

Register by December 23, 2015 to save!

Jubilee Celebration!

40TH

INTERNATIONAL CONFERENCE AND EXPOSITION ON
**ADVANCED CERAMICS
AND COMPOSITES**

Hilton Daytona Beach Resort and Ocean Center | Daytona Beach, Florida, USA

January 24–29, 2016



Organized by the Engineering Ceramics Division of The American Ceramic Society

ceramics.org/icacc2016

40TH INTERNATIONAL CONFERENCE AND EXPOSITION ON ADVANCED CERAMICS AND COMPOSITES

Jubilee Celebration!

The 40th International Conference & Exposition on Advanced Ceramics & Composites (ICACC) continues its strong tradition as the leading international meeting on advanced structural and functional ceramics, composites, and other emerging ceramic materials and technologies.

Since its inception in 1977, this prestigious conference has been organized by The American Ceramic Society (ACerS) and the Society's Engineering Ceramics Division (ECD). Over the years, the conference has experienced tremendous growth in interest and participation from ceramic researchers and developers from national, regional, and global technical communities. This year's meeting continues the tradition and adds a few grand celebrations to mark this, its 40th year.

As a celebration of the 40th anniversary and to recognize the ongoing success of the conference, a special Jubilee Symposium, Engineered Ceramics—Current Status and Future Prospects, will feature previous ECD Mueller and Bridge Building Award winners, past and current ECD officers, and past ICACC plenary speakers. The presentations will focus on current status and future prospects of the many technical topics related to advanced ceramics and composites as well as the 40-year journey of ceramics and composites from Cocoa Beach to Daytona.

The ECD Executive Committee and volunteer organizers sincerely hope you will join us at this special anniversary conference for a stimulating and enjoyable ICACC'16.

We look forward to seeing you in Daytona Beach, Florida in January 2016!



2016 ICACC PROGRAM CHAIR

Andrew Gyekenyesi
Ohio Aerospace Institute/NASA Glenn Research Center

ACERS ENGINEERING CERAMICS DIVISION LEADERSHIP

- Trustee: **Tatsuki Ohji**, National Institute of Advanced Industrial Science and Technology (AIST), Japan
- Chair: **Soshu Kirihaara**, Osaka University, Japan
- Chair-Elect: **Andrew L. Gyekenyesi**, Ohio Aerospace Institute, USA
- Vice Chair/Treasurer: **Jingyang Wang**, Institute of Metal Research, China
- Secretary: **Manabu Fukushima**, National Institute of Advanced Industrial Science & Technology (AIST), Japan

Join the Celebration!
There are many events planned to celebrate the momentous 40th anniversary of ICACC.
See pages 6 and 7 for more detailed information

HILTON DAYTONA BEACH RESORT

100 North Atlantic Avenue
Daytona Beach, FL
Phone: 1-386-254-8200
Fax: 1-386-253-0275

Rates:

One to four occupants: \$161
Students: \$132
U.S. government employee: \$89

Mention The American Ceramic Society to obtain the special rate. Room rates are effective until December 18, 2015 and are based on availability.



SPONSORS

ceramics.org/icacc2016

AWARD AND PLENARY SPEAKERS

MONDAY, JANUARY 25, 2016

MUELLER AWARD



Jeffrey Wadsworth, president and chief executive officer, Battelle Memorial Institute
Title: *Challenges and Opportunities for 21st Century Research & Development*

Wadsworth

BRIDGE BUILDING AWARD



Hai-Doo Kim, president, Korean Institute of Materials Science
Title: *From Idea to Product: Sustainable Cycle*

Kim

PLENARY SPEAKERS



Joachim Maier, director, Max Planck Institute for Solid State Research in Stuttgart (Germany); head, department of Physical Chemistry of Solids.
Title: *Function Through Defects: From Ceramics to Electrochemistry*

Maier



Sanjay M. Correa, vice president, GE Aviation
Title: *SiC-SiC Ceramic Matrix Composites in Jet Engines*

Correa

THE ECD GLOBAL YOUNG INVESTIGATOR AWARD



Surojit Gupta, assistant professor, University of North Dakota
Title: *On the Design of Novel Structural Materials for Multifunctional Applications*

Gupta

40th Jubilee Symposium: Engineered Ceramics—Current Status and Future Prospects (MONDAY – WEDNESDAY)

- Current trends and future directions for research and technology on engineering ceramics
- Challenges and prospects for ceramic technologies
- Energy and environmental issues and role of ceramics
- New strategies and technologies for sustainable and self-sufficient solutions
- Engineered ceramics for sustainable development
- Global environmental issues and standards
- Ceramic education, training and knowledge management

Register by **December 23, 2015** to save!

"I absolutely appreciate this meeting. In my opinion, it's the best organized, the best scientific ceramic meeting from all over the world."

– 2015 ICACC attendee

SCHEDULE AT A GLANCE

Sunday, January 24, 2016

Kennedy Space Center tour (ticketed event) 8:00 a.m. – 4:30 p.m.
Conference registration 2:00 p.m. – 7:00 p.m.
Welcome reception at Hilton 5:30 p.m. – 7:00 p.m.

Monday, January 25, 2016

Conference registration 7:00 a.m. – 6:00 p.m.
Opening awards ceremony & plenary session 8:30 a.m. – Noon
Companion coffee 9:00 a.m. – 10:30 a.m.
Lunch on own Noon – 1:20 p.m.
Concurrent technical sessions 1:30 p.m. – 5:30 p.m.
Special "Thank You" reception sponsored by Daytona Beach CVB 6:00 p.m. – 7:00 p.m.
Young Professional Network, GGRN, student mixer 7:30 p.m. – 9:00 p.m.

Tuesday, January 26, 2016

Conference registration 7:30 a.m. – 6:00 p.m.
Concurrent technical sessions 8:30 a.m. – 12:00 p.m.
Lunch on own Noon – 1:20 p.m.
Concurrent technical sessions 1:30 p.m. – 6:00 p.m.
Exhibits & poster session A, including reception 5:00 p.m. – 8:00 p.m.

Wednesday, January 27, 2016

Conference registration 7:30 a.m. – 5:30 p.m.
Concurrent technical sessions 8:30 a.m. – Noon
Lunch on own Noon – 1:20 p.m.
Concurrent technical sessions 1:30 p.m. – 5:00 p.m.
Exhibits & poster session B, including reception 5:00 p.m. – 7:30 p.m.

Thursday, January 28, 2016

Conference registration 7:30 a.m. – 6:00 p.m.
Concurrent technical sessions 8:30 a.m. – Noon
Lunch on own Noon – 1:20 p.m.
Concurrent technical sessions 1:30 p.m. – 5:00 p.m.
40th Jubilee Celebratory Dinner (ticketed event) 7:00 p.m. to 9:30 p.m.

Friday, January 29, 2016

Conference registration 8:00 a.m. – Noon
Concurrent technical sessions 8:30 a.m. – Noon

ceramics.org/icacc2016

40TH INTERNATIONAL CONFERENCE AND EXPOSITION ON ADVANCED CERAMICS AND COMPOSITES

Jubilee Celebration!

"I've been coming to ICACC for 25 years. I see the value of meeting people here, and being able to have students give talks. The energy of the meeting is incredible. There are a lot of progressive thinking people in the meeting and in ACerS society. It's recognized as the best ceramics meeting around."

– 2015 ICACC attendee

Go to ceramics.org/icacc2016 for complete technical program

2016 SYMPOSIUM/FOCUSED SESSIONS

	Monday (January, 25)		Tuesday (January, 26)		Wednesday (January, 27)		Thursday (January, 28)		Friday (January, 29)
	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.	A.M.
Plenary									
40th Jubilee Symposium: Engineered Ceramics: Current Status and Future Prospects									
5th Global Young Investigator Forum									
EMERGING TECHNOLOGIES SYMPOSIUM - Carbon Nanostructures and 2D Materials, and Composites									
S1: Mechanical Behavior and Performance of Ceramics & Composites (INCLUDES FS3)									
S2: Advanced Ceramic Coatings for Structural, Environmental, and Functional Applications									
S3: 13th International Symposium on Solid Oxide Fuel Cells (SOFC): Materials, Science and Technology									
S4: Armor Ceramics									
S5: Next Generation Bioceramics and Biocomposites									
S6: Advanced Materials and Technologies for Direct Thermal Energy Conversion and Rechargeable Energy Storage									
S7: 10th International Symposium on Nanostructured Materials: Functional Nanomaterials and Thin Films for Sustainable Energy Harvesting, Environmental and Health Applications									
S8: 10th International Symposium on Advanced Processing and Manufacturing Technologies for Structural and Multifunctional Materials and Systems (APMT10)									
S9: Porous Ceramics: Novel Developments and Applications									
S10: Virtual Materials (Computational) Design and Ceramic Genome									
S11: Advanced Materials and Innovative Processing Ideas for the Production Root Technology									
S12: Materials for Extreme Environments: Ultrahigh Temperature Ceramics (UHTCs) and Nano-laminated Ternary Carbides and Nitrides (MAX Phases)									
S13: Advanced Materials for Sustainable Nuclear Fission and Fusion Energy									
S14: Crystalline Materials for Electrical, Optical and Medical Applications									
Focused Session 1: Geopolymers, Chemically Bonded Ceramics, Eco-friendly and Sustainable Materials									
Focused Session 2: Advanced Ceramic Materials and Processing for Photonics and Energy									
Focused Session 3: Materials Diagnostics, Nondestructive Evaluation and Structural Health Monitoring of Ceramic Components and Systems						(COMBINED WITH S1)			
Focused Session 4: Additive Manufacturing and 3D Printing Technologies									
Focused Session 5: Field Assisted Sintering and Related Phenomena at High Temperatures									
Focused Session 6: Hybrid Materials and Processing Technologies									

Jubilee Celebration 40th

INTERNATIONAL CONFERENCE AND EXPOSITION ON ADVANCED CERAMICS AND COMPOSITES

Celebrating 40 years of ICACC

JANUARY 17-19, 1977



"Trident C4 first launch". Licensed under Public Domain via Commons



Jim Mueller (middle) was the driving force in the beginning and ongoing success of the Cocoa Beach Conferences. The James I. Mueller Memorial Lecture Award is one of ECD's most prestigious awards and is presented at ICACC.



Meeting attendees watching the first Trident missile launch on January 18, 1977, at the NASA Kennedy Space Center.

JANUARY 21, 1985



Bonnie J. Dunbar, NASA astronaut, Houston, Texas, spoke at the Engineering Ceramics Division banquet in Cocoa Beach, Fla., about her experiences aboard the Space Shuttle D-1 mission, launched last October. After the talk, she presented a Space Shuttle plaque commemorating the flight to the Division.

The Ceramic-Metal Systems Division, led by Jim Mueller, Jerry Persh Jim McCauley, John Buckley, Sy Bortz, and others, initiated the first formal "Cocoa Beach Conference" on Composite and Advanced Ceramic Materials in January 1977, where 37 papers (all invited) were presented and ~90 people attended.



MAY 8, 1985

Attendance reached 144 – the first year attendance was over 100.

39th ICACC had more than 14 symposia and several focused sessions with more than 1,000 presentations and 1,100 attendees.

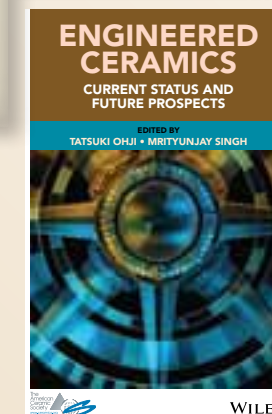
JANUARY, 2007

JANUARY, 1990

The "Cocoa Beach" meeting moved to its current venue in Daytona Beach. The move was necessary to accommodate the growing number of attendees and exhibitors.

JANUARY, 2015

40th Jubilee commemorative book entitled "Engineered Ceramics: Current Status and Future Prospects" is published to chronicle and celebrate the 40-year history of ICACC.



WILEY

Special 40th Jubilee Celebratory Events

Please join us for a welcome reception Sunday night at the Hilton

Sunday, January 24

A self-guided tour of the **NASA Kennedy Space Center** has been organized for interested attendees, to recognize the important role space exploration has played in the ICACC conference through the years. Seating is limited, so purchase tickets early. The \$75 registration fee includes admission and the roundtrip bus ride from Daytona Beach to the Space Center.



Monday, January 25

As a thank you to the Engineering Ceramics Division, Daytona Beach Convention and Visitors Bureau is hosting a special, **complimentary reception** at Sloppy Joe's.

Monday – Wednesday, January 25 – 27

A special **40th Jubilee Symposium** will feature previous ECD Mueller and Bridge Building Award winners, past and current ECD officers, and past ICACC plenary speakers.

Thursday, January 28

Plan to attend the **40th Anniversary Banquet**, to celebrate the history and growth of ICACC, from its humble beginnings at Cocoa Beach to present day. Purchase your tickets by Dec. 28, 2015. Be sure to attend this walk through the ages.

A special **40th Jubilee Commemorative Book** entitled "Engineered Ceramics: Current Status and Future Prospects," chronicles and celebrates the 40-year history of ICACC. All ECD Mueller and Bridge Building Award winners, and past and current ECD Officers were invited to write book chapters. This special edition book will be provided to full conference registrants. Students, exhibitors and others may purchase at \$87.50 — 50% off list price.



Ceramic-Metal Systems division name changed to Engineering Ceramics Division. The first chair of the Engineering Ceramics Division, Frank D. Gac, said the shift in emphasis allowed the division to meet the challenges of advanced material concepts and new engineering systems, including ceramics for energy conversion systems, friction and wear, brittle material design, materials for advanced space transportation, ceramic cutting tools, grinding and abrasives and advanced processing technology.



40TH INTERNATIONAL CONFERENCE AND EXPOSITION ON ADVANCED CERAMICS AND COMPOSITES

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Thank you to all the symposia and session organizers. Your dedication and hard work continue to make ICACC the prestigious conference attendees have come to expect. A full list of organizers can be found on the website ceramics.org/icacc16.

CONCURRENT TECHNICAL SESSIONS

S1: Mechanical Behavior and Performance of Ceramics & Composites

- Processing – microstructure – mechanical properties correlation
- Ceramics & composites for energy generation and environment
- Functionally graded materials and systems with multi-functional properties
- Mechanics, characterization techniques, & equipment
- Design, reliability, and life prediction modeling of devices and components
- Virtual and small-scale testing and applications
- Fiber, matrices, coatings, and interfaces
- Environmental effects and thermo-mechanical performance
- In situ characterization using x-rays & neutrons
- Testing of joined and integrated components and structures
- NDE of ceramic components & failure analysis
- Mechanical applications of transparent ceramics
- Manufacturing of composite structures for gas turbine applications
- Tribological performance of ceramics and composites

S2: Advanced Ceramic Coatings for Structural, Environmental, and Functional Applications

- Thermal and environmental barrier coatings
- Coatings to resist CMAS, oxidation, corrosion, wear, and erosion
- Advanced coating component systems for extreme environments
- Vibration damping coatings
- Functionally graded coatings and materials
- Advanced coating processing methods and modeling
- Advanced testing and nondestructive evaluation methodologies
- Nanostructured and multifunctional coating system integration and durability
- Interface phenomena, adhesion and fundamental coating properties
- Multi-scale modeling of coating properties and life prediction

S3: 13th International Symposium on Solid Oxide Fuel Cells (SOFC): Materials, Science, and Technology

- Electrolytes; oxygen ion, proton and mixed conductors; conduction mechanisms
- Electrode materials and microstructural engineering; electrode processes, defect chemistry, analytical techniques
- Ceramic and metallic interconnects; degradation mechanisms, coatings, accelerated testing and life prediction
- Sealing materials, designs and approaches; compatibility and interactions
- Novel processing and design of cell and stack materials
- Mechanical and thermal properties, electrochemical performance and stability
- Electrical and structural reliability
- Surface and interfacial reactions; materials transport and electrode poisoning; catalytic degradation, carbon fouling
- Degradation modeling and computational simulation of cells and stacks
- High temperature electrolysis: steam, steam and CO₂, chemical process engineering utilizing solid oxide electrolyte ceramics
- Fuel processing; reforming using supported/unsupported catalysts; carbon and sulfur fouling, gas separation membranes
- System design and demonstration
- Applications: Centralized and distributed generation, CHP and μ -CHP, hydrogen production, portable and unmanned operations

"This is a fantastic conference because you get to actually meet the people whose papers you've been reading, people you've been working with, phone calling and emailing back and forth. You get to exchange ideas more quickly."

– 2015 ICACC attendee

CONCURRENT TECHNICAL SESSIONS

S4: Armor Ceramics

- Ballistic behavior
- Synthesis and processing
- Materials characterization
- Quasi-static and dynamic behavior
- Materials and process modeling
- Bonding of materials

S5: Next Generation Bioceramics and Biocomposites

- Porous bioceramics
- Advanced processing of bioceramics
- Bio-synthetic interfaces
- Biomineralization and tissue-material interactions
- Bioactive and resorbable ceramics
- Bio-inspired and biomimetic ceramics
- Self-assembled bioceramics
- Ceramics for drug and gene delivery
- Antibacterial surfaces
- In vitro and In vivo characterization of bioceramics
- Mechanical properties of bioceramics
- Medical and dental applications of bioceramics
- Nanostructured bioceramics
- Magnetic nanoceramics for biomedical applications
- Light-emitting nanoceramics for bioimaging, sensing and therapy

S6: Advanced Materials and Technologies for Direct Thermal Energy Conversion and Rechargeable Energy Storage

- Thermoelectric materials for energy harvesting
- Materials for thermionic and thermovoltaic applications
- Materials for solar-thermal applications
- Stationary rechargeable batteries for grid, solar, and wind technologies
- Advanced anode and cathode materials for lithium batteries
- Materials design, screening, and electrode architectures for lithium batteries
- Diagnostics and materials characterization for lithium batteries
- Electrode/electrolyte interface characterization for lithium batteries
- Applications focused lithium batteries
- Lithium metal-air and lithium-sulphur battery technologies
- Sodium batteries and beyond lithium batteries
- All-solid-state batteries
- Solid electrolytes for batteries
- Materials of capacitive energy storage (supercapacitors)

S7: 10th International Symposium on Nanostructured Materials: Functional Nanomaterials and Thin Films for Sustainable Energy Harvesting, Environmental, and Health Applications

- Synthesis, functionalization and assembly of metal oxide nanomaterials
- Metal oxide nanostructures for chemical and biological sensors
- One-dimensional nanostructures for energy applications
- Nanotoxicity, drug-delivery and health aspects of engineered nanostructures
- Transparent conducting oxides for energy harvesting
- Nanomaterials for photocatalysis, solar hydrogen and thermoelectrics
- Integration of functional metal oxide nanostructures in devices
- Nanodevices: Fabrication and large-scale integration
- Innovative techniques for characterization and manipulation of nanostructures
- Industrial development and application of nanomaterials

"I was overwhelmed at how welcoming everyone was, even though I was only a beginning graduate student. Everyone was very accommodating and very friendly. I had a great experience and have come back every year since. ACerS feels like a family, so every year I get to catch up with old friends, make a lot of new friends, as well as listen to what is going on in the ceramics world from a variety of different fields. Everyone should come to ICACC."

– 2015 ICACC attendee

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CONCURRENT TECHNICAL SESSIONS

S8: 10th International Symposium on Advanced Processing and Manufacturing Technologies for Structural and Multifunctional Materials and Systems (APMT10)

- Rapid prototyping, patterning, templates and self assembly
- Microelectronics devices and systems
- Advanced composite manufacturing technologies, hybrid processes
- Advanced fiber fabrication
- Nano-reinforcement processing (CNT, graphene, BN, etc.)
- Novel forming/sintering technologies
- Microwave or microwave-assisted processing, SPS
- Advanced powder synthesis and processing
- Aqueous synthesis and processing, colloidal processing
- Polymer-based processing
- Design-oriented manufacturing and processing
- Large scale/complicated shape processing
- Joining, integration, machining, repair, and refurbishment technologies
- Green manufacturing; global environmental issues and standards
- Life cycle assessment, recycling, and reuse technologies

S9: Porous Ceramics: Novel Developments and Applications

- Innovations in processing methods and synthesis of porous ceramics
- Structure and properties of porous ceramics
- Modeling of porous structures and properties
- Novel characterization tools of porous structures
- Mechanical behavior of porous ceramics
- Micro-porous and meso-porous ceramics
- Ceramic membranes
- Ceramics with hierarchical porosity
- Engineered porous architectures enabled by automated manufacturing technologies
- Porous ceramics for environmental applications
- Porous ceramics for energy applications
- Porous ceramics for biological applications
- Porous ceramics for functional applications
- Porous ceramics for water filtration

S10: Virtual Materials (Computational) Design and Ceramic Genome

- Ceramic genome
- Integrated materials computational engineering
- Novel simulation methods for materials processing and performance
- Multi-scale modeling approaches
- Modeling materials behavior under extreme/harsh environments (ultrahigh temperature, radiation, environmental damages, and severe mechanical load and stresses)
- Model-aided design of thermal insulating and thermo-structural materials
- Modeling and design of new innovative ceramics for functional applications
- Prediction of the crystal structure and properties of new ceramics
- Modeling defects and amorphous matter
- Modeling of surfaces, interfaces, and grain boundaries at multiple scales

S11: Advanced Materials and Innovative Processing Ideas for the Production Root Technology

- Shaping processes
- Thermal processes for advanced materials
- Recycling and reuse processes
- Coating processes for low friction and energy solutions
- New concepts and emerging technologies
- Innovative process technologies with enhanced product performance

THE WINTER WORKSHOP

Winter Workshop is designed for ceramic and glass students and young professionals from around the world. Students attending the EMA16 and the ICACC16 are encouraged to participate in the winter workshop, which includes programming at EMA and the welcome reception and plenary session at ICACC'16. Get more information at ceramics.org/winterworkshop.

CONCURRENT TECHNICAL SESSIONS

S12: Materials for Extreme Environments: Ultrahigh Temperature Ceramics (UHTCs) and Nano-laminated Ternary Carbides and Nitrides (MAX Phases)

- New precursors for powders, coatings, and matrix or fibers of composites
- Structure-property relationships of existing systems
- Materials design, new composition and composites
- Novel processing methods (bulk, coatings, and thin films)
- Novel characterization methods and lifetime assessment
- Methods for improving damage tolerance, oxidation and thermal shock resistance
- New methods for joining and machining of components
- Structural stability under extreme environments (irradiation, ultra-high temperature)

S13: Advanced Materials for Sustainable Nuclear Energy and Fusion Energy

- Ceramics and composites technology for accident-tolerant LWR fuels and core
- Materials for advanced fission reactors and fusion energy
- Ceramics and composites for detection of nuclear radiation
- Joining and coating for reactor components
- Graphite and carbon materials
- Crystalline, amorphous and composite materials for waste immobilization
- Long-term behavior of waste forms through experiments and modeling
- Container corrosion in geological disposal conditions
- Novel techniques for characterization and processing of solid and liquid samples
- Fuel reprocessing and management of fission product elements
- Fundamental science of radiation damage, defect production, evolutions, and interactions
- Theory, modeling, and simulation of radiation effects in ceramics and composites
- Fuel and cladding evolution and performance modeling
- Codes and standards, design methodology

S14: Crystalline Materials for Electrical, Optical, and Medical Applications

- Semiconductors for LED/LD, power device, and sensor
- Optical materials for laser, nonlinear optics, optical isolator, and phosphors
- Scintillators for X-, gamma-, and neutron detection
- Piezo-, ferro-, and magneto-electric materials
- Transparent ceramics and nanocrystals
- Phase diagrams, defect chemistry, and crystalline quality

STUDENT AND YOUNG PROFESSIONAL NETWORKING MIXER

MONDAY, JANUARY 25 | 7:30 – 9 P.M.

Swap stories with fellow students and young professionals during this relaxed evening event.



SCHOTT SHOT GLASS CONTEST

TUESDAY, JANUARY 26 | 6:45 – 8 P.M.

THE OCEAN CENTER, EXHIBIT SHOW FLOOR

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

Don't miss this design contest! Competitors are given one shot glass, donated by SCHOTT, and 15 drinking straws used to build a protective device for their glass. Then, the glasses are dropped from varying levels until the breaking threshold is reached. The glass with the highest successful drop distance wins!

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FOCUSED SESSIONS

FS1: Geopolymers, Chemically Bonded Ceramics, Eco-friendly, and Sustainable Materials

- Synthesis, processing microstructure
- Waste encapsulation
- Porosity (nano-, meso-, micro-)
- Construction materials
- Mechanical properties, thermal
- Coatings (fire-resistant, shock resistance acid-resistant)
- Other inorganic analogues
- Novel applications
- Composites
- Sustainable materials
- Conversion to ceramics

FS2: Advanced Ceramic Materials and Processing for Photonics and Energy

- Multifunctional materials
- Advanced and nanostructured materials for photonics, electronics, and sensing
- Advanced and nanostructured materials for photovoltaics and solar fuels
- Advanced glass based materials for laser sources and nonlinear applications

FS3: Materials Diagnostics, Nondestructive Evaluation, and Structural Health Monitoring of Ceramic Components and Systems

- Combined with Symposium 1

FS4: Additive Manufacturing and 3-D Printing Technologies

- Selective laser sintering
- Stereolithography
- Direct writing technologies
- Fused deposition modeling
- Laminated object manufacturing/green tape stacking
- Ink jet printing technologies
- Powder bed fusion process
- Emerging additive manufacturing technologies

FOCUSED SESSIONS

FS5: Field Assisted Sintering and Related Phenomena at High Temperatures

- Spark plasma sintering
- Flash sintering
- Microwave sintering
- Grain growth
- Phase transformations
- Creep and superplasticity
- Joule heating
- Defect chemistry and diffusion
- Electrical conductivity and photoemission

FS6: Hybrid Materials and Processing Technologies

- Hybrid interfaces for creating new materials
- Nano-composite materials and hybrid architectures
- Design/synthesis/evaluation for hybrid-function of materials
- Self-assembled, organic-inorganic hybrid materials
- Analytical techniques for characterization of hybrid materials
- Nano-mechanics and evaluation technique for hybrid materials
- Manufacturing of hybrid materials and components
- Energy/environmental applications of nano/hybrid structure
- Biomedical and textile applications
- Biomimetic/bioinspired hybrid materials
- Anisotropic/heterogeneous hybrid materials

5th Global Young Investigator Forum

This interdisciplinary symposium will feature research from a variety of thematic areas, including, but not limited to:

- Frontiers in ceramic chemistry and physics: New precursors for functional ceramics, ceramics and catalysis, functional surfaces
- Ceramic hybrid materials and composites for aerospace, armor, biological and medical applications
- Advanced ceramics and coatings for structural, environmental and functional applications
- Novel ceramic processing methods and synthesis routes
- Nanocomposites and nanostructured materials
- Computational materials prediction and design
- Novel characterization tools of ceramics and composites
- Applications: Ceramic sensors and actuators, energy generation, saving and storage, photo-catalysis and biomedical applications
- Young researchers' funding, mobility and networks

Register by December 23, 2015 to save!

Emerging Technologies Symposium: Carbon Nanostructures and 2-D Materials, and Composites

- Synthesis of carbon nanostructures and 2-D materials by chemical vapor deposition and others
- Creation of atomic layers from 2-D materials by exfoliation and unzipping
- Surface chemistry, surface functionalization
- Inorganic-organic hybrid composites
- Structural, electrical, mechanical and optical characterization of CNS and 2-D materials
- Green carbon production
- Electronic and optical properties
- Carbon and 2-D materials based devices
- Electronics applications
- Biomedical applications
- Energy production and storage
- Sensing applications
- Computational methods in the design of tailored nanostructured materials
- Electronic band structure, and transport theory and modeling of 2-D crystals
- General properties of 2-D-layered oxides, nitrides and sulfides
- New physical and chemical properties of 2-D materials



"I consider this my professional home. I enjoy interacting with the members and staff of ACerS. It's a great organization. There is a lot of networking that goes on, which helps me professionally and in terms of professional development."

– 2015 ICACC attendee

Meeting Registration

Early registration deadline: **December 23, 2015**



4 ways to register

MAIL
The American Ceramic Society
L-2625, PO Box 600001
Columbus, OH 43260-2625 USA

FAX
1-240-396-5637
(Credit Cards Only)

PHONE
1-866-721-3322 (U.S.)
1-240-646-7054 (Int'l.)
(Credit Cards Only)

WIRE TRANSFER
1-240-646-7054 (Int'l.)

Please print This is my work address home address school address I am a Young Professional (under 40 yrs. old & in first 10 yrs. of professional career)

First Name _____ M.I. _____ Last Name _____
 Company/Affiliation/School _____ Job Title _____
 Street Address _____
 City _____ State/Province _____ Postal Code _____ Country _____
 Phone _____ Fax _____ E-mail _____

Billing Address

Same as Above Address _____ City _____ State _____ Zip _____ Country _____

Registration

Registration includes coffee breaks, welcome reception, 2 exhibit receptions

	Early Reg. Through Dec. 23	After Dec. 23
ACerS Member**	<input type="checkbox"/> \$595	<input type="checkbox"/> \$745
ACerS Member plus 12 month membership renewal*++	<input type="checkbox"/> \$715	<input type="checkbox"/> \$865
Nonmember***	<input type="checkbox"/> \$715	<input type="checkbox"/> \$865
ACerS Emeritus/Senior/Associate Member**	<input type="checkbox"/> \$495	<input type="checkbox"/> \$645
One Day Member†	<input type="checkbox"/> \$495	<input type="checkbox"/> \$645
One Day Nonmember††	<input type="checkbox"/> \$615	<input type="checkbox"/> \$765
GGRN or Material Advantage Student Member+ <input type="checkbox"/> Grad <input type="checkbox"/> Undergrad	<input type="checkbox"/> \$160	<input type="checkbox"/> \$235
GGRN Registration & Membership Renewal* <input type="checkbox"/> Grad <input type="checkbox"/> Undergrad	<input type="checkbox"/> \$190	<input type="checkbox"/> \$265
Nonmember Student††† <input type="checkbox"/> Grad <input type="checkbox"/> Undergrad	<input type="checkbox"/> \$195	<input type="checkbox"/> \$270
Exhibit only**	<input type="checkbox"/> \$75	<input type="checkbox"/> \$75
Spouse/Companion***	<input type="checkbox"/> \$75	<input type="checkbox"/> \$75
Thursday, Jan. 28 – 40th Jubilee Dinner Ticket (optional)	<input type="checkbox"/> \$40	<input type="checkbox"/> \$60
Extra ECD Book (optional)	<input type="checkbox"/> \$87.50	<input type="checkbox"/> \$87.50
Sunday, Jan. 24 – NASA Tour (optional)	<input type="checkbox"/> \$75	<input type="checkbox"/> \$75
GRAND TOTAL	\$ _____	\$ _____

*Member, nonmember, emeritus rates include conference proceedings on CD and ECD Book.
 +Receives 1 year ACerS membership.
 ++Graduate receives 1 year GGRN.
 **Only includes exhibit receptions.
 ***Spouse/Companion registration only includes welcome reception and exhibit receptions.
 †See ACerS membership options below.

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Check for \$ _____ enclosed.
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Cancellation Policy: Full refund less \$50 if cancelled on or before December 23, 2015; 50% refund if cancelled between December 24, 2015 and January 23, 2016; no refunds after the start of the conference.

For hotel accommodations, call the Hilton Daytona Beach Resort & Ocean Center at 1-386-254-8200

ACerS Membership†

If you are not already a member of a division, choose one free affiliation. Members may add an additional Division for \$10. Nonmembers will automatically join the Engineering Ceramics Division for free.

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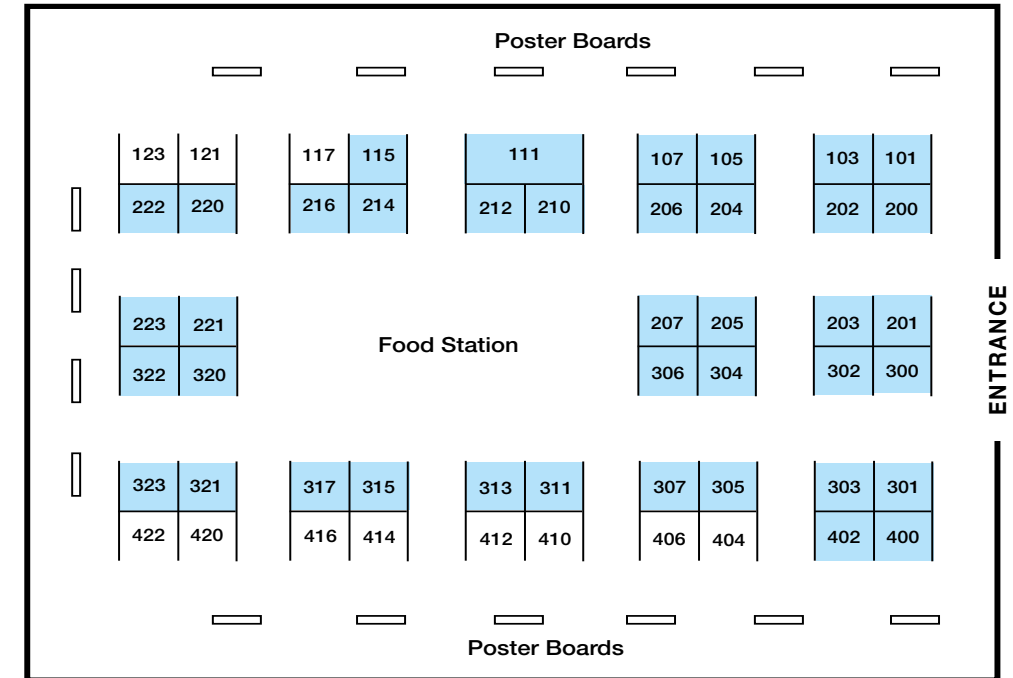
EXHIBITION INFORMATION

Take advantage of this exceptional opportunity to showcase your company's latest products, services and technology to a sophisticated audience sharply focused on this market.

Exhibit hours: Tuesday, January 26, 5 – 8 p.m.
 Wednesday, January 27, 5 – 7:30 p.m.

Exhibit location: Ocean Center Arena, 101 North Atlantic Avenue, Daytona Beach, FL

Reserve your booth space today! Contact Mona Thiel at mthiel@ceramics.org or at 614-794-5826.



Exhibitor	Booth	Exhibitor	Booth
AdValue Technology	322	MEL Chemicals	304
Alfred University	315	Microtrac	306
American Isostatic Presses, Inc.	101	Nanoscience Instruments	303
AMTECO Incorporated	210	NETZSCH Instruments North America, LLC	300
AVS, Inc.	307	NIST	111-113
Booth Reserved	216	Noritake Co., Inc.	223
C-Therm Technologies Ltd.	220	Powder Processing & Technology LLC	203
Centorr Vacuum Industries, Inc.	200	Oxy-Gon Industries, Inc.	214
CM Furnaces, Inc.	311	Smarter Shows	103
Dorst America	301	Sonoscan, Inc.	221
Element Materials Technology	222	TevTech LLC	212
ESL ElectroScience	204	Thermal Wave Imaging Inc.	321
Gasbarre Products (PTX Pentronix, Inc.)	207	Verder Scientific, Inc.	206
H.C. Starck North American Trading LLC	305	Washington Mills	320
Haiku Tech, Inc.	313	Zircar Ceramics, Inc.	302
Harper International Corp.	317		
Harrop Industries, Inc.	201		
Keith Company Inc.	205		
Linseis Inc.	202		
Lithoz GmbH	323		

Register by **December 23, 2015** to save!

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