

CERAMIC LEADERSHIP SUMMIT

June 21-22, 2010

Baltimore, MD

Hyatt Regency



*Exploring the major trends affecting
the Ceramic Materials Community*

www.ceramics.org/cls

MONDAY, JUNE 21, 2010

10:00 A.M.-NOON

GENERAL SESSION 1: Emerging Business and Technology Opportunities and Challenges for the Ceramics Community

NOON-1:30 P.M.

AFFINITY GROUP LUNCHEES Discussion Topic: What are the principal challenges & opportunities that will have the greatest impact on your sector during the next five years?

Large Corporation Executives	Small Business & Entrepreneurs	Education Leaders	Researchers	Future Leaders
------------------------------	--------------------------------	-------------------	-------------	----------------

1:30-3:00 P.M.

GENERAL SESSION 2: Materials for a Secure and Stable Energy Future

3:00-3:30 P.M.

REFRESHMENT BREAK

3:30-5:00 P.M.

GENERAL SESSION 3: The Future of Ceramic Education: Changing Needs, Changing Realities

6:45-7:30 P.M.

RECEPTION

7:30-9:30 P.M.

OPENING NIGHT DINNER

TUESDAY, JUNE 22, 2010

7:45-8:30 A.M.

CONTINENTAL BREAKFAST

8:30-10:25 A.M.

TRACK 1: ENERGY INNOVATIONS

TRACK 2: DEFENSE INNOVATIONS

TRACK 3: CERAMIC FRONTIERS

8:30-9:25 A.M.

Enabling a Nuclear Renaissance

Meeting Materials Needs for 21st Century Defense

Ceramic Materials for Clean Air Technologies

9:30-10:25 A.M.

Next Steps for Fuel Cells

Multi-spectral Transparent Materials Technologies

Designer Materials: Multi-scale Modeling

10:30-10:45 A.M.

REFRESHMENT BREAK

10:45-11:40 A.M.

TRACK 4: BUSINESS & RESEARCH ENVIRONMENT

Building Industry-University Alliances	New Realities for Materials Research Funding	The Global Business Climate for Ceramic-related Industries
--	--	--

11:45 A.M.-1:00 P.M.

HOSTED LUNCH – Buffet in Atrium

1:00-3:00 P.M.

TRACK 1: ENERGY INNOVATIONS

TRACK 2: DEFENSE INNOVATIONS

TRACK 3: CERAMIC FRONTIERS

1:00-1:55 P.M.

Ceramic Materials for Efficient and Clean Power Generation

Opaque and Transparent Armor Ceramics

Integration of Ceramics in Advanced Microsystems

2:00-2:55 P.M.

Materials for Advanced Sodium Metal Halide Batteries

High Temperature Ceramics for Military Applications

Ceramics for Electronics and Communications

3:00-3:15 P.M.

REFRESHMENT BREAK

3:15-5:00 P.M.

GENERAL SESSION 4: Ten in Ten: Ceramic Technologies That Will Transform the World

5:30-10:00 P.M.

VOLUNTEER LEADERSHIP RETREAT OPENING EVENT: Camden Yards – Orioles/Marlins

WEDNESDAY, JUNE 23, 2010

8:00 A.M.-NOON

ACeRS VOLUNTEER LEADERSHIP RETREAT

1:00-5:00 P.M.

ACeRS BOARD MEETING

OVERVIEW

The Ceramic Leadership Summit is a unique and powerful meeting, focusing on the most important strategic challenges confronting the ceramic materials and technologies community. The list of invited speakers includes some of the most respected leaders in our community, and the highly interactive format will also take advantage of the expertise of the leaders and future leaders who will be in attendance. Critical topics at the Summit include: the global business climate for ceramic materials and technologies; the developing role of materials in our energy future; the future of ceramic education; and the most important (and commercial) emerging ceramic technologies. The Summit was designed by our community, for our community. The content was identified by surveying hundreds of ceramic business, university and research leaders. It is a meeting designed for people like you, and we invite you to be part of it.

MONDAY, JUNE 21, 2010

GENERAL SESSION 1

10:00 A.M. TO NOON

Emerging Business and Technology Opportunities and Challenges for the Ceramics Community

Global corporate leaders provide their perspectives on the economic, political, societal, technological, and environmental opportunities and challenges facing the ceramic materials and technologies community during the next five to ten years. The talks will be followed by a facilitated dialogue with Summit participants.

Session Leader: **Rodney Lanthorne**, Vice-Chairman, Kyocera International, Inc.

Session Leader: **Joel Moskowitz**, CEO, Ceradyne, Inc.

Session Leader: **David Morse**, Senior Vice President, Director of Research, Corning Inc.



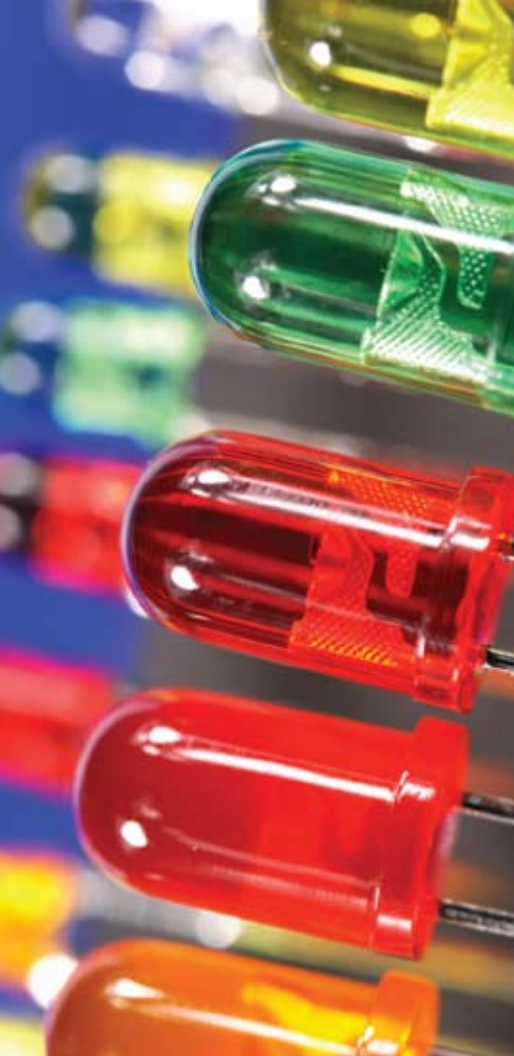
Rodney Lanthorne



Joel Moskowitz



David Morse



MONDAY, JUNE 21, 2010

GENERAL SESSION 2

1:30 TO 3:00 P.M.

Materials for a Secure and Stable Energy Future

During the past five years, the Department of Energy's Office of Basic Energy Sciences has engaged thousands of scientists around the world to study the current status, limiting factors and specific fundamental scientific bottlenecks of the widespread implementation of alternate energy technologies. From these efforts, it is clear that the magnitude of the challenge is so immense that existing approaches will not be enough to secure our energy future. During this session, we will explore how meeting these challenges will require scientific breakthroughs in new materials and chemical processes to make possible new energy technologies and performance levels far beyond what is now possible.

Session Leader: **John C. Hemminger**, Chair of the Basic Energy Sciences Advisory Committee of the DOE Office of Science, and Dean, School of Physical Sciences, UC, Irvine

Session Leader: **Patricia M. Dehmer**, Deputy Director for Science Programs for Office of Science, U.S. Department of Energy

GENERAL SESSION 3

3:30 TO 5:00 P.M.

The Future of Ceramic Education: Changing Needs, Changing Realities

Both ceramic education leaders and employers will provide different views on how ceramic education is changing, and what needs to happen to make it more relevant for the future. This highly interactive session will cover a host of important topics for all who care about ceramic and materials education, as well as the future ceramic workforce.

Session Leader: **Doreen Edwards**, Dean, Kazuo Inamori School of Engineering, Alfred University

Session Leader: **Rustum Roy**, Professor Emeritus, Pennsylvania State University

TUESDAY, JUNE 22, 2010

GENERAL SESSION 4

3:15 TO 5:00 P.M.

Ten in Ten: Ceramic Technologies That Will Transform the World

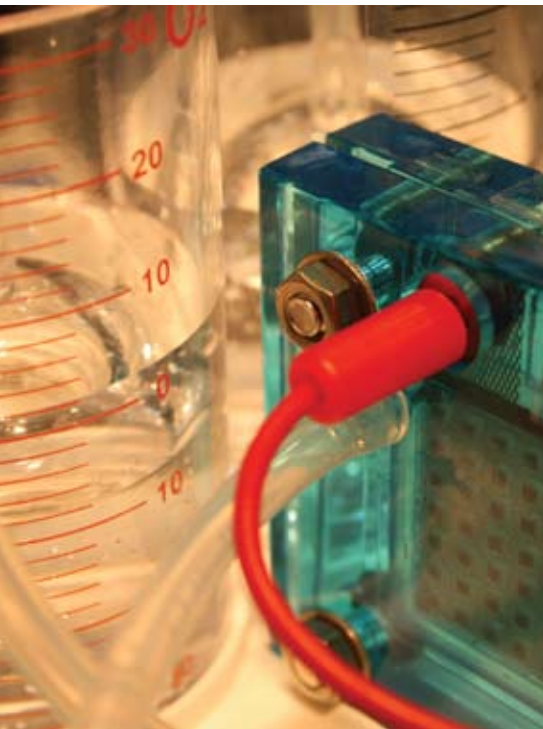
Take a tour of ten ceramic technologies that are most likely to transform the world over the next ten years. Nearly 400 ACerS members helped identify ceramic technologies that are most likely to have a significant impact in the future. The top ten technologies will be highlighted in this session, and Summit participants will discuss which ones are likely to have the greatest impact and the greatest commercial value.

Session Leader: **Larry Hench**, Graduate Research Professor, Department of Materials Science and Engineering, University of Florida

Young Professional Program

Know individuals at your company, institution or university who are rising stars? Nominate them to be part of the **Future Leaders Program**. With input from executives, R&D leaders, researchers, engineers and academicians, this program is designed to help high-performing young professionals gain a fuller understanding of their leadership profiles, strengths and development areas within the materials science world. Each participant will build an individual leadership development plan that lays out a strategy for the coming year. YPs may qualify for a special rate. Contact Megan Bricker at mbricker@ceramics.org for special pricing information and to nominate a young professional.





TUESDAY, JUNE 22, 2010

TRACK 1: ENERGY INNOVATIONS

8:30 TO 9:25 A.M.

Enabling a Nuclear Renaissance: Better, Faster, Cheaper Using Advanced Ceramics

The nuclear industry is at the eye of a perfect storm with fuel oil and natural gas prices near record highs, worldwide energy demands increasing at an alarming rate, and increased concerns about greenhouse gas emissions that have caused many to look negatively at long-term use of fossil fuels. This convergence of factors has led to a growing interest in revitalization of the nuclear power industry within the United States and around the globe. This session will discuss the critical role that ceramic materials play throughout the entire fuel cycle and the critical role of materials advancements in the 'nuclear renaissance.'

Session Leader: **John Marra**, Associate Laboratory Director, Savannah River National Lab

9:30 TO 10:25 A.M.

Next Steps for Fuel Cells

Fuel cells are entering early markets in consumer products, generators of electricity, combined heat and power systems, industrial vehicles, and much more. Solid oxide systems are being developed for many of these markets, and the U.S. DOE envisions SOFC systems as simplifying and reducing the cost of carbon sequestration from coal. This session will discuss the fuel cell vision and the steps needed to make the vision a reality, as well as "Ceramics: The Heart of SOFC Systems."

Session Leader: **Robert Rose**, Senior Advisor and Founder, U.S. Fuel Cell Council

Session Leader: **Claus Peter Kluge**, Manager, R&D, CeramTec AG

1:00 TO 1:55 P.M.

An Industry Perspective: Development and Application of Ceramic Materials for Efficient and Clean Power Generation

Two leaders from United Technologies Research Center will provide their perspective on ceramic materials development and application for efficient and clean power generation. UTRC plays a key role as the innovation engine for United Technologies, focusing on advanced technologies and bringing those technologies to the marketplace. The presentation will share UTRC's experience in materials development, component testing, and system or sub-system demonstration and discuss material needs for near-term efficient and low emission power systems.

Session Leader: **William Tredway**, Group Leader for Ceramics and Deputy Department Leader for the Physical Sciences Department, United Technologies Research Center

Session Leader: **Ellen Sun**, Principle Research Scientist, United Technologies Research Center

2:00 TO 2:55 P.M.

Materials For Advanced Sodium Metal Halide Batteries

The world needs large-scale energy storage devices and systems that are safe, reliable and economical. They can help to manage utility grids, expand adoption of solar and wind power, accelerate adoption of electric motor vehicles, and enable billions of people to come online into the age of electricity. There are currently few economically viable and technically feasible storage solutions that are dispatchable and meet the stringent cost and reliability demands. High energy density sodium metal halide battery technology is emerging as one of the key solutions, and GE is playing a leadership role in addressing the technology challenges and taking it to the manufacturing and commercial stages. This presentation will discuss the critical role that materials, particularly ceramics, play in the performance and life of sodium metal halide batteries.

Session Leader: **Mohamed Rahmane**, Senior Engineer/Project Leader, GE Global Research





TUESDAY, JUNE 22, 2010

TRACK 2: DEFENSE INNOVATIONS

8:30 TO 9:25 A.M.

Meeting Materials Needs for 21st Century Defense

Using the Department of Defense & Engineering Imperatives as a backdrop for strategic planning in materials research, this session will explore recent studies in strategic materials planning and strategic initiative opportunities, relating them to specific needs and opportunities in ceramic and ceramic-hybrid materials. The discussion will emphasize the need for applying contemporary computational techniques to materials design, and development and testing, as well as the importance of curricula and education in materials science and engineering in general, and ceramics in particular.

Session Leader: **Lewis E. Slotter, II**, Associate Director of Materials and Structures, Office of the Director, Defense Research & Engineering, Department of Defense

9:30 TO 10:25 A.M.

Multi-spectral Transparent Materials Technologies

Ceramic windows and domes protect delicate sensors from harsh environments while transmitting electromagnetic radiation in one or more spectral regions. There are no durable materials that transmit both midwave (3-5 microns) and longwave (8-12 microns) infrared radiation. This session will explore current thrusts in window research and development, including the fabrication of nanocomposites with properties not attained by monolithic materials, making conformal shapes that extend the state-of-the-art in machining and metrology, and scaling up transparent ceramics to make meter-class windows.

Session Leader: **Daniel C. Harris**, Senior Scientist and Esteemed Fellow, Naval Air Systems Command, U.S. Navy

1:00 TO 1:55 P.M.

Opaque and Transparent Armor Ceramics

Ceramics were first used extensively in body armor and helicopter seats during the Vietnam era, when work on armor ceramics reached its first peak. Since that time work has been sporadic and it has been hard to sustain the required longer term research activities and critical mass groups. This has changed dramatically over the last several years with the increase in terrorism and the asymmetric conflicts in the Middle East and the Army's plan to undergo a transformation to a more agile, deployable and survivable Future Force. The key issues for armor remain pretty much the same: cost, performance, production capacity and strategic availability. This talk will review some historical information as well as current and future activities, including a new Board of Army Science and Technology/National Materials Advisory Board study committee "To Review Opportunities in Protection Materials Science and Technology for Future Army Applications."

Session Leader: **James W. McCauley**, Chief Scientist in Materials/ARL Fellow, U.S. Army Research Laboratory, APG, MD

Session Leader: **Parimal Patel**, U.S. Army Research Laboratory, APG, MD

2:00 TO 2:55 P.M.

High Temperature Ceramics for Military Applications

Ceramic materials are attractive candidates for use in a variety of defense applications where their high temperature capability offers considerable benefits, including aircraft turbine engines and space vehicle thermal protection. While the opportunities are many, so are the challenges for transitioning these materials from the lab to production in the marketplace. Performance, manufacturing and cost are issues that face the development and customer communities on a daily basis. This session will explore current opportunities and payoffs for high temperature ceramics and the challenges for their transition to military systems.

Session Leader: **Allan Katz**, Senior Program Manager, Ceramics Branch, Materials and Manufacturing Directorate, Air Force Research Laboratory, WPAFB





TUESDAY, JUNE 22, 2010

TRACK 3: CERAMIC FRONTIERS

8:30 TO 9:25 A.M.

An Industry Perspective: Development and Application of Ceramic Materials for Clean Air Technologies

Corning played a key role in inventing cellular ceramics structure for catalytic converters, and is continuing this tradition by focusing on the next generation of substrates and filters for clean air technologies. This session will examine Corning's experience in materials research and reliability testing of components related to emission control, and explore the regulatory requirements demanding improved efficiency and product performance. The implications on the current and future needs for ceramic materials and their requirements will be also be discussed.

Session Leader: **Sujanto Widjaja**, Project Manager, Science & Technology Division, Corning Inc.

9:30 TO 10:25 A.M.

Designer Materials: Multi-scale Modeling

This session will review current computational trends in first-principles design of armor ceramics using multi-scale modeling and the special computational challenges that are required for linking the vast spatiotemporal scales from the quantum to the continuum. The special challenge of across-the-scale experimental validation of multi-scale models of brittle ceramic materials for simulating the physics of fragmentation and how the initiation, growth, and coalescence of microcracks in simulations can be concurrently passed across spatiotemporal scales will also be reviewed.

Session Leader: **George A. Gazonas**, Research Physicist, U.S. Army Research Lab

1:00 TO 1:55 P.M.

Integration of Ceramics in Advanced Microsystems

Advanced microsystems are being developed that can sense, think, act and communicate to provide new capabilities for integrated circuits, sensors and rf-systems. Ceramics will play an important role in this revolution. However, integration of new materials into integrated circuit and packaging technologies is a major challenge. New process control strategies are being developed and used to improve the ability to design and integrate multi-material systems into sophisticated devices. New process technologies are also leading to capabilities for producing parts quicker, cheaper and with more functionality. In addition, many of the challenges and opportunities in advanced microsystem technologies will be based on understanding science at the nanoscale. This session will cover these important trends in the microtechnology field and the impact that new ceramic materials and fabrication methods will have in achieving greater miniaturization and functionality.

Session Leader: **Duane Dimos**, Director, MS&E Center, Sandia National Labs

Session Leader: **Thomas M. Shaw**, Research Staff Member, IBM Thomas J. Watson Research Ctr.

2:00 TO 2:55 P.M.

Ceramics for Electronics and Communications

This session will address trends and developments in a wider field of electroceramics, focusing on semi-conducting and piezoelectric materials.

Session Leader: **Christian Hoffmann**, Vice President, EPCOS OHG





TUESDAY, JUNE 22, 2010

TRACK 4: BUSINESS & RESEARCH ENVIRONMENT

10:45 TO 11:40 A.M.

Building Industry-University Alliances

The economic stability of “small” undergraduate engineering programs such as Ceramic Engineering depends heavily upon striking a balance between the undergraduate and graduate missions. Enrollment alone can never justify a program’s existence. Coupled with the current economic climate, it is clear that future viability depends directly on building a much stronger and sustainable relationship with industry. This presentation will give a chair’s perspective on the expanded role industry needs to play in key areas such as advisory boards, recruiting, ABET accreditation, curriculum and acquisition.

Session Leader: **Wayne Huebner**, Chair, MSE, Missouri University of Science & Technology

10:45 TO 11:40 A.M.

New Realities for Materials Research Funding

This session discusses new U.S. Government research funding realities. The Department of Energy’s Office of Basic Energy Sciences supports research to understand, predict and control matter and energy. The total FY10 budget appropriation increased by 3%. The Air Force Office of Scientific Research has the responsibility to discover, shape and champion basic research. Over the past five years, AFOSR’s core basic research budget has increased approximately \$100M. The Office of Naval Research provides funding

across a broad spectrum of technology levels. The ONR budget is approximately \$2B. The National Science Foundation received an increase of 7% over 2008. These numbers point to an anticipated increase in materials research funding, particularly in priority areas.

Session Leader: **Linda Horton**, Division Director, Division of Materials Sciences and Engineering, Department of Energy

Session Leader: **Joycelyn Harrison**, Program Manager, Air Force Office of Scientific Research

Session Leader: **Lynnette D. Madsen**, Program Director for Ceramics, National Science Foundation

Session Leader: **Eric Wuchina**, Program Officer, Office of Naval Research

10:45 TO 11:40 A.M.

The Global Business Climate for Ceramic-related Industries

This session will examine market drivers, emerging technology trends and overall dynamics across several areas related to applications of ceramics, such as materials and manufacturing, energy, transportation and water treatment. We will look at trends, successes and failures of venture capitalist financing in these areas, as well as the effect of the recent economic downturn, especially on broad categories of coatings and composites. We will also discuss opportunities and challenges for emerging technology adoption in these areas.

Session Leader: **Evgenia Pekarskaya**, Senior Analyst, Lux Research





REGISTRATION INFORMATION

	ON OR BEFORE MAY 21, 2010	AFTER MAY 21, 2010
Member	\$595	\$695
Nonmember	\$715	\$815
Emeritus/Senior	\$425	\$525
Material Advantage Student Member	\$195	\$245
Student: Not in Material Advantage	\$230	\$280
Extra Dinner Ticket	\$85	\$85

Note: Registration includes 2 lunches, coffee breaks, networking reception and conference dinner on Monday

To register, visit www.ceramics.org/cls or contact Customer Service by phone (866) 721-3322 in U.S. or (240) 646-7054 outside U.S., by fax (301) 206-9789, or by email customerservice@ceramics.org.

Save 30% off each registration when 3 or more people from the same organization sign up by May 21 at the Member, Nonmember, or Emeritus rates. Registrations must be made at the same time, but Registrants may be from different locations. To take advantage of this offer, contact ACerS Customer Service.

HOTEL INFORMATION

Hyatt Regency Baltimore

300 Light Street

Baltimore, MD 21202

(402) 592-6464

(888) 421-1442

Room Rates

\$195.00 plus tax - Single/Double

\$161.00 plus tax - Government

To make reservations online, visit www.ceramics.org/cls.

When making a reservation by phone, mention [The American Ceramic Society](#) room block to secure your reservation at the conference rate.



CERAMIC LEADERSHIP SUMMIT

June 21-22, 2010

Baltimore, MD

Hyatt Regency

**Register
by May 21st
to save \$100!**

www.ceramics.org/cls



THE AMERICAN CERAMIC SOCIETY
600 N. CLEVELAND AVE. SUITE 210
WESTERVILLE, OH 43082