CALL FOR PAPERS!

Abstracts due July 29, 2016

41ST INTERNATIONAL CONFERENCE AND EXPOSITION ON

ADVANCED CERAMICS AND COMPOSITES

January 22–27, 2017

Hilton Daytona Beach Resort and Ocean Center | Daytona Beach, Fla., USA

Organized by the Engineering Ceramics Division of The American Ceramic Society

The American Ceramic Society
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Engineering Ceramics Division
The American Ceramic Society

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Introduction

The 41st International Conference and Exposition on Advanced Ceramics and Composites (ICACC) continues the strong tradition as the leading international meeting on advanced structural and functional ceramics, composites, and other emerging ceramic materials and technologies. The meeting will be held from January 22-27, 2017 in Daytona Beach, Florida. Since its inception in 1977, this prestigious conference has been organized by the American Ceramic Society's (ACerS) Engineering Ceramics Division (ECD) and ACerS. Since then, the conference has experienced tremendous growth in interest and participation from ceramic researchers and developers from national, regional, and global technical communities. This conference reached a milestone in 2016 celebrating its 40-year journey of ceramics and composites.

The technical program consists of fifteen symposia, three focused sessions, the 3rd Pacific Rim Engineering Ceramics Summit, and 6th Global Young Investigator Forum. These technical sessions, consisting of both oral and poster presentations, will provide an open forum for scientists, researchers, and engineers from around the world to present and exchange findings on recent advances on various aspects related to ceramic science and technology.

The technical program encompasses diverse areas of ceramics and advanced composites, with particular attention to include topics that address the current trends in the research, development, engineering, and application of advanced ceramics. The core symposia at this conference include Mechanical behavior and performance of ceramics and composites, Advanced ceramic coatings, Solid oxide fuel cells, Armor ceramics, Bioceramics, Advanced materials and technologies for energy conversion and rechargeable energy storage, Nanostructured materials and nanocomposites, Advanced processing and manufacturing technologies, Porous ceramics, Virtual material design, Industrial root technologies, Materials for extreme environments, Ceramics for sustainable nuclear energy and fusion energy, and Crystalline materials for electrical, Optical and medical applications. Due to its success as a focused session, the Additive manufacturing and 3-D printing technologies topic has been promoted as one of the fifteen core symposia.

In addition to the core symposia, the technical program will include three focused sessions on emerging technologies: Geopolymers, Chemically bonded ceramics, Eco-friendly and sustainable materials and advanced ceramic materials and processing for photonics and energy, as well as Carbon nanostructures and 2-D Materials and Composites. Building upon the successful interactions and excitement generated in the first five years, the Sixth Global Young Investigator Forum will again be organized and facilitated by a group of our young researchers.

Details of the symposia and focused sessions are listed in the Call for Papers. The ECD Executive Committee and volunteer organizers sincerely hope you will join us at ICACC'17 for a stimulating and enjoyable conference.

We look forward to seeing you in Daytona Beach, Florida in January 2017!

Jingyang Wang
2017 ICACC Program Chair
Shenyang National Laboratory for Materials Science
Institute of Metal Research, Chinese Academy of Sciences
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Abstract Submission Instructions

- Visit **www.ceramics.org/icacc2017** to review session topics.
- Select "Submit Abstract" to be directed to the Abstract Central website.

Abstract title and text character limit (including spaces) is 1,500 characters. If you have questions, please contact **Marilyn Stoltz** at mstoltz@ceramics.org or +1 614-794-5868.

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Hilton Daytona Beach Resort

100 North Atlantic Ave., Daytona Beach, FL 32118
Phone: 1-386-254-8200

Rates: One to four occupants: $165
Students: $136
US government employee: Prevailing rate

Mention The American Ceramic Society to obtain the special rate. Room rates are effective until December 16, 2017 and are based on availability.

Tentative Schedule of Events

Sunday, January 22, 2017

Conference registration	2:00 – 7:00 p.m.
Welcome reception at Hilton	5:30 – 7:00 p.m.

Monday, January 23, 2017

Conference registration	7:00 a.m. – 6:00 p.m.
Opening awards ceremony and plenary session	8:30 a.m. – Noon
Companion coffee	9:00 – 10:30 a.m.
Lunch on own	Noon – 1:20 p.m.
Concurrent technical sessions	1:30 – 5:30. p.m.
Young Professional Network, GGRN, student mixer	7:30 – 9:00 p.m.

Tuesday, January 24, 2017

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 – 6:00 p.m.
Exhibits and poster session A, including reception	5:00 – 8:00 p.m.

Wednesday, January 25, 2017

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 – 5:00 p.m.
Exhibits and poster session B, including reception	5:00 – 7:30 p.m.

Thursday, January 26, 2017

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 – 5:00 p.m.

Friday – January 27

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

Technical Symposia

S1: Mechanical Behavior and Performance of Ceramics and Composites

Structural ceramics and composites have applications in areas including energy generation, environment, space, transportation, and microelectronics. Long-term mechanical reliability is a key issue in their ultimate use for a specific application. Correlations between processing and service conditions/environment to failure of ceramics by fracture, fatigue, or deformation are key aspects. Extreme environments and challenging applications of ceramic materials have necessitated new approaches for characterization. This symposium solicits abstracts related to the diverse aspects of mechanical behavior of ceramics and composites and their correlations to processing and component performance and reliability.

Proposed Session Topics

- Processing–microstructure–mechanical properties correlation
- Ceramics and composites for energy generation and environment
- Functionally graded materials and multilayer systems with multifunctional properties
- Mechanics, characterization techniques, and equipment
- Design, reliability, and life prediction modeling of devices and components
- Small-scale testing and applications
- Fiber, matrices, coatings, and interfaces
- Environmental effects and thermomechanical performance
- In situ characterization using X-rays and neutrons
- Testing of joined and integrated components and structures
- Failure analysis
- Mechanical applications of transparent ceramics
- Manufacturing of composite structures for gas turbine applications
- Tribological performance of ceramics and composites

Symposium Organizers

- **Dileep Singh**, Argonne National Laboratory; dsingh@anl.gov
- **Jonathan A. Salem**, NASA Glenn Research Center; jonathan.a.salem@nasa.gov
- **Dietmar Koch**, German Aerospace Center, Germany; dietmar.koch@dlr.de
- Emmanuel Maillet, General Electric Company
- Shaoming Dong, Shanghai Institute of Ceramics, China
- Warren Oden, Hysitron, Inc.
- T. Ishikawa, Tokyo University of Science, Yamaguchi, Japan
- Monica Ferraris, Politecnico di Torino, Italy
- Walter Krenkel, Unversity of Bayreuth, Germany
- Rajesh Kumar, United Technologies Research Center
- Andrew Wereszcak, Oak Ridge National Laboratory
- Raul Bermejo, Montanuniversitaet Leoben, Austria
- Jian-Feng Yang, Xi'an Jiaotong University, China

ACerS Engineering Ceramics Division Leadership

- Chair: **Soshu Kirihara**, Osaka University, Osaka, Japan; kirihara@jwri.osaka-u.ac.jp
- Chair-elect: **Andrew L. Gyekenyesi**, Ohio Aerospace Institute, Cleveland, Ohio; Andrew.L.Gyekenyesi@nasa.gov
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S2: Advanced Ceramic Coatings for Structural, Environmental, and Functional Applications

The growing demand for advanced materials to be used in extreme environments is the key driver for the development of ceramic coatings. In next generation turbine engines new lightweight structural materials such as CMC and intermetallics as well as advanced superalloys promise higher efficiency due to increasing operation temperatures. Consequently, the development of new, high-performance protective coating systems minimizing oxidation and thermochemical degradation of such advanced materials and components is mandatory. In many industrial applications protection of structural materials against corrosion, wear, and oxidation remains a key challenge. This symposium will provide an open forum for material scientists and engineers from around the world to discuss recent advances in coating sciences and technologies. The symposium addresses innovative processing, microstructure and property characterization, performance, and durability of advanced ceramic coating systems. Special sessions will be dedicated to coating and component developments for aerospace, energy, and industrial applications. Integrated structural, environmental properties and functionality through advanced coating composition development, innovative processing, and structural design, and modeling are particularly emphasized.

Proposed Session Topics

- Thermal and environmental barrier coatings for next generation turbine engines
- Coatings to resist CMAS, oxidation, corrosion, wear, and erosion
- Advanced coating systems for extreme environments
- Nanostructured and multifunctional coating system integration and durability
- Advanced coating processing methods and modeling
- Advanced testing and non-destructive evaluation methodologies

Symposium Organizers

- **Peter Mechnich**, German Aerospace Center (DLR), Germany; peter.mechnich@dlr.de
- **Douglas E. Wolfe**, The Pennsylvania State University; dew125@arl.psu.edu
- Dongming Zhu, NASA Glenn Research Center
- Elizabeth Opila, University of Virginia
- Marie-Hélène Vidal-Sétif, ONERA, France
- Robert Vaßen, Forschungszentrum Jülich GmbH, Germany
- Eugene Medvedovski, Endurance Technologies Inc., Canada
- Yutaka Kagawa, University of Tokyo, Japan
- Soumendra N. Basu, Boston University
- Byung-Koog Jang, National Institute for Materials Science (NIMS), Japan
- Eric H. Jordan, The University of Connecticut
- Bryan Harder, NASA Glenn Research Center
- Kang N. Lee, Rolls-Royce Corporation
- Rodney W. Trice, Purdue University
- Federico Cernuschi, Ricerca sul Sistema Energetico, Italy
- Uwe Schulz, German Aerospace Center, Germany
- Yiguang Wang, Northwestern Polytechnical University, China
- Ping Xiao, University of Manchester, UK
- Kevin Plucknett, Dalhousie University, Canada
- Satoshi Kitaoka, Japan Fine Ceramics Center, Japan

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S3: 14th International Symposium on Solid Oxide Fuel Cells (SOFC): Materials, Science and Technology

Solid oxide fuel cells (SOFC) offer potential for clean and efficient power generation from a wide variety of fuels ranging from hydrocarbons to renewables and coal derived fuels. Advanced systems configurations are currently being developed for applications in centralized and distributed stationary generation using SOFCs. Considerable progress has been made in SOFC based systems for automotive auxiliary power generation as well as in man portable and unmanned operation. With demonstrated advantages of high electrical efficiency, lower emissions (greenhouse gas, SO_x, NO_x, VOC and particulate matters) and ease of products configurability, major focus of interest continues to be on systems research and development, products engineering and cost effective manufacturing under the sponsorship of government agencies and private industries. Although significant progress has been made in the areas of cell and stack materials, component fabrication, stack and systems simulation and design, fuel processing and systems operation on a wide variety of liquid and gaseous hydrocarbons, technology development continues towards the identification of bulk and interfacial modifications for performance enhancement, understanding of ageing phenomena, accelerated testing and minimization of degradation as well as cost reduction at both materials and process levels. Significant challenges still exist in the areas of durability enhancement, stacking cells, fracture mechanics of ceramic components, thermal management, and BOP component development at both sub-kWe and large multi-kWe levels.

Electrochemical energy conversion in solid oxide cell is reversible allowing power generation and fuel production. An essential goal of the modern energy supply is the transition from fossil to renewable energy sources like wind and sun. A disadvantage of these sustainable sources is their fluctuating nature. This necessitates the development of appropriate technologies for the storage of excess energy. High-temperature electrolysis can solve this problem providing highest efficiency for generation of chemicals and products from excessive power. In electrolysis, the regenerative energy is directly converted into hydrogen or/and into a synthesis gas which can be further processed into any fuel. The production of methane, synthetic oils or diesel, in particular, provides promising synergies. So, it will be possible to couple electricity grid, natural gas grid and chemicals production. For this reason the research on solid oxide electrolysis is important task which helps to understand the opportunities and limitations of this new technology for future energy systems.

The primary purpose of this symposium is to provide an international forum for scientists and engineers to present recent technical progress, and to exchange ideas and technical information on various aspects of solid oxide fuel cells.

Proposed Session Topics

- 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 CO_2, chemical process engineering utilizing SOEC
- 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

Symposium Organizers

- **Narottam P. Bansal**, NASA Glenn Research Center; Narottam.P.Bansal@nasa.gov
- **Mihails Kusnezoff**, Fraunhofer IKTS, Germany; mihails.kusnezoff@ikts.fraunhofer.de
- Vincenzo Esposito, DTU Energy Conversion, Denmark
- Tatsumi Ishihara, Kyushu University, Japan
- Ruey-Yi Lee, Institute of Nuclear Energy Research, Taiwan
- Nguyen Q. Minh, University of California San Diego
- Prabhakar Singh, University of Connecticut
- Federico Smeacetto, Politecnico di Torino, Italy
- Jeffrey W. Stevenson, Pacific Northwest National Laboratory
- Sascha Kühn, Ezelleron, Germany
- Scott A. Barnett, Northwestern University
- Kristen H. Brosnan, General Electric Global Research

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S4: Armor Ceramics - Challenges and New Developments

When properly combined with other materials, ceramic and glass materials can exhibit ballistic penetration resistances significantly higher than monolithic metallic materials. Not surprisingly therefore, lightweight armor technologies based on ceramic and glass materials have been developed providing levels of protection against a wide array of ballistic threats. Despite this reality, current knowledge and understanding is limited with respect to the effects of a ceramic body's physical, chemical, structural, and mechanical characteristics on its local and global response to dynamic contact loading conditions that are characterized by locally large transient stresses, deformations, and temperatures. This deficiency in understanding of processing-structure-properties-performance relationships has been a hindrance to the development of new materials through conventional and advanced processes, as well as materials-by-design strategies.

This symposium is an opportunity for attendees from industry, academia, and government organizations to meet and participate in open discussions on relevant fundamental and applied research that supports the advancement of knowledge and understanding of the processing–structure–properties–performance relationships for ceramic and glass materials.

Proposed symposium topics are listed below. In addition, special presentations on a range of topics including superhard ceramic materials, metastable or "far from equilibrium" ceramic materials, novel processing science for advanced ceramics and glasses such as field-assisted sintering and additive manufacturing, advanced characterization methods, hierarchical-structure designed material or multi-scale materials-by-design strategies, fundamental property-structure-process relationship studies such as complexion transitions, dynamic behavior and inelastic deformation mechanisms, and fundamental ballistic behavior are planned. If you are interested in giving a presentation related to one of these special topics, please contact the symposium organizers listed below.

Proposed Session Topics

- Ballistic behavior: depth-of-penetration, dwell and penetration, in situ/real-time and post-test characterization, mechanisms, size–scale effects, modeling, new techniques
- Synthesis and processing: ceramics, glasses, glass-ceramics, new materials, new methods, monolithic and composites, toughened, damage-tolerant, multi-scale structures, materials-by-design, conventional and novel, powders, green body forming, densification, surface modification, planar and curved shapes with/without topological features, scale-up
- Materials characterization: chemistry, phases, structure, defects, flaws and flaw statistics, bulk, surface, microscopy, spectroscopy, combined methods, non-destructive, residual stress, reactivity, wear and erosion, new techniques
- Quasi-static and dynamic behavior: mechanical properties, low and high-rate, high-pressure, large deformation, shear, multi-stress state, shock, fracture, fragmentation, damage, inelastic deformation mechanisms, phase transformations and transitions, in situ probing, small-scale, size–scale effects, reactivity, macro, new techniques
- Materials and process modeling: material, system, analytical, computational, continuum, atomistic, multi-scale, thermodynamics, mechanics, phenomenological, physically-based, microstructural, damage, inelastic deformation mechanisms, phase transformations and transitions, fracture, fragmentation, impact, penetration, residual stress, homogeneous and heterogeneous deformation, failure, size-scale effects, novel numerical techniques, new materials
- Bonding of materials: surface chemistry and structure, surface treatments, bond material characteristics and properties, bond theory, bonded interface processing, interface characteristics and properties, bond durability, residual stress, modeling

Contributing papers addressing these topics and the special topics listed above are welcomed. For those interested in participating, but uncertain whether their work fits within the theme of this symposium, please contact the symposium organizers listed below.

Symposium Organizers

- **Jerry LaSalvia**, ARL; jerry.c.lasalvia.civ@mail.mil
- **Jeffrey Swab**, ARL; jeffrey.j.swab.civ@mail.mil
- Sikhanda Satapathy
- David Stepp, ARO
- Andrew Wereszczak, ORNL
- Victoria Blair, ARL
- Michael Golt, ARL
- Ghatu Subhash, UFL

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S5: Next Generation Bioceramics and Biocomposites

Novel bioceramic materials are being developed that will provide improvements in diagnosis and treatment of medical and dental conditions. In addition, the development and use of nanostructured materials, bio-inspired materials, biomimetic materials, and inorganic-organic structures has generated considerable scientific interest. This symposium will allow for discussion among the many groups involved in the development and use of bioceramics, including ceramic researchers, medical device manufacturers, and clinicians.

Proposed Session Topics

- Porous bioceramics (joint with Symposium 9)
- 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 (joint with Symposium 7)
- Magnetic nanoceramics for biomedical applications
- Light-emitting nanoceramics for bioimaging, sensing and therapy
- Ceramic biosensors

Symposium Organizers

- **Roger Narayan**, University of North Carolina; roger_narayan@unc.edu
- Markus Reiterer, Medtronic, Inc.
- Bikramjit Basu, Indian Institute of Science, India
- Ilaria Cacciotti, Università degli Studi Niccolò Cusano, Italy
- Marta Cerruti, McGill University, Canada
- Eva Hemmer, Institut National de la Recherche Scientifique (INRS), Canada
- Chikara Ohtsuki, Nagoya University, Japan
- Akiyoshi Osaka, Okayama University, Japan
- Kohei Soga, Tokyo University of Science, Japan
- Enrica Verné, Politecnico di Torino, Italy

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

The significant increases in demand of world energy consumption as well as clean and efficient energy resources have prompted the imperative searches of new materials and technologies. The technologies aiming for clean energy generation with zero-emission will require advances in materials development for electricity generation as well as efficient and reliable energy storage. This symposium will focus on the advanced engineering ceramics and technologies that could help the global community to achieve the stated goals. As for the electric energy generation focuses will be on materials for energy harvesting and renewable energy generation. On the other hand, energy storage improvements in materials design, electrodes architecture, electrolytes, separators and cell chemistry are key factors to extend the life, enhance the safety, and lower the cost of rechargeable batteries that are regarded as the most efficient energy storage systems for portable electronics, renewable energy storage, smart grid, and transportation applications. A deeper understanding of the battery materials/property relationship, electrode/electrolyte interface phenomena, and cell failure mechanisms is critically needed to face these challenges. The search for advanced high capacity electrode materials and the implementation of the very challenging lithium sulfur, lithium-air and sodium-air batteries will be necessary to overcome the energy density shortfall in currently commercial batteries.

Proposed Session Topics

- 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 (super-capacitors)

Symposium Organizers

- **Palani Balaya**, National University of Singapore, Singapore; mpepb@nus.edu.sg
- **Olivier Guillon**, Forschungszentrum Jülich, Germany; o.guillon@fz-juelich.de
- Mickael Dollé, University of Montrael, Canada
- Valerie Pralong, CNRS CRISMAT, France
- H. T. Lin, Guangdong University of Technology, China
- Jang Wook Choi, KAIST, South Korea
- XiangXin Guo, Shangai Institute of Ceramics, China
- Ryoji Funahashi, AIST, Osaka, Japan
- Anke Weidenkaff, Stuttgart University, Germany
- Naoaki Yabuuchi, Tokyo Denki University, Japan
- Chi-Chang Hu, National Tsing Hua University, Taiwan

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S7: 11th International Symposium on Functional Nanomaterials and Thin Films for Sustainable Energy Harvesting, Environmental and Health Applications

Functional nanomaterials with intrinsically new and tailored properties are key elements for developing sustainable energy solutions. New energy technologies and devices demand functional inorganic and composite materials and conceptual advancement that combine advanced processing, fundamentally new properties, and energy-efficient materials synthesis that will form the focus of this symposium. Particular emphasis will be given to novel synthesis approaches, surface functionalization, and heterostructuring of nanoparticles, nanowires, and nanoscopic films. Application of nanostructures in photocatalysis, energy and sensing applications, nanostructured coatings for photovoltaic, and biomedical applications will form the major thrust areas. Contributions related to energy applications such as perovskite materials, batteries, fuel cells, water splitting, and carbon dioxide conversion as well as transparent conductors and challenges related to the large-scale production and integration of functional and structural nanomaterials are highly desired.

Proposed Session Topics

- Synthesis, functionalization and assembly of 1-D, 2-D and 3-D nanostructures
- Inorganic materials and composites for energy harvesting and CO_2 conversion
- Metal oxide nanostructures for chemical and biological sensors
- Functional nanostructures for energy conversion and storage and catalysis
- Nanomaterials for photocatalysis, solar hydrogen, and thermoelectrics
- Nanotoxicity, drug-delivery and tissue engineering with tailored nano-bioconjugates
- Integration of functional metal oxide nanostructures in devices
- Perovskites and other optical materials for light management
- Innovative thin film techniques (e.g., ALD, PECVD)
- Industrial production and application of nanomaterials and coatings

Symposium Organizers

- **Sanjay Mathur**, University of Cologne, Germany; sanjay.mathur@uni-koeln.de
- Yoon-Bong Hahn, Chonbuk National University, Korea
- Yakup Gönüllü, University of Cologne, Germany
- Esko I. Kauppinen, Aalto University, Finland
- Shiping Song, Shanghai Institute of Applied Physics, China
- Hidehiro Kamiya, University of Agriculture and Technology, Japan
- Marlies van Bael, Hasselt University, Belgium
- Alberto Vomiero, Luleå University of Technology, Sweden
- Anja-Verena Mudring, Iowa State University
- Mustafa Ürgen, Istanbul Technical University, Turkey
- Mohamed Siaj, University of Quebec and Montreal, Canada
- Gunnar Westin, Uppsala University, Sweden
- Candan Tamerler, University of Kansas
- Jih-Jen Wu, National Cheng Kung University, Taiwan
- A. S. Khanna, IIT Bombay, India
- Shaohua Shen, Xian Jiaotong University, China

S8: 11th International Symposium on Advanced Processing and Manufacturing Technologies for Structural and Multifunctional Materials and Systems (APMT11)

The properties and performance of structural and multifunctional materials largely depend on their processing and manufacturing routes. Manufacturing processes carefully designed with sufficient understanding of forming/sintering behaviors lead to reliable performance of components and products of large size and complex shapes. On the other hand, recently developed new processing and fabrication techniques of ceramic materials and systems give us unique properties that cannot be achieved from the conventional routes. The aim of this international symposium is to discuss global advances in the research and development of advanced processing and manufacturing technologies for a wide variety of fiber reinforced and particulate composites, non-oxide and oxide based structural ceramics, and multifunctional materials, as well as their components and devices. Current advances and state-of-the-art in various eco-friendly processing approaches will be also covered.

Proposed Session Topics

- Novel forming/sintering technologies, near-net shaping
- 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.)
- 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

Symposium Organizers

- **Tatsuki Ohji**, National Institute of Advanced Industrial Science and Technology (AIST), Japan; t-ohji@aist.go.jp
- **Mrityunjay Singh**, Ohio Aerospace Institute; mrityunjaysingh@oai.org
- Mirosław Bućko, AGH University of Science and Technology, Poland
- Surojit Gupta, University of North Dakota, ND
- Jerzy Lis, AGH University of Science and Technology, Poland
- Eugene Medvedovski, Endurance Technologies Inc., Canada
- Lisa Rueschhoff, Purdue University
- Richard D. Sisson, Jr., Worcester Polytechnic Institute
- Tohru S. Suzuki, National Institute for Materials Science (NIMS), Japan
- Satoshi Tanaka, Nagaoka University of Technology, Japan
- Valerie Wiesner, NASA Glenn Research Center
- Yiquan Wu, Alfred University

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S9: Porous Ceramics: Novel Developments and Applications

Porous materials are utilized in many applications including but not limited to thermal insulation, catalysts, catalyst supports, filters, adsorbers and sensors. This symposium aims to bring together the technical community to share recent advances in the formation, characterization, properties and modeling of porous ceramic, carbon, glass and glass-ceramic components for any application.

These materials contain pore sizes from the nanometers to millimeters, and can have textured to random porosity or hierarchical porosity and be based on various pore architectures, such as foams, honeycombs, fiber networks, bio-inspired structures.

This symposium will be the ideal showcase for the research activities of many groups involved in the development and use of porous materials including but not limited to the areas of ceramics, chemistry, mechanics, fluid dynamics, modeling and simulation and application engineering.

Proposed Session Topics

- 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 ptructures
- 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

Symposium Organizers

- **Paolo Colombo**, University of Padova, Italy; paolo.colombo@unipd.it
- **Manabu Fukushima**, AIST, Japan; manabu-fukushima@aist.go.jp
- Samuel Bernard, Institut Européen des Membranes, France
- Tobias Fey, University of Erlangen-Nuremberg, Germany
- Giorgia Franchin, University of Padova, Italy
- Fabrice Rossignol, CNRS Limoges, France
- Alek Pyzik, The Dow Chemical Company
- Kurosch Rezwan, University of Bremen, Germany
- Hutha Sarma, Corning Environmental Technologies
- Takashi Shirai, Nagoya Institute of Technology, Japan
- Yuping Zeng, Shanghai Institute of Ceramics, Chinese Academy of Sciences, China
- Sunho Choi, Northeastern University

S10: Virtual Materials (Computational) Design and Ceramic Genome

Recent progress in computational materials science has significantly enhanced the efficiency with which the understanding of fundamental phenomena, the improvement of materials performance, the optimization of processing, the discovery of new materials, and the design of structural components can be achieved. This symposium will focus on the design, modeling and simulation of ceramics and composites so as to further optimize their behavior and facilitate the design of new ceramics and composites with tailored properties. A broader perspective is desired including the interest related to ceramic genome, virtual materials design for new innovative materials and thermo-structure, integrated materials computational engineering, prediction of the structure and properties of crystals and defects, modeling materials behavior under extreme/harsh environments, application of novel simulation methods for materials processing and performance, simulation of novel ceramics for functional applications, and the modeling of surfaces, interfaces and grain boundaries at multiple scales.

Proposed Session Topics

- Ceramic genome
- Integrated materials computational engineering
- Novel simulation methods for materials processing and performance
- Multiscale modeling approaches
- Modeling materials behavior under extreme/harsh environments (ultra-high 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

Symposium Organizers

- **Jingyang Wang**, Institute of Metal Research, Chinese Academy of Sciences, China; jywang@imr.ac.cn
- William J. Weber, University of Tennessee
- Gerard L. Vignoles, University of Bordeaux, France
- Paul Rulis, University of Missouri-Kansas City
- Katsuyuki Matsunaga, Nagoya University, Japan
- Hans J. Seifert, Karlsruhe Institute of Technology, Germany
- Jian Luo, University of California, San Diego
- Sean Smith, The University of New South Wales, Australia
- Haixuan Xu, University of Tennessee
- Kouichi Yasuda, Tokyo Institute of Technology, Japan

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

"Production Root Technology" symbolically refers to an integration of six production technology groups including casting, molding, forming, welding, heat treatment, and surface treatment. The Production Root Technology entails both materials and process technologies. These are hidden behind products and do not frequently appear outward. However, they are very important fundamentally and greatly influence the material features. As the functions of products become more complex and robust, the importance of this Production Root Technology is concurrently growing.

Unlike other technology fields, the Production Root Technology has an interdisciplinary nature in itself, since it inevitably includes a broad spectrum of skills from material synthesis all the way up to parts and modules manufacturing. Also, when the development of industrial components with improved features is demanded, especially by employing the novel materials and ceramics and composites or by employing functional (low-friction, protective or decorative) coating methods, the interdisciplinary approach plays even a greater role. Therefore, this symposium is designated to properly serve and to provide a precious opportunity for the world's leading scientists and engineers from many fields to exchange ideas and to build up new collaborations in the field of Production Root Technology. Many successful stories and noteworthy examples of transforming 3 D (dangerous, dirty, and difficult) aspects of Production Root Technology into the ACE (automatic, clean and easy) form will also be recognized and shared.

Proposed Session Topics

- 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
- Functional powders, bulk and thin films
- Pulsed laser ablation and deposition of functional materials
- Industrial root technology based on GIGAKU concept

Symposium Organizers

- **Kyoung Il Moon**, Korea Institute of Industrial Technology, Korea; kimoon@kitech.re.kr
- **Tadachika Nakayama**, Nagaoka University of Technology, Japan; nky15@vos.nagaokaut.ac.jp
- Sangmok Lee, Korea Institute of Industrial Technology, Korea
- Ali Erdemir, Argonne National Laboratory
- Tim Hosenfeldt, Schaeffler Group, German
- Jun Akedo, AIST, Japan
- Jacob L. Jones, North Carolina State University
- L. K. Sharma, CSIR, India
- Byungkoog Jang, NIMS, Japan
- Kouichi Yasuda, Tokyo Institute of Technology, Japan
- Natalie Sobczak, Foundry Research Institute, Poland
- Naoto Koshizaki, Hokkaido University, Japan

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

Ultrahigh temperature ceramics (UHTCs) and nano-laminated ternary carbides and nitrides (MAX phases) are potential materials for use in extreme environments such as scramjet engine components, leading edges and thermal protection systems for hypersonic vehicles, and cladding materials in generation IV nuclear reactors. However, their thermal/chemical stability in extreme environments, the ability to be formed into complex shapes/sharp edges, thermal shock resistance, irradiation resistance, and damage tolerance are all critical challenges limiting near-term industrial applications of these materials. For such extreme environment applications, new advances in the understanding of structure-property relations and improved performance are needed. These will require development of new approaches for improving the thermal shock resistance, thermochemical stability, damage tolerance and machinability, as well as discovery of new materials to ensure an enormous leap forward in performance. This symposium will focus on design, processing, structure-property relationships, thermal and mechanical properties, oxidation resistance, machining and joining, and stability of UHTCs and MAX phases both from fundamental and application-oriented perspectives.

Proposed Session Topics

- New precursors for powders, coatings, and matrix or fibers of composites
- Processing-microstructure-property relationships of existing systems
- Materials design, novel compositions, 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, ultrahigh temperature)

Symposium Organizers

- **Yanchun Zhou**, Aerospace Research Institute of Material and Processing Technology, China; yczhou@imr.ac.cn, yczhou714@gmail.com
- **Surojit Gupta**, University of North Dakota; surojit.gupta@engr.und.edu
- Jon Binner, University of Birmingham, UK
- Erica L. Corral, University of Arizona
- Per Eklund, Linköping University, Sweden
- William G. Fahrenholtz, Missouri University of Science and Technology
- Greg Hilmas, Missouri University of Science and Technology
- Sea-Hoon Lee, Korea Institute of Materials Science, Korea
- Frederic. Monteverde, Institute of Science and Technology of Ceramics-CNR, Italy
- Miladin Radovic, Texas A&M University
- Jochen Schneider, Materials Chemistry, RWTH Aachen, Aachen, Germany
- Luc J Vandeperre, Imperial College London, UK
- Guo-Jun Zhang, Shanghai Institute of Ceramics, CAS, China

S13: Advanced Materials for Sustainable Nuclear Fission and Fusion Energy

Development of advanced materials and their application for the safer and sustainable nuclear energy and for future fusion energy systems continues to grow. This international symposium provides a venue for material scientists and nuclear engineers to discuss the opportunities and needs for key enabling materials in such energy systems, and the current state-of-the-art science and technology ranging from materials design, processing and properties to their performance in harsh nuclear environments. Included also will be discussions on prospects of their commercial development, and qualification and licensing requirements. The symposium is cosponsored by the ACerS Nuclear and Environmental Technology Division. Abstracts for this symposium are solicited in, but not limited to, the following topical areas:

Proposed Session Topics

- Ceramic and composite technologies 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 for nuclear energy
- Crystalline, amorphous and composite materials for waste immobilization
- Long-term behavior of waste forms thorough experiments and modeling
- Container corrosion in geological disposal conditions
- Novel techniques for characterization and processing
- 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, cladding, assembly, and core evolutions and performance modeling
- Codes and standards, design methodology

Symposium Organizers

- **Yutai Katoh**, Oak Ridge National Laboratory; katohy@ornl.gov
- **Josef Matyáš**, Pacific Northwest National Laboratory; Josef.Matyas@pnnl.gov
- Jake Amoroso, Savannah River National Laboratory
- Christian Deck, General Atomics
- Theodore Besmann, University of South Carolina
- Monica Ferraris, Politecnico di Torino, Italy
- Raghunath Kanakara, University of Idaho
- Weon-Ju Kim, Korea Atomic Energy Research Institute, Korea
- Takashi Nozawa, Japan Atomic Energy Agency, Japan
- Lance Snead, Massachusetts Institute of Technology
- Kumar Sridharan, University of Wisconsin
- Kurt Terrani, Oak Ridge National Laboratory
- Cory Trivelpiece, Savannah River National Laboratory

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S14: Crystalline Materials for Electrical, Optical and Medical Applications

This session will provide a forum for the presentation and discussion of recent research and development activities on crystalline materials. The session will cover all aspects, from basic research and material characterization, through physicochemical aspects of growth, synthesis and deposition techniques, to the technological development of industrialized materials. For this purpose, world-wide experts in the different topics will be invited to introduce their most recent activities. The broad scope of the session assures a wide overview of the state-of-the-art issues on crystalline materials, aiming to stimulate interdisciplinary discussions and collaborations in a wide range of fields.

Proposed Session Topics

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

Symposium Organizers

- **Kiyoshi Shimamura**, National Institute for Materials Science (NIMS), Japan; SHIMAMURA.Kiyoshi@nims.go.jp
- Noboru Ichinose, Waseda University, Japan
- Nerine J. Cherepy, Lawrence Livermore National Laboratory
- Didier Chaussende, Grenoble Institute of Technology (INP), France
- Luisa E. Bausá, Autonomous University of Madrid, Spain
- Alain Largeteau, Institute for Solid State Chemistry Bordeaux (ICMCB), France
- Kenji Toda, Niigata University, Japan
- Mikio Higuchi, Hokkaido University, Japan

S15: Additive Manufacturing and 3-D Printing Technologies

Additive manufacturing and 3-D printing are novel fabrication processes of ceramic components with functional structures. The processes allow for innovative complex part fabrication, client customization, rapid prototyping, and distributed manufacturing. Three-dimensional models are designed minutely according to theoretical concepts in computer graphic applications, and two-dimensional cross sections are created by slicing operations automatically. High resolution laser beams are scanned on a spread ceramic powder bed with or without resin binders to form solid planes of two-dimensional cross sections. Through layer stacking, ceramic precursors or components with the three-dimensional models are fabricated rapidly and exactly. In other processes, paste materials with ceramic particles dispersed are fused from nozzles moving freely in three dimensions to create composite precursors. Various functional components of dielectric lattices to control electromagnetic waves, biomaterials components for medical applications and ceramics electrode with large surface area will be newly developed. Large scale structural components for aerospace and other high temperature applications can be fabricated with internal cooling path networks formed without casting molds. This symposium focuses on superiority of design, efficient processing, and perspicuous evaluations in the additive manufacturing and 3-D printing processes.

Proposed Session Topics

- 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

Symposium Organizers

- **Soshu Kirihara**, Osaka University, Japan; kirihara@jwri.oska-u.ac.jp
- **Mrityunjay Singh**, Ohio Aerospace Institute; mrityunjaysingh@oai.org
- **Michael C. Halbig**, NASA Glenn Research Center; michael.c.halbig@nasa.gov
- Elizabeth Kupp, Pennsylvania State University
- Cesar R. Foschini, Universidae Estadual Paulista, Bauru, Brazil
- Johannes Homa, Lithoz GmbH, Austria
- Miranda Fateri, FH Aachen, Germany
- Cynthia Gomes, BAM, Germany

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Focused Sessions

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

Ceramic-like inorganic polymers can be made under low energy conditions such as ambient temperatures and pressures. These materials include alumino-silicates or "geopolymers," alkali activated cements, phosphates and other chemically bonded inorganic compounds. The use of waste products or components derived from biological materials as starting compounds or as reinforcements in composites demonstrates the eco-friendly and sustainable nature of these materials. Novel potential applications of such composites include hydrogen storage, water purification, porous materials for CO_2 sequestration, thermal insulation, fire resistant building materials, structural ceramic composites reinforced with ceramic, metal or biological reinforcements.

Proposed Session Topics

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

Symposium Organizers

- **Waltraud M. Kriven**, University of Illinois at Urbana-Champaign; kriven@illinois.edu
- Claus H. Rüscher, Leibniz University of Hannover, Germany
- Sylvie Rossignol, GEMH-ENSCI, Limoges, France
- Hubert Rahier, Vrije Universiteit, Brussel, Belgium
- Ruy Sa Ribeiro, National Institute for Amazonian Research, Brazil
- John L. Provis, University of Sheffield, UK

FS2: Advanced Ceramic Materials and Processing for Photonics and Energy

In the past few years significant progress has been reported on the synthesis as well as on the structural, physical and chemical characterization of ceramic nanostructures that exhibit size-dependent properties and on novel glass-based materials for optical lasers and amplifiers. The field of nanomaterials (e.g. nanowires, nanorods, nanotetrapods) has become one of the most active research areas within the nano-science community. Such materials are leading to fundamental new discoveries as well as applications in photovoltaics, optical sources, electroceramics, multiferroic materials, catalysis and solar hydrogen. Optical glasses have been employed in the fabrication of high power fiber lasers with unprecedented performance and for optical waveguide based devices with multiple functionalities.

This session focuses on all ceramic materials with application potentials as functional materials, with particular consideration given to the capability to tailor and control material properties via surface and structural modifications. The session also includes novel optical glass-based materials with new functionalities, new emission wavelengths and with an overview toward integration with other classes of materials (polymers, metals). New nanotechnology tools and technological procedures for the development of new functional devices integrating bottom-up and top-down technologies will be also considered.

Proposed Session Topics

- 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

Symposium Organizers

- **Alberto Vomiero**, Luleå University of Technology, Sweden; alberto.vomiero@ltu.se
- Federico Rosei, University du Quebec, Canada
- Yasuhiro Tachibana, RMIT University, Australia
- David Kisailus, University of California at Riverside

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FS3: Carbon Nanostructures and 2-D Materials, and Composites

This symposium is focused on the frontiers of fundamental and applied science of carbon nanostructures (CNS) and two-dimensional (2-D) materials. Examples of carbon nanostructures can include carbon nanotubes, nanodiamonds, graphene and fullerenes. Graphene has received worldwide attention as result of the 2010 Nobel Prize for Physics and the exceptional properties and growing number of applications of graphene. Some examples of the 2-D nanomaterials presenting a tantalizing prospect of scaling all semiconductor science and technology down to a truly atomic scale are chalcogenide (sulfide, selenide, and telluride) materials with bandgaps comparable to conventional group IV or group III-V semiconductors, and MXenes (transition metal carbides and carbonitrides with 2-D $M_{n+1}X_n$ layers). In all cases, the preparation of composites by the combination of carbon nanostructures and/or 2-D materials with inorganic or organic compounds can lead to the development of new functional materials with unique properties. These composite materials will have important roles in nanotechnology engineering as well their application in different technological areas. Applications in areas of energy, electronic devices, environmental science, nanomedicine and sensing are welcomed.

Proposed Session Topics

- Synthesis of carbon nanostructures and 2-D materials by chemical vapor deposition and others
- Creation of atomic layers of 2-D materials by exfoliation/delamination and unzipping of 3-D materials.
- 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, carbides, nitrides, and sulfides
- New physical and chemical properties of 2-D materials

Symposium Organizers

- **Gustavo Costa**, NASA Glenn Research Center; gustavo.costa@nasa.gov
- Michael Naguib, Oak Ridge National Laboratory
- Ziqi Sun, Queensland University of Technology, Australia
- Talita Mazon, CTI - Centro de Tecnologia da Informação Renato Archer, Brazil
- Maria A. Zaghete, Sao Paulo State University, Brazil

6TH GLOBAL YOUNG INVESTIGATOR FORUM

The Global Young Investigators Forum (GYIF) aims to bring together young researchers from around the world by facilitating scientific discussions to promote the exchange of ideas essential to identifying emerging global challenges at the forefront of ceramic science and engineering research. Young researchers, including students, postdoctoral researchers, young professionals and early career faculty are invited to join this event. The GYIF symposium will help establish global cooperation and networking among young scientists and engineers to approach current and future challenges in ceramic science and technology as well as provide GYIF participants a unique forum at which to showcase their research.

In addition to connecting with young researchers, all GYIF participants will be invited to attend a private luncheon hosted by the President of the American Ceramic Society. The American Ceramic Society will also provide complimentary student registration for a select number of eligible student GYIF presenters. The Global Young Investigator Award laureate will deliver the opening keynote lecture.

Proposed Session Topics

- 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

Symposium Organizers

- **Valerie Wiesner**, NASA Glenn Research Center; valerie.l.wiesner@nasa.gov
- **Eva Hemmer**, University of Ottawa, Canada; ehemmer@uottawa.ca
- **Kathleen Shugart**, UES at Air Force Research Lab; knshugart@gmail.com
- Manabu Fukushima, National Institute of Advanced Industrial Science and Technology (AIST), Japan
- Daniele Benetti, Institut National de la Recherche Scientifique, Canada
- David Poerschke, University of California, Santa Barbara
- Ken'ichiro Kita, National Institute of Advanced Industrial Science and Technology (AIST), Japan
- Lisong Xioa, University Duisburg-Essen, Germany
- Alex Lee, National Cheng Kung University, Taiwan
- Mahmood Shirooye, University of Southern California
- Thomas Fischer, University of Cologne, Germany
- Bai Cui, University of Nebraska–Lincoln

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3RD PACIFIC RIM ENGINEERING CERAMICS SUMMIT

During the past fifty years, Pacific Rim countries have proudly contributed to ground breaking research, technology development, and commercialization in the field of engineered and functional ceramics. These important contributions led to the advancement and wide scale utilization of ceramics in energy, aerospace, healthcare, communication, infrastructure, transportation, environmental, as well as other industrial sectors. In turn, these ceramic technologies and systems led to significant improvements in living standards and quality of life for people across the world.

The International Summit series started in 2011 with a focus on Pacific Rim countries. The second summit in 2012 focused on EU/US ceramic efforts, while in 2013 it was titled the Summit of Americas. The second round for both the Pacific Rim and EU/US summits were held in 2014 and 2015, respectively. In 2017, the 3rd Pacific Rim Engineering Ceramics Summit will bring together experts from academia, industry, and government research institutes/laboratories to discuss the current state of the art and various technical challenges in research and development, engineering, manufacturing, and application of ceramic materials. The goal of the summit is to provide a forum for global information exchange concerning the current status and emerging trends in various ceramic technologies in Pacific Rim countries.

Proposed Session Topics

- Current trends and future directions for research and technology
- Challenges and opportunities for various ceramic technologies
- Energy and environmental issues and role of ceramics
- Ceramic education, training, and knowledge management
- Overview of major ceramics efforts in the region

Symposium Organizers

- **Young-Wook Kim**, University of Seoul, Korea; ywkim@uos.ac.kr
- **H. Suematsu**, Nagaoka University of Technology, Japan; suematsu@etigo.nagaokaut.ac.jp
- **Andrew L. Gyekenyesi**, Ohio Aerospace Institute; andrew.l.gyekenyesi@nasa.gov
- Shibin Jiang, Ad Value Ceramics/ Photonics
- Ramesh Singh, University of Malaya, Malaysia
- Palani Balaya, National University of Singapore, Singapore
- Sirithan Jiemsirilers, Chulalongkorn University, Thailand
- Junichi Tatami, Yohohama National University, Japan
- Shaoming Dong, Shanghai Institute of Ceramics, China
- Ziqi Sun, Queensland University of Technology, Australia

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