



Electronic Materials and Applications 2011

register

by December 21, 2010 to save \$125

ORGANIZING COMMITTEE



Shashank Priya



Juan C. Nino



Quanxi Jia



SCHEDULE

WEDNESDAY, JANUARY 19, 2011

Registration	7:30 a.m. to 7 p.m.
Welcome and Opening Remarks	8:45 to 9 a.m.
Plenary Session I	9 to 10 a.m.
Concurrent Technical Sessions	10:30 a.m. to Noon
Plenary Session II	1:15 to 2:15 p.m.
Concurrent Technical Sessions	2:45 to 5:30 p.m.
Poster Session & Welcome Reception	6 to 8 p.m.

THURSDAY, JANUARY 20, 2011

Registration	7 a.m. to 6 p.m.
Plenary Session III	8 to 9 a.m.
Concurrent Technical Sessions	9:30 a.m. to Noon
Plenary Session IV	1:15 to 2:15 p.m.
Concurrent Technical Sessions	2:45 to 5:30 p.m.
Conference Dinner	7 to 9 p.m.

FRIDAY, JANUARY 21, 2011

Registration	7 a.m. to 4:30 p.m.
Plenary Session V	8 to 9 a.m.
Concurrent Technical Sessions	9:30 a.m. to Noon
Concurrent Technical Sessions	1:30 to 5 p.m.

PLENARY SPEAKERS



Akira Ando, General Manager, Murata Mfg. Co., Ltd
Structure-derived Novel Function of Electronic Ceramics

Wednesday, January 19 at 9:00 a.m.



Patricia M. Dehmer, Deputy Director for Science Programs, U.S. Department of Energy
Facing Our Energy Challenges in a New Era of Science

Wednesday, January 19 at 1:15 p.m.



Roop L. Mahajan, Virginia Polytechnic Institute and State Univ.
Interdisciplinary Research and Innovation for a Sustainable Energy Future

Thursday, January 20 at 8:00 a.m.



Lynnette Madsen, Program Director for Ceramics, National Science Foundation
A Decade of Ceramics

Wednesday, January 19 at 1:15 p.m.

S1: ADVANCES IN CERAMIC PROCESSING, FORMING AND SHAPING

Organizers: Wolfgang M. Sigmund, Univ. of Florida; Juan C. Nino, Univ. of Florida; Kristen Brosnan, General Electric Global Research Center; Edward M. Sabolsky, West Virginia Univ.

Considerable scientific challenges remain for understanding fundamental aspects of ceramic processing technologies to meet demands in electronic applications. This symposium will focus on the advancement of understanding ceramic processing science, forming and shaping. Every aspect of processing science will be covered, from nanopowders to recent advances in sintering. Applications of electronic ceramics include actuators, solid oxide fuel cells, thermoelectrics, energy storage and conversion, sensors, power electronics and microwave dielectrics.

SESSIONS	DATE	TIME
Nanostructured Materials	19-Jan	10:30 a.m. to Noon
Thin Film and Microelectronic Processing	19-Jan	2:45 to 5:30 p.m.
Advances in Powder Processing and Sintering	20-Jan	9:30 to 11:45 a.m.

S2: SYMPOSIUM ON ADVANCED DIELECTRIC, PIEZOELECTRIC AND FERROIC MATERIALS, AND EMERGING FIELDS IN ELECTRONICS

Organizers: Clive Randall, Pennsylvania State Univ.; Shashank Priya, Virginia Polytechnic Institute and State Univ.; Amit Goyal, Oak Ridge National Lab; Dwight Viehland, Virginia Polytechnic Institute and State Univ.; Sahn Nahm, Korea Univ.; Pam A. Thomas, Univ. of Warwick, UK; Richard Meyer, Applied Research Lab.

This symposium will bring together researchers from academia and industry to present the latest advances in synthesis, modeling, and characterization of dielectric, piezoelectric, ferroelectric, and multiferroic materials. These materials have a tremendous impact on a variety of civilian and defense applications including tunable microwave devices, sonar transducers, memories, MEMS devices, high energy density capacitors, piezoelectric composites, energy harvesting, actuators, and sensors. Recent work on bridging phases in relaxor based perovskites, multiferroic heterostructures, lead-free piezoelectrics, composite thin films, flexoelectric effect, and fundamental materials science including computational and analytical modeling will be discussed.

SESSIONS	DATE	TIME
Piezoelectric Fundamentals	19-Jan	10:30 a.m. to Noon
Non-Lead Piezoelectrics	19-Jan	2:45 to 6:00 p.m.
Defect/Transport	20-Jan	9:30 a.m. to Noon
Multiferroics	20-Jan	2:45 to 6:00 p.m.
Thin Film Structures, Materials, and Characterization	20-Jan	2:45 to 6:00 p.m.
Dielectrics	21-Jan	9:30 a.m. to Noon

Electronic Materials and Applications

SESSIONS	DATE	TIME
Multiferroics and Piezoelectrics	21-Jan	9:30 a.m. to Noon
Dielectric-Thermal	21-Jan	1:30 to 5:00 p.m.
Piezoelectrics and Dielectrics	21-Jan	1:30 - 5:00 pm

S3: NANO PHENOMENA AND INTERFACIAL/SURFACE EFFECTS IN ELECTRONIC CERAMICS

Organizers: Geoff Brennecke, Sandia National Labs; Brady Gibbons, Oregon State Univ.; Jacob L. Jones, Univ. of Florida; Brian Gorman, Colorado School of Mines; Amit Goyal, Ridge National Lab; David Norton, Univ. of Florida; Bryan Huey, Univ. of Connecticut

This symposium will provide a forum for academic, industrial, and national lab researchers to present and discuss the latest advances and fundamental research in the area of interfacial effects on the structural and physical properties of electronic ceramics. Novel approaches to composite materials, strain induced enhancement of functionalities, nanostructuring, characterization of material properties and physical responses at the interface will be also emphasized.

SESSIONS	DATE	TIME
Domains and Switching	20-Jan	9:30 a.m. to Noon
Function and Multi-Function through Improved Processing	20-Jan	2:45 to 5:30 p.m.
Interface as Device	21-Jan	9:30 to 11:45 a.m.
Controlled Fabrication and Processing of Nanomaterials	21-Jan	1:30 to 5:00 p.m.

S4: SYMPOSIUM ON ENERGY HARVESTING AND SENSORS FOR STRUCTURAL HEALTH MONITORING

Organizers: Shashank Priya, Virginia Polytechnic Institute and State Univ.; Paul Clem, Sandia National Labs; Nian Sun, Northeastern Univ.; Henry Sodano, Arizona State Univ.; Gyuhae Park, Los Alamos National Lab; Peter Finkel, NUWC

Vast reductions in the size and power consumption of CMOS circuitry have led to focused research efforts on small and efficient power sources. Much of the current emphasis has been on developing on-site generators that transform an available environmental energy (light, kinetic, and thermal gradient) into electrical energy. This symposium will review past developments, current challenges and future goals in the field of energy harvesting and its application to structural health monitoring. Presentations in the symposium will concentrate on these topics: Energy Harvesting (piezoelectric, inductive, magnetostrictive, photovoltaic, electrets, radioactive and thermoelectric), and Structural Health Monitoring.

SESSIONS	DATE	TIME
Energy Harvesting - Theory and Examples	19-Jan	10:30 a.m. to Noon

SESSIONS	DATE	TIME
Energy Harvesting - Theory, Examples and Extension to Micro/Nanoscale	19-Jan	2:45 to 5:30 p.m.

S5: FUNCTIONAL CERAMICS FOR ENERGY STORAGE & CONVERSION

Organizers: Chris Apblett, Sandia National Labs; Shirley Meng, Univ. of California San Diego, Wolfgang M. Sigmund, Univ. of Florida; Peggy Chunlei Wang, Florida International Univ.

This symposium will provide a forum for academic, industrial, and national lab researchers to present and discuss the latest advances and fundamental research in the area of functional ceramic materials for energy storage and conversion systems including batteries (primary and secondary) of different chemistries (Li-ion Mg-ion, NiMH etc.), supercapacitors and hybrids. Advances in computational/modeling aspects will also be emphasized.

SESSIONS	DATE	TIME
Focused Session on Lithium-ion Battery Cathode Materials	21-Jan	9:30 to 11:45 a.m.
Focused Session on Solid State Ionics	21-Jan	1:30 to 3:15 p.m.
Focused Session on Lithium-ion Battery Anode	21-Jan	3:15 to 4:15 p.m.





S6: CERAMIC MATERIALS IN POWER ELECTRONICS (WIDE-BAND GAP INTEGRATION, HIGH POWER CAPACITORS)

Organizers: Jon Ihlefeld, Sandia National Labs; Paul Clem, Sandia National Lab

Efficient power electronics are in increasingly high demand to support electrical grid, transportation and renewable power handling. Electronic ceramics and their integration with traditional semiconductor power devices have the potential to play a large role in this growing field. In particular, integration of ferroelectrics with wide bandgap semiconductors is an active and promising field of research. This symposium will provide a forum for academic, industrial, and national lab researchers to present and discuss the latest advances and fundamental research in the area of bulk, thick film, thin film and nanoparticle electronic ceramics for power electronic applications.

SESSIONS	DATE	TIME
Ceramic Materials for Power Electronics	20-Jan	2:45 to 4:30 p.m.

S7: METAMATERIALS AND MICROWAVE CERAMICS

Organizers: Paul Clem, Sandia National Labs; Amit Goyal, Oak Ridge National Lab

The ability to develop artificially engineered dielectric materials has enabled new phenomena attractive for communications, optics, and sensing. Among these are microwave dielectrics for RF/microwave applications, ferrites, tunable dielectrics, and a broad class of "Metamaterials" including artificially structured dielectrics, doubly negative materials, and artificial electromagnetics with unique character. Ceramic materials play unique roles in these systems, and are of particular interest for low loss properties and tunable behavior. This symposium is a forum for emerging electromagnetic phenomena, engineered materials design, structure-property relationships, and system performance in these highly engineered artificial electromagnetic structures.

SESSIONS	DATE	TIME
Metamaterials	19-Jan	10:30 a.m. to Noon
Microwave Ceramics and Designed RF Composites	19-Jan	2:45 to 4:30 p.m.

S8: HIGHLIGHTS OF STUDENT RESEARCH IN BASIC SCIENCE AND ELECTRONIC CERAMICS

Organizers: Victoria Knox, PCSA; Jaime George, PCSA; Geoff Brenneka, Sandia National Laboratories; Jacob Jones, Univ. of Florida

Student research is being conducted at all universities throughout the United States and the international community. However, there are few conferences or workshops where such research activities are highlighted. This symposium will showcase primarily undergraduate as well as graduate research to encourage innovation and involvement of students throughout the ceramics community.

SESSIONS	DATE	TIME
Future of Ceramics I	19-Jan	12:10-1:00 p.m.
Future of Ceramics II	20-Jan	12:10-1:00 p.m.
Future of Ceramics III	21-Jan	12:10-1:00 p.m.

HOTEL INFORMATION

Royal Plaza in the Walt Disney® World Resort

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December 21, 2010

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EMA 2011 Registration	EARLY REG. THROUGH DEC. 21	AFTER DEC. 21
Member [‡]	<input type="checkbox"/> \$515	<input type="checkbox"/> \$640
Nonmember [‡] (includes one year of ACerS membership)	<input type="checkbox"/> \$635	<input type="checkbox"/> \$760
One Day: Member [‡]	<input type="checkbox"/> \$395	<input type="checkbox"/> \$520
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Companion	<input type="checkbox"/> \$60	<input type="checkbox"/> \$60

[‡] Select free division affiliation

Note: Registration includes coffee breaks, Welcome Reception, Conference Dinner.

Save 25% – register for EMA 2011 and 35th Int'l Conference & Expo on Advanced Ceramics & Composites!

EMA 2010 & IGACC'11 Combined Registration	EARLY REG. THROUGH DEC. 21	AFTER DEC. 21
Member	<input type="checkbox"/> \$790	<input type="checkbox"/> \$915
Nonmember	<input type="checkbox"/> \$910	<input type="checkbox"/> \$1,035
Emeritus/Senior	<input type="checkbox"/> \$595	<input type="checkbox"/> \$720
Student	<input type="checkbox"/> \$230	<input type="checkbox"/> \$305
Non Member Student	<input type="checkbox"/> \$265	<input type="checkbox"/> \$340

GRAND TOTAL \$ _____ \$ _____

ACerS Membership[‡]

If you are not a member of a division, choose one free division affiliation below.

- Art Glass & Optical Materials
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Membership includes online access to *Journal of the American Ceramic Society*, *International Journal of Applied Ceramic Technology*, and the new *International Journal of Applied Glass Science*. Also includes print subscription and online access to *American Ceramic Society Bulletin*.

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Cancellation Policy: Full refund less \$50 if cancelled on or before December 21, 2009; 50% refund if cancelled between December 22, 2009 and January 18, 2010; no refunds after the start of the conference.

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