy\*, The Pennsylvania State University, USA; Nancy M Washton, Joseph V Ryan, Pacific Northwest National Laboratory, USA; Carlo G Pantano, The Pennsylvania State University, USA; Karl T Mueller, Pacific Northwest National Laboratory, USA

**4:20 PM**

**(PACRIM10-S22-009-2013) Kinetic Modeling of Glass Alteration Phase Precipitation: Implications for the Role of the Gel Layer**

Denis Strachan\*, James Neeway, Pacific Northwest National Laboratory, USA

**4:40 PM**

**(PACRIM10-S22-010-2013) Using Solid-State NMR to Understand the Formation and Role of Surface Alteration Layers on Nuclear Waste Glass**

Kelly Ann Murphy\*, The Pennsylvania State University, USA; Nancy M Washton, Joseph V Ryan, Pacific Northwest National Laboratory, USA; Carlo G Pantano, Karl T Mueller, The Pennsylvania State University, USA

**5:00 PM**

**(PACRIM10-S22-011-2013) The Durability of Simulated UK High Level Waste Glass Compositions Based on Recent Vitrification Campaign**

Mike Harrison\*, NNL, United Kingdom; Carl J Steele, Sellafield Ltd., United Kingdom

**5:20 PM**

**(PACRIM10-S22-012-2013) Dissolution rate of P0798 simulated HLW glass in MgCl<sub>2</sub> solution measured by using micro-channel flow-through test method as a function of pH**

Yaohiro Inagaki\*, Yuki Yamamura, Kazuya Idemitsu, Tatsumi Arima, Kyushu University, Japan; Sei-ichiro Mitsui, JAEA, Japan; Kenji Noshita, Hitachi Ltd, Japan

**5:40 PM**

**(PACRIM10-S22-013-2013) Chemical Durability of a Glass Composite 129I Wasteform**

Pat Brady\*, Tina Nenoff, Curt Mowry, Jeffrey Reich, Terry Garino, David Rademacher, Sandia National Laboratories, USA

Thursday, June 6, 2013

## **Nuclear Waste Glass Chemistry and Vitrification**

8:40 AM-11:40 AM

Room: Surf

Session Chair(s): Aldo Boccaccini

**8:40 AM**

**(PACRIM10-S22-014-2013) Technetium solubility in borosilicate nuclear waste glasses: Progress report**

John McCloy\*, Michael J Schweiger, Charles Soderquist, Dong-Sang Kim, Pacific Northwest National Laboratory, USA; Wayne W Lukens, Lawrence Berkeley National Laboratory, USA

**9:00 AM**

**(PACRIM10-S22-015-2013) Structure and Properties of Hf Doped Iron Borophosphate Glasses**

Mevlut Karabulut\*, Cenk Aydin, Huseyin Ertap, Mustafa Yuksek, Kafkas University, Turkey

**9:20 AM**

**(PACRIM10-S22-016-2013) Surface Structure Analysis of Iron Phosphate Glasses at High Temperature**

Hayato Tateno\*, Tetsuji Yano, Tetsuo Kishi, Shuichi Shibata, Tokyo Institute of Technology, Japan; Kanae Matsuyama, Takeshi Okita, Shinya Miyamoto, Toshiba Corporation, Japan; Hirohide Kofuji, Japan Atomic Energy Agency, Japan; Munetaka Myochin, Toshiba Corporation, Japan

**9:40 AM**

**(PACRIM10-S22-017-2013) Stabilization/Solidification of Primary Waste Generated from a Pyrochemical Process for the Recovery of U and TRUs**

Hwan-Seo Park\*, In-Hak Cho, Su-Na Ahn, In-Tae Kim, Geun-Il Park, Korea Atomic Energy Research Institute, Republic of Korea

**10:00 AM**

Break

**10:20 AM**

**(PACRIM10-S22-018-2013) Cold Crucible  
Vitrification of Hanford HLW Surrogates in  
Aluminum-Iron-Phosphate Glass**

Sergey Stefanovsky\*, Sergey Shvetsov, Valeri Gorbunov, Andrey Lekontsev, Andrey Efimov, Igor Knyazev, Olga Stefanovsky, Maria Zen'kovskaya, SIA Radon, Russian Federation; Jay Roach, Nexergy Technical, PLLC, USA

**10:40 AM**

**(PACRIM10-S22-019-2013) In-Situ Analysis of  
Pseudo-Cold Cap in Laboratory-scale Liquid Fed  
Ceramic Melter by X-Ray Computed Tomography**

Tetsuji Yano\*, Keita Watanabe, Naoko Ikezi, Tomohiro Amagasa, Kenji Takeshita, Tokyo Institute of Technology, Japan; Kazuhiro Minami, Eiji Ochi, Japan Nuclear Fuel Limited (JNFL), Japan

**11:00 AM**

**(PACRIM10-S22-020-2013) Scaled Melter Testing  
of Noble Metals Behavior with Japanese HLW  
Streams**

Keith S Matlack\*, Hao Gan, Ian L Pegg, The Catholic University of America, USA; Innocent Joseph, Bradley W Bowan, EnergySolutions, USA; Yoshiyuki Miura, Norio Kanehira, Eiji Ochi, Tamotsu Ebisawa, Atsushi Yamazaki, JNFL, Japan; Toshiro Oniki, Yoshihiro Endo, IHI Corporation, Japan

**11:20 AM**

**(PACRIM10-S22-021-2013) Suppression of Yellow  
Phase Formation during Japanese HLW  
Vitrification**

Ian L Pegg\*, Hao Gan, Keith S Matlack, The Catholic University of America, USA; Innocent Joseph, Bradley W Bowan, EnergySolutions, USA; Yoshiyuki Miura, Norio Kanehira, Eiji Ochi, JNFL, Japan; Toshiro Oniki, Yoshihiro Endo, IHI Corporation, Japan

## **Development and Characterization of Matrices for Waste Treatment and Immobilization**

1:20 PM-5:00 PM

Room: Surf

Session Chair(s): James Marra

**1:20 PM**

**(PACRIM10-S22-022-2013) Role of Nuclear and  
Electronic Energy Loss on Damage Production and  
Recovery in Irradiated Amorphous Ceramics  
(Invited Speaker)**

William J Weber\*, Marie Backman, University of Tennessee, USA; Yanwen Zhang, Oak Ridge National Laboratory, USA; Flyura Djurabekova, Kai Nordlund, University of Helsinki, Finland; Marcel Toulemonde, University of Caen, France; Aurelien Debelle, University Paris-Sud, France

**2:00 PM**

**(PACRIM10-S22-023-2013) Neodymium Titanate  
Ceramics as Advanced Waste Forms for Nuclear  
Energy**

Braeden Matthew Clark\*, S. K Sundaram, Alfred University, USA; K. M Fox, K. S Brinkman, Savannah River National Laboratory, USA

**2:20 PM**

**(PACRIM10-S22-024-2013) Entrapment of  
molecular iodine produced in nuclear industry,  
with the Hofmann's clathrates of formula  
 $M(L)Ni(CN)_4$  where M = Fe, Ni and L an organic  
linear compound**

Giovanni Massasso\*, Yannick Guari, Joulia Larionova, Jerome Long, Institut Charles Gerhardt - Université de Montpellier 2, France; Agnes Grandjean, CEA, France; Barbara Onida, Politecnico di Torino, Italy

**2:40 PM**

**(PACRIM10-S22-025-2013) Immobilization of iodine -based nuclear waste in phosphate glasses**

Thomas Lemesle, Francois O Mear\*, Lille 1 University, France; Lionel Campayo, Olivier Pinet, CEA, DEN, DTCD/SECM/LDMC, France; Lionel Montagne, Lille 1 University, France

**3:00 PM**

**(PACRIM10-S22-026-2013) Structure and Reactivity of Anion Bearing Sodalite**

Eric Pierce\*, Juliane Hopf, Oak Ridge National Laboratory, USA; Wayne Lukens, Lawrence Berkley National Laboratory, USA; Jeffrey Fitts, Brookhaven National Laboratory, USA; Carol M Jantzen, David Missimer, Savannah River National Laboratory, USA

**3:20 PM**

Break

**3:40 PM**

**(PACRIM10-S22-027-2013) Progress in the development of glass-ceramics from silicate waste focusing on functional materials**

Aldo Boccaccini\*, C. Rama Krishna Satish, Univ. of Erlangen-Nuremberg, Germany; Enrico Bernardo, Univ. of Padova, Italy

**4:00 PM**

**(PACRIM10-S22-028-2013) Immobilization of actinides (lanthnides) into crystalline phase in glass-ceramic waste forms**

Miae Kim\*, Kai Xu, Jong Heo, Pohang University of Science and Technology, Republic of Korea

**4:20 PM**

**(PACRIM10-S22-029-2013) Cement matrices for nuclear waste immobilisation - Recent advances from the ISL, University of Sheffield**

John L Provis\*, Hajime Kinoshita, Neil C Hyatt, University of Sheffield, United Kingdom

**4:40 PM**

**(PACRIM10-S22-030-2013) Water Remediation using Alkali Metal Titanates**

Brittany Higgins\*, Doreen Edwards, Alfred University, USA

**Symposium 23: Advances  
in Biomineralized  
Ceramics, Bioceramics, and  
Bioinspired Designs  
And  
Symposium 24:  
Nanostructured  
Bioceramics and Ceramics  
for Biomedical Applications**

Tuesday, June 4, 2013

**Joint Session I**

1:20 PM-6:00 PM

Room: Pointe

Session Chair(s): Min Wang, Christèle Combes

**1:20 PM**

**(PACRIM10-BIO-001-2013) In Vitro and in Vivo Properties of CaCO<sub>3</sub>-Based Cements for Bone Reconstruction (Invited Speaker)**

Christèle Combes\*, Solène Tadier, Sylvaine Jacquart, Hassan Noukrati, INPT, France; Fani Anagnostou, Université Denis-Diderot Paris 7, France; Sophie Cazalbou, Sophie Girod-Fullana, UPS - CIRIMAT, France; Reine Bareille, Université de Bordeaux, France; Christian Rey, INPT, France

**1:40 PM**

**(PACRIM10-BIO-002-2013) Ceramic-Polymer Conjugation for Near Infrared Bioimaging Probes**

Kohei Soga\*, Hiroshi Hyodo, Eva Hemmer, Nallusamy Venkatachalam, Hidehiro Kishimoto, Tokyo University of Science, Japan

**2:00 PM**

**(PACRIM10-BIO-003-2013) Upconverting and NIR-Emission Showing Er<sup>3+</sup> and Yb<sup>3+</sup> Doped Gd<sub>2</sub>O<sub>3</sub> Nanostructures for Bioimaging**

Eva Hemmer\*, Tomoyoshi Yamano, Hidehiro Kishimoto, Tokyo University of Science, Japan; Fiorenzo Vetrone, Francois Legare, Institut National de la Recherche Scientifique, Canada; Kohei Soga, Tokyo University of Science, Japan

**2:20 PM**

**(PACRIM10-BIO-004-2013) Design, Manufacture and Assessment of Nanocomposite Tissue Engineering Scaffolds (Invited Speaker)**

Min Wang\*, The University of Hong Kong, Hong Kong

**2:40 PM**

**(PACRIM10-BIO-005-2013) Cell-Loaded Ceramic-Based Microbeads for Direct Bone Implant Science**

Eng San Tian\*, Yong Yao Jason Feng, National University of Singapore, Singapore; Seow Khoon Mark Chong, Nanyang Technological University, Singapore; Kok Yen Jerry Chan, Zhiyong Zhang, KK Women's and Children's Hospital, Singapore; Swee Hin Teoh, Nanyang Technological University, Singapore

**3:00 PM**

**(PACRIM10-BIO-006-2013) Fabrication of PLA/amorphous magnesium phosphate electrospun fibers for tissue engineering applications**

Huan Zhou\*, Maryam Nabiyouni, Sarit B Bhaduri, University of Toledo, USA

**3:20 PM**

break

**3:40 PM**

**(PACRIM10-BIO-007-2013) Effect of RGD immobilization on light induced cell sheet detachment**

Kui Cheng\*, Yi Hong, Mengfei Yu, Wenjian Weng, Huiming Wang, Jun Lin, Zhejiang University, China

**4:00 PM**

**(PACRIM10-BIO-008-2013) A Novel Fibrillar Collagen/TCP Scaffold as a Bone Substitute for Sheep Posterolateral Lumbar Fusion**

Ali Sait Ismailoglu\*, Frank Vizesi, Erik Erbe, NuVasive, USA; Bryan Cunningham, Ashley Murgatroyd, Kenneth Mullinix, Orthopedic Spinal Research Lab, USA; Joost D. de Bruijn, Queen Mary University of London, United Kingdom; Sung-Ching Chen, Maxigen Biotech Inc., Taiwan

**4:20 PM**

**(PACRIM10-BIO-009-2013) Mineralized collagen coatings with chitosan nanospheres incorporation for osseointegration application**

Ziqiang Kong, Wenjian Weng\*, Chenlu Song, Zhiyu Wang, Kui Cheng, Jun Lin, Zhejiang University, China

**4:40 PM**

**(PACRIM10-BIO-010-2013) Alkoxysilane mediated Synthesis of Prussian blue Nanocomposites with palladium of variable nanogeometry: Applications in direct and HRP-catalyzed sensing of hydrogen**

Prem Chandra Pandey, Ashsish K Pandey\*, Indian Institute of Technology, Banaras Hindu University, India

**5:00 PM**

**(PACRIM10-BIO-011-2013) Synthesis Mg Doped Hydroxyapatite Fine Particles by Hydrothermal Microwave Assisted Method**

Juan Carlos Rendon-Angeles\*, Karla Lorena M Montoya-Cisneros, Research Institute for Advanced Studies of the NPI, Mexico; Zully M Matamoros-Veloza, Technological Institute of Saltillo, Mexico; Kazumichi Y Yanagisawa, Faculty of Science, Kochi University, Japan

**5:20 PM**

**(PACRIM10-BIO-012-2013) Synthesis and Characterization of Pd-TiO<sub>2</sub>-SiO<sub>2</sub> Nanocomposite for Electroanalytical Applications**

Prem Chandra Pandey, Arvind Prakash\*, Indian Institute of Technology, Banaras Hindu University, India

**5:40 PM**

**(PACRIM10-BIO-013-2013) Synthesis of gold nanoparticles of variable nanogeometry and their electroanalytical applications**

Prem Chandra Pandey, Gunjan Pandey\*, Indian Institute of Technology, Banaras Hindu University, India

Wednesday, June 5, 2013

## Joint Session II

8:00 AM-12:00 PM

Room: Bayside/Strand

Session Chair(s): To Be Announced

**8:00 AM**

**(PACRIM10-BIO-014-2013) Nanoscale structure and modification of Biomaterials (Invited Speaker)**

Federico Rosei\*, INRS, Canada

**8:20 AM**

**(PACRIM10-BIO-015-2013) Evaluation of Multi-Walled Carbon Nanotubes Reinforced Monetite Bionanocomposite Cements for Bone Defect Repair**

Nariman Mansouri, Huan Zhou\*, Timothy J Luchini, Sarit B Bhaduri, University of Toledo, USA

**8:40 AM**

**(PACRIM10-BIO-016-2013) Carbonate Apatite Cement Consisting of Vaterite and Dicalcium Phosphate Anhydrous Transforms to Carbonate Apatite**

Arief Cahyanto\*, Faculty of Dental Science, Kyushu University, Japan; Michito Maruta, Fukuoka Dental College, Japan; Kanji Tsuru, Faculty of Dental Science, Kyushu University, Japan; Shigeki Matsuya, Fukuoka Dental College, Japan; Kunio Ishikawa, Faculty of Dental Science, Kyushu University, Japan

**9:00 AM**

**(PACRIM10-BIO-017-2013) An evaluation of effect addition of phosphorylated chitosan to monetite based bone cement**

Nariman Mansouri, Huan Zhou\*, Timothy J Luchini, Sarit B Bhaduri, University of Toledo, USA

**9:20 AM**

**(PACRIM10-BIO-018-2013) Synthesis and In Vitro Characterisation of Multi-Substituted Hydroxyapatite**

Benjamin McCarthy\*, Xiang Zhang, Ceram, United Kingdom

**9:40 AM**

**(PACRIM10-BIO-019-2013) A Multi-Component High-Strength Lithium Disilicate Glass-Ceramic**

Saifang Huang\*, Peng Cao, The University of Auckland, New Zealand; Zhaohui Huang, China University of Geosciences (Beijing), China; Wei Gao, The University of Auckland, New Zealand

**10:00 AM**

Break

**10:20 AM**

**(PACRIM10-BIO-020-2013) Bone Tissue Engineering Scaffolds Incorporated with rhVEGF for Promoting Vascularization**

Chong Wang, Min Wang\*, The University of Hong Kong, Hong Kong

**10:40 AM**

**(PACRIM10-BIO-021-2013) Unidirectional Bioactive Glass Fiber Scaffolds for Repair of Segmental Defects**

Steven Jung\*, Mo-Sci Corporation, USA; Delbert E Day, Missouri University of Science and Technology, USA

**11:00 AM**

**(PACRIM10-BIO-022-2013) Bioactive, porous ceramic hybrid material with enhanced mechanical properties**

Tassilo Moritz\*, Matthias Ahlhelm, Kristin Haderk, Fraunhofer IKTS, Germany; Erwin Gorjup, Hagen v. Briesen, Fraunhofer IBMT, Germany

**11:20 AM**

**(PACRIM10-BIO-023-2013) Synthesis and coloration of zirconia dental ceramic for use in CAD/CAM system**

Wenxu Li\*, Harbin Institute of Technology, China; De-zhen Yu, Fu-ping Wang, Harbin Institute of Technology, China

**11:40 AM**

**(PACRIM10-BIO-024-2013) Characterization of Self-Colored Dental Zirconia Frameworks**

Selvin Yesilay Kaya\*, Guray Kaya, Rasim Ceylantekin, Erhan Ayas, Busra Gunhan, Anadolu University, Turkey



# Symposium 23: Advances in Biomineralized Ceramics, Bioceramics, and Bioinspired Designs

Thursday, June 6, 2013

## Mineralization Processes, Self-assembly and Organic/Inorganic Structures

8:30 AM-12:00 PM

Room: Bayside/Strand

Session Chair(s): Laurie Gower, Wen Yang

**8:30 AM**

**(PACRIM10-S23-001-2013) Biology Enabled  
Materials Assembly and Synthesis (Invited  
Speaker)**

Candan Tamerler\*, University of Washington, USA

**9:00 AM**

**(PACRIM10-S23-002-2013) Using Polymers to  
Repair Carious Lesions in Dentin (Invited Speaker)**

Stefan Habelitz\*, Kuniko Saeki, University of  
California, USA; Yung-Ching Chien, Lawrence  
Berkeley National Laboratory, USA; Laurie Gower,  
University of Florida, USA; James J DeYoreo,  
Lawrence Berkeley National Laboratory, USA;  
Grayson W Marshall, University of California, USA

**9:30 AM**

**(PACRIM10-S23-003-2013) Physical Controls on  
Matrix Mineralization (Invited Speaker)**

Jinhui Tao\*, Mike Nielsen, Jim De Yoreo, Lawrence  
Berkeley National Lab, USA

**10:00 AM**

Break

**10:20 AM**

**(PACRIM10-S23-004-2013) NMR investigation of  
biomimetic collagen-apatite models**

Yan Wang, Thierry Azaïs, Guillaume Laurent,  
UPMC/CNRS/Collège de France, France; Franck  
Fayon, CEMHTI CNRS, France; Nadine Nassif,  
Florence Babonneau\*, UPMC/CNRS/Collège de  
France, France

**10:40 AM**

**(PACRIM10-S23-005-2013) Multifunctional role of  
NCPs and their mimics in HA/collagen  
nanocomposites (Invited Speaker)**

Douglas E. Rodriguez\*, University of Florida, USA

**11:10 AM**

**(PACRIM10-S23-006-2013) The formation of  
hierarchical structures from amorphous calcium  
carbonate and inorganic additives (Invited  
Speaker)**

Jong Seto\*, Helmut Coelfen, Universitaet Konstanz,  
Germany

**11:40 AM**

**(PACRIM10-S23-007-2013) Use of  
biomineralization media in biomimetic synthesis  
of bone substitutes (Invited Speaker)**

A. Cuneyt Tas\*, University of Illinois, USA

## Bioinspired and Biomimetic Ceramics and Composites and New Materials

1:20 PM-5:30 PM

Room: Bayside/Strand

Session Chair(s): Po-Yu Chen, Ekaterina Novitskaya

**1:20 PM**

**(PACRIM10-S23-008-2013) Bio-Inspired Micro-  
Channeled Hydroxyapatite Components by  
Sequential Freeze Drying and Free Pressureless  
Spark-Plasma Sintering (Invited Speaker)**

Eugene Olevsky\*, Yen-Shan Lin, San Diego State

University, USA; Marc Meyers, University of California, San Diego, USA

**1:50 PM**

**(PACRIM10-S23-009-2013) Functional ceramic composites by magnetic field aligned freeze casting and subsequent polymer infiltration**

Michael Porter\*, Marc A Meyers, Joanna McKittrick, University of California San Diego, USA

**2:10 PM**

**(PACRIM10-S23-010-2013) Biologically-Inspired Synthesis of Nanostructured Zinc Oxide (Invited Speaker)**

Wenting Hou, UC Riverside, USA; Michael Nielsen, Lawrence Berkeley National Labs, USA; Louis Lancaster, UC Riverside, USA; Dongsheng Li, James DeYoreo, Lawrence Berkeley National Labs, USA; David Kisailus\*, UC Riverside, USA

**2:40 PM**

**(PACRIM10-S23-011-2013) Multifunctional Glass Microspheres for Medical Applications (Invited Speaker)**

Delbert E Day\*, Missouri University of Science and Technology, USA

**3:10 PM**

Break

**3:30 PM**

**(PACRIM10-S23-012-2013) Infiltrated mullite-cordierite / epoxy co-continuous composites**

James Zimmermann\*, Manuela Ocampo, Patrick Tepesch, Corning, USA

**3:50 PM**

**(PACRIM10-S23-013-2013) Nature Inspired "Nacre-like" SiC-PMMA Composites (Invited Speaker)**

Valentina Naglieri\*, Bernd Gludovatz, Amy Wat, Antoni P Tomsia, Lawrence Berkeley National Laboratory, USA; Robert O Ritchie, UC Berkeley, USA

**4:20 PM**

**(PACRIM10-S23-014-2013) Vapor Deposition Polymerization as an Alternative Method to Enhance the Mechanical Performance of Bio-Inspired Scaffolds**

Pei-Chun Chou\*, National Tsing Hua University, Taiwan; Michael M Porter, Joanna McKittrick, University of California, San Diego, USA; Po-Yu Chen, National Tsing Hua University, Taiwan

**4:40 PM**

**(PACRIM10-S23-015-2013) Bioinspired Materials Derived from Natural Species (Invited Speaker)**

Tongxiang Fan\*, Xingmei Guo, Di Zhang, Shanghai Jiaotong University, China

**5:10 PM**

**(PACRIM10-S23-016-2013) Comparative evaluation of the crystallization behavior and biocompatibility of fluorapatite-mullite glass-ceramics**

Sahar Mollazadeh Beidokhti, Iran University of Science and Technology, Islamic Republic of Iran; Abbas Youssefi\*, Par-e- Tavous Research Center, Islamic Republic of Iran; Bijan Eftekhari Yekta, Jafar Javadpour, Iran University of Science and Technology, Islamic Republic of Iran; Tahere Sadat Jafarzade Kashi, Tehran University of Medical Science, Islamic Republic of Iran; Morteza Mehrju, Mohhammad Ali Shokrgozar, National Cell Bank of Iran- Pasteur Institute of Iran, Islamic Republic of Iran

Friday, June 7, 2013

## Natural Ceramics and Composites

8:30 AM-12:20 PM

Room: Bayside/Strand

Session Chair(s): Joanna McKittrick, Eugene Olevsky

**8:30 AM**

**(PACRIM10-S23-017-2013) Structure and fracture resistance of armored fish scales (Invited Speaker)**

Marc Meyers\*, Wen Yang, University of California, San Diego, USA; Bernd Gludovatz, Elizabeth Zimmermann, Robert Ritchie, University of California, Berkeley, USA

**9:00 AM**

**(PACRIM10-S23-018-2013) The Armored Carapace of the Boxfish: Structure and Mechanical Properties (Invited Speaker)**

Wen Yang\*, James Kiang, Michael Porter, Marc Meyers, Joanna McKittrick, University of California, San Diego, USA

**9:30 AM**

**(PACRIM10-S23-019-2013) Mechanical and Functional Design of Natural Dermal Armors**

Chang-Yu Sun\*, Hao-Jen Fang, Pei-Chun Chou, Po-Yu Chen, National Tsing Hua University, Taiwan

**9:50 AM**

**(PACRIM10-S23-020-2013) Comparison of the prehensility of the tail of Alligator Pipefish and Bay Pipefish**

Zherrina Manilay\*, Vanessa Nguyen, Ana Bertha Castro-Ceseña, Michael M Porter, Ekaterina Novitskaya, Joanna McKittrick, University of California, San Diego, USA

**10:10 AM**

Break

**10:30 AM**

**(PACRIM10-S23-021-2013) Cuttlebone: A Multifunctional Buoyancy Control Device**

Yao-Tien Ku, National Tsing Hua University, Taiwan; Wen-Guang Liu, National Tsing Hua University, Taiwan; Yueh-Ying Chou, National Tsing Hua University, Taiwan; Yi-Hsin Lee, Chuan-Chin Chiao, National Tsing Hua University, Taiwan; Po-Yu Chen\*, National Tsing Hua University, Taiwan

**10:50 AM**

**(PACRIM10-S23-022-2013) Reinforcing structures in avian wing bones**

Ekaterina Novitskaya\*, James Kiang, Hannah Walsh, Marc A Meyers, Joanna McKittrick, University of California, San Diego, USA

**11:10 AM**

**(PACRIM10-S23-023-2013) Structure-Function Relationships in Damage Tolerant Structural Glasses: Analysis of the Architectural Complexities of Sponge Skeletal Systems (Invited Speaker)**

James C Weaver\*, Harvard University, USA

**11:40 AM**

**(PACRIM10-S23-024-2013) Role of structural components on the microcracking of human dentin**

Felipe Eltit\*, Vincent Ebacher, Rizhi Wang, UBC, Canada

**12:00 PM**

**(PACRIM10-S23-025-2013) Shear Fracture of Human Cortical Bone**

Tengteng (Toni) Tang\*, Vincent Ebacher, UBC, Canada; Pierre Guy, Center for Hip Health and Mobility, Canada; Peter Cripton, UBC, Canada; Heather McKay, Center for Hip Health and Mobility, Canada; Rizhi Wang, UBC, Canada

# Symposium 24: Nanostructured Bioceramics and Ceramics for Biomedical Applications

Monday, June 3, 2013

## Nanostructured Bioceramics I

1:20 PM-6:00 PM

Room: Pointe

Session Chair(s): Rena Bizios, Masahiro Yoshimura

**1:20 PM**

**(PACRIM10-S24-001-2013) Nanostructured Bioactive Glasses: from Experiments to Ab Initio Calculations (Invited Speaker)**

Christian Bonhomme\*, Christel Gervais, Université P et M Curie, France; Danielle Laurencin, ICG, France; Edouard Jallot, Jonathan Lao, J Marie Nedelec, Josephine Lacroix, IN2P3, France; John Hanna, Mark Smith, University of North Texas, USA; Jincheng Du, Y. Xiang, University of Warwick, United Kingdom

**1:40 PM**

**(PACRIM10-S24-002-2013) Growing Integration Layer [GIL] Strategy: Preparation of Bioactive Ceramic Layers on Metallic Materials in Solution without Firing Processes (Invited Speaker)**

Masahiro Yoshimura\*, National Cheng Kung Univ., Taiwan; Nobuhiro Matsushita, Tokyo Institute of Technology, Japan

**2:00 PM**

**(PACRIM10-S24-003-2013) Multicomponent and Multifunctional Nanoparticles for Cancer Detection and Treatment**

Si-Yue Li, Min Wang\*, The University of Hong Kong, Hong Kong

**2:20 PM**

**(PACRIM10-S24-004-2013) The Tissue/Ceramic Implant Interface: A Cell Perspective (Invited Speaker)**

Rena Bizios\*, UTSA, USA

**2:40 PM**

**(PACRIM10-S24-005-2013) Nanostructured bioceramics for the prevention of orthopaedic implant associated infections (Invited Speaker)**

Rizhi Wang\*, University of British Columbia, Canada

**3:00 PM**

Break

**3:20 PM**

**(PACRIM10-S24-006-2013) Silica Nano- fibers and nano-tubes from electrospun polymer templating (Invited Speaker)**

Yuki Shirosaki, Hiroki Yoshihara, Yuri Nakamura, Satoshi Hayakawa, Song Chen, Kyushu Institute of Technology, Japan; Artemis Stamboulis, University of Birmingham, United Kingdom; Nobutaka Hanagata, National Institute of Materials Science, Japan; Akiyoshi Osaka\*, Kyushu Institute of Technology, Japan

**3:40 PM**

**(PACRIM10-S24-007-2013) Nanostructured glass-ceramic x-ray imaging plate (Invited Speaker)**

Jacqueline Johnson\*, Lee Leonard, Hien-Yoong Hah, UTSI, USA; Carlos Alvarez, Northwestern University, USA; Rick Lubinsky, SUNY, USA; Charles Johnson, UTSI, USA; Amanda Petford-Long, Argonne National Laboratory, USA

**4:00 PM**

**(PACRIM10-S24-008-2013) Strengths of Solid State NMR to investigate silicon-containing bioceramics (Invited Speaker)**

Florence Babonneau\*, Cristina Coelho, UPMC/CNRS/Collège de France, France; David Marchat, Ecole Nationale Supérieure des Mines, France

**4:20 PM**

**(PACRIM10-S24-009-2013) Nanoparticle-based colloidal hybrids for biomedical applications (Invited Speaker)**

Kiyofumi Katagiri\*, Hiroshima University, Japan

**4:40 PM**

**(PACRIM10-S24-010-2013) Two photon polymerization of ceramic-polymer hybrid materials**

Roger Narayan\*, UNC/NCSU Joint Dept of Biomedical Engineering, USA

**5:00 PM**

**(PACRIM10-S24-011-2013) A Rapid Microwave Assisted Synthesis of Alkaline Earth Phosphates Nanospheres**

Huan Zhou\*, Sarit B Bhaduri, University of Toledo, USA

**5:20 PM**

**(PACRIM10-S24-012-2013) Polylactic acid/bioactive glass fiber meshes for craniofacial applications**

Leena Varila\*, Ulriika Vanamo, Åbo Akademi University, Finland; Mervi Puska, Turku Clinical Biomaterials Centre, Finland; Pekka K Vallittu, University of Turku, Finland; Johan Bobacka, Leena Hupa, Åbo Akademi University, Finland

**5:40 PM**

**(PACRIM10-S24-013-2013) Synthesis and Characterization of Cupric oxide-silver nanocomposite as peroxidase mimetic**

Prem Chandra Pandey, Richa Singh\*, Indian Institute of Technology, Banaras Hindu University, India

Session Chair(s): Pelagia Gouma, Mohamed Rahaman

**8:30 AM**

**(PACRIM10-S24-014-2013) Formation and Characteristics of Osteoconductive Nanocomposite Scaffolds Produced by Negative Voltage Electrospinning**

Ho-Wang Tong, Min Wang\*, The University of Hong Kong, Hong Kong

**8:50 AM**

**(PACRIM10-S24-015-2013) Invited Speaker: Nanostructured Ceramic Sensors for Breath Diagnostics (Invited Speaker)**

Pelagia Gouma\*, SUNY Stony Brook, USA

**9:10 AM**

**(PACRIM10-S24-016-2013) Nanostructured ceramics with tailored functionalization for biotechnology and biomedical applications (Invited Speaker)**

Stephen Kroll\*, Tanja-Yvonne Klein, Ulrike Hess, Laura Treccani, Kuroschi Rezwan, University of Bremen, Germany

**9:30 AM**

**(PACRIM10-S24-017-2013) Bioactive glasses exhibiting controlled therapeutic ion release for bone regeneration (Invited Speaker)**

Aldo Boccaccini\*, Univ. of Erlangen-Nuremberg, Germany

**10:00 AM**

Break

**10:20 AM**

**(PACRIM10-S24-018-2013) Development of Bioactive Glass Scaffolds for Segmental Bone Repair (Invited Speaker)**

Mohamed N Rahaman\*, Missouri University of Science & Technology, USA

Tuesday, June 4, 2013

## Nanostructured Bioceramics II

8:30 AM-12:00 PM

Room: Pointe

**10:40 AM**

**(PACRIM10-S24-019-2013) Design, synthesis and evaluation of gelatinous hydroxyapatite nanocomposites for orthopedic applications (Invited Speaker)**

Ching-Chang Ko\*, University of North Carolina-Chapel Hill, USA

**11:00 AM**

**(PACRIM10-S24-020-2013) Organically Functionalized alkoxy silane mediated synthesis of functional nanomaterials and their applications (Invited Speaker)**

Prem Chandra Pandey\*, Indian Institute of Technology, Banaras Hindu University, India

**11:20 AM**

**(PACRIM10-S24-021-2013) Preparing Bioceramics and Drug Contained Biocomposite Coatings for Biointegration by Electrolysis (Invited Speaker)**

Shiow Kang Yen\*, National Chung Hsing University, Taiwan

**11:40 AM**

**(PACRIM10-S24-022-2013) Development of Immobilized urease reactor based on organically modified sol-gel glass for urea sensing**

Prem Chandra Pandey, Digvijay Panday\*, Indian Institute of Technology, Banaras Hindu University, India

# 2013 Glass and Optical Materials Division Annual Meeting

## SYMPOSIUM A: Glass Science

Monday, June 3, 2013

### Glass Transition and Relaxation I

2:00 PM-6:00 PM

Room: Seabreeze

Session Chair(s): Kostya Trachenko

**2:00 PM**

**(PACRIM10-SA-001-2013) Bubbles in space-time: the dynamic facilitation theory of the glass transition (Invited Speaker)**

Juan P Garrahan\*, University of Nottingham, United Kingdom

**2:30 PM**

**(PACRIM10-SA-002-2013) Non-linear responses of glass formers under oscillating temperature (Invited Speaker)**

Takashi Odagaki\*, Tokyo Denki University, Japan

**3:00 PM**

**(PACRIM10-SA-003-2013) Electrical Field Assisted Viscous Flow Accompanied by Electrical Conductivity and Photoemission in a Sodium Aluminosilicate Glass**

Umberto Scipioni, Vincenzo M Sglavo, University of Trento, Italy; Rishi Raj\*, University of Colorado, USA; Setsuro Ito, Tokyo Institute of Technology, Japan

**3:20 PM**

Break

**3:40 PM**

**(PACRIM10-SA-004-2013) The Origin of Persistent Shear Stress in Supercooled Liquids (Invited Speaker)**

Peter Harrowell\*, University of Sydney, Australia

**4:10 PM**

**(PACRIM10-SA-005-2013) Diverging non-locality of the viscosity kernel for liquids approaching their glassy state (Invited Speaker)**

Peter Daivis\*, RMIT University, Australia; Tetsuya Morishita, National Institute of Advanced Industrial Science and Technology, Japan

**4:40 PM**

**(PACRIM10-SA-006-2013) The phonon theory of liquid thermodynamics and liquid-glass transition (Invited Speaker)**

Kostya Trachenko\*, Queen Mary University of London, United Kingdom

**5:10 PM**

**(PACRIM10-SA-007-2013) Atomic Dynamics in Liquids (Invited Speaker)**

Takeshi Egami\*, University of Tennessee, USA

**5:40 PM**

**(PACRIM10-SA-008-2013) Glass transition and relaxation from temperature-modulated differential scanning calorimetry simulations**

Xiaoju Guo\*, John C Mauro, Douglas C Allan, Corning Inc, USA

Tuesday, June 4, 2013

### Glass Transition and Relaxation II

9:00 AM-10:50 AM

Room: Seabreeze

Session Chair(s): Kostya Trachenko

**9:00 AM**

**(PACRIM10-SA-009-2013) Phase separation and crystallization processes in borosilicate glass (Invited Speaker)**

Sophie Schuller\*, CEA, France

**9:30 AM**

**(PACRIM10-SA-010-2013) Viscosity, Crystallization and Glass Forming Tendency of Na<sub>2</sub>O-CaO-B<sub>2</sub>O<sub>3</sub> Melts**

Kathryn Goetschius\*, Luciana Ghussn, Richard K Brow, Missouri University of Science and Technology, USA

**9:50 AM**

Break

**10:10 AM**

**(PACRIM10-SA-011-2013) On the GRP Method for Critical Cooling Rate Calculations**

Bruno P Rodrigues, Edgar Dutra Zanotto\*, Fed. University Sao Carlos, Brazil

**10:30 AM**

**(PACRIM10-SA-012-2013) Evolution of Dynamical Heterogeneities during Sub-Tg Annealing of Amorphous Selenium**

Ozgur Gulbiten\*, University of Arizona, USA; John C Mauro, Corning Incorporated, USA; Pierre Lucas, University of Arizona, USA

## Non-Oxide Glasses I

10:50 AM-11:50 AM

Room: Seabreeze

Session Chair(s): Pierre Lucas, Ellyn King

**10:50 AM**

**(PACRIM10-SA-013-2013) Comprehensive Structural Characterization and Modeling of amorphous Ga-Sb phase change alloys**

Trent Edwards\*, University of California, Davis, USA; Bora Kalkan, Lawrence Berkeley Laboratory, USA; Simone Raoux, IBM T. J. Watson Research

Center, USA; Sabyasachi Sen, University of California, Davis, USA

**11:10 AM**

**(PACRIM10-SA-014-2013) A multi-technique investigation into the structure of ternary chalcogenide glasses in the system BaSe-Ga<sub>2</sub>Se<sub>3</sub>-GeSe<sub>2</sub>**

Alvin Mao\*, University of California at Davis, USA; Bruce Aitken, Corning Incorporated, USA; Sabyasachi Sen, University of California at Davis, USA

**11:30 AM**

**(PACRIM10-SA-015-2013) Structural Investigation of Mixed Glass Former Glasses in the Na<sub>2</sub>S+GeS<sub>2</sub>+P<sub>2</sub>S<sub>5</sub> and Na<sub>2</sub>S+SiS<sub>2</sub>+P<sub>2</sub>S<sub>5</sub> Systems**

Christian Bischoff\*, Nathan Dunlap, Steve W Martin, Iowa State University, USA

## Non-Oxide Glasses II

2:00 PM-6:00 PM

Room: Seabreeze

Session Chair(s): Pierre Lucas, Ellyn King

**2:00 PM**

**(PACRIM10-SA-016-2013) Fabrication of low-loss mid-IR chalcogenide fibers**

Christophe Lafond\*, Jean-Francois Couillard, Jean-Luc Delarosbil, Fernand Sylvain, Coractive High-Tech Inc., Canada

**2:20 PM**

**(PACRIM10-SA-017-2013) Sub-micrometer patterning of chalcogenide bulk glasses by a soft lithography (Invited Speaker)**

Tomas Kohoutek\*, University of Pardubice, Czech Republic; Jiri Orava, University of Cambridge, United Kingdom; Hiroshi Fudouzi, National Institute for Material Science (NIMS), Japan



**2:50 PM**

**(PACRIM10-SA-018-2013) Physical properties of selenide glasses in correlation with their structure (Invited Speaker)**

Katya Sykina, Université de Rennes 1, France;  
Michael Deschamps, Université d'Orléans, France;  
Yann Gueguen, Yang Guang, Eric Furet, Claire Roiland, Laurent Le Pollès, Catherine Boussard, Tanguy Rouxel, Jean Christophe Sangleboeuf, Université de Rennes 1, France; Dominique Massiot, Université d'Orléans, France; Pierre Lucas, University of Arizona, USA; Bruno Bureau\*, Université de Rennes 1, France

**3:20 PM**

Break

**3:40 PM**

**(PACRIM10-SA-019-2013) Identifying the best chalcogenide glasses for fabricating optical waveguides for signal processing and mid infrared science (Invited Speaker)**

Barry Luther-Davies\*, Rongping Wang, Zhiyong Yang, Steve Madden, Duk-Yong Choi, Xin Gai, Ting Wang, Xiueqiong Su, Kunlun Yan, Pan Ma, Wenhou Wei, Ivy Yu, Australian National University, Australia

**4:10 PM**

**(PACRIM10-SA-020-2013) Correlation between structure and refractive index modification by femtosecond laser filamentation (Invited Speaker)**

David Le Coq\*, University of Rennes 1, France;  
Eugène Bychkov, Pascal Masselin, University of Littoral-Côte d'Opale, France

**4:40 PM**

**(PACRIM10-SA-021-2013) Observation of a Continuous Random Network Structure in  $\text{Ge}_x\text{Se}_{100-x}$  glasses: Results from high-resolution  $^{77}\text{Se}$  MATPASS-CPMG NMR Spectroscopy**

Derrick Kaseman\*, Sabyasachi Sen, University of California Davis, USA; Zhehong Gan, Ivan Hung, National High Magnetic Field Laboratory, USA

**5:00 PM**

**(PACRIM10-SA-022-2013) A novel approach to develop chalcogenide glasses and glass-ceramics transparent in the infrared range**

Elena Petracovschi\*, Laurent Calvez, Mathieu Hubert, UMR CNRS 6226 Institut des Sciences Chimiques de Rennes, France; Gaelle Delaizir, Ecole Nationale Supérieure de Céramique Industrielle, France; Jean-Luc Adam, UMR CNRS 6226 Institut des Sciences Chimiques de Rennes, France

**5:20 PM**

**(PACRIM10-SA-023-2013) Telluride bulk glasses for thermoelectric applications**

Pierre Lucas\*, Zhiyong Yang, University of Arizona, USA; Clement Conseil, Bruno Bureau, University of Rennes I, France; Qing Hao, University of Arizona, USA; Catherine Boussard-Pledel, University of Rennes I, France; Celine Caillaud, University of Arizona, USA

**5:40 PM**

**(PACRIM10-SA-024-2013) Pore Formation and Removal in Solution-processed Amorphous Arsenic Sulfide Films**

Yunlai Zha\*, Maike Waldmann, Princeton University, USA; Samuel Fingerma, University of Massachusetts Lowell, USA; Stanley Cantrell, North Carolina A&T State University, USA; Chao Lu, Craig B Arnold, Princeton University, USA

Wednesday, June 5, 2013

## Glass Structure & Properties - Novel Glass Formers

8:40 AM-10:20 AM

Room: Seabreeze

Session Chair(s): Brian Riley, John McCloy

**8:40 AM**

**(PACRIM10-SA-025-2013) A Review of Vanadate Glasses**

Steve Feller\*, Jason Maldonis, Coe College, USA;  
Scott Kroeker, Vlad Michaelis, University of  
Manitoba, Canada; Uwe Hoppe, Rostock University,  
Germany; Blane Baker, Jennifer McKnight, William  
Jewell College, USA; Mario Affatigato, Coe College,  
USA

**9:00 AM**

**(PACRIM10-SA-026-2013) Cr, a little known glass  
forming cation: the case of alkali**

**chromomolybdate and chromotungstate glasses**

Bruce Aitken\*, Randall E Youngman, Corning  
Incorporated, USA

**9:20 AM**

**(PACRIM10-SA-027-2013) Network Structure in  
Alkali Molybdate Glasses**

Randall Youngman\*, Bruce Aitken, Corning  
Incorporated, USA

**9:40 AM**

**(PACRIM10-SA-028-2013) Structure of high  
refractive index  $\text{La}_2\text{O}_3\text{-Nb}_2\text{O}_5$  glasses prepared by  
containerless processing**

Atsunobu Masuno\*, The University of Tokyo,  
Japan; Shinji Kohara, Japan Synchrotron Radiation  
Research Institute, Japan; Hiroyuki Inoue, The  
University of Tokyo, Japan

**10:00 AM**

Break

## **Glass Structure & Properties - NMR studies**

10:20 AM-12:00 PM

Room: Seabreeze

Session Chair(s): Brian Riley, John McCloy

**10:20 AM**

**(PACRIM10-SA-029-2013) Structural investigation  
of lanthanum enriched borosilicate glasses and  
their alteration layers from  $^{11}\text{B}$ ,  $^{29}\text{Si}$  and  $^{17}\text{O}$   
NMR**

Frederic Angeli\*, Thibault Charpentier, Estelle  
Molieres, Patrick Jollivet, Stéphane Gin, CEA,  
France

**10:40 AM**

**(PACRIM10-SA-030-2013) Limits on "Free" Oxide  
Ions in Potassium Silicate Glasses: O-17 NMR**

Jonathan F Stebbins\*, Stanford University, USA;  
Sabyasachi Sen, University of California, Davis, USA

**11:00 AM**

**(PACRIM10-SA-031-2013) The Combination of Ab  
Initio Calculations and NMR spectroscopy for the  
study of bioactive glasses**

Christian Bonhomme\*, Christel Gervais, UPMC,  
France; Danielle Laurencin, ICG, France; John  
Hanna, Mark Smith, University of Warwick, United  
Kingdom; Jincheng Du, Ye Xiang, University of  
North Texas, USA

**11:20 AM**

**(PACRIM10-SA-032-2013) Impact of boron  
addition on non-bridging oxygen and five-  
coordinated aluminum in calcium aluminosilicate  
glasses: A multi-nuclear NMR study**

Linda M Thompson\*, Jonathan F Stebbins, Stanford  
University, USA

Thursday, June 6, 2013

## **Glass Structure & Properties - Mechanical Properties**

9:00 AM-12:00 PM

Room: Seabreeze

Session Chair(s): Jonathan Salem

**9:00 AM**

**(PACRIM10-SA-033-2013) High Modulus Glass  
Fibers: A Way to Develop New Compositions**

Kirsten Hellmann\*, Reinhard Conradt, RWTH  
Aachen Institute of Mineral Engineering, Germany

**9:20 AM**

**(PACRIM10-SA-034-2013) Slow Crack Growth Properties of Sealing Glasses**

Jonathan Salem\*, NASA GRC, USA

**9:40 AM**

**(PACRIM10-SA-035-2013) Huge thermal shrinkage and viscoelastic property of anisotropic alkali metaphosphate glass**

Seiji Inaba\*, Setsuro Ito, Tokyo Institute of Technology, Japan

**10:00 AM**

Break

**10:20 AM**

**(PACRIM10-SA-036-2013) Anisotropy and mechanical property of metaphosphate glass**

Jun Endo\*, Asahi Glass Co., Ltd., Japan; Seiji Inaba, Setsuro Ito, Tokyo Institute of Technology, Japan

**10:40 AM**

**(PACRIM10-SA-037-2013) A Novel Approach to the Mechanical Properties of Inorganic Glasses**

Reinhard Conradt\*, Richard Dronskowsky, RWTH Aachen University, Germany

**11:00 AM**

**(PACRIM10-SA-038-2013) Lattice dilation in an alkali aluminosilicate glass via direct strain measurements**

Ellyn A King\*, Donghui Zhao, Douglas C Allan, Science & Technology Division, Corning Incorporated, USA

**11:20 AM**

**(PACRIM10-SA-039-2013) Evidence for very high noble gas solubilities in vitreous silica at high pressure**

Coralie Weigel, Montpellier University, France; Alain Polian, University of P&M Curie, France; Matthieu Kint, Marie Foret, René Vacher, Benoit Rufflé\*, Montpellier University, France

**11:40 AM**

**(PACRIM10-SA-040-2013) Dispersion of the stress optic response of oxide glass**

Justine Galbraith, Gao Tang, Josef Zwanziger\*, Dalhousie University, Canada

## Glass Structure

1:20 PM-5:40 PM

Room: Seabreeze

Session Chair(s): Liping Huang, Peter Lezzi

**1:20 PM**

**(PACRIM10-SA-041-2013) The structure of high temperature single component oxide liquids**

Lawrie B Skinner\*, Stony Brook (SUNY), USA; Chris Benmore, Argonne National Laboratory, USA; John B Parise, Stony Brook (SUNY), USA; Richard Weber, Argonne National Laboratory, USA

**1:40 PM**

**(PACRIM10-SA-042-2013) Local structure around rare-earth ions in B<sub>2</sub>O<sub>3</sub> glass melt quenched at high pressure**

Hideo Hosono\*, Fuji Funabiki, Satoru Matsuishi, Tokyo Institute of Technology, Japan

**2:00 PM**

**(PACRIM10-SA-043-2013) Structure of Al<sub>2</sub>O<sub>3</sub>-SiO<sub>2</sub> glasses by means of molecular dynamics simulation**

Hiroyuki Inoue\*, Atsunobu Masuno, The University of Tokyo, Japan; Yoshihiro Saito, Sumitomo Electric Industries, Ltd., Japan

**2:20 PM**

**(PACRIM10-SA-044-2013) Molecular Structure of the (BaO)<sub>x</sub>(.68 SiO<sub>2</sub> .32B<sub>2</sub>O<sub>3</sub>)<sub>100-x</sub> amorphous system**

Chad Monroe Holbrook\*, Shibalik Chakraborty, Punit Boolchand, Vignarooban Kandasamy, Jonathan Goldstein, Wright-Patterson AFB, USA

**2:40 PM**

**(PACRIM10-SA-045-2013) Structure-Properties Relationship Within Glass Transition Range**

Oleg A Prokhorenko\*, Laboratory of Glass Properties, USA

**3:00 PM**

**(PACRIM10-SA-046-2013) Alkali Free Boroaluminosilicate Glasses for High Energy and High Temperature Power Electronic Capacitors**

Priyanka Dash\*, Eugene Furman, Michael T Lanagan, Carlo G Pantano, The Pennsylvania State University, USA

**3:20 PM**

Break

**3:40 PM**

**(PACRIM10-SA-047-2013) Structure of Amorphous Tantalum Thin Films**

Namjun Kim\*, Jonathan F Stebbins, Stanford University, USA

**4:00 PM**

**(PACRIM10-SA-048-2013) Essential Structural Features of 'Stuffing' Alkali Accommodation in Ion-Exchanged Silicate Glasses from Molecular Dynamics Simulations**

Patrick K Kreski\*, Alfred University, USA; Arun K Varshneya, Saxon Glass Technologies, Inc., USA; Alastair N Cormack, Alfred University, USA

**4:20 PM**

**(PACRIM10-SA-049-2013) Structure and Properties of Zinc Aluminophosphate Glasses**

Charmayne Smith\*, Richard Brow, Missouri University of Science and Technology, USA

**4:40 PM**

**(PACRIM10-SA-050-2013) The tin-iron redox couple in silicate and phospho-silicate glasses**

Luciana Ghussn\*, Richard K Brow, Missouri University of Science & Technology, USA; K. Schaffers, S. R Qiu, P. Ehrmann, T. Suratwala, Lawrence Livermore National Laboratory, USA

**5:00 PM**

**(PACRIM10-SA-051-2013) Structural Properties of Borate Glasses Containing Transition Metal Oxides**

Maryam Kazemzadeh Dehdashti\*, William G Fahrenholtz, Gregory E Hilmas, Missouri University of Science and Technology, USA

**5:20 PM**

**(PACRIM10-SA-052-2013) Structure-Electrical Relationship in Copper Lithium Phosphate Glasses**

Giulia Broglia\*, Consuelo Mugoni, Monia Montorsi, Cristina Siligardi, University of Modena and Reggio Emilia, Italy; Himanshu Jain, Lehigh University, USA

Friday, June 7, 2013

## Theoretical & Numerical Modeling

8:30 AM-12:00 PM

Room: Seabreeze

Session Chair(s): Jincheng Du

**8:30 AM**

**(PACRIM10-SA-053-2013) Molecular Dynamics Simulations of Silicate Glasses (Invited Speaker)**

Junko Habasaki\*, Tokyo Institute of Technology, Japan

**9:00 AM**

**(PACRIM10-SA-054-2013) Structure and properties of sodium aluminosilicate glasses from molecular dynamics simulations**

Ye Xiang\*, Jincheng Du, University of North Texas, USA

**9:20 AM**

**(PACRIM10-SA-055-2013) The role of pressure in determining the structural properties of disordered Ge-Se systems with changing composition**

Carlo Massobrio\*, Assil Bouzid, IPCMS, France

## Glass Structure & Properties - Characterization

8:40 AM-11:00 AM

Room: Pacifica/Tide

Session Chair(s): John McCloy

**8:40 AM**

**(PACRIM10-SA-061-2013) Advanced Instrumentation for in-situ Studies of Liquids and Glasses using X-ray and Neutron Beamlines**

Richard Weber\*, Chris Benmore, MDI, USA; Lawrie Skinner, Stony Brook University, USA; Joerg Neuefeind, Oak Ridge National Laboratory, USA; Sonia Tumber, MDI, USA; Louis Santodanato, Oak Ridge National Laboratory, USA; John Parise, Stony Brook University, USA

**9:00 AM**

**(PACRIM10-SA-062-2013) Low-energy ion scattering spectroscopy of modified silicate glasses**

Rui M Almeida\*, Ray Hickey, Himanshu Jain, Carlo G Pantano, Instituto Superior Tecnico, Portugal

**9:20 AM**

**(PACRIM10-SA-063-2013) Structural study of Na<sub>2</sub>O-FeO-Fe<sub>2</sub>O<sub>3</sub>-P<sub>2</sub>O<sub>5</sub> glasses by HPLC and Raman Spectroscopy**

Lina Ma\*, Richard Brow, Missouri University of Science and Technology, USA

**9:40 AM**

**(PACRIM10-SA-064-2013) Structure and Properties of Densified Glasses**

Liping Huang\*, Mike Guerette, Fenglin Yuan, Rensselaer Polytechnic Institute, USA

**10:00 AM**

Break

**9:40 AM**

**(PACRIM10-SA-056-2013) Thermochemistry of borosilicate glasses**

Peter Kroll\*, Atreyi Dasmahapatra, UT Arlington, USA

**10:00 AM**

Break

**10:20 AM**

**(PACRIM10-SA-057-2013) Diversity and Multiplicity of Glass Structure: Approach from Computer Simulation (Invited Speaker)**

Akira Takada\*, Asahi Glass Co. Ltd., Japan

**10:50 AM**

**(PACRIM10-SA-058-2013) Molecular Dynamic Simulations of Vanado-Phosphate Glasses Containing Alkaline Ions (Invited Speaker)**

Monia Montorsi\*, Giulia Broglia, Consuelo Mugoni, University of Modena and Reggio Emilia, Italy; Guido Ori, University Montpellier 2, France; Cristina Siligardi, University of Modena and Reggio Emilia, Italy

**11:20 AM**

**(PACRIM10-SA-059-2013) Structural and Dynamical Insights into Ionic Liquids Confined in Porous Chalcogenides: a Molecular Simulation Study**

Guido Ori\*, Institut Charles Gerhardt - ENSCM - Université Montpellier 2 - CNRS, France; Massimo Celino, ENEA, Italy; Carlo Massobrio, Institut de Physique et de Chimie des Matériaux de Strasbourg (UMR 7504-CNRS), France; Benoit Coasne, Massachusetts Institute of Technology, USA

**11:40 AM**

**(PACRIM10-SA-060-2013) First-Principles Study Of Barriers For Hydrolysis Reactions In Borosilicate Glasses**

Peter Zapol\*, Haiying He, Xin Tan, Argonne National Laboratory, USA

**10:20 AM**

**(PACRIM10-SA-065-2013) Impact of Ligand Field Strength on Spectral Property of Colorant Ions in both Aqueous Solution and Glass matrix**

Roger Qiu\*, Paul Ehrmann, Kathleen Schaffers, Tayyab Suratwala, Phil Miller, Brandon Wood, Vince Lordi, Lawrence Livermore National Laboratory, USA; Luciana Gusshn, Elizabeth Buchheit, Richard Brow, Missouri University of Science and Technology, USA

**10:40 AM**

**(PACRIM10-SA-066-2013) Breakthroughs via Solid State Amorphous Synthesis in Structural Ceramics**

Kimura Hiroshi\*, National Defense Academy, Japan

# **SYMPOSIUM B: Glass Technology and Cross- Cutting Topics**

Thursday, June 6, 2013

## **Glass Melting and Thermal Processing**

8:30 AM-11:10 AM

Room: Sunset

Session Chair(s): To Be Announced

**8:30 AM**

**(PACRIM10-SB-001-2013) Recent Fiber Glass  
Technology Development and Challenges (Invited  
Speaker)**

Hong Li\*, PPG Industries Inc, USA

**9:00 AM**

**(PACRIM10-SB-002-2013) Efficient Disc-to-fiber  
Multimaterial Co-extrusion for Robust Infrared  
Optical Fibers**

Guangming Tao\*, Soroush Shabahang, Ayman F.  
Abouraddy, University of Central Florida, CREOL,  
USA

**9:20 AM**

**(PACRIM10-SB-003-2013) Fabrication and  
characterization of As<sub>2</sub>Se<sub>3</sub> chalcogenide glass  
waveguides and gratings by thermal nanoimprint  
lithography**

Yi Zou\*, Hongtao Lin, Okechukwu Obguu, Lan Li,  
University of Delaware, USA; Sylvain Danto, J.  
David Musgraves, Kathleen Richardson, University  
of Central Florida, USA; Juejun Hu, University of  
Delaware, USA

**9:40 AM**

**(PACRIM10-SB-004-2013) Biocompatible and  
Bioactive Glasses for Medical Applications (Invited  
Speaker)**

Mariano Velez\*, Steve Jung, Yiyong He, Vernon C  
Modglin, Mo-Sci Corp., USA; Ming C Leu, Krishna C  
Kolan, Missouri University of Science & Technology,  
USA; Tien-Min G Chu, Indiana University, USA

**10:10 AM**

Break

**10:30 AM**

**(PACRIM10-SB-005-2013) Designing New Glass  
and Efficient Glass Forming Process Together**

Oleg A Prokhorenko\*, Laboratory of Glass  
Properties, USA

**10:50 AM**

**(PACRIM10-SB-006-2013) Glass Powder Injection  
Molding: A Ceramic HighThroughput Production  
Technology applied to Electrical Conductive Glass  
Components with Sharp Edges and Complex  
Geometries**

Tassilo Moritz\*, Jochen Schilm, Anne Mannschatz,  
Fraunhofer IKTS, Germany

## **Glass and Ceramics for Novel Applications I**

11:10 AM-12:00 PM

Room: Sunset

Session Chair(s): To Be Announced

**11:10 AM**

**(PACRIM10-SB-007-2013) Alkali-free bioactive  
glasses for bone tissue engineering (Invited  
Speaker)**

Ashutosh Goel\*, Sterlite Technologies Ltd., India;  
Jose Ferreira, University of Aveiro, CICECO,  
Portugal

**11:40 AM**

**(PACRIM10-SB-008-2013) Glass Manufacturing  
Industry Council - 15 Years of Glass Industry  
Coordination and Support**

Robert Weisenburger Lipetz\*, Glass Manufacturing  
Industry Council, USA

# Ultrafast Science of Glass, Ceramics, and Materials

1:20 PM-3:20 PM

Room: Sunset

Session Chair(s): To Be Announced

**1:20 PM**

**(PACRIM10-SB-009-2013) Towards increased efficiency in solar energy harvesting via intermediate states (Invited Speaker)**

Eric Mazur\*, Harvard University, USA

**1:50 PM**

**(PACRIM10-SB-010-2013) Femtosecond Dual-Arm Z-Scan On Ceramic And Single Crystals Of YAG**

Samuel Paul David\*, Honghua Hu, Trenton Ensley, David J. Hagan, Eric W. Van Stryland, Romain Gaume, University of Central Florida, USA

**2:10 PM**

**(PACRIM10-SB-011-2013) Ultrafast laser processing of glass: dynamics on multiple time scales (Invited Speaker)**

Denise M Krol\*, University of California, Davis, USA

**2:40 PM**

**(PACRIM10-SB-012-2013) Femtosecond Pulse Laser Surface Modification of Yttrium Aluminum Garnet Ceramics**

Daniel Steere\*, Shanmugavelayut Sundaram, Alfred University, USA

**3:00 PM**

Break

# Surface Reactions and Corrosion

3:20 PM-6:00 PM

Room: Sunset

Session Chair(s): To Be Announced

**3:20 PM**

**(PACRIM10-SB-013-2013) Modeling of Glass Durability through Advances in the Understanding of Medium Range Order (MRO)**

Carol M. Jantzen\*, John M Pareizs, Savannah River National Laboratory, USA

**3:40 PM**

**(PACRIM10-SB-014-2013) Surface Structure and Reactivity for Glasses: New Methods and Applications Using Solid-State NMR**

Karl Todd Mueller\*, Nancy M Washton, Jinfeng Lai, Joseph V Ryan, Pacific Northwest National Laboratory, USA; Carlo G Pantano, Kelly A Murphy, Penn State University, USA

**4:00 PM**

**(PACRIM10-SB-015-2013) Dissolution of Phosphate-doped Borosilicate Glasses in Alkaline Solutions**

Xiaoming Cheng\*, Richard Brow, Genda Chen, Missouri University of Science and Technology, USA

**4:20 PM**

**(PACRIM10-SB-016-2013) Templated Texturing of Glass Surfaces by Thermal Poling**

Nicholas J Smith\*, Corning Incorporated, USA

**4:40 PM**

**(PACRIM10-SB-017-2013) Lithium diffusion during glass corrosion**

James J Neeway\*, Joseph V Ryan, Alexandre V Mitroshkov, Pacific Northwest National Laboratory, USA

**5:00 PM**

**(PACRIM10-SB-018-2013) Fabrication and fluorescence of novel oxyfluoride glass and glass-ceramics with nonlinear BaAlBO<sub>3</sub>F<sub>2</sub> nanocrystals and patterning of single crystal line**

Kenji Shinozaki\*, Tsuyoshi Honma, Takayuki Komatsu, Nagaoka University of Technology, Japan



**5:20 PM**

**(PACRIM10-SB-019-2013)  $\text{Na}_{2-x}\text{Fe}_{1+x/2}\text{P}_2\text{O}_7/\text{C}$  glass-ceramics cathode for the sodium ion batteries**

Tsuyoshi Honma\*, Takuya Togashi, Atsushi Sato, Noriko Ito, Tkayuki Komatsu, Nagaoka University of Technology, Japan

Friday, June 7, 2013

## Glass and Ceramics for Novel Applications II

8:30 AM-10:20 AM

Room: Sunset

Session Chair(s): To Be Announced

**8:30 AM**

**(PACRIM10-SB-020-2013) Self-healing process in glassy materials for high temperature applications (Invited Speaker)**

Sandra Castanié, Francois O Mear\*, Daniel Coillot, Lille 1 University, France; Renaud Podor, ICSM-CEA-CNRS-UM2-ENSCM, France; Lionel Montagne, Lille 1 University, France

**9:00 AM**

**(PACRIM10-SB-021-2013) Viscous Galliosilicate Glass Seals for SOFCs: Behavior in Air and Humidified Hydrogen**

Tongan Jin, Scott T Misture\*, Mark O Naylor, Alfred University, USA

**9:20 AM**

**(PACRIM10-SB-022-2013) Effect of Low Melting, Crystallizable Glass (Glass-ceramic) on Sintering Behavior and Dielectric Properties of Barium Titanate**

Xiaofeng Su\*, Minoru Tomozawa, Keith J Nelson, Rensselaer Polytechnic Institute, USA; Douglas B Chrisey, Tulane University, USA

**9:40 AM**

**(PACRIM10-SB-023-2013) Crystallization mechanism of Lithium Aluminosilicate (LAS) glass ceramics: nucleation, viscosity and microstructure**

Qiang Fu\*, Jie Wang, Bryan Wheaton, Karen Geisinger, Corning Incorporated, USA

**10:00 AM**

Break

## Glass Strengthening (Chemical, Mechanical, and Thermal)

10:20 AM-12:00 PM

Room: Sunset

Session Chair(s): To Be Announced

**10:20 AM**

**(PACRIM10-SB-024-2013) Damage Resistant Glass Compositions**

Matt Dejneka\*, Tim Gross, Christy Chapman, Corning Incorporated, USA

**10:40 AM**

**(PACRIM10-SB-025-2013) Fracture Strength and Strengthening of PMT Glasses for Neutrino Detection**

Kameron Chambliss\*, S. K Sundaram, Alfred University, USA; Milind Diwan, Brookhaven National Laboratory, USA

**11:00 AM**

**(PACRIM10-SB-026-2013) High-Speed Camera Study of Stage III Crack Propagation in Strengthened Glass**

Zhongzhi Tang\*, John Mauro, Guangli Hu, Matthew B Abrams, Natesan Venkataraman, Corning Incorporated, USA

**11:20 AM**

**(PACRIM10-SB-027-2013) Effect of salt bath composition on chemical tempering of sodium-containing silicate glass**

Vincenzo M Sglavo\*, University of Trento, Italy

**11:40 AM**

**(PACRIM10-SB-028-2013) Anticlastic Curvature during Bending of Thin Glass Sheet**

Suresh Gulati\*, K. Hemanth Vepakomma, Jamie T Westbrook, Corning Incorporated, USA

# SYMPOSIUM C: Glasses for Optoelectronic and Optical Applications

Monday, June 3, 2013

## Glasses for Sensing

2:00 PM-3:40 PM

Room: Sunset

Session Chair(s): John Ballato

**2:00 PM**

### **(PACRIM10-SC-001-2013) 3-D Flexible Glass Photonics**

Lan Li\*, Hongtao Lin, Yi Zou, University of Delaware, USA; Sylvain Danto, J. David Musgraves, Kathleen Richardson, University of Central Florida, USA; Juejun Hu, University of Delaware, USA

**2:20 PM**

### **(PACRIM10-SC-002-2013) High-index-contrast Mid-IR Chalcogenide Glass Resonators on Silicon**

Hongtao Lin\*, Lan Li, Yi Zou, University of Delaware, USA; Sylvain Danto, J. David Musgraves, Kathleen Richardson, University of Central Florida, USA; Juejun Hu, University of Delaware, USA

**2:40 PM**

### **(PACRIM10-SC-003-2013) Monolithically Integrated Evanescently-Coupled Photodetector for Infrared Glass-on-Silicon Sensing Platform**

Vivek Singh\*, Timothy Zens, Massachusetts Institute of Technology, USA; Juejun Hu, University of Delaware, USA; Pao-Tai Lin, Jianfei Wang, Massachusetts Institute of Technology, USA; J. David Musgraves, Kathleen Richardson, Clemson University, USA; Joel Hensley, Physical Sciences Inc., USA; Lionel C Kimerling, Anu Agarwal, Massachusetts Institute of Technology, USA

**3:00 PM**

### **(PACRIM10-SC-004-2013) Polymer-coated Microdisk Resonators for Infrared Chemical Sensing**

Vivek Singh\*, Massachusetts Institute of Technology, USA; James Giammarco, Anna P Soliani, Clemson University, USA; Pao-Tai Lin, Massachusetts Institute of Technology, USA; Juejun Hu, University of Delaware, USA; J. David Musgraves, Igor Luzinov, Kathleen Richardson, Clemson University, USA; Joel Hensley, Physical Sciences Inc., USA; Lionel C Kimerling, Anu Agarwal, Massachusetts Institute of Technology, USA

**3:20 PM**

Break

## Photo-induced Glass Modifications

3:40 PM-6:00 PM

Room: Sunset

Session Chair(s): Setsuhisa Tanabe, Kenji Nomura

**3:40 PM**

### **(PACRIM10-SC-005-2013) Ultrafast laser written glass photonics: the challenges and opportunities (Invited Speaker)**

Michael Withford\*, Simon Gross, Douglas Little, Qiang Lui, Yuwen Duan, Thomas Meany, Graham Smith, Iza Spaleniak, Nemanja Jovanovic, Peter Dekker, Michael Ireland, Alex Fuerbach, Michael Steel, Macquarie University, Australia

**4:10 PM**

### **(PACRIM10-SC-006-2013) Silver containing oxide glasses for multi-scale structured optical materials (Invited Speaker)**

Thierry Cardinal\*, Yannick Petit, Guang Yang, ICMCB-CNRS, France; Arnaud Royon, Gauthier Papon, Lionel Canioni, LOMA, France; Vincent Rodriguez, Marc Dussauze, ISM, France; Kallepalli Deepak, David Grojo, Olivier Uteza, Philippe Delaporte, LP3, France

**4:40 PM**

**(PACRIM10-SC-007-2013) Direct Mapping of Silver Photodissolution Dynamics and Reversibility in Arsenic Trisulphide Thin Films by AFM**

Vincent Palumbo, University of Connecticut, USA;  
Andriy Kovalskiy, Austin Peay State University, USA;  
Himanshu Jain, Lehigh University, USA; Bryan D Huey\*, University of Connecticut, USA

**5:00 PM**

**(PACRIM10-SC-008-2013) Laser-induced crystallization and decomposition of Sb-S-I glasses**

Brian Knorr\*, Dmytro Savytsky, Volkmar Dierolf, Himanshu Jain, Lehigh University, USA

**5:20 PM**

**(PACRIM10-SC-009-2013) Mechanisms of photosensitivity in photo-thermo-refractive glass and volume Bragg gratings**

Julien Lumeau\*, University of Central Florida, USA;  
Larissa Glebova, Vadim Smirnov, OptiGrate Corp, USA; Michael Klimov, Leonid Glebov, University of Central Florida, USA

Tuesday, June 4, 2013

## Glasses with Nanoparticles

9:00 AM-10:20 AM

Room: Sunset

Session Chair(s): Heike Ebendorff-Heidepriem

**9:00 AM**

**(PACRIM10-SC-010-2013) PbS Quantum Dot Formation on Rare-Earth Ion Clusters in Glasses**

Jong Heo\*, Won J Park, Pohang University of Science and Technology, Republic of Korea; Woon J Chung, Kongju National University, Republic of Korea

**9:20 AM**

**(PACRIM10-SC-011-2013) Spectral engineering of optical fiber preforms through active nanoparticle doping**

John Ballato\*, Tiffany Lindstrom, Thomas Hawkins, Clemson University, USA; Michael Bass, University of Central Florida, USA

**9:40 AM**

Break

## Photoluminescent Materials I

10:20 AM-12:00 PM

Room: Sunset

Session Chair(s): Thierry Cardinal

**10:20 AM**

**(PACRIM10-SC-012-2013) Transparent glass ceramics showing long persistent luminescence (Invited Speaker)**

Setsuhisa Tanabe\*, Kyoto University, Japan; Takayuki Nakanishi, Hokkaido University, Japan

**10:50 AM**

**(PACRIM10-SC-013-2013) Rare earth doped chalcogenide optical waveguide (Invited Speaker)**

Virginie Nazabal\*, University of Rennes 1, France; Jean-Louis Doualan, CIMAP, France; Radwan Chahal, Frederic Charpentier, University of Rennes 1, France; Patrice Camy, Petr Nemecek, CIMAP, France; Anne-Marie Jurdyc, LPCML, France; Johann Troles, Bruno Bureau, Herve Lhermite, Joel Charrier, University of Rennes 1, France; Karine Michel, BRGM, France; Lionel Quétel, IDIL, France; Jean-Luc Adam, University of Rennes 1, France

**11:20 AM**

**(PACRIM10-SC-014-2013) Structure of doped tin fluorophosphates glasses: a joint computational-experimental effort aimed at improving solar cell efficiency**

Justin Oelgoetz\*, Travis Tanner, James York-Winegar, Andriy Kovalskiy, Tristan A Harper, Heidi Ulery, Brennan Carrie, Austin Peay State University, USA

## Photoluminescent Materials II

2:00 PM-3:40 PM

Room: Sunset

Session Chair(s): To be Announced

### **2:00 PM**

#### **(PACRIM10-SC-015-2013) Valence states of Copper and Tin Ions in Photoluminescent Sodium Borosilicate Phase-Separated Glasses**

Atsuo Yasumori\*, Yuki Funamoto, Fumitake Tada, Sayaka Yanagida, Tokyo University of Science, Japan; Motohiro Uo, Tokyo Medical and Dental University, Japan

### **2:20 PM**

#### **(PACRIM10-SC-016-2013) White light emission of rare earth free oxide glass**

Hirokazu Masai\*, Kyoto University, Japan; Takumi Fujiwara, Tohoku University, Japan; Syuji Matsumoto, Asahi Glass Co. Ltd, Japan; Toshinobu Yoko, Kyoto University, Japan

### **2:40 PM**

#### **(PACRIM10-SC-017-2013) Inter valence charge transfer and optoelectronic property in (Ca,Sr)TiO<sub>3</sub>:Pr<sup>3+</sup>**

Yumiko Katayama\*, Setsuhisa Tanabe, Kyoto University, Japan

### **3:00 PM**

#### **(PACRIM10-SC-018-2013) Stabilization of the Ingredient Powders of Ca- $\alpha$ -SiAlON:Eu<sup>2+</sup> Phosphor**

Jin-Myung Kim\*, Young-Jo Park, Jae-Wook Lee, Jae-Kyung Ha, Korea Institute of Materials Science, Republic of Korea

### **3:20 PM**

Break

## Glass Surface Modifications and Films

3:40 PM-6:00 PM

Room: Sunset

Session Chair(s): Julien Lumeau, Ashutosh Goel

### **3:40 PM**

#### **(PACRIM10-SC-019-2013) Atomic structure, electronic structure, and structural relaxation of transparent amorphous oxide semiconductor, In-Ga-Zn-O (Invited Speaker)**

Kenji Nomura\*, Qualcomm Technology Inc., USA

### **4:10 PM**

#### **(PACRIM10-SC-020-2013) Anti-Reflective Surface Structures In Fused Silica Windows, Lenses and Fibers (Invited Speaker)**

Catalin M Florea\*, Lynda E Busse, Leslie B Shaw, Ishwar D Aggarwal, Jasbinder S Sanghera, Sotera Defense Solutions, USA

### **4:40 PM**

#### **(PACRIM10-SC-021-2013) Microscopic interactions during optical pad polishing: relationship between slurry particle size distribution & workpiece surface roughness**

Tayyab I Suratwala\*, Mike Feit, Rusty Steele, Lana Wong, Nan Shen, Rebecca Dylla-Spears, Richard Desjardin, Dan Mason, Paul Geraghty, Phil Miller, Lawrence Livermore National Laboratory, USA

### **5:00 PM**

#### **(PACRIM10-SC-022-2013) Convergent Pad Polishing of Glass Optics**

Tayyab I Suratwala\*, Mike Feit, Rusty Steele, Richard Desjardin, Dan Mason, Lawrence Livermore National Laboratory, USA

**5:20 PM**

**(PACRIM10-SC-023-2013) Laser chemical vapor deposition of silica for in-filling of damaged optical surfaces**

Selim Elhadj\*, Manyalibo J Matthews, Gabe Guss, David L Flores, Igor V Makasyuk, Isaac L Bass, Norm Nielsen, Lawrence Livermore National Laboratory, USA

**5:40 PM**

**(PACRIM10-SC-024-2013) Solution-processing of Thick Chalcogenide-chalcogenide and Metal-chalcogenide Structures by Spin-coating and Multilayer Lamination**

Yunlai Zha\*, Craig B Arnold, Princeton University, USA

Wednesday, June 5, 2013

## Novel Optical Fibers I

8:30 AM-10:20 AM

Room: Sunset

Session Chair(s): To be Announced

**8:30 AM**

**(PACRIM10-SC-025-2013) Molten Core Fabrication of Novel Optical Fibers (Invited Speaker)**

John Ballato\*, Clemson University, USA

**9:00 AM**

**(PACRIM10-SC-026-2013) Cladding Glass Development for Semiconductor Core Optical Fibers**

Stephanie Morris\*, Thomas Hawkins, Paul Foy, John Ballato, Clemson University and The Center for Optical Materials Science and Engineering Technologies (COMSET), USA; Steve Martin, Iowa State University of Science and Technology, USA; Robert Rice, Dreamcatchers Consulting, USA

**9:20 AM**

**(PACRIM10-SC-027-2013) Alkali/Alkaline-earth**

**doping in silica glass: From the perspective of optical fiber technology**

Ashutosh Goel\*, Sterlite Technologies Ltd., India

**9:40 AM**

**(PACRIM10-SC-028-2013) Novel lanthanum aluminum silicate glass optical fibers for laser and nonlinear applications**

Doris Litzkendorf\*, Kay Schuster, Stephan Grimm, Jens Kobelke, Anne Ludwig, Anka Schwuchow, Martin Leich, Sylvia Jetschke, Hartmut Bartelt, Institute of Photonic Technology, Fiber Optics, Germany; Heike Ebendorff-Heidepriem, Tanya M Monro, Institute for Photonics & Advanced Sensing, The University of Adelaide, Australia

**10:00 AM**

Break

## Novel Optical Fibers II

10:20 AM-12:00 PM

Room: Sunset

Session Chair(s): Catalin Florea

**10:20 AM**

**(PACRIM10-SC-029-2013) PTR-like glasses for photosensitive optical fiber**

Larissa Glebova\*, OptiGrate Corp., USA; Peter Hoffman, Rodrigo Correa, Mikhail Klimov, Daniel Ott, Ivan Divliansky, Axel Schulzgen, Leonid Glebov, University of Central Florida, USA

**10:40 AM**

**(PACRIM10-SC-030-2013) New germanate glasses and fibers for infrared and high nonlinearity applications**

Heike Ebendorff-Heidepriem\*, H. Tilanka Munasinghe, David G Lancaster, David Ottaway, Tanya M Monro, University of Adelaide, Australia; Anja Winterstein, Christian Schiele, University of Erlangen-Nuremberg, Germany; Lothar Wondraczek, University of Jena, Germany

**11:00 AM**

**(PACRIM10-SC-031-2013) Tellurium glasses for infrared optical sensing and thermoelectrical applications**

Catherine Boussard-Plédel\*, S. Cui, C. Conseil, B. Bureau, J. Lucas, University of Rennes 1, France

**11:20 AM**

**(PACRIM10-SC-032-2013) UV Sensing Capability of Optical Fiber Incorporated with Gd<sub>2</sub>O<sub>3</sub> Nanoparticles**

Seongmin Ju\*, Seongmook Jeong, Youngwoong Kim, Lin Htein, Won-Taek Han, Gwangju Institute of Science and Technology, Republic of Korea

**11:40 AM**

**(PACRIM10-SC-033-2013) Square-registered IR imaging fibers and fiber bundles**

Daniel Gibson\*, Jas Sanghera, Brandon Shaw, Vinh Nguyen, Rafael Gattass, NRL, USA; Ishwar Aggarwal, Sotera Defense Solutions, USA

# **SYMPOSIUM D: James C. Phillips Honorary Symposium**

Monday, June 3, 2013

## **Topological Constraint Theory of Glass I**

2:00 PM-5:50 PM

Room: Palm

Session Chair(s): Matthieu Micoulaut, John Mauro

**2:00 PM**

**(PACRIM10-SD-001-2013) Some thoughts on  
James Charles Phillips (Invited Speaker)**

Punit Boolchand\*, University of Cincinnati, USA

**2:30 PM**

**(PACRIM10-SD-002-2013) Understanding and  
Predicting the Properties of Complex Materials  
(Invited Speaker)**

Morten M Smedskjaer\*, Aalborg University,  
Denmark; John C Mauro, Corning Incorporated,  
USA; Yuanzheng Yue, Aalborg University, Denmark

**3:00 PM**

**(PACRIM10-SD-003-2013) Structure Property  
Relationships and Bond Percolation Effects in low-  
k Dielectric Materials (Invited Speaker)**

Sean King\*, Intel Corporation, USA

**3:30 PM**

Break

**3:50 PM**

**(PACRIM10-SD-004-2013) Why the Phillips  
constraint theory of glasses works (Invited  
Speaker)**

Kostya Trachenko\*, Queen Mary University of  
London, United Kingdom

**4:20 PM**

**(PACRIM10-SD-005-2013) Constraint theory for  
ionic network forming systems (Invited Speaker)**  
Prabhat Gupta\*, Ohio State University, USA

**4:50 PM**

**(PACRIM10-SD-006-2013) Anomalies in glassy  
B2O3 unveiled by topological considerations of  
crystalline polymorphs (Invited Speaker)**

Guillaume Ferlat\*, Ari P. Seitsonen, Michele  
Lazzeri, Francesco Mauri, Univ. P. & M. Curie  
(UPMC), France

**5:20 PM**

**(PACRIM10-SD-007-2013) Topology and Rigidity in  
Alkali Borate Glasses: The Volterra Approach  
(Invited Speaker)**

Richard Kerner\*, University of Paris-VI, France

Tuesday, June 4, 2013

## **Topological Constraint Theory of Glass II**

9:00 AM-11:50 AM

Room: Palm

Session Chair(s): Matthieu Micoulaut, John Mauro

**9:00 AM**

**(PACRIM10-SD-008-2013) Jim Phillips - a scientific  
entrepreneur supreme -- (i) the pseudo-potential,  
(ii) a spectroscopic ionicity scale, (iii) bond-  
constraint theory, and (iii) proteins and biological  
materials, too large and complex to treat as an  
simple extension of all the above (Invited  
Speaker)**

Gerald Lucovsky\*, North Carolina State University,  
USA

**9:30 AM**

**(PACRIM10-SD-009-2013) Structure, dynamical  
properties and topology of GST phase change  
materials (Invited Speaker)**



Jean-Yves Raty\*, University of Liege, Belgium;  
Christophe Bichara, CNRS Univ. Aix-Marseille,  
France

**10:00 AM**

Break

**10:20 AM**

**(PACRIM10-SD-010-2013) Detection of structural heterogeneity in glass-forming liquids via sub-Tg enthalpy relaxation in hyperquenched glasses (Invited Speaker)**

Yuanzheng Yue\*, Aalborg University, China; Yanfei Zhang, Shandong Polytechnic University, China

**10:50 AM**

**(PACRIM10-SD-011-2013) Predicting the Fragility of Network-Forming Melts near the Rigidity Transition: A Coarse-graining Approach**

David Sidebottom\*, Stanley Schnell, Tri Tran, Creighton University, USA

**11:20 AM**

**(PACRIM10-SD-012-2013) Dynamic and Mechanical Properties of Calcium Borophosphate Glasses in Relation to Structure and Topology**

Christian Hermansen\*, Yuanzheng Yue, Aalborg University, Denmark

## **Exponential Complexity in Materials Science and Biology**

2:00 PM-5:50 PM

Room: Palm

Session Chair(s): Matthieu Micoulaut, John Mauro

**2:00 PM**

**(PACRIM10-SD-013-2013) Curing cancer using engineered viruses (Invited Speaker)**

James C. Phillips\*, Rutgers, USA

**3:00 PM**

**(PACRIM10-SD-014-2013) A bifurcation of the Stretching Exponent beta in Glass Confirmed**

**Experimentally ( $\beta = 3/5$  for Stress Relaxation and  $\beta = 3/7$  for Structural Relaxation) (Invited Speaker)**

Marcel Potuzak\*, Roger C Welch, John C Mauro, Corning Incorporated, USA

**3:30 PM**

Break

**3:50 PM**

**(PACRIM10-SD-015-2013) From glasses to ranking, an unexpected path for the SER theory (Invited Speaker)**

Gerardo Naumis\*, Instituto de Fisica, UNAM, Mexico

**4:20 PM**

**(PACRIM10-SD-016-2013) Debye Relaxation in Highly Viscous Hydrogen-bonded Liquids (Invited Speaker)**

Limin Wang\*, Yanqin Gao, Dongyang Bi, Xin Li, Yanshan University, China

**4:50 PM**

**(PACRIM10-SD-017-2013) Abnormal Physical Behavior of Nanoporous Glasses (Invited Speaker)**

Chandrasiri Ihalawela, Mayur Sundararajan, Gang Chen\*, Ohio University, USA

**5:20 PM**

**(PACRIM10-SD-018-2013) Elastic Anomalies and Pressure Induced Phases in Crystalline Silica (Invited Speaker)**

James Chelikowsky\*, University of Texas at Austin, USA

Wednesday, June 5, 2013

## **Superconductivity**

8:30 AM-10:20 AM

Room: Palm

Session Chair(s): Punit Boolchand, Davor Pavuna

**8:30 AM**

**(PACRIM10-SD-019-2013) Evolution of the vortex structure and its stability in HTSC in the presence of intrinsic disorder (Invited Speaker)**  
Jan Alexander Jung\*, University of Alberta, Canada

**9:00 AM**

**(PACRIM10-SD-020-2013) Fractal Superconducting Oxide Networks for High T<sub>c</sub> superconductivity (Invited Speaker)**  
Antonio Bianconi\*, Superstripes onlus, Italy

**9:30 AM**

**(PACRIM10-SD-021-2013) From (Metallic) Glasses to Glassy Superconductors and Beyond (Invited Speaker)**  
Davor Pavuna\*, EPFL, Switzerland

**10:00 AM**

Break

## **Semiconductors, Pseudopotentials, and Dielectric Theory I**

10:20 AM-11:50 AM

Room: Palm

Session Chair(s): John Mauro, Douglas Allan

**10:20 AM**

**(PACRIM10-SD-022-2013) James C. Phillips, Pseudopotentials, and Optical Properties of Semiconductors (Invited Speaker)**  
Marvin L Cohen\*, University of California and Lawrence Berkeley National Lab, USA

**10:50 AM**

**(PACRIM10-SD-023-2013) Electronic and optical excitations in solids and nanostructures (Invited Speaker)**  
Steven G. Louie\*, University of California and LBNL, USA

**11:20 AM**

**(PACRIM10-SD-024-2013) Crystallographic Databases and the Discovery of New Materials: Then and Now (Invited Speaker)**  
Karin M Rabe\*, Rutgers University, USA

Thursday, June 6, 2013

## **Semiconductors, Pseudopotentials and Dielectric Theory II**

9:00 AM-11:50 AM

Room: Palm

Session Chair(s): John Mauro, Douglas Allan

**9:00 AM**

**(PACRIM10-SD-025-2013) A Simple Man's View of Jim Phillips, Linus Pauling, and Electronegativity (Invited Speaker)**  
James Van Vechten\*, Pureenergy (UK) Ltd., United Kingdom

**9:30 AM**

**(PACRIM10-SD-026-2013) Phase Change Materials: Employing concepts of solid state physics to tailor novel electronic memories (Invited Speaker)**  
Matthias Wuttig\*, RWTH Aachen, Germany

**10:00 AM**

Break

**10:20 AM**

**(PACRIM10-SD-027-2013) Scales of order of in non-crystalline SiO<sub>2</sub>, and nano-crystalline oxides, e.g., TiO<sub>2</sub> and TiO<sub>2</sub>-based alloys: application to pre-existing, process-induced vacated O-atom sites (Invited Speaker)**  
Gerald Lucovsky\*, Daniel Zeller, Jinwoo Kim, Ku Wu, Cheng Cheng, Xyling Zhang, North Carolina State University, USA

**10:50 AM**

**(PACRIM10-SD-028-2013) Electronic Structure and Electron Transport in Nanoscale Systems (Invited Speaker)**

Jerry Bernholc\*, NC State University, USA

**11:20 AM**

**(PACRIM10-SD-029-2013) Strategies for design and synthesis of novel superhard materials (Invited Speaker)**

Yongjun Tian\*, State Key Laboratory of Metastable Materials Science and Technology, China

## Intermediate Phase I

1:00 PM-5:50 PM

Room: Palm

Session Chair(s): Matthieu Micoulaut, Punit Boolchand

**1:00 PM**

**(PACRIM10-SD-030-2013) Observation of intermediate phases in network glasses-trials and tribulations (Invited Speaker)**

Punit Boolchand\*, University of Cincinnati, USA

**1:30 PM**

**(PACRIM10-SD-031-2013) Recent advances in the first-principles modelling of glassy networks (Invited Speaker)**

Carlo Massobrio\*, IPCMS, France

**2:00 PM**

**(PACRIM10-SD-032-2013) New tools for the historical benchmark systems of rigidity theory (Invited Speaker)**

Matthieu Micoulaut\*, Mathieu Bauchy, Ali Kachmar, UPMC, France

**2:30 PM**

**(PACRIM10-SD-033-2013) Simulations of silver-alloyed chalcogenide phase change materials (Invited Speaker)**

David Drabold\*, Binay Prasai, Gang Chen, Ohio University, USA

**3:00 PM**

Break

**3:20 PM**

**(PACRIM10-SD-034-2013) Structure of network-forming liquid and glasses: topological and chemical ordering (Invited Speaker)**

Philip S Salmon\*, Anita Zeidler, University of Bath, United Kingdom

**3:50 PM**

**(PACRIM10-SD-035-2013) Rigidity, Fragility and their Dynamical Consequences in Binary Ge-Se Supercooled Liquids and Glasses (Invited Speaker)**

Sabyasachi Sen\*, University of California, Davis, USA

**4:20 PM**

**(PACRIM10-SD-036-2013) Screening of charge and structural motifs in oxides (Invited Speaker)**

Peter Littlewood\*, Argonne National Lab, USA

**4:50 PM**

**(PACRIM10-SD-037-2013) The intermediate phase of elastic networks studied with the pebble game algorithm (Invited Speaker)**

Mykyta V. Chubynsky\*, University of Ottawa, Canada

**5:20 PM**

**(PACRIM10-SD-038-2013) Rigidity in Network Glasses (Invited Speaker)**

Fei Wang\*, California State University, Long Beach, USA; Punit Boolchand, University of Cincinnati, USA

Friday, June 7, 2013

## Intermediate Phase II

8:30 AM-12:00 PM

Room: Palm

Session Chair(s): Matthieu Micoulaut, Punit Boolchand

**8:30 AM**

**(PACRIM10-SD-039-2013) Two-Level Solutions to Exponentially Complex Problems in Glass Science (Invited Speaker)**

John C. Mauro\*, Corning Incorporated, USA;  
Morten M Smedskjaer, Aalborg University, Denmark

**9:00 AM**

**(PACRIM10-SD-040-2013) Electrical conductivity and Boolchand phase in oxide glasses (Invited Speaker)**

Mohammed Malki\*, CNRS UPR 3079, France;  
Matthieu Micoulaut, Université Pierre et Marie Curie, CNRS UMR 7600, France; Deassy I Novita, Shibalik Chakraborty, Punit Boolchand, University of Cincinnati, USA

**9:30 AM**

**(PACRIM10-SD-041-2013) Adaptive densified liquids and the definition of pressure-dependent topological constraints: evidence for a reversibility window analogue (Invited Speaker)**

Mathieu Bauchy\*, Matthieu Micoulaut, UPMC, France

**10:00 AM**

Break

**10:20 AM**

**(PACRIM10-SD-042-2013) Evidence of Intermediate Phase in homogeneous Heavy Metal Oxide glasses (Invited Speaker)**

Shibalik Chakraborty\*, Punit Boolchand, University of Cincinnati, USA

**10:40 AM**

**(PACRIM10-SD-043-2013) Evidence for Self-organization in Li- and Na-Borate Glasses (Invited Speaker)**

Kandasamy Vignarooban\*, University of Cincinnati, USA; Mohammed Malki, University of Orleans, France; Matthieu Micoulaut, University of Paris 6, France; Wayne Bresser, Northern Kentucky University, USA; Richard Kerner, University of Paris 6, France; Rajat Bhageria, Sycamore High School, USA; Vanhook William, Mariemont High School, USA; Punit Boolchand, University of Cincinnati, USA

**11:00 AM**

**(PACRIM10-SD-044-2013) Slow homogenization and the Strong nature of Intermediate Phase melts in the  $As_xSe_{100-x}$  binary (Invited Speaker)**

Sriram Ravindren\*, Punit Boolchand, Kapila Gunasekera, Zachary Tucker, Aaron Diebold, University of Cincinnati, USA

**11:20 AM**

**(PACRIM10-SD-045-2013) Fragility, elastic phases,  $^{119}Sn$  Mossbauer effect and Raman scattering in homogeneous  $Si_xGe_xTe_{100-2x}$  glasses\* (Invited Speaker)**

Kapila Gunasekera\*, Punit Boolchand, University of Cincinnati, USA; Sergey Mamedov, Horiba Jobin Yvon, USA

# 2nd International Richard M. Fulrath Symposium on “Frontiers of Ceramics for Sustainable Development”

Monday, June 3, 2013

## Ceramics for Sustainable Development I

1:20 PM-5:30 PM

Room: Crown

Session Chair(s): Mrityunjay Singh, Yoshihiko Imanaka

**1:20 PM**

**(PACRIM10-FUL-001-2013) Direct Observation of Light and Heavy Elements in Energy Ceramics and Their Properties (Invited Speaker)**

Yuichi Ikuhara\*, The University of Tokyo/ Japan Fine Ceramics Center/ Tohoku University, Japan

**1:50 PM**

**(PACRIM10-FUL-002-2013) NatureTech for ceramic processing (Invited Speaker)**

Hajime Haneda\*, National Institute for Materials Science, Japan

**2:20 PM**

**(PACRIM10-FUL-003-2013) Novel multilayered LTCC process using aerosol-type nanoparticle deposition developed for next-generation HPC CPU packages (Invited Speaker)**

Yoshihiko Imanaka\*, Hideyuki Amada, Fumiaki Kumasaka, Fujitsu Laboratories Ltd., Japan

**2:50 PM**

**(PACRIM10-FUL-004-2013) Growth and characteristics of novel single crystals for optical applications (Invited Speaker)**

Kiyoshi Shimamura\*, E.García Villora, National Institute for Materials Science, Japan; Noboru Ichinose, Waseda University, Japan

**3:20 PM**

Break

**3:40 PM**

**(PACRIM10-FUL-005-2013) Theoretical Design of Highly Active SrTiO<sub>3</sub>-based Photocatalyst from Doping Scheme toward Solar Energy Utilization for Hydrogen Production (Invited Speaker)**

Naoto Umezawa\*, National Institute for Materials Science, Japan; Pakpoom Reunchan, Kasetsart University, Thailand; Xu Hua, Shuxin Ouyang, Yuanjian Zhang, Jinhua Ye, National Institute for Materials Science, Japan

**4:10 PM**

**(PACRIM10-FUL-006-2013) Dielectric and Piezoelectric Enhancement of New Nano-structured Ceramics with High-density Heteroepitaxial Interfaces**

Satoshi Wada\*, Shuto Kawashima, Shintaro Ueno, Ichiro Fujii, Kouichi Nakashima, Nobuhiro Kumada, University of Yamanashi, Japan; Yoshihiro Kuroiwa, Hiroshima University, Japan

**4:30 PM**

**(PACRIM10-FUL-007-2013) Potential Application of Porous Electrochemical Cell for Formation of Hydrogen and Decomposition of Carbon Dioxide**

Yoshihiro Hirata\*, Soichiro Sameshima, Kagoshima University, Japan

**4:50 PM**

**(PACRIM10-FUL-008-2013) Challenges for Lead-free Piezoelectric Ceramics in Alkali Niobate System**

Ken-ichi Kakimoto\*, Nagoya Institute of Technology, Japan

**5:10 PM**

**(PACRIM10-FUL-009-2013) Uniformly Porous MgTi<sub>2</sub>O<sub>5</sub> with Narrow Pore-Size Distribution: In-Situ Synthesis, In-Situ Evaluation and New In-Situ Surface Coating**

Yoshikazu Suzuki\*, University of Tsukuba, Japan

Tuesday, June 4, 2013

## **Ceramics for Sustainable Development II**

8:30 AM-12:00 PM

Room: Crown

Session Chair(s): Satoshi Wada, Yuichi Ikuhara

**8:30 AM**

**(PACRIM10-FUL-010-2013) High-speed preparation of superconducting YBCO film by laser CVD (Invited Speaker)**

Takashi Goto\*, Pei Zhao, Akihiko Ito, IMR Tohoku University, Japan

**9:00 AM**

**(PACRIM10-FUL-011-2013) Fabrication of Highly Structure-Controlled Ceramics by Advanced Powder Processing (Invited Speaker)**

Yoshio Sakka\*, NIMS, Japan

**9:30 AM**

**(PACRIM10-FUL-012-2013) Design of Permanent Expansion into Refractories (Invited Speaker)**

Richard Bradt\*, The University of Alabama, USA

**10:00 AM**

Break

**10:20 AM**

**(PACRIM10-FUL-013-2013) Grain boundary fracture toughness of Si<sub>3</sub>N<sub>4</sub> ceramics measured using very small specimens**

Junichi Tatami\*, Masaki Katayama, Yokohama National University, Japan; Tsukaho Yahagi,

Kanagawa Academy of Science and Technology, Japan; Takahiro Horiuchi, Masahiro Yokouchi, Kanagawa Industrial Technology Center, Japan; Kouichi Yasuda, Tokyo Institute of Technology, Japan; Do Kyung Kim, Korea Advanced Institute of Science and Technology, Republic of Korea

**10:40 AM**

**(PACRIM10-FUL-014-2013) Ceramics and Polymer Hybrid Materials Processing with Nano Second Pulse Field**

Tadachika Nakayama\*, Hong Baek Cho, Takeshi Fujihara, Minh Triet Huynh Tan, Nguyen Thanh Son, Weihua Jiang, Tsuneo Suzuki, Hisayuki Suematsu, Koichi Niihara, Nagaoka University of Technology, Japan

**11:00 AM**

**(PACRIM10-FUL-015-2013) 2D Nanosheets from Layered Ceramics: To Graphene and Beyond**

Minoru Osada\*, National Institute for Materials Science, Japan

**11:20 AM**

**(PACRIM10-FUL-016-2013) Synthesis and characterization of lithium aluminate red phosphors**

Masahiro Aoyama, Satoshi Sakaida, Yusuke Amano, Graduate School of Engineering, Nagoya Institute of Technology, Japan; Koji Inoue, Mie Industrial Research Institute, Japan; Sawao Honda, Graduate School of Engineering, Nagoya Institute of Technology, Japan; Shinobu Hashimoto, Nagoya Institute of Technology, Japan; Yuji Iwamoto\*, Graduate School of Engineering, Nagoya Institute of Technology, Japan

**11:40 AM**

**(PACRIM10-FUL-017-2013) Synthesis and Photo-Induced Electrical Properties of Bismuth Ferrite-Based Thin Films**

Wataru Sakamoto\*, Narimichi Makino, Kenji Yoshida, Makoto Morira, Toshinobu Yogo, Nagoya University, Japan

# Ceramics for Sustainable Development III

1:20 PM-5:10 PM

Room: Crown

Session Chair(s): Noboru Ichinose, Takashi Goto

**1:20 PM**

**(PACRIM10-FUL-018-2013) Application of first-principles phonon-calculations in materials science (Invited Speaker)**

Isao Tanaka\*, Atsushi Togo, Kyoto university, Japan

**1:50 PM**

**(PACRIM10-FUL-019-2013) Design of Microwave Dielectrics Based on Crystallography (Invited Speaker)**

Hitoshi Ohsato\*, Nagoya Industrial Science Reserach Institute, Japan; Ken'ichi Kakimoto, Nagoya Institute of Technology, Japan

**2:20 PM**

**(PACRIM10-FUL-020-2013) Experimentally reproducing grain boundary processes in the Earth's interior**

Takehiko Hiraga\*, University of Tokyo, Japan; Naoki Ohashi, Hidehiro Yoshida, National Institute for Materials Science, Japan

**2:40 PM**

**(PACRIM10-FUL-021-2013) Synthesis and characterization of Eu<sup>3+</sup> doped CaZrO<sub>3</sub> based perovskite type oxide phosphors**

Yohei Shimokawa\*, Satoshi Sakaida, Toru Asaka, Nagoya Institute of Technology, Japan; Koji Inoue, Mie Prefecture Industrial Research Institute, Japan; Sawao Honda, Yuji Iwamoto, Nagoya Institute of Technology, Japan

**3:00 PM**

**(PACRIM10-FUL-022-2013) Multiple Deposition of Ga-Doped ZnO Highly Transparent Conductive Films on Polymer Substrates (Invited Speaker)**

Tetsuya Yamamoto\*, Hisao Makino, Seiichi Kishimoto, Huaping Song, Kochi University of Technology, Japan

**3:30 PM**

Break

**3:50 PM**

**(PACRIM10-FUL-023-2013) Recent progress of laser patterning of optical active crystals with high orientation in glass**

Takayuki Komatsu\*, Tsuyoshi Honma, Nagaoka University of Technology, Japan

**4:10 PM**

**(PACRIM10-FUL-024-2013) Structural Study and Dielectric Property of SrTaO<sub>2</sub>N**

Shinichi Kikkawa\*, Yaru Zhang, Hokkaido University, Japan

**4:30 PM**

**(PACRIM10-FUL-025-2013) Defect-polarization control for enhancing piezoelectric properties in perovskite ferroelectrics: a case study on BaTiO<sub>3</sub>-based single crystals**

Yuji Noguchi\*, Shotaro Ishikawa, Yuuki Kitanaka, Masaru Miyayama, RCAST, U-Tokyo, Japan; Chikako Moriyoshi, Yoshihiro Kuroiwa, Hiroshima University, Japan

**4:50 PM**

**(PACRIM10-FUL-026-2013) Preparation of thermochromic vanadium dioxide nanoparticles for smart window by sol-gel method**

Hisao Suzuki\*, Kazuhiro Kurosawa, Naonori Sakamoto, Naoki Wakiya, Shizuoka University, Japan; Hidetoshi Miyazaki, Shimane University, Japan; Toshitaka Ota, Nagoya Institute of Technology, Japan

Wednesday, June 5, 2013

## Ceramics for Sustainable Development IV

8:30 AM-11:30 AM

Room: Crown

Session Chair(s): Junichi Tatami, Naoki Ohashi

**8:30 AM**

**(PACRIM10-FUL-027-2013) Smart Powder Processing for Energy and Environment (Invited Speaker)**

Makio Naito\*, Osaka University, Japan

**9:00 AM**

**(PACRIM10-FUL-028-2013) Charge compensation in oxide electroceramics in relation with hydrogen impurity (Invited Speaker)**

Naoki Ohashi\*, Ken Watanabe, Isao Sakaguchi, Yutaka Adachi, Shunichi Hishita, Takeshi Ohgaki, Hajime Haneda, National Institute for Materials Science, Japan

**9:30 AM**

**(PACRIM10-FUL-029-2013) Visualization of Oxide Ionic Diffusion at La<sub>0.6</sub>Sr<sub>0.4</sub>Co<sub>0.8</sub>Fe<sub>0.2</sub>O<sub>3-d</sub>/Gd<sub>0.2</sub>Ce<sub>0.8</sub>O<sub>2</sub>/Y<sub>0.15</sub>Zr<sub>0.85</sub>O<sub>2-y</sub> Interfaces by 16O/18O Exchange Technique**

Teruhisa Horita\*, Mina Niishi, Do-Hyng Cho, Taro Shimonosono, Haruo Kishimoto, Katsuhiko Yamaji, Manuel E Brito, Harumi Yokokawa, AIST, Japan

**9:50 AM**

Break

**10:10 AM**

**(PACRIM10-FUL-030-2013) Relation between Electron and Ferroelectricity in BaTiO<sub>3</sub> Studied with First-principles Calculation (Invited Speaker)**

Yoshiki Iwazaki\*, Toshimasa Suzuki, Youichi Mizuno, Hiroshi Kishi, Taiyo Yuden Co., Ltd., Japan; Shinji Tsuneyuki, The University of Tokyo, Japan

**10:40 AM**

**(PACRIM10-FUL-031-2013) Resistance Switching Properties in the Partially Oxidized Platinum and Niobium-doped Strontium Titanate Schottky Junctions (Invited Speaker)**

Sakyo Hirose\*, Akira Ando, Murata Manufacturing Co., Ltd., Japan; Hideki Yoshikawa, Naoki Ohashi, National Institute for Materials Science, Japan

**11:10 AM**

**(PACRIM10-FUL-032-2013) Oxygen diffusion in Ba-Fe-based perovskite oxides**

Ken Watanabe\*, Isao Sakaguchi, Kazunori Takada, Hajime Haneda, Naoki Ohashi, National Institute for Materials Science, Japan



Tuesday, June 4, 2013

## Poster Session

5:30 PM-8:00 PM

Room: Ballroom

**(PACRIM10-S1-P001-2013) Effect of SiC and graphite on room-temperature mechanical properties of boron carbide composites sintered by Spark Plasma Sintering**

Bibi Malmal Moshtaghioun\*, University of Seville, Spain; Angel Luis Ortiz-Seco, University of Extremadura, Spain; Diego Gomez-Garcia, Arturo Dominguez-Rodriguez, University of Seville, Spain

**(PACRIM10-S1-P002-2013) Simulation of Sintering using a NonSmooth Discrete Element Method**

Sylvain Martin\*, Commissariat à l'Energie Atomique et aux Energies Alternatives, France; Mohamed Guessesma, Jérôme Fortin, Université de Picardie Jules Verne, France; Khashayar Saleh, Université de Technologie de Compiègne, France; Jacques Lechelle, Frederic Adenot, Commissariat à l'Energie Atomique et aux Energies Alternatives, France

**(PACRIM10-S3-P003-2013) A Novel Method for Sintering Oxide Ceramics**

Thomas Meek\*, University of Tennessee, USA

**(PACRIM10-S3-P004-2013) Effect of Dispersed SiC Particles on the Oxidation of Magnesium Alloys**

Sungbin Won\*, Chunyu Xu, Yeonsang Hwang, Dongbok Lee, Sungkyunkwan University, Republic of Korea; Jaechun Lee, Myongji University, Republic of Korea

**(PACRIM10-S3-P005-2013) Effect of Powder Characteristics on Electrical Properties of Silicon Carbide Ceramics**

Lim Kwang-Young\*, Young-Wook Kim, University of Seoul, Republic of Korea; Kwang Joo Kim, Konkuk University, Republic of Korea

**(PACRIM10-S3-P006-2013) Enhancement on the Corrosion Properties of Ti-Based Bulk Metallic Glass Composites by CNT addition**

Pee-Yew Lee\*, National Taiwan Ocean University, Taiwan

**(PACRIM10-S3-P007-2013) The influence of sintering and infiltration process on the property of Al<sub>2</sub>O<sub>3</sub> parts fabricated by Stereolithography Apparatus**

Yanling Cheng\*, Guangdong University of Technology, China; Yong Chen, University of Southern California, USA; Junyu Fu, Changlu Fu, Guangdong University of Technology, China; Qifa Zhou, University of Southern California, USA; Shanghua Wu, Guangdong University of Technology, China

**(PACRIM10-S4-P008-2013) Effect of Forming Method on Compressive Strength of Polysiloxane-derived Silicon Carbide Ceramics**

Lim Kwang-Young\*, Jung-Hye Eom, Young-Wook Kim, University of Seoul, Republic of Korea

**(PACRIM10-S4-P009-2013) Energetics of Polymer Derived Amorphous Si-(B)-O-C Glasses**

Amir Hossein Tavakoli\*, University of California, Davis, USA; Renzo Campostrini, University of Trento, Italy; Joachim Bill, University of Stuttgart, Germany; Gian D Sorarù, University of Trento, Italy; Alexandra Navrotsky, University of California, Davis, USA

**(PACRIM10-S4-P010-2013) Evolutions and Controlling of Defects during Preparation of Continuous High-temperature Resistant SiC(Al)**

## Fibers

Ke Jian\*, Jun Wang, Hao Wang, Yingde Wang, Yongcai Song, National University of Defense Technology, China

### **(PACRIM10-S4-P011-2013) Fabrication of SiC-Al Co-continuous Phase Composites**

Guojian Jiang\*, Shanghai Institute of Technology, China; Xiumin Yao, Shanghai Institute of Ceramics, Chinese Academy of Science, China; Liuliu Ding, Tongji University, China; Wei Peng, Li Duan, Shanghai Institute of Technology, China; Yunying Liu, Shanghai Jiaotong University, China; Wei Xiong, Yangsheng Ni, Jiayue Xu, Shanghai Institute of Technology, China; Wenjun Li, Shanghai Jiaotong University, China

### **(PACRIM10-S4-P012-2013) Increase in thermal conductivity of silicon carbide fiber/phenolic resin composites by the addition of graphene nanoplatelets**

Tae-Eon Kim\*, Kwang Yeon Cho, Korea Institute of Ceramic and Technology, Republic of Korea; Yong-Gun Shul, Yonsei University, Republic of Korea

### **(PACRIM10-S4-P013-2013) Iron silicide-containing polymer-derived silicon oxycarbide ceramics with magnetic functionality**

Mirabbos Hojamberdiev\*, Emanuel Ionescu, Ravi Mohan Prasad, Claudia Fasel, Ralf Riedel, Technische Universitaet Darmstadt, Germany

### **(PACRIM10-S4-P014-2013) Si-C-(N)-O Aerogels: a New Nanostructured Gas Sensor Ceramic Material**

Gian-Domenico Soraru\*, University of Trento, Italy; Aylin Karakuscu, CNR-IDASC, Italy; Emanuele Zera, University of Trento, Italy; P .R. Aravind, German Aerospace Research Centre [DLR], Germany; Andrea Ponzoni, CNR-IDASC, Italy; Giorgio Sberveglieri, University of Brescia, Italy

### **(PACRIM10-S4-P015-2013) Studying the Thermochemistry of Silicon Oxycarbide via Ternary Crystalline Models**

Peter Kroll\*, Nelli Bodiford, UT Arlington, USA

### **(PACRIM10-S4-P016-2013) Synthesis and pyrolysis of a novel preceramic polymer PZMS from PMS to fabricate ZrC/SiC ceramic composite**

Shao Changwei\*, Hao Wang, NUDT, China

### **(PACRIM10-S4-P017-2013) Synthesis of a porous SiC material from polycarbosilane by direct foaming and radiation curing**

Akira Idesaki\*, Masaki Sugimoto, Masahito Yoshikawa, Japan Atomic Energy Agency, Japan

### **(PACRIM10-S4-P018-2013) Synthesis and Characterization of Novel Si-C-N Aerogels from Polysilazane**

Andrea Perolo, Renzo Camprostrini, Gian-Domenico Soraru\*, University of Trento, Italy; Yigal Blum, SRI International, USA

### **(PACRIM10-S4-P019-2013) BaTiO<sub>3</sub> single crystal fibers from abnormal grain growth**

Zhaoxi Chen\*, Fei Peng, Clemson University, USA

### **(PACRIM10-S5-P020-2013) Development of new synthesis route of lanthanum germanate oxyapatite from homogeneous aqueous solution**

Shouta Kitajima\*, Tokyo University of Science, Japan; Kiyoshi Kobayashi, National Institute for Materials Science, Japan; Toru Higuchi, Tokyo University of Science, Japan; Yoshio Sakka, National Institute for Materials Science, Japan

### **(PACRIM10-S5-P021-2013) Fabrication of BSO Powder and Growth of BSO Single Crystal**

Guojian Jiang\*, Jiayue Xu, Shanghai Institute of

Technology, China; Yunying Liu, Shanghai Jiaotong University, China; Hui Shen, Min Jin, Yan Zhang, Xiaolu Wang, Junjun Wang, Yun Xu, Shanghai Institute of Technology, China

**(PACRIM10-S5-P022-2013) Fabrication of coarser AlN particles by sintering of micro granules**

Ken Yonashiro\*, Junichi Tatami, Toru Wakihara, Yokohama National University, Japan; Yutaka Fukunaga, Yukihiro Kanechika, Tokuyama Corporation, Japan

**(PACRIM10-S5-P023-2013) Fabrication of flake-like boehmite/ceria or zinc oxide composites for UV shield coating**

Seizo Obata\*, Gifu Pref. Ceram. Res. Inst., Japan; Susumu Kawai, Gifu University, Japan; Kenji Kido, Kawai Lime Industry Co.,Ltd., Japan; Michiyuki Yoshida, Osamu Sakurada, Gifu University, Japan

**(PACRIM10-S5-P024-2013) Magnetic orientation of bismuth nano-particle in transparent medium**

Naoyuki Kitamura\*, National Institute of Advanced Industrial Science and Technology, Japan; Kohki Takahashi, Iwao Mogi, Institute for Materials Research, Tohoku University, Japan; Kohei Fukumi, National Institute of Advanced Industrial Science and Technology, Japan; Satoshi Awaji, Kazuo Watanabe, Institute for Materials Research, Tohoku University, Japan

**(PACRIM10-S5-P025-2013) Measuring the Permittivity of Nanoparticle Powder Slurries**

Eric Anderson\*, Daniel Contreras, John Eom, Chris Gage, Michael Loy, Richard Haskell, Adrian Hightower, Harvey Mudd College, USA; Todd Monson, Sandia National Laboratories, USA; Mitul Verma, Frances Su, Harvey Mudd College, USA

**(PACRIM10-S5-P026-2013) Sol-Gel Auto-**

**Combustion Synthesis of ZnO Diluted Magnetic Semiconductor (DMS) Powders Doped with Co**

Chuanbin Wang\*, Xuan Zhou, Fei Chen, Qiang Shen, Lianmeng Zhang, Wuhan University of Technology, China

**(PACRIM10-S5-P027-2013) Solid reaction mechanism of Li<sub>2</sub>CO<sub>3</sub> and FePO<sub>4</sub>/C powder**

Takashi Hashizume\*, Daisuke Akita, Atsushi Saiki, Kiyoshi Terayama, University of Toyama, Japan

**(PACRIM10-S5-P028-2013) The Effect of Powder Phase Composition on Spark Plasma Sintered Silicon Nitride**

William Pinc, Anne C Ellis\*, Luke S Walker, Erica L Corral, University of Arizona, USA

**(PACRIM10-S6-P029-2013) An Investigation on the Reduction of Mn-Co Spinel during Electric Field Assisted Sintering**

Anshu Gaur\*, University of Trento, Italy; Dario Montinaro, SOFCPOWER Spa, Italy; Vincenzo M Sglavo, University of Trento, Italy

**(PACRIM10-S6-P030-2013) Copper-Carbon Nanotubes Composites: Densification by Spark Plasma Sintering and Mechanical Properties**

Christophe Guiderdoni, Claude Estournès\*, Viviane Turq, Alain Peigney, Alicia Weibel, Christophe Laurent, CIRIMAT, France

**(PACRIM10-S6-P031-2013) Fabrication of TiC-SiC nanocomposites from sol-gel and carbothermal reduction process by SPS**

Manyuan Zhou\*, Don Rodrigo, Yi-Bing Cheng, Monash University, Australia

**(PACRIM10-S6-P032-2013) Mechanical and tribological properties of CNT-ZrO<sub>2</sub> nanocomposites prepared by Spark Plasma**

## **Sintering**

Anne Kasperski, Alicia Weibel, Dalya Al Kattan, Christophe Laurent, Claude Estournès\*, Alain Peigney, CIRIMAT, France

### **(PACRIM10-S6-P033-2013) Monoliths of Carbon Nanotubes prepared by Spark Plasma Sintering**

Claude Estournès\*, Alicia Weibel, Tymaï Dinh, Geoffroy Chevallier, Alain Peigney, Xiuwen Zheng, Christophe Laurent, CIRIMAT, France

### **(PACRIM10-S6-P034-2013) Surface morphology of YSZ thin films deposited from a precursor solution under the electrical fields**

Atsushi Saiki\*, Takashi Hashizume, Kento Hamada, University of Toyama, Japan

### **(PACRIM10-S7-P035-2013) Hetero epitaxial growth of Cr<sub>2</sub>O<sub>3</sub>/LiNbO<sub>3</sub>/Cr<sub>2</sub>O<sub>3</sub>/ multilayer**

Ichikawa Koji\*, Yokota Takeshi, Imura Rempei, Gomi Manabu, Nagoya Institute of Technology, Japan

### **(PACRIM10-S7-P036-2013) I<sub>3</sub>- Diffusion in TiO<sub>2</sub> nanopore in dye-sensitized solar cells**

Minobu Kawano\*, Hiromi Sato, Yuhei Ogomi, Pandey Shyam, Shuzi Hayase, Graduate School of LSSE, Kyushu Institute Technology, Japan

### **(PACRIM10-S7-P037-2013) Micro/nano Structured Zn<sub>1-x</sub>Al<sub>x</sub>O Bulk Materials with Enhanced Thermoelectric Properties**

Dai-Bing Zhang, Bo-Ping Zhang\*, Zhen-Hua Ge, University of Science and Technology Beijing, China

### **(PACRIM10-S7-P038-2013) Preparation of SnO<sub>2</sub>/layered SnO<sub>x</sub> compound composites and their electrical properties**

Kenji Suzuoka, Tokyo University of Agriculture and Technology, Japan; Kazuhiko Katoh, Yasunori

Tabira, Isamu Yashima, Mitsui Mining & Smelting Corporation, Japan; Motoyuki Iijima, Hidehiro Kamiya\*, Tokyo University of Agriculture and Technology, Japan

### **(PACRIM10-S7-P039-2013) Synthesis and characterization of metal nanoparticles decorated zinc oxide nanorods**

Sang Kyoo Lim\*, Sung-Ho Hwang, Seong Hui Hong, So-Hee Bang, SoonHyun Kim, DGIST, Republic of Korea

### **(PACRIM10-S8-P040-2013) Advanced Metallization Technology on Alumina Ceramics Surface Based on Photocatalysis**

Xuefeng Liu\*, Yanyan Luan, Haiqin Chen, Zhannan Peng, Jianxin Xie, University of Science and Technology Beijing, China

### **(PACRIM10-S8-P041-2013) Effects of particle size and crystalline phase developed after Thermal Shock cycles in Cordierite-Mullite Concretes Mixes**

Ana Maria Paniagua\*, Karla J Lozano, Israsel Guzman, Arturo Mendez, Leonor Perez, Instituto Politecnico Nacional, Mexico

### **(PACRIM10-S8-P042-2013) Evaluation of ceramic/ceramic (SiC/SiC & Al<sub>2</sub>O<sub>3</sub>/Al<sub>2</sub>O<sub>3</sub>) joint interface prepared via brazing**

Amirhossein Ghazi Daryani\*, Firouz Khani, Sharif University, Islamic Republic of Iran

### **(PACRIM10-S8-P043-2013) Investigation hydrophilic effect of silicon rubber insulators by modified TiO<sub>2</sub>-SiO<sub>2</sub> nano particles**

Majid Jafari\*, Mohammad Eatezadi, Islamic Azad University Najafabad Branch, Islamic Republic of Iran

### **(PACRIM10-S8-P044-2013) Multi-Layered NKLNT**

### **Ceramic Piezoelectric Actuators**

Jaesung Song\*, Min-Soo Kim, In-Sung Kim, Soon-Jong Jeong, Korea Electrotechnology Research Institute, Republic of Korea

### **(PACRIM10-S8-P045-2013) Processing of Self-Setting Wet Foams to Porous Ceramics**

Jung G Park\*, Ashish Pokhrel, Seo D Nam, Ik Jin Kim, Processing and Application of Inorganic Materials (PAIM), Hanseo University, Republic of Korea

### **(PACRIM10-S8-P046-2013) Rapid fabrication and high temperature mechanical properties of C/SiC Composites by melt infiltration**

Takeki Hara\*, Yasuo Kogo, Masashi Ishikawa, Tokyo University of Science, Japan; Takuya Aoki, Toshio Ogasawara, Japan Aerospace Exploration Agency (JAXA), Japan

### **(PACRIM10-S8-P047-2013) Reduction Kinetics of NiFe<sub>2</sub>O<sub>4</sub> Oxygen Carriers with Various Inert Support Materials for Chemical Looping Combustion**

Yu-Lin Kuo\*, Wei-Mau Hsu, Yao-Hsuan Tseng, Young Ku, National Taiwan University of Science and Technology, Taiwan

### **(PACRIM10-S8-P048-2013) Sol-gel synthesis of carbon nanotube reinforced titanium carbide nanocomposites**

Xiaojing Wang\*, Caen Ang, Monash University, Australia; Jie Zhong, Central South University, China; Yi-Bing Cheng, Monash University, Australia

### **(PACRIM10-S8-P049-2013) Synthesis of Magnesia Nano Particles and its effect on Sintering of Nano Alumina**

Majid Jafari\*, Islamic Azad University Najafabad Branch, Islamic Republic of Iran

### **(PACRIM10-S8-P050-2013) Synthesis of hybrid glass composite membrane based SiO<sub>2</sub>/polymer and studied their structural properties**

Uma Thanganathan\*, Okyama University, Japan

### **(PACRIM10-S8-P051-2013) Transparent AlON Pressurelessly Sintered from Powder Synthesized by a Novel Solid-state Reaction Method**

Xihai Jin\*, Lian Gao, Jing Sun, Yangqiao Liu, Linhua Gui, Shanghai Institute of Ceramics, Chinese Academy of Sciences, China

### **(PACRIM10-S8-P052-2013) Pressureless sintering of in situ SiC-BN nanocomposite ceramics with high resistivity and excellent thermal conductivity**

Yinsheng Li\*, Shanghai Institute of Ceramics, China

### **(PACRIM10-S9-P053-2013) Max Phases foams from direct foaming methods**

Gilles Lepretre, Ecole Nationale Supérieure d'Ingénieur, France; Elisangela Guzi de Moraes\*, Paolo Colombo, Università degli Studi di Padova, Italy

### **(PACRIM10-S9-P054-2013) Oxidation Resistance of ZrB<sub>2</sub>-SiC-ZrC ceramics above 2000 K**

Yutaro Arai\*, Yasuo Kogo, Masashi Ishikawa, Tokyo University of Science, Japan; Shu-qi Guo, National Institute for Material Science (NIMS), Japan; Ken Goto, Japan Aerospace Exploration Agency (JAXA), Japan; Takuya Yasuno, Iwaki Meisei University, Japan

### **(PACRIM10-S9-P055-2013) Thermal Properties of Zirconium Diboride With Transition Metal Diboride Additions**

Devon McClane\*, William G Fahrenholtz, Greg E Hilmas, Missouri University of Science and Technology, USA

**(PACRIM10-S10-P056-2013) Characterization of filters impregnated with silver nanoparticles**

Guillermo van Erven Cabala, Wilson Acchar\*, Federal Institute of Education, Science and Technology - Bahia, Brazil

**(PACRIM10-S10-P057-2013) Comparison of High Pressure DC-sputtering and Pulsed Laser Deposition of Superconducting**

**Bi<sub>1.6</sub>Pb<sub>0.4</sub>Sr<sub>2</sub>Ca<sub>2</sub>Cu<sub>3</sub>O<sub>10+δ</sub>**

Ghazala Yalda Hirmiz\*, Mahdi H Suhail, Suzan M Shakoly, Baghdad University-College of Science, Iraq

**(PACRIM10-S10-P058-2013) Development of a hybrid process combined with a dry and a wet process for the applications in a boundary lubrication area**

HyunJun Park, Kyoung Il Moon\*, KITECH, Republic of Korea

**(PACRIM10-S10-P059-2013) Effect of Annealing on Optical and Photocatalytic Properties of Zn<sub>2</sub>TiO<sub>4</sub> Thin Films Prepared by Reactive Magnetron Co-sputtering**

Yen-Lin Huang\*, National Chung Hsing University, Taiwan; Ying-Chieh Lee, National PingTung University of Science & Technology, Taiwan; Du-Cheng Tsai, Rong-Hsin Huang, Fuh-Sheng Shieu, National Chung Hsing University, Taiwan

**(PACRIM10-S10-P060-2013) Fabrication of K<sub>2</sub>Ta<sub>2</sub>O<sub>6</sub> by hydrothermal method and their optical property**

Atsushi Saiki\*, Takashi Hashizume, University of Toyama, Japan

**(PACRIM10-S10-P061-2013) Improved dielectric properties of BaTiO<sub>3</sub>-coated (Ca,Ba)Cu<sub>3</sub>Ti<sub>4</sub>O<sub>12</sub>**

**ceramics by the sol-gel process**

Hui Eun Kim\*, Soon-Mi Choi, Sung-Yun Lee, Seoul National University, Republic of Korea; Youn Woo Hong, Bio-IT convergence Center, Korea Institute of Ceramic Eng. & Tech., Republic of Korea; Sang-Im Yoo, Seoul National University, Republic of Korea

**(PACRIM10-S10-P062-2013) Structural stability and thermal properties of lanthanum zirconate films for thermal barrier coating**

Hyung-Tae Kim\*, Seongwon Kim, Sung-Min Lee, Yoon-Suk Oh, Korea Institute of Ceramic Engineering and Technology, Republic of Korea; Byung-Koog Jang, National Institute of Materials Science, Japan

**(PACRIM10-S10-P063-2013) Ta-O-N thin films deposited by low vacuum reactive sputtering**

Takashi Hashizume\*, Hiroki Nakagawa, Atsushi Saiki, University of Toyama, Japan

**(PACRIM10-S10-P064-2013) The Optical and Electrical Properties of ZTO/AlN/Ag/AlN/ZTO Film for Low-Emissivity**

Guneik Jang\*, Yong-Jun Shin, Chungbuk National University, Republic of Korea

**(PACRIM10-S10-P065-2013) The effect of third elements on the microstructure and wear properties of MoN- Cu-X nanocomposite coatings deposited by reactive magnetron sputtering with single alloying target**

Kyoung Il Moon\*, Han Chan Lee, Duck Hyeong Jung, Seung Yong Shin, KITECH, Republic of Korea

**(PACRIM10-S10-P066-2013) The hard ferrite coating on Boron nitride by Sol-gel method**

Yongho Yoon\*, Jihoon Jung, Chemical engineering, Kyonggi University, Republic of Korea

**(PACRIM10-S12-P067-2013) Alumina Thick Layer Prepared by Aerosol Deposition Method for Insulator of High Thermal Emission Circuit Board**

Jun Akedo\*, Muneyasu Suzuki, Hiroki Tsuda, National Institute of Advanced Industrial Science & Technology, Japan

**(PACRIM10-S12-P068-2013) Characterization and X-ray crystal structure analysis of high-quality Bi<sub>0.5</sub>K<sub>0.5</sub>TiO<sub>3</sub>-Bi<sub>0.5</sub>Na<sub>0.5</sub>TiO<sub>3</sub> ferroelectric single crystals**

Yuji Noguchi\*, Ken Yanai, Yuuki Kitanaka, Masaru Miyayama, RCAST, U-Tokyo, Japan; Chikako Moriyoshi, Yoshihiro Kuroiwa, Hiroshima University, Japan; Shuki Torii, Takashi Kamiyama, KEK, Japan

**(PACRIM10-S12-P069-2013) Effects of engineered 90° domain structures upon piezoelectric properties of Bi<sub>4</sub>Ti<sub>3</sub>O<sub>12</sub> single crystals**

Yuuki Kitanaka, Yuji Noguchi\*, Masaru Miyayama, The University of Tokyo, Japan; Chikako Moriyoshi, Yoshihiro Kuroiwa, Hiroshima University, Japan

**(PACRIM10-S12-P070-2013) Electrical Properties of Chemically Synthesized Lead-Free Ferroelectric K<sub>0.5</sub>Na<sub>0.5</sub>NbO<sub>3</sub>-AZrO<sub>3</sub> [A: alkaline earth] Thin Films**

Wataru Sakamoto\*, Takumi Matsuda, Nagoya University, Japan; Bong-Yeon Lee, Takashi Iijima, AIST, Japan; Makoto Moriya, Toshinobu Yogo, Nagoya University, Japan

**(PACRIM10-S12-P071-2013) Enhanced magneto-transport properties of Ga<sub>2</sub>O<sub>3</sub>-doped Mn-Zn ferrites**

HyoJin Kim\*, Jae-Hyoung Yoo, Sang-Im Yoo, Seoul National University, Republic of Korea

**(PACRIM10-S12-P072-2013) First-principles**

**Investigation Negative Thermal Expansion Mechanism in A-site-Ordered Perovskite SrCu<sub>3</sub>Fe<sub>4</sub>O<sub>12</sub>**

Hongping Li, Changsheng Li\*, School of Materials Science and Engineering, Jiangsu University, China

**(PACRIM10-S12-P073-2013) Growth and characterization of (K,Na)(Nb,Ta)O<sub>3</sub> ferroelectric single crystals**

Yuji Noguchi\*, Takuya Hattori, Yuuki Kitanaka, Masaru Miyayama, RCAST, U-Tokyo, Japan; Chikako Moriyoshi, Yoshihiro Kuroiwa, Hiroshima University, Japan

**(PACRIM10-S12-P074-2013) Growth and characterization of high-quality Bi<sub>0.5</sub>Na<sub>0.5</sub>TiO<sub>3</sub>-BaTiO<sub>3</sub> ferroelectric single crystals**

Yuji Noguchi\*, Hiroaki Onozuka, Yuuki Kitanaka, Masaru Miyayama, RCAST, U-Tokyo, Japan; Chikako Moriyoshi, Yoshihiro Kuroiwa, Hiroshima University, Japan

**(PACRIM10-S12-P075-2013) High Speed and Wide scanning angle optical micro scanner with lead free piezoelectric AD layer**

Jae-Hyuk Park, National Institute of Advanced Industrial Science & Technology, Japan; Yoshihiro Kawakami, NEC Tohkin Co. Ltd., Japan; Muneyasu Suzuki, Jun Akedo\*, National Institute of Advanced Industrial Science & Technology, Japan

**(PACRIM10-S12-P076-2013) High-speed, Compact Electro-optic Modulators Fabricated on Silicon Substrates by Aerosol Deposition**

Hiroki Tsuda\*, Jun Akedo, AIST, Japan; Masafumi Nakada, Takanori Shimizu, Hiroshi Miyazaki, Keishi Ohashi, MIRAI-Selete, Japan

**(PACRIM10-S12-P077-2013) Ho<sub>2</sub>O<sub>3</sub> and La<sub>2</sub>O<sub>3</sub> Doped BaTiO<sub>3</sub>-Ceramics Characterization**

Vojislav Mitic\*, V. Paunovic, M. Miljkovic, Lj. Zivkovic, University of Nis, Serbia

**(PACRIM10-S12-P078-2013) Low-Temperature Sintering of  $\text{NaNbO}_3$ - $\text{BaTiO}_3$  Lead-Free Piezoelectric Ceramics**

Rintaro Aoyagi\*, Shu Fujita, Masaki Maeda, Nagoya Institute of Technology, Japan

**(PACRIM10-S12-P079-2013) Low-temperature sintering of  $\text{Li}_2\text{CO}_3$  doped  $(\text{Ba,Ca})(\text{Ti,Sn})\text{TiO}_3$  lead-free piezoelectric ceramics**

Lei Zhao, Bo-Ping Zhang\*, Peng-Fei Zhou, School of Materials Science and Engineering, University of Science and Technology Beijing, China

**(PACRIM10-S12-P080-2013) Mechanoluminescence mechanism of  $\text{Sm}^{3+}$  doped  $\text{Sr}_{n+1}\text{Sn}_n\text{O}_{3n+1}$  ( $n=1, 2, \infty$ ) with perovskite oxides**

Sunao Kamimura\*, Kyushu University, Japan; Hiroshi Yamada, Cha-Nan Xu, National Institute of Advanced Industrial Science and Technology, Japan

**(PACRIM10-S12-P081-2013) Preparation of Nickel Borides and Carbides Supported on Carbon and their Electrocatalytic Activity for PEFC**

Chang gyu An\*, Masafumi Nakaya, Kiyoshi Kanie, Atsushi Muramatsu, Tohoku University, Japan

**(PACRIM10-S12-P082-2013) Roll-to-roll Large Area Coating by Aerosol Deposition**

Shingo Hirose\*, Yukitoshi Ezuka, Nobuo Sakamoto, Daniel Popovic, Naoki Seto, Atsushi Iwata, Jun Akedo, Advanced industrial Science and Technology, Japan

**(PACRIM10-S12-P083-2013) Strontium titanate films with quantum paraelectric behavior**

Hiroshi Takashima\*, Mitsuru Itoh, AIST, Japan

**(PACRIM10-S12-P084-2013) Structure and Electric Properties of  $(1-x)(0.1\text{BiYbO}_3-0.9\text{PbTiO}_3)$ - $x\text{Pb}(\text{Zn}_{1/3}\text{Nb}_{2/3})\text{O}_3$  high-temperature piezoelectric ceramics**

Liang Shi\*, School of Materials Science and Engineering, University of Science and Technology Beijing, China; Dong Guo, Institute of Acoustics, Chinese Academy of Sciences, Beijing, China; Bo-Ping Zhang, School of Materials Science and Engineering, University of Science and Technology Beijing, China

**(PACRIM10-S12-P085-2013) The mechanism of the multifunctional material Mn doped  $\text{CaZnOS}$  in the Electro-Mechano-Optical conversions**

Dong Tu\*, Kyushu University, Japan; Chao-Nan Xu, Yuki Fujio, National Institute of Advanced Industrial Science and Technology (AIST), Japan

**(PACRIM10-S13-P086-2013) Dielectric Properties of  $\text{ZnTa}_2\text{O}_6$  / Polypropylene Composites at Microwave Frequency**

Chang Jun Jeon\*, Eung Soo Kim, Kyonggi University, Republic of Korea

**(PACRIM10-S13-P087-2013) Effect of  $\text{MgO}$  and  $\text{Zn-B}$  glass doping on structural, dielectric and electrical properties of  $\text{Mg}_2\text{TiO}_4$  ceramics**

Xiaohong Wang\*, Zhaoqiang Li, Wenzhong Lu, Huazhong University of Science and Technology, China

**(PACRIM10-S13-P088-2013) Influence of Pure Oxygen Atmosphere Sintering on Microwave Dielectric Behaviors of  $x(\text{Mg}_{0.96}\text{Co}_{0.04})\text{TiO}_3 - (1-x)\text{SrTiO}_3$  Ceramics**

Kok-Wan Tay, Bo-Sin Hou\*, WuFeng University, Taiwan



**(PACRIM10-S13-P089-2013) Microwave Dielectric Properties and Low-Temperature Sintering of Ba<sub>0.5</sub>Sr<sub>0.5</sub>TiO<sub>3</sub>-CaMoO<sub>4</sub> Ceramics**

Jiwei Zhai\*, Lingjiang Tang, Hui Wang, Yanlong Bian, Tongji University, China

**(PACRIM10-S13-P090-2013) Microwave Dielectric Properties of 0.9CaMgSi<sub>2</sub>O<sub>6</sub>-0.1MgSiO<sub>3</sub> with TiO<sub>2</sub> Glass-Ceramics**

Bo Kyeong Choi\*, Gui Nam Sun, Eung Soo Kim, Kyonggi University, Republic of Korea

**(PACRIM10-S13-P091-2013) Microwave dielectric ceramics with compositions in the vicinity of CaNdAlO<sub>4</sub> in CaO-Nd<sub>2</sub>O<sub>3</sub>-Al<sub>2</sub>O<sub>3</sub> system**

Xiang Ming Chen\*, Lei Yi, Min Min Mao, Lei Li, Zhejiang University, China

**(PACRIM10-S13-P092-2013) Microwave quality factor of the Ba<sub>6-3x</sub>R<sub>8+2x</sub>Ti<sub>18</sub>O<sub>54</sub> (R = rare earth) solid solutions depended on the ionic size difference between Ba and R**

Hitoshi Ohsato\*, Nagoya Industrial Science Research Institute, Japan; Masaki Imaeda, Hideyasu Sakashita, Nagoya Institute of Technology, Japan

**(PACRIM10-S13-P093-2013) Optical and microwave dielectric properties of (Mg<sub>1-x</sub>Zn<sub>x</sub>)Al<sub>2</sub>O<sub>4</sub> transparent ceramics fabricated by Spark Plasma Sintering**

Ping Fu\*, Zhong W Lu, Huazhong University of Science & Technology, China

**(PACRIM10-S13-P094-2013) Tunable Microwave Metamaterials Based on Ferrites**

Hongjie Zhao, Bo Li, Ji Zhou\*, Tsinghua University, China

**(PACRIM10-S14-P095-2013) Fabrication and Electrical Characteristics of Au/P(VDF-**

**TrFE)/CEP/Si(100) Structures**

Byung Eun Park\*, Bo Jin, Guizhe An, University of Seoul, Republic of Korea

**(PACRIM10-S15-P096-2013) Characterization of Sm<sub>0.5</sub>Sr<sub>0.5</sub>CoO<sub>3-δ</sub> cathode for solid oxide fuel cells**

Yen-Pei Fu\*, Jie Ouyang, Chien-Hung Li, National Dong Hwa University, Taiwan

**(PACRIM10-S15-P097-2013) Effect of Co/Fe ratio and Microstructural Design on the Structural and Electrical Properties of BaSrCo<sub>1-x</sub>Fe<sub>x</sub>O<sub>3-x</sub> Mixed Conducting Oxides**

Kuan-Zong Fung\*, Ta-Te Chen, Yu-Cheng Su, Shu-Yi Tsai, Chi-Yang Liu, National Cheng Kung University, Taiwan

**(PACRIM10-S15-P098-2013) Effect of Co/Fe ratio on Structural Stability and Conductivity of Mixed Conducting La<sub>0.8</sub>Ca<sub>0.2</sub>Fe<sub>1-x</sub>Co<sub>x</sub>O<sub>3</sub> (x=0~0.4) Perovskite in Reducing Atmosphere**

Kuan-Zong Fung\*, Shu-Yi Tsai, Yu-Cheng Su, Chi-Yang Liu, National Cheng Kung University, Taiwan

**(PACRIM10-S15-P099-2013) Effect of Na-Carbonate on the Microstructure Development and Electrical Conductivity of Gadolinia-doped Ceria**

Dulcina F Souza\*, Edson C Gezebielucka, Federal University of Sao Carlos, Brazil

**(PACRIM10-S15-P100-2013) Effect of Processing Route on the Crystallization and Conductivity of Mn<sub>3-x</sub>Co<sub>x</sub>O<sub>4</sub> Spinel for Solid Oxide Fuel Cell Applications**

Kuan-Zong Fung\*, Shu-Yi Tsai, Hsin-Chia Ho, Chi-Yang Liu, National Cheng Kung University, Taiwan

**(PACRIM10-S15-P101-2013) Electrical Conductivity**

**of 10YSZ/Al<sub>2</sub>O<sub>3</sub> Heterofilms Prepared by Spin Coating**

Fabio Coutinho Antunes, Dulcina F Souza\*, Federal University of São Carlos, Brazil

**(PACRIM10-S15-P102-2013) Electrical and optical properties of Pt/WO<sub>3</sub> thin film prepared using sol-gel process**

Shunji Imamura\*, Yuki Yamaguchi, Atsuo Yasumori, Keishi Nishio, Tokyo University of Science, Japan

**(PACRIM10-S15-P103-2013) Fabrication of CeO<sub>2</sub>/Al multilayer thin films and the thermal behavior**

Shunpei Kurokawa\*, Takashi Hashizume, Atsushi Saiki, University of Toyama, Japan

**(PACRIM10-S15-P104-2013) High Temperature Reaction on Composite Cathode Consisting of Yttrium Doped Bismuth Oxide (Y<sub>0.75</sub>Bi<sub>0.25</sub>O<sub>1.5</sub>) and La<sub>1-x</sub>Sr<sub>x</sub>MeO<sub>3-δ</sub> Perovskite (Me=Mn, Cu)**

Kuan-Zong Fung, Shu-Yi Tsai\*, Hao-Sheng Wang, Chung-Ta Ni, National Cheng Kung University, Taiwan

**(PACRIM10-S15-P105-2013) Hydrogen and oxygen gas partial pressure dependence on gasochromism of Pt/WO<sub>3</sub> thin film prepared using sol-gel process**

Yuki Yamaguchi\*, Takahiro Hanawa, Shunji Imamura, Shigeru Ito, Kenjiro Fujimoto, Atsuo Yasumori, Keishi Nishio, Tokyo University of Science, Japan

**(PACRIM10-S15-P106-2013) Microstructures and catalytic activity of SOFC anodes with spinel-supported metal catalysts**

Katelyn Glass\*, Brenden Hill, Alfred University, USA; Jane Howe, Oak Ridge National Laboratory, USA; Scott T Mixture, Alfred University, USA

**(PACRIM10-S15-P107-2013) Nano-sized Pt on Surface Modified Carbon Paper by Phosphates for Fuel Cells**

Chao-chun Yen\*, Feng Chia University, Taiwan; Min-Yi Dai, Nai-Su Pai, Chi-Chun Yang, Ming-Jia Wang, National Chung Hsing University, Taiwan; Shi-Kun Chen, Feng Chia University, Taiwan; Shio-Kang Yen, National Chung Hsing University, Taiwan

**(PACRIM10-S15-P108-2013) Tuning the composition and porosity in polymer derived ceramics for gas separation applications**

Cristina Schitco\*, Mahdi Seifollahi Bazarjani, Technische Universität Darmstadt, Germany; Claudia Turdean-Ionescu, Mattias Eden, Stockholm University, Sweden; Aleksander Gurlo, Ralf Riedel, Technische Universität Darmstadt, Germany

**(PACRIM10-S15-P109-2013) New Sealing Glasses to Bond Together Ceramics, and Metals**

Oleg A Prokhorenko\*, Laboratory of Glass Properties, USA

**(PACRIM10-S16-P110-2013) A Module Study of Thermoelectric Power Generation in Non-Telluride Systems**

Soon-Mok Choi\*, Won-Seon Seo, Korea Institute of Ceramic Eng. and Tech., Republic of Korea

**(PACRIM10-S16-P111-2013) Compositional optimization of reduced polycrystalline Sr<sub>x</sub>Ba<sub>1-x</sub>Nb<sub>2</sub>O<sub>6</sub> for high-temperature thermoelectric applications**

Christopher Dandeneau\*, Kimbrelle Thommasson, Kyle Staples, An Dang, Rajendra K Bordia, Fumio S Ohuchi, University of Washington, USA

**(PACRIM10-S16-P112-2013) Effect of Al content on the microstructure and thermoelectric properties of Ca<sub>1-x</sub>Al<sub>x</sub>MnO<sub>3</sub>**

Kyeongsoon Park\*, C. M Kim, J. W Seo, Sejong University, Republic of Korea

**(PACRIM10-S16-P113-2013) Electrical conductivity of La<sub>4</sub>BaCu<sub>5</sub>O<sub>x</sub> thin film at high temperature**

Woosuck Shin\*, Noriya Izu, Toshio Itoh, Takafumi Akamatsu, AIST, Japan; Daiki Mori, Ryuji Okazaki, Ichiro Terasaki, Nagoya University, Japan

**(PACRIM10-S16-P114-2013) High Pressure Processing of PbTe**

Edward Gorzkowski\*, James A Wollmershauser, Boris Feigelson, Ashraf Imam, Naval Research Laboratory, USA

**(PACRIM10-S16-P115-2013) Perovskite La(Co, Ni)O<sub>3</sub> and La(Ca, Mn)O<sub>3</sub> Thick Film for Thermoelectric Application**

Wenyan Jiang\*, Seung-Hyun Kim, Angus I Kingon, Brown University, USA

**(PACRIM10-S16-P116-2013) Process development and material characterization of Bi<sub>0.3</sub>Sb<sub>1.7</sub>Te<sub>3</sub> thick films on polyethylene terephthalate substrates by aerosol deposition**

So Baba\*, Hiroshi Sato, Lan Huang, Akiko Uritani, Ryoji Funahashi, Jun Akedo, National Institute of Advanced Industrial Science and Technology, Japan

**(PACRIM10-S16-P117-2013) Promising Thermoelectric Performance in Transition Metal Niobates with Edge-Shared MO<sub>6</sub> Arrangements**

Peter Carl Metz\*, Samuel A Miller, Scott T Misture, Alfred University, USA

**(PACRIM10-S16-P118-2013) Thermoelectric power factor of Ca-doped LaCoO<sub>3</sub> polycrystalline ceramics**

Julio E. Rodriguez\*, Carlos Otalora, Universidad Nacional de Colombia, Colombia

**(PACRIM10-S17-P119-2013) Densification and Properties of Fluorine Doped Tin Oxide (FTO) Ceramics by Spark Plasma Sintering**

Meijuan Li\*, Qiang Shen, Fei Chen, Lianmeng Zhang, Wuhan University of Technology, China

**(PACRIM10-S18-P120-2013) Engineering of Amorphous Granite for Deep Borehole Disposal**

Pin Yang\*, Yifeng Wang, Mark A Rodriguez, Patrick V Brady, Peter N Swift, Clay Newton, Sandia National Laboratories, USA

**(PACRIM10-S18-P121-2013) Microstructural evolution of 3D carbon/carbon composite under high temperature irradiation**

Shuo-Cheng Tsai\*, National Tsing-Hua University, Taiwan; Chien-hung Chen, University of Tennessee, USA; Chun-Yu Ho, I-Che Chiu, Ji-Jung Kai, National Tsing-Hua University, Taiwan

**(PACRIM10-S18-P122-2013) Microstructure of damage in helium-implanted 3C-SiC and C/C composite**

I-Che Chiu\*, Yan-Ru Lin, Chun-Yu Ho, Shuo-cheng Tsai, National Tsing-Hua University, Taiwan; Chien-hung Chen, University of Tennessee, USA; Ji-Jung Kai, National Tsing-Hua University, Taiwan

**(PACRIM10-S18-P123-2013) Off-stoichiometric Sintering of Actinide and Rare-earth Oxides**

Jack Henderson\*, Netzsch Instruments North America LLC, USA

**(PACRIM10-S18-P124-2013) SiC/SiC Fuel Cladding by NITE process for Innovative LWR - Resistance under high temperature water and steam**

Chisato Kanda\*, OASIS, Muroran institute of technology, Japan; Yasuharu Kanda, Muroran Institute of Technology, Japan; Hirotatsu Kishimoto, Akira Kohyama, OASIS, Muroran

institute of technology, Japan

**(PACRIM10-S18-P125-2013) SiC/SiC Fuel Cladding by NITE process for Innovative LWR -Pre-composite Ribbon Design and Fabrication**

Yuuki Asakura\*, Joon-Soo Park, Hirotatsu Kishimoto, Akira Kohyama, OASIS, Muroran Institute of Technology, Japan

**(PACRIM10-S18-P126-2013) Study of zirconium based composite as a potential inert matrix fuel**

Yin Liu, Yiquan Wu\*, Alfred University, USA

**(PACRIM10-S19-P127-2013) Controllable Synthesis of Nitrogen-Doped Graphene/InSe Nanocomposites with Enhanced Photocatalytic Performance**

Xuefeng Song\*, Peng Zhang, Lian Gao, Shanghai Jiao Tong University, China

**(PACRIM10-S19-P128-2013) Engineering Approaches to Improved Hydrogen Production from Photocatalysts**

Victoria L. Blair\*, Scott T. Mixture, Alfred University, USA

**(PACRIM10-S19-P129-2013) Low-temperature preparation of crystalline mesoporous TiO<sub>2</sub> using sol-gel process**

Shiro Hirotsu\*, Sayaka Yanagida, Atsuo Yasumori, Keishi Nishio, Tokyo University of Science, Japan

**(PACRIM10-S19-P130-2013) Preparation of the brookite-type titanium oxide nanocrystal by hydrothermal synthesis**

Shinya Kitahara\*, Takashi Hashizume, Atsushi Saiki, University of Toyama, Japan

**(PACRIM10-S19-P131-2013) Synthesis and Photocatalytic Activity of TiO<sub>2</sub>@ Fe<sub>3</sub>O<sub>4</sub> hollow**

**mesoporous spheres**

Hua Tang, Changsheng Li\*, School of Materials Science and Engineering, Jiangsu University, China

**(PACRIM10-S19-P132-2013) Synthesis of pyrochlore-type K<sub>2</sub>Ta<sub>2</sub>O<sub>6</sub> with high photocatalytic activity for dye degradation**

Xia Li\*, Ling Qi, College of Materials Science and Technology, Qingdao University of Science & Technology, China

**(PACRIM10-S20-P133-2013) Fabrication of superhydrophilic-superoleophobic nanocomposite coatings for Oil/Water Separation**

Jin Yang, Institute for Advanced Materials, Jiangsu University, China; Changsheng Li\*, School of Materials Science and Engineering, Jiangsu University, China

**(PACRIM10-S20-P134-2013) Mineral carbonation using CO<sub>2</sub> microbubbles for CO<sub>2</sub> storage**

Jun-Hwan Bang\*, Wonbaek Kim, Kyung Sun Song, Soo Chun Chae, Youn Nam Jang, Korea Institute of Geoscience and Mineral Resources (KIGAM), Republic of Korea

**(PACRIM10-S20-P135-2013) Characterisation of porous aluminum titanate produced with starch and CNTs**

Genfa Zhao\*, Yang Bai, Lijie Qiao, University of Science and Technology, Beijing, China

**(PACRIM10-S21-P136-2013) Effect of Aliovalent Dopant and Atmosphere on Synthesis and Electrical Conduction of Li<sub>4</sub>Ti<sub>5</sub>O<sub>12</sub> Anode for Li Battery Application**

Kuan-Zong Fung\*, Mei-Han Chen, Chung-Ta Ni, Shu-Yi Tsai, National Cheng Kung University, Taiwan; Antanas Orliukas, Vilnius University, Lithuania; Gunars Bajars, University of Latvia, Latvia

**(PACRIM10-S21-P137-2013) Enhanced electrochemical performance of SnO<sub>2</sub>/MWCNT composite anode for lithium-ion batteries by a facile microwave-assisted hydrothermal synthesis**  
Ming-Hung Chou, Jeng-Yu Lin\*, Tatung University, Taiwan

**(PACRIM10-S21-P138-2013) Preparation and Properties of Ionic-Liquids Based Electrolyte for Lithium-ion Batteries**

Chiung-Cheng Huang\*, Bing-Yi Lin, Che-Liang Kuo, She-Huang Wu, Tatung University, Taiwan

**(PACRIM10-S21-P139-2013) Preparation and characterization of Li<sub>3</sub>V<sub>2</sub>(PO<sub>4</sub>)<sub>3</sub>/C composites as cathode materials for Li ion batteries**

Chun-Chen Yang, Shu-Hsien Kung\*, Ming Chi University of Technology, Taiwan

**(PACRIM10-S21-P140-2013) Preparation and characterization of Li<sub>4</sub>Ti<sub>5</sub>O<sub>12</sub>/C composite as an anode material**

Chun-Chen Yang, Hwai-Jow Hwu\*, Ming Chi University of Technology, Taiwan

**(PACRIM10-S21-P141-2013) Thin Film Deposition of LiCoO<sub>2</sub> Cathode on Flexible Substrate for Li Battery Applications**

Shu-Yi Tsai\*, Chung-Ta Ni, Kuan-Zong Fung, National Cheng Kung University, Taiwan; Antanas Orliukas, Vilnius University, Lithuania; Gunars Bajars, University of Latvia, Latvia

**(PACRIM10-S21-P142-2013) V<sub>2</sub>O<sub>5</sub> cathode for High-Performance All-Solid-State Thin Film Battery**

Joosun Kim\*, KIST, Republic of Korea; Jooho Moon, Yonsei University, Republic of Korea; Hyunjung Shin, SungKyunKwan University, Republic of Korea; Kyung-Deog Nam, KIST, Republic of Korea

**(PACRIM10-S22-P143-2013) An archaeological analog for long-term interaction between iron and glass**

Seiichiro Mitsui\*, Hideki Yoshikawa, Japan Atomic Energy Agency, Japan; Toshiya Matsui, University of Tsukuba, Japan; Makoto Kaneko, Yuki Nakamatsu, Satoshi Utsunomiya, Kyushu University, Japan

**(PACRIM10-S22-P144-2013) Development and Use of the International Simple Glass for Glass Corrosion Testing**

Charles L. Crawford\*, James Marra, David Peeler, Savannah River National Laboratory, USA

**(PACRIM10-S22-P145-2013) Hafnium and Samarium Speciation in Vitrified Radioactive Incinerator Slag**

Galina Malinina, Sergey Stefanovsky\*, SIA Radon, Russian Federation; Andrey Shiryaev, Institute of Physical Chemistry and Electrochemistry RAS, Russian Federation; Yan Zubavichus, NRC Kurchatov Institute, Russian Federation

**(PACRIM10-S23-P146-2013) Characterization of electrolytic CaP/ZrO<sub>2</sub> double-layer coatings on AZ91D magnesium alloy**

Ming Jia Wang\*, Shiow Kang Yen, National Chung Hsing University, Taiwan

**(PACRIM10-S23-P147-2013) Drug Contained Biopolymer- HA/ Al<sub>2</sub>O<sub>3</sub>-ZrO<sub>2</sub> Composite Coating on AZ91 for Medical Device by Electrolysis**

Tien-Yu Wang\*, Ming Jia Wang, Chi-Chuan Yang, Shiow Kang Yen, National Chung Hsing University, Taiwan

**(PACRIM10-S23-P148-2013) The mechanical properties of the  $\beta$ -Si<sub>3</sub>N<sub>4</sub> whiskers reinforced dental resin composites**

Kai-hui Zuo\*, Yu-ping Zeng, the Shanghai Institute of Ceramics, China; Li-min Lu, the University of Waterloo, Canada

**(PACRIM10-S23-P149-2013) Toughening Components in Abalone Nacre**

Maria Isabel Lopez\*, Pedro E Meza-Martinez, Joanna McKittrick, UCSD, USA; Po-Yu Chen, NTHU, Taiwan; Marc A Meyers, UCSD, USA

**(PACRIM10-S24-P150-2013) A functionalized nanoporous alumina membrane electrochemical sensor for DNA detection with gold nanoparticle amplification**

Weiwei Ye\*, Mo Yang, the Hong Kong Polytechnic University, Hong Kong

**(PACRIM10-S24-P151-2013) Application of scratch hardness tests for evaluation of pre-sintered zirconia CAD/CAM blocks for all-ceramic prosthesis**

Da-Jeong Lee\*, Seung-Won Seo, Hyung-Joon Yoon, Dae-Joon Kim, Sejong University, Republic of Korea

**(PACRIM10-S24-P152-2013) Osteoinductive Collagen/TCP Scaffold: Is this a reality?**

Ali Sait Ismailoglu\*, Frank Vizesi, Erik Erbe, NuVasive, USA; Huipin Yuan, Xpand Biotechnology BV, Netherlands; Sung-Ching Chen, Maxigen Biotech Inc., Taiwan; Joost D. de Bruijn, Queen Mary University of London, United Kingdom

**(PACRIM10-S24-P153-2013) Magnetite Nanoparticles in Hybrid Aerogel and Its Hyperthermia Application**

Chang-Yeoul Kim\*, Eun-Hee Lee, Korea Institute of Ceramic Eng. & Tech, Republic of Korea; Yong-Ho Choa, Hanyang Univ., Republic of Korea

**(PACRIM10-SA-P154-2013) Fictive Temperature, Heat Capacity and Structure in Yttrium, Lanthanum, Calcium and Barium Boroaluminosilicate Glasses: High Resolution 11B & 27Al MAS NMR**

Elizabeth Morin\*, Jonathan F Stebbins, Jingshi Wu, Stanford University, USA

**(PACRIM10-SA-P155-2013) High temperature conductivities of glass sealants containing silver particles**

Takafumi Akamatsu\*, Toshio Itoh, Noriya Izu, Woosuck Shin, National Institute of Advanced Industrial Science and Technology, Japan

**(PACRIM10-SA-P156-2013) Impact of tungsten on structure and thermodynamics of borosilicate melts**

Peter Kroll\*, John P Nimmo, UT Arlington, USA; Maryam K Dehdashti, William G Fahrenholtz, Missouri University of Science and Technology, USA

**(PACRIM10-SA-P157-2013) Molecular dynamics simulations of the structural changes in sodium aluminosilicate glasses from soda to peralumina compositions**

Ye Xiang\*, Jincheng Du, University of North Texas, USA

**(PACRIM10-SA-P158-2013) On the origin of peculiarities in ternary Ge-Ga(As,Sb)-Se glasses by high-resolution XPS**

Roman Golovchak\*, Himanshu Jain, Lehigh University, USA

**(PACRIM10-SA-P159-2013) Patterning Surface Structures on Chalcogenide Glass via Imprinting Technique**

Byeong Kyou Jin, Yun Gu Cho, Yong Gyu Choi\*, Korea Aerospace University, Republic of Korea

**(PACRIM10-SA-P160-2013) Quick-EXAFS provides new insight on dynamics of temperature-induced structural reorganization in selenide glasses**

Roman Golovchak\*, Himanshu Jain, Lehigh University, USA

**(PACRIM10-SA-P161-2013) Structure and chemistry in halide-lead-tellurite glasses**

Brian Joseph Riley\*, John McCloy, Andrew Lipton, Charles Windisch, Jr., Nancy Washton, Matthew Olszta, Carmen Rodriguez, Pacific Northwest National Lab, USA

**(PACRIM10-SA-P162-2013) The Effects of the Mixed Glass Former Effect on Ion Conductivity in MGF Solid State Electrolytes**

Deborah Elizabeth Watson\*, Steve Martin, Iowa State University, USA; Randilynn Christensen, University of Manitoba, Canada; Christian Bischoff, Garrett Olson, Nathan Dunlap, Iowa State University, USA

**(PACRIM10-SA-P163-2013) The atomic structure of sodium iron phosphate glasses**

Bushra M. Al-Hasni\*, Sohar University, Oman; Gavin Mountjoy, University of Kent, United Kingdom; Emma Barney, Rutherford Appleton Laboratory, United Kingdom; Abbasher Gismelseed, Sultan Qaboos University, Oman

**(PACRIM10-SA-P164-2013) Towards reliable structural information of multicomponent glass systems**

Christoph Scherer\*, Schott AG, Germany; Friederike Schmid, Johannes-Gutenberg University, Germany; Martin Letz, Schott AG, Germany

**(PACRIM10-SA-P165-2013) Brittle-to-Ductile Transition in Densified Silica Glass**

Fenglin Yuan\*, Rensselaer Polytechnic Institute, USA

**(PACRIM10-SA-P166-2013) Effect of total flow rate and post-heat treatment on the structure and mechanical properties of SnO<sub>2</sub>:F thin film**

Qian Gao\*, Zhejiang University, China

**(PACRIM10-SB-P167-2013) Fatigue and aging studies of soda lime silicate glass fibers using the two-point bending method**

Erica Ronchetto\*, Francisco Serbena, Richard Brow, Missouri University of Science and Technology, USA

**(PACRIM10-SB-P168-2013) In-situ characterization of borate glass dissolution by micro-Raman spectroscopy**

Jaime George\*, Richard K Brow, Missouri University of Science and Technology, USA

**(PACRIM10-SB-P169-2013) Model for the calculation of the crystallization kinetics of glass powders**

Raphael M. C. V. Reis\*, Edgar D Zanotto, LaMaV - UFSCar, Brazil

**(PACRIM10-SB-P170-2013) Scalable fabrication of digitally designed spherical multimaterial particles enabled by in-fiber emulsification**

Guangming Tao\*, Joshua J Kaufman, Soroush Shabahang, Ayman F. Abouraddy, University of Central Florida, CREOL, USA

**(PACRIM10-SB-P171-2013) Strength Increase of Silica Glass Fiber through the Formation of a Residual Surface Compressive Stress Layer by Surface Stress Relaxation**

Peter J Lezzi\*, Qiran Xiao, Minoru Tomozawa, Thierry Blanchet, Rensselaer Polytechnic Institute, USA; Charles Kurkjian, University of Southern Maine, USA

**(PACRIM10-SB-P172-2013) Study of Al<sub>2</sub>O<sub>3</sub>-ZrO<sub>2</sub>-SiO<sub>2</sub> (AZS) refractory material corrosion in industrially tableware glass melt**

Peter Simurka\*, Jaroslav Sedlacek, Jozef Kraxner, Institute of Inorganic Chemistry Slovak Academy of Sciences, Slovakia

**(PACRIM10-SB-P173-2013) The corrosion behaviour of Ti<sub>50</sub>Cu<sub>28</sub>Ni<sub>15</sub>Sn<sub>7</sub> bulk metallic glasses and Mg<sub>49</sub>Y<sub>15</sub>Cu<sub>36</sub> bulk nanocrystalline alloys formed by vacuum hot pressing technique**

Pee-Yew Lee\*, Sung-Ting Chung, National Taiwan Ocean University, Taiwan

**(PACRIM10-SB-P174-2013) Three Classes of Extrusion Methodologies for Robust Multimaterial Fibers**

Guangming Tao\*, Soroush Shabahang, Ayman F Abouraddy, U. of Central Florida, USA

**(PACRIM10-SB-P175-2013) Double-Piston Extrusion of Hybrid Infrared Fiber Preforms**

Guangming Tao\*, University of Central Florida, CREOL, USA; Yinsheng Xu, Ningbo University, China; Soroush Shabahang, University of Central Florida, CREOL, USA; Shixun Dai, Ningbo University, China; Ayman F. Abouraddy, University of Central Florida, CREOL, USA

**(PACRIM10-SB-P176-2013) Robust Tellurium-based Chalcogenide Glass Fibers For Far-infrared Transmission Produced by Multimaterial Co-extrusion**

Guangming Tao\*, University of Central Florida, CREOL, USA; Xunsi Wang, Ningbo University, China; Ayman F. Abouraddy, University of Central Florida, CREOL, USA

**(PACRIM10-SB-P177-2013) Study of alteration mechanism of obsidian and barium borosilicate**

**glass for its long-term assessment in geological repository**

Nishi Rani\*, Jaya P Shrivastava, University of Delhi, India; Rakesh K Bajpai, BARC, India

**(PACRIM10-SB-P178-2013) Fatigue and Ageing of Ion Exchanged Soda-Lime Silicate Glass Fibers**

Francisco Carlos Serbena\*, State University of Ponta Grossa, Brazil; Richard K Brow, Missouri University of Science and Technology, USA

**(PACRIM10-SB-P179-2013) Impact of Color Centers on Radiation Hardening of Rare-Earth-Doped Optical Fibers**

Kelly Simmons-Potter\*, Brian P Fox, University of Arizona, USA

**(PACRIM10-SC-P180-2013) Agglomeration Reduction in Optical Glass Polishing Slurries Using EDL Bound Surfactants**

Lana L Wong\*, Rebecca Dylla-Spears, Tayyab Suratwala, Philip Miller, Michael Feit, Rusty Steele, Lawrence Livermore National Laboratory, USA

**(PACRIM10-SC-P181-2013) Amorphous Selenium/Alumino-Silicate nanomultilayered composite films and their photo induced effects**

S. Charnovych, University of Debrecen, Hungary; Petr Nemeč\*, University of Pardubice, Czech Republic; Virginie Nazabal, Université de Rennes 1, France; M. Veres, Institute of Solid State Physics and Optics, Hungary; A. Csik, ATOMKI, Hungary; M. Allix, Site Haute Température, France; S. Kokenyesi, University of Debrecen, Hungary

**(PACRIM10-SC-P182-2013) Emission property of Sn<sup>2+</sup>-activated borate glass**

Hirokazu Masai\*, Yuto Suzuki, Yasuhiro Yamada, Yomei Tokuda, Toshinobu Yoko, Kyoto University,



Japan

**(PACRIM10-SC-P183-2013) Fabrication and Characterization of Phosphor Embedded Glass Ceramics**

Fan-Bean Wu\*, Chi-Kun Chang, Yuan-Rum Chung, National United University, Taiwan

**(PACRIM10-SC-P184-2013) Fabrication of light emitting amorphous thin film in the system of SnO-ZnO-P<sub>2</sub>O<sub>5</sub> via liquid phase synthesis**

Hiroki Miyata\*, Hirokazu Masai, Yomei Tokuda, Toshinobu Yoko, Kyoto University, Japan

**(PACRIM10-SC-P185-2013) Laser vs. thermal crystallization of Sb-S-I glass**

Marisa Sanders, The College of New Jersey, USA; Dmytro Savytskyi\*, Roman Golovchak, Volkmar Dierolf, Himanshu Jain, Lehigh University, USA

**(PACRIM10-SC-P186-2013) Low-loss chalcogenide planar waveguides for mid-infrared applications**

Zhiyong Yang\*, Duk Choi, Pan Ma, Steve Madden, Barry Luther-Davies, Australian National University, Australia

**(PACRIM10-SC-P187-2013) Luminous Silicate Glass Coating Containing Phosphor Fine Particles by Screen Printing Method**

Haruka Nakamura\*, Asana Numai, Sayaka Yanagida, Atsuo Yasumori, Tokyo University of Science, Japan

**(PACRIM10-SC-P188-2013) Photoluminescence Properties of Copper Ion Doped Alkaline-Earth Borosilicate Glasses**

Yuki Funamoto\*, Kota Tohyama, Sayaka Yanagida, Atsuo Yasumori, Tokyo University of Science, Japan

**(PACRIM10-SC-P189-2013) Preparation of Gold Nanoparticles Loading Porous Titania-Glass Composite Film for LSPR Sensor by Screen Printing and Photocatalytic Deposition Methods**

Shohei Tomita\*, Makoto Akagi, Sayaka Yanagida, Atsuo Yasumori, Tokyo University of Science, Japan

**(PACRIM10-SC-P190-2013) Pulsed laser deposited Ge-As-Se amorphous thin films and their photostability**

Petr Nemeč\*, University of Pardubice, Czech Republic; Alain Moreac, Virginie Nazabal, Université de Rennes 1, France

**(PACRIM10-SC-P191-2013) The dependence of photosensitivity on composition for thin films of GexAsySe1-x-y chalcogenide glasses**

Rongping Wang\*, Australian National University, Australia; Xueqiong Su, Beijing University of Technology, China; Zhiyong Yang, Barry Luther-Davies, Australian National University, Australia; Li Wang, Beijing University of Technology, China

**(PACRIM10-SC-P192-2013) Upconversion and downconversion luminescence in Tb<sup>3+</sup>, Tm<sup>3+</sup> and Yb<sup>3+</sup> co-doped oxyfluoride glass and glass-ceramics**

Zhengda Pan\*, Richard Akrobetu, Richard Mu, Steven Morgan, Fisk University, USA

**(PACRIM10-SD-P193-2013) Vibrational Properties of Chalcogenide Glasses: An ab initio Molecular Dynamics Study**

Ali Kachmar\*, Université Pierre et Marie Curie, France; Mathieu Bauchy, Massachusetts Institute of Technology, USA; Matthieu Micoulaut, Université Pierre et Marie Curie, France