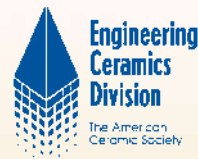




# MEETING GUIDE

33<sup>RD</sup> INTERNATIONAL CONFERENCE AND EXPOSITION ON  
**ADVANCED CERAMICS AND  
COMPOSITES**

January 18-23, 2009  
Hilton Daytona Beach Resort & Ocean Center  
Daytona Beach, Florida, USA  
[www.ceramics.org/daytona2009](http://www.ceramics.org/daytona2009)



Organized by The American Ceramic Society and The American Ceramic Society's Engineering Ceramics Division

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## MEETING REGULATIONS

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**Registration Requirements:** Attendance at any meeting of the Society shall be limited to duly registered persons.

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# Welcome

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Hello and welcome to the 33rd International Conference on Advanced Ceramics and Composites (ICACC).

In 1977, The American Ceramic Society's Ceramic-Metal Systems Division held its 1st Annual Conference on Composites and Advanced Materials in Cocoa Beach, Florida with 21 in attendance. In 1985, the Ceramic-Metal Division changed its name to the current Engineering Ceramics Division. While the meeting underwent a quite a few name changes throughout its history, one thing had remained constant – the meeting location in Cocoa Beach. Thus, most people referred to the meeting as simply “The Cocoa Beach Meeting.”

Things changed in 2007, however, as “The Cocoa Beach Meeting” moved up the coast to Daytona Beach to accommodate the growth of this popular meeting. And while the meeting location has changed, the meeting's purpose remains constant – to provide a high quality technical program with the latest information on advanced ceramics and composites and to provide the best possible venue for networking opportunities. We think that you will find that this year's program consisting of eleven symposia and four focused sessions will be synergistic and beneficial to your own work. We are excited to have symposia co-organized with the Electronics Division and the Nuclear & Environmental Technology Division. There are many cross cutting interests and complementary R&D programs among divisions, and we believe this joint programming will provide a stimulating experience for you.

Several special activities have been planned in addition to the outstanding technical program. The Engineering Ceramics Division invites you to participate in these special conference activities. On Sunday, conference attendees can network from 5 PM to 7 PM in the Oceanview Room and Terrace at the Hilton for the Welcome Reception. The Plenary and Award Session is a highlight of the conference and will take place starting at 8:30 AM on Monday morning. The concurrent Expo and Poster Sessions occur Tuesday and Wednesday evenings in the Ocean Center across the street from the Hilton.

The Engineering Ceramics Division and Executive Committee, in addition to The American Ceramic Society thank you for contributing to this year's conference. We hope you have a memorable experience in Daytona Beach.

Jonathan Salem  
2009 ICACC Program Chair  
& ECD Chair-Elect  
NASA Glenn Research Center



## ACerS Division Leadership

### Engineering Ceramics Division Leadership

**Trustee:**

Mrityunjay Singh

**Chair:**

Andy Wereszczak

**Chair Elect/2009 Technical Program Chair:**

Jonathan Salem

**Vice Chair/Treasurer**

Tatsuki Ohji

**Secretary:**

Dileep Singh

**Past Chair:**

Dongming Zhu

# Schedule At A Glance

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## **Sunday, January 18, 2009**

	<b>Time</b>	<b>Room</b>
Conference Registration	2 PM – 7 PM	Hilton – Coquina Foyer
Speaker Ready Room	2 PM – 7 PM	Hilton – Manatee
Welcome Reception	5 PM – 7 PM	Hilton – Oceanview Room and Oceanview Terrace

## **Monday, January 19, 2009**

Conference Registration and Member and Publication Center	7 AM – 6 PM	Hilton – Coquina Foyer
Speaker Ready Room	8 AM – 4 PM	Hilton – Manatee
Companion Coffee	8 AM – 9:30 AM	Hilton – Oceanview Room
Opening Awards Ceremony & Plenary Session	8:30 AM – 12 PM	Hilton – Coquina D and E
Companion Tour to Beach Street	9:30 AM – 3:15 PM	Hilton – Hotel Lobby North
New Member Welcome Meeting	12 PM – 12:30 PM	Hilton – Coquina A
Lunch On Own	12 PM – 1:20 PM	
Concurrent Technical Sessions	1:20 PM – 6 PM	Hilton
ACerS Town Hall Meeting	6 PM – 7 PM	Hilton – Coquina F
Student Networking Reception	7 PM – 9 PM	Hilton – Oceanview Room and Oceanview Terrace

## **Tuesday, January 20, 2009**

Conference Registration and Member and Publication Center	7 AM – 6 PM	Hilton – Coquina Foyer
Speaker Ready Room	8 AM – 4 PM	Hilton - Manatee
Concurrent Technical Sessions	8 AM – 12 PM	Hilton
Companion Coffee	8 AM – 10 AM	Hilton – Oceanview Room
Exhibitor Move-In	12 PM – 4 PM	Ocean Center
Lunch On Own	12 PM – 1:20 PM	
Concurrent Technical Sessions	1:20 PM – 5:20 PM	Hilton
Poster Session A Move-In	3 PM – 4:30 PM	Ocean Center
Exhibits & Poster Session A – Including Reception	5:30 PM – 8 PM	Ocean Center – Entrance through Seaside Corridor

## **Wednesday, January 21, 2009**

Conference Registration and Member and Publication Center	7:30 AM – 5:30 PM	Hilton – Coquina Foyer
Speaker Ready Room	8 AM – 4 PM	Hilton - Manatee
Concurrent Technical Sessions	8 AM – 12 PM	Hilton
Lunch On Own	12 PM – 1:20 PM	
Concurrent Technical Sessions	1:20 PM – 5:20 PM	Hilton
Poster Session B Move-In	3 PM – 4:30 PM	Ocean Center
Exhibits & Poster Session B – Including Reception	5 PM – 7:30 PM	Ocean Center – Entrance through Seaside Corridor

# Schedule At A Glance

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## **Thursday, January 22, 2009**

Conference Registration	7:30 AM – 6 PM	Hilton – Coquina Foyer
Speaker Ready Room	8 AM – 4 PM	Hilton - Manatee
Concurrent Technical Sessions	8 AM – 12 PM	Hilton
Lunch On Own	12 PM – 1:20 PM	
Concurrent Technical Sessions	1:20 PM – 6 PM	Hilton

## **Friday, January 23, 2009**

Conference Registration	7:30 AM – 12:30 PM	Hilton – Coquina Foyer
Concurrent Technical Sessions	8 AM – 12:30 PM	Hilton

**New In 2009**  
**SHORT COURSE**  
**Thermal Analysis & Thermophysical Properties Measurements**  
**of Ceramic & Refractory Materials\***  
**Sunday, January 18, 2009**  
**8:30 AM to 7:00 PM**  
**Hilton – Coquina G and F**  
**Sponsored by Netzsch Instruments, Inc.**

\*Separate registration fee

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**SCHOTT Shot Glass Contest**  
**Tuesday, January 20 – The Ocean Center**  
**5:30 – 7:30 p.m.**  
**Exhibit Show Floor**

Organized by ACerS President's Council of Student Advisors (PCSA)

Don't miss this new design contest! Teams of three students are given one shot glass and have only 30 drinking straws to protect their shot glasses. The teams have 45 minutes to build their protection devices. Then, the glasses are dropped from varying levels until the breaking threshold is reached.

The glass with the highest successful drop distance wins!

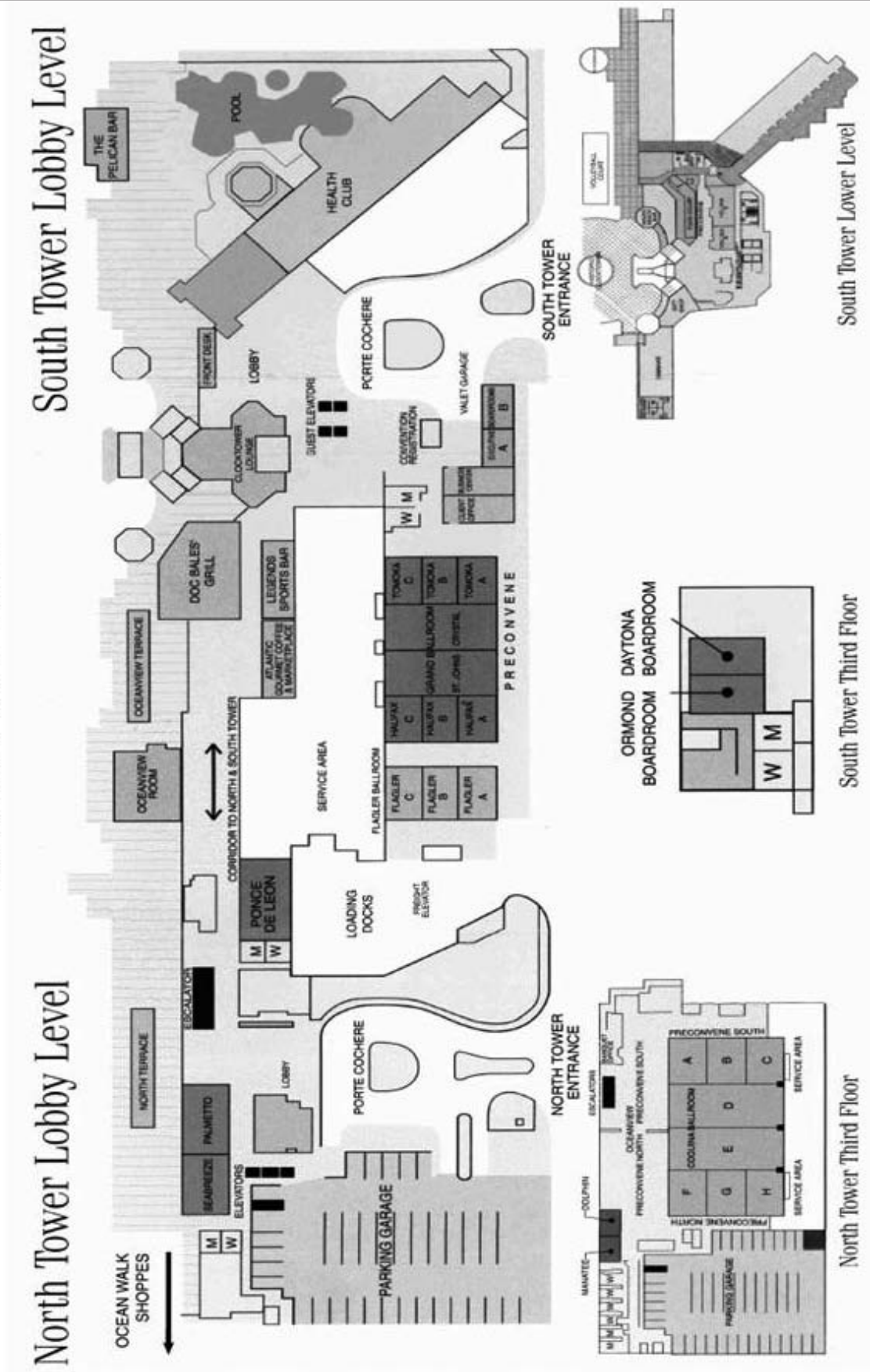
The shot glasses are being provided by SCHOTT North America, Inc. Thank you, SCHOTT!

**SCHOTT**



# Hilton Meeting Room Floor Plan

## Hilton Daytona Beach Oceanfront Resort Floor Plan



# Directions

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## Directions from the Hilton to Ocean Center

To get to the Ocean Center from the Hilton, exit the Hilton through the South Tower Lobby. Turn left on the sidewalk to the crosswalk. Proceed across the street to the Ocean Center entrance.



### **Hilton:**

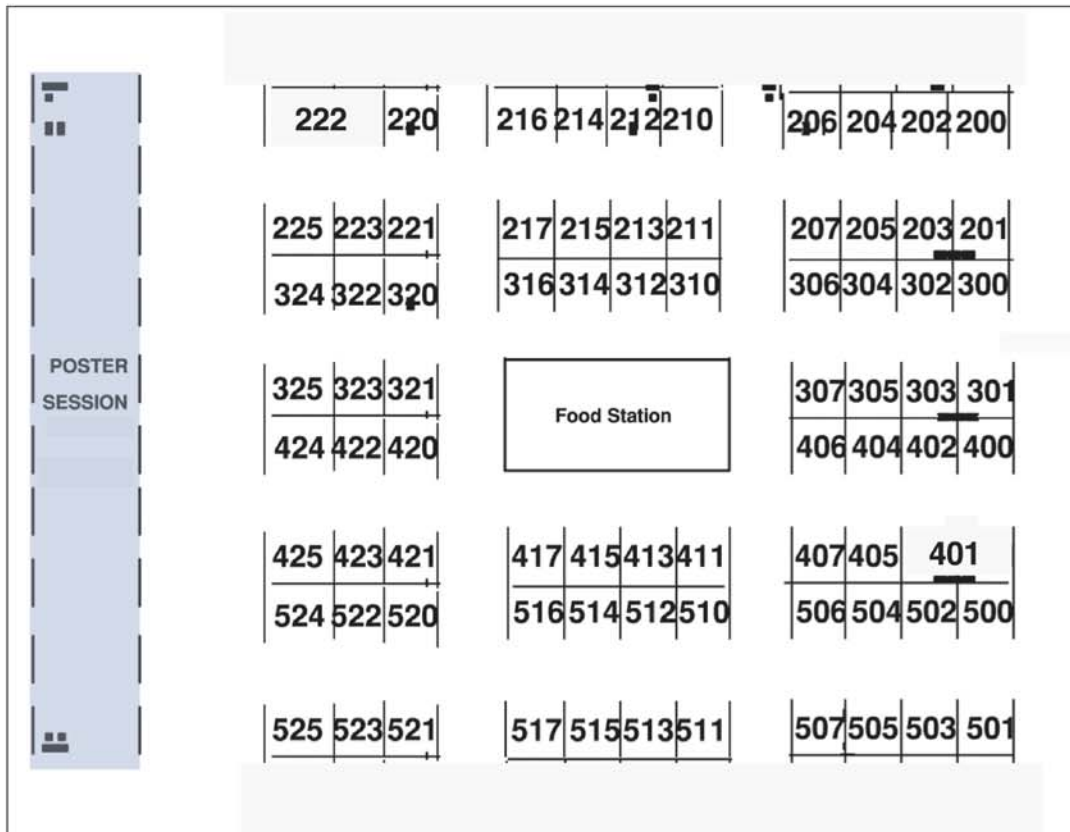
Welcome Reception  
Registration  
Technical Sessions  
Member and Publications  
Center

### **Ocean Center:**

Exhibit & Reception  
Poster Session

**Thank You to US Air Force Office  
of Scientific Research – Technical  
Program Sponsor**

# Expo Floor Plan & Booth Information



## Exhibitors (as of 12/22/08)

Company	Booth#	Company	Booth#	Company	Booth#
Alfred University – NYS College of Ceramics	421	Gasbarre Products	203	PremaTech Advanced Ceramics	310
The American Ceramic Society	222	Harper International	424	Premier Mill, an SPX Brand	201
ACerS President's Council of Student Advisors (PCSA)	225	Harrop Industries Inc.	200	PSC Inc.	325
Anter Corp.	300	H.C. Starck Inc.	323	PTX-Pentronix Div., Gasbarre Products	203
Association of American Ceramic Component Manufacturers (AACCM)	422	HED International	220	Pyromeral Systems	206
AVS Inc.	400	Heinrich Ceramic Decal Inc.	505	Quantachrome Instruments	302
BTU International Inc.	207	IBU-tec Advanced Materials AG	217	RD Webb Co. Inc.	316
Carbolite Inc.	306	KiON Specialty Polymers	404	Setaram	506
Centorr Vacuum Industries	307	Kitco Metals Inc.	520	Sonic Mill	502
Cilas Particle Size	303	LECO Corp	425	Starfire Systems Inc.	301
CM Furnaces	420	Laeis GmbH	415	TEAM by Sacmi	415
Dalian Jinma Scientific & Technical Industries Co.	503	Linseis Inc	411	TevTech LLC	423
Denka Corp.	510	Matrix Enterprises	322	Thermal Technology Inc.	407
Dunhua Zhengxing Abrasive Co. Ltd.	305	McDanel Advanced Ceramic Technologies	413	Thermal Wave Imaging	511
Electro Abrasives Corp.	321	Micromeritics Instruments	500	Thermex-Thermatron	202
Elkem AS	324	Microtrac	524	Trans-Tech/Skyworks	417
ESL ElectroScience	314	Nabertherm	406	Treibacher Industries Inc	211
Evans Analytical Group	405	Netzsch Fine Particles	401	Washington Mills Electro Minerals	312
Fuelcellmaterials.com	516	Netzsch Instruments Inc.	401	Well Diamond Wine Saw Inc.	501
		New Lenox Machine Co. Inc.	205	Wiley-Blackwell	210
		Oxy-Gon Industries Inc.	320	ZIRCAR Ceramics Inc.	304
		Pangea International Ltd.	507	Zircar Zirconia	402
		Powder Processing & Technology	216		



# Plenary Speakers

## 2009 James I. Mueller Award

*Lecture Topic: Thermal Barrier Coatings—A Step in the Quest for Ceramics in Gas Turbines*

9:00 AM



**Dr. Curtis Johnson**  
*General Electric Global Research Center  
USA*

Curtis Johnson joined General Electric in 1973 at its Corporate Research and Development Center (now GE Research) where he has worked on a wide variety of challenges related to the development and application of ceramics. After retiring in 2008, he is currently a part-time consultant with GE. Over the last 35 years, Curt has worked on the development, fabrication, characterization, life prediction and reliability assessment of advanced ceramics and coatings. He helped develop processes for sintering and near-net-shape fabrication of sintered silicon carbide. He helped advance analytical techniques for probabilistic strength and failure prediction of brittle materials. Curt's recent research interests include thermal barrier coatings and environmental barrier coatings with emphasis on fabrication-microstructure-property-performance relationships. During his tenure at GE, Curt has been recognized with three GE Dushman Awards on sintered SiC, face-pumped lasers, and thermal barrier coatings. Recently, he was awarded the Distinguished Career Award from the Hudson-Mohawk Section of TMS. He has authored or co-authored over 25 publications and holds 35 issued United States patents.

## 2009 Bridge Building Award

*Lecture Topic: Research and Development Activities in Advanced Ceramics in China - Current Status and Future Prospects*

9:40 AM



**Prof. Dongliang Jiang**  
*Shanghai Institute of Ceramics  
China*

Professor Dongliang Jiang is Academician, Chinese Academy of Engineering from Shanghai Institute of Ceramics, Shanghai, China. He graduated from Nanjing University of Technology (formerly Nanjing Institute of Chemistry and Technology) in 1960. He was Deputy Director of Shanghai Institute of Ceramics, Chinese Academy of Sciences during 1991-1995. He also worked as Visiting Researcher in the Dept. of Materials Sciences and Engineering, University of Michigan.

He has made numerous contributions to the development of a number of advanced ceramics and composites such as translucent fine grain structure alumina, alumina based cermets, high-purity alumina cements, high strength SiC-based ceramics and composites, and SiC/Si<sub>3</sub>N<sub>4</sub> graded and laminated composite materials. He has also developed aqueous tape casting and aqueous gel-casting based processing technologies. His current interests also include biomaterials, transparent ceramics, and nano-composites.

Professor Jiang has devoted his life to fostering cooperation among international ceramic societies and promoting the development of ceramic science and technology. He has served and continues to serve on the International Advisory Board of many conferences and journals all over the world. He has served as Vice president of Chinese Material Research Society for more than 8 years. He has published more than 250 papers, 3 books and holds 18 patents. He has received ten major awards and was elected as Academician of World Academy of Ceramics, Italy in 1993.

## Plenary Speaker

*Lecture Topic: Microstructural Evolution in Ceramics by Structural Transition at Interfaces*

10:40 AM



**Suk Joong L. Kang**  
*KAIST  
South Korea*

Suk-Joong L. Kang is a professor in the Department of Materials Science and Engineering and the director of the Center for NanoInterface Technology at Korea Advanced Institute of Science and Technology (KAIST). He is the recipient of several awards, including an academic award from the Korean Institute of Metals and Materials and the Incheon Prize from the Incheon Memorial Foundation. Prof. Kang's current research interest focuses on sintering and related phenomena, including grain growth and interface migration, in perovskites (BaTiO<sub>3</sub>, SrTiO<sub>3</sub>, NBT-BT, KNN) and Cemented Carbides. Microstructural evolution by structural transition and defect formation at interfaces is of particular interest to Prof. Kang. He has published more than 200 papers and seven books (with six editorships). He also holds 12 patents. Prof. Kang is currently a fellow of The American Ceramic Society, and a member of the World Academy of Ceramics, the Korean Academy of Science and Technology and the National Academy of Engineering in Korea.

## Plenary Speaker

*Lecture Topic: Piezoelectric Composite Materials and Structures*

11:20 AM



**Dr. Andreas Schoenecker**  
*IKTS Fraunhofer  
Germany*

Dr. Andreas J. Schönecker heads the Functional Ceramics Department at the Fraunhofer Institute of Ceramic Technologies and Systems (IKTS) Dresden, Germany, which is a research and development organization specializing in engineering and functional ceramics and their application in customized systems. Dr. Schönecker studied Physics at the Technical University of Dresden, Germany, and received his Ph.D. in Solid State Physics from here in 1976. In 1975 he joined the Institute of Solid State Physics and Materials Science Jena, working as senior researcher in electronic materials and ceramics. A part of Fraunhofer IKTS since its inception (1990), Dr. Schönecker heads the development of smart materials and systems for the client companies that contract the Organization's service. Dr. Schönecker is the author or co-author of about 85 technical papers and filed 65 patents. Currently he is also member of the advisory board of Smart Material Corp., Fl.

# Technical Sessions By Symposium

Session Title	Day	Time	Location
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## ***Symposium 1: Mechanical Behavior and Performance of Ceramics and Composites***

Processing-Microstructure-Mechanical Properties Correlations: I	Monday, January 19	1:20 – 6 PM	Coquina A
Ternary Compounds and MAX Phases	Tuesday, January 20	8 AM- 12 PM	Coquina A
Fracture of Ceramics and Composites – Modeling and Testing	Tuesday, January 20	1:20 – 5:20 PM	Coquina A
Ultra High Temperature Ceramics – Processing	Wednesday, January 21	8 – 11:20 AM	Coquina A
Processing-Microstructure-Mechanical Properties Correlations: II	Wednesday, January 21	1:20 – 5 PM	Coquina A
Ultra High Temperature Ceramics – Characterization	Thursday, January 22	8 – 11:20 AM	Coquina D
Nondestructive Evaluation	Thursday, January 22	8 – 11 AM	Coquina A
Ultra High Temperature Ceramics – Oxidation Behavior	Thursday, January 22	1:20 – 4 PM	Coquina A
Environmental Effects on Mechanical Properties	Thursday, January 22	4 – 6:20 PM	Coquina A
Design and Life Prediction Methodologies	Friday, January 23	8 – 10:40 AM	Coquina A
Tribological Behavior of Ceramics and Composites	Friday, January 23	10:40 AM – 12:40 PM	Coquina A

## ***Symposium 2: Advanced Ceramic Coatings for Structural, Environmental, and Functional Applications***

Coatings to Resist Wear, Erosion and Tribological Loadings	Monday, January 19	1:20 – 6 PM	Coquina H
Thermal Barrier Coatings I	Tuesday, January 20	8 AM – 12 PM	Coquina H
Thermal Barrier Coatings II	Tuesday, January 20	1:20 – 3:20 PM	Coquina H
Thermal Barrier and Abradable Coatings	Tuesday, January 20	3:20 – 6 PM	Coquina H
Advanced Coating Processing	Wednesday, January 21	8 – 10 AM	Coquina H
Damping Coatings	Wednesday, January 21	10 AM – 12 PM	Coquina H
Advanced Testing Methods and Nondestructive Evaluation	Wednesday, January 21	1:20 – 3:20 PM	Coquina H
Environmental Barrier Coatings	Wednesday, January 21	3:20 – 6 PM	Coquina H
Environmental Barrier and Nanofunctional Coatings	Thursday, January 22	8 AM – 12 PM	Coquina H

# Technical Sessions By Symposium

Session Title	Day	Time	Location
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## ***Symposium 3: 6th International Symposium on Solid Oxide Fuel Cells (SOFC): Materials, Science and Technology***

Cell and Stack Development	Monday, January 19	1:20 – 6 PM	Coquina E
Electrochemical Performance/Stability of Cells and Stacks	Tuesday, January 20	8 AM – 12 PM	Coquina E
Electrodes I	Tuesday, January 20	1:20 – 5:20 PM	Coquina E
Electrodes II	Wednesday, January 21	8 AM – 12 PM	Coquina E
Seals	Wednesday, January 21	1:20 – 5:20 PM	Coquina E
Interconnects/Fuel Reforming	Thursday, January 22	8 AM – 12 PM	Coquina E
Novel Processing/Reliability and Degradation	Thursday, January 22	1:20 – 6 PM	Coquina E
Oxide Ion, Proton and Mixed Conductors	Friday, January 23	8 AM – 12:20 PM	Coquina E

## ***Symposium 4: Armor Ceramics***

Impact, Penetration and Material Modeling	Tuesday, January 20	8 AM – 12 PM	Coquina D
Material Concepts, Processes and Characterization	Tuesday, January 20	1:20 – 5:20 PM	Coquina D
Application of NDE	Wednesday, January 21	8 – 10 AM	Coquina D
Manufacturing Challenges	Wednesday, January 21	10 – 11 AM	Coquina D
Dynamic Behavior	Wednesday, January 21	11 AM – 12 PM	Coquina D
Transparent Armor	Wednesday, January 21	1:20 – 5:20 PM	Coquina D

## ***Symposium 5: Next-Generation Bioceramics***

Medical Applications of Bioceramics	Monday, January 19	1:20 – 5:40 PM	Coquina G
In-Vitro and In-Vivo Characterization of Bioceramics	Tuesday, January 20	8 AM – 12 PM	Coquina G
Nanostructured Bioceramics (joint with Symposium 7)	Tuesday, January 20	1:20 – 5:20 PM	Coquina G
Porous Bioceramics (joint with Symposium 9)	Wednesday, January 21	8 AM – 12 PM	Coquina F
Advanced Processing of Bioceramics	Wednesday, January 21	1:20 – 5:20 PM	Coquina G

# Technical Sessions By Symposium

Session Title	Day	Time	Location
<b>Symposium 6: Key Materials and Technologies for Efficient Direct Thermal-to-Electrical Conversion</b>			
Symposium 6 Plenary Session	Thursday, January 22	8 – 9 AM	Coquina G
Material Synthesis and Processing Procedures	Thursday, January 22	9 – 10 AM	Coquina G
Nanostructured Materials	Thursday, January 22	10 AM – 12 PM	Coquina G
Structure-Composition and Property Relationship	Thursday, January 22	2 – 4 PM	Coquina G
Thermoelectric Power Generation	Thursday, January 22	4 – 5:20 PM	Coquina G
<b>Symposium 7: 3rd International Symposium on Nanostructured Materials and Nanocomposites: Held in Honor of Professor Koichi Niihara</b>			
Recent Advances in Nanocomposites and Nanostructures I	Tuesday, January 20	8 AM – 12 PM	Coquina C
Nanostructured Bioceramics (joint session with Symposium 5)	Tuesday, January 20	1:20 – 5:20 PM	Coquina G
Recent Advances in Nanocomposites and Nanostructures II	Tuesday, January 20	1:20 – 3:20 PM	Coquina C
Nanostructured Membranes, Films, Coatings and Nanoporous Materials	Tuesday, January 20	3:20 – 5:20 PM	Coquina C
Nanowires: Growth and Device Applications	Wednesday, January 21	8 AM – 12 PM	Coquina C
Synthesis, Processing and Assembly of Nanostructures I	Wednesday, January 21	1:20 – 3:20 PM	Coquina C
Synthesis, Processing and Assembly of Nanostructures II	Wednesday, January 21	3:20 – 5:20 PM	Coquina C
Synthesis, Processing and Assembly of Nanostructures III	Thursday, January 22	8 – 10 AM	Coquina C
Bioactive Materials	Thursday, January 22	10 AM – 12 PM	Coquina C
Nanomaterials for Energy Applications	Thursday, January 22	1:20 – 3:20 PM	Coquina C
Nanomaterials: New Compositions and Architectures I	Thursday, January 22	3:20 – 5:20 PM	Coquina C
Nanomaterials: New Compositions and Architectures II	Friday, January 23	8 – 11:20 AM	Coquina C
<b>Symposium 8: 3rd International Symposium on Advanced Processing and Manufacturing Technologies for Structural and Multifunctional Materials and Systems (APMT)</b>			
Microwave-Processing and SPS	Monday, January 19	1:20 – 5:20 PM	Coquina B
Advanced Forming and Sintering	Tuesday, January 20	8 AM – 12 PM	Coquina B
Coating, Joining and Machining	Tuesday, January 20	1:20 – 5 PM	Coquina B
Smart Processing	Wednesday, January 21	8 AM – 12 PM	Coquina B
Composite Manufacturing	Wednesday, January 21	1:20 – 4:40 PM	Coquina B
Binder and Suspension Technologies	Thursday, January 22	8 – 11:20 AM	Coquina B



# Technical Sessions By Symposium

Session Title	Day	Time	Location
<b>Symposium 9: Porous Ceramics: Novel Developments and Applications</b>			
Processing Methods for Porous Ceramics I	Monday, January 19	1:20 – 3:20 PM	Coquina F
Processing Methods for Porous Ceramics II	Monday, January 19	3:20 – 5:20 PM	Coquina F
Structure and Properties of Porous Ceramics I	Tuesday, January 20	8 – 10 AM	Coquina F
Structure and Properties of Porous Ceramics II	Tuesday, January 20	10 AM – 12 PM	Coquina F
Structure and Properties of Porous Ceramics III	Tuesday, January 20	1:20 – 3:20 PM	Coquina F
Applications of Porous Ceramics I	Tuesday, January 20	3:20 – 5:20 PM	Coquina F
Porous Bioceramics (joint session with Symposium 5)	Wednesday, January 21	8 AM – 12 PM	Coquina F
Applications of Porous Ceramics II	Wednesday, January 21	1:20 – 3:20 PM	Coquina F
Applications of Porous Ceramics III	Wednesday, January 21	3:20 – 5:20 PM	Coquina F
<b>Symposium 10: International Symposium on Silicon Carbide and Carbon-Based Materials for Fusion and Advanced Nuclear Energy Applications</b>			
Fusion Energy Programs and Applications	Monday, January 19	1:20 – 6 PM	Crystal Ballroom*
Fission Energy Programs and Applications	Tuesday, January 20	8 – 10 AM	Crystal Ballroom*
Heat Exchangers and Joining for Nuclear Application	Tuesday, January 20	10 AM – 12 PM	Crystal Ballroom*
Irradiation Effect and Microstructural Characterization	Tuesday, January 20	1:20 – 3:20 PM	Crystal Ballroom*
Design Codes and Standards	Tuesday, January 20	3:20 – 5:20 PM	Crystal Ballroom*
Composite Design and Properties	Wednesday, January 21	8 AM – 12 PM	Crystal Ballroom*
Ceramics for Fuel Coating and Matrix	Wednesday, January 21	1:20 – 5:20 PM	Crystal Ballroom*
Emerging Materials and Novel Processing	Thursday, January 22	8 – 10 AM	Crystal Ballroom*
			*South Tower
<b>Symposium 11: Symposium on Advanced Dielectric, Piezoelectric, Ferroelectric, and Multiferroic Materials</b>			
Electromechanical Phenomena of Piezoelectric Composites, Actuators, Sensors and Motors	Monday, January 19	1:20 – 4:20 PM	Tomoka A&B*
Lead Free Piezoelectrics	Tuesday, January 20	8 – 11 AM	Tomoka A&B*
Integrated Multilayers and Interface Structures	Tuesday, January 20	1:20 – 4:20 PM	Tomoka A&B*
Microwave Dielectrics, Metamaterials and Frequency Tunable Devices	Wednesday, January 21	8 – 11 AM	Tomoka A&B*
Nanoscale Phenomena in Dielectric, Ferroelectric and Piezoelectric Materials	Wednesday, January 21	1:20 – 3:40 PM	Tomoka A&B*
Perovskite Dielectric, Mott Insulators, Ferroelectric, and Piezoelectric Materials	Thursday, January 22	8 – 11:20 AM	Tomoka A&B*
Novel Properties, Such as Flexoelectric Effect	Thursday, January 22	1:20 – 4 PM	Tomoka A&B*
Multiferroic Oxides, Hetrostructures, and Thin Films	Friday, January 23	8 – 9:40 AM	Tomoka A&B*
			*South Tower

# Technical Sessions By Symposium

Session Title	Day	Time	Location
<b><i>Focused Session 1: Geopolymers and other Inorganic Polymers</i></b>			
Synthesis and Processing	Thursday, January 22	8 – 10 AM	Coquina F
Microstructure	Thursday, January 22	10 – 11:20 AM	Coquina F
Properties	Thursday, January 22	11:20 AM – 12 PM	Coquina F
Inorganic Analogues of Geopolymers	Thursday, January 22	1:20 – 3:40 PM	Coquina F
Novel Applications	Thursday, January 22	3:40 – 5 PM	Coquina F
Composites	Thursday, January 22	5 – 6 PM	Coquina F
Waste Encapsulation	Friday, January 23	8 – 9 AM	Coquina F
Construction Materials	Friday, January 23	9 – 10 AM	Coquina F
<b><i>Focused Session 2: Materials for Solid-State Lighting</i></b>			
Materials for Solid-State Lighting	Thursday, January 22	1:20 – 2:40 PM	Coquina H
<b><i>Focused Session 3: Advanced Sensor Technology for High-Temperature Applications</i></b>			
Advanced Sensor Technology I	Thursday, January 22	1:20 – 6:20 PM	Coquina B
Advanced Sensor Technology II	Friday, January 23	8 AM – 12:20 PM	Coquina B
<b><i>Focused Session 4: Processing and Properties of Nuclear Fuels and Wastes</i></b>			
Strategies for Management of Nuclear Waste	Monday, January 19	1:20 – 3:20 PM	Coquina C
Ceramic Processing for Advanced Nuclear Applications	Monday, January 19	3:20 – 6:20 PM	Coquina C

# Symposia

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## 2009 Program Chair: Jonathan Salem, NASA Glenn Research Center, Oak Ridge National Laboratory

### Symposium 1

#### **Mechanical Behavior and Performance of Ceramics and Composites:**

**Organizers:** Dileep Singh, Argonne National Laboratory, USA; Monica Ferraris, Politecnico di Torino, Italy; Julián Martínez Fernández, University of Seville, Spain; Edwin Fuller, National Institute of Standards and Technology, USA; Greg Hilmas, Missouri University of Science & Technology, USA; Osama Jadaan, University of Wisconsin-Platteville, USA; Yutai Katoh, Oak Ridge National Laboratory, USA; Walter Krenkel, University of Bayreuth, Germany; Jacques Lamon, University of Bordeaux, France; Edgar Lara-Curzio, Oak Ridge National Laboratory, USA; Jonathan Salem, NASA Glenn Research Center, USA; J. G. Sun, Argonne National Laboratory, USA; James Webb, Corning Incorporated, USA; Y. C. Zhou, Chinese Academy of Sciences, China

### Symposium 2

#### **Advanced Ceramic Coatings for Structural, Environmental, and Functional Applications**

**Organizers:** Dongming Zhu, NASA Glenn Research Center, USA; H.T. Lin, Oak Ridge National Laboratory, USA; Uwe Schulz, German Aerospace Center, Germany; Yutaka Kagawa, University of Tokyo, Japan; Rodney W. Trice, Purdue University, USA; Irene T. Spitsberg, Kennametal Incorporated, USA; Robert Vaßen, Forschungszentrum Jülich GmbH, Germany; Yong-Ho Sohn, University of Central Florida, USA; Anette M. Karlsson, University of Delaware, USA; Sophoclis Patsias, Rolls-Royce PLC, UK; Dileep Singh, Argonne National Laboratory, USA; Ping Xiao, University of Manchester, UK

### Symposium 3

#### **6th International Symposium on Solid Oxide Fuel Cells (SOFC): Materials, Science, and Technology**

**Organizers:** Prabhakar Singh, Pacific Northwest National Laboratory, USA; Narottam P. Bansal, NASA Glenn Research Center, USA; Tatsumi Ishihara, Kyushu University, Japan; Tatsuya Kawada, Tohoku University, Japan; Nguyen Q. Minh, GE Power Systems, USA; Mogens Mogensen, Risoe National Laboratory, Denmark; Nigel M. Sammes, University of Connecticut, USA; Robert Steinberger-Wilckens, Forschungszentrum-Jülich GmbH, Germany; Jeffrey W. Stevenson, Pacific Northwest National Laboratory, USA; Ellen Sun, United Technology Research Center, USA; Eric D. Wachsman, University of Florida, USA

### Symposium 4

#### **Armor Ceramics**

**Organizers:** Jeffrey J. Swab, US Army Research Laboratory, USA; Lisa Prokurat Franks, US Army TARDEC, USA; Jerry LaSalvia, US Army Research Laboratory, USA; Brian Leavy, US Army Research Laboratory, USA; James McCauley, US Army Research Laboratory, USA; David Stepp, US Army Research Office, USA; Andrew Wereszczak, Oak Ridge National Laboratory, USA

### Symposium 5

#### **Next Generation Bioceramics**

**Organizers:** Roger Narayan, University of North Carolina-Chapel Hill, USA; Karin Hing, University of London, UK; Sachin Mamidwar, Orthogen, USA; Bikramjit Basu, Indian Institute of Technology, India

### Symposium 6

#### **Key Materials and Technologies for Efficient Direct Thermal-to-Electrical Conversion**

**Organizers:** Anke Weidenkaff, EMPA, Switzerland; Ryoji Funahashi, AIST, Japan; Kunihito Koumoto, Nagoya University, Japan; H.T. Lin, Oak Ridge National Laboratory, USA; Terry Tritt, Clemson University, USA; Antoine Maignan, Laboratoire CRISMAT, France; Qiang Li, Brookhaven National Laboratory, USA; Li Dong Chen, Shanghai Institute of Ceramics, China

## **Symposium 7**

### **3rd International Symposium on Nanostructured Materials and Nanocomposites: in Honor of Professor Koichi Niihara**

**Organizers:** Sanjay Mathur, University of Wuerzburg & Leibniz-Institut für Neue Materialien, Saarland University, Germany; Mrityunjay Singh, Ohio Aerospace Institute, NASA Glenn Research Center, USA; Lionel Vayssieres, National Institute of Materials Science, Japan; Masasuke Takata, Nagaoka University of Technology, Japan; Tohru Sekino, Tohoku University, Japan; Donglin Jiang, Shanghai Institute of Ceramics, China; Kwang-Bo Shim, Hanyang University, Korea; Albert Romano-Rodriguez, University of Barcelona, Spain; Michael Carpenter, University at Albany-SUNY, USA; Hae-Weon Lee, Korea Institute of Science & Technology, Korea; Jing-Feng Li, Tsinghua University, China

## **Symposium 8**

### **3rd International Symposium on Advanced Processing and Manufacturing Technologies (APMT) for Structural and Multifunctional Materials and Systems**

**Organizers:** Tatsuki Ohji, AIST, Japan; Mrityunjay Singh, Ohio Aerospace Institute, NASA Glenn Research Center, USA; Takashi Goto, Tohoku University, Japan; Soshu Kiriwara, Osaka University, Japan; Tomaz Kosmac, Josef Stefan Institute, Slovenia; Walter Krenkel, University of Bayreuth, Germany; Richard D. Sisson, Jr., Worcester Polytechnic Institute, USA; Koji Watari, AIST, Japan

## **Symposium 9**

### **Porous Ceramics: Novel Developments and Applications**

**Organizers:** Paolo Colombo, Università di Padova, Italy; Sujanto Widjaja, Corning Incorporated, USA; Manuel Brito, AIST, Japan; Yury Gogotsi, Drexel University, USA; Aleksander J. Pyzik, The Dow Chemical Company, USA; Michael Scheffler, Brandenburgische Technische Universität Cottbus, Germany

## **Symposium 10**

### **International Symposium on Silicon Carbide and Carbon-Based Materials for Fusion and Advanced Nuclear Energy Applications**

**Organizers:** Yutai Katoh, Oak Ridge National Laboratory, USA; Hans Hegeman, NRG Petten, The Netherlands; Akira Kohyama, Kyoto University, Japan; William Windes, Idaho National Laboratory, USA; Jacques Lamon, University of Bordeaux, France; Kazuhiro Sawa, Japan Atomic Energy Agency, Japan; Lance Snead, Oak Ridge National Laboratory, USA; Charles Henager, Pacific Northwest National Laboratory, USA

## **Symposium 11**

### **Symposium on Advanced Dielectric, Piezoelectric, Ferroelectric, and Multiferroic Materials**

**Organizers:** Shashank Priya, Virginia Tech, USA; Dwight Viehland, Virginia Tech, USA; Paul Clem, Sandia National Laboratories, USA; Sahn Nahm, Korea University, Korea; Pam A. Thomas, University of Warwick, UK; Clive Randall, The Pennsylvania State University, USA

### **Focused Session 1 – Geopolymers and Other Inorganic Polymers**

**Organizer:** Waltraud M. Kriven, University of Illinois at Urbana-Champaign, USA

### **Focused Session 2 – Materials for Solid State Lighting**

**Organizer:** David P. Norton, University of Florida, USA

### **Focused Session 3 – Advanced Sensor Technology for High-Temperature Applications**

**Organizers:** Linan An, University of Central Florida, USA; Qing-Ming Wang, University of Pittsburgh, USA

### **Focused Session 4 – Processing and Properties of Nuclear Fuels and Wastes**

**Organizers:** Alex D. Cozzi, Savannah River National Laboratory, USA; Kevin M. Fox, Savannah River National Laboratory, USA



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Mack, D.E.	20-Jan	2:40PM	Coquina H	31	Park, D.	22-Jan	10:00AM	Coquina H	49
MacKenzie, K.J.	22-Jan	8:00AM	Coquina F	52	Park, H.	20-Jan	4:20PM	Coquina F	34
Maiorano, D.W.	20-Jan	2:00PM	Coquina D	32	Parthasarathy, T.A.	22-Jan	1:20PM	Coquina A	52
Maitra, S.	20-Jan	11:00AM	Coquina G	28	Patterson, T.	20-Jan	5:40PM	Coquina H	31
Maley, S.M.	22-Jan	1:20PM	Coquina B	56	Peyratout, C.S.	20-Jan	10:00AM	Coquina F	29
Malzbender, J.	22-Jan	4:00PM	Coquina E	53	Peyratout, C.S.	22-Jan	10:20AM	Coquina H	49
Manzoor, U.	23-Jan	11:40AM	Coquina C	58	Pickenheim, B.	19-Jan	5:00PM	Coquina C	25
Marra, J.	19-Jan	1:20PM	Coquina C	25	Plucknett, K.P.	20-Jan	10:20AM	Coquina B	28
Martinez-Fernandez, J.	21-Jan	11:20AM	Coquina F	39	Plucknett, K.P.	20-Jan	9:00AM	Coquina F	29
Martinez-Fernandez, J.	21-Jan	2:00PM	Coquina A	41	Popescu Pogriion, N.	21-Jan	4:20PM	Coquina A	41
Martinez-Fernandez, J.	22-Jan	9:20AM	Coquina D	49	Portune, A.	21-Jan	8:40AM	Coquina D	38
Masuda, Y.	21-Jan	3:20PM	Coquina C	44	Pramanick, A.	22-Jan	10:00AM	Tomoka A&B	52
Mathur, S.	23-Jan	10:00AM	Coquina C	58	Prewitt, A.D.	22-Jan	8:40AM	Tomoka A&B	52
Mawdsley, J.	22-Jan	4:20PM	Coquina E	53					



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Prochazka, J.	22-Jan	2:20PM	Coquina C	54	Sglavo, V.M.	19-Jan	2:40PM	Coquina E	22
Prud'homme, E.	22-Jan	4:40PM	Coquina F	55	Sglavo, V.M.	22-Jan	5:40PM	Coquina E	54
<b>Q</b>					Shabalin, I.L.	20-Jan	11:20AM	Coquina A	26
Quinn, G.D.	20-Jan	1:20PM	Coquina A	30	Shah, M.	21-Jan	10:40AM	Coquina E	38
<b>R</b>					Shanti, N.O.	19-Jan	2:00PM	Coquina F	23
Rahaman, M.N.	20-Jan	9:00AM	Coquina G	27	Sharafat, S.	19-Jan	5:00PM	Crystal Ballroom	24
Rahier, H.	22-Jan	8:40AM	Coquina F	52	Sharafat, S.	19-Jan	5:20PM	Crystal Ballroom	24
Raj, R.	20-Jan	10:00AM	Coquina C	28	Shen, H.	23-Jan	8:40AM	Coquina C	57
Raj, R.	22-Jan	2:40PM	Coquina F	55	Sherman, D.-.	20-Jan	11:40AM	Coquina D	27
Raszewski, F.C.	19-Jan	5:20PM	Coquina C	25	Shinavski, R.J.	19-Jan	4:40PM	Crystal Ballroom	24
Reaney, I.	19-Jan	2:20PM	Tomoka A&B	24	Shinavski, R.J.	21-Jan	10:00AM	Crystal Ballroom	40
Reaney, I.	21-Jan	11:40AM	Coquina F	39	Shinoda, K.	20-Jan	3:20PM	Coquina H	31
Redfern, S.	19-Jan	3:20PM	Coquina C	25	Shockey, D.	20-Jan	8:40AM	Coquina D	27
Redfern, S.	22-Jan	1:20PM	Tomoka A&B	55	Shvarzman, A.	23-Jan	8:40AM	Coquina F	58
Refke, A.	21-Jan	8:00AM	Coquina H	37	Shyam, A.	21-Jan	4:00PM	Coquina F	45
Reid, D.	21-Jan	4:40PM	Coquina C	44	Sillassen, M.B.	23-Jan	9:00AM	Coquina E	57
Ren, F.	21-Jan	11:00AM	Coquina F	39	Silvestroni, L.	21-Jan	10:00AM	Coquina A	37
Rey, C.C.	21-Jan	3:40PM	Coquina G	43	Sinclair, D.	22-Jan	3:40PM	Tomoka A&B	55
Richardson, P.D.	19-Jan	4:40PM	Coquina C	25	Singh, C.	21-Jan	11:40AM	Coquina E	38
Robert, R.	22-Jan	10:00AM	Coquina G	50	Singh, M.	20-Jan	2:40PM	Coquina B	33
Roedel, J.	20-Jan	8:00AM	Tomoka A&B	30	Singh, V.	21-Jan	9:20AM	Coquina H	38
Roedel, J.	21-Jan	4:40PM	Coquina A	41	Singh, V.	22-Jan	9:00AM	Coquina H	49
Rosei, F.	21-Jan	2:20PM	Coquina G	43	Sisson, R.D.	20-Jan	8:40AM	Coquina B	28
Rossetti, G.A.	21-Jan	1:20PM	Tomoka A&B	46	Sivakumar, R.	21-Jan	5:40PM	Coquina H	42
Rowe, D.M.	22-Jan	3:40PM	Coquina G	54	Smeacetto, F.	21-Jan	2:00PM	Coquina E	42
Ruggles-Wrenn, M.	22-Jan	4:40PM	Coquina A	53	Smith, C.E.	22-Jan	8:20AM	Coquina A	48
Ruggles-Wrenn, M.	22-Jan	5:00PM	Coquina A	53	Smith, J.A.	23-Jan	9:20AM	Coquina A	56
Runyon, B.	21-Jan	10:40AM	Coquina H	38	Smith, R.L.	20-Jan	2:20PM	Coquina A	30
Ryan, J.V.	19-Jan	5:40PM	Coquina C	25	Snead, L.	20-Jan	9:20AM	Crystal Ballroom	29
<b>S</b>					Snead, L.	21-Jan	2:20PM	Crystal Ballroom	45
Sadik, P.	22-Jan	2:20PM	Coquina H	56	Snel, M.	21-Jan	8:40AM	Coquina B	40
Sagoe-Crentsil, K.	22-Jan	11:20AM	Coquina F	52	Sofie, S.W.	20-Jan	10:20AM	Coquina F	29
Saha, G.C.	19-Jan	5:00PM	Coquina H	22	Solomah, A.G.	20-Jan	2:40PM	Coquina G	32
Saiz, E.	21-Jan	2:00PM	Coquina G	43	Song, T.	23-Jan	9:00AM	Coquina F	58
Sajgalik, P.	21-Jan	10:00AM	Coquina C	39	Sopyan, I.	20-Jan	4:40PM	Coquina G	33
Sakulich, A.R.	23-Jan	9:20AM	Coquina F	58	Soraru, G.	19-Jan	4:20PM	Coquina F	24
Samantaray, M.M.	20-Jan	2:20PM	Tomoka A&B	35	Spalding, T.	22-Jan	11:40AM	Coquina H	50
Sammes, N.M.	22-Jan	1:40PM	Coquina E	53	Sporer, D.R.	20-Jan	3:40PM	Coquina H	31
Sammes, N.M.	22-Jan	10:40AM	Coquina E	50	Srivastava, V.K.	21-Jan	4:20PM	Coquina B	44
Sampath, S.	19-Jan	4:40PM	Coquina H	22	Stafford, R.	21-Jan	4:40PM	Coquina F	45
Sampath, S.	23-Jan	10:40AM	Coquina B	58	Stamboulis, A.	20-Jan	4:20PM	Coquina G	32
Sarin, P.	21-Jan	4:00PM	Coquina H	42	Stein, A.	19-Jan	3:20PM	Coquina F	24
Sarin, P.	22-Jan	9:20AM	Coquina A	48	Steinbrech, R.	21-Jan	3:20PM	Coquina A	41
Saruhan-Brings, B.	20-Jan	10:00AM	Coquina H	26	Steinbrech, R.W.	19-Jan	2:00PM	Coquina E	22
Saruhan-Brings, B.	22-Jan	5:00PM	Coquina B	56	Striker, T.M.	23-Jan	10:40AM	Coquina C	58
Sawa, K.	20-Jan	8:40AM	Crystal Ballroom	29	Strong, K.T.	20-Jan	4:20PM	Coquina D	32
Sawan, M.E.	19-Jan	4:00PM	Crystal Ballroom	24	Stutz, E.	23-Jan	8:20AM	Coquina B	58
Schaniel, D.	20-Jan	4:00PM	Coquina C	33	Subhash, G.	22-Jan	8:00AM	Coquina D	49
Scheffler, F.A.	21-Jan	1:20PM	Coquina F	45	Suda, S.	21-Jan	2:40PM	Coquina E	42
Scheffler, M.	20-Jan	4:00PM	Coquina F	34	Suematsu, H.	20-Jan	2:00PM	Coquina C	33
Schilm, J.	21-Jan	1:20PM	Coquina E	42	Sugirua, K.	22-Jan	2:40PM	Coquina G	54
Schmidt, H.	21-Jan	11:20AM	Coquina E	38	Sukeshini, M.A.	22-Jan	2:20PM	Coquina E	53
Schmidt, J.	20-Jan	10:40AM	Crystal Ballroom	29	Sun, J.	21-Jan	2:00PM	Coquina H	42
Schmidt, K.	21-Jan	8:00AM	Coquina D	38	Sun, J.	22-Jan	8:00AM	Coquina A	48
Schmidt-Winkel, P.	22-Jan	2:00PM	Tomoka A&B	55	Sun, N.X.	21-Jan	8:00AM	Tomoka A&B	41
Schoenecker, A.	19-Jan	11:20AM	Coquina D/E	21	Sun, X.	21-Jan	2:00PM	Coquina D	43
Schulz, U.	20-Jan	9:20AM	Coquina H	26	Sun, Z.	20-Jan	8:00AM	Coquina A	25
Schwind, T.	23-Jan	9:00AM	Coquina A	56	Sun, Z.P.	20-Jan	5:00PM	Coquina G	33
Seabaugh, M.M.	20-Jan	9:20AM	Coquina E	26	Suri, A.K.	20-Jan	11:20AM	Coquina B	29
Seal, S.	19-Jan	2:00PM	Coquina G	22	Suri, A.K.	22-Jan	8:20AM	Crystal Ballroom	52
Segall, A.	23-Jan	10:20AM	Coquina A	56	Svingala, F.R.	22-Jan	9:20AM	Coquina F	52
Sehirlioglu, A.	22-Jan	11:00AM	Coquina G	50	<b>T</b>				
Sehirlioglu, A.	22-Jan	2:40PM	Tomoka A&B	55	Tachibana, Y.	22-Jan	1:20PM	Coquina C	54
Seibert, A.P.	20-Jan	2:20PM	Coquina E	31	Tachibana, Y.	23-Jan	8:00AM	Coquina C	57
Seitz, M.	22-Jan	10:40AM	Coquina B	51	Tan, G.	20-Jan	1:20PM	Tomoka A&B	35
Sekino, T.	20-Jan	1:20PM	Coquina C	33	Tan, Y.	20-Jan	5:20PM	Coquina H	31
Sel, O.	23-Jan	10:40AM	Coquina E	57	Tan, Y.	22-Jan	10:40AM	Coquina A	49
Serizawa, H.	20-Jan	3:40PM	Coquina B	33	Tanaka, M.	20-Jan	11:40AM	Coquina H	26
Sglavo, V.M.	19-Jan	2:00PM	Coquina A	21	Tandon, R.	23-Jan	8:20AM	Coquina A	56
					Tang, E.Z.	19-Jan	1:20PM	Coquina E	22
					Tas, A.	21-Jan	3:20PM	Coquina G	43

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Thevuthasan, T.	22-Jan	11:20AM	Coquina E	50	Wereszczak, A.	22-Jan	9:20AM	Coquina G	50
Thevuthasan, T.	23-Jan	9:20AM	Coquina E	57	Westin, G.	19-Jan	2:40PM	Coquina F	23
Thompson, M.J.	21-Jan	8:20AM	Coquina A	37	Westin, G.	19-Jan	5:20PM	Coquina H	22
Tomeckova, V.	22-Jan	9:00AM	Coquina B	51	Westin, G.	21-Jan	9:00AM	Tomoka A&B	41
Torres Garibay, C.	21-Jan	10:20AM	Coquina B	40	Westin, G.	22-Jan	11:20AM	Coquina H	50
Trice, R.	21-Jan	9:00AM	Coquina H	38	White, M.	20-Jan	4:00PM	Coquina G	32
Trifu, R.	20-Jan	11:00AM	Coquina F	29	White, R.M.	21-Jan	2:20PM	Coquina A	41
Tripathy, P.	23-Jan	11:00AM	Coquina C	58	White, R.M.	22-Jan	10:00AM	Coquina D	49
Trolier-McKinstry, S.	19-Jan	1:20PM	Tomoka A&B	24	Wiff, J.P.	21-Jan	2:40PM	Coquina A	41
Trottmann, M.	22-Jan	5:00PM	Coquina G	54	Wiff, J.P.	21-Jan	9:00AM	Coquina B	40
Tsur, Y.	21-Jan	9:20AM	Tomoka A&B	41	Wilson, J.	21-Jan	9:20AM	Coquina E	38
Tucker, M.C.	20-Jan	9:00AM	Coquina E	26	Windes, W.	20-Jan	9:00AM	Crystal Ballroom	29
Tuller, H.L.	20-Jan	4:40PM	Coquina E	32	Woan, K.V.	19-Jan	3:20PM	Coquina G	23
Tuncer, M.	23-Jan	11:20AM	Coquina C	58	Wu, H.	20-Jan	9:20AM	Coquina C	28
Turo, L.	19-Jan	2:40PM	Coquina C	25					
Tuttle, B.	21-Jan	2:00PM	Tomoka A&B	46			<b>X</b>		
					Xiao, P.	20-Jan	1:20PM	Coquina H	31
		<b>U</b>			Xiao, P.	21-Jan	2:20PM	Coquina H	42
Ullmann, T.H.	22-Jan	9:00AM	Coquina A	48	Xu, J.	19-Jan	4:00PM	Coquina H	22
Utsuno, S.	19-Jan	2:20PM	Coquina F	23	Xu, P.	19-Jan	4:00PM	Coquina C	25
		<b>V</b>							
Vaidhyanathan, B.	19-Jan	4:00PM	Coquina B	23	Yang, L.	23-Jan	11:20AM	Coquina E	57
Vaidhyanathan, B.	19-Jan	4:40PM	Coquina B	23	Yang, Z.	22-Jan	8:00AM	Coquina E	50
Vakifahmetoglu, C.	20-Jan	8:40AM	Coquina F	29	Yasuoka, M.	19-Jan	4:20PM	Coquina B	23
Van der Biest, O.	19-Jan	2:00PM	Coquina B	23	Yeckley, R.	20-Jan	3:40PM	Coquina D	32
Van Gestel, T.	20-Jan	4:40PM	Coquina F	34	Yeon, S.	20-Jan	11:20AM	Coquina F	29
Van Gestel, T.	22-Jan	2:00PM	Coquina E	53	Yerokhin, A.	22-Jan	8:00AM	Coquina H	49
van Riessen, A.	22-Jan	3:40PM	Coquina F	55	Yin, X.	20-Jan	11:40AM	Coquina A	26
Vance, E.	23-Jan	8:00AM	Coquina F	58	Yoo, H.	22-Jan	8:00AM	Tomoka A&B	52
Varanasi, C.	20-Jan	11:20AM	Coquina C	28	Young, A.L.	21-Jan	10:20AM	Tomoka A&B	41
Vassen, R.	20-Jan	4:00PM	Coquina H	31					
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Vincent, A.	22-Jan	10:00AM	Coquina A	49			<b>Z</b>		
					Zagar, K.	21-Jan	9:00AM	Coquina C	39
		<b>W</b>			Zeng, Y.	20-Jan	11:00AM	Coquina B	29
Wachsman, E.D.	20-Jan	3:20PM	Coquina E	31	Zhai, J.	23-Jan	9:00AM	Tomoka A&B	58
Wada, M.	21-Jan	2:40PM	Coquina H	42	Zhang, P.	19-Jan	2:40PM	Coquina H	22
Wada, S.	21-Jan	3:00PM	Tomoka A&B	46	Zhang, S.C.	22-Jan	2:20PM	Coquina A	53
Wali, N.	21-Jan	2:20PM	Coquina B	44	Zhihong, Z.	20-Jan	11:20AM	Crystal Ballroom	30
Wang, H.	19-Jan	3:40PM	Tomoka A&B	25	Zhitomirsky, I.	20-Jan	3:20PM	Coquina G	32
Wang, J.	20-Jan	9:00AM	Coquina A	26	Zhou, X.	20-Jan	2:40PM	Coquina E	31
Wang, K.	19-Jan	5:40PM	Coquina E	22	Zhou, Y.	20-Jan	8:40AM	Coquina A	25
Wang, K.	22-Jan	9:20AM	Coquina H	49	Zhou, Y.	21-Jan	11:20AM	Coquina B	40
Wang, Q.	22-Jan	6:00PM	Coquina B	56	Zhou, Y.	21-Jan	9:00AM	Coquina A	37
Wang, Q.	23-Jan	10:00AM	Coquina B	58	Zhu, D.	21-Jan	11:00AM	Coquina H	38
Wang, W.	19-Jan	4:00PM	Coquina E	22	Zhu, D.	21-Jan	4:20PM	Coquina H	42
Wang, Y.	22-Jan	2:00PM	Coquina B	56	Zhu, J.	22-Jan	3:20PM	Tomoka A&B	55
Watari, K.	21-Jan	2:00PM	Coquina B	44	Zhu, M.	21-Jan	10:40AM	Coquina A	37
Watts, J.	22-Jan	10:40AM	Coquina D	49	Zhu, S.	21-Jan	4:20PM	Coquina F	45
Way, H.	21-Jan	10:00AM	Coquina D	39	Zhu, S.	22-Jan	3:20PM	Coquina A	53
Weber, J.	20-Jan	3:40PM	Coquina G	32	Ziebarth, R.	21-Jan	1:40PM	Coquina F	45
Weeks, M.D.	20-Jan	4:20PM	Coquina H	31	Zou, L.	22-Jan	10:20AM	Coquina D	49
					Zvereva, I.	22-Jan	9:00AM	Coquina G	50

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Guahk, G.	20-Jan	5:30PM	Exhibit Hall	36	Salamone, S.	20-Jan	5:30PM	Exhibit Hall	36
Gupta, V.	21-Jan	5:00PM	Exhibit Hall	47	Salvador, P.	21-Jan	5:00PM	Exhibit Hall	46
Gusman, M.	21-Jan	5:00PM	Exhibit Hall	48	Sanchez, J.A.	21-Jan	5:00PM	Exhibit Hall	46
Harada, Y.	21-Jan	5:00PM	Exhibit Hall	48	Schmidt, V.	21-Jan	5:00PM	Exhibit Hall	47
Hbaieb, K.	21-Jan	5:00PM	Exhibit Hall	48	Sglavo, V.M.	21-Jan	5:00PM	Exhibit Hall	47
Henkel, L.	21-Jan	5:00PM	Exhibit Hall	48	Shirooyeh, M.	21-Jan	5:00PM	Exhibit Hall	48
Henley, M.V.	21-Jan	5:00PM	Exhibit Hall	48	Shoji, M.	21-Jan	5:00PM	Exhibit Hall	47
Iqbal, S.S.	20-Jan	5:30PM	Exhibit Hall	36	Silvestroni, L.	20-Jan	5:30PM	Exhibit Hall	35
Jaberian, N.	21-Jan	5:00PM	Exhibit Hall	47	Sinclair, D.	20-Jan	5:30PM	Exhibit Hall	37
Jiang, B.	21-Jan	5:00PM	Exhibit Hall	46	Singh, R.	20-Jan	5:30PM	Exhibit Hall	35
Jung, H.	21-Jan	5:00PM	Exhibit Hall	46	Singh, V.	21-Jan	5:00PM	Exhibit Hall	47
Jung, J.	21-Jan	5:00PM	Exhibit Hall	46	Sinnamon, K.E.	20-Jan	5:30PM	Exhibit Hall	35
Kartuzov, V.V.	21-Jan	5:00PM	Exhibit Hall	47	Sofie, S.W.	21-Jan	5:00PM	Exhibit Hall	46
Kell, J.W.	20-Jan	5:30PM	Exhibit Hall	36	Sopyan, I.	21-Jan	5:00PM	Exhibit Hall	47
Kikuta, K.	21-Jan	5:00PM	Exhibit Hall	46	Sugahara, T.	20-Jan	5:30PM	Exhibit Hall	36
Kim, H.	21-Jan	5:00PM	Exhibit Hall	47	Sugino, A.	20-Jan	5:30PM	Exhibit Hall	36
Kim, J.	20-Jan	5:30PM	Exhibit Hall	37	Suri, A.K.	21-Jan	5:00PM	Exhibit Hall	47
Kim, S.	20-Jan	5:30PM	Exhibit Hall	36	Tan, C.	20-Jan	5:30PM	Exhibit Hall	36
Kim, W.	20-Jan	5:30PM	Exhibit Hall	36	Tan, Z.	20-Jan	5:30PM	Exhibit Hall	36
Kirkland, T.P.	21-Jan	5:00PM	Exhibit Hall	47	Terauchi, M.	21-Jan	5:00PM	Exhibit Hall	47
Kondo, S.	20-Jan	5:30PM	Exhibit Hall	36	Tokoi, Y.	21-Jan	5:00PM	Exhibit Hall	48
Kress, R.	21-Jan	5:00PM	Exhibit Hall	47	Tomes, P.	21-Jan	5:00PM	Exhibit Hall	47
Kulkov, S.N.	20-Jan	5:30PM	Exhibit Hall	36	Tsai, C.	21-Jan	5:00PM	Exhibit Hall	46
Kumar, A.	20-Jan	5:30PM	Exhibit Hall	36	Tu, C.	21-Jan	5:00PM	Exhibit Hall	46
Lee, E.	20-Jan	5:30PM	Exhibit Hall	35	Vilceus, D.	21-Jan	5:00PM	Exhibit Hall	47
Lee, J.	20-Jan	5:30PM	Exhibit Hall	35	Volceanov, E.	20-Jan	5:30PM	Exhibit Hall	35
Lee, J.	21-Jan	5:00PM	Exhibit Hall	47	Voyles, J.	21-Jan	5:00PM	Exhibit Hall	47
Lee, S.	21-Jan	5:00PM	Exhibit Hall	48	Wang, Y.	21-Jan	5:00PM	Exhibit Hall	47
Lorenzo Martin, M.	20-Jan	5:30PM	Exhibit Hall	35	Watari, K.	21-Jan	5:00PM	Exhibit Hall	48
Lugo, F.	21-Jan	5:00PM	Exhibit Hall	48	Weber, J.	21-Jan	5:00PM	Exhibit Hall	47
Lukich, S.	21-Jan	5:00PM	Exhibit Hall	46	Zhou, S.	20-Jan	5:30PM	Exhibit Hall	36
Mahmoodian, R.	20-Jan	5:30PM	Exhibit Hall	36	Zhu, D.	20-Jan	5:30PM	Exhibit Hall	36
Manisha, T.	21-Jan	5:00PM	Exhibit Hall	46	Zhu, J.	20-Jan	5:30PM	Exhibit Hall	37
Manzoor, U.	21-Jan	5:00PM	Exhibit Hall	48					

## Monday, January 19, 2009

## Plenary Session

Room: Coquina D/E

Session Chairs: Jonathan Salem, NASA Glenn Research Center;  
Andrew Wereszczak, Oak Ridge National Laboratory

8:30 AM

## Opening Remarks

9:00 AM

**(ICACC-PL-001-2009) Thermal Barrier Coatings: A Step in the Quest for Ceramics in Gas Turbines (Invited)**

C. A. Johnson\*, GE Research, USA

9:40 AM

**(ICACC-PL-002-2009) Research and Development Activities in Advanced Ceramics in China: Current Status and Future Prospects (Invited)**

D. Jiang\*, Shanghai Institute of Ceramics, China

10:20 AM

## Break

10:40 AM

**(ICACC-PL-003-2009) Microstructural Evolution in Ceramics by Structural Transition at Interfaces (Invited)**

S. Kang\*, Korea Advanced Inst. of Science &amp; Technology, South Korea

11:20 AM

**(ICACC-PL-004-2009) Piezoelectric Composite Materials and Structures (Invited)**

A. Schoenecker\*, Fraunhofer-Institut für Keramische Technologien und Systeme, Germany

## Symposium 1: Mechanical Behavior and Performance of Ceramics &amp; Composites

## Processing-Microstructure-Mechanical Properties Correlations: I

Room: Coquina A

Session Chairs: Randall Hay, AFRL; Joachim Rico, University of Seville

1:20 PM

**(ICACC-S1-001-2009) Precipitation of (Gd,Dy)PO<sub>4</sub> Solid Solutions and Coatings on Sapphire Fibers**

E. E. Boakye\*, P. Mogilevsky, UES Inc., USA; R. S. Hay, F. E. Geoff, Air Force Research Laboratory, Materials Directorate, Wright-Patterson Air Force Base, USA

1:40 PM

**(ICACC-S1-002-2009) Softening of Rare Earth Orthophosphates by Transformation Plasticity: Possible Applications to Fiber-Matrix Interphases in Ceramic Composites**

R. Hay\*, G. Fair, E. Boakye, P. Mogilevsky, AFRL/RXLN, USA; T. Parthasarathy, UES, Inc., USA; J. Davis, M. Wilson, AFRL/RXLN, USA

2:00 PM

**(ICACC-S1-003-2009) Alumina - Silicon Carbide Laminated Composites by Spark Plasma Sintering**

F. De Genua, V. M. Sglavo\*, A. Molinari, University of Trento, Italy; F. Casari, K4Sint srl, Italy

2:20 PM

**(ICACC-S1-004-2009) Effect of Residual Raw Materials on the Sintering of SHS Produced Ceramic Matrix Composites**

M. P. Hunt\*, K. V. Logan, Virginia Polytechnic Institute and State University, USA

2:40 PM

**(ICACC-S1-005-2009) Estimation of warpage of constrained sintering electrolyte film used in SOFC**

K. Hbaieb\*, Institute of materials research and engineering, Singapore

3:00 PM

## Break

3:20 PM

**(ICACC-S1-006-2009) Correlation between processing parameters, microstructure and properties of Al<sub>2</sub>O<sub>3</sub>-Y<sub>2</sub>O<sub>3</sub>-ZrO<sub>2</sub> ceramics**

C. Oelgardt\*, J. G. Heinrich, Clausthal University of Technology, Germany; G. L. Messing, Pennsylvania State University, USA

3:40 PM

**(ICACC-S1-007-2009) Zirconia - CNT Nanocomposites Manufactured by Direct In-Situ Growth of Carbon Nanotubes on Zirconia**

A. Datye\*, V. Monroy, G. Gomes, K. Hernandez, K. Wu, Florida International University, USA; H. Lin, Oak Ridge National Laboratory, USA; W. Li, Florida International University, USA

4:00 PM

**(ICACC-S1-008-2009) Manufacturing of Silicon Nitride Carbon Nanotube Composites**

A. Datye\*, K. Wu, Florida International University, USA; H. Lin, Oak Ridge National Laboratory, USA; D. Hunn, Lockheed Martin, USA; J. Schmidt, J. Vleugels, K. Vanmeensel, Katholieke Universiteit Leuven, Belgium

4:20 PM

**(ICACC-S1-009-2009) Influences of Aluminum on the Composition and Compressive Strength of the SHS Regolith Reaction Product**

E. J. Faierson\*, K. V. Logan, Virginia Polytechnic Institute and State University-National Institute of Aerospace, USA

4:40 PM

**(ICACC-S1-010-2009) SiC Nanometer Sizing Effect on Self Healing Ability of Structural Ceramics**

W. Nakao\*, S. Abe, K. Ando, Yokohama National University, Japan

5:00 PM

**(ICACC-S1-011-2009) Advanced Modular Heatshield Systems with Ceramic Reinforcement Fibers and Lightweight Microspheres**

W. M. Congdon\*, Applied Research Associates, Inc., USA

5:20 PM

**(ICACC-S1-012-2009) Effect of Surface Siliconization on the Mechanical Behaviour of C/C**

L. Gaab\*, D. Koch, G. Grathwohl, Ceramics, Germany

5:40 PM

**(ICACC-S1-013-2009) Mechanical Properties of Al<sub>2</sub>O<sub>3</sub>-ZrO<sub>2</sub> Nanocomposite Fabricated by Gelcasting**

S. Arvandi\*, M. Faghihi-Sani, Sharif University of Technology, Iran

## Symposium 2: Advanced Ceramic Coatings for Structural, Environmental, and Functional Applications

## Coatings to Resist Wear, Erosion and Tribological Loadings

Room: Coquina H

Session Chairs: Irene Spitsberg, Kennametal, Inc.; Dileep Singh, Argonne National Laboratory

1:20 PM

**(ICACC-S2-001-2009) Tribological Coatings and Wear Resistant Mechanical Components (Invited)**

G. L. Doll\*, R. D. Evans, Timken Technology Center, USA

**2:00 PM**

**(ICACC-S2-002-2009) Characterization of Microlaminated Large Area Filtered Arc Coatings for Aircraft Components**

V. Gorokhovskiy\*, J. Wallace, C. Bowman, D. VanVorous, J. O'Keefe, Arcovac Surface Engineering, LLC, USA; V. Champagne, M. Pepi, US Army Research Laboratory, USA; W. Tabakoff, University of Cincinnati, USA

**2:20 PM**

**(ICACC-S2-003-2009) Plasma Electrolytic Oxidation (PEO) Coatings on a Zirconium Alloy for Improved Wear and Corrosion Resistance**

Y. Chen\*, University of Windsor, Canada; X. Nie, University of Windsor, Canada; D. O. Northwood, University of Windsor, Canada

**2:40 PM**

**(ICACC-S2-004-2009) Effect of Plasma Electrolyte Oxidation Process on wear behaviour of a Mg alloy AJ62**

P. Zhang\*, University of Windsor, Canada; X. Nie, University of Windsor, Canada; H. Hu, University of Windsor, Canada

**3:00 PM**

**Break**

**4:00 PM**

**(ICACC-S2-006-2009) Wear Resistance of Hard Materials in Drilling Applications (Invited)**

J. Xu\*, H. John, A. Krafczyk, Baker Hughes INTEQ GmbH, Germany

**4:40 PM**

**(ICACC-S2-007-2009) Process Design of Thermal Sprayed Ceramic and Cermet Coatings**

A. G. Valarezo, S. Sampath\*, SUNY at Stony Brook, USA

**5:00 PM**

**(ICACC-S2-008-2009) Mechanical and Wear Resistant Properties of 'Duplex' WC-17Co Nanocrystalline Coatings Sprayed by the HVOF Technique**

G. C. Saha\*, T. I. Khan, University of Calgary, Canada; L. B. Glensk, Hyperion Technologies Inc., Canada

**5:20 PM**

**(ICACC-S2-009-2009) Solution based routes to hard WC-Co composites, gradients and coatings**

G. Westin\*, Uppsala University, Sweden; K. Jansson, Stockholm University, Sweden; A. Ekstrand, Uppsala University, Sweden

**5:40 PM**

**(ICACC-S2-010-2009) Probing Indentation-induced inelastic deformation behavior of functionally graded WC-Co/SS coating via High Velocity Oxy-Fuel (HVOF) Process**

W. B. Choi\*, A. Valarezo, E. Mari, M. Mantovani, A. Torcia, S. Sampath, SUNY at Stony Brook, USA

**Symposium 3: 6th International Symposium of Solid Oxide Fuel Cells (SOFC): Materials, Science, and Technology**

**Cell and Stack Development**

Room: Coquina E

Session Chairs: Narottam Bansal, NASA Glenn Research Center; Prabhakar Singh, Pacific Northwest National Laboratory

**1:20 PM**

**(ICACC-S3-001-2009) 10 kW SOFC Cell and Stack Development at Versa Power Systems (Invited)**

E. Z. Tang\*, Versa Power Systems, Canada

**2:00 PM**

**(ICACC-S3-002-2009) Fuel Cell Development at Forschungszentrum Juelich with Special Emphasis on Mechanical Aspects (Invited)**

R. W. Steinbrech\*, J. Malzbender, H. Buchkremer, N. Menzler, L. Blum, B. Haart, S. M. Gross, R. Steinberger-Wilckens, Forschungszentrum Juelich, Germany

**2:40 PM**

**(ICACC-S3-003-2009) Micro-tubular solid oxide fuel cells with embedded current collector**

M. Colonna, R. De La Torre, V. M. Sglavo\*, University of Trento, Italy; R. Raj, University of Colorado, USA

**3:00 PM**

**Break**

**3:20 PM**

**(ICACC-S3-004-2009) Current Status of SOFC Stack Development at KIST (Invited)**

H. Lee\*, J. Lee, H. Kim, H. Jung, Korea Institute of Science and Technology, South Korea; H. Chung, Seoul National University, South Korea; H. Song, Korea Institute of Science and Technology, South Korea

**4:00 PM**

**(ICACC-S3-005-2009) Key Issues of Cell Fabrication and Stack Manufacture Targeting Low Cost for Planar SOFC (Invited)**

W. Wang\*, Ningbo Institute of Material Technology and Engineering, China

**4:40 PM**

**(ICACC-S3-006-2009) Development of Multi-cell Arrayed SOFC Stack**

J. Lee\*, H. Kim, H. Jung, S. Lee, H. Kim, J. Son, H. Lee, KIST, South Korea

**5:20 PM**

**(ICACC-S3-008-2009) Advanced Cell Development to Increase Direct JP-8 Performance in the Liquid Tin Anode SOFC**

M. Koslowski\*, W. G. McPhee, L. S. Bateman, M. J. Slaney, J. Bentley, T. Tao, CellTech Power, LLC, USA

**5:40 PM**

**(ICACC-S3-009-2009) A high-performance no-chamber fuel cell operated on ethanol flame**

K. Wang\*, J. Ahn, Washington State University, USA

**Symposium 5: Next Generation Bioceramics**

**Medical Applications of Bioceramics**

Room: Coquina G

Session Chair: Roger Narayan, University of North Carolina

**1:20 PM**

**(ICACC-S5-001-2009) Synthesis and Characterization of Wet-chemically Derived Magnetite-HAp Hybrid Nanoparticles**

S. Hayakawa, K. Tsuru, A. Matsumoto, Okayama U, Japan; E. Fujii, K. Kawabata, Industrial Technology Center of Okayama Prefecture, Japan; A. Osaka\*, Okayama U, Japan

**2:00 PM**

**(ICACC-S5-002-2009) Oxide Nanoparticle as Catalytic Biomedical Antioxidants (Invited)**

S. Seal\*, W. T. Self, A. Masunov, A. S. Karakoti, University of Central Florida, USA

**2:20 PM**

**(ICACC-S5-003-2009) In Situ Nanoscale Mechanics of Nanohydroxyapatite Bone Biomaterials (Invited)**

K. S. Katti\*, R. Khanna, D. R. Katti, North Dakota State University, USA

**2:40 PM**

**(ICACC-S5-004-2009) Aspects of Dental Applications Based on Materials of the CaO - Al<sub>2</sub>O<sub>3</sub> - System**

L. Hermansson\*, A. Faris, G. G6mes-Ortega, J. Coppola, J. L66f, Doxa AB, Sweden

**3:00 PM**

**Break**

**3:20 PM**

**(ICACC-S5-005-2009) Challenges in Biomedical Applications of Erbium-Cerium Mixed Oxide Nanoparticles**  
 K. V. Woan\*, Y. Tsai, W. M. Sigmund, University of Florida, USA

**3:40 PM**

**(ICACC-S5-006-2009) One-step Preparation of Organosiloxane-derived Silica Particles (Invited)**  
 S. Chen, S. Hayakawa, K. Tsuru, A. Osaka\*, Okayama University, Japan

**4:00 PM**

**(ICACC-S5-007-2009) Understanding the receptor mediated cellular interaction mechanism of cerium oxide nanoparticles by Single Molecule Force Spectroscopy**  
 A. Vincent\*, S. B. Krishna Moorthy, E. Heckert, W. T. Self, C. M. Reilly, S. Seal, University of Central Florida, USA

**4:20 PM**

**(ICACC-S5-008-2009) Rapid Prototyping of Ceramic-Polymer Hybrid Materials**  
 B. Chichkov, A. Ovsianikov, Laser Zentrum Hannover, Germany; S. Gittard, R. Narayan\*, University of North Carolina, USA

**4:40 PM**

**(ICACC-S5-009-2009) Enhancing emission properties of ceria nanoparticles through doping**  
 A. Kumar\*, S. K. Babu, S. Seal, University of Central Florida, USA

**5:00 PM**

**(ICACC-S5-010-2009) Fabrication of Hybrid Thin Films Consisting of Ceramic and Polymer Using a Biomimetic Principle (Invited)**  
 L. Luo, B. K. Roy, G. Zhang, J. Cho\*, SUNY Binghamton, USA

**5:20 PM**

**(ICACC-S5-011-2009) Novel Bioceramics for Bone Implants (Invited)**  
 P. Gouma\*, SUNY Stony Brook, USA

## Symposium 8: 3rd International Symposium on Advanced Processing and Manufacturing Technologies for Structural and Multifunctional Materials and Systems (APMT)

### Microwave-Processing and SPS

Room: Coquina B

Session Chairs: Omer Van der Biest, Leuven University; Ralph Bruce, Bethel College

**1:20 PM**

**(ICACC-S8-001-2009) Microwave Assist Sintering of Porcelain Insulators with Large Cross-section (Invited)**  
 S. M. Allan\*, M. Fall, Ceralink Inc., USA; G. Carnahan, Lapp Insulator, USA; H. S. Shulman, Ceralink Inc., USA

**2:00 PM**

**(ICACC-S8-002-2009) The Influence of the Electric Current in the Pulsed Electric Current Sintering Process (Invited)**  
 K. Vanmeensel, J. Vleugels, O. Van der Biest\*, Leuven University, Belgium

**2:40 PM**

**(ICACC-S8-003-2009) Microwave Assist Technology for Industrial Ceramic Processing**  
 S. M. Allan, M. L. Fall\*, H. S. Shulman, Ceralink Inc, USA

**3:00 PM**

Break

**3:20 PM**

**(ICACC-S8-004-2009) Millimeter Wave Sintering of Metal-Ceramic Composites**  
 R. W. Bruce\*, Bethel College, USA; M. A. Imam, A. W. Fliflet, Naval Research Laboratory, USA

**3:40 PM**

**(ICACC-S8-005-2009) Solid-State Reactive Sintering of Polycrystalline Nd:YAG Ceramic Laser Host Materials Using an 83 GHz Millimeter Wave System**  
 R. W. Bruce\*, C. A. Stephenson, Bethel College, USA; A. W. Fliflet, S. H. Gold, M. A. Imam, Naval Research Laboratory, USA

**4:00 PM**

**(ICACC-S8-006-2009) Microwave Assisted Large Scale Sintering of Multilayer Electroceramic Devices**  
 B. Vaidhyanathan\*, A. Ketharam, J. Binner, Loughborough University, United Kingdom; R. Raghavendra, Littelfuse Ireland Limited, Ireland

**4:20 PM**

**(ICACC-S8-007-2009) Influence of the Secondary Phase Composition on the Microwave Sintering Process**  
 M. Yasuoka\*, National Institute of Advanced Industrial Science and Technology (AIST), Japan; T. Shirai, Nagoya Institute of Technology, Japan; K. Watari, National Institute of Advanced Industrial Science and Technology (AIST), Japan

**4:40 PM**

**(ICACC-S8-008-2009) Synthesis of nanocrystalline Barium Titanate: Do use of microwaves really help?**  
 B. Vaidhyanathan\*, V. Venkatachalam, J. Binner, Loughborough University, United Kingdom

**5:00 PM**

**(ICACC-S8-009-2009) Novel Route for Combustion Synthesis of Zirconia-mullite/MoSi<sub>2</sub> Composite**  
 Z. I. Mohamed, Y. M. Ahmed\*, Central Metallurgical R&D Institute, Egypt

## Symposium 9: Porous Ceramics: Novel Developments and Applications

### Processing Methods for Porous Ceramics I

Room: Coquina F

Session Chair: Paolo Colombo, University of Padova

**1:20 PM**

**(ICACC-S9-001-2009) Freeze Gelation, a Versatile Process for Manufacturing New Oxide Ceramics and Composites (Invited)**  
 D. Koch\*, M. Kühn, C. Soltmann, M. Pulkin, L. Henkel, G. Grathwohl, Ceramics, Germany

**2:00 PM**

**(ICACC-S9-002-2009) Ceramic Laminates with Graded Porosity via Thermoreversible Gelcasting**  
 N. O. Shanti\*, S. R. Stock, J. L. Fife, K. T. Faber, Northwestern University, USA

**2:20 PM**

**(ICACC-S9-003-2009) Simple fabrication method of Al<sub>2</sub>O<sub>3</sub> hollow nanoparticles from Al nanoparticles**  
 S. Utsuno\*, K. Matsumura, Y. Kagawa, The University of Tokyo, Japan

**2:40 PM**

**(ICACC-S9-004-2009) Solution route to nano-phase metal sponges**  
 G. Westin\*, A. Ekstrand, Uppsala University, Sweden; K. Jansson, Stockholm University, Sweden

**3:00 PM**

Break



**Processing Methods for Porous Ceramics II**

Room: Coquina F

Session Chair: Michael Scheffler, BTU Cottbus

**3:20 PM****(ICACC-S9-005-2009) Controlling Morphologies of Porous Solids Structured by Multiple Templates (Invited)**

A. Stein\*, F. Li, Z. Wang, University of Minnesota, USA

**4:00 PM****(ICACC-S9-006-2009) Templated Mesoporous Silicon Oxycarbide powders and thin films produced by Evaporation-Induced Self-Assembly**

A. Puletelli, C. Fernandez-Martin, C. Boissière, C. Gervais, F. Babonneau\*, UPMC-Paris6 / CNRS, France

**4:20 PM****(ICACC-S9-007-2009) OxyCarbide-Derived Carbons (OCDCs): a Novel form of Porous Carbon**

G. Soraru\*, P. Dibandjo, University of Trento, Italy; H. Kleebe, Technische Universität Darmstadt, Germany; G. Mariotto, Università di Verona, Italy

**4:40 PM****(ICACC-S9-008-2009) Morphological control of alumina particle stabilized foams**

G. V. Franks\*, C. Chuanuwatanakul, D. E. Dunstan, University of Melbourne, Australia

**5:00 PM****(ICACC-S9-009-2009) Nanostructured Alumina Coatings and Membranes Formed by a Dissolution/Precipitation Process Using AIN Powder Hydrolysis**

A. Kocjan\*, K. Krnel, T. Kosmac, Jozef Stefan Institute, Slovenia

**Symposium 10: International Symposium on Silicon Carbide and Carbon-based Materials for Fusion and Advanced Nuclear Energy Applications****Fusion Energy Programs and Applications**

Room: Crystal Ballroom

Session Chairs: Shahram Sharafat, University of California Los Angeles; Akira Kohyama

**1:20 PM****(ICACC-S10-001-2009) R & D of SiC/SiC Composite Materials in Japan (Invited)**

A. Kohyama\*, T. Hinoki, Kyoto University, Japan; H. Kishimoto, Muroran Institute of Technology, Japan; A. Hasegawa, S. Nogami, Tohoku University, Japan; T. Nozawa, Japan Atomic Energy Agency, Japan; T. Shibayama, Hokkaido University, Japan; T. Tanaka, National Institute for Fusion Research, Japan; J. Park, IEST Co., Ltd., Japan

**2:00 PM****(ICACC-S10-002-2009) The current EU-R&D programme on SiC/SiC composites for fusion**

H. Hegeman\*, NRG Petten, Netherlands; J. Boutard, EFDA, Germany; E. Diegele, Fusion for Energy, Spain

**2:40 PM****(ICACC-S10-003-2009) R&D on SiC/SiC Composites in Japan under Broader Approach Activities for Fusion**

T. Nozawa\*, S. Jitsukawa, H. Tanigawa, Japan Atomic Energy Agency, Japan

**3:00 PM**

Break

**3:20 PM****(ICACC-S10-004-2009) SiC Composite Research and Development in U.S. Fusion Programs**

Y. Katoh\*, L. Snead, S. Kondo, Oak Ridge National Laboratory, USA; C. Henager, Pacific Northwest National Laboratory, USA; M. Sawan, University of Wisconsin, USA; S. Sharafat, University of California, Los Angeles, USA; R. Shinavski, Hypertherm HTC, USA

**4:00 PM****(ICACC-S10-005-2009) Nuclear Damage Parameters for SiC/SiC Composite in Fusion Systems (Invited)**

M. E. Sawan\*, University of Wisconsin-Madison, USA; L. Snead, Y. Katoh, Oak Ridge National Laboratory, USA

**4:40 PM****(ICACC-S10-006-2009) SiC/SiC Composite Structures for Flow Channel Inserts**

R. J. Shinavski\*, T. Z. Engel, J. K. Terlecki, Hyper-Therm HTC, Inc., USA; N. B. Morley, University of California - Los Angeles, USA

**5:00 PM****(ICACC-S10-007-2009) Status of SiC Foam-Based Flow Channel Inserts for the U.S. ITER DCLL TBM**

S. Sharafat\*, N. Morley, A. Aoyama, S. Smolentsev, University of California Los Angeles, USA; Y. Katoh, Oak Ridge National Lab, USA; B. Williams, Ultramet Inc., USA

**5:20 PM****(ICACC-S10-008-2009) SiC Syntactic Foam Development for U.S.-ITER DCLL TBM Flow Channel Inserts**

S. Sharafat\*, A. Aoyama, University of California Los Angeles, USA; B. Williams, ULTRAMET, Inc., USA; N. Ghoniem, University of California Los Angeles, USA

**5:40 PM**

Discussion: Fusion FCI Application

**Symposium 11: Symposium on Advanced Dielectric, Piezoelectric, Ferroelectric, and Multiferroic Materials****Electromechanical Phenomena of Piezoelectric Composites, Actuators, Sensors and Motors**

Room: Tomoka A&amp;B

Session Chair: Dragan Damjanovic, EPFL

**1:20 PM****(ICACC-S11-001-2009) PZT Piezoelectric MEMS with Close-coupled Electronics (Invited)**

S. Trolier-McKinstry\*, Penn State, USA

**2:00 PM****(ICACC-S11-002-2009) Application of Intergranular and Fractal Impedance Model on Optimisation of BaTiO3 Properties**

V. Mitic\*, University of Nis, Serbia; V. B. Pavlovic, University of Belgrade, Serbia; L. Kocic, V. Paunovic, D. Mancic, University of Nis, Serbia

**2:20 PM****(ICACC-S11-003-2009) In-Situ Raman Spectroscopy of Barium Titanate**

I. Reaney\*, University of Sheffield, United Kingdom

**2:40 PM****(ICACC-S11-004-2009) Piezoelectric Fiber Composites for Energy Harvesting**

F. Mohammadi\*, H. Kim, R. B. Cass, Advanced Cerametrics, Inc., USA

**3:00 PM**

Break

**3:20 PM****(ICACC-S11-005-2009) Mechanical creep behavior of undoped and La+Nb codoped PZT actuating microcantilever and microbridge actuator systems**

B. El mostafa\*, K. Hee-yeoun, S. Jong-hyeong, Y. Sang-Kyeong, Samsung Electromechanics Co., South Korea

**3:40 PM**

**(ICACC-S11-006-2009) Mechanical strain and piezoelectric properties of PZT stacks related to semi-bipolar electric cycling fatigue**

H. Wang\*, H. Lin, A. Wereszczak, T. Cooper, ORNL, USA

**4:00 PM**

**(ICACC-S11-007-2009) Piezoelectric-Ceramic-Embedded Smart Concrete Module for Structure Health Monitoring**

Y. Chen\*, College of Optoelectronic Engineering, China; Y. Wen, P. Li, The Key laboratory for Optoelectronic Technology & Systems, Ministry of Education, China

## Focused Session 4: Processing and Properties of Nuclear Fuels and Wastes

### Strategies for Management of Nuclear Waste

Room: Coquina C

Session Chairs: Kevin Fox, Savannah River National Lab; Alex Cozzi, Savannah River National Laboratory

**1:20 PM**

**(ICACC-FS4-001-2009) Towards a Global Nuclear Renaissance: A New Paradigm for Waste Management**

J. Marra\*, Savannah River National Lab, USA

**1:40 PM**

**(ICACC-FS4-002-2009) Computational Flowsheet Model of the Hanford Waste Treatment & Immobilization Plant**

P. S. Lowery\*, Bechtel National, Inc. – WTP, USA; R. A. Gilbert, US Department of Energy/Office of River Protection, USA; R. Carter, Energy Solutions, USA; S. A. Davis, URS Corporation – Washington Division, USA; W. F. Lenzke, Bechtel National, Inc. – WTP, USA; M. G. Woodworth, Energy Solutions, USA

**2:00 PM**

**(ICACC-FS4-003-2009) Impacts of Caustic Leaching on Hanford Waste Treatment & Immobilization Plant Container Count**

J. Olson\*, Bechtel National, Inc., USA; R. A. Gilbert, US Department of Energy/Office of River Protection, USA; R. Gimple, URS Corporation - Washington Division, USA; R. Peterson, Pacific Northwest National Laboratory, USA; K. Jenkins, Y. Deng, URS Corporation - Washington Division, USA

**2:20 PM**

**(ICACC-FS4-004-2009) Development and Testing of a Cement Waste Form for TRU Effluent from the Savannah River Site Mixed Oxide Fuel Fabrication Facility**

A. D. Cozzi\*, E. K. Hansen, Savannah River National Laboratory, USA

**2:40 PM**

**(ICACC-FS4-005-2009) Ceramic cesium/strontium/barium/rubidium waste form by wet ceramic processing**

J. V. Ryan, L. Turo\*, J. Vienna, Pacific Northwest National Laboratory, USA

**3:00 PM**

Break

## Ceramic Processing for Advanced Nuclear Applications

Room: Coquina C

Session Chairs: Kevin Fox, Savannah River National Lab; Alex Cozzi, Savannah River National Laboratory

**3:20 PM**

**(ICACC-FS4-006-2009) Intracrystalline disorder of Pu in ceramics? Evidence from Ce-bearing zirconate pyrochlores**

S. Redfern\*, E. Harvey, F. Aguado, University of Cambridge, United Kingdom

**3:40 PM**

**(ICACC-FS4-007-2009) Fabrication of Minor-Actinide Bearing Mixed Oxide Fuel**

J. T. Dunwoody\*, C. R. Stanek, C. G. Worley, Los Alamos National Laboratory, USA; S. L. Voit, Oak Ridge National Laboratory, USA; K. J. McClellan, S. P. Willson, D. L. Gallimore, K. J. Spencer, R. E. Mason, Los Alamos National Laboratory, USA

**4:00 PM**

**(ICACC-FS4-008-2009) Strategies for Reprocessing of MgO-Pyrochlore Cermet Composite Fuel for Light Water Reactors (LWRs)**

P. Xu\*, University of Florida, USA; K. Holliday, K. Czerwinski, University of Nevada Las Vegas, USA; J. C. Nino, University of Florida, USA

**4:20 PM**

**(ICACC-FS4-009-2009) Optimization of sintering kinetics of depleted uranium fuel pellets**

D. D. Byler\*, K. J. McClellan, C. R. Stanek, S. J. Yates, R. J. Houlton, Los Alamos National Laboratory, USA

**4:40 PM**

**(ICACC-FS4-010-2009) Characterization of Pu-238 Heat Source Granule Containment**

P. D. Richardson\*, J. P. Romero, F. E. Sandoval, A. D. Neuman, W. S. Duncan, D. L. Thronas, Los Alamos Nat. Lab, USA

**5:00 PM**

**(ICACC-FS4-011-2009) Yield Stress Reduction of Simulated DWPF Melter Feed Slurries**

B. Pickenheim\*, M. Stone, D. Adamson, Savannah River National Laboratory, USA

**5:20 PM**

**(ICACC-FS4-012-2009) The Use of Hafnium and Neodymium as Surrogates for Uranium in Waste Glass Studies**

F. C. Raszewski\*, J. H. Gillam, I. A. Reamer, P. J. Workman, Savannah River National Laboratory, USA

**5:40 PM**

**(ICACC-FS4-013-2009) Glass Formulations for a Combined Cesium, Strontium, Lanthanide, Transition Metal Waste Stream**

J. V. Ryan\*, J. Crum, J. Vienna, Pacific Northwest National Laboratory, USA

**6:00 PM**

**(ICACC-FS4-014-2009) Ceramic Coated Particles for Safe Operation in HTRs and in Long-Term Storage**

H. Nabielek, J. J. van der Merwe, J. Fachinger\*, K. Verfondern, W. von Lensa, Forschungszentrum Juelich, Germany; B. Grambow, Ecole de Mines Nantes, France; E. de Visser-Tynova, Nuclear Research & Consultancy Group, Netherlands

## Tuesday, January 20, 2009

### Symposium 1: Mechanical Behavior and Performance of Ceramics & Composites

#### Ternary Compounds & MAX Phases

Room: Coquina A

Session Chair: Yanchun Zhou, Institute of Metal Research, Chinese Academy of Sciences

**8:00 AM**

**(ICACC-S1-014-2009) Synthesis of MAX Phases by Pulse Discharge Sintering Process and their Performance (Invited)**

Z. Sun\*, H. Hashimoto, Y. Du, W. Tian, AIST, Japan

**8:40 AM**

**(ICACC-S1-015-2009) Room and high-temperature mechanical properties and oxidation behavior of Ti<sub>3</sub>AlC<sub>2</sub>/TiB<sub>2</sub> composites**

Y. Zhou\*, C. Li, J. Zhang, M. Li, Institute of Metal Research, Chinese Academy of Sciences, China

**9:00 AM**

**(ICACC-S1-016-2009) New Developments on Understanding the Mechanical Property, Phase Stability and Defects of Layered Ternary Compounds Using First-principles Calculation (Invited)**  
J. Wang\*, Y. Zhou, Institute of Metal Research, Chinese Academy of Sciences, China

**9:40 AM**

Break

**10:00 AM**

**(ICACC-S1-017-2009)  $Ti_3SiC_2$  for nuclear applications: investigation of irradiation effects induced by charged particles (Invited)**

M. Le Flem\*, CEA, France; X. Liu, S. Doriot, T. Cozzika, CEA Saclay, France; I. Monnet, CIMAP, Centre de Recherche sur les Ions les Matériaux et la Photonique, France; Y. Zhou, Shenyang National Laboratory for Materials Science, Chinese Academy of Sciences, China

**10:40 AM**

**(ICACC-S1-018-2009) Heavy ions induced damages in  $Ti_3SiC_2$ : effect of irradiation temperature**

J. Nappe\*, P. Grosseau, Ecole Nationale Supérieure des Mines, France; F. Audubert, CEA Cadarache, France; B. Guilhot, Ecole Nationale Supérieure des Mines, France; M. Beauvy, CEA Cadarache, France; M. Benabdesselam, Université de Nice - Sophia Antipolis, France

**11:00 AM**

**(ICACC-S1-019-2009) Mechanical Properties and Ultrahigh Damping of Random and Oriented MAX Phases**

S. Amini\*, M. W. Barsoum, Drexel University, USA

**11:20 AM**

**(ICACC-S1-020-2009) Physico-Mechanical Properties and Thermal Shock Resistance of TiC- and ZrC-Based Hetero-Modulus Ceramics**

I. L. Shabalina\*, University of Salford, United Kingdom

**11:40 AM**

**(ICACC-S1-021-2009) Composition and Microstructure of  $Ti_3SiC_2$  modified C/SiC composites fabricated by liquid phase infiltration route**

X. Yin\*, S. He, L. Cheng, T. Li, L. Zhang, National Key Laboratory of Thermostructure Composite Materials, China

## Symposium 2: Advanced Ceramic Coatings for Structural, Environmental, and Functional Applications

### Thermal Barrier Coatings I

Room: Coquina H

Session Chairs: Dongming Zhu, NASA Glenn Research Center; Uwe Schulz, German Aerospace Center

**8:00 AM**

**(ICACC-S2-011-2009) CMAS Interactions with Ceramic Coatings for Gas Turbine Components (Invited)**

S. Krämer, K. M. Grant, E. M. Vogel, C. G. Levi\*, University of California, Santa Barbara, USA

**8:40 AM**

**(ICACC-S2-012-2009) Hard Particle Impact of Modulated TBC (Invited)**

B. Hazel\*, M. Fu, T. Schaedler, R. Darolia, GE Aviation, USA; R. McMeeking, M. Crowell, A. Evans, UCSB, USA

**9:20 AM**

**(ICACC-S2-013-2009) Influence of CMAS on Thermal Conductivity and Integrity of EB-PVD Thermal Barrier Coatings**

U. Schulz\*, S. Faulhaber, German Aerospace Center, Germany

**9:40 AM**

Break

**10:00 AM**

**(ICACC-S2-014-2009) Analysis of pore morphology changes with temperature in partially and fully yttria-stabilised zirconia EB-PVD TBCs and its correlation with thermal conductivity**

B. Saruhan-Brings\*, R. Ochrombel, V. Rhykthin, German Aerospace Center, Germany

**10:20 AM**

**(ICACC-S2-015-2009) Numerical Simulation of the Enhanced Resistance to Foreign Object Damage Enabled by Modulation in Columnar Thermal Barrier Coatings**

M. W. Crowell\*, R. M. McMeeking, A. G. Evans, University of California at Santa Barbara, USA

**10:40 AM**

**(ICACC-S2-016-2009) Monitoring Delamination of Thermal Barrier Coatings During Interrupted Furnace Cycling by Near-Infrared and Upconversion Luminescence Imaging**

J. I. Eldridge\*, NASA Glenn Research Center, USA; R. E. Martin, Cleveland State University, USA; D. E. Wolfe, Penn State University, USA

**11:00 AM**

**(ICACC-S2-017-2009) Evolution of thermal and optical properties of EB-PVD TBCs subject to thermal cycling**

A. M. Limarga\*, T. Kakuda, T. D. Bennett, D. R. Clarke, University of California, USA

**11:20 AM**

**(ICACC-S2-018-2009) Cracking Behavior of TBC Layer and its effect on TGO Stress in EB-PVD TBC System under In-Phase Thermo-mechanical Test**

R. Kitazawa\*, M. Tanaka, Y. Liu, Y. Kagawa, The University of Tokyo, Japan

**11:40 AM**

**(ICACC-S2-019-2009) Damage evolution in a center-hole EB-PVD TBC specimen under thermo-mechanical fatigue loading**

M. Tanaka\*, R. Kitazawa, K. Matsumura, Y. Liu, Y. Kagawa, The University of Tokyo, Japan

## Symposium 3: 6th International Symposium of Solid Oxide Fuel Cells (SOFC): Materials, Science, and Technology

### Electrochemical Performance/Stability of Cells and Stacks

Room: Coquina E

Session Chairs: Nigel Sammes, Colorado School of Mines; Nguyen Minh, GE Power Systems

**8:00 AM**

**(ICACC-S3-010-2009) Evaluation of Proton and Oxygen Conducting Electrolytes**

S. Elangovan\*, J. Hartvigsen, F. Zhao, D. Ramirez, B. Heck, D. Larsen, Ceramtec, Inc., USA

**8:20 AM**

**(ICACC-S3-011-2009) High Performance IT-SOFC with Ceria/Bismuth Bilayered Electrolyte**

K. Lee\*, M. D. Camaratta, D. Jung, J. Ahn, H. Yoon, B. Lee, E. D. Wachsman, University of Florida, USA

**8:40 AM**

**(ICACC-S3-012-2009) Performance and Degradation of Metal Supported SOFC**

J. Hjeltn\*, P. Blennow, K. Brodersen, S. Ramousse, M. Mogensen, Risoe-DTU, Denmark

**9:00 AM**

**(ICACC-S3-013-2009) Longevity of Metal-Supported SOFCs**

M. C. Tucker\*, T. Z. Shoklapper, G. Y. Lau, C. P. Jacobson, L. C. DeJonghe, S. J. Visco, LBNL, USA

**9:20 AM**

**(ICACC-S3-014-2009) Tailoring Cell Performance for Demanding Applications**

M. M. Seabaugh\*, M. J. Day, P. H. Matter, B. E. McCormick, K. Chenault, S. Ibanez, A. C. McCoy, J. Archer, NexTech Materials, Ltd., USA

**9:40 AM**

**Break**

**10:00 AM**

**(ICACC-S3-015-2009) ASR Deconvolution and Degradation Study of Segmented-in-Series SOFCs Using AC Impedance**

Z. Liu\*, D. Saus, T. Ohn, Rolls Royce Fuel Cell System (US), Inc., USA

**10:20 AM**

**(ICACC-S3-016-2009) Anode Functional Layer for Intermediate Temperature Solid Oxide Fuel Cells**

J. Ahn\*, H. Yoon, E. Wachsmann, University of Florida, USA

**10:40 AM**

**(ICACC-S3-017-2009) Operation of oxide-anode solid oxide fuel cells on simulated coal gas**

D. M. Bierschenk\*, J. Haag, K. Poeppelmeier, S. A. Barnett, Northwestern University, USA

**11:00 AM**

**(ICACC-S3-018-2009) Fundamentals of Liquid Tin Anode Solid Oxide Fuel Cell (LTA- SOFC) Operation**

R. Gemmen\*, K. Gerdes, NETL, USA; M. Koslowski, W. G. McPhee, T. Tao, CellTech Power, LLC, USA

**11:20 AM**

**(ICACC-S3-019-2009) YSZ Electrolyte Surface Chemistry in Operating SOFC and Its Impact on the Oxygen Exchange**

M. Backhaus-Ricoult\*, Corning Incorporated, USA

**11:40 AM**

**(ICACC-S3-020-2009) Novel design of a planar cell**

A. Demin\*, Institute of High temperature Electrochemistry, Russian Federation

## Symposium 4: Armor Ceramics

### Impact, Penetration & Material Modeling

Room: Coquina D

Session Chair: Jeffrey Swab, US Army Research Laboratory

**8:00 AM**

**(ICACC-S4-001-2009) Fragmentation of Ceramics in the Ballistic Environment (Invited)**

D. Grady\*, Applied Research Associates, USA

**8:40 AM**

**(ICACC-S4-002-2009) Mesomechanical Material Properties Governing Penetration of Glass Armor**

D. Shockey\*, D. Bergmannshoff, D. R. Curran, J. W. Simons, SRI International, USA

**9:00 AM**

**(ICACC-S4-003-2009) Analysis of Local Strain-Rate-Dependent Strength in Brittle Materials with Penny-shaped Cracks and Pores**

C. Zingale, L. Graham-Brady\*, K. T. Ramesh, Johns Hopkins University, USA

**9:20 AM**

**(ICACC-S4-004-2009) Rheology of Powder and Porous Media in Modeling of Penetration into Porous Ceramic**

B. Galanov\*, S. Ivanov, V. Kartuzov, IPMS, Ukraine

**9:40 AM**

**Break**

**10:00 AM**

**(ICACC-S4-005-2009) Inelastic Deformation Micro-mechanisms in Structural Ceramics (Invited)**

J. McCauley\*, Army Research Laboratory, USA

**10:40 AM**

**(ICACC-S4-006-2009) Ballistic Impact Damage in Silicon Carbide and Boron Carbide**

J. LaSalvia\*, B. Leavy, J. R. Houskamp, H. T. Miller, R. C. McCuiston, J. Campbell, U.S. Army Research Laboratory, USA

**11:00 AM**

**(ICACC-S4-007-2009) Characterization of Microstructural Damage in Silicon Carbide Processed Via Modified Chemical Vapor Deposition**

H. Miller\*, R. McCuiston, J. LaSalvia, B. Leavy, D. MacKenzie, U.S. Army Research Laboratory, USA

**11:20 AM**

**(ICACC-S4-008-2009) Stacking-fault induced plasticity in Silicon Carbide polytypes**

G. Fanchini\*, D. E. Niesz, M. Chhowalla, Rutgers University, USA

**11:40 AM**

**(ICACC-S4-009-2009) The Ballistic Performance of Multimaterial Multilayered Systems for Armor Applications**

D. Sherman\*, S. Genihovitz, Technion, Israel

## Symposium 5: Next Generation Bioceramics

### In Vitro and In Vivo Characterization of Bioceramics

Room: Coquina G

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

**8:00 AM**

**(ICACC-S5-012-2009) Evaluation of Three-Dimensional 13-93 Bioactive Glass Fiber Scaffolds After In-vivo Implantation in Rats**

S. Jung, D. E. Day\*, R. F. Brown, Missouri University of Science and Technology, USA

**8:40 AM**

**(ICACC-S5-013-2009) Cellular activation by bioactive glasses (Invited)**

J. Gough\*, University of Manchester, United Kingdom

**9:00 AM**

**(ICACC-S5-014-2009) In Vitro and In Vivo Evaluation of Bioactive Glass Scaffolds for Bone and Tissue Repair (Invited)**

M. N. Rahaman\*, D. E. Day, Missouri University of Science and Technology, USA

**9:20 AM**

**(ICACC-S5-015-2009) Flow Optimization of Osteoceramic Orthopedic Cement**

T. D. McGee\*, J. M. Wendt, Iowa State University, USA

**9:40 AM**

**Break**

**10:00 AM**

**(ICACC-S5-016-2009) Structure of Substituted Hydroxyapatites investigated by Solid State Nuclear Magnetic Resonance**

C. Bonhomme\*, F. Babonneau, C. Gervais, F. Pourpoint, G. Gasqueres, UPMC-Paris6 / CNRS, France; S. Hayakawa, A. Osaka, Graduate School of Natural Science and Technology, Japan

**10:20 AM**

**(ICACC-S5-017-2009) Direct Observation of the Formation of Collagen at Dental Implant Surfaces (Invited)**

L. A. Giannuzzi\*, D. Phifer, FEI Company, USA; N. J. Giannuzzi, Private Practice, USA; M. J. Capuano, Long Island Oral and Maxillofacial Surgery, USA; R. P. Gursky, L. Pullan, FEI Company, USA

**10:40 AM**

**(ICACC-S5-018-2009) Biocompatibility Aspects of Injectable Chemically Bonded Ceramics in the CaO -Al<sub>2</sub>O<sub>3</sub> - P<sub>2</sub>O<sub>5</sub> - SiO<sub>2</sub> System**

L. Hermansson\*, T. Jarmar, A. Faris, G. G6mes-Ortega, Doxa AB, Sweden; J. L66f, Engineering Science, Sweden

**11:00 AM****(ICACC-S5-019-2009) Synthesis and Characterization of Bioactive Glass Ceramics**

S. Maitra\*, Universiti Teknologi Petronas, Malaysia; A. Rahaman, R. Pyare, Banaras Hindu University, India; B. K. Dutta, H. B. Mukhtar, Universiti Teknologi Petronas, Malaysia

**11:20 AM****(ICACC-S5-020-2009) Ageing and Fatigue Behavior of Dental Zirconia (3Y-TZP) Ceramics**

T. Kosmac\*, Jozef Stefan Institute, Slovenia; C. Oblak, P. Jevnikar, Medical Faculty, University of Ljubljana, Slovenia

**11:40 AM****(ICACC-S5-021-2009) Mechanical and biocompatibility of yttrium and fluorine doped hydroxyapatite**

B. Basar\*, Z. Evis, A. Tezcaner, Middle East Technical University, Turkey

**Symposium 7: 3rd International Symposium on Nanostructured Materials and Nanocomposites: Held in Honor of Professor Koichi Niihara****Recent Advances in Nanocomposites and Nanostructures I**

Room: Coquina C

Session Chair: Sanjay Mathur, University of Cologne

**8:00 AM****(ICACC-S7-001-2009) Nanocomposite Technology-State-of-the Art and Future Direction- (Invited)**

K. Niihara\*, Nagaoka University of Technology, Japan

**8:40 AM****(ICACC-S7-002-2009) Production of Alumina Matrix Nanocomposite by Solid State Precipitation**

A. Mukhopadhyay\*, R. Todd, Oxford University, UK, United Kingdom

**9:00 AM****(ICACC-S7-003-2009) Nickel Alumina Nanocomposites by Electroless Coating - Synthesis and Properties**

T. J. Graule\*, M. Zraggen, S. Roos, D. Werner, J. Heinecke, Y. De Hazan, Empa, Switzerland

**9:20 AM****(ICACC-S7-004-2009) Ductile deformation in alumina/silicon carbide nanocomposites**

H. Wu\*, Loughborough University, United Kingdom; S. Roberts, University of Oxford, United Kingdom; B. Derby, The University of Manchester, United Kingdom; B. Tanner, Durham University, United Kingdom

**9:40 AM**

Break

**10:00 AM****(ICACC-S7-005-2009) High Temperature Semiconductivity of Doped Graphene Networks Made from the Polymer Route**

H. Ryu, R&amp;D Division of Hyundai Motor Company, South Korea; R. Raj\*, University of Colorado at Boulder, USA

**10:40 AM****(ICACC-S7-006-2009) Mg Matrix Composites Reinforced with MAX Phases**

S. Amini\*, M. W. Barsoum, Drexel University, USA

**11:00 AM****(ICACC-S7-007-2009) Molecular Mixing to Evaluate the Alumina to Silica Ratio of Mullite Solid Solutions as a Function of Temperature**

T. D. McGee\*, Iowa State University, USA

**11:20 AM****(ICACC-S7-008-2009) Processing and characterization of second phase nanocolumns in thin film oxide ceramics**

C. Varanasi\*, J. Burke, University of Dayton Research Institute, USA; J. H. Lee, Texas A&amp;M, USA; H. Wang, Texas A&amp;M, USA; P. N. Barnes, Air Force Research Laboratory, USA

**11:40 AM****(ICACC-S7-009-2009) Simulation Based Design of Polymer Clay Nanocomposites using Multiscale Modeling**

D. R. Katti, K. S. Katti\*, North Dakota State University, USA

**Symposium 8: 3rd International Symposium on Advanced Processing and Manufacturing Technologies for Structural and Multifunctional Materials and Systems (APMT)****Advanced Forming and Sintering**

Room: Coquina B

Session Chairs: Richard Sisson, Worcester Polytechnic Institute; Tatsuki Ohji, National Institute of Advanced Industrial Science &amp; Technology

**8:00 AM****(ICACC-S8-010-2009) Composite Manufacturing and Recycling by Advanced Powder Processing for Energy and Environments (Invited)**

M. Naito\*, K. Sato, A. Kondo, Osaka University, Japan; N. Isu, INAX Corporation, Japan

**8:40 AM****(ICACC-S8-011-2009) Teaching and Learning the Design, Development and Evaluation of Sustainable Materials Selection and Processes**

R. D. Sisson\*, J. O'Shaughnessy, K. Rong, J. Bergendahl, D. Apelian, Worcester Polytechnic Institute, USA

**9:00 AM****(ICACC-S8-012-2009) Low-soda Reactive Alumina's for the Ceramics Industry**

C. Compson\*, R. McConnell, Almatix, USA; N. Grossmann, B. Kruft-Steuler, Almatix, Germany

**9:20 AM****(ICACC-S8-013-2009) Comparison of High Alumina Product Properties Depending on Shaping Technology and Firing Conditions**

A. Kaiser\*, LAEIS GmbH, Luxembourg; R. van Loo, ALPHA CERAMICS GmbH, Germany; J. Kraus, SAMA MASCHINENBAU GmbH, Germany; W. Doerr, RIEDHAMMER GmbH, Germany

**9:40 AM**

Break

**10:00 AM****(ICACC-S8-014-2009) Densification Enhancement of Alumina by Sandwich Process Design**

O. L. Ighodaro\*, O. I. Okoli, B. Wang, HPMT, FAMU-FSU College of Engineering, USA

**10:20 AM****(ICACC-S8-015-2009) Processing factors involved in sintering  $\beta$ -Si<sub>3</sub>N<sub>4</sub>-based ceramics in an air atmosphere furnace**

K. P. Plucknett\*, M. Quinlan, Dalhousie University, Canada

**10:40 AM****(ICACC-S8-016-2009) Fabrication of Ultrahigh Porous Silicon Carbide with Micrometer-sized Cells by Novel Gelcasting Method**

M. Fukushima\*, M. Nakata, Y. Yoshizawa, National Institute of Advanced Industrial Science and Technology (AIST), Japan

**11:00 AM****(ICACC-S8-017-2009) Fabrication and properties of porous SiC ceramics via an in-situ reaction-bonding processing**

Y. Zeng\*, Shanghai Institute of Ceramics, CAS, China; D. Jiang, Shanghai Institute of Ceramics, CAS, China

**11:20 AM****(ICACC-S8-018-2009) Issues in the Synthesis and Fabrication of Refractory Carbides, Borides and their Mixtures**

A. K. Suri\*, K. Nagaiyar, S. Chidambaram, Bhabha Atomic Research Centre, India

## Symposium 9: Porous Ceramics: Novel Developments and Applications

### Structure and Properties of Porous Ceramics I

Room: Coquina F

Session Chair: Gian Domenico Soraru, University of Trento

**8:00 AM****(ICACC-S9-010-2009) Glass Foams from Cullet**

A. Saburit Llaudis, F. García Ten, M. Orts Tari, Campus Universitario Riu Sec, Spain; E. Bernardo, P. Colombo\*, University of Padova, Italy

**8:20 AM****(ICACC-S9-011-2009) Strength, Permeability and Heat Transfer Properties of Open Cell Macro Porous SiC as a Function of Structural Morphologies**

J. Fellows\*, J. Cutts, H. Anderson, C. A. Lewinsohn, M. Wilson, Ceramatec, Inc., USA

**8:40 AM****(ICACC-S9-012-2009) Ceramic Foams with Hierarchical Porosity from Preceramic Polymers**

P. Colombo, C. Vakifahmetoglu\*, University of Padova, Italy

**9:00 AM****(ICACC-S9-013-2009) Porous  $\beta$ -Si<sub>3</sub>N<sub>4</sub> ceramics prepared with fugitive graphite filler**

K. P. Plucknett\*, P. Chanda, Dalhousie University, Canada; L. Garrido, Centro de Tecnologia de Recursos Minerales y Cerámica (CETMIC, CIC-CONICET-UNLP), Argentina; L. Genova, CCTM Centro de Ciência e Tecnologia de Materiais, Cidade Universitária, Brazil

**9:20 AM****(ICACC-S9-014-2009) Structure, Phase Composition and Micromechanical Instability in Porous Ceramic Material**

S. N. Kulkov\*, S. P. Buyakova, Institute of Strength Physics and Materials Science, RAS, Russian Federation

**9:40 AM****Break**

### Structure and Properties of Porous Ceramics II

Room: Coquina F

Session Chair: Yury Gogotsi, Drexel University

**10:00 AM****(ICACC-S9-015-2009) Synthesis and Thermal Properties of Porous Mineral Materials**

C. S. Peyratout\*, Ecole Nationale Supérieure de Céramique Industrielle, France; A. Beismann, Ecole Nationale Supérieure de Céramique Industrielle, France; A. Michot, Ecole Nationale Supérieure de Céramique Industrielle, France; G. Visomblin, Ecole Nationale Supérieure de Céramique Industrielle, France; D. S. Smith, Ecole Nationale Supérieure de Céramique Industrielle, France

**10:20 AM****(ICACC-S9-016-2009) Structural Characterization and Fluid Flow Behavior of Aqueous Freeze Cast Porous Ceramic Substrates**

S. W. Sofie\*, J. McCrummen, S. Codd, T. Broston, Montana State University, USA

**10:40 AM****(ICACC-S9-017-2009) Long-term High Temperature Stability of WHIPOX® All-Oxide CMC**

B. J. Kanka\*, M. J. Schmücker, German Aerospace Center Cologne, Germany

**11:00 AM****(ICACC-S9-018-2009) Aluminum Silicate Aerogels with High Temperature Stability**

R. Trifu\*, W. Rhine, I. Melnikova, S. White, Aspen Aerogels, Inc., USA; F. Hurwitz, NASA Glenn Research Center, USA

**11:20 AM****(ICACC-S9-019-2009) High Specific Surface Area Carbon from Etching of SiCN Ceramics**

S. Yeon\*, Y. Gogotsi, Drexel University, USA; C. Vakifahmetoglu, P. Colombo, University of Padova, Italy

**11:40 AM****(ICACC-S9-020-2009) Estimation of Tortuosity factor in porous ceramics**

V. V. Krishnan\*, C. Singh, A. Kumar, S. Agarwal, Indian Institute of Technology Delhi, India

## Symposium 10: International Symposium on Silicon Carbide and Carbon-based Materials for Fusion and Advanced Nuclear Energy Applications

### Fission Energy Programs and Applications

Room: Crystal Ballroom

Session Chairs: Roger Naslain, LCTS; Satoshi Konishi, Institute of Advanced Energy, Kyoto University

**8:00 AM****(ICACC-S10-009-2009) Development of SiC/SiC Composites for the Gas Cooled Fast Reactor (Invited)**

P. Billot\*, J. Séran, L. Chaffron, CEA/Saclay Bt 520, France

**8:40 AM****(ICACC-S10-010-2009) Research and developments on C/C composite for Very High Temperature Reactor (VHTR) application**

T. Shibata, T. Makita, T. Takagi, E. Kunimoto, K. Sawa\*, Japan Atomic Energy Agency, Japan

**9:00 AM****(ICACC-S10-011-2009) Ceramic Composites for Next Generation Power Plant**

W. Windes\*, Idaho National Laboratory, USA; L. Snead, Y. Katoh, Oak Ridge National Laboratory, USA; R. Shinavski, Hypertherm HTC, USA; T. Burchell, Oak Ridge National Laboratory, USA

**9:20 AM****(ICACC-S10-012-2009) Carbon Fiber Composites In High Temperature Reactor Application**

L. Snead\*, Y. Katoh, K. Ozawa, T. Burchell, Oak Ridge National Laboratory, USA

**9:40 AM****Break**

### Heat Exchangers and Joining for Nuclear Application

Room: Crystal Ballroom

Session Chair: Monica Ferraris, Polytechnic di Torino

**10:00 AM****(ICACC-S10-013-2009) Development of SiC Composite Heat Exchange Structure for Advanced Nuclear Systems (Invited)**

S. Konishi\*, Y. Yamamoto, T. Hinoki, K. Noborio, Institute of Advanced Energy, Kyoto University, Japan; Y. Inagaki, Japan Atomic Energy Agency, Japan; A. Kohyama, Institute of Advanced Energy, Kyoto University, Japan

**10:40 AM****(ICACC-S10-014-2009) Design, Fabrication, and Testing of Silicon Infiltrated Ceramic Plate-type Heat Exchangers**

J. Schmidt\*, German Aerospace Center, Germany; P. Peterson, University of California, USA; K. Sridharan, University of Wisconsin, USA



11:00 AM

**(ICACC-S10-015-2009) Joining SiC/SiC Composites for Fusion Applications**

C. H. Henager\*, PNNL, USA

11:20 AM

**(ICACC-S10-016-2009) Diffusion bonding between SiC and ferritic steel**

Z. Zhihong\*, H. Tatsuya, K. Akira, Graduate School of Energy Science, Kyoto University, Gokasho, Uji, Japan

11:40 AM

Discussion: Joining

**Symposium 11: Symposium on Advanced Dielectric, Piezoelectric, Ferroelectric, and Multiferroic Materials****Lead-free Piezoelectrics**

Room: Tomoka A&amp;B

Session Chair: Paul Clem, Sandia National Laboratories; Vojislav Mitic, University of Nis

8:00 AM

**(ICACC-S11-008-2009) High-strain Bismuth-based Lead-free Piezoceramics (Invited)**

J. Roedel\*, Technische Universität Darmstadt, Germany

8:40 AM

**(ICACC-S11-009-2009) Lead-Free Piezoelectric Materials in Alkali Niobate Systems (Invited)**

C. Ahn\*, C. Park, S. Priya, Virginia Tech, USA

9:20 AM

**(ICACC-S11-010-2009) Piezoelectric Property Relationships for Lead-Free Compositions in the Piezoceramic Bi<sub>0.5</sub>Na<sub>0.5</sub>TiO<sub>3</sub>-BaTiO<sub>3</sub>-K<sub>0.5</sub>Na<sub>0.5</sub>NbO<sub>3</sub> System**

C. DiAntonio\*, Sandia National Laboratories, USA

9:40 AM

Break

10:00 AM

**(ICACC-S11-011-2009) Transmission Electron Microscopy and Electron Diffraction Studies of Lead-Free Ferroelectrics in the System BNT-BT-KNN**

H. Kleebe\*, J. Kling, L. Schmitt, S. Lauterbach, H. Fuess, W. Jo, J. Rödel, Technische Universität Darmstadt, Germany

10:20 AM

**(ICACC-S11-012-2009) Development of competitive lead-free piezoceramic materials, a novel approach**

K. Astafiev\*, W. Wolny, Ferroperm Piezoceramics A/S, Denmark; D. Damjanovic, N. Setter, Ecole Polytechnique Fédérale de Lausanne (EPFL), Switzerland; B. Malic, M. Kosec, Jozef Stefan Institute, Slovenia

10:40 AM

**(ICACC-S11-013-2009) Reflection high-energy electron diffraction study of K(Ta,Nb)O<sub>3</sub> thin films and related superlattices**

J. A. Cianfrone\*, M. Ivill, C. J. Callendar, D. P. Norton, University of Florida, USA; L. A. Boatner, Oak Ridge National Laboratory, USA

**Symposium 1: Mechanical Behavior and Performance of Ceramics & Composites****Fracture of Ceramics and Composites - Modeling and Testing**

Room: Coquina A

Session Chairs: Jonathan Salem, NASA Glenn Research Center; Monica Ferraris, Polytechnic di Torino

1:20 PM

**(ICACC-S1-022-2009) On the History of Brittle Materials Fractography (Invited)**

G. D. Quinn\*, NIST, USA

2:00 PM

**(ICACC-S1-023-2009) Fracture Mechanics Tests for Brittle Materials**

S. Freiman\*, J. J. Mecholsky, Freiman Consulting, USA

2:20 PM

**(ICACC-S1-024-2009) Estimation of Fracture Energy from Work of Fracture for Unstable Crack Growth**

R. L. Smith\*, J. J. Mecholsky, University of Florida, USA; S. W. Freiman, National Institute of Standards and Technology, USA

2:40 PM

**(ICACC-S1-025-2009) A microcomposite driven multiscale model to the mechanical behavior of fiber reinforced ceramic matrix composites**

J. L. Lamon\*, D. Casteignat, CNRS, France

3:00 PM

Break

3:20 PM

**(ICACC-S1-026-2009) A Finite Element Model of Indentation Fracture**

K. E. Johanns\*, J. Lee, Y. Gao, G. Pharr, University of Tennessee, USA

3:40 PM

**(ICACC-S1-027-2009) Determination of an R-Curve in the Very First Crack Extension Using Corrected Load-displacement Data and COD- Profile Measurements**

S. Fünfschilling\*, T. Fett, R. Oberacker, University of Karlsruhe, Germany; H. Jelitto, G. Schneider, TU Hamburg- Haburg, Germany; M. J. Hoffmann, University of Karlsruhe, Germany

4:00 PM

**(ICACC-S1-028-2009) Long-Term Gradient Temperature Stress Relaxation Testing and Modeling of Ceramic Thermal Insulation Materials**

J. G. Hemrick\*, E. Lara-Curzio, J. F. King, Oak Ridge National Laboratory, USA

4:20 PM

**(ICACC-S1-029-2009) Comparison of shear strength tests on epoxy joined C/C composites and ceramics**

A. Ventrella, M. Ferraris\*, M. Salvo, V. Casalegno, Politecnico di Torino, Italy

4:40 PM

**(ICACC-S1-030-2009) Shear Strength of and Residual Stresses in Large Area Sialon/H13 Steel Joints by Brazing**

S. Boddapati\*, M. Shirgaokar, D. R. Siddle, S. Brahmandam, I. Spitsberg, Kennametal, Inc., USA

5:00 PM

**(ICACC-S1-031-2009) Dynamic Behaviour of Ceramic Tiles Under Impact**

D. M. Constantinescu\*, M. Sandu, University POLITEHNICA of Bucharest, Romania; E. Voicaneanov, Metallurgical Research Institute – ICEM SA, Romania; S. Soroan, M. Gavan, University POLITEHNICA of Bucharest, Romania

## Symposium 2: Advanced Ceramic Coatings for Structural, Environmental, and Functional Applications

### Thermal Barrier Coatings II

Room: Coquina H

Session Chairs: Robert Vassen, IEF-1; Rodney Trice, Purdue University

**1:20 PM**

#### (ICACC-S2-020-2009) Factors affecting the failure of thermal barrier coatings with a Pt-enriched $\gamma+\gamma'$ bond coat

X. Zhao, M. Karadge, P. Xiao\*, University of Manchester, United Kingdom

**1:40 PM**

#### (ICACC-S2-021-2009) Phase Stability of Yttria-Stabilized Zirconia after Isothermal and Gradient Aging

C. A. Johnson\*, GE Global Research, USA; Y. Gao, GE Global Research, USA; D. M. Lipkin, GE Global Research, USA; W. C. Hasz, GE Global Research, USA; W. A. Nelson, W. D. Bonificio, GE Energy, USA; C. G. Levi, University of California, USA

**2:00 PM**

#### (ICACC-S2-022-2009) Microstructure, Mechanical and Thermal Properties of CMAS- penetrated APS thermal Barrier Coatings

S. Faulhaber\*, A. G. Evans, University of California Santa Barbara, USA

**2:20 PM**

#### (ICACC-S2-023-2009) Fracture Mechanical Modelling of a Plasma Sprayed TBC System

H. Brodin\*, SIEMENS Industrial Turbomachinery AB, Sweden; R. Ericsson, Linköping University, Sweden; S. Sjöström, SIEMENS Industrial Turbomachinery AB, Sweden; S. Johansson, Linköping University, Sweden

**2:40 PM**

#### (ICACC-S2-024-2009) Aluminates for Use in Thermal Barrier Coatings with Double Layer Structure

D. E. Mack\*, G. Pracht, R. Vassen, D. Stöver, Forschungszentrum Jülich GmbH, Germany

**3:00 PM**

Break

### Thermal Barrier and Abradable Coatings

Room: Coquina H

Session Chairs: Robert Vassen, IEF-1; Rodney Trice, Purdue University

**3:20 PM**

#### (ICACC-S2-025-2009) Deposition Rate Effects on Stress Evolution during Plasma Spraying of Thermal Barrier Coatings

K. Shinoda\*, A. Valarezo, J. R. Colmenares-Angulo, G. Dwivedi, S. Sampath, Stony Brook University, USA

**3:40 PM**

#### (ICACC-S2-026-2009) Ceramics for Abradable Shroud Seal Applications

D. R. Sporer\*, Sulzer Metco, Austria; S. Wilson, Sulzer Markets and Technology, Switzerland; M. Dorfman, Sulzer Metco, Austria

**4:00 PM**

#### (ICACC-S2-027-2009) Development of abradables for the high pressure turbine of aeroengines

R. Vassen\*, T. Steinke, G. Mauer, IEF-1, Germany; D. Roth-Fagaraseanu, T. Wunderlich, Rolls-Royce Deutschland Ltd & Co KG., Germany

**4:20 PM**

#### (ICACC-S2-028-2009) Defining Optimal Roughness of the Bond Coat – Top Coat Interface in Air-Plasma Sprayed Thermal Barrier Coating Systems

M. D. Weeks\*, D. R. Mumm, University of California, Irvine, USA

**4:40 PM**

#### (ICACC-S2-029-2009) Sulfate-Induced High Temperature Degradation of Air Plasma Sprayed Thermal Barrier Coatings

P. Mohan\*, T. Patterson, University of Central Florida, USA; V. H. Desai, New Mexico State University, USA; Y. Sohn, University of Central Florida, USA

**5:00 PM**

#### (ICACC-S2-030-2009) Repeatability of stress strain behavior of Plasma Sprayed coatings

G. Dwivedi\*, A. Valarezo, S. Sampath, T. Nakamura, J. Colmenares-Angulo, Center for Thermal Spray Research, Stony Brook University, USA

**5:20 PM**

#### (ICACC-S2-031-2009) Effect of Starting Microstructure on Thermal Conductivity of As-Deposited and Aged Plasma-Sprayed Thermal Barrier Coatings

Y. Tan\*, S. Sampath, State University of New York at Stony Brook, USA

**5:40 PM**

#### (ICACC-S2-032-2009) Thermal Conductivity and Coefficients of Thermal Expansion of Free-Standing Air Plasma Sprayed CoNiCrAlY Coatings

T. Patterson\*, Y. Sohn, University of Central Florida, USA

## Symposium 3: 6th International Symposium of Solid Oxide Fuel Cells (SOFC): Materials, Science, and Technology

### Electrodes-I

Room: Coquina E

Session Chairs: Tatsumi Ishihara, Kyushu University; Meilin Liu, Georgia Institute of Technology

**1:20 PM**

#### (ICACC-S3-021-2009) Anodic performance of Ce(Mn,Fe)O<sub>2</sub>-La(Sr)Fe(Mn)O<sub>3</sub> perovskite composite for La(Sr)Ga(Mg,Co)O<sub>3</sub> electrolyte (Invited)

T. Ishihara\*, Kyushu University, Japan; P. Vanalabphatana, Chulalongkorn University, Thailand; H. Matsumoto, Kyushu University, Japan

**2:00 PM**

#### (ICACC-S3-022-2009) Novel Composite Anodes for Metal Supported SOFC

P. Blennow\*, T. Klemensø, A. Persson, M. Mogensen, Risø DTU, Denmark

**2:20 PM**

#### (ICACC-S3-023-2009) Perovskite Materials for use as Sulfur Tolerant Anodes in SOFC's

A. P. Seibert\*, T. G. Howell, Air Force Research Laboratories, USA; H. Xiao, UES, USA; M. A. Rottmayer, T. L. Reitz, Air Force Research Laboratories, USA

**2:40 PM**

#### (ICACC-S3-024-2009) Recent Research and Development on SOFC Cathodes at PNNL

X. Zhou\*, J. Templeton, Z. Nie, P. Singh, L. R. Pederson, J. W. Stevenson, Pacific Northwest National Lab, USA

**3:00 PM**

Break

**3:20 PM**

#### (ICACC-S3-025-2009) Deconvolution of SOFC Cathode Polarization (Invited)

E. D. Wachsman\*, University of Florida, USA

**4:00 PM**

#### (ICACC-S3-026-2009) Factors Affecting Performance of Neodymium Cuprates in SOFC Cathode Composites

M. Cassidy\*, J. Irvine, University of St Andrews, United Kingdom

**4:20 PM****(ICACC-S3-027-2009) Evaluating Composite SOFC Cathodes using Isotopic Oxygen Exchange**

C. Kan\*, E. Wachsman, University of Florida, USA

**4:40 PM****(ICACC-S3-028-2009) Investigation of cathodic behavior of thin film SrTi<sub>1-x</sub>Fe<sub>x</sub>O<sub>3-δ</sub> (x = 0.05-1) model MIEC system**

W. Jung, H. L. Tuller\*, MIT, USA

**5:00 PM****(ICACC-S3-029-2009) Analysis of LSCF/YSZ symmetric cathodes using FIB/SEM in conjunction with EIS**

D. Gostovic\*, J. R. Smith, K. A. O'Hara, K. S. Jones, E. D. Wachsman, University of Florida, USA

**Symposium 4: Armor Ceramics****Material Concepts, Processes & Characterization**

Room: Coquina D

Session Chair: Jerry LaSalvia, U.S. Army Research Laboratory

**1:20 PM****(ICACC-S4-010-2009) Characterizing the Features and Properties of Engineered Grain Boundaries in Silicon Carbide for Improved Dynamic Performance**

S. R. Mercurio\*, S. Miller, M. Jitianu, R. Haber, Rutgers University, USA

**1:40 PM****(ICACC-S4-011-2009) Effects of grain size and second phases on properties of sintered SiC**

P. Karandikar\*, G. Evans, S. Wong, M Cubed Technologies, Inc., USA

**2:00 PM****(ICACC-S4-012-2009) Investigation of the Effect of Comminution upon Boron Carbide Microstructure and Phase**

D. W. Maiorano\*, R. A. Haber, V. Dornich, S. Miller, Rutgers, The State University of New Jersey, USA

**2:20 PM****(ICACC-S4-013-2009) Determination of Unit Cell Parameters of Al<sub>2</sub>O<sub>3</sub>-TiB<sub>2</sub> Composites**

S. Holt\*, K. V. Logan, Virginia Tech, USA

**2:40 PM****(ICACC-S4-014-2009) High-Frequency Ultrasonic Characterization of Alumina for High Strain Rate Applications**

S. Bottiglieri\*, R. Haber, Rutgers University, USA; A. Arcaro, Industrie Bitossi, Italy; R. Rovai, Industrie Bitossi, Italy

**3:00 PM**

Break

**3:20 PM****(ICACC-S4-015-2009) TEM study of Grain Boundary Phases in Alumina for High Strain Rate Applications**

S. Miller\*, S. Mercurio, R. Haber, Rutgers University, USA; R. Rovai, A. Arcaro, Industrie Bitossi S.p.A., Italy

**3:40 PM****(ICACC-S4-016-2009) Development of Sialons as an Armor Ceramic**

R. Yeckley\*, Kennametal, USA; J. LaSalvia, M. Klusewitz, Army Research Laboratory, USA

**4:00 PM****(ICACC-S4-017-2009) Indenter Elastic Modulus and Hertzian Ring Crack Initiation**

W. L. Daloz\*, A. Wereszczak, Oak Ridge National Laboratory, USA; O. Jadaan, University of Wisconsin-Platteville, USA; K. T. Strong, Oak Ridge National Laboratory, USA

**4:20 PM****(ICACC-S4-018-2009) Hertzian Indentation With Si<sub>3</sub>N<sub>4</sub> Balls on a Flat Si<sub>3</sub>N<sub>4</sub> Target**

K. T. Strong\*, A. Wereszczak, W. Daloz, Oak Ridge National Laboratory, USA; O. Jadaan, University of Wisconsin-Platteville, USA

**4:40 PM****(ICACC-S4-019-2009) Microstructure control of TiB<sub>2</sub>-B<sub>4</sub>C-SiC particulate composites by reaction hot pressing**

H. J. Brown-Shaklee\*, W. G. Fahrenholtz, G. E. Hilmas, Missouri University of Science and Technology, USA

**Symposium 5: Next Generation Bioceramics****Nanostructured Bioceramics (joint with Symposium 7)**

Room: Coquina G

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

**1:20 PM****(ICACC-S5-022-2009) Bioinspired Synthesis of Self-assembled Calcium Phosphate Nanocomposites Using Block Copolymer-peptide Conjugates (Invited)**

Y. Yusufoglu, Y. Hu, M. Kanapathipillai, M. Kramer, E. Kalay, K. Schmidt-Rohr, S. Mallapragada, M. Akinc\*, Iowa State University, USA

**2:00 PM****(ICACC-S5-023-2009) Biomimetic Polymer/Ceramic Composite Materials for Bone Regeneration (Invited)**

P. X. Ma\*, University of Michigan, USA

**2:20 PM****(ICACC-S5-024-2009) Design of Novel Polymer Clay Nanocomposites Using Amino Acids (Invited)**

K. S. Katti\*, D. Salliyil Kodakkattu Mana, D. R. Katti, North Dakota State University, USA

**2:40 PM****(ICACC-S5-025-2009) Nano-Structured Bioceramics: A New Frontier in Biomaterials**

A. G. Solomah\*, American Consultants, USA

**3:00 PM**

Break

**3:20 PM****(ICACC-S5-026-2009) Electrophoretic Deposition of Hydroxyapatite – Biopolymer Nanocomposites for Biomedical Applications (Invited)**

I. Zhitomirsky\*, X. Pang, F. Sun, McMaster University, Canada

**3:40 PM****(ICACC-S5-027-2009) Development of a Nanobiosensor for Salmonella Detection**

J. Weber\*, University of South Florida, USA; S. Pillai, S. R. Singh, Alabama State University, USA; A. Kumar, University of South Florida, USA

**4:00 PM****(ICACC-S5-028-2009) Prevention of Excessive Pulp Temperatures During the Light-Cured Preparation of Dental Composite Restorations (Invited)**

M. White\*, M. Jakubinek, R. Price, Dalhousie University, Canada

**4:20 PM****(ICACC-S5-029-2009) Effect of cation substitution on the structure and the crystallisation of fluorine containing aluminosilicate ionomer glasses (Invited)**

A. Stamboulis\*, University of Birmingham, United Kingdom

## 4:40 PM

### (ICACC-S5-030-2009) Biphasic calcium phosphate containing magnesium synthesized via sol-gel method

I. Sopyan\*, T. Abdurrahim, International Islamic University Malaysia, Malaysia; R. Singh, University Tenaga Nasional, Malaysia

## 5:00 PM

### (ICACC-S5-031-2009) Nano-Hydroxyapatite Powders Doped With Mg & F Ions

Z. P. Sun\*, Z. Evis, Middle East Technical University, Turkey

## Symposium 7: 3rd International Symposium on Nanostructured Materials and Nanocomposites: Held in Honor of Professor Koichi Niihara

### Recent Advances in Nanocomposites and Nanostructures II

Room: Coquina C

Session Chair: Mrityunjay Singh, Ohio Aerospace Institute

## 1:20 PM

### (ICACC-S7-010-2009) Formation of nano-scaled oxide semiconductor composite structures using self-organized phase separation route

T. Sekino\*, Institute of Multidisciplinary Research for Advanced Materials (IMRAM), Tohoku University, Japan; T. Shimizu, T. Kusunose, The Institute of Scientific and Industrial Research (ISIR), Osaka University, Japan; S. Tanaka, Institute of Multidisciplinary Research for Advanced Materials (IMRAM), Tohoku University, Japan

## 2:00 PM

### (ICACC-S7-011-2009) Bonding of Organic Molecules between Metal Surface in Passivated Copper Nanosized Powders by Pulsed Wire Discharge

H. Suematsu\*, Y. Saito, Y. Tokoi, T. Suzuki, T. Nakayama, K. Niihara, Nagaoka University of Technology, Japan

## 2:40 PM

### (ICACC-S7-013-2009) Electrical, Mechanical, and Thermal Properties of Multiwalled Carbon Nanotube and Zirconia Composites

K. Ahmad\*, P. Wei, Tsinghua University, China

## 3:00 PM

Break

## Nanostructured Membranes, Films, Coatings and Nanoporous Materials

Room: Coquina C

Session Chair: Tohru Sekino, IMRAM, Tohoku Univ.

## 3:20 PM

### (ICACC-S7-014-2009) Nanocrystalline Diamond Films For MEMS Applications (Invited)

A. Kumar\*, S. Balachandran, H. Jeedigunta, T. Weller, University of South Florida, USA

## 4:00 PM

### (ICACC-S7-015-2009) Structure Determination and Photoswitching of Single Molecules in Nanopores (Invited)

D. Schaniel\*, Universität zu Köln, Germany; A. Cervellino, Paul Scherrer Institute, Switzerland; S. Andrea, Universität zu Köln, Germany; J. Schefer, L. Keller, Paul Scherrer Institute, Switzerland; T. Woike, Universität zu Köln, Germany

## 4:40 PM

### (ICACC-S7-016-2009) Cellular Ceramics via Alkane Phase Emulsified Suspensions

S. Barg\*, D. Koch, G. Grathwohl, University of Bremen, Germany

## 5:00 PM

### (ICACC-S7-017-2009) Fabrication of Patterned Film of Gold Nanoparticles Using Electron Irradiation and Post-pyrolysis

Y. Kim, S. Yoo, S. Cho\*, Korea Advanced Institute of Science and Technology, South Korea

## Symposium 8: 3rd International Symposium on Advanced Processing and Manufacturing Technologies for Structural and Multifunctional Materials and Systems (APMT)

### Coating, Joining and Machining

Room: Coquina B

Session Chairs: Michael Halbig, Army Research Laboratory; Takashi Goto, IMR Tohoku Univ

## 1:20 PM

### (ICACC-S8-019-2009) High-Speed Thick Coatings by Laser CVD for Engineering Applications (Invited)

T. Goto\*, IMR Tohoku Univ, Japan

## 2:00 PM

### (ICACC-S8-020-2009) Faradayic EPD Processing of Thermal Barrier Coatings

J. W. Kell\*, H. A. McCrabb, Faraday Technology, USA

## 2:20 PM

### (ICACC-S8-021-2009) Indium Tin Oxide Thin Film Coatings Obtained Using Developed Rotary Ceramic Sputtering Targets

E. Medvedovski\*, C. J. Szepesti, O. Yankov, Umicore Indium Products, USA; K. Leitner, R. Linsbod, Umicore Materials AG, Liechtenstein; P. Lippens, Umicore Thin Film Products, Belgium

## 2:40 PM

### (ICACC-S8-023-2009) Joining and Integration of Silicon Nitride Ceramics for Aerospace and Energy Systems

M. Singh\*, Ohio Aerospace Institute, NASA Glenn Research Center, USA; R. Asthana, University of Wisconsin-Stout, USA

## 3:00 PM

Break

## 3:20 PM

### (ICACC-S8-024-2009) Joining of Silicon Carbide through the Diffusion Bonding Approach

M. Halbig\*, Army Research Laboratory, USA; M. Singh, Ohio Aerospace Institute, USA

## 3:40 PM

### (ICACC-S8-025-2009) Basic Study of Joint Interface Formation in Magnetic Pressure Seam Welding

H. Serizawa\*, I. Shibahara, S. Rashed, H. Murakawa, Osaka University, Japan; M. Watanabe, S. Kumai, Tokyo Institute of Technology, Japan

## 4:00 PM

### (ICACC-S8-026-2009) Joining of Silicon Nitride by Ceramic Slurry

N. Kondo\*, H. Hyuga, H. Kita, AIST, Japan

## 4:20 PM

### (ICACC-S8-027-2009) Modeling and Analysis of Machinability Evaluation in the Ultrasonic Drilling (USD) Process of Aluminum Oxide-Based Ceramic

R. S. Jadoun\*, GBPUAT, Pantnagar, India

## Symposium 9: Porous Ceramics: Novel Developments and Applications

### Structure and Properties of Porous Ceramics III

Room: Coquina F

Session Chair: Thomas Graule, Empa

**1:20 PM**

**(ICACC-S9-021-2009) Design of silica networks using organic-inorganic hybrid alkoxides for highly permeable hydrogen separation membranes**

M. Kanezashi\*, K. Yada, T. Yoshioka, T. Tsuru, Hiroshima University, Japan

**2:00 PM**

**(ICACC-S9-023-2009) Damage tolerance based strength assessment and design of porous ceramics**

H. Baba\*, IHI Corporation, Japan; A. Suzuki, Saitama University, Japan

**2:20 PM**

**(ICACC-S9-024-2009) Computer Simulation of Hydrogen Capacity of Nanoporous Carbon**

V. Kartuzov\*, NASU Frantzevich Institute for Problems of Materials Science, Ukraine; Y. Gogotsi, Drexel University, USA; A. Kryklya, NASU Frantzevich Institute for Problems of Materials Science, Ukraine

**2:40 PM**

**(ICACC-S9-025-2009) Microstructural Evolution and Thermal Properties of Polymer Derived Ceramic**

M. S. Beltrao\*, C. A. Costa, M. Ferreira, Federal University of Rio de Janeiro, Brazil

**3:00 PM**

Break

### Applications of Porous Ceramics I

Room: Coquina F

Session Chair: James Webb, Corning Incorporated

**3:20 PM**

**(ICACC-S9-026-2009) Virus Filters Based on Surface Modified Diatomite Ceramics (Invited)**

T. J. Graule\*, B. Michen, M. Wegmann, Empa, Switzerland

**4:00 PM**

**(ICACC-S9-027-2009) Glass foams for photocatalytic applications**

M. Scheffler\*, C. Ohl, C. Olschewski, V. Wilker, BTU Cottbus, Germany; F. Scheffler, ZAE Bayern, Germany

**4:20 PM**

**(ICACC-S9-028-2009) Novel Electrospun Nanofiber Filtration System Against Chemical and Biological Agents**

H. Park\*, W. M. Sigmund, Q. Zhang, C. Wu, University of Florida, USA

**4:40 PM**

**(ICACC-S9-029-2009) Development of novel microporous ZrO<sub>2</sub> membranes for H<sub>2</sub>/CO<sub>2</sub> separation**

T. Van Gestel\*, W. A. Meulenbergh, M. Bram, D. Stöver, Forschungszentrum Jülich, Germany

## Symposium 10: International Symposium on Silicon Carbide and Carbon-based Materials for Fusion and Advanced Nuclear Energy Applications

### Irradiation Effect and Microstructural Characterization

Room: Crystal Ballroom

Session Chair: Timothy Burchell, ORNL

**1:20 PM**

**(ICACC-S10-017-2009) Mechanical Strength of CTP Triplex SiC Fuel Clad Tubes After Irradiation in MIT Research Reactor Under PWR Conditions (Invited)**

H. Feinroth\*, M. Ales, E. Barringer, Ceramic Tubular Products LLC, USA; G. Kohse, D. Carpenter, Massachusetts Institute of Technology, USA; R. Jaramillo, Oak Ridge National Lab, USA

**2:00 PM**

**(ICACC-S10-018-2009) Evolution of defect clusters in SiC during neutron-irradiation at elevated temperatures**

S. Kondo\*, Y. Katoh, L. L. Snead, Oak Ridge National Laboratory, USA

**2:20 PM**

**(ICACC-S10-019-2009) High temperature irradiation and PIE of SiC/SiC composites brazed on monolithic SiC**

L. Gosmain\*, C. Sauder, X. Palacin, D. Moulin, P. Gavaille, B. Bourdilliau, L. Chaffron, Commissariat à l'Énergie Atomique, France

**2:40 PM**

**(ICACC-S10-020-2009) X-ray tomographic characterization of the macroscopic porosity of CVI SiC/SiC composites. Effects on the thermo-mechanical behaviour**

L. Gélébart\*, C. Château, CEA, France; M. Bornert, Ecole Polytechnique, France; J. Crépin, ENSMP, France; E. Boller, ESRF, France

**3:00 PM**

Break

### Design Codes and Standards

Room: Crystal Ballroom

Session Chair: Lance Snead, Oak Ridge National Laboratory

**3:20 PM**

**(ICACC-S10-021-2009) Non-Metallic Materials for HTRs: The Development of Codes and Standards (Invited)**

T. D. Burchell\*, ORNL, USA

**4:00 PM**

**(ICACC-S10-022-2009) Characterization of Mechanical Properties of Nuclear Graphite Using Subsize Specimens**

T. Byun\*, ORNL, USA; J. Yoon, KAERI, South Korea; L. L. Snead, ORNL, USA

**4:20 PM**

**(ICACC-S10-023-2009) Mechanical properties of tri-axially braided carbon fiber composite for HTGR control rod applications**

K. Ozawa\*, Y. Katoh, L. L. Snead, J. W. Klett, Oak Ridge National Laboratory, USA; W. E. Windes, Idaho National Laboratory, USA

**4:40 PM**

Discussion: Codes and Standards

## Symposium 11: Symposium on Advanced Dielectric, Piezoelectric, Ferroelectric, and Multiferroic Materials

### Integrated Multi-Layers and Interface Structures

Room: Tomoka A&B

Session Chair: Clive Randall, Pennsylvania State University

**1:20 PM**

#### (ICACC-S11-014-2009) Valence Electronic Structure Profile across the Triple and Tetragonal Pocket Junctions in SrTiO<sub>3</sub> Ceramic

G. Tan\*, Wuhan University of Technology, China

**1:40 PM**

#### (ICACC-S11-015-2009) Interface Engineered Ferroelectric Thin Films and Multilayered Structures with Optimized Properties (Invited)

C. Chen\*, University of Texas at San Antonio, USA

**2:20 PM**

#### (ICACC-S11-016-2009) Effect of microstructural imperfections on the performance of multi-layer ceramic capacitors

M. M. Samantaray\*, E. C. Dickey, C. A. Randall, The Pennsylvania State University, USA; P. Pinceloup, A. Gurav, KEMET Electronics Corporation, USA

**2:40 PM**

#### (ICACC-S11-017-2009) Electrical Design of Barium Titanate Based Capacitor Materials for Sub-micron Layers

R. D. Levi\*, C. A. Randall, Penn State University, USA

**3:00 PM**

Break

**3:20 PM**

#### (ICACC-S11-018-2009) Computational Study of Displacement Pathways in Bismuth Pyrochlores

B. B. Hinojosa\*, J. C. Nino, A. R. Asthagiri, University of Florida, USA

**3:40 PM**

#### (ICACC-S11-019-2009) Correlation between crystal structure and dielectric relaxation in fluorite-related compounds: the weberite case

L. Cai\*, J. C. Nino, university of florida, USA

**4:00 PM**

#### (ICACC-S11-020-2009) Crack Growth in PMN-PT Piezoelectric Single Crystals due to Electrical Loading

M. Pan\*, E. P. Gorzkowski, Naval Research Laboratory, USA

## Posters

Room: Exhibit Hall

**5:30–8:00 PM**

### Poster Session A

#### (ICACC-S1-P01-2009) Thermo-physical Processes in Cerium Nitrate Precursor Droplets Injected into High Temperature Plasma

A. Saha\*, V. Singh, S. Seal, A. Ozturk, S. Basu, University of Central Florida, USA

#### (ICACC-S1-P02-2009) Reciprocating Sliding Wear Studies on Biomimetic Si/SiC Ceramic Composites

A. Ganesan\*, Indian Institute of Technology Madras, India; A. Udayakumar, National Aerospace Laboratories, India; V. Bhanu Prasad, Defence Metallurgical Research Laboratory, India; M. Balasubramanian, Indian Institute of Technology Madras, India

#### (ICACC-S1-P03-2009) Electrical and Microstructural Properties of Composite Electrolyte on the Base of Ce<sub>0.8</sub>Gd<sub>0.2</sub>O<sub>2-δ</sub> and Nano-sized Al<sub>2</sub>O<sub>3</sub>

E. Pikalova, A. Proshina, A. Demin\*, Institute of High temperature electrochemistry, Russian Federation

#### (ICACC-S1-P04-2009) Strontium titanate as perspective material for electrochemical hydrogen conversion

A. A. Murashkina, E. Pikalova, A. Demin\*, Institut of High Temperature Electrochemistry, Russian Federation

#### (ICACC-S1-P05-2009) Influence of MeOx (Me=Co, Ni) on the properties of gadolinium-doped barium cerate

D. Medvedev, A. Demin\*, E. Gorbova, Institute of High Temperature Electrochemistry, Russian Federation

#### (ICACC-S1-P06-2009) Effect of SiC Content and Third Phase Metal Additions on the Thermal and Mechanical Properties of Si/SiC Ceramics

A. L. Marshall\*, A. L. McCormick, M. K. Aghajanian, M Cubed Technologies, Inc., USA

#### (ICACC-S1-P07-2009) Selection of a Toughened Mullite for a Miniature Gas Turbine Engine

B. A. Bender\*, M. Pan, Naval Research Lab, USA

#### (ICACC-S1-P08-2009) Mechanical Properties a room and high temperature in RBSiC

C. E. Ribeiro da Silva\*, C. A. da Costa, UFRJ, Brazil; E. Lara-Curzio, ORNL, USA

#### (ICACC-S1-P09-2009) From Conventional to Fast Sintering of Zirconia Toughened Alumina Nanocomposites

E. Volceanov\*, Metallurgical Research Institute- ICEM SA, Romania; G. Aldica, National Institute of Materials Physics, Romania; B. Matovic, Institute of Nuclear Science "Vinca", Serbia; D. Constantinescu, A. Volceanov, S. Stoleriu, University Politehnica of Bucharest, Romania; V. Fruth, \*\*\* Institute of Physical Chemistry "Ilie Murgulescu" of Romanian Academy, Romania; S. Motoc, Metallurgical Research Institute- ICEM SA, Romania

#### (ICACC-S1-P10-2009) Coating Design and Mechanical Evaluation on Silicon Carbide Fiber Reinforced Silicon Carbide Laminates

E. Lee\*, K. Jang, T. Kim, Kookmin University, South Korea; S. Woo, Korea Institute of Energy Research, South Korea; K. Lee, Kookmin University, South Korea

#### (ICACC-S1-P11-2009) Delamination Toughness Evaluation of a Ceramic Matrix Composite

G. Ojard\*, Pratt & Whitney, USA; T. Barnett, Southern Research Institute, USA; U. Santhosh, J. Ahmad, Research Applications, Inc., USA; R. J. Miller, Pratt & Whitney, USA; R. John, Air Force Research Laboratory, AFRL/RXLM, USA

#### (ICACC-S1-P12-2009) Fatigue Behavior of MI SiC/SiC Composites

G. Ojard\*, Pratt & Whitney, USA; Y. Gowayed, Auburn University, USA; G. Morscher, Ohio Aerospace Institute, USA; U. Santhosh, J. Ahmad, Research Applications, Inc, USA; R. J. Miller, Pratt & Whitney, USA; R. John, Air Force Research Laboratory, AFRL/RXLN, USA

#### (ICACC-S1-P13-2009) Round Robin on Indentation Fracture Toughness of Silicon Nitride Ceramics

H. Miyazaki\*, Y. Yoshizawa, K. Hirao, T. Ohji, National Institute of Advanced Industrial Science and Technology, Japan

#### (ICACC-S1-P14-2009) A novel sintering additive for silicon carbide densification at low temperature

J. Lee\*, T. Nishimura, N. Hirotsuki, H. Tanaka, S. Lee, National Institute for Materials Science, Japan

#### (ICACC-S1-P15-2009) Nanoscale Study of the Subcritical to Mirror Transition in Single-crystal Sapphire Fibers

J. M. López-Cepero, J. J. Quispe-Cancapa, A. R. de Arellano-López, J. Martínez-Fernández\*, Universidad de Sevilla-CSIC, Spain

#### (ICACC-S1-P16-2009) Intermediate Temperature Oxidation: Review and Test Method Refinement

K. E. Sinnamon\*, G. Ojard, B. K. Flandermeyer, R. J. Miller, Pratt & Whitney, USA

#### (ICACC-S1-P17-2009) An attempt to improve the fracture toughness of ZrB<sub>2</sub>-based ultra high temperature ceramics

D. Sciti, L. Silvestroni\*, A. Bellosi, National Research Council - CNR, Italy; M. Nygren, Stockholm University, Sweden

#### (ICACC-S1-P18-2009) Role of Residual Stresses on Mechanical Properties Enhancement during Joining by Plastic Deformation

M. Lorenzo Martin\*, D. Singh, J. Routbort, Argonne National Laboratory, USA

#### (ICACC-S1-P19-2009) SiCf/SiC Composites Joining by Microwave Assisted SHS

R. Rosa, P. Veronesi, A. Corradi, C. Leonelli, Università degli Studi di Modena e Reggio Emilia, Italy; M. Salvo, V. Casalegno, M. Ferraris\*, Politecnico di Torino, Italy

#### (ICACC-S1-P20-2009) Sintering and Ageing Properties of Manganese-Doped Y-TZP Ceramics

R. Singh\*, S. Meenaloshini, C. Tan, University Tenaga Nasional, Malaysia; I. Sopyan, IUM, Malaysia; W. Teng, SIRIM, Malaysia



**(ICACC-S1-P21-2009) Development of a System for Ceramic-lined Steel Pipe Production Using SHS Method**

R. Mahmoodian\*, R. Rahbari Ghahnavyeh, M. Hamdi bin Abd Shukor, University of Malaya, Malaysia

**(ICACC-S1-P22-2009) Bonding of Sintered SiC with Si/SiC: Microstructure-Mechanical Properties Correlation**

S. Salamone\*, R. Neill, P. Karandikar, G. Evans, S. Wong, MCubed Technologies Inc., USA

**(ICACC-S1-P23-2009) Tensile Properties along Orthogonal-directions and Through-the-thickness Compressive Properties of Two C/C Composites used as Aircraft Brake Materials**

S. S. Iqbal\*, P. Filip, Southern Illinois Univ, Carbondale, USA

**(ICACC-S1-P24-2009) Wear Behavior of Zirconia-Based Ceramics under High-Speed Dry Sliding on Steel**

S. N. Kulikov\*, N. L. Savchenko, Inst. of Strength Physics and Mater. Sci., RAS, Russian Federation

**(ICACC-S1-P25-2009) Relationship between Microstructure and Properties on Ceramic Matrix - Metal Composite**

S. Zhou\*, W. Xiong, Huazhong University of Science and Technology, China

**(ICACC-S1-P26-2009) Occurrence and Appearance of Macrofaunal Fragments from Several Clay Deposits in Voevodina, Serbia**

S. Devic\*, IMS Institute, Belgrade, Serbia

**(ICACC-S1-P27-2009) Influence of ZrO<sub>2</sub> Stabilized with Twin Cations on Tribological Properties of ZTA Composites**

S. Motoc\*, E. Volceanov, R. Neagu, A. Motoc, A. Volceanov, S. Stoieriu, Metallurgical Research Institute, Romania

**(ICACC-S1-P29-2009) An Investigation on the Compressive Properties of 2024Al Matrix Composites Reinforced with High Content SiC Particles at Various Strain Rates**

Z. Tan\*, C. Cho, Chongqing University, China

**(ICACC-S2-P01-2009) Application of semiconductor ceramic glazes to high-voltage ceramic insulators**

A. L. Prette\*, V. M. Sglavo, University of Trento, Italy; O. E. Alarcon, Santa Catarina Federal University (UFSC), Brazil; M. C. Fredel, Santa Catarina Federal University (UFSC), Brazil

**(ICACC-S2-P02-2009) Lattice and Thermal Radiation Conductivity of Thermal Barrier Coatings: Models and Experiments**

D. Zhu\*, C. M. Spuckler, NASA Glenn Research Center, USA

**(ICACC-S2-P03-2009) Material Design and Evaluations on Double Layered Thermal Barrier Coatings**

G. Guahk\*, Y. Heo, Kookmin University, South Korea; U. Paik, Hanyang University, South Korea; K. Lee, Kookmin University, South Korea

**(ICACC-S2-P04-2009) Thermal Barrier Coatings Deposited by the Faradayic EPD Process**

J. W. Kell\*, H. A. McCrabb, Faraday Technology, USA

**(ICACC-S2-P05-2009) Characterization of Al<sub>2</sub>O<sub>3</sub>-coated Cemented Carbide Cutting Tools Using Transmission Electron Microscope and Nanoindentation**

S. Kim\*, S. Ryu, Korea Institute of Ceramic Engineering and Technology, South Korea; S. Cho, S. Ahn, H. Kim, Korloy Inc., South Korea; H. Kim, Korea Institute of Ceramic Engineering and Technology, South Korea

**(ICACC-S2-P06-2009) Development of Life Prediction Model of Thermal Barrier Coating**

Y. Ohtake\*, IHI corporation, Japan

**(ICACC-S5-P01-2009) Predicting nano toxicity of rare-earth oxides nanoparticles using particle swarm optimization**

A. Kumar\*, A. S. Karakoti, S. Seal, University of Central Florida, USA

**(ICACC-S5-P02-2009) Manufacturing of scaffolds by sintering for bone tissue engineering**

A. M. Casadei\*, F. Dingee, T. S. Eufrazio, P. A. Souza, Federal University of Santa Catarina, Brazil; E. A. Duek, PUC, Brazil; C. Rambo, M. Fredel, Federal University of Santa Catarina, Brazil

**(ICACC-S5-P03-2009) A novel technique enhancing Ti-15Zr-4Ta-4Nb alloy with osteoconductivity via spatial design and thermal oxidation**

A. Sugino\*, K. Uetsuki, Nakashima Propeller Co., Ltd., Japan; K. Tsuru, Kyushu University, Japan; Y. Nakamura, S. Hayakawa, Okayama University, Japan; C. Ohtsuki, Nagoya University, Japan; A. Osaka, Okayama University, Japan

**(ICACC-S5-P04-2009) Customized Scaffold Fabrication with Solid Free Form Technique**

C. Ergun\*, R. Toru, A. Bahadir, Istanbul Technical University, Turkey

**(ICACC-S5-P05-2009) Improvement of Quality the Pottery from Clay Loams in the Kyrgyz Republic**

C. Bakanov\*, J. A. Akmatova, M. T. Kasymova, Kyrgyz-Russian Slavic University, Kyrgyzstan

**(ICACC-S5-P06-2009) Sintering Behavior of Hydroxyapatite Ceramics Prepared by Different Routes**

C. Tan\*, R. Singh, K. Aw, W. Yeo, University Tenaga Nasional, Malaysia; H. M., University Malaysia, Malaysia; S. I., International Islamic University Malaysia, Malaysia

**(ICACC-S5-P07-2009) Synthesis of Sol-gel Bioactive Glass Microspheres by Gelation in an Emulsion**

S. P. Cooper\*, A. B. Brennan, University of Florida, USA

**(ICACC-S5-P08-2009) Study of rheological behavior and Zeta Potential of the aqueous medium HA dispersion for impregnation in biomorphic cellular ceramic**

T. Eufrazio\*, Federal University of Santa Catarina, Brazil; J. Will, P. Greil, University of Erlangen-Nuremberg, Germany

**(ICACC-S5-P09-2009) Structure and Thermoelectric Properties of Ba- and K-doped Sr<sub>2</sub>FeMoO<sub>6</sub> Double Perovskite oxides**

T. Sugahara\*, M. Ohtaki, Kyushu University, Japan; T. Souma, Takamastu National College of Technology, Japan

**(ICACC-S9-P01-2009) Fabrication of carbon fiber reinforced porous Si<sub>3</sub>N<sub>4</sub> ceramics using electrophoretic deposition**

K. P. Plucknett\*, P. Chanda, B. Collier, Dalhousie University, Canada; L. Garrido, Centro de Tecnología de Recursos Minerales y Cerámica (CETMIC, CIC-CONICET-UNLP), Argentina; L. Genova, CCTM Centro de Ciência e Tecnologia de Materiais, Cidade Universitária, Brazil

**(ICACC-S9-P02-2009) Ceramic foams synthesized from electron beam irradiated methylsilicone resin and Al/Si filler mixtures**

R. M. Rocha\*, Comando-Geral de Tecnologia Aeroespacial, Brazil; J. C. Bressiani, A. A. Bressiani, Instituto Pesquisas Energéticas e Nucleares, Brazil

**(ICACC-S9-P03-2009) Nanoporous Glass-Ceramics for Gas Separation**

B. E. Hill, M. E. Miller, S. T. Mixture\*, Alfred University, USA

**(ICACC-S10-P01-2009) Thermomechanical bending behaviours of SiCf/SiCm composites for nuclear applications**

C. Colin\*, CEA, France; C. Lorrette, CEA Grenoble, France; M. Le Flem, CEA, France; L. Briottet, CEA Grenoble, France; L. Gélébart, P. Wident, CEA, France

**(ICACC-S10-P02-2009) Effects of irradiation-induced swelling of SiC fiber and matrix on mechanical properties of advanced SiC/SiC composites**

K. Ozawa\*, T. Hinoki, H. Kishimoto, A. Kohyama, Institute of Advanced Energy, Kyoto University, Japan

**(ICACC-S10-P03-2009) CFC/Cu alloy monoblock joints by single-step brazing technique**

M. Ferraris\*, V. Casalegno, M. Salvo, Politecnico di Torino, Italy

**(ICACC-S10-P04-2009) Validation of ring-on-ring flexural test for nuclear ceramics using miniature specimens**

S. Kondo\*, Y. Katoh, T. Byun, Oak Ridge National Laboratory, USA; J. Kim, Chosun University, South Korea; L. L. Snead, J. H. Miller, Oak Ridge National Laboratory, USA

**(ICACC-S10-P05-2009) Fracture Resistance of Silicon Carbide Composites Using Various Notched Specimens**

T. Nozawa\*, Japan Atomic Energy Agency, Japan; J. Park, Institute of Energy Science and Technology, Japan; A. Kohyama, Kyoto University, Japan; H. Tanigawa, Japan Atomic Energy Agency, Japan

**(ICACC-S10-P06-2009) Optimization of fracture strength tests for the TRISO layers of coated fuel particles by finite element analysis**

J. Kim, Chosun University, South Korea; T. Byun\*, Y. Katoh, ORNL, USA

**(ICACC-S10-P07-2009) Time-Dependent Failure of Hi-Nicalon Type S SiC Fiber For Use In Gen IV Nuclear Applications**

T. Z. Engel\*, S. R. Nutt, University of Southern California, USA; R. J. Shinavski, Hyper-Therm HTC, Inc., USA

**(ICACC-S10-P08-2009) Optimization of an Interphase Thickness in Hot-Pressed SiCf/SiC Composites**

W. Kim\*, J. Lee, S. Kang, J. Park, Korea Atomic Energy Research Institute, South Korea

**(ICACC-S11-P01-2009) Cationic substitution in the ferroelectric Aurivillius phase  $\text{Bi}_3\text{NbTiO}_9$** 

A. Missyul\*, I. Zvereva, Saint-Petersburg State University, Russian Federation; T. T. Palstra, Rijksuniversiteit Groningen, Netherlands

**(ICACC-S11-P02-2009) Synthesis of  $\text{Na}_0.5\text{K}_0.5\text{NbO}_3$  piezoelectric ceramics**

C. Dosch\*, M. A. Cottrell, J. L. Jones, University of Florida, USA

**(ICACC-S11-P03-2009) Influence of Extrinsic Conduction Mechanisms on the Electrical Conductivity and Microwave Dielectric Loss of  $\text{BaCo}_1/3\text{Nb}_2/3\text{O}_3$  Ceramics**

M. Li, A. Feteira, D. Sinclair\*, University of Sheffield, United Kingdom

**(ICACC-S11-P04-2009) Influence of Octahedral Tilting on the Microwave Dielectric Properties of  $\text{A}_3\text{LaNb}_3\text{O}_{12}$  Hexagonal Perovskites (A = Ba, Sr)**

R. Rawal, A. J. McQueen, University of Sheffield, United Kingdom; L. Gillie, University of Huddersfield, United Kingdom; N. C. Hyatt, E. McCabe, University of Sheffield, United Kingdom; K. Samara, N. Alford, Imperial College London, United Kingdom; A. Feteira, I. M. Reaney, D. Sinclair\*, University of Sheffield, United Kingdom

**(ICACC-S11-P05-2009) Incipient Ferroelectricity in 'A-site' Ordered  $\text{AA}'_3\text{Ti}_4\text{O}_{12}$  Perovskites**

M. Ferrarelli, M. Li, University of Sheffield, United Kingdom; S. Kamba, Academy of Sciences of the Czech Republic, Czech Republic; A. R. West, D. Sinclair\*, University of Sheffield, United Kingdom

**(ICACC-S11-P06-2009) Electrical properties of Cofired PZT-SKN Multilayer Actuators with Inner Ag/Pd electrode**

J. Kim\*, N. J. Donnelly, C. A. Randall, Center for Dielectric Studies, Materials Research Institute, The Pennsylvania State University, USA

**(ICACC-S11-P07-2009) Structures and electrical properties of  $0.94(\text{Na}_0.535\text{K}_0.480)(\text{Nb}_{1-x}\text{Sbx})\text{O}_3-0.06\text{LiNbO}_3$  lead-free piezoelectric ceramics**

D. Zhao, J. Hu, Q. Chen, D. Xiao, J. Zhu\*, Sichuan University, China

**(ICACC-S11-P08-2009) Phase diagram study in the  $\text{Bi}_2\text{O}_3$ - $\text{Fe}_2\text{O}_3$  system, in air**

V. Fruth\*, J. Calderon-Moreno, C. Andronescu, E. Tenea, M. Zaharescu, Institute of Physical Chemistry "Ilie Murgulescu" of the Romanian Academy, Romania

**(ICACC-S11-P09-2009) Dielectric Properties of Doped  $\text{BaTiO}_3$** 

V. Mitic\*, University of Nis, Serbia; V. B. Pavlovic, University of Belgrade, Serbia; L. Kocic, V. Pautovic, University of Nis, Serbia; B. Jordovic, University of Kragujevac, Serbia; J. Purenovic, L. Zivkovic, University of Nis, Serbia

**(ICACC-S11-P10-2009) Magnetic Properties of Metal-Ceramic Composite Core-shell Structures Synthesized Using Coprecipitation and Hetero-coagulation**

M. Karmarkar, R. Islam, C. Ahn\*, J. T. Abiade, D. Kumar, D. Viehland, S. Priya, Virginia Tech, USA

**(ICACC-FS4-P01-2009) Frit Optimization for Sludge Batch Processing at the Defense Waste Processing Facility**

K. M. Fox\*, D. K. Peeler, T. B. Edwards, Savannah River National Lab, USA

**8:20 AM****(ICACC-S1-033-2009) Effects of Densification Method and Grain Size on Mechanical Properties of Zirconium Diboride**

M. J. Thompson\*, W. G. Fahrenholz, G. Hilmas, Missouri University of Science and Technology, USA; M. Cinbuluk, Air Force Research Laboratory, USA

**8:40 AM****(ICACC-S1-034-2009) UHTC: Interfaces and Defects**

D. D. Jayaseelan\*, Y. Wang, E. Eakins, Imperial College London, United Kingdom; F. Montevede, D. Sciti, G. Hilmas, A. Bellosi, ISTEC-CNR, Italy; P. Brown, B. Lee, Imperial College London, United Kingdom

**9:00 AM****(ICACC-S1-035-2009) New carbides in Zr-Al-C and Zr-Al-Si-C system for ultrahigh temperature applications**

L. He, Y. Zhou\*, Institute of Metal Research, Chinese Academy of Sciences, China

**9:20 AM****(ICACC-S1-036-2009) Microstructure and Mechanical Properties of Reaction Sintered Zirconium Carbide-Tungsten Cermets**

M. M. Giles\*, S. C. Zhang, W. G. Fahrenholtz, G. E. Hilmas, Missouri University of Science and Technology, USA

**9:40 AM****Break****10:00 AM****(ICACC-S1-037-2009) TEM analysis of Boride-based Ultra-High Temperature Ceramics**

L. Silvestroni\*, D. Sciti, A. Bellosi, ISTEC - CNR, Italy; S. Lauterbach, H. Kleebe, Institute of Applied Geosciences, TUD, Germany

**10:20 AM****(ICACC-S1-038-2009) Zirconium Carbide and Zirconium Diboride based Carbon Nanotube Composites for Ultra High Temperature Applications**

A. Datye\*, K. Wu, Florida International University, USA; H. Lin, Oak Ridge National Laboratory, USA; W. Li, Florida International University, USA; J. Vliegels, K. Vanmeensel, Katholieke Universiteit Leuven, Belgium

**10:40 AM****(ICACC-S1-039-2009) Pressureless Sintering  $\text{ZrB}_2$ - $\text{SiC}$  Composites at Low Temperatures**

M. Zhu\*, Y. Wang, Northwestern Polytechnical University, China

**11:00 AM****(ICACC-S1-040-2009) Fabrication of Carbon Fiber Reinforced Ultra High Temperature Ceramic(UHTC) Matrix Composites and UHTC Coatings**

S. Dong\*, Z. Wang, Y. Ding, X. Zhang, P. He, L. Gao, Shanghai Institute of Ceramics, Chinese Academy of Sciences, China

**Wednesday, January 21, 2009****Symposium 1: Mechanical Behavior and Performance of Ceramics & Composites****Ultra High Temperature Ceramics - Processing**

Room: Coquina A

Session Chair: Greg Hilmas, Missouri University of Science & Technology

**8:00 AM****(ICACC-S1-032-2009) Recent Approaches to Controlling Microstructure of Ultra High Temperature Ceramics**

S. Johnson\*, M. Gasch, NASA Ames Research Center, USA; M. Stackpoole, M. Gusman, ELORET Corporation, USA

**Symposium 2: Advanced Ceramic Coatings for Structural, Environmental, and Functional Applications****Advanced Coating Processing**

Room: Coquina H

Session Chair: Richard Sisson, Worcester Polytechnic Institute

**8:00 AM****(ICACC-S2-033-2009) LPPS-Thin Film - a Hybrid Process between Thermal Spray and PVD for the Deposition of Improved Ceramic Layers (Invited)**

A. Refke\*, M. Gindrat, K. von Niessen, Sulzer Metco AG, Switzerland

**8:40 AM****(ICACC-S2-034-2009) Progress In Making Dense Ceramics Using Solution Precursor And Suspension Plasma Spray Processes**

M. Gell\*, E. H. Jordan, B. Cetegen, J. Wang, C. Muoto, M. Aindow, J. Roth, University of Connecticut, USA

9:00 AM

(ICACC-S2-035-2009) Structure-Processing-Property Relationships of Suspension Plasma Sprayed Coatings  
K. Van Every, R. Trice\*, M. Krane, Purdue University, USA

9:20 AM

(ICACC-S2-036-2009) Deposition mechanism of nano ceria coating by Solution precursor plasma spray  
V. Singh\*, S. Seal, S. Basu, A. Saha, University of Central Florida, USA

9:40 AM

Break

## Damping Coatings

Room: Coquina H

Session Chair: Sophoclis Patsias, Rolls-Royce plc

10:00 AM

(ICACC-S2-037-2009) The temperature dependence of the flexural damping properties of materials and coatings up to 1100°C (Invited)  
D. R. Clarke\*, UC Santa Barbara, USA

10:40 AM

(ICACC-S2-038-2009) Uniaxial Testing Approach for Determination of Modulus and Loss Factor of Ceramic Coatings  
B. Runyon\*, T. J. George, J. Mark, USAF, USA; A. McNally, Universal Technology Corporation, USA

11:00 AM

(ICACC-S2-039-2009) High Temperature Damping Behavior of Plasma-Sprayed Thermal Barrier and Protective Coatings  
D. Zhu\*, R. A. Miller, K. P. Duffy, L. J. Ghosn, NASA Glenn Research Center, USA

11:20 AM

(ICACC-S2-040-2009) The Influence of Thickness on the Properties of Air Plasma Sprayed Ceramic Blend Coatings  
J. Hansel\*, Universal Technology Corporation, USA

11:40 AM

(ICACC-S2-041-2009) Enhancing the Passive Damping of Plasma Sprayed Ceramic Coatings  
J. P. Henderson\*, Universal Technology Corporation, USA; A. D. Nashif, Universal Technology Corporation, Consultant, USA; J. E. Hansel, Universal Technology Corporation, USA; R. M. Willson, APS Materials, Inc., USA

## Symposium 3: 6th International Symposium of Solid Oxide Fuel Cells (SOFC): Materials, Science, and Technology

### Electrodes-II

Room: Coquina E

Session Chairs: Eric Wachsman, University of Florida; Jeffrey Stevenson, Pacific Northwest National Laboratory

8:00 AM

(ICACC-S3-030-2009) A Platform for Determination of the Intrinsic Catalytic Properties of New Electrode Materials (Invited)  
M. Liu\*, S. Wang, M. E. Lynch, L. Yang, J. Lee, Georgia Tech, USA

8:40 AM

(ICACC-S3-031-2009) Characterization of composite cathodes using FIB/SEM and TEM  
D. Gostovic\*, S. Jin, K. A. O'Hara, E. D. Wachsman, K. S. Jones, University of Florida, USA

9:00 AM

(ICACC-S3-032-2009) Trends in stability of SOFC cathodes under CO<sub>2</sub> and reduced oxygen activity  
B. Jiāng, J. Lee, J. Ovenstone, D. Edwards, S. T. Mixture\*, Alfred University, USA

9:20 AM

(ICACC-S3-033-2009) Structural and Electrochemical Characterization of La<sub>0.8</sub>Sr<sub>0.2</sub>MnO<sub>3</sub> - Y<sub>2</sub>O<sub>3</sub>-Stabilized ZrO<sub>2</sub> (LSM-YSZ) Cathodes with Varying Composition

J. Wilson\*, Northwestern University, USA; A. Duong, University of California - Irvine, USA; J. Cronin, Northwestern University, USA; M. Gameiro, Rutgers University, USA; S. Rukes, Northwestern University, USA; H. Chen, K. Thornton, University of Michigan, USA; D. Mumm, University of California - Irvine, USA; S. Barnett, Northwestern University, USA

9:40 AM

Break

10:40 AM

(ICACC-S3-035-2009) Polarization resistance of infiltrated La<sub>0.9</sub>Sr<sub>0.4</sub>Co<sub>0.2</sub>Fe<sub>0.8</sub>O<sub>3</sub> - Ce<sub>0.9</sub>Gd<sub>0.1</sub>O<sub>1.95</sub> cathodes: Effect of surface area

M. Shah\*, J. D. Nicholas, S. A. Barnett, Northwestern University, USA

11:00 AM

(ICACC-S3-036-2009) Defect Equilibria in Perovskite SOFC Cathodes

S. R. Bishop\*, K. L. Duncan, E. D. Wachsman, University of Florida, USA

11:20 AM

(ICACC-S3-037-2009) Laminar Flow and Total Pressure Effects in Solid Oxide Fuel Cell Electrode Pores

H. Schmidt\*, R. R. Chien, L. M. Lediaev, Montana State University, USA

11:40 AM

(ICACC-S3-038-2009) Performance of SOFCs with Ni-impregnated anodes - stability and redox tolerance  
V. V. Krishnan, C. Singh\*, A. Arun, Indian Institute of Technology, India

## Symposium 4: Armor Ceramics

### Application of NDE

Room: Coquina D

Session Chair: Lisa Franks, US Army TARDEC

8:00 AM

(ICACC-S4-020-2009) A Portable Microwave Interference Scanning System for Nondestructive Testing Of Multi-Layered Dielectric Materials

K. Schmidt\*, J. Little, Evisive, Inc., USA; W. Ellingson, Argonne National Laboratory, USA; W. Green, US Army RDECOM ARL, USA

8:20 AM

(ICACC-S4-021-2009) Destructive Testing and Nondestructive Evaluation of Alumina Structural Ceramics

R. E. Brennan\*, J. M. Sands, W. H. Green, J. H. Yu, U.S. Army Research Laboratory, USA

8:40 AM

(ICACC-S4-022-2009) Microstructural study of sintered SiC via high frequency ultrasound spectroscopy

A. Fortune\*, R. Haber, Rutgers University, USA

9:00 AM

(ICACC-S4-023-2009) Nondestructive Evaluation of as Fabricated and Damaged Encapsulated Ceramics

W. H. Green\*, R. Brennan, R. H. Carter, U.S. Army Research Laboratory, USA

9:20 AM

(ICACC-S4-024-2009) Impact Damage Analysis In A Level III Flexible Body Armor Vest Using XCT

J. Wells\*, JMW Associates, USA; N. Rupert, NLR Technologies LLC, USA; M. Neal, Pinnacle Armor Inc., USA

9:40 AM

Break

**Manufacturing Challenges**

Room: Coquina D

Session Chair: Lisa Franks, US Army TARDEC

**10:00 AM****(ICACC-S4-025-2009) Improving Ceramic Armor with Media-Milled Nanoparticles**

H. Way\*, NETZSCH Fine Particle Technology, USA

**10:20 AM****(ICACC-S4-026-2009) Energy efficient radio frequency lamination of flat glass and ceramics for solar and armor applications**

S. M. Allan\*, M. L. Fall, H. S. Shulman, Ceralink Inc, USA

**10:40 AM****(ICACC-S4-027-2009) Pressureless Reaction Sintering of AION using Aluminum Orthophosphate as a Transient Liquid Phase**

M. P. Bakas\*, H. Chu, Idaho National Laboratory, USA

**Dynamic Behavior**

Room: Coquina D

Session Chair: Lisa Franks, US Army TARDEC

**11:00 AM****(ICACC-S4-028-2009) Comparison of Impacts on Glass and Glass Ceramic Bars**

S. J. Bless\*, J. Tolman, S. Levinson, I. Polyzois, G. J. Rodin, The University of Texas at Austin, USA

**11:20 AM****(ICACC-S4-029-2009) Uniaxial and confined dynamic compression of AIN**

G. Hu\*, K. Ramesh, Johns Hopkins Uni., USA; J. McCauley, Army Research Laboratory, USA

**11:40 AM****(ICACC-S4-030-2009) Dynamic Indentation Fracture Toughness of Advanced Ceramics**

M. A. Klecka\*, G. Subhash, University of Florida, USA

**Symposium 5: Next Generation Bioceramics****Porous Bioceramics (joint with Symposium 9)**

Room: Coquina F

Session Chairs: Julian Jones, Imperial College London; Daculsi Guy, INSERM

**8:00 AM****(ICACC-S5-032-2009) Porous bioactive glasses and nanocomposites for bone regeneration and their 3D characterization (Invited)**

J. R. Jones\*, Imperial College London, United Kingdom

**8:40 AM****(ICACC-S5-033-2009) Aerosol Assisted Synthesis and Structural Characterization of Mesoporous Silicophosphate Derivatives**

C. Bonhomme\*, C. Coelho, F. Pourpoint, T. Azais, L. Bonhomme-Coury, C. Boissière, F. Babonneau, UPMC-Paris6 / CNRS, France

**9:00 AM****(ICACC-S5-034-2009) The relative importance of strut porosity and chemistry on osteoinductivity of bioceramic bone graft substitutes (Invited)**

K. A. Hing\*, Queen Mary University of London, United Kingdom; M. Coathup, S. Samizadeh, G. W. Blunn, UCL, United Kingdom

**9:20 AM****(ICACC-S5-035-2009) Porous Scaffolds using Nanocrystalline Titania for Bone Graft Applications (Invited)**

S. J. Kalita\*, A. Menon, University of Central Florida, USA

**9:40 AM****Break****10:00 AM****(ICACC-S5-036-2009) Effect of fluorapatite on the bioactivity of nano-macroporous soda-lime phosphofluorsilicate glass-ceramics**

M. Hassan\*, S. Wang, M. Falk, H. Jain, Lehigh University, USA

**10:20 AM****(ICACC-S5-037-2009) 20 years of Biphasic Calcium Phosphates Bioceramics developments and applications (Invited)**

D. Guy\*, INSERM, Nantes University, France

**11:00 AM****(ICACC-S5-038-2009) Biaxial flexure strength and Weibull analysis of engineered hydroxyapatite**

F. Ren\*, E. D. Case, M. Tafesse, A. Morrison, M. J. Baumann, Michigan State University, USA

**11:20 AM****(ICACC-S5-039-2009) Fabrication, Chemical Etching and Compressive Strength of Porous Biomimetic SiC for Medical Implants**

C. Torres-Raya, D. Hernandez-Maldonado, J. Ramirez-Rico, C. Garcia-Gañan, A. R. de Arellano-Lopez, J. Martinez-Fernandez\*, Universidad de Sevilla-CSIC, Spain

**11:40 AM****(ICACC-S5-040-2009) High fracture toughness K-fluorrichterite-fluorapatite glass ceramics for biomedical applications (Invited)**

I. Reaney\*, University of Sheffield, United Kingdom

**Symposium 7: 3rd International Symposium on Nanostructured Materials and Nanocomposites: Held in Honor of Professor Koichi Niihara****Nanowires: Growth and Device Applications**

Room: Coquina C

Session Chair: Hao Shen, Institute of Inorganic Chemistry, University of Cologne

**8:00 AM****(ICACC-S7-018-2009) Nanowires as Building Blocks of New Devices: Present State and Prospects (Invited)**

F. Hernandez-Ramirez\*, Electronic Nanosystems S.L., Spain; J. Prades, R. Jimenez-Diaz, A. Romano-Rodriguez, J. Morante, University of Barcelona, Spain; S. Barth, Leibniz-Institute of New Materials, Germany; S. Mathur, University of Cologne, Germany

**8:40 AM****(ICACC-S7-019-2009) Template-assisted Synthesis and Characterization of SrTiO<sub>3</sub> Nanostructures**

K. Zagar, S. Sturm, M. Ceh\*, Jozef Stefan Institute, Slovenia

**9:00 AM****(ICACC-S7-020-2009) Synthesis and Characterization of BaTiO<sub>3</sub> Nanostructures**

K. Zagar\*, S. Sturm, M. Ceh, Jozef Stefan Institute, Slovenia

**9:20 AM****(ICACC-S7-021-2009) CVD Growth Mechanism of Metal Oxide Nanowires**

J. Pan\*, T. Fischer, H. Shen, S. Mathur, Institute of Inorganic Chemistry, University of Cologne, Germany

**9:40 AM****Break****10:00 AM****(ICACC-S7-022-2009) SiC/Si<sub>3</sub>N<sub>4</sub> Nano/Micro Composites – Processing and Mechanical Properties**

P. Sajgalik\*, M. Hnatko, S. Lojanova, Z. Lencses, Slovak Academy of Sciences, Slovakia

**10:40 AM**

**(ICACC-S7-023-2009) Nanowire Hybrid Structures**  
A. Lugstein\*, A. M. Andrews, M. Steinmair, Y. J. Hyun, E. Bertagnolli, G. Strasser, Vienna University of Technology, Austria

**11:00 AM**

**(ICACC-S7-024-2009) Multifunctional Single-Wall Carbon Nanotube-Si<sub>3</sub>N<sub>4</sub> Nanocomposites**  
E. L. Corral\*, University of Arizona, USA

**11:20 AM**

**(ICACC-S7-025-2009) Surface sensitization of tin oxide nanostructures for enhanced ethanol and co detection by spill-over effect**  
S. Mathur, R. Ganesan\*, Max Planck Institute for Nuclear Physics, Germany; N. Donia, Leibniz Institut für Neue Materialien gGmbH, Germany

**11:40 AM**

**(ICACC-S7-026-2009) Synthesis of carbon nanotube using various shape and size of gold nanoparticulate catalyst**  
S. Moon\*, The Institute of Science and Industrial Research (ISIR), Osaka Univ., Japan; T. Sekino, S. Tanaka, Institute of Multidisciplinary Research for Advanced Materials (IMRAM), Tohoku Univ., Japan

## Symposium 8: 3rd International Symposium on Advanced Processing and Manufacturing Technologies for Structural and Multifunctional Materials and Systems (APMT)

### Smart Processing

Room: Coquina B

Session Chairs: Byung-Koog Jang, National Institute for Materials Science; Soshu Kirihaara, Osaka University

**8:00 AM**

**(ICACC-S8-028-2009) Texturing of zinc oxide and its applications (Invited)**  
Y. Kinemuchi\*, H. Kaga, K. Okanou, AIST Japan, Japan; S. Tanaka, K. Uematsu, Nagaoka Univ. of Tech., Japan; H. Nakano, J. Tatami, Yokohama Natl. Univ., Japan; K. Watari, AIST Japan, Japan

**8:40 AM**

**(ICACC-S8-029-2009) Influence of Tape Casting Parameters, Sintering and Magnetic Field on the Texture of Alumina Ceramics**  
M. Snel\*, J. van Hoolst, A. de Wilde, M. Mertens, F. Snijders, J. Luyten, Flemish Institute for Technological Research, Belgium

**9:00 AM**

**(ICACC-S8-030-2009) Segregation Mechanism in (M=Al,Ga) Zn<sub>1-x</sub>MxO Ceramics and Its Influence on the Thermoelectric Properties**  
J. P. Wiff\*, Y. Kinemuchi, K. Watari, National Institute of Advanced Industrial Science and Technology (AIST), Japan

**9:20 AM**

**(ICACC-S8-031-2009) Production of Novel Architectures through Controlled Degradation of Electrospun Precursors**  
X. Dai\*, S. Shivkumar, WPI, USA

**9:40 AM**

Break

**10:00 AM**

**(ICACC-S8-032-2009) Process optimization for integrally cored ceramic mold (ICCM)fabricated by ceramic stereolithography (CerSLA)**  
C. Bae\*, J. W. Halloran, University of Michigan, USA

**10:20 AM**

**(ICACC-S8-033-2009) Large Area Maskless Photopolymerization of Ceramic Suspensions**  
C. Torres Garibay\*, V. Tomeckova, C. Bae, J. W. Halloran, University of Michigan, USA

**10:40 AM**

**(ICACC-S8-034-2009) Terahertz Wave Properties of Dielectric Ceramic Patterns with Micro Polygon Patches Fabricated by Stereolithography**  
S. Kirihaara\*, T. Niki, M. Kaneko, Osaka University, Japan

**11:00 AM**

**(ICACC-S8-035-2009) Millimeter Wave Properties of Titania Photonic Crystal with Diamond Structure Fabricated by Using Micro-stereolithography**  
M. Kaneko\*, Osaka university, Japan; S. Kirihaara, Osaka university, Japan

**11:20 AM**

**(ICACC-S8-036-2009) Preparation of Beta-SiAlON:Eu Phosphor Powders by Combustion Synthesis**  
Y. Zhou\*, Y. Yoshizawa, K. Hirao, National Institute of Advanced Industrial Science and Technology (AIST), Japan

**11:40 AM**

**(ICACC-S8-037-2009) Study of sintering kinetics of nano crystalline 2Y-TZP/Al<sub>2</sub>O<sub>3</sub> composite**  
A. Ghosh\*, S. Koley, A. K. Sahu, A. K. Suri, Bhabha Atomic Research Centre, India

## Symposium 9 is in a joint session with Symposium 5 - see pg. 39

## Symposium 10: International Symposium on Silicon Carbide and Carbon-based Materials for Fusion and Advanced Nuclear Energy Applications

### Composite Design and Properties

Room: Crystal Ballroom

Session Chairs: Robert Shinavski, Hyper-Therm HTC, Inc.; Chuck Henager, PNNL

**8:00 AM**

**(ICACC-S10-024-2009) Single- and Multi-Layered Interphases in SiC/SiC Composites Exposed to Severe Conditions: An Overview (Invited)**  
R. R. Naslain\*, R. Pailler, J. Lamon, LCTS, France

**8:40 AM**

**(ICACC-S10-025-2009) Mechanical Behaviour and Structural Characterizations of Minicomposites SiC/SiC based on Hi-Nicalon S and SA3 Reinforcement**  
C. Sauder, CEA, DEN, DMN/SRMA/LTMEX, France; J. Lamon\*, A. Brusson, LCTS, France

**9:00 AM**

**(ICACC-S10-026-2009) Comparative study on tensile properties of uni-directional SiC-matrix composites reinforced with various near-stoichiometric SiC fibers**  
K. Ozawa\*, Y. Katoh, E. Lara-Curzio, S. Kondo, L. L. Snead, Oak Ridge National Laboratory, USA; A. Szweda, Dow Corning Corporation, USA

**9:20 AM**

**(ICACC-S10-027-2009) Deformation of SiC/SiC Composites With Off-Axis Fibers**  
C. H. Henager\*, PNNL, USA

**9:40 AM**

Break

**10:00 AM**

**(ICACC-S10-028-2009) Life Prediction of Nuclear Grade SiC/SiC for Gen IV Nuclear Applications (Invited)**  
R. J. Shinavski\*, T. Z. Engel, Hyper-Therm HTC, Inc., USA; R. Battiste, E. Lara-Curzio, Oak Ridge National Laboratory, USA

**10:40 AM****(ICACC-S10-029-2009) Compatibility of interfaces and fibers for SiC-composites in nuclear environments**

C. H. Henager\*, R. J. Kurtz, PNNL, USA

**11:00 AM****(ICACC-S10-030-2009) Evaluation of fatigue behavior for Advanced SiC/SiC Composites**

Y. Kawashima\*, Graduate School of Energy Science, Kyoto University, Gokasho, Uji, Japan; T. Hinoki, A. Kohyama, Institute of Advanced Energy, Kyoto University, Gokasho, Uji, Japan

**11:20 AM****(ICACC-S10-031-2009) Behaviours of SiC fibers at high temperature**

C. Colin\*, V. Falanga, L. Gélébart, CEA Saclay, France

**11:40 AM****Discussion: Life Prediction****Symposium 11: Symposium on Advanced Dielectric, Piezoelectric, Ferroelectric, and Multiferroic Materials****Microwave Dielectrics, Metamaterials, and Frequency Tunable Devices**

Room: Tomoka A&amp;B

Session Chair: Dwight Viehland, Virginia Polytechnic Institute

**8:00 AM****(ICACC-S11-021-2009) Novel Microwave Multiferroic Composites with Large Frequency Tunability (Invited)**

J. Lou, M. Liu, R. David, O. Obi, S. Stoute, C. Pettiford, N. X. Sun\*, Northeastern University, USA

**8:40 AM****(ICACC-S11-022-2009) Phase Relationship and Microwave Dielectric Properties in the Vicinity of Ba(Zn<sub>1/3</sub>Ta<sub>2/3</sub>)O<sub>3</sub>**

H. Ohsato\*, Nagoya Institute of Technology, Japan; E. Koga, Panasonic Electronic Devices Japan Co. Ltd., Japan

**9:00 AM****(ICACC-S11-023-2009) All alkoxide based synthesis of perovskite films**

G. Westin\*, A. Pohl, K. Lashgari, Uppsala University, Sweden; K. Jansson, Stockholm University, Sweden

**9:20 AM****(ICACC-S11-024-2009) Thin layer barium titanate obtained by aqueous cathodic EPD**

H. Yaseen, S. Baltianski, Y. Tsur\*, Technion, Israel

**9:40 AM****Break****10:00 AM****(ICACC-S11-025-2009) Ceramic-Polymer Dielectric Composites Produced via Directional Freezing of Camphene-Based Slurries**

E. Gorzkowski\*, M. Pan, Naval Research Lab, USA

**10:20 AM****(ICACC-S11-026-2009) Low Temperature Sintering of PNSZT**

A. L. Young\*, R. Moore, D. Zschiesche, M. Hutchinson, A. Roesler, Sandia National Laboratories, USA

**10:40 AM****(ICACC-S11-027-2009) Effect of Sb<sub>2</sub>O<sub>5</sub> and CuO on the Microstructure and Piezoelectric Properties of the (Na<sub>0.5</sub>K<sub>0.5</sub>)NbO<sub>3</sub> Lead-Free Piezoelectric Ceramics**

S. Nahm\*, I. Seo, H. Park, N. Van Dung, Korea University, South Korea; Y. Lee, J. Paik, B. Choi, Korea Institute of Ceramic Engineering and Technology, South Korea

**Symposium 1: Mechanical Behavior and Performance of Ceramics & Composites****Processing-Microstructure-Mechanical Properties Correlations: II**

Room: Coquina A

Session Chairs: Rajan Tandon, Sandia National Laboratories; James Webb, Corning Incorporated

**1:20 PM****(ICACC-S1-041-2009) Mechanical Behaviour of MoSi<sub>2</sub> reinforced TiB<sub>2</sub>-based ceramics**

A. Mukhopadhyay, G. B. Raju, B. Basu\*, IIT Kanpur, India

**1:40 PM****(ICACC-S1-042-2009) Comparison in Foreign Object Damage between SiC/SiC and Oxide/Oxide Ceramic Matrix Composites**

D. J. Alexander\*, D. C. Faucett, S. R. Choi, Naval Air Systems Command, USA

**2:00 PM****(ICACC-S1-043-2009) Microstructure, Creep and Residual Stresses of Directionally Solidified, Al<sub>2</sub>O<sub>3</sub>-based Eutectics**

J. Ramirez-Rico, A. R. Pinto-Gómez, A. R. de Arellano-Lopez, J. Martinez-Fernandez\*, Universidad de Sevilla-CSIC, Spain; J. I. Peña, P. B. Oliete, V. M. Orera, CSIC - Universidad de Zaragoza, Spain; J. L. Roubort, D. Singh, Argonne National Laboratory, USA

**2:20 PM****(ICACC-S1-044-2009) Processing, Microstructure and Mechanical Property Relationships of B<sub>4</sub>C-TiB<sub>2</sub> Eutectic Ceramic Composites**

R. M. White\*, D. P. Shay, A. V. Polotai, E. C. Dickey, The Pennsylvania State University, USA

**2:40 PM****(ICACC-S1-045-2009) Mechanical and Physical Characterization of SiO<sub>2</sub>-added Leucite Ceramics**

J. P. Wiff\*, Y. Kinemuchi, S. Naito, A. Uozumi, K. Watari, National Institute of Advanced Industrial Science and Technology (AIST), Japan

**3:00 PM****Break****3:20 PM****(ICACC-S1-046-2009) Mechanical Properties of Disk-shaped La<sub>0.58</sub>Sr<sub>0.4</sub>Co<sub>0.2</sub>Fe<sub>0.8</sub>O<sub>3-δ</sub> Membranes**

J. Malzbender, B. Huang, R. Steinbrech\*, Forschungszentrum Juelich, Germany

**3:40 PM****(ICACC-S1-047-2009) Self-Crack-Healing behavior under Combustion Gas Atmosphere**

T. Osada\*, W. Nakao, K. Takahashi, K. Ando, Yokohama national university, Japan; S. Saito, NHK Spring CO. LTD., Japan

**4:00 PM****(ICACC-S1-048-2009) How to improve the thermal conductivity of CMC as cladding material of GFR?**

C. Julien\*, R. Pailler, LCTS, France; F. Audubert, CEA, France

**4:20 PM****(ICACC-S1-049-2009) Performed Nanomaterials for a New Generation of IT-SOFC**

N. Popescu Pogriorn\*, I. Mercioniu, National Institute for Materials Physics, Romania; N. Cretu, University TRANSILVANIA, Romania; A. Boer, University TRANSILVANIA, Romania; M. Gulgun, Sabanci University, Turkey

**4:40 PM****(ICACC-S1-050-2009) Mechanical Properties of Copper-Alumina Interpenetrating Network Composites**

J. S. Winzer, L. Weiler, Technische Universität Darmstadt, Germany; Z. Poniznik, Polish Academy of Sciences, Poland; V. Salit, D. Gross, Technische Universität Darmstadt, Germany; M. Basista, Polish Academy of Sciences, Poland; J. Dusza, Slovak Academy of Sciences, Slovakia; J. Roedel\*, Technische Universität Darmstadt, Germany



## Symposium 2: Advanced Ceramic Coatings for Structural, Environmental, and Functional Applications

### Advanced Testing Methods and Non-Destructive Evaluation

Room: Coquina H

Session Chair: Rodney Trice, Purdue University

**1:20 PM**

(ICACC-S2-042-2009) In Situ Studies of Phase Evolution and Stress in Ceramic Coatings (Invited)

K. T. Faber\*, Northwestern University, USA

**2:00 PM**

(ICACC-S2-043-2009) Measurement of Thermal Barrier Coating Conductivity by Thermal Imaging Method

J. Sun\*, Argonne National Laboratory, USA

**2:20 PM**

(ICACC-S2-044-2009) Impedance spectroscopy study on sputtered alumina thin films and thermally grown oxide on FeCrAlloy substrate

F. Yang, P. Xiao\*, University of Manchester, United Kingdom

**2:40 PM**

(ICACC-S2-045-2009) Oxygen Permeability of Undoped and Lutetia-doped Alumina Polycrystals under Oxygen Potential Gradients at Ultra-high Temperatures

S. Kitaoka, T. Matsudaira, M. Wada\*, Japan Fine Ceramics Center, Japan

**3:00 PM**

Break

### Environmental Barrier Coatings

Room: Coquina H

Session Chairs: Hua-Tay Lin, Oak Ridge National Laboratory; Peter Mechnich, German Aerospace Center (DLR)

**3:20 PM**

(ICACC-S2-046-2009) Modeling Thermal Residual Stress in Environmental Barrier Coated Silicon Nitride

R. Bhatt, A. Abdul-Aziz\*, US Army, USA

**3:40 PM**

(ICACC-S2-047-2009) Phase Transformation and Mapping of Plasma-Sprayed Ba and Sr-doped Aluminosilicate Coatings

B. Harder\*, K. T. Faber, Northwestern University, USA; K. N. Lee, Rolls-Royce Corporation, USA

**4:00 PM**

(ICACC-S2-048-2009) Crystallographic Studies on Thermal Expansion Properties of Y<sub>2</sub>SiO<sub>5</sub>

P. Sarin\*, R. P. Haggerty, A. R. Cackovic, Z. D. Apostolov, J. L. Bell, P. E. Driemeyer, W. M. Kriven, University of Illinois at Urbana-Champaign, USA

**4:20 PM**

(ICACC-S2-049-2009) Environmental Barrier Coatings for Turbine Engines: A Design and Performance Perspective

D. Zhu\*, NASA Glenn Research Center, USA

**4:40 PM**

(ICACC-S2-050-2009) Microstructure of oxide ceramic coatings in the Al<sub>2</sub>O<sub>3</sub>-Y<sub>2</sub>O<sub>3</sub> system deposited by MOCVD

N. K. Eils\*, P. Mechnich, M. Schmuecker, German Aerospace Center, Cologne, Germany; I. Schlueter, H. Keune, Technical University of Braunschweig, Germany

**5:00 PM**

(ICACC-S2-051-2009) High Emissivity Coatings for Oxide/oxide Ceramic Matrix Composites

P. Mechnich\*, M. Schmuecker, B. Esser, G. Dibowski, German Aerospace Center (DLR), Germany

**5:20 PM**

(ICACC-S2-052-2009) Thick UHTC Coatings Consisting of ZrB<sub>2</sub>/SiC and Additional UHTC Phases

Y. Blum\*, SRI International, USA

**5:40 PM**

(ICACC-S2-053-2009) Multilayer Environmental Barrier Coatings on Silicon Carbide Ceramics

R. Sivakumar\*, S. N. Tewari, K. N. Lee, Cleveland State University, USA; D. S. Fox, R. T. Bhatt, NASA Glenn Research Center, USA

## Symposium 3: 6th International Symposium of Solid Oxide Fuel Cells (SOFC): Materials, Science, and Technology

### Seals

Room: Coquina E

Session Chairs: Richard Brow, Missouri University of Science & Technology; Yeong-Shyung Chou, Pacific Northwest National Laboratory

**1:20 PM**

(ICACC-S3-039-2009) Sealing glasses for SOFC

J. Schilim\*, M. Kusnezoff, A. Rost, Fraunhofer IKTS, Germany

**1:40 PM**

(ICACC-S3-040-2009) Self-healing Sealing Glass

L. Montagne\*, D. Coillot, G. Tricot, L. Delevoye, University of Lille, France

**2:00 PM**

(ICACC-S3-041-2009) Characterization and performance of glass ceramic sealant for planar SOFCs

F. Smeacetto\*, M. Salvo, M. Ferraris, L. Ajitdoss, politecnico di torino, Italy; A. Chrysanthou, University of Hertfordshire, United Kingdom

**2:20 PM**

(ICACC-S3-042-2009) Effect of alkali on the thermal and electrical stability of SOFC sealing glass

Y. Chou\*, J. Stevenson, P. Singh, Pacific Northwest National Laboratory, USA

**2:40 PM**

(ICACC-S3-043-2009) Thermal cycle durability of glass/ceramic composite gas-tight sealing on metal substrates

S. Suda\*, M. Matsumiya, K. Kawahara, K. Jono, Japan Fine Ceramics Center, Japan

**3:00 PM**

Break

**3:20 PM**

(ICACC-S3-044-2009) Thermochemical Stability at the Interface of a New Seal Glass and Crofer 22 APU Interconnect

M. Mahapatra, K. Lu\*, W. Reynolds, Virginia Polytechnic Institute and State University, USA

**3:40 PM**

(ICACC-S3-045-2009) Self-Consistent Creep Model of Glass/Ceramic Sealant and its Application in Solid Oxide Fuel Cells

W. Liu\*, X. Sun, M. Khaleel, Pacific Northwest National Lab, USA

**4:00 PM**

(ICACC-S3-046-2009) Reactive Air Brazed Ceramic/Metal-Joints for SOFC-Application: Delamination Resistance and Failure Mechanisms at Ambient Temperature

B. J. Kuhn\*, Forschungszentrum Jülich GmbH, Germany; F. J. Wetzel, BMW Group, Germany; R. W. Steinbrech, J. Malzbender, L. Singheiser, Forschungszentrum Jülich GmbH, Germany

**4:20 PM**

**(ICACC-S3-047-2009) Reactive Air Braze Ceramic/Metal-Joints for SOFC-Application: Mechanical Testing and Failure Mechanisms at Intermediate and Stack-Operating Temperature**  
B. J. Kuhn\*, Forschungszentrum Jülich GmbH, Germany; F. J. Wetzel, BMW Group, Germany; R. W. Steinbrech, J. Malzbender, L. Singheiser, Forschungszentrum Jülich GmbH, Germany

**4:40 PM**

**(ICACC-S3-048-2009) Determination of fracture strength of glass-ceramic sealant used in SOFC**  
K. Hbaieb\*, Institute of materials research and engineering, Singapore

**5:00 PM**

**(ICACC-S3-049-2009) Novel concept of "double seal" for planar solid oxide fuel cell stacks**  
Y. Chou\*, J. Templeton, G. Maupin, J. Choi, J. Stevenson, P. Singh, Pacific Northwest National Laboratory, USA

**Symposium 4: Armor Ceramics****Transparent Armor**

Room: Coquina D

Session Chair: Dale Neisz, Rutgers University

**1:20 PM**

**(ICACC-S4-031-2009) Numerical study of the effect of surface stresses of transparent ceramics of a laminated target for military armor applications**  
C. G. Fountzoulas\*, J. M. Sands, G. A. Gilde, P. J. Patel, Army Research Laboratory, USA

**1:40 PM**

**(ICACC-S4-032-2009) A Preliminary Mohr-Coulomb Model for CTH to Predict Long-Rod Penetration into Borosilicate Glass**  
S. Chocron\*, C. E. Anderson, K. A. Dannemann, A. E. Nicholls, Southwest Research Institute, USA

**2:00 PM**

**(ICACC-S4-033-2009) Quantifying Dynamic Failure Strength of Soda Lime Glass Under Compression/Shear Loading Using A Combined Experimental and Modeling Approach**  
X. Sun\*, W. Liu, Pacific Northwest National Laboratory, USA; W. Chen, X. Nie, Purdue University, USA; D. W. Templeton, Army Tank and Automotive Research, USA

**2:20 PM**

**(ICACC-S4-034-2009) Effect of local residual stress distribution on optical properties in transparent polycrystalline Al<sub>2</sub>O<sub>3</sub>**  
T. Miyazaki\*, K. Matsumura, The University of Tokyo, Japan; B. Kim, National Institute for Materials Science, Japan; Y. Kagawa, The University of Tokyo, Japan

**2:40 PM**

**(ICACC-S4-035-2009) Elastic-Plastic Indentation Response of Transparent Ceramics and Glasses**  
A. M. Muller\*, D. J. Green, The Pennsylvania State University, USA

**3:00 PM**

Break

**3:20 PM**

**(ICACC-S4-036-2009) Effect of Loading Rate and Surface Conditions on Bi-axial Flexural Strength of Borosilicate Glass**  
X. Nie, W. W. Chen\*, Purdue University, USA; A. A. Wereszczak, Oak Ridge National Laboratory, USA; D. W. Templeton, TARDEC, USA

**3:40 PM**

**(ICACC-S4-037-2009) Dynamic Characterization of Soda-Lime Glass**  
C. S. Alexander\*, Sandia National Laboratories, USA

**4:00 PM**

**(ICACC-S4-038-2009) Investigation of Transparent Glass Ceramic Systems for Armor Applications**  
V. Domnich\*, R. A. Haber, S. Miller, Rutgers University, USA; M. Davis, V. Capozzi, A. Marker, Schott North America, USA

**4:20 PM**

**(ICACC-S4-039-2009) Advances in Ballistic Performance of Commercially Available Saint-Gobain Sapphire Transparent Armor Composites**  
C. Jones\*, J. Rioux, Saint-Gobain Crystals, USA

**4:40 PM**

**(ICACC-S4-040-2009) ALON® Transparent Armor**  
L. Goldman\*, U. Kashalikar, R. Foti, S. Sastri, Surmet Corp., USA

**Symposium 5: Next Generation Bioceramics****Advanced Processing of Bioceramics**

Room: Coquina G

Session Chair: Anthony Brennan, University of Florida

**1:20 PM**

**(ICACC-S5-041-2009) Hybrid Bioceramics for Tissue Engineering: A Study of Composition and Topography (Invited)**  
A. B. Brennan\*, University of Florida, USA

**2:00 PM**

**(ICACC-S5-042-2009) Bioinspired Scaffolds for Bone Tissue Regeneration (Invited)**  
E. Saiz\*, A. P. Tomsia, Lawrence Berkeley National Laboratory, USA

**2:20 PM**

**(ICACC-S5-043-2009) Surface Nanopatterning to Control Cell Growth (Invited)**  
F. Rosei\*, INRS, Univ of Quebec, Canada

**2:40 PM**

**(ICACC-S5-044-2009) Ceramics for medical applications: a picture for the next 20 years (Invited)**  
J. Chevalier\*, L. Gremillard, INSA-Lyon, France

**3:00 PM**

Break

**3:20 PM**

**(ICACC-S5-045-2009) Vaterite bioceramics: monodisperse CaCO<sub>3</sub> micropills forming at 70 C in aqueous gelatin-urea solutions (Invited)**  
A. Tas\*, Yeditepe University, Turkey

**3:40 PM**

**(ICACC-S5-046-2009) Low Temperature Consolidation of Nanocrystalline Apatites. Towards a New Generation of Calcium Phosphate Ceramics? (Invited)**  
D. Grossin, S. Marlinet, C. Drouet, C. Estournes, INPT-ENSIACET, France; E. Champion, F. Rossignol, Université de Limoges, France; C. Combes, C. C. Rey\*, INPT-ENSIACET, France

**4:00 PM**

**(ICACC-S5-047-2009) Mechanical and biological characterization of poly-acid lactic/bioglass composites for medical applications**  
G. Nathalie\*, C. Jérôme, M. Sylvain, INSA Lyon MATEIS UMR CNRS 5510, France; H. Daniel, Faculté de pharmacie Rockefeller, France; Z. Rachid, Noraker, France

**4:20 PM**

**(ICACC-S5-048-2009) Synthesis of bioactive hybrid in the system PTMO-CaO-SiO<sub>2</sub>-P<sub>2</sub>O<sub>5</sub> through sol-gel processing**  
M. Koh\*, Nagoya University, Japan; M. Kamitakahara, Tohoku University, Japan; G. Kawachi, K. Kikuta, C. Ohtsuki, Nagoya University, Japan

**4:40 PM**

**(ICACC-S5-049-2009) Ceramic Microspheres for Local Treatment of Cancer**  
M. Kawashita\*, Tohoku University, Japan

5:00 PM

**(ICACC-S5-050-2009) Machinable Tricalcium Phosphate/Calcium Titanate Composites**

C. Ergun\*, Istanbul Technical University, Turkey

**Symposium 7: 3rd International Symposium on Nanostructured Materials and Nanocomposites: Held in Honor of Professor Koichi Niihara****Synthesis, Processing and Assembly of Nanostructures I**

Room: Coquina C

Session Chair: Michael Carpenter, University at Albany - SUNY

1:20 PM

**(ICACC-S7-027-2009) Processing and Properties of Fully Dense Nanostructured YSZ (Invited)**

J. Binner\*, B. Vaidyanathan, K. Annapoorani, A. Paul, B. Raghupathy, Loughborough University, United Kingdom

2:00 PM

**(ICACC-S7-028-2009) A New Generation of Partially Stabilized Zirconia (PSZ) Nanoparticles**

L. Leidolph, T. Khalil\*, IBU-tec Advanced Materials GmbH, Germany

2:20 PM

**(ICACC-S7-029-2009) Bi-Level Patterning for Functional Electronic Nanostructures**

G. L. Brennecke\*, A. Gin, J. Stevens, J. S. Wheeler, B. A. Tuttle, Sandia National Labs, USA; J. G. Ekerdt, University of Texas at Austin, USA

2:40 PM

**(ICACC-S7-030-2009) Production of Nano Ceramic Powders via Pulsation Reactor Process**

L. Leidolph\*, IBU-tec advanced materials GmbH, Germany

3:00 PM

Break

**Synthesis, Processing and Assembly of Nanostructures II**

Room: Coquina C

Session Chair: Ashok Kumar, University of South Florida

3:20 PM

**(ICACC-S7-031-2009) Liquid Phase Morphology Control of Metal Oxides (Invited)**

Y. Masuda\*, National Institute of Advanced Industrial Science and Technology (AIST), Japan

4:00 PM

**(ICACC-S7-032-2009) C-rich, B-doped silicon oxycarbide ceramics: synthesis and characterization**

P. Dibandjo\*, E. Callone, G. Sorarù, University of Trento, Italy

4:20 PM

**(ICACC-S7-033-2009) Constituent Phases of Nanosized Alumina Powders Synthesized by Pulsed Wire Discharge**

S. Ishihara\*, Japan Science and Technology Agency, Japan; Y. Tokoi, Niigata University, Japan; Y. Shikoda, H. Suematsu, T. Suzuki, T. Nakayama, K. Niihara, Nagaoka University of Technology, Japan

4:40 PM

**(ICACC-S7-034-2009) Exotic burning rates in composite solid propellant using nanoscale titania catalysts**

D. Reid\*, University of Central Florida, USA; M. Stephens, R. Carro, E. Petersen, Texas A&amp;M University, USA; S. Seal, University of Central Florida, USA

5:00 PM

**(ICACC-S7-035-2009) Efficient Photocatalytic Degradation of Methylene blue with CuO doped nanocrystalline TiO<sub>2</sub>**

S. J. Kalita\*, A. Menon, University of Central Florida, USA

**Symposium 8: 3rd International Symposium on Advanced Processing and Manufacturing Technologies for Structural and Multifunctional Materials and Systems (APMT)****Composite Manufacturing**

Room: Coquina B

Session Chairs: Mrityunjay Singh, Ohio Aerospace Institute; Walter Krenkel, Universitat Bayreuth

1:20 PM

**(ICACC-S8-038-2009) Advanced Processing and Manufacturing Technologies for Carbon Fiber Reinforced CMCs (Invited)**

W. Krenkel\*, H. Mucha, Universitat Bayreuth, Germany

2:00 PM

**(ICACC-S8-039-2009) Polymer/Filler Composites with High-Thermal Conductivity**

K. Watari\*, S. Kume, I. Yamada, AIST, Japan; I. Harada, K. Mitsuishi, Mitsui Chemical, Japan

2:20 PM

**(ICACC-S8-040-2009) Modeling Reactive Melt Infiltration of a Cf/ZrC Composite**

N. Wali\*, L. Zou, J. M. Yang, University of California, Los Angeles, USA

2:40 PM

**(ICACC-S8-041-2009) A general way to metal/ceramic and ceramic/ceramic composites by using a modified powder-binder technique**

G. Motz\*, W. Krenkel, U. Degenhardt, University of Bayreuth, Germany; K. Berroth, F. Stegner, FCT Ingenieurkeramik GmbH, Germany; A. Dierdorf, D. Decker, Clariant Advanced Materials GmbH, Germany

3:00 PM

Break

3:20 PM

**(ICACC-S8-042-2009) Investigations of Phenolic Resins as Carbon precursors for C-Fibre reinforced composites**

H. W. Mucha\*, W. Krenkel, University of Bayreuth, Germany; B. Wielage, Chemnitz University of Technology, Germany

3:40 PM

**(ICACC-S8-043-2009) Manufacturing of Aluminum Nitride - Carbon Nanotube Composites**

A. Datye\*, K. Wu, Florida International University, USA; H. Lin, Oak Ridge National Laboratory, USA; J. Vleugels, K. Vanmeensel, Katholieke Universiteit Leuven, Belgium; D. Hunn, Lockheed Martin, USA; J. Schmidt, Fraunhofer Institut Fertigungstechnik Materialforschung IFAM, Germany; W. Li, Florida International University, USA

4:00 PM

**(ICACC-S8-044-2009) Fabrication of Aligned Multi-Walled Carbon Nanotubes in Al<sub>2</sub>O<sub>3</sub> Ceramics**

B. Jang\*, Y. Sakka, National Institute for Materials Science, Japan; J. Yoo, S. Woo, Korea Institute of Energy Research, South Korea

4:20 PM

**(ICACC-S8-045-2009) Microstructural Characterization of C/C-SiC Composites after Oxidation with Oxyacetylene Gas in Open Air**

V. K. Srivastava\*, S. Singh, Institute of Technology, India

## Symposium 9: Porous Ceramics: Novel Developments and Applications

### Applications of Porous Ceramics II

Room: Coquina F

Session Chair: Aleksander Pyzik, The Dow Chemical Co.

**1:20 PM**

#### (ICACC-S9-031-2009) Polymer derived ceramics as PCM containments

F. A. Scheffler\*, E. Stern, C. Buerhop-Lutz, O. Schwappach, ZAE Bayern, Germany; M. Scheffler, BTU Cottbus, Germany

**1:40 PM**

#### (ICACC-S9-032-2009) Acicular Mullite Diesel Particulate Filters And Their Use In Automotive Emission Catalysis (Invited)

R. Ziebarth\*, Dow Chemical Co, USA

**2:20 PM**

#### (ICACC-S9-033-2009) Three Dimensional Micromechanical Modeling of Porous Acicular Mullite

C. H. Hsiung\*, Northwestern University, USA; A. J. Pyzik, The Dow Chemical Company, USA; K. T. Faber, Northwestern University, USA

**2:40 PM**

#### (ICACC-S9-034-2009) Porous Fe,Cr-ZrO<sub>2</sub>(7Y2O<sub>3</sub>) Cermets Produced by EBPVD

B. A. Movchan, F. Lemkey\*, L. M. Nerodenka, International Center for Electron Beam Technologies of EO Paton Electric Welding Institute, Ukraine

**3:00 PM**

Break

### Applications of Porous Ceramics III

Room: Coquina F

Session Chair: Sujanto Widjaja, Corning Incorporated

**3:20 PM**

#### (ICACC-S9-035-2009) Use of ceramic microfibers to generate a high porosity cross-linked microstructure in extruded honeycombs (Invited)

J. J. Liu\*, R. A. Dahl, S. J. Pillai, T. D. Gordon, B. Zuberi, GEO2 Technologies Inc., USA

**4:00 PM**

#### (ICACC-S9-036-2009) The effect of porosity on the mechanical properties of cordierite diesel particulate filter substrates

A. Shyam\*, E. Lara-Curzio, T. R. Watkins, Oak Ridge National Laboratory, USA; R. J. Stafford, T. M. Yonushonis, Cummins Inc., USA

**4:20 PM**

#### (ICACC-S9-037-2009) In Situ Reactive Processing of Porous Silicon Carbide Ceramics at Low Temperatures

S. Zhu\*, Missouri University of Science and Technology, USA

**4:40 PM**

#### (ICACC-S9-038-2009) Data Reliability for Honeycomb Porous Material Flexural Testing

R. Stafford\*, Cummins Inc, USA; S. Gonczy, Gateway Materials Technology, USA; P. Godorov, ASTM International, USA

**5:00 PM**

#### (ICACC-S9-039-2009) Precursors for Porous Sintered Bodies

K. Nagaiyar\*, A. Awasthi, Bhabha Atomic Research Centre, India

## Symposium 10: International Symposium on Silicon Carbide and Carbon-based Materials for Fusion and Advanced Nuclear Energy Applications

### Ceramics for Fuel Coating and Matrix

Room: Crystal Ballroom

Session Chairs: Kazuhiro Sawa, Japan Atomic Energy Agency; Tatsuya Hinoki, Kyoto University

**1:20 PM**

#### (ICACC-S10-032-2009) Advantages and Implications of the Utilization of Zirconium Carbide in Advanced Coated Particle Fuel (Invited)

T. M. Besmann\*, Oak Ridge National Laboratory, USA

**2:00 PM**

#### (ICACC-S10-033-2009) Zirconium Carbide for Very High Temperature Reactor Coated Particle Fuel: Processing and Properties as a Function of Non-Stoichiometry

H. F. Jackson\*, W. E. Lee, D. J. Daniel, Imperial College London, United Kingdom; W. J. Clegg, University of Cambridge, United Kingdom; M. J. Reece, Nanoforce Technology Limited, United Kingdom; D. C. Parfitt, R. W. Grimes, Imperial College London, United Kingdom; D. Manara, European Commission, JRC, Germany

**2:20 PM**

#### (ICACC-S10-034-2009) Comparing Microstructure and Property Evolution of SiC and ZrC in Very High Temperature Irradiation Conditions

L. Snead\*, Y. Katoh, S. Kondo, Oak Ridge National Laboratory, USA

**2:40 PM**

Discussion: ZrC for Fuel

**3:00 PM**

Break

**3:20 PM**

#### (ICACC-S10-035-2009) Development of High Burn-Up Composite Fuel with SiC Matrix for Gas-Cooled Fast Reactor

T. Hinoki\*, Y. Park, J. Park, Kyoto University, Japan; S. Miwa, T. Donomae, Japan Atomic Energy Agency, Japan

**4:00 PM**

#### (ICACC-S10-036-2009) Determination of the Maximum Achievable Coated Particle Fuel Packing Fraction for a Cylindrical Fuel Compact Made by an Overcoating and Compacting Method

P. Pappano\*, Oak Ridge National Laboratory, USA

**4:20 PM**

#### (ICACC-S10-037-2009) Silicon Carbide Fuel Particle Coatings Produced By Fluid-Bed Chemical Vapor Deposition Using Non-Halide Precursors

J. Miller\*, Oak Ridge National Laboratory, USA

**4:40 PM**

#### (ICACC-S10-038-2009) Fracture Properties of SiC Layer in TRISO-Coated Fuel Particles

T. Byun\*, ORNL, USA; J. Kim, Chosun University, South Korea; J. D. Hunn, L. L. Snead, ORNL, USA

**5:00 PM**

Discussion: SiC for Fuel

## Symposium 11: Symposium on Advanced Dielectric, Piezoelectric, Ferroelectric, and Multiferroic Materials

### Nanoscale Phenomena in Dielectric, Ferroelectric and Piezoelectric Materials

Room: Tomoka A&B

Session Chair: Satoshi Wada, University of Yamanashi

**1:20 PM**

#### (ICACC-S11-028-2009) Thermodynamics of Polar Anisotropy in Ferroelectric Solid Solutions (Invited)

G. A. Rossetti\*, University of Connecticut, USA; A. G. Khachatryan, Rutgers, The State University of New Jersey, USA

**1:40 PM**

#### (ICACC-S11-029-2009) Influence of the grain boundaries on the ferroelectric switching behavior of individual grains inside a PZT thin film

Y. Jing\*, J. Blendell, Purdue University, USA

**2:00 PM**

#### (ICACC-S11-030-2009) Ultrathin Film Multilayer Capacitors: Electrode Interactions

B. Tuttle\*, G. Brennecka, D. Marincel, C. Parish, L. Brewer, J. Wheeler, Sandia National Laboratories, USA; J. Jones, University of Florida, USA; J. Ekerdt, University of Texas at Ausing, USA

**2:40 PM**

#### (ICACC-S11-031-2009) Quantitative STEM-EDS mapping of PLZT thin films

C. M. Parish\*, G. L. Brennecka, B. A. Tuttle, L. N. Brewer, Sandia National Laboratories, USA

**3:00 PM**

#### (ICACC-S11-032-2009) Design of Size and Interconnections of Novel Complex Oxide Powders (Invited)

S. Wada\*, S. Kondo, A. Nozawa, T. Goto, University of Yamanashi, Japan; Y. Kuroiwa, Hiroshima University, Japan

## Posters

Room: Exhibit Hall

**5:00–7:30 PM**

### Poster Session B

#### (ICACC-S3-P01-2009) Permeation and Stability Investigation of Ba<sub>0.5</sub>Sr<sub>0.5</sub>Co<sub>0.8</sub>Fe<sub>0.2</sub>O<sub>3-δ</sub> Membranes for Oxy-Fuel Processes

A. Ellett\*, D. Schlehüser, T. Markus, L. Singheiser, Forschungszentrum Juelich GmbH, Germany

#### (ICACC-S3-P02-2009) Dynamics of Cr reactions with SOFC thin film and bulk cathodes

B. Jiang\*, D. D. Edwards, Alfred University, USA; R. Naum, Applied Coatings, Inc., USA; S. T. Mixture, Alfred University, USA

#### (ICACC-S3-P03-2009) Vibrational Properties of LaGaO<sub>3</sub> Single Crystals

C. A. Carpenter\*, M. Luzgovy, C. Klemenz, N. Orlovskaya, University of Central Florida, USA

#### (ICACC-S3-P04-2009) Ba(Zr<sub>0.8-x</sub>Ce<sub>x</sub>Y<sub>0.2</sub>)O<sub>3-δ</sub> Proton Conductors as Electrolytes for Solid Oxide Fuel Cells

C. Tsai\*, V. Schmidt, Montana State University, USA

#### (ICACC-S3-P05-2009) In Situ X-ray Diffraction and Raman Spectroscopy of LiF-added Ba(Zr<sub>0.8-x</sub>Ce<sub>x</sub>Y<sub>0.2</sub>)O<sub>2.9</sub> Ceramics

C. Tu\*, S. Lee, C. Huang, Fu Jen Catholic University, Taiwan; R. R. Chien, Montana State University, USA; C. Tsai, Fu Jen Catholic University, Taiwan; V. H. Schmidt, Montana State University, USA

#### (ICACC-S3-P06-2009) Program for Computation of High-temperature Values of Heat Capacity of Silicate and Refractory Substances by the Method after Landia

A. Gogishvili, D. Eristavi\*, A. Sarukhanishvili, V. Eristavi, L. Megrelishvili, Georgian Technical University, Georgia

#### (ICACC-S3-P07-2009) Degradation Mechanism of LSCF SOFC Cathodes

D. Oh\*, E. Armstrong, D. Gostovic, E. Wachsman, University of Florida, USA

#### (ICACC-S3-P08-2009) Densification and Electrical Conductivity of Samaria-Doped Ceria Prepared by Chemical Route

E. C. Souza, E. N. Muccillo\*, Energy and Nuclear Research Institute, Brazil

#### (ICACC-S3-P09-2009) In Situ Simultaneous Electrochemical and Catalytic Activity Measurements of LSM and LSCF

E. N. Armstrong\*, B. M. Blackburn, C. C. Kan, E. D. Wachsman, University of Florida, USA

#### (ICACC-S3-P10-2009) Characterization of LSCo-GDC composite cathode for IT-SOFC application

H. Jung\*, KIST, South Korea; K. Hong, Seoul National University, South Korea; S. Choi, H. Kim, J. Son, H. Lee, J. Lee, KIST, South Korea

#### (ICACC-S3-P11-2009) Deposition and Characterization of LSC thin films

J. Ovenstone, R. Lacey, J. Jung\*, D. Edwards, S. T. Mixture, Alfred University, USA; R. Naum, Applied Coatings Group, USA

#### (ICACC-S3-P12-2009) Phase-boundary Grooving at the Surface in SOFC Materials

J. L. Riesterer\*, S. Bhowmick, C. Carter, University of Connecticut, USA

#### (ICACC-S3-P13-2009) Copper-GDC SOFCs for Use with Hydrocarbon Fuel

J. A. Sanchez\*, S. R. Bishop, E. Wachsman, U. of Florida, USA

#### (ICACC-S3-P14-2009) Surface Enhanced Raman Spectroscopy for Investigation of SOFC Cathodes

K. S. Blinn\*, H. W. Abernathy, M. Liu, Georgia Tech, USA

#### (ICACC-S3-P15-2009) Synthesis and Characterization of Microtubular SOFC with GDC Electrolyte

K. Kikuta\*, T. Usui, Y. Izumi, N. Yashiro, Y. Takeuchi, Nagoya University, Japan

#### (ICACC-S3-P16-2009) Effects of Lithium Fluoride on the Conductivity of SOFC Electrolytes

P. Burr\*, H. Schmidt, C. Tsai, H. Chen, R. Callahan, Montana State University, USA

#### (ICACC-S3-P17-2009) Synthesis and Electrical Conductivity Relaxation Measurements of Epitaxial / Textured Cathode Thin Films

K. R. Balasubramaniam, L. Yan, P. Salvador\*, Carnegie Mellon University, USA

#### (ICACC-S3-P18-2009) A niobium phosphate glass sealant for intermediate temperature solid oxide fuel cells

J. R. Martinelli, A. Rogerio, O. R. Oliveira, E. N. Muccillo, F. C. Fonseca, IPEN, Brazil; D. Z. De Florio, UFABC, Brazil; R. Muccillo\*, IPEN, Brazil

#### (ICACC-S3-P19-2009) Defect Equilibria in Ceria-based SOFC Materials

S. R. Bishop\*, K. L. Duncan, E. D. Wachsman, University of Florida, USA

#### (ICACC-S3-P20-2009) Crystallography of Interfaces and Triple Phase Boundaries in SOFCs from Three Dimensional Microstructure Data

S. J. Dillon\*, L. Helmick, S. Wang, S. Seetharaman, Carnegie Mellon University, USA; K. Gerdes, R. Gemmen, National Energy Technology Laboratories, USA; P. Salvador, G. S. Rohrer, Carnegie Mellon University, USA

#### (ICACC-S3-P21-2009) Effect of Nickel Oxide Sintering Aid in Micro and Nano-sized Yttria Stabilized Zirconia Powders

S. W. Sofie\*, Montana State University, USA; M. L. Lifson, Dartmouth College, USA

#### (ICACC-S3-P22-2009) Mechanical Properties of Cubic and Rhombohedral Sc<sub>0.1</sub>Ce<sub>0.01</sub>Zr<sub>0.2</sub>

S. Lukich\*, N. Orlovskaya, J. Kuebler, UCF, USA

#### (ICACC-S3-P23-2009) Thermo-mechanical Characterization of Scandia and Ceria Doped Zirconia- an Electrolyte Material for Intermediate Solid Oxide Fuel Cells

T. Manisha\*, W. Lim, M. Radovic, Texas A&M University, USA; N. Orlovskaya, University of Central Florida, USA

#### (ICACC-S3-P24-2009) Thermal Stresses in Anode Supported High Temperature and Intermediate Temperature Planar SOFC as a Function of Thermo-mechanical Properties of Constituent Materials

T. Manisha\*, M. Radovic, Texas A&M University, USA; N. Orlovskaya, University of Central Florida, USA

**(ICACC-S3-P25-2009) Glycine-Nitrate Synthesis and Characterization of Ba(Zr<sub>0.8-x</sub>Ce<sub>x</sub>Y<sub>0.2</sub>)O<sub>2.9</sub>**

R. Chien, V. Schmidt\*, Montana State University, USA; S. Lee, C. Huang, C. Tu, Fu Jen Catholic University, Taiwan

**(ICACC-S3-P26-2009) Deposition of layered LSGM electrolytes and densification using activated microwave sintering**

V. Fruth\*, Institute of Physical Chemistry "Ilie Murgulescu" of the Romanian Academy, Romania; E. Volceanov, Institute of Metallurgical Research, Romania; C. Andronesco, I. Atkinson, M. Gartner, M. Zaharescu, Institute of Physical Chemistry "Ilie Murgulescu" of the Romanian Academy, Romania

**(ICACC-S3-P27-2009) Densification of MnCo2O4 protective coatings for SOFC interconnectors**

A. L. Prette, University of Trento, Italy; L. Tognana, C. Sergio, S. Modena, SOFCPower srl, Italy; V. M. Sglavo\*, University of Trento, Italy

**(ICACC-S3-P28-2009) Anodes with controlled porosity for higher RedOx tolerance**

A. Contino, D. Montinaro, University of Trento, Italy; S. Modena, L. Tognana, G. Prospero, SOFCPower srl, Italy; V. M. Sglavo\*, University of Trento, Italy

**(ICACC-S3-P29-2009) Effect of nano grains on ionic conductivity of doped ceria for IT-SOFC**

V. Singh\*, S. Babu, S. Seal, university of central florida, USA

**(ICACC-S3-P30-2009) Interfacial Mechanical Properties between Interconnect and Cathode in Planar SOFCs**

Y. Wang\*, E. Lara-Curzio, B. Armstrong, R. Trejo, T. Watkins, Oak Ridge National Lab, USA

**(ICACC-S4-P01-2009) Effect of Particle Size, Particle Loading and Thermal Processing Conditions on the Properties of Alumina Reinforced Aluminum Metal Matrix Composites**

A. McCormick\*, M. K. Aghajanian, A. L. Marshall, M Cubed Technologies, USA

**(ICACC-S4-P02-2009) Synthesis and characterization of B4C/TiB2 composites**

S. Cihangir, C. Ergun\*, S. Yilmaz, F. C. Sahin, Istanbul Technical University, Turkey

**(ICACC-S4-P03-2009) Larger and Lighter Transparent Spinel Composite Ballistic Protection**

J. Voyles\*, L. Fehrenbacher, I. Vesnovsky, J. Kutsch, TA&T, USA; G. Gilde, Aberdeen Proving Ground, USA

**(ICACC-S4-P04-2009) Effects of Bonding on Ballistic Performance of Spinel/glass Systems**

I. Vesnovsky, K. Rozenburg\*, Technology Assessment and Transfer, USA; S. Bless, University of Texas at Austin, USA

**(ICACC-S4-P05-2009) Pressureless sintering of B<sub>4</sub>C-SiC composites for armor applications**

R. M. Rocha\*, J. S. Gutierrez, F. L. Melo, Comando-Geral de Tecnologia Aeroespacial, Brazil

**(ICACC-S4-P06-2009) Instrumented Hertzian Indentation Characterization of Two Transparent Ceramics**

R. Kress\*, University of Maryland, College Park, USA; J. LaSalvia, H. Miller, G. Glide, US Army Research Laboratory, USA

**(ICACC-S4-P07-2009) Strength-Size-Scaling Response in Boron Carbide Over Wide Range of Effective Areas**

T. P. Kirkland\*, A. Wereszczak, K. Strong, Oak Ridge National Laboratory, USA; O. Jadaan, University of Wisconsin, USA; G. Thompson, US Army DTRD, USA

**(ICACC-S4-P08-2009) Computer Modeling of Shock Wave Propagation in SiC – Sample**

V. V. Kartuzov\*, V. L. Bekenev, E. V. Kartuzov, H. V. Hachatrian, IPMS NASU, Ukraine

**(ICACC-S4-P09-2009) Properties of Nanostructured Alumina/spinel Composites**

V. Gupta\*, K. Mills, Rutgers University, USA; J. W. McCauley, U.S. Army Research Laboratory, USA; D. E. Niesz, M. Chhowalla, Rutgers University, USA

**(ICACC-S6-P01-2009) Thermoelectric properties of II-VI single crystal alloys**

M. H. Aguirre\*, Empa, Switzerland; A. B. Trigubó, CONICET-CITEFA, Argentina; R. Robert, A. Weidenkaff, Empa, Switzerland

**(ICACC-S6-P02-2009) Thermoelectric and Magnetic Properties of Sr<sub>1-x</sub>Na<sub>x</sub>RuO<sub>3</sub> (x = 0.0 – 0.25)**

P. Tomes\*, Empa - Swiss Federal Laboratories for Materials Testing and Research, Switzerland; J. Hejtmánek, K. Krizek, ASCR, v.v.i., Czech Republic; L. Bocher, R. Robert, M. Aguirre, A. Weidenkaff, Empa - Swiss Federal Laboratories for Materials Testing and Research, Switzerland

**(ICACC-S7-P01-2009) Interactions, Phase Evolution and Ferromagnetism of Fe-MWCNT-SiCN composites**

A. A. Francis\*, Central Metallurgical Research and Development Institute, Egypt; E. Ionescu, R. Riedel, Technische Universität Darmstadt-TUD, Germany

**(ICACC-S7-P02-2009) Optical properties in Eu<sup>3+</sup> doped Au-PVP polymer hybrid nanocomposites**

A. Mishra\*, P. Tripathy, S. Ram, Indian Institute of Technology, India; H. J. Fecht, Universität Ulm, Germany

**(ICACC-S7-P03-2009) Correlation of compaction pressure, density, Pore size distribution and sintering behaviour of nano crystalline 2Y-TZP-Al<sub>2</sub>O<sub>3</sub> composite**

S. Koley, A. Ghosh, A. K. Sahu, R. C. Hubli, A. K. Suri\*, Bhabha Atomic Research Centre, India

**(ICACC-S7-P04-2009) Comparison of Adhesion Strength for Low-k Thin Films Using Four Point Bend and Nanoscratch Testing**

D. Vilceus\*, A. Kumar, University of South Florida, USA

**(ICACC-S7-P05-2009) Fabrication of the Finestructured Alumina Porous Materials with Nanoimprint Method**

H. Kim\*, T. Nakayama, J. Yoshimura, K. Imaki, T. Yoshimura, H. Suemastu, T. Suzuki, K. Niihara, Extreme Energy-Density Research Institute, Japan

**(ICACC-S7-P06-2009) Fabrication of organic-inorganic nano hybrid material: Preparation of a thermo conductive BN nanosheets and polysiloxane mixture**

H. Cho\*, K. Niihara, S. Hisayuki, S. Tsuneo, T. Nakayama, S. Makoto, F. Takeshi, Nagaoka University of Technology, Japan

**(ICACC-S7-P07-2009) Effect of Manganese Doping on the Behavior of Biphasic Calcium Phosphate Powder**

I. Sopyan\*, N. Ahmad Nawawi, International Islamic University Malaysia, Malaysia; R. Singh, Universiti Tenaga Nasional, Malaysia

**(ICACC-S7-P08-2009) Electrochemical Performance of Boron-doped Nanocrystalline Diamond Electrodes**

J. Weber\*, University of South Florida, USA; J. Zimmer, B. Johnson, sp3 Diamond Technologies, USA; A. Kumar, University of South Florida, USA

**(ICACC-S7-P09-2009) Effects on Surface State of Nanostructured Carbon Nitride Films by Pre-sputtering and Heat Treatment**

J. Lee\*, Case Western Reserve University, USA; C. Chang, J. Kim, Y. Jeong, Y. Seo, Kyungnam University, South Korea; S. Chowdhury, Intel Corporation, USA; S. Lee, Kyungnam University, South Korea

**(ICACC-S7-P10-2009) Controlled Synthesis and Growth Mechanism Study of Tin Oxide Nanowire Arrays**

J. Pan\*, J. Altmayer, J. Wei, N. Donia, H. Shen, S. Mathur, University of Cologne, Germany

**(ICACC-S7-P11-2009) The formation of nanostructure compound layer during sulfur plasma nitriding and its mechanical properties**

K. Moon\*, S. Kim, Korea Institute of Industrial technology, South Korea; K. Lee, Hanyang University, South Korea

**(ICACC-S7-P12-2009) Synthesis of the BN Nanosheet Based Composite using the Under Solution High Energy Process**

M. Shoji\*, S. Suzuki, K. Suwa, T. Fujihara, T. Nakayama, T. Suzuki, H. Suematsu, K. Niihara, Nagaoka University of Technology, Japan

**(ICACC-S7-P13-2009) Structure-properties correlation of the hydrothermally prepared TiO<sub>2</sub> nanotubes**

M. Zaharescu, S. Preda\*, C. Anastasescu, A. Rusu, Institute of Physical Chemistry "Ilie Murgulescu" of the Romanian Academy, Romania; V. S. Teodorescu, National Institute for R&D on Materials Physics, Romania

**(ICACC-S7-P14-2009) Structure Control of the Nanotube/Nanoparticle Hybrid Materials with Sonochemical Processing**

M. Terauchi\*, S. Suzuki, T. Nakayama, Nagaoka University of Technology, Japan; T. Sekino, Tohoku University, Japan; T. Suzuki, H. Suematsu, K. Niihara, Nagaoka University of Technology, Japan

**(ICACC-S7-P15-2009) Synthesis and Magnetoviscous Effect in a Maghemite Nanoferrofluid**

E. Ghasemi, A. Mirhabibi, Iran University Of Science and Technology, Iran; M. Edrissi, Amirkabir University, Iran; N. Jaberian\*, Tehran University, Iran

**(ICACC-S7-P16-2009) Zinc oxide-based materials obtained by chemical route**

S. Mihaiu\*, M. Gartner, Institute of Physical Chemistry "Ilie Murgulescu" of the Romanian Academy, Romania; V. Teodorescu, National Institute of Materials Physics, Romania; M. Gabor, Technical University of Cluj-Napoca, Romania; A. Toader, M. Zaharescu, Institute of Physical Chemistry "Ilie Murgulescu" of the Romanian Academy, Romania

**(ICACC-S7-P17-2009) Adhesion improvement of hard boron nitride films by insertion of various inter layers**

T. Ohori\*, H. Asami, J. Shirahata, T. Suzuki, T. Nakayama, H. Suematsu, K. Niihara, Ngaoka University of Technology, Japan

**(ICACC-S7-P18-2009) Syntheses and Characterization of new Iron(II)alkoxides and Materials**

T. Fischer\*, S. Mathur, University of Cologne, Germany

**(ICACC-S7-P19-2009) Quantum Confinement Effect in ZnO Nanoparticles synthesized by Co-Precipitate Method**

L. Tabassam, COMSATS IIT, Pakistan; M. Islam, NUST, Pakistan; U. Manzoor\*, COMSATS IIT, Pakistan

**(ICACC-S7-P20-2009) Synthesis of Aluminum Nitride Nanosized Powder by Pulsed Wire Discharge without Ammonia**

Y. Tokoi\*, Niigata University, Japan; T. Suzuki, T. Nakayama, H. Suematsu, Nagaoka University of Technology, Japan; F. Kaneko, Niigata University, Japan; K. Niihara, Nagaoka University of Technology, Japan

**(ICACC-S8-P01-2009) Pressureless Sintering of Boron Carbide in an Ar Atmosphere Containing Gaseous Metal Species**

H. Miyazaki\*, Y. Zhou, H. Hyuga, Y. Yoshizawa, T. Kumazawa, National Institute of Advanced Industrial Science and Technology, Japan

**(ICACC-S8-P02-2009) Shrinkage reduction of clay through addition of alumina**

K. Hbaieb\*, Institute of materials research and engineering, Singapore

**(ICACC-S8-P03-2009) Premium Zirconia Enabling High Tech Solutions**

K. Beck\*, H.C. Starck Inc., USA; T. Schmidt, R. Wagner, H.C. Starck GmbH, Germany

**(ICACC-S8-P04-2009) Thermal Conductivity Measurement of Ceramic Filler for Ceramic/Polymer Composite Fabrication**

K. Watari\*, I. Yamada, S. Kume, National Institute of Advanced Industrial Science and Technology, Japan

**(ICACC-S8-P05-2009) Manufacturing Ceramic Bodies via Rapid Freeze Gelation (RFG)**

L. Henkel\*, L. Vinke, D. Koch, G. Grathwohl, Ceramics, Germany

**(ICACC-S8-P06-2009) Effect of Copper Powder and Porous Copper as Reinforcement on Spreading Characteristics and Strength Development of Ag-Sn-Cu Lead-Free Solder**

L. D. Angelia\*, M. Hamdi, S. Zawiah, University of Malaya, Malaysia; T. Ariga, Tokai University, Japan; A. E. Tontowi, Gadjah Mada University, Indonesia

**(ICACC-S8-P07-2009) Characterization of a Zirconia-Spinel Nanocomposite Processed by Spark Plasma Sintering**

M. Shirooyeh\*, University of Southern California, USA; S. Tanju, J. E. Garay, University of California, USA; T. G. Langdon, University of Southern California, USA

**(ICACC-S8-P08-2009) Fabrication of Ultrahigh Porous Cordierite with Micrometer-sized Cells by Novel Gelcasting Method**

M. Fukushima\*, M. Nakata, Y. Yoshizawa, National Institute of Advanced Industrial Science and Technology (AIST), Japan

**(ICACC-S8-P09-2009) Some Effects of Ultra High Temperature Ceramics Processing Routes on Microstructure**

M. Gusman\*, M. Stackpoole, EIORET at NASA Ames Research Ctr., USA; S. M. Johnson, M. Gasch, NASA Ames Research Center, USA; K. Lau, A. Sanjurjo, SRI International, USA

**(ICACC-S8-P10-2009) Effect of particle size distribution on the final properties of reaction bonded SiC (RBSC) made by filtration casting**

P. Chhillar\*, I. Sullivan, T. Stangle, M Cubed Technologies, USA

**(ICACC-S8-P11-2009) Optimisation of microwave-assisted rapid debinding of CIM parts in multi-mode applicators**

R. Rosa\*, P. Veronesi, C. Leonelli, University of Modena, Italy

**(ICACC-S8-P12-2009) Microwave assisted synthesis of non-oxide ceramics for high temperature applications**

R. Rosa\*, P. Veronesi, A. Corradi, C. Leonelli, University of Modena, Italy

**(ICACC-S8-P13-2009) Ceramic Tapes of Si-Al-O-N-C Compounds from Silicene Resins and Al-Si Fillers**

R. M. Rocha\*, Comando-Geral de Tecnologia Aeroespacial, Brazil; J. C. Bressiani, A. H. Bressiani, Instituto de Pesquisas Energéticas e Nucleares, Brazil

**(ICACC-S8-P14-2009) Synthesis of Lithium Silicate Powders via an Organic-Inorganic Steric Entrapment Route**

S. Lee\*, W. M. Kriven, University of Illinois at Urbana-Champaign, USA

**(ICACC-S8-P15-2009) Morphology Control of Metal Oxides for Environmental Sensors**

Y. Masuda\*, X. Hu, T. Kimura, K. Kato, National Institute of Advanced Industrial Science and Technology (AIST), Japan; M. Ajimi, M. Bekki, S. Sonezaki, TOTO Ltd. Research Laboratory, Japan

**(ICACC-S8-P16-2008) Ultrasonic Non-Destructive Testing of Ceramic Sputtering Targets**

E. Medvedovski\*, C. J. Szepesi, Umicore Indium Products, USA

**(ICACC-FS1-P01-2009) Effect of K2O-SiO2 Ratio on the Microstructure and Mechanical Properties of Fly Ash Derived Geopolymers**

T. L. Metroke, M. V. Henley\*, Air Force Research Laboratory, USA

**(ICACC-FS1-P02-2009) Effect of K2O-SiO2 Ratio on the Microstructure and Mechanical Properties of Fly Ash Derived Geopolymers during Thermal Exposure to 1000°C**

T. L. Metroke\*, M. V. Henley, Air Force Research Laboratory, USA

**(ICACC-FS2-P01-2009) Effects of Ag and P co-doping on ZnO optical and transport properties**

F. Lugo\*, K. Kim, H. Kim, S. J. Pearton, D. P. Norton, F. Ren, University of Florida, USA

**(ICACC-FS2-P02-2009) High Efficiency Down Converting Powder Phosphors for Solid State Lighting Applications**

S. Maslov\*, D. Bera, P. Holloway, University of Florida, USA

**(ICACC-FS2-P03-2009) Crystal growth and scintillation properties of Ce-doped aluminate with perovskite-type single crystals**

Y. Harada\*, T. Suzuki, National Institute of Advanced Industrial Science and Technology (AIST), Japan; T. Kitazawa, University of Tokyo, Japan

## Thursday, January 22, 2009

**Symposium 1: Mechanical Behavior and Performance of Ceramics & Composites****Non-destructive Evaluation**

Room: Coquina A

Session Chair: Jiangang Sun, Argonne National Laboratory

8:00 AM

**(ICACC-S1-051-2009) Nondestructive Inspection of Ceramic Bearing Balls**

J. Sun\*, E. Koehl, S. Steckenrider, Argonne National Laboratory, USA

8:20 AM

**(ICACC-S1-052-2009) Electrical Resistance of Ceramic Matrix Composites for Damage Detection and Life-Prediction**

C. E. Smith\*, University of Akron, USA; G. Morscher, Ohio Aerospace Institute, USA; Z. Xia, University of Akron, USA

8:40 AM

**(ICACC-S1-053-2009) A Study of Out-of-plane Fiber Orientation Measurement of Carbon-Carbon Composites Using Infrared Thermo-graphic Technique**

S. S. Iqbal\*, Southern Illinois University, Carbondale, USA

9:00 AM

**(ICACC-S1-054-2009) Non-Destructive Evaluation Methods for CMC Components**

T. H. Ullmann\*, R. Jemmal, S. Hofmann, German Aerospace Center (DLR), Germany

9:20 AM

**(ICACC-S1-055-2009) High Temperature Structural Studies of Ceramics and Composites Using Synchrotron Radiation**

P. Sarin\*, W. M. Kriven, University of Illinois at Urbana-Champaign, USA

9:40 AM

Break



## 10:00 AM

**(ICACC-S1-056-2009) Surface elastic properties of porous nanosilica coatings by scanning force microscopy**

A. Vincent\*, S. B. Krishna Moorthy, S. Seal, University of Central Florida, USA

## 10:20 AM

**(ICACC-S1-057-2009) Residual stresses imaging in indented ceramics by photoacoustic microscopy**

A. Glazov\*, K. Muratkov, Ioffe Physical-technical institute, Russian Federation

## 10:40 AM

**(ICACC-S1-058-2009) Determination of Elastic Properties and Characterization of Thermal Barrier Coatings Using Resonant Ultrasound Spectroscopy**

Y. Tan\*, S. Sampath, State University of New York at Stony Brook, USA; A. Shyam, E. Lara-Curzio, Oak Ridge National Laboratory, USA

## Ultra High Temperature Ceramics - Characterization

Room: Coquina D

Session Chair: Dileep Singh, Argonne National Laboratory

## 8:00 AM

**(ICACC-S1-059-2009) Rate sensitivity of indentation hardness and uniaxial compressive strength of ultra-high temperature ZrB<sub>2</sub>-SiC composite**

D. Ghosh, G. Subhash\*, University of Florida, USA

## 8:20 AM

**(ICACC-S1-060-2009) TEM investigation of plastic deformation in an ultra-high temperature ZrB<sub>2</sub>-SiC composite**

D. Ghosh\*, G. R. Bourne, G. Subhash, University of Florida, USA

## 8:40 AM

**(ICACC-S1-061-2009) Mechanical behavior of spark plasma sintered ZrB<sub>2</sub> composites with nano-sized SiC particles**

D. Chung\*, J. Yang, University of California Los Angeles, USA; S. Guo, Y. Kagawa, National Institute of Materials Science, Japan

## 9:00 AM

**(ICACC-S1-062-2009) Microstructure development and mechanical behavior of reaction sintered and reaction hot pressed ZrB<sub>2</sub>-SiC**

H. J. Brown-Shaklee\*, W. G. Fahrenholtz, G. E. Hilmas, Missouri University of Science and Technology, USA

## 9:20 AM

**(ICACC-S1-063-2009) High Temperature Compressive Mechanical Behavior of ZrB<sub>2</sub>-Based Ultra- High Temperature Ceramic Composites**

J. Martinez-Fernandez\*, J. Ramirez-Rico, M. Bautista, A. R. de Arellano-Lopez, Universidad de Sevilla-CSIC, Spain; M. Singh, Ohio Aerospace Institute, USA

## 9:40 AM

Break

## 10:00 AM

**(ICACC-S1-064-2009) Room and High Temperature Deformation Mechanisms of LaB<sub>6</sub>-ZrB<sub>2</sub> Directionally Solidified Eutectic Ceramic Composites**

R. M. White\*, C. I. Phillips, E. C. Dickey, The Pennsylvania State University, USA

## 10:20 AM

**(ICACC-S1-065-2009) Microstructure and Mechanical Behavior of Melt-Infiltrated Cf/ZrC Composites for Ultrahigh Temperature Applications**

L. Zou\*, N. Wali, J. Yang, University of California Los Angeles, USA; A. Allen, Ultramet, USA; N. Bansal, NASA-GRC, USA

## 10:40 AM

**(ICACC-S1-066-2009) Stress measurement in ZrB<sub>2</sub>/SiC composites via neutron diffraction**

J. Watts\*, Missouri University of Science and Technology, USA; M. Teague, Knolls Atomic Power Laboratory, USA; G. Hilmas, B. Fahrenholtz, Missouri University of Science and Technology, USA

## 11:00 AM

**(ICACC-S1-067-2009) High temperature X-ray diffraction studies of monoclinic to tetragonal phase transformation in HfO<sub>2</sub>**

R. P. Haggerty\*, P. Sarin, P. E. Driemeyer, J. L. Bell, A. Cackovic, W. M. Kriven, University of Illinois at Urbana-Champaign, USA

## Symposium 2: Advanced Ceramic Coatings for Structural, Environmental, and Functional Applications

### Environmental Barrier and Nano-Functional Coatings

Room: Coquina H

Session Chairs: Ping Xiao, University of Manchester; Yongho Sohn, University of Central Florida

## 8:00 AM

**(ICACC-S2-054-2009) Ceramic Coatings on Lightweight Metals by Plasma Electrolytic Oxidation (Invited)**

A. Yerokhin\*, Sheffield University, United Kingdom; A. Matthews, Sheffield University, United Kingdom

## 8:40 AM

**(ICACC-S2-055-2009) The Effect of Process Parameters on the Post-treatment of Cerium Based Conversion Coatings on Al 2024-T3**

D. K. Heller, W. G. Fahrenholtz\*, M. J. O'Keefe, Missouri University of Science and Technology, USA

## 9:00 AM

**(ICACC-S2-056-2009) Scalable Rare-earth nanostructured Catalytic Coatings for High temperature protection of Aluminides**

V. Singh\*, S. Babu, S. Seal, G. Das, University of Central Florida, USA; A. Czyska-Filemonowicz, AGH University of Science and Technology, Poland

## 9:20 AM

**(ICACC-S2-057-2009) Processing of dip-coated polymer derived composite ceramic coatings on metallic substrates**

K. Wang\*, R. K. Bordia, University of Washington, USA

## 9:40 AM

Break

## 10:00 AM

**(ICACC-S2-058-2009) Anatase-Calcium Phosphate Composite Coating for Photocatalysis**

D. Park\*, J. Ryu, J. Choi, B. Hahn, W. Yoon, Korea Institute of Materials Science, South Korea

## 10:20 AM

**(ICACC-S2-059-2009) Semi-conductor Photocatalytic Coatings**

C. S. Peyratout\*, Ecole Nationale Supérieure de Céramique Industrielle, France; M. Fassier, Ecole Nationale Supérieure de Céramique Industrielle, France; N. Chouard, Ecole Nationale Supérieure de Céramique Industrielle, France; D. S. Smith, Ecole Nationale Supérieure de Céramique Industrielle, France; C. Ducroquetz, T. Voland, Centre Technique de Matériaux Naturels de Construction, France

## 10:40 AM

**(ICACC-S2-060-2009) Residual Stress Induced Toughening in SiC Nanocomposite Coatings**

A. R. Beaber\*, S. L. Girshick, W. W. Gerberich, University of Minnesota, USA

**11:00 AM****(ICACC-S2-061-2009) Magnesia and Yttria based coatings for Direct-Copper-Bonding of silicon nitride ceramics**

L. Mueller\*, Georg-Simon-Ohm-Hochschule, University of Applied Sciences, Germany; A. Roosen, University Erlangen-Nuremberg, Germany; T. Frey, Georg-Simon-Ohm-Hochschule, University of Applied Sciences, Germany; J. Schulz-Harder, Electrovac curamik GmbH, Germany

**11:20 AM****(ICACC-S2-062-2009) Metal-in-ceramic nano-composites prepared through solution processing**

G. Westin\*, A. Pohl, A. Ekstrand, K. Jansson, Uppsala University, Sweden

**11:40 AM****(ICACC-S2-063-2009) Experimental Solderability Study of SAC 305 with Various Oxide Systems and Nanogold Coatings**

S. Klatt, Washington University in St. Louis, USA; T. Spalding\*, A. Vincent, S. Seal, University of Central Florida, USA; R. Nowak, A. Kudyba, N. Sobczak, Foundry Research Institute, Poland

## Symposium 3: 6th International Symposium of Solid Oxide Fuel Cells (SOFC): Materials, Science, and Technology

**Interconnects/Fuel Reforming**

Room: Coquina E

Session Chairs: Maria Medeiros, Office of Naval Research; A. Manivannan, U.S. DOE/NETL

**8:00 AM****(ICACC-S3-050-2009) Advanced SOFC Interconnect Development at PNNL**

Z. Yang\*, G. Xia, J. Templeton, L. Li, Z. Nie, J. Coleman, C. Wang, J. Dtevenson, P. Singh, Pacific Northwest National Laboratory, USA

**8:20 AM****(ICACC-S3-051-2009) Impact of protective and contacting layers on the long-term SOFC operation (Invited)**

M. Kusnezoff\*, V. Sauchuk, S. Megel, E. Girdauskaite, Fraunhofer IKTS, Germany

**9:00 AM****(ICACC-S3-052-2009) Evaluation of Protective Coatings on Nickel Based Superalloy and Ferritic Stainless Steels for SOFC Interconnect Applications**

L. Chen\*, E. Y. Sun, N. Magdefrau, J. Yamanis, United Technologies Research Center, USA

**9:20 AM****(ICACC-S3-053-2009) Mechanisms of Chromium Transport on Cathode Materials of Solid Oxide Fuel Cell**

G. Lau\*, M. C. Tucker, C. P. Jacobson, S. J. Visco, L. C. DeJonghe, Lawrence Berkeley National Laboratory, USA

**9:40 AM****Break****10:00 AM****(ICACC-S3-054-2009) Thin film coatings to reduce chromium migration**

J. Lee, R. Lacey, D. Edwards, Alfred University, USA; R. Naum, Applied Coatings, Inc., USA; S. Mixture\*, Alfred University, USA

**10:20 AM****(ICACC-S3-055-2009) Carbon dioxide reforming of methane on Ni-ceria-based oxide cermet anode for solid oxide fuel cells**

M. Kawano\*, H. Yoshida, K. Hashino, T. Inagaki, The Kansai Electric Power Co., Inc., Japan

**10:40 AM****(ICACC-S3-056-2009) Synthesis and catalytic activity of Co-doped BaCe<sub>x</sub>Zr<sub>1-x</sub>O<sub>3</sub> mixed conductors for hydrogen reforming**

A. Suresh, J. Basu, B. A. Wilhite, University of Connecticut, USA; N. M. Sammes\*, Colorado School of Mines, USA; B. Carter, University of Connecticut, USA

**11:00 AM****(ICACC-S3-057-2009) Hydrogen Transport Water Gas Shift Membrane Reactor**

J. Li\*, T. Oh, H. Yoon, E. Wachsman, University of Florida, USA

**11:20 AM****(ICACC-S3-083-2009) Understanding the Initial Oxide Scale Formation and Growth on Haynes® 214® Alloy**

S. Kuchibhatla, W.R. Wiley Environmental Molecular Sciences Laboratory, USA; C. G. Vasil, Estrella Mountain Community College, USA; V. Shuttanandan, M. H. Engelhard, P. Nachimuthu, R. Baxter, W.R. Wiley Environmental Molecular Sciences Laboratory, USA; T. Thevuthasan\*, P. Singh, PNNL, USA

## Symposium 6: Key Materials and Technologies for Efficient Direct Thermal-To-Electrical Conversion

**S6 Plenary Session**

Room: Coquina G

Session Chair: Antoine Maignan, Laboratoire CRISMAT

**8:00 AM****Opening and Welcome****8:20 AM****(ICACC-S6-001-2009) Aperiodic compounds as potential thermoelectric materials (Invited)**

Y. Miyazaki\*, Tohoku University, Japan

**Material Synthesis and Processing Procedures**

Room: Coquina G

Session Chair: David Rowe, Cardiff University

**9:00 AM****(ICACC-S6-002-2009) The impact of the intermediate phases on the formation of the layered perovskite-like compounds**

I. Zvereva\*, A. Missyul, Saint-Petersburg State University, Russian Federation

**9:20 AM****(ICACC-S6-003-2009) Strength of Bismuth Telluride**

A. Wereszczak\*, T. Kirkland, Oak Ridge National Laboratory, USA; O. Jadaan, University of Wisconsin-Platteville, USA; H. Wang, Oak Ridge National Laboratory, USA

**9:40 AM****Break****Nanostructured Materials**

Room: Coquina G

Session Chair: Yuzuru Miyazaki, Tohoku University

**10:00 AM****(ICACC-S6-004-2009) Development of Thermoelectric Active Materials and Their Application for Solar Heat Conversion (Invited)**

R. Robert\*, P. Tomes, M. Trottmann, M. H. Aguirre, L. Bocher, A. Weidenkaff, Empa-Materials Science & Technology, Switzerland

**10:40 AM****(ICACC-S6-005-2009) Binary Doping of ZnO for High ZT n-type Oxide Thermoelectric Materials**

M. Ohtaki\*, K. Araki, K. Yamamoto, Kyushu University, Japan

**11:00****(ICACC-S6-015-2009) Thermoelectric Properties in the TiO<sub>2</sub>/SnO<sub>2</sub> System**

F. Dynys, A. Sayir, NASA Glenn Research Center, USA; A. Sehrioglu\*, Case Western Reserve University, USA; M. Berger, Ecole des Mines, France

**11:20 AM****(ICACC-S6-006-2009) Nanostructure Design of Thermoelectric Oxide Ceramics**

K. Koumoto\*, H. Ohta, Nagoya University, Japan

**11:40 AM****(ICACC-S6-007-2009) Thermoelectric properties of nano-scaled lanthanides doped ZnO**

M. H. Aguirre\*, Empa, Switzerland; E. Otal, CONICET-CITEFA, Argentina; N. Nina Schaeuble, R. Robert, A. Weidenkaff, Empa, Switzerland

**Symposium 7: 3rd International Symposium on Nanostructured Materials and Nanocomposites: Held in Honor of Professor Koichi Niihara****Synthesis, Processing and Assembly of Nanostructures III**

Room: Coquina C

Session Chair: Dominik Schaniel, Universität zu Köln

**8:00 AM****(ICACC-S7-036-2009) Formation of Nanostructured Bioactive Coatings on Alumina and Zirconia Ceramics Using a Fast Biomimetic Method (Invited)**

S. Beranic Klopčič, I. Pribosic, T. Kosmac\*, Jozef Stefan Institute, Slovenia

**8:40 AM****(ICACC-S7-037-2009) Assembly of Multi-walled Carbon Nanotubes and Titania Sol**

K. Lu\*, J. Qian, Virginia Polytechnic Institute and State University, USA

**9:00 AM****(ICACC-S7-038-2009) Patterning Arrays of Nanoparticles**

J. Basu\*, University of Connecticut, USA; N. Ravishankar, Indian Institute of Science, India; C. Carter, University of Connecticut, USA

**9:20 AM****Break****Bio-active Materials**

Room: Coquina C

Session Chair: Rishi Raj, University of Colorado at Boulder

**10:00 AM****(ICACC-S7-039-2009) Biodegradable Polymeric Nanoparticles for Long Time Tracking of Stem Cells for Regenerative Medicine Therapy (Invited)**

H. Hosseinkhani\*, Research Institute for Integrated Medical Sciences, Japan

**10:40 AM****(ICACC-S7-040-2009) A study of Mechanical and Biological Properties  $Al_2TiO_5$ - $TiO_2$  Nanocomposite (Invited)**

S. J. Kalita\*, V. Somani, University of Central Florida, USA

**11:20 AM****(ICACC-S7-041-2009) Upconversion based nano rare earth oxide phosphors for biomedical imaging**

S. B. Krishna Moorthy\*, J. Cho, University of Central Florida, USA; E. Durand, Université Paris-Sud 11, France; M. Bass, J. Dowding, W. T. Self, S. Seal, University of Central Florida, USA

**11:40 AM****(ICACC-S7-042-2009) New Ceramic Foams with Open Cell Size Gradient**

S. Barg\*, M. Vieira Carlesso, D. Koch, G. Grathwohl, University of Bremen, Germany

**Symposium 8: 3rd International Symposium on Advanced Processing and Manufacturing Technologies for Structural and Multifunctional Materials and Systems (APMT)****Binder and Suspension Technologies**

Room: Coquina B

Session Chairs: Tomaz Kosmac, Jozef Stefan Institute; Koji Watari, National Institute of Advanced Industrial Science and Technology

**8:00 AM****(ICACC-S8-046-2009) Effect of Interparticle Interactions on the Rheological properties of Paraffin-Wax Suspensions (Invited)**

A. Dakskobler\*, T. Kosmac, Jozef Stefan Institute, Slovenia

**8:40 AM****(ICACC-S8-047-2009) Preparation of Highly Concentrated Nanosized Alumina Suspensions for Spray-drying**

S. Cottrino\*, Y. Jorand, E. Maire, J. Adrien, INSA, France

**9:00 AM****(ICACC-S8-048-2009) PhotoRheology and PhotoDSC of Polymerizable Ceramic Suspensions**

V. Tomeckova\*, F. Teyssandier, C. Torres-Garibay, C. Bae, B. J. Love, J. W. Halloran, University of Michigan, USA

**9:20 AM****(ICACC-S8-049-2009) Photopolymerizable ceramic suspensions for Ceramic stereolithography (CerSLA) characterized using differential photo-calorimetry (Photo-DSC)**

C. Bae\*, V. Tomeckova, C. Torres-Garibay, J. W. Halloran, university of michigan, USA

**9:40 AM****Break****10:00 AM****(ICACC-S8-050-2009) Crosslinkable poly vinyl alcohol (PVA) binder for forming gel and tape cast components (Invited)**

G. V. Franks\*, University of Melbourne, Australia

**10:40 AM****(ICACC-S8-051-2009) Optimization of Acrylic Triblock Copolymers for Thermoreversible Gelcasting**

M. Seitz\*, K. R. Shull, K. T. Faber, Northwestern University, USA

**11:00 AM****(ICACC-S8-052-2009) Preparation of Electro-Conductive Ceramic Composites from  $Si_3N_4$  Coated by Nano-sized ZrN**

A. Maglica, K. Krnel, T. Kosmac\*, Jozef Stefan Institute, Slovenia

**Symposium 10: International Symposium on Silicon Carbide and Carbon-based Materials for Fusion and Advanced Nuclear Energy Applications****Emerging Materials and Novel Processing**

Room: Crystal Ballroom

Session Chairs: Yutai Katoh, Oak Ridge National Laboratory; Hans Hegeman, NRG Petten; Akira Kohyama, Kyoto University

**8:00 AM****(ICACC-S10-039-2009) Ceramic processing in production of SiC-based composites for fusion applications**

S. Novak\*, G. Drazic, J. Stefan Institute, Slovenia

**8:20 AM**

**(ICACC-S10-040-2009) Hot pressed silicon carbide ceramic**  
A. Ghosh, A. Gulnar, R. K. Fotedar, G. K. Dey, A. K. Suri\*, Bhabha Atomic Research Centre, India

**8:40 AM**

**(ICACC-S10-041-2009) Current Status of NITE-SiC/SiC Products and Their Performance**  
A. Kohyama\*, Kyoto University, Japan; J. Park, IEST Co., Ltd., Japan; H. Kishimoto, K. Shimoda, Kyoto University, Japan

**9:00 AM**

**Discussion: Emerging Materials**

**9:40 AM**

**Break**

## S10 Summary Discussion

Room: Crystal Ballroom

Session Chair: Yutai Katoh, Oak Ridge National Laboratory

**10:00 AM**

**Summary Discussion**

## Symposium 11: Symposium on Advanced Dielectric, Piezoelectric, Ferroelectric, and Multiferroic Materials

### Perovskite Dielectric, Mott Insulators, Ferroelectric, and Piezoelectric Materials

Room: Tomoka A&B

Session Chair: Ian Reaney, University of Sheffield

**8:00 AM**

**(ICACC-S11-033-2009) Point Defect Re-equilibration Kinetics in BaTiO<sub>3</sub> (Invited)**  
H. Yoo\*, C. Lee, Seoul National University, South Korea

**8:40 AM**

**(ICACC-S11-034-2009) Effects of Field & Temperature During Poling on the Ferroelectric Properties of Lead Zirconate Titanate**  
A. D. Prewitt\*, J. L. Jones, University of Florida, USA

**9:00 AM**

**(ICACC-S11-035-2009) Defect and Crystal Chemistry and Related Phenomena in Perovskite Oxides (Invited)**  
S. Lee\*, W. H. Woodford, G. Yang, Z. Liu, C. A. Randall, Penn State University, USA

**9:40 AM**

**Break**

**10:00 AM**

**(ICACC-S11-036-2009) Nonlinear Contributions to Converse Piezoelectric Properties in Lead Zirconate Titanate Ceramics**  
A. Pramanick\*, University of Florida, USA; D. Damjanovic, Swiss Federal Institute of Technology, Switzerland; J. C. Nino, J. L. Jones, University of Florida, USA

**10:20 AM**

**(ICACC-S11-037-2009) Progress Towards Strong Flexoelectric Piezoelectric Composites (Invited)**  
L. Cross\*, N. B. Smith, Y. Fu, W. Zhu, N. Li, Penn State University, USA

**11:00 AM**

**(ICACC-S11-038-2009) Broad band dielectric response and mechanisms of hardening and softening in lead zirconate titanate**  
D. Damjanovic\*, V. Porokhonsky, L. Jin, EPFL, Switzerland

## Focused Session 1: Geopolymers and other Inorganic Polymers

### Synthesis and Processing

Room: Coquina F

Session Chair: Waltraud Kriven, University of Illinois at Urbana-Champaign

**8:00 AM**

**(ICACC-FS1-001-2009) Inorganic Polymers (Geopolymers) as Advanced Materials (Invited)**  
K. J. MacKenzie\*, Victoria University of Wellington, New Zealand

**8:40 AM**

**(ICACC-FS1-020-2009) Low-temperature Setting Inorganic Materials from Low-cost to High Performance Materials (Invited)**  
H. Rahier\*, J. Wastiels, M. Alshaaer, B. Van Mele, Vrije Universiteit Brussel, Belgium

**9:20 AM**

**(ICACC-FS1-002-2009) Alkali Activated Aerogels (Invited)**  
F. R. Svingala\*, B. Varela, Rochester Institute of Technology, USA

**9:40 AM**

**Break**

### Microstructure

Room: Coquina F

Session Chair: Kenneth MacKenzie, Victoria University of Wellington

**10:00 AM**

**(ICACC-FS1-003-2009) The Mineral Polymer Concept: Silicones and Geopolymers with Covalent Bonding (Invited)**  
J. Davidovits\*, Geopolymer Institute, France

**10:40 AM**

**(ICACC-FS1-004-2009) Microstructure and Short Range Order in Aluminosilicate Geopolymers (Invited)**  
J. L. Bell, P. Sarin, W. M. Kriven\*, University of Illinois at Urbana-Champaign, USA

### Properties

Room: Coquina F

Session Chair: Kenneth MacKenzie, Victoria University of Wellington

**11:20 AM**

**(ICACC-FS1-005-2009) Performance and Properties of Si-rich Geopolymer Binder Systems (Invited)**  
K. Sagoe-Crentsil\*, CSIRO Materials Science and Engineering, Australia

## Symposium 1: Mechanical Behavior and Performance of Ceramics & Composites

### Ultra High Temperature Ceramics - Oxidation Behavior

Room: Coquina A

Session Chair: Eric Wuchina, Naval Surface Warfare Center, Carderock Div.

**1:20 PM**

**(ICACC-S1-068-2009) A Model for Predicting Oxidation Kinetics of Refractory Diborides (Invited)**  
T. A. Parthasarathy\*, UES, Inc., USA; R. A. Rapp, The Ohio State University, USA; M. Opeka, Naval Surface Warfare Center, USA; R. J. Kerans, Air Force Research Laboratory, USA

**2:00 PM**

**(ICACC-S1-069-2009) Direct observation of flow and bubbling in liquid oxide films on ZrB<sub>2</sub>-SiC ceramic composites during high temperature oxidation**  
S. Gangireddy\*, J. W. Halloran, University of Michigan, USA

**2:20 PM****(ICACC-S1-070-2009) Oxidation of ZrB<sub>2</sub> Ceramics with Tungsten Carbide Additions**

S. C. Zhang\*, G. Hilmas, W. Fahrenholtz, Missouri University of Science and Technology, USA

**2:40 PM****(ICACC-S1-071-2009) Oxidation Behavior Of Zirconium Diboride-Based UHTCs: Nanoscale Analysis and Effect of Silicon Carbide Content**

E. G. Eakins\*, D. D. Jayaseelan, W. E. Lee, Imperial College London, United Kingdom; F. Monteverde, A. Bellosi, Institute of Science and Technology for Ceramics, Italy

**3:00 PM****Break****3:20 PM****(ICACC-S1-072-2009) Microstructure, mechanical properties, and oxidation behavior of fine grained ZrB<sub>2</sub>-SiC ceramics**

S. Zhu\*, W. G. Fahrenholtz, G. E. Hilmas, Missouri University of Science and Technology, USA

**3:40 PM****(ICACC-S1-073-2009) Ultra-high temperature ceramics for applications in extreme environments**

F. Monteverde\*, R. Savino, ISTECC-CNR, Italy

**Environmental Effects on Mechanical Properties**

Room: Coquina A

Session Chair: Jacques Lamon, CNRS

**4:00 PM****(ICACC-S1-074-2009) Oxidation Kinetics and Strength Versus Scale Thickness for Hi-Nicalon<sup>TM</sup>-S SiC Fiber**

R. Hay\*, G. Fair, E. Urban, J. Morrow, J. Somerson, M. Wilson, AFRL/RXLN, USA

**4:20 PM****(ICACC-S1-075-2009) Static Fatigue of Multifilament Tows at High Temperatures Above 900°C**

J. L. Lamon\*, A. Laforet, CNRS, France

**4:40 PM****(ICACC-S1-076-2009) Effects of Steam Environment on Creep Behavior of Nextel610/Monazite/Alumina Composite at 1100°C**

T. Yeleser, M. Ruggles-Wrenn\*, Air Force Institute of Technology, USA; G. Fair, Air Force Research Laboratory, USA; J. Davis, Teledyne Scientific &amp; Imaging LLC, USA

**5:00 PM****(ICACC-S1-077-2009) Effects of Steam Environment on Fatigue Behavior of a SiC/SiNC Ceramic Matrix Composite at 1300 °C**

V. Sharma, M. Ruggles-Wrenn\*, Air Force Institute of Technology, USA

**5:20 PM****(ICACC-S1-078-2009) Fatigue Characterization of Melt-Infiltrated (MI) Woven Hi-Nic-SiC/BN/SiC CMC Using a Unique Combustion Heating Test Facility**

T. T. Kim\*, Air Force Research Laboratory, USA; S. Mall, Air Force Institute of Technology, USA; L. P. Zawada, Air Force Research Laboratory, USA

**5:40 PM****(ICACC-S1-079-2009) Corrosion Resistance of Ceramics in Vaporous and Boiling Sulfuric Acid**

C. Lewinsohn\*, H. Anderson, M. Wilson, Ceramtec, Inc., USA; M. Sunderberg, J. Brangefalt, Kanthal, AB, Sweden

**6:00 PM****(ICACC-S1-080-2009) A study of Compressive Properties of Non-Heat Treated and Heat Treated C/C Composite before and after Oxidation**

S. S. Iqbal\*, P. Filip, Southern Illinois Univ, Carbondale, USA

**Symposium 3: 6th International Symposium of Solid Oxide Fuel Cells (SOFC): Materials, Science, and Technology****Novel Processing/Reliability and Degradation**

Room: Coquina E

Session Chairs: S. Elangovan, Ceramtec, Inc.; Juergen Malzbender, Forschungszentrum Juelich

**1:20 PM****(ICACC-S3-058-2009) Rapid fabrication of multiple SrTi<sub>1-x</sub>FexO<sub>3-δ</sub> compositions and geometries via ink-jet printing**

K. Haga\*, W. Jung, H. L. Tuller, Massachusetts Institute of Technology, USA

**1:40 PM****(ICACC-S3-059-2009) Tape Casting and Hot Pressing Fabrication Process and Characterization of an Anode-Supported Planar SOFC**

C. An, G. Restuccia, N. M. Sammes\*, J. Song, Colorado School of Mines, USA

**2:00 PM****(ICACC-S3-060-2009) Development of novel nano-structured SOFC's**

T. Van Gestel\*, W. A. Meulenber, H. Buchkremer, Forschungszentrum Jülich, Germany

**2:20 PM****(ICACC-S3-061-2009) Multi-layer SOFC Fabrication using Direct Ink Write Method of Deposition**

M. A. Sukeshini\*, R. Cummins, D. Young, Wright State University, USA; H. Xiao, UES Corporation, USA; M. Rottmayer, T. Reitz, The Air Force Research Laboratory, USA

**2:40 PM****(ICACC-S3-062-2009) Rapid Prototyping of SOFCs**

M. Camaratta\*, B. M. Blackburn, E. D. Wachsman, University of Florida, USA

**3:00 PM****Break****3:20 PM****(ICACC-S3-063-2009) Synthesis and Characterization of Pure, Doped-CeO<sub>2</sub> and Its Derivatives for Energy and Environment**

J. Basu\*, J. P. Winterstein, S. Bhowmick, C. Carter, University of Connecticut, USA

**3:40 PM****(ICACC-S3-064-2009) Co-generation of Electricity and Syngas on Novel Segmented in Series SOFCs under Electrochemical Partial Oxidation of Simulated Natural Gas**

I. Kim\*, M. Pillai, N. McDonald, S. Barnett, P. Blaszcak, Functional Coating Technology, LLC, USA

**4:00 PM****(ICACC-S3-065-2009) Advanced Characterisation of SOFC Behaviour**

J. Malzbender\*, R. Steinbrech, L. Singheiser, Forschungszentrum Juelich, Germany

**4:20 PM****(ICACC-S3-066-2009) Post-test Evaluation of the Electrodes and Interconnects from Solid Oxide Electrolysis Stacks**

J. Mawdsley\*, J. Carter, A. Kropf, Argonne National Laboratory, USA; B. Yildiz, Massachusetts Institute of Technology, USA; V. Maroni, Argonne National Laboratory, USA

**4:40 PM****(ICACC-S3-067-2009) Quantitative Microstructural Analysis of Ni Coarsening in Ni-YSZ Anodes**

J. Cronin\*, J. Wilson, Northwestern University, USA; H. Chen, K. Thornton, University of Michigan, USA; S. A. Barnett, Northwestern University, USA

**5:00 PM**

**(ICACC-S3-068-2009) *In situ* synchrotron measurements of equilibrium strontium surface segregation in  $\text{La}_{0.7}\text{Sr}_{0.3}\text{MnO}_3$  as a function of oxygen partial pressure: implications for SOFC performance and growth**

T. T. Fister\*, M. Richard, M. J. Highland, D. D. Fong, P. M. Baldo, J. A. Eastman, P. H. Fuoss, Argonne National Laboratory, USA; K. R. Balasubramaniam, J. C. Meador, P. A. Salvador, Carnegie Mellon University, USA

**5:20 PM**

**(ICACC-S3-069-2009) Impact of Benzene and Naphthalene Containing Syngas Fuel on SOFC Performance**

G. A. Hackett\*, K. R. Gerdes, National Energy Technology Laboratory, USA; J. W. Zondlo, West Virginia University, USA; R. S. Gemmen, National Energy Technology Laboratory, USA

**5:40 PM**

**(ICACC-S3-070-2009) Curvature evolution and control in anode supported solid oxide fuel cells**

M. Cologna, University of Trento, Italy; M. Bertoldi, SOFCPower srl, Italy; V. M. Sglavo\*, University of Trento, Italy

## Symposium 6: Key Materials and Technologies for Efficient Direct Thermal-To-Electrical Conversion

### Structure-Composition and Property Relationship

Room: Coquina G

Session Chair: Antoine Maignan, Laboratoire CRISMAT

**2:00 PM**

**(ICACC-S6-008-2009) Chemical thermodynamic in thermoelectric materials. From Science to Materials engineering (Invited)**

J. Tedenac\*, R. Marin-Ayral, D. Ravot, F. Gascoin, Montpellier University, France

**2:40 PM**

**(ICACC-S6-009-2009) Ca-arrangements and Hole Transports in a Layered Cobaltate,  $\text{Ca}_{0.33}\text{CoO}_2$**

K. Sugirua\*, H. Ohta, Nagoya University, Japan; Y. Ishida, RIKEN SPring-8 Center, Japan; R. Huang, Japan Fine Ceramics Center, Japan; Y. Ikuhara, The University of Tokyo, Japan; K. Nomura, ERATO-SORST, JST, Japan; H. Hosono, Tokyo Institute of Technology, Japan; K. Koumoto, Nagoya University, Japan

**3:00 PM**

**(ICACC-S6-010-2009) Thermoelectric Properties of Substituted  $\text{SrMnO}_3$**

B. Dabrowski\*, S. Kolesnik, Northern Illinois University, USA; K. Swierczek, AGH University of Science and Technology, Poland; M. Himes, Northern Illinois University, USA

**3:20 PM**

Break

## Thermoelectric Power Generation

Room: Coquina G

Session Chair: Jean-Claude Tedenac, Montpellier University

**3:40 PM**

**(ICACC-S6-011-2009) Thermoelectric Generators (Invited)**

D. M. Rowe\*, Cardiff University, United Kingdom

**4:20 PM**

**(ICACC-S6-012-2009) Economical Production of Thermoelectric Oxide Materials through SHS**

L. Griffin, S. Lin\*, Lamar University, USA

**4:40 PM**

**(ICACC-S6-013-2009) Thermoelectric properties of nanocomposites based on conducting oxides**

O. J. Gregory\*, X. Chen, University of Rhode Island, USA; G. C. Fralick, NASA Glenn Research Center, USA

**5:00 PM**

**(ICACC-S6-014-2009) A first Solar Power Converter (SPOC) based on perovskite-type oxide thermoelectric materials**

M. Trottman\*, A. Weidenkaff, R. Robert, P. Tomes, M. Aguirre, L. Bocher, EMPA, Switzerland

**5:20 PM**

**Closing and Final Discussion**

## Symposium 7: 3rd International Symposium on Nanostructured Materials and Nanocomposites: Held in Honor of Professor Koichi Niihara

### Nanomaterials for Energy Applications

Room: Coquina C

Session Chair: Tomaz Kosmac, Jozef Stefan Institute

**1:20 PM**

**(ICACC-S7-043-2009) Preparation and Characteristic Control of Conducting Polymer/Metal Oxide Nano-hybrid Films for Solar Energy Conversion (Invited)**

Y. Tachibana\*, S. Makuta, K. Umekita, J. Terao, S. Tsuda, N. Kambe, S. Kuwabata, Osaka University, Japan

**2:00 PM**

**(ICACC-S7-044-2009) Birefringence in transparent and conducting carbon nanotube electrodes and its effects on the conversion efficiency of organic photovoltaics**

G. Fanchini\*, S. Miller, B. Parekh, M. Chhowalla, Rutgers University, USA

**2:20 PM**

**(ICACC-S7-045-2009) Increase of effectiveness of the DSC  $\text{TiO}_2$  Anode via P-doping**

J. Prochazka\*, L. Kavan, M. Zukalova, JHI, Czech Republic

**2:40 PM**

**(ICACC-S7-046-2009) Defect engineering and morphological modifications of rare earth oxide nanostructures for efficient methanol oxidation**

S. B. Krishna Moorthy\*, A. Vincent, A. S. Karakoti, S. Seal, University of Central Florida, USA

**3:00 PM**

Break

## Nanomaterials: New Compositions and Architectures I

Room: Coquina C

Session Chair: Yasuhiro Tachibana, Osaka University

**3:20 PM**

**(ICACC-S7-047-2009) Defect State Dampening of the Au Nanoparticle SPR Band in Harsh Environments (Invited)**

M. A. Carpenter\*, R. H. Phillip, University at Albany-SUNY, USA

**4:00 PM**

**(ICACC-S7-048-2009) Effect of Polymer Derived SiOC on Creep Resistance and Thermal Conductivity of  $\text{Si}_3\text{N}_4$  and SiC Ceramics**

Z. Lencses\*, P. Sajgalik, L. Hric, T. Plachky, Slovak Academy of Sciences, Slovakia; R. Riedel, Darmstadt University of Technology, Germany

**4:20 PM**

**(ICACC-S7-049-2009) The modification of agglomeration state of (20 vol. %)  $\text{ZrO}_2$  -  $\text{Al}_2\text{O}_3$  nanocrystalline composite powders synthesized by simple gel method**

H. Gocmez\*, M. Tuncer, S. Alanbey, Dumlupinar University, Turkey

**4:40 PM**

**(ICACC-S7-050-2009) Large-Area Fabrication of Hierarchical Micro/Nanostructures by Electron Irradiation of Organic/Inorganic Mixture Polymer and Their Applications to Superhydrophobic and Superhydrophilic Surfaces**  
E. Lee, J. Kum, S. Cho\*, Korea Advanced Institute of Science and Technology, South Korea

**5:00 PM**

**(ICACC-S7-051-2009) Efficient Decomposition of Methanol over Modified Titanium Oxide Surfaces: Dependence on the Morphology and Defect Structure**  
A. S. Karakoti\*, A. Vincent, T. Spalding, S. Babu, S. Seal, University of Central Florida, USA

## Symposium 11: Symposium on Advanced Dielectric, Piezoelectric, Ferroelectric, and Multiferroic Materials

### Novel Properties such as Flexoelectric Effect

Room: Tomoka A&B

Session Chair: Susan Trolier-McKinstry, Penn State

**1:20 PM**

**(ICACC-S11-039-2009) Domain walls and defects in ferroic perovskites (Invited)**  
S. Redfern\*, C. Wang, L. Goncalves-Ferreira, R. Harrison, E. Artacho, J. Scott, E. Salje, University of Cambridge, United Kingdom

**2:00 PM**

**(ICACC-S11-040-2009) New High-Performance Ferroelectric Materials for Piezoelectric Multilayer Actuators (Invited)**  
P. Schmidt-Winkel\*, W. Athenstaedt, O. Dernovsek, A. Feltz, R. Gabl, A. Glazunov, C. Hoffmann, G. Kügerl, M. Schossmann, EPCOS OHG, Ceramic Components Division, Austria

**2:40 PM**

**(ICACC-S11-041-2009) Enhanced High Temperature Piezoelectrics through Doping of Liquid Phase Sintered BiScO<sub>3</sub>-PbTiO<sub>3</sub> Ceramics**  
A. Sehirlioglu\*, A. Sayir, CWRU / NASA GRC, USA; F. Dynys, NASA-GRC, USA

**3:00 PM**

Break

**3:20 PM**

**(ICACC-S11-042-2009) Feature of Morphotropic Phase Boundary of (1-x)Bi(Ga,Sc)O<sub>3</sub>-xPbTiO<sub>3</sub> Piezoelectric Ceramics**  
L. Li, Y. Jiang, X. Yue, D. Xiao, J. Zhu\*, Sichuan University, China

**3:40 PM**

**(ICACC-S11-043-2009) The Time Constant: The 'Forgotten Man' of Impedance Spectroscopy**  
D. Sinclair\*, M. Ferrarelli, M. Li, A. R. West, University of Sheffield, United Kingdom

## Focused Session 1: Geopolymers and other Inorganic Polymers

### Inorganic Analogues of Geopolymers

Room: Coquina F

Session Chair: Kwesi Sagoe-Crentsil, CSIRO Materials Science and Engineering

**1:20 PM**

**(ICACC-FS1-006-2009) Cold setting Inorganic Networks including Phosphates (Invited)**  
C. Kaps\*, Chair of Building Chemistry, Germany

**2:00 PM**

**(ICACC-FS1-007-2009) Phosphate Polymeric Binders Improving Ceramic Strength, Thermal Shock- and Corrosion Resistance**  
E. Medvedovski\*, Umicore Indium Products, USA

**2:20 PM**

**(ICACC-FS1-008-2009) Structural Analysis of an Iron Based Geopolymer**  
J. L. Bell, W. M. Kriven\*, Univ of Illinois, USA

**2:40 PM**

**(ICACC-FS1-009-2009) Inorganic Ultrahigh Temperature Polymers with Multifunctional Properties (Invited)**  
R. Raj\*, University of Colorado at Boulder, USA

**3:20 PM**

Break

## Novel Applications

Room: Coquina F

Session Chair: Christian Kaps, Chair of Building Chemistry

**3:40 PM**

**(ICACC-FS1-010-2009) Geopolymers for Fire Resistant Applications (Invited)**  
A. van Riessen\*, W. Rickard, T. Jadambaa, Curtin University of Technology, Australia

**4:20 PM**

**(ICACC-FS1-011-2009) Geopolymer-based Smart Adhesives for Structural Health Monitoring: A Feasibility Study**  
J. He\*, G. Zhang, Louisiana State University, USA; S. Hou, Dalian University of Technology, China; C. Cai, Louisiana State University, USA

**4:40 PM**

**(ICACC-FS1-012-2009) Potassium Composite Geopolymer Consolidated by Sand or Industrial Waste**  
S. Rossignol, P. Michaud, E. Prud'homme\*, A. Michot, J. Soro, GEMH-ENSCI, France; E. Joussein, Grese, France

## Composites

Room: Coquina F

Session Chair: Christian Kaps, Chair of Building Chemistry

**5:00 PM**

**(ICACC-FS1-013-2009) Preparation of Electric Conductance Materials Based on Geopolymer**  
P. Roubicek, Ceske luppove zavody a.s., Czech Republic; Z. Cerny\*, I. Jakubec, P. Bezdecka, V. Stengl, Institute of Inorganic Chemistry, v.v.i., Academy of Science of the Czech Republic, Czech Republic

**5:20 PM**

**(ICACC-FS1-014-2009) Properties of Phosphorous Containing Geopolymer Matrix and Fiber Reinforced Composite on Its Basis**  
O. Bortnovsky\*, Research Institute of Inorganic Chemistry, Czech Republic; J. Dedecek, Z. Sobalik, J. Heyrovsky Institute of Physical Chemistry, Academy of Sciences of the Czech Republic, Czech Republic; V. Vodickova, D. Kroisova, Technical University of Liberec, Czech Republic; P. Roubicek, Ceske luppove zavody, Czech Republic

**5:40 PM**

**(ICACC-FS1-015-2009) Blast furnace slag as raw material for geopolymer synthesis**  
C. Panagiotopoulou\*, S. Tsvivilis, T. Perraki, M. Perraki, G. Kakali, N.T.U.A, Greece

## Focused Session 2: Materials for Solid State Lighting

### Materials for Solid State Lighting

Room: Coquina H

Session Chair: David Norton, University of Florida

**1:20 PM**

**(ICACC-FS2-001-2009) SulfoSelenide Phosphors and Nanophosphors for Solid-State Lighting (Invited)**  
H. Menkara\*, B. K. Wagner, R. Gilstrap, C. J. Summers, PhosphorTech, USA



## 1:40 PM

(ICACC-FS2-002-2009) SiCO Thin Films: a Novel LED Material  
G. Soraru, A. Karakuscu\*, R. Guider, L. Pavesi, University of Trento, Italy

## 2:00 PM

(ICACC-FS2-003-2009) Phosphorus-doped ZnO thin films and diodes  
K. Kim\*, H. Kim, F. Lugo, S. J. Pearton, D. P. Norton, Y. Wang, F. Ren, University of Florida, USA

## 2:20 PM

(ICACC-FS2-004-2009) Structural and Optical Properties of  $\text{CuSc}_{1-x}\text{Mg}_x\text{O}_2/\text{ZnO}$  Semiconducting Thin Film Heterostructures  
P. Sadik\*, F. Lugo, M. Ivill, D. Norton, University of Florida, USA

## Focused Session 3: Advanced Sensor Technology for High-Temperature Applications

### Advanced Sensor Technology I

Room: Coquina B

Session Chair: Qing-Ming Wang, University of Pittsburgh

#### 1:20 PM

(ICACC-FS3-001-2009) Materials and Sensor Designs for On-line Monitoring of Harsh Environments in Fossil Energy Applications (Invited)  
S. M. Maley\*, R. R. Romanosky, Department of Energy, USA

#### 2:00 PM

(ICACC-FS3-002-2009) Oxidation and Corrosion Behaviors of Polymer Derived Si(Al)CN High Temperature Sensors (Invited)  
Y. Wang\*, Northwestern Polytechnical University, China; L. An, University of Central Florida, USA

#### 2:40 PM

(ICACC-FS3-003-2009) Wireless Passive Ceramic MEMS Sensors for In-Situ Monitoring Combustion Turbines (Invited)  
X. Dong\*, L. An, University of Central Florida, USA

#### 3:20 PM

Break

#### 3:40 PM

(ICACC-FS3-004-2009) Sensor Development for High Temperature and Harsh Environmental Sensing in Gas Turbine Engines (Invited)  
U. DeSilva\*, G. Kidane, C. He, R. Bunce, N. Ulerich, Siemens Power Generation Inc., USA

#### 4:20 PM

(ICACC-FS3-005-2009) Sensors for Combustion Monitoring in Energy Plants (Invited)  
R. N. Ghosh\*, Michigan State University, USA

#### 5:00 PM

(ICACC-FS3-006-2009) Impedancemetric planar NO<sub>x</sub>-gas sensors having two different oxide sensing electrodes  
B. Saruhan-Brings\*, German Aerospace Center, Germany; M. C. Stranzenbach, Federal Ministry of Economics and Technologies, Germany

#### 5:20 PM

(ICACC-FS3-007-2009) Electrochemical Analysis of the Effect of Area of La<sub>2</sub>CuO<sub>4</sub> Electrodes for NO<sub>x</sub> Sensor Applications and Its Implications on Sensing Mechanism  
E. R. Macam\*, B. M. Blackburn, R. Mendoza, E. D. Wachsman, University of Florida, USA

#### 5:40 PM

(ICACC-FS3-008-2009) Gas Mixture Results for Thermally Modified Potentiometric Gas Sensor Array  
B. M. Blackburn\*, E. D. Wachsman, University of Florida, USA

## 6:00 PM

(ICACC-FS3-009-2009) High Temperature Acoustic Wave Gas Sensor Using ZnO Nanorods Sensitive Layer  
H. Cheng, L. Qin, Q. Wang\*, University of Pittsburgh, USA

## Friday, January 23, 2009

## Symposium 1: Mechanical Behavior and Performance of Ceramics & Composites

### Design and Life Prediction Methodologies

Room: Coquina A

Session Chair: Osama Jadaan, University of Wisconsin-Platteville

#### 8:00 AM

(ICACC-S1-081-2009) Mechanical Strength of Si and SiC Semiconductor Chips  
O. Jadaan\*, University of Wisconsin-Platteville, USA; A. Wereszczak, Oak Ridge National Laboratory, USA

#### 8:20 AM

(ICACC-S1-082-2009) Residual Stress Estimation Using Curved Indentation Cracks  
R. Tandon\*, Sandia National Laboratories, USA; T. E. Buchheit, Sandia National Lab, USA; M. W. Reiterer, Medtronic Energy and Component Center, USA

#### 8:40 AM

(ICACC-S1-083-2009) Predicting the cyclic failure behaviour of alumina in a fretting fatigue test using a probabilistic lifetime approach  
M. Härtelt\*, H. Riesch-Oppermann, Forschungszentrum Karlsruhe GmbH, Germany; T. Schalk, Universitaet Karlsruhe, Germany; O. Kraft, Forschungszentrum Karlsruhe GmbH, Germany

#### 9:00 AM

(ICACC-S1-084-2009) Cyclic fatigue of alumina under torsional loading at room and higher temperatures  
T. Schwind\*, E. Kerscher, K. Lang, D. Löhe, Universität Karlsruhe, Germany

#### 9:20 AM

(ICACC-S1-085-2009) Wave Propagation In 2D Lattice Structures  
M. Ruzzene, Georgia Institute of Technology, USA; P. Samala, Adecco, USA; J. A. Smith\*, Z. Shi, Corning Incorporated, USA

#### 9:40 AM

Break

#### 10:00 AM

(ICACC-S1-086-2009) Effective volume and area calculations for ceramic specimens in three-point and four-point flexure  
R. Jain\*, S. F. Duffy, Cleveland State University, USA

#### 10:20 AM

(ICACC-S1-087-2009) Analytical and Experimental Studies of Ceramic and Glass Proppants under Simulated Well and API 60 Test Conditions  
A. Segall\*, J. Harris, J. Hellmann, B. Scheetz, R. Kosecki, J. Boyce, Penn State University, USA

## Tribological Behavior of Ceramics & Composites

Room: Coquina A

Session Chair: Maria de la Cinta Lorenzo-Martin, Argonne National Laboratory

#### 10:40 AM

(ICACC-S1-088-2009) Sliding wear properties of pressureless infiltrated 3-3 Al(Mg)/Al<sub>2</sub>O<sub>3</sub> interpenetrating composites  
H. Chang\*, J. Binner, R. Higginson, IPTME, Loughborough University, United Kingdom

**11:00 AM****(ICACC-S1-089-2009) Unlubricated Clutch System based on the Function Relevant Friction Pairing Advanced Non-Oxide Ceramic vs. Steel**

A. Albers\*, M. N. Mitariu, S. Ott, University of Karlsruhe (TH) Research University, Germany

**11:20 AM****(ICACC-S1-090-2009) Investigation of fretting fatigue caused damage of alumina and silicon nitride using the focused ion beam method**

T. Schalk, K. Lang\*, D. Loehe, Universitaet Karlsruhe (TH), Germany

**11:40 AM****(ICACC-S1-091-2009) Strength characteristics and abrasive wear of ceramics and ceramic matrix composites**

O. N. Grigoriev\*, B. A. Galanov, V. A. Kotenko, Frantsevich Institute for Problems in Materials Science of NASU, Ukraine

**12:00 PM****(ICACC-S1-092-2009) Tribological properties of carbon/silicon carbide aircraft brake materials**

S. Fan\*, L. Zhang, Y. Xu, L. Cheng, Northwestern Polytechnical University, China

**Symposium 3: 6th International Symposium of Solid Oxide Fuel Cells (SOFC): Materials, Science, and Technology****Oxide Ion, Proton and Mixed Conductors**

Room: Coquina E

Session Chairs: Briggs White, National Energy Technology Laboratory; Zhien Liu, Rolls Royce Fuel Cell System (US), Inc.

**8:00 AM****(ICACC-S3-071-2009) Defect Structure, Electronic Conductivity and Expansion Properties of  $\text{La}_{1-x}\text{Sr}_x\text{Co}_{1-y}\text{Ni}_y\text{O}_3$** 

P. Hjalmarsson\*, M. Sogaard, M. Mogensen, Risøe National Laboratory - Technical University of Denmark, Denmark

**8:20 AM****(ICACC-S3-072-2009) Bulk and surface electronic properties of B-site substituted LSM cathodes for SOFC applications**

B. J. Ingram\*, T. A. Cruse, M. Krumpelt, Argonne National Laboratory, USA

**8:40 AM****(ICACC-S3-073-2009) Numerical Continuum Modeling and Simulation of Mixed-Conducting Thin Film and Patterned Electrodes**

M. E. Lynch\*, D. S. Mebane, M. Liu, Georgia Tech, USA

**9:00 AM****(ICACC-S3-074-2009) Ionic conductivity of magnetron-sputtered nanocrystalline scandia- and yttria-stabilized zirconia thin films**

M. B. Sillassen\*, P. Eklund, Aarhus University, Denmark; N. Pryds, N. Bonanos, Risø National Laboratory for Sustainable Energy Technical University of Denmark - DTU, Denmark; J. Bottiger, Aarhus University, Denmark

**9:20 AM****(ICACC-S3-075-2009) Ionic Conductivity of Scandia Doped Zirconia Thin Films by Oxygen-Plasma-Assisted Molecular Beam Epitaxy**

T. Thevuthasan\*, S. V. Kuchibhatla, C. M. Wang, O. Marina, W. Jiang, V. Shutthanandan, P. Nachimuthu, R. Devanathan, L. Saraf, PNNL, USA

**9:40 AM****Break****10:00 AM****(ICACC-S3-076-2009) Intermediate Temperature Structure-ionic Conductivity Relationships in Ceria-based Electrolytes**

J. Nino\*, E. Wachsman, S. Omar, University of Florida, USA

**10:20 AM****(ICACC-S3-077-2009) Mesoporous ceria-based thin films for SOFC application : the impact of the pore-solid nanoarchitecture on the electrical properties**

J. Hierro\*, C. Laberty, University Pierre et Marie Curie, France; L. Bianchi, CEA-Le Ripault, France; A. Ringuede, ENSCP, France; D. Grosso, C. Sanchez, University Pierre et Marie Curie, France

**10:40 AM****(ICACC-S3-078-2009) Mesoporous Lanthanum silicate and Lanthanum silicate-NiO composite thin films for potential applications in Intermediate-Temperature Solid oxide Fuel Cells (IT-SOFCs)**

O. Sel\*, Université Pierre et Marie Curie, France; G. Baldinozzi, Matériaux Fonctionnels pour l'Energie - Equipe mixte CEA-CNRS-ECP, France; D. Grosso, C. Laberty-Robert, C. Sanchez, Université Pierre et Marie Curie, France

**11:00 AM****(ICACC-S3-079-2009) Conductivity behavior and structural changes in  $\text{Bi}_2\text{O}_3$ -based solid solutions under isothermal condition for IT-SOFCs**

D. Jung\*, J. C. Nino, E. D. Wachsman, University of Florida, USA

**11:20 AM****(ICACC-S3-080-2009) New Proton Conducting Electrolyte and Compatible Cathode for Low Temperature Solid oxide Fuel cells**

L. Yang\*, S. Wang, Z. Liu, C. Zuo, M. Liu, Georgia Institute of Technology, USA

**11:40 AM****(ICACC-S3-081-2009) Fabrication and Hydrogen Permeation Properties of Tubular  $\text{Ni-SrCe}_{0.8}\text{Zr}_{0.2}\text{O}_3/\text{SrCe}_{0.7}\text{Zr}_{0.2}\text{Eu}_{0.1}\text{O}_3$  Hydrogen Membrane**

J. Li\*, T. Oh, H. Yoon, E. Wachsman, University of Florida, USA

**12:00 PM****(ICACC-S3-082-2009) Thermopower measurements and XPS analysis of  $\text{Ba}_{0.5}\text{Sr}_{0.5}\text{Co}_x\text{Fe}_{1-x}\text{O}_{3-\delta}$  ( $x = 0, 0.2, 0.4, 0.6, 0.8$  and  $1.0$ )**

J. Jung\*, S. T. Mistry, D. Edwards, Alfred University, USA

**Symposium 7: 3rd International Symposium on Nanostructured Materials and Nanocomposites: Held in Honor of Professor Koichi Niihara****Nanomaterials: New Compositions and Architectures II**

Room: Coquina C

Session Chair: Hossein Hosseinkhani, Research Institute for Integrated Medical Sciences

**8:00 AM****(ICACC-S7-052-2009) Interfacial Design of a Semiconductor Quantum Dots/TiO<sub>2</sub> Structure for Optimizing Solar Cell Performance (Invited)**

Y. Tachibana\*, K. Umekita, S. Kuwabata, Osaka University, Japan

**8:40 AM****(ICACC-S7-053-2009) Gas Sensing Application of Metal Oxide Nanowires (Invited)**

J. Pan, T. Fischer, H. Shen\*, S. Mathur, Institute of Inorganic Chemistry, University of Cologne, Germany

**9:20 AM****(ICACC-S7-054-2009) Formation of Nanostructures in a Brittle Material with Transformations**

S. N. Kulkov\*, Inst. of Strength Physics and Mater. Sci., RAS, Russian Federation

**9:40 AM****Break**

**10:00 AM**

**(ICACC-S7-055-2009) Chemically Designed Nanoparticles, Nanowires and Nanocomposites: Processing, Applications and Devices (Invited)**

S. Mathur\*, University of Cologne, Germany

**10:40 AM**

**(ICACC-S7-056-2009) Combustion Synthesis of LaFeO<sub>3</sub> and LaMnO<sub>3</sub> Perovskite Nanopowders for Functionalized Nanostructures**

T. M. Striker\*, J. A. Ruud, Y. Gao, P. D. Willson, M. Manoharan, GE Global Research, USA

**11:00 AM**

**(ICACC-S7-057-2009) Gold Nanoparticles assisted synthesis of Graphitic Carbon**

P. Tripathy\*, A. Mishra, S. Ram, Indian Institute of Technology, India

**11:20 AM**

**(ICACC-S7-058-2009) The Synthesis of Soft Agglomerated Zirconia Based Nanocrystalline Powders by Supercritical CO<sub>2</sub>**

H. Gocmez, M. Tuncer\*, Dumlupinar University, Turkey

**11:40 AM**

**(ICACC-S7-059-2009) Quantum confinement Effect in ZnO 1-D nanostructures synthesized by Vapor Transport method**

L. Tabassam, A. S. Bhatti, U. Manzoor\*, COMSATS IIT, Pakistan

## **Symposium 11: Symposium on Advanced Dielectric, Piezoelectric, Ferroelectric, and Multiferroic Materials**

### **Multiferroic Oxides, Hetrostructures, and Thin Films**

Room: Tomoka A&B

Session Chair: Shashank Priya, Virginia Tech

**8:00 AM**

**(ICACC-S11-044-2009) Ferroelectric Properties of Orientation Controlled Epitaxial BiFeO<sub>3</sub> Thin Films on Si and YSZ Substrate**

H. Go\*, Tokyo institute of technology, Japan; N. Wakiya, Shizuoka University, Japan; T. Kiguchi, Tohoku University, Japan; J. S. Cross, T. Yoshioka, J. Tanaka, K. Shinozaki, Tokyo institute of technology, Japan

**8:20 AM**

**(ICACC-S11-045-2009) Magnetoelectric Ceramic Composites (Invited)**

C. Nan\*, Tsinghua University, China

**9:00 AM**

**(ICACC-S11-046-2009) An overview of magnetoelectric laminates: materials, structures and devices (Invited)**

J. Zhai\*, Z. Xing, Virginia Tech, USA; S. Dong, Peking University, China; J. Li, D. Viehland, Virginia Tech, USA

## **Focused Session 1: Geopolymers and other Inorganic Polymers**

### **Waste Encapsulation**

Room: Coquina F

Session Chair: Arie van Riessen, Curtin University of Technology

**8:00 AM**

**(ICACC-FS1-016-2009) Metakaolinite Geopolymers for Immobilization of Nuclear and Hazardous Waste (Invited)**

E. Vance\*, D. Perera, P. Walls, J. Hanna, Z. Aly, D. Brew, ANSTO, Australia

**8:40 AM**

**(ICACC-FS1-017-2009) Geopolymers for immobilization of nitrate salts and oil crude waste**

A. Shvarzman\*, J. Lati, G. Bar Nes, R. Werthim, Sami Shamon College of Engineering, Israel

## **Construction Materials**

Room: Coquina F

Session Chair: Arie van Riessen, Curtin University of Technology

**9:00 AM**

**(ICACC-FS1-018-2009) Practical application challenges and research progresses of geopolymer concretes**

T. Song\*, I. Dumitru, V. Mukhin, Boral, Australia

**9:20 AM**

**(ICACC-FS1-019-2009) Geopolymerization of Moroccan Waste Products**

A. R. Sakulich\*, M. W. Barsoum, Drexel University, USA; A. Aatiq, H. Hannache, Universite Hassan II, Morocco

**9:40 AM**

**Break**

## **Focused Session 3: Advanced Sensor Technology for High-Temperature Applications**

### **Advanced Sensor Technology II**

Room: Coquina B

Session Chair: Linan An, University of Central Florida

**8:00 AM**

**(ICACC-FS3-010-2009) Electric-Field Effects in Solid-State Gas Sensors**

B. M. Blackburn\*, E. D. Wachsman, University of Florida, USA

**8:20 AM**

**(ICACC-FS3-011-2009) Extreme Temperature Materials for Turbine Sensors (Invited)**

E. Stutz\*, C. Neslen, US Air Force, USA; O. Gregory, University of Rhode Island, USA; M. de Cunha, University of Maine, USA; J. Gutleber, Mesoscribe, USA

**9:00 AM**

**(ICACC-FS3-012-2009) Sensor Technology for High Temperature Applications up to 1000°C (Invited)**

M. da Cunha\*, T. Moonlight, R. Lad, D. Frankel, G. Bernhardt, University of Maine, USA

**9:40 AM**

**Break**

**10:00 AM**

**(ICACC-FS3-013-2009) High Temperature Piezoelectric Materials For Transducer Applications (Invited)**

Q. Wang\*, University of Pittsburgh, USA

**10:40 AM**

**(ICACC-FS3-014-2009) Multifunctional Thermo-Structural Coatings with Embedded Sensors for Extreme Environment Applications (Invited)**

S. Sampath\*, Materials Science and Engineering, State University of New York, USA

**11:20 AM**

**(ICACC-FS3-015-2009) TPD/TPR Evaluation of Oxide Nano-Materials for Sensor Applications**

E. N. Armstrong\*, University of Florida, USA; T. Striker, V. Ramaswamy, J. A. Ruud, General Electric, USA; E. D. Wachsman, University of Florida, USA

**11:40 AM**

**(ICACC-FS3-016-2009) Au-YSZ Nanocomposites for Harsh Environment Chemical Sensing Applications**

M. A. Carpenter\*, P. H. Rogers, University at Albany-SUNY, USA

**12:00 PM**

**(ICACC-FS3-017-2009) The effects of processing on the optical properties of doped CuMn<sub>2</sub>O<sub>4</sub>-based spinels**

C. J. Leslie\*, R. K. Bordia, F. S. Ohuchi, University of Washington, USA