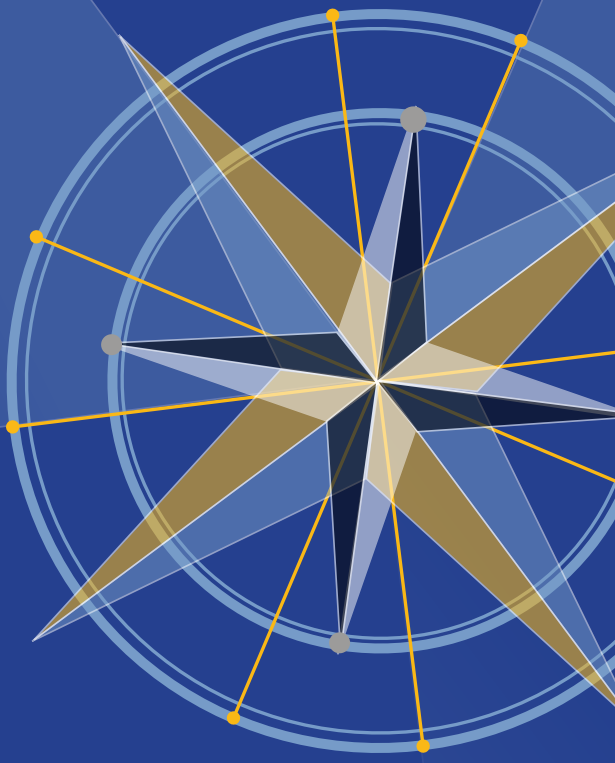
Organized by the Engineering Ceramics Division of The American Ceramic Society

CONFERENCE GUIDE



44TH INTERNATIONAL CONFERENCE AND EXPOSITION ON ADVANCED CERAMICS AND COMPOSITES

JANUARY 26 – 31, 2020 | HILTON DAYTONA BEACH RESORT AND OCEAN CENTER
DAYTONA BEACH, FLORIDA, USA

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ceramics.org/icacc2020

WELCOME

Welcome to Daytona Beach, Florida, for the 44th International Conference and Exposition on Advanced Ceramics and Composites, a showcase for cutting-edge research and product developments in advanced ceramics, armor ceramics, solid oxide fuel cells, ceramic coatings, bioceramics, and more. We hope you benefit from the technical program and Industry Expo that provide an open forum to present and exchange findings on recent advances in ceramic science and technology.

The Engineering Ceramics Division of the American Ceramic Society has organized this prestigious conference since 1977—with tremendous growth in interest and participation from ceramic communities globally.

The key event of this year's conference is the 4th Pacific Rim Engineering Ceramics Summit. The 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. In addition, this year's technical program consists of eighteen symposia, five focused sessions on emerging technologies, the 9th Global Young Investigator Forum, and a special focused session on Diversity, Entrepreneurship, and Commercialization to recognize the ECD Jubilee Global Diversity Award recipients.

Attendees also have access to the Exposition on Tuesday, January 28, and Wednesday, January 29, across the street at the Ocean Center. Plan to connect with representatives from these industry-leading organizations.

Our special thanks go to our event sponsors listed on page iii.

The ECD Executive Committee and volunteer organizers, together with ACerS, thank you for joining us for what should be a stimulating and beneficial experience.

2020 Program Chair

Valerie Wiesner
NASA Langley
Research Center

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Final Program

2019-2020 Engineering Ceramics Division Officers

Chair: **Surojit Gupta**, University of North Dakota, USA

Chair-elect: **Valerie Wiesner**, NASA Langley Research Center, USA

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ACerS Board of Directors Division Liaison: **Jingyang Wang**, Institute of Metal Research, Chinese Academy of Sciences, China

President's Council of Student Advisors Delegate: **Carli Marsico**, University of Washington, USA

Welcome from The American Ceramic Society (ACerS)

The ACerS community is open to all, and we're happy to have you with us. ACerS values diverse and inclusive participation within the field of ceramic science and engineering. We strive to promote involvement and access to leadership opportunity regardless of race, ethnicity, gender, religion, age, sexual orientation, nationality, disability, appearance, geographic location, career path or academic level.

If you are a new member or joining us for the first time, please see the events available for you on page viii, or visit the ACerS registration desk to learn more.

For all guests, if you need access to a nursing mother's room or have other special needs, please ask us at the ACerS registration desk. For childcare services, please check with the hotel concierge for a listing of licensed and bonded caregivers.

We hope you enjoy the conference and want you to know that all individuals are welcome at ACerS conferences and events.

MEETING REGULATIONS

Cell phones silent

During oral sessions conducted during Society meetings, unauthorized photography, videotaping, and audio recording is strictly prohibited for two reasons:
(1) conference presentations are the intellectual property of the presenting authors and as such are protected, and
(2) engaging in photography, videotaping, or audio recording is disruptive to the presenter and the audience.
Failure to comply may result in the removal of the offender from the session or from the remainder of the meeting.

Note: The Society may engage photographers to photograph sessions for marketing and promotional purposes.

No photography/ recording

MEETING REGULATIONS

The American Ceramic Society is a nonprofit scientific organization that facilitates the exchange of knowledge meetings and publication of papers for future reference. The Society owns and retains full right to control its publications and its meetings. The Society has an obligation to protect its members and meetings from intrusion by others who may wish to use the meetings for their own private promotion purpose. Literature found not to be in agreement with the Society's goals, in competition with Society services or of an offensive nature will not be displayed anywhere in the vicinity of the meeting. Promotional literature of any kind may not be displayed without the Society's permission and unless the Society provides tables for this purpose. Literature not conforming to this policy or displayed in other than designated areas will be disposed. The Society will not permit unauthorized scheduling of activities during its meeting by any person or group when those activities are conducted at its meeting place in interference with its programs and scheduled activities. The Society does not object to appropriate activities by others during its meetings if it is consulted with regard to time, place, and suitability. Any person or group wishing to conduct any activity at the time and location of the Society meeting must obtain permission from the Executive Director or Director of Meetings, giving full details regarding desired time, place and nature of activity.

Diversity Statement: The American Ceramic Society values diverse and inclusive participation within the field of ceramic science and engineering. ACerS strives to promote involvement and access to leadership opportunity regardless of race, ethnicity, gender, religion, age, sexual orientation, nationality, disability, appearance, geographic location, career path or academic level. Visit the registration desk if you need access to a nursing mother's room or need further assistance. For childcare services, please check with the concierge at individual hotels for a listing of licensed and bonded caregivers.

The American Ceramic Society plans to take photographs and video at the conference and reproduce them in educational, news or promotional materials, whether in print, electronic or other media, including The American Ceramic Society's website. By participating in the conference, you grant The American Ceramic Society the right to use your name and photograph for such purposes. All postings become the property of The American Ceramic Society.

During oral sessions conducted during Society meetings, **unauthorized photography, videotaping and audio recording is prohibited.** Failure to comply may result in the removal of the offender from the session or from the remainder of the meeting.

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

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International Journal of Applied Ceramic Technology

International Journal of Ceramic Engineering & Science

2020 AWARD SPEAKERS

MONDAY, JANUARY 27 | 8:30 A.M. – 12:00 P.M.

Opening Remarks 8:30 A.M. | HILTON COQUINA D & E

JAMES L. MUELLER AWARD | 8:50 AM

Weber

William J. Weber, Governor's Chair Professor, University of Tennessee, USA

Title: *Ion-Beam modification and nanostructure evolution in ceramics*

Abstract: Ion-beam modification is a result of both inelastic energy loss to electrons and elastic energy loss to atomic nuclei. The effects of these different energy loss pathways on defect production, nanostructure evolution and phase transitions in ceramics are complex. Using experimental and computational approaches, the separate and coupled effects of energy loss to electrons and atomic nuclei on ion-beam modification of ceramics have been investigated over a range of ions and energies. These studies demonstrate: 1) formation of nanoscale phase transitions by high electronic energy dissipation and by synergistic effects between pre-existing defects and electronic energy loss; 2) coupled effects of energy loss to electrons and atomic nuclei on nanograin growth; and 3) ionization-induced defect annealing. The diverse range of effects provides new paradigms in ion-beam modification of ceramics on the role of electronic energy loss in defect engineering and functional nanostructure formation. This research has advanced understanding on the role of defects in electronic energy dissipation and electron-phonon coupling, and the knowledge gained provides insights for creating novel interfaces and nanostructures with controlled morphologies, phases and local strain, which can be employed to engineer functionalized thin film structures with tunable electronic, ionic, magnetic and optical properties.

BRIDGE BUILDING AWARD | 9:30 AM

Ishikawa

Toshihiro Ishikawa, Vice President, Tokyo University of Science, Yamaguchi (Sanyo-Onoda City University), Japan

Title: *Development of precursor ceramics using organic silicon polymer*

Abstract: This presentation will discuss our unique precursor ceramics developed by author and coworkers in Ube Industries, Ltd.. We have developed many types of functional ceramics using polycarbosilane as a raw material. Since 1983, several grades of SiC-based fibers have been produced from polycarbosilane in Ube Industries, Ltd. Of these grades, we developed the highest heat-resistant SiC-polycrystalline fiber (Tyranno SA), which can withstand up to 2000°C, using organic silicon polymer containing small amount of aluminum as a starting material (T.Ishikawa, et al, *Nature*, 391 (1998) 773). In the same year, we also developed a new type of tough, thermally conductive SiC composite (SA-Tyrannohex) with high strength up to 1600°C in air. This ceramic consists of a highly ordered, close-packed structure of very fine hexagonal columnar SiC-fibers with a thin interfacial carbon layer between them (T.Ishikawa, et al., *Science*, 282 (1998) 1295). Furthermore, we successfully developed a strong photo-catalytic fiber (TiO_2/SiO_2 fiber) with a gradient surface layer composed of TiO_2-nanocrystals making the best use of controlled phase separation (bleed out) of additives (titanium(IV)tert-butoxide) contained in polycarbosilane (T.Ishikawa, et al., *Nature*, 416 (2002) 64). In this presentation, the development story and subsequent progress will be discussed.

2020 PLENARY SPEAKERS | 10:40 AM

Balázsi

Katalin Balázsi, Head of Thin Film Physics Department, Institute for Technical Physics and Materials Science, Centre for Energy Research, Hungarian Academy of Sciences, Budapest, Hungary

Title: *Ceramic biomaterials: From traditional technologies to novel applications*

Abstract: The 400 000 artificial hip joint operations made every year in the word and there are 25 000 000 people with a total hip replacement. The wear and risk of the implant loosening increases so that after 10 years 10-20% of the implants have to be renewed. Biomaterials used for implant should possess some important properties in order to long-term usage in the body without rejection. The biocompatibility, mechanical, chemical and surface properties play a key role in the creation of sufficient and long term functional replacements. New fundamental research outcomes with industrial perspectives are given for understanding the applications of ceramics in load-bearing and low-load-bearing bioimplants with directions for future developments. Nowadays, Si_3N_4 is a new bioceramic with extremely good mechanical properties. Hydroxyapatite (HA) is a widely used bioceramic in implantology considering its high bioactivity. A bioactive coating (HA) on the bioinert ceramic implant's surface (Si_3N_4) could help avoid the rejection from the body in the critical early few days after the operation. The preparation of bioceramics will be showed from traditional technologies to novel applications. The main trends and fundamental scientific problems will be discussed.

11:20 AM

Gray

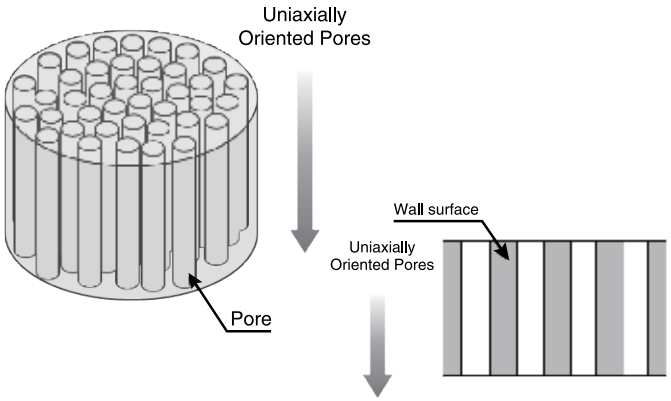
George T. (Rusty) Gray, III, Laboratory Fellow, Los Alamos National Laboratory, USA

Title: *Developing a pathway to microstructure-aware predictive capability for the shock / dynamic response of materials*

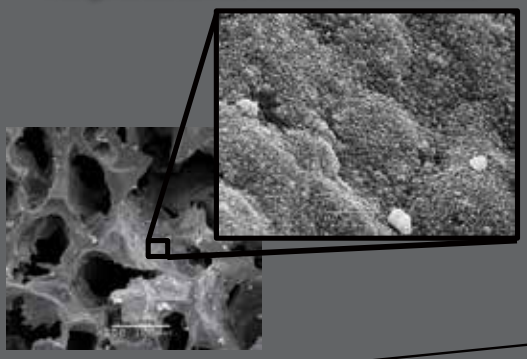
Abstract: It is sixty years since Cyril Stanley Smith's seminal paper describing the effects of shock loading on the structure / property behavior of materials. While numerous experimental observations have fostered the correlation of post-shock microstructural parameters, such as dislocations, point defects, deformation twins, shock-induced phase products, etc., quantitative predictive capability of the defect generation and damage evolution in materials has yet to be realized. Broadly based defect generation/storage phenomenology presenting a unified view of the material structure/property aspects of shock-wave deformation has proven very difficult. However, changes in design and manufacturing paradigms applied to events dominated by dynamic-loading processes have placed increased emphasis on developing physically-based predictive materials models of shock effects on materials as well as amazing innovations in in-situ shock diagnostics. In this talk, a survey of the evolution in the state-of-our-understanding of defect generation and damage evolution is discussed and thoughts on the evolving capabilities to move shock / dynamic behavior of materials research from observation to design and control is presented. Examples of how utilizing "real-time", post-mortem, and "in-situ" experimental approaches together are needed to facilitate quantification 4D processes during dynamic/shock-wave loading will be discussed.

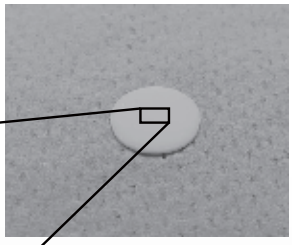
Porous Ceramic

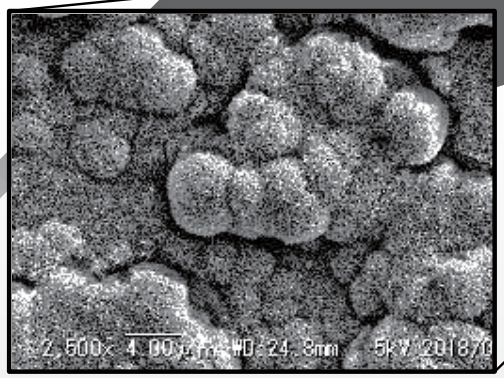
ADAMANT Namiki
3-8-22 Shinden Adachi-ku
Tokyo 123-8511
Japan
https://www.ad-na.com/en/



Hybrid Biomaterial







Bio-Zirconia with bioactive surface

- We have developed zirconia with a bioactive surface.
- Although this developed product is zirconia, it chemically bonds to the living body, furthermore, high strength is not impaired.
- It is also a special process, so it has excellent cost performance.
- Uniaxially Oriented Pores This property can also be expressed in our highly rigid zirconia with uniaxially oriented pores.
- These zirconia with a bioactive surface and bioactive pores zirconia materials are expected as new biomaterials.

ADAMANT Namiki

SCHEDULE AT A GLANCE

Hilton Daytona Beach Resort/Ocean Walk Village | 100 North Atlantic Avenue
Exposition & Poster Session Location | Ocean Center Conference Center/Arena

SUNDAY, JANUARY 26

Conference registration	2:00 p.m. – 7:00 p.m.	Hilton – Coquina Foyer
Member and publication center	2:00 p.m. – 7:00 p.m.	Hilton – Coquina Foyer
Speaker ready room	2:00 p.m. – 7:00 p.m.	Hilton – Manatee
Welcome reception	5:30 p.m. – 7:00 p.m.	Hilton – Coquina Foyer

MONDAY, JANUARY 27

Conference registration	7:00 a.m. – 6:00 p.m.	Hilton – Coquina Foyer
Member and publication center	7:00 a.m. – 6:00 p.m.	Hilton – Coquina Foyer
Speaker ready room	8:00 a.m. – 4:00 p.m.	Hilton – Manatee
Opening awards ceremony & plenary session	8:30 a.m. – 12:00 p.m.	Hilton – Salon D&E
Companion coffee	9:00 a.m. – 10:30 a.m.	Hilton - Oceanview
Coffee break	10:10 a.m. – 10:40 a.m.	Hilton
Lunch on own	12:00 p.m. – 1:20 p.m.	
Concurrent technical sessions	1:30 p.m. – 6:10 p.m.	Hilton
Coffee break	3:00 p.m. – 3:20 p.m.	Hilton
New Member Reception	5:30 p.m. – 6:30 p.m.	Hilton - Oceanview
ACerS Global Graduate Researchers Network Student and Young Professional Networking Mixer	7:30 p.m. – 9:00 p.m.	Hilton - Oceanview

TUESDAY, JANUARY 28

Conference registration	7:30 a.m. – 6:00 p.m.	Hilton – Coquina Foyer
Member and publication center	7:30 a.m. – 6:00 p.m.	Hilton – Coquina Foyer
Speaker ready room	8:00 a.m. – 4:00 p.m.	Hilton – Manatee
Concurrent technical sessions	8:30 a.m. – 12:00 p.m.	Hilton
Coffee break	10:00 a.m. – 10:20 a.m.	Hilton
Exhibitor set-up	12:00 p.m. – 4:00 p.m.	Ocean Center Arena
ACerS journal workshop: Expand your impact	12:00 p.m	Flagler B/C
Lunch on own	12:00 p.m. – 1:20 p.m.	
Concurrent technical sessions	1:30 p.m. – 5:30 p.m.	Hilton
Coffee break	3:00 p.m. – 3:20 p.m.	Hilton
Poster session A set-up	3:00 p.m. – 4:30 p.m.	Ocean Center Arena
Exhibits & poster session A, including reception	5:00 p.m. – 8:00 p.m.	Ocean Center Arena

WEDNESDAY, JANUARY 29

Conference registration	7:30 a.m. – 5:30 p.m.	Hilton – Coquina Foyer
Member and publication center	7:30 a.m. – 5:30 p.m.	Hilton – Coquina Foyer
Speaker ready room	8:00 a.m. – 4:00 p.m.	Hilton – Manatee
Concurrent technical sessions	8:30 a.m. – 12:00 p.m.	Hilton
Coffee break	10:00 a.m. – 10:20 a.m.	Hilton
Lunch on own	12:00 p.m. – 1:20 p.m.	
Concurrent technical sessions	1:30 p.m. – 6:00 p.m.	Hilton
Coffee break	3:00 p.m. – 3:20 p.m.	Hilton
Poster session B set-up	3:00 p.m. – 4:30 p.m.	Ocean Center Arena
Exhibits & poster session B, including reception	5:00 p.m. – 7:30 p.m.	Ocean Center Arena

THURSDAY, JANUARY 30

Conference registration	7:30 a.m. – 5:30 p.m.	Hilton – Coquina Foyer
Member and publication center	7:30 a.m. – 5:30 p.m.	Hilton – Coquina Foyer
Speaker ready room	8:00 a.m. – 4:00 p.m.	Hilton – Manatee
Concurrent technical sessions	8:30 a.m. – 12:00 p.m.	Hilton
Coffee break	10:00 a.m. – 10:20 a.m.	Hilton
Lunch on own	12:00 p.m. – 1:20 p.m.	
Concurrent technical sessions	1:30 p.m. – 5:30 p.m.	Hilton
Coffee break	3:00 p.m. – 3:20 p.m.	Hilton
Last Night reception	5:30 p.m. – 6:30 p.m.	Hilton – Coquina Foyer
Women in ceramics luncheon (ticketed event)	12:00 p.m. – 1:20 p.m.	Oceanview

FRIDAY, JANUARY 31

Conference registration	8:00 a.m. – 12:00 p.m.	Hilton – Coquina Foyer
Concurrent technical sessions	8:30 a.m. – 11:40 a.m.	Hilton
Coffee break	10:00 a.m. – 10:20 a.m.	Hilton

SPECIAL EVENTS

Welcome Reception

SUNDAY, JANUARY 26 | 5:30 – 7:00 P.M.
HILTON – COQUINA FOYER

Network with colleagues at this reception.

New Member Reception

MONDAY, JANUARY 27 | 5:30 – 6:30 P.M.
HILTON – OCEANVIEW

New ACerS members are invited to join us for a casual gathering and opportunity to network with other new members. (by invitation only)

ACerS Global Graduate Researcher Network

Student and Young Professional Networking Mixer

MONDAY, JANUARY 27 | 7:30 – 9:00 P.M.

HILTON – OCEANVIEW

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

Shot Glass Contest

TUESDAY, JANUARY 28
6:45 – 7:45 P.M.

THE OCEAN CENTER, EXHIBIT SHOW FLOOR

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

Test your skills with this design contest! Competitors get 15 drinking straws to build a protective device for their shot glass donated by SCHOTT. Then, the glasses are dropped from increasing heights until the breaking threshold is reached. The glass with the highest successful drop distance wins!

Exposition & Poster Session Hours

TUESDAY, JANUARY 28 | 5:00 – 8:00 P.M.
WEDNESDAY, JANUARY 29 | 5:00 – 7:30 P.M.
OCEAN CENTER CONFERENCE CENTER / ARENA

Visit with vendors from the ceramic and glass industry.

ACerS Journal Workshop: Expand your Impact

TUESDAY, JANUARY 28 | 12:00 – 1:45 P.M.
FLAGLER B/C

Sponsored by: WILEY

Successful research impacts both the field of the research and broader society. While most researchers understand academic impact of publications, few are trained to address societal impact.

This workshop discusses methods for improving the reach of your publications including options for sharing your work. Furthermore, the workshop provides insight on the need for and hands-on experience with formulating societal impact language.

Lunch will be provided.

The Student and Industry Failure Trials (SIFT) Competition

WEDNESDAY, JANUARY 29 | 5:30 – 7:30 PM
OCEAN CENTER CONFERENCE CENTER / ARENA

This competition will challenge teams of students, industry professionals, and academics to analyze a ceramic material which has failed in an industrial setting and identify the failure mechanism. The competition is open to any student from undergraduate through graduate levels of study, and any interested industry professionals or researchers are welcome to participate as advisors to the teams of students. The SIFT Competition is organized by the President's Council of Student Advisors.

Women in Ceramics Luncheon

THURSDAY, JANUARY 30 | 12:00 – 1:20 P.M.
OCEANVIEW

Last Night Reception

THURSDAY, JANUARY 30 | 5:30 – 6:30 P.M.
HILTON – COQUINA FOYER

Sponsored by:

Recap the week's excitement with your colleagues and friends.

Mechanical Properties of Ceramics and Glass 2020 Short Course*

THURSDAY, JANUARY 30 | 8:30 A.M. – 5:00 P.M
FRIDAY, JANUARY 31 | 8:30 A.M. – 5:00 P.M.
LOCATION: HILTON – COQUINA SALON C (NORTH TOWER)
INSTRUCTOR: **George D. Quinn**, NIST

Additional registration fee is required.*

The ECD Global Young Investigator Award

MONDAY, JANUARY 27 | 1:30 PM | HILTON COQUINA SALON G

The Global Young Investigator Award laureate delivers the opening keynote lecture as a part of the 9th Global Young Investigator Forum.


Mhin

Sungwook Mhin, Senior Researcher, Korea Institute of Industrial Technology (KITECH), Korea

Title: *Advantageous crystalline–amorphous phase boundary for water oxidation*

Engineering Ceramics Division (ECD) Jubilee Global Diversity Award

MONDAY, JANUARY 27 | 1:30 – 3:20 P.M.
HILTON COQUINA SALON E

This award is intended to recognize exceptional early- to mid-career professionals who are women and/or underrepresented minorities (i.e. based on race, ethnicity, nationality and/or geographic location) in the area of ceramic science and engineering.


Yun

1:30 PM

Hui-suk Yun, Materials Processing Innovation Research Division, Korea Institute of Materials Science (KIMS), Korea

Title: *Current technological advances in multi-ceramic additive manufacturing*


Casalegno

2:20 PM

Valentina Casalegno, Institute of Materials Physics and Engineering, Politecnico di Torino (POLITO), Italy

Title: *Ceramic and composite joints for nuclear applications*

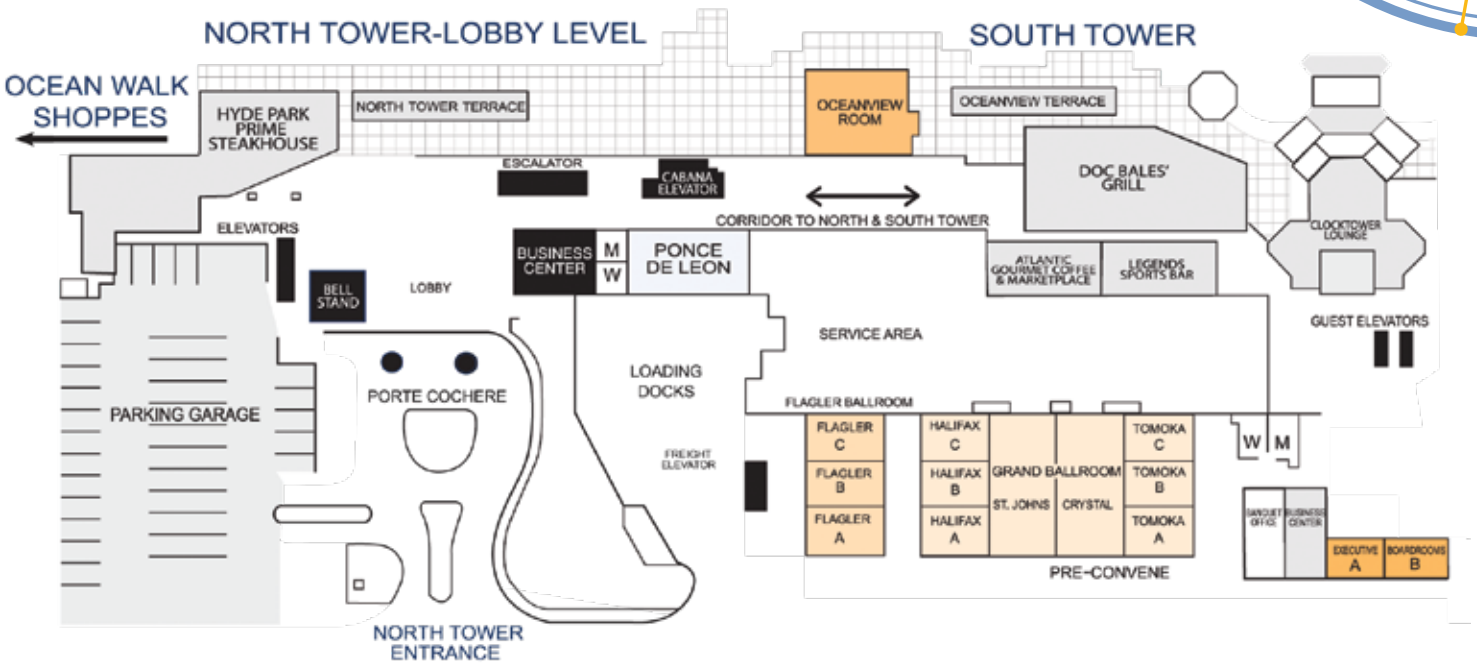

Tallon

3:20 PM

Carolina Tallon, Department of Materials Science and Engineering and Advanced Manufacturing Team, Virginia Polyechnic Institute and State University, USA

Title: *Multi-scale thermal protective systems for extreme environments: Design, processing, properties and modeling*

HILTON MEETING ROOM FLOOR PLAN



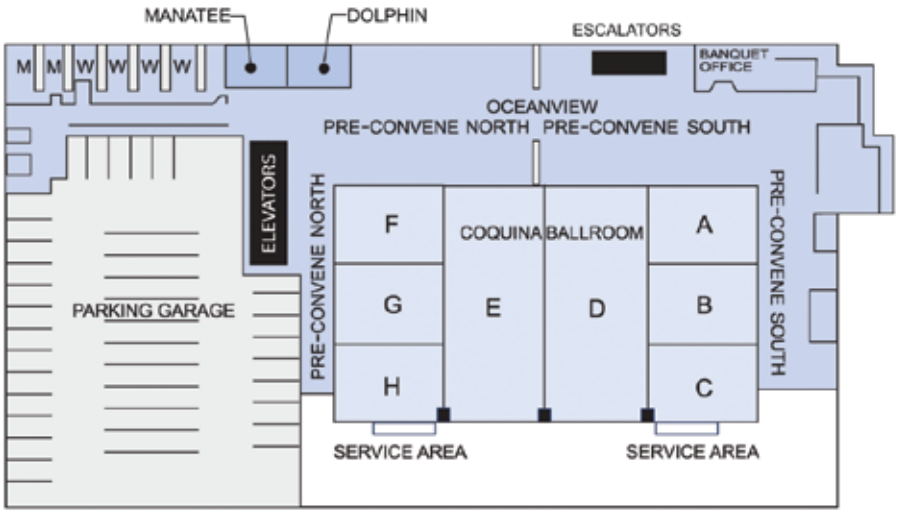
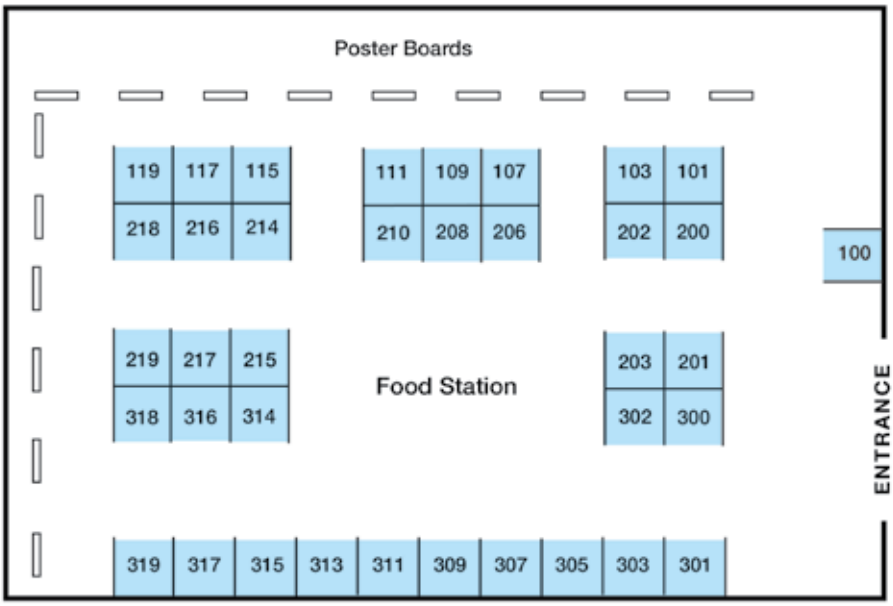


EXHIBIT FLOOR PLAN AND BOOTH INFORMATION

TUESDAY, JANUARY 28 | 5:00 – 8:00 PM
WEDNESDAY, JANUARY 29 | 5:00 – 7:30 PM

OCEAN CENTER (across the street from the Hilton)



Stop by any vendor booth in our ICACC 2020 Expo and receive a raffle ticket for a drawing to win the following exciting prizes:

FIRST PRIZE:
Phase Equilibria Diagrams PC Database, Version 4.4 USB single license ($1,095 value)

SECOND PRIZE:
ICACC 2021 free registration ($730 value)

THIRD PRIZE:
"Engineered Ceramics: Current Status and Future Products" technical book ($175 value)

Turn your raffle tickets in during exhibit hours at the ACerS booth (100) in the Exhibit Hall. You may turn in as many tickets as you gather from exhibitors, so the more you visit with our vendors, the better your odds to win! The prizes will be drawn at 6:30 p.m., Wednesday, January 29, at the ACerS booth. You need not be present to win. This is a great opportunity to collaborate with potential business partners, and walk away with something useful for your business or career.

Exhibitor	Booth No.
3DCERAM SINTO INC.	318
AdValue Technology, LLC	216
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Haiku Tech	208
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ICACC EXPO PREVIEW

Exhibit dates:

Tuesday, January 28: | 5:00 – 8:00 p.m. | Wednesday, January 29 | 5:00 – 7:30 p.m.

3DCERAM-SINTO
Booth No. 318
3DCERAM-SINTO regroups an un-parallel expertise in the technology of 3D printing, offering a complete package by accompanying their clients on their chosen projects, choice of ceramic, production specification, R&D, modification of 3D parts just to industrialization, on demand production, the selling of the CERAMAKER 900 printers and the associated consumables..
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(PACC-FMAs 2020)

Hilton Panama | Panama City, Panama | July 19-23, 2020

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S2: ADVANCED CERAMIC COATINGS FOR STRUCTURAL, ENVIRONMENTAL, AND FUNCTIONAL APPLICATIONS

Peter Mechnich, German Aerospace Center (DLR), Germany; Douglas E. Wolfe, The Pennsylvania State University, USA; Bryan Harder, NASA Glenn Research Center, USA; Eugene Medvedovski, Endurance Technologies Inc., Canada; Elizabeth Opila, University of Virginia, USA; Eric H. Jordan, The University of Connecticut, USA; Robert Vaßen, Forschungszentrum Jülich, Germany; Kang N. Lee, NASA Glenn Research Center, USA; Byung-Koog Jang, Kyushu University, Japan; David Poerschke, University of Minnesota, USA; Ping Xiao, University of Manchester, UK; Julin Wan, GE Global Research, USA; Yutaka Kagawa, University of Tokyo, Japan; Soumendra N. Basu, Boston University, USA; Rodney W. Trice, Purdue University, USA; Uwe Schulz, German Aerospace Center (DLR), Germany; Kaylan Wessels, Pratt and Whitney, USA; Yiguang Wang, Northwestern Polytechnical University, China; Satoshi Kitaoka, Japan Fine Ceramics Center, Japan

S3: 17TH INTERNATIONAL SYMPOSIUM ON SOLID OXIDE CELLS (SOC): MATERIALS, SCIENCE AND TECHNOLOGY

Mihails Kusnezoff, Fraunhofer IKTS, Germany; Narottam P. Bansal, NASA Glenn Research Center, USA; Tatsumi Ishihara, Kyushu University, Japan; Federico Smeacetto, Politecnico di Torino, Italy; Jeffrey W. Stevenson, Pacific Northwest National Laboratory, USA; Julie Mougin, CEA, France; Ruey-Yi Lee, Institute of Nuclear Energy Research, Taiwan; Vincenzo Esposito, DTU Energy Conversion, Denmark; Scott A. Barnett, Northwestern University, USA; Tae Ho Shin, Korea Institute of Ceramic Engineering and Technology, South Korea; Prabhakar Singh, University of Connecticut, USA; Sebastian Molin, Gdansk University of Technology, Poland

S4: ARMOR CERAMICS—CHALLENGES AND NEW DEVELOPMENTS

Jerry LaSalvia, CCDC ARL, USA; Jeffrey Swab, CCDC ARL, USA; Brady Aydelotte, CCDC ARL, USA; Michael Bakas, ARO, USA; Kristopher Behler, CCDC ARL, USA; Victoria Blair, CCDC ARL, USA; Peter Brown, DSTL, UK; Richard Haber, Rutgers University, USA; Christopher Marvel, Lehigh University, USA; Patrik Lundberg, FOI, SE; Ghatu Subhash, University of Florida, USA; Andrew Wereszczak, ORNL, USA

S5: NEXT GENERATION BIOCERAMICS AND BIOCOMPOSITES

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S6: ADVANCED MATERIALS AND TECHNOLOGIES FOR RECHARGEABLE ENERGY STORAGE

Palani Balaya, National University of Singapore, Singapore; Mickael Dollé, University of Montrael, Canada; Olivier Guillon, Forschungszentrum Jülich, Germany; Ilias Belharouak, Oak Ridge National Laboratory, USA; Fei Chen, Wuhan University of Technology, China; XiangXin Guo, Qingdao University, China; Wei Lai, Michigan State University, USA; Valerie Pralong, CNRS CRISMAT, France; Naoaki Yabuuchi, Yokohama National University, Japan

S7: 14TH INTERNATIONAL SYMPOSIUM ON FUNCTIONAL NANOMATERIALS AND THIN FILMS FOR SUSTAINABLE ENERGY HARVESTING, ENVIRONMENTAL, AND HEALTH APPLICATIONS

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S8: 14TH INTERNATIONAL SYMPOSIUM ON ADVANCED PROCESSING AND MANUFACTURING TECHNOLOGIES FOR STRUCTURAL AND MULTIFUNCTIONAL MATERIALS AND SYSTEMS (APMT14)

Zhengyi Fu, Wuhan University of Technology, China; Hisayuki Suematsu, Nagaoka University of Technology, Japan; Tatsuki Ohji, National Institute of Advanced Industrial Science and Technology (AIST), Japan; Enrico Bernardo, University of Padova, Italy; Surojit Gupta, University of North Dakota, USA; Hyung Sun Kim, Inha University, Korea; Haixue Yan, Queen Mary, University of London; Jerzy Lis, AGH University of Science and Technology, Poland; Eugene Medvedovski, Endurance Technologies Inc., Canada; Lisa Rueschhoff, Purdue University, USA; Richard D. Sisson, Jr., Worcester Polytechnic Institute, USA; Tohru S. Suzuki, National Institute for Materials Science (NIMS), Japan; Satoshi Tanaka, Nagaoka University of Technology, Japan; Weimin Wang, Wuhan University of Technology, China; Yiquan Wu, Alfred University, USA

S9: POROUS CERAMICS: NOVEL DEVELOPMENTS AND APPLICATIONS

Paolo Colombo, University of Padova, Italy; Manabu Fukushima, National Institute of Advanced Industrial Science and Technology (AIST), Japan; Tobias Fey, University of Erlangen-Nuremberg, Germany; Farid Akhtar, Lulea University of Technology, Sweden; Samuel Bernard, Institut de Recherche sur les Céramiques de Limoges, France; Jacob George, Corning, USA; Aleksander Gurlo, Technical University Berlin, Germany; Oleksandr Kravchenko, Old Dominion University, USA; Miki Inada, Kyushu University, Japan; C.D. Madhusoodana, Ceramic Technological Institute Bharat Heavy Electricals Ltd., India; Jian-feng Yang, Xi'an Jiaotong University, China

S10: MODELING, GENOME, INFORMATICS, AND MACHINE LEARNING

Jingyang Wang, Institute of Metal Research, Chinese Academy of Sciences, China; Hyung-Tae Kim, Korean Institute of Ceramic Engineering and Technology, Korea; Jian Luo, University of California, San Diego, USA; Katsuyuki Matsunaga, Nagoya University, Japan; Sergei Manzhos, National University of Singapore, Singapore; Paul Rulis, University of Missouri-Kansas City, USA; Hans J. Seifert, Karlsruhe Institute of Technology, Germany; Sean Smith, The University of New South Wales, Australia; Valentino Cooper, Oak Ridge National Laboratory, USA; Gerard L. Vignoles, University of Bordeaux, France; William J. Weber, University of Tennessee, USA; Haixuan Xu, University of Tennessee, USA

S11: ADVANCED MATERIALS AND INNOVATIVE PROCESSING IDEAS FOR PRODUCTION ROOT TECHNOLOGIES

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S12: ON THE DESIGN OF NANO-LAMINATED TERNARY TRANSITION METAL CARBIDES/ NITRIDES (MAX PHASES) AND BORIDES (MAB PHASES), AND THEIR 2D COUNTERPARTS (MXENES, MBENES)

Surojit Gupta, University of North Dakota, USA; Miladin Radovic, Texas A&M University, USA; Konstantza Lambrinou, SCK · CEN, Belgium; Jochen M. Schneider, Uppsala University, Sweden; Jie Zhang, Institute of Metal Research, Chinese Academy of Sciences, China; Thierry Cabioch, Université de Poitiers, France; Babak Anasori, Drexel University, USA; Sylvain Dubois, Université de Poitiers, France; Per Eklund, Linköping University, Sweden; Johanna Rosen, Linköping University, Sweden; Jesus Gonzalez, RWTH Aachen University, Germany

S13: DEVELOPMENT AND APPLICATIONS OF ADVANCED CERAMICS AND COMPOSITES FOR NUCLEAR FISSION AND FUSION ENERGY SYSTEMS

Phil Edmondson, Oak Ridge National Laboratory, USA; Takaaki Koyanagi, Oak Ridge National Laboratory, USA; Cory Trivelpiece, Savannah River National Laboratory, USA; Kyle Brinkman, Clemson University, USA; Kevin Fox, Savannah River National Laboratory, USA; Monica Ferraris, Politecnico di Torino, Italy; Weon-Ju Kim, Korea Atomic Energy Research Institute, Korea; Tatsuya Hinoki, Kyoto University, Japan; Cédric Sauder, CEA, France

S14: CRYSTALLINE MATERIALS FOR ELECTRICAL, OPTICAL, AND MEDICAL APPLICATIONS

Kiyoshi Shimamura, National Institute for Materials Science, Japan; Noboru Ichinose, Waseda University, Japan; Joanna McKittrick, University of California, San Diego, USA; Victoria Blair, U.S. Army Research Laboratory, USA; James Wollmershauser, Naval Research Laboratory, USA; Mariya Zhuravleva, University of Tennessee, USA; Yoshihiko Imanaka, Fujitsu Laboratories Ltd., Japan; Romain Gaume, University of Central Florida, USA; Takayuki Yanagida, Nara Institute of Science and Technology, Japan; Yiquan Wu, Alfred University, USA; Kenji Toda, Niigata University, Japan

S15: 4TH INTERNATIONAL SYMPOSIUM ON ADDITIVE MANUFACTURING AND 3D PRINTING TECHNOLOGIES

Soshu Kirihara, Osaka University, Japan; Mrityunjay Singh, Ohio Aerospace Institute, USA; Michael Halbig, NASA Glenn Research Center, USA; Hui-Suk Yun, KIMS, Korea; Martin Schwentenwein, Lithoz GmbH, Austria; Alberto Ortona, SUPSI, Switzerland; Giorgia Franchin, Università di Padova, Italy; Tyrone Jones, Army Research Laboratory, USA; Tobias A. Schaedler, HRL Laboratories LLC, USA; Arnaldo Moreno Berto, ITC, Spain

S16: GEOPOLYMERS, INORGANIC POLYMERS, AND SUSTAINABLE MATERIALS

Waltraud M. Kriven, University of Illinois at Urbana-Champaign, USA; Joseph Davidovits, Geopolymer Institute, St. Quentin, France; Ghassan Al Chaar, US Army Corps of Engineers, ERDC, CERL, USA; Don Seo, Arizona State University, USA; Henry A. Colorado, Universidad de Antioquia, Medellin, Colombia

S17: ADVANCED CERAMIC MATERIALS AND PROCESSING FOR PHOTONICS AND ENERGY

Alberto Vomiero, Cá Foscari University of Venice, Italy; Federico Rosei, INRS, Canada; Yasuhiro Tachibana, RMIT University, Australia; David Kisailus, University of California at Riverside, USA; Tohru Sekino, Osaka University, Japan; Isabella Concina, Luleå University of Technology, Sweden; Haiguang Zhao, Qingdao University, China; Francesco Enrichi, Centro Enrico Fermi, Rome, Italy; Daniele Benetti, INRS, Canada

S18: ULTRA-HIGH TEMPERATURE CERAMICS

William G. Fahrenholtz, Missouri University of Science and Technology, USA; Sea-Hoon Lee, Korea Institute of Materials Science, Korea; Frederic Monteverde, National Research Council-Institute of Science and Technology for Ceramics, Italy; Luc J Vandeperre, Imperial College London, UK; Guo-Jun Zhang, Donghua University, Shanghai, China; Carolina Tallon, Virginia Tech, USA; Bai Cui, University of Nebraska-Lincoln, USA; Ji Zou, Wuhan University of Technology, China; Lisa Rueschhoff, Air Force Research Laboratory, USA; Emanuel Ionescu, Technical University Darmstadt, Germany

FOCUSED SESSION 1: BIO-INSPIRED PROCESSING OF ADVANCED MATERIALS

Joaquin Ramirez-Rico, University of Seville, Spain; Florian Bouville, Imperial College London, UK; Francois Barthelat, McGill University, Canada; Esther Garcia-Tuñon, University of Liverpool, UK; Denis Gebauer, Leibniz University of Hannover, Germany; Steven Naleway, University of Utah, USA; Eduardo Saiz, Imperial College London, UK; Simone Sprio, Institute of Science and Technology for Ceramics-ISTEC, Italy; Pablo Zavattieri, Purdue University, USA

FOCUSED SESSION 2: IMAGE-BASED CHARACTERIZATION AND MODELLING OF CERAMICS BY NON-DESTRUCTIVE EXAMINATION TECHNIQUES

Tobias Fey, Friedrich-Alexander-University Erlangen-Nürnberg, Germany; You Zhou, National Institute of Advanced Industrial Science and Technology (AIST), Japan; Satoshi Tanaka, Nagaoka University of Technology, Japan; Alisa Stratulat, ZEISS Research Microscopy Solutions, USA

FOCUSED SESSION 3: MOLECULAR-LEVEL PROCESSING AND CHEMICAL ENGINEERING OF FUNCTIONAL MATERIALS

Sanjay Mathur, University of Cologne, Germany; Emanuel Ionescu, Technische Universität Darmstadt, Germany; Shashank Mishra, Universite of Lyon, France; Maarit Karppinen, Aalto University, Finland; Thomas Fischer, University of Cologne, Germany; Gurpreet Singh, Kansas University, USA; Gunnar Westin, Uppsala University, Sweden; Claudia Wickleder, Siegen University, Germany; Ausrine Bartasyte, University of Franche-Comté, France; Hirokazu Katsui, National Institute of Advanced Industrial Science and Technology (AIST), Japan; Silke Christiansen, Helmholtz Zentrum Berlin, Germany; K. Byrappa, Adichunchanagiri University, India; Yoshiyuki Sugahara, Waseda University, Japan

SYMPOSIA ORGANIZERS

2020 PROGRAM CHAIR: **Valerie Wiesner**, NASA Langley Research Center, USA

FOCUSED SESSION 4: GREEN TECHNOLOGIES AND CERAMIC/CARBON REINFORCED POLYMERS

Manoj K. Mahapatra, University of Alabama at Birmingham, USA; Satoshi Kobayashi, Tokyo Metropolitan University, Japan; Henry A. Colorado, Universidad de Antioquia UdeA, Medellin, Colombia; Manabu Fukushima, National Institute of Advanced Industrial Science and Technology (AIST), Japan; Jorge Barcena, Tecnalia Research and Innovation, Spain; Enrico Bernardo, University of Padova, Italy; Surojit Gupta, University of North Dakota, USA; Seiichi Nomura, The University Texas at Arlington, USA; Marino Quaresimin, University of Padova, Italy; Takenobu Sakai, Saitama University, Japan; Federico Smeacetto, Politecnico di Torino, Italy; Carlos Mauricio F. Vieira, Universidade Estadual do Norte Fluminense, Brazil; Vladimir Vinogradov, Newcastle University, UK; Tomohiro Yokozaki, The University of Tokyo

FOCUSED SESSION 5: MATERIALS FOR THERMOELECTRICS

Jon Goldsby, NASA Glenn Research Center, USA; Jing-Feng Li, Tsinghua University, China; Lidong Chen, Shanghai Institute of Ceramics, China; Masakazu Mukaida, AIST, Japan; Michitaka Ohtaki, Kyushu University, Japan; Xinfeng Tang, Wuhan University of Technology, China

4TH PACIFIC RIM ENGINEERING CERAMICS SUMMIT

Young-Wook Kim, University of Seoul, Republic of Korea; Jingyang Wang, Institute of Metal Research, China; Manabu Fukushima, National Institute of Advanced Industrial Science and Technology (AIST), Japan; Surojit Gupta, University of North Dakota, USA; Valerie Wiesner, NASA Langley Research Center, USA; Hua-Tay Lin, Guangdong University of Technology, China; Junichi Tatami, Yohohama National University, Japan; Juan Paulo Wiff, Air Liquide, Japan; Prabhakar Singh, Indian Institute of Technology, Banaras, India; Dechang Jia, Harbin Institute of Technology, China; In-Hyuck Song, Korea Institute of Materials Science, Republic of Korea; Miki Inada, Kyushu University, Japan; Ziqi Sun, Queensland University of Technology, Australia; Ramesh Singh, University of Malaya, Malaysia

9TH GLOBAL YOUNG INVESTIGATOR FORUMGLOBAL

Daniele Benetti, Institut National de la Recherche Scientifique, Canada; Manoj Mahapatra, University of Alabama at Birmingham, USA; Giorgia Franchin, University of Padova, Italy; Matthew P. Appleby, NASA Glenn Research Center, USA; Rebekah Webster, University of Virginia, USA; Andrew Rosenberger, US Army Research Laboratory, USA; Wei Ji, Wuhan University of Technology, China

SPECIAL FOCUSED SESSION ON DIVERSITY, ENTREPRENEURSHIP, AND COMMERCIALIZATION

Surojit Gupta, University of North Dakota, USA; Valerie Wiesner, NASA Langley Research Center, USA; Amanda Krause, University of Florida, USA; Emmanuel Maillet, GE Research, USA; Thiyagarajan Natarajan, Applied Materials, USA

TECHNICAL SESSIONS BY SYMPOSIUM

Sessions	Date	Time	Location
PLENARY SESSION	Jan 27	8:30 AM - 12:00 PM	Coquina Salon D
4TH PACIFIC RIM ENGINEERING CERAMICS SUMMIT			
Challenges and Opportunities for Ceramic Technologies I	Jan 28	8:30 AM - 11:50 AM	Coquina Salon E
Applications of Engineering and Functional Ceramics	Jan 28	1:30 PM - 4:50 PM	Coquina Salon E
Challenges and Opportunities for Ceramic Technologies II	Jan 29	8:30 AM - 12:00 PM	Coquina Salon E
Current trends: Coatings	Jan 29	1:30 PM - 5:20 PM	Coquina Salon E
Current trends: Energy Issues	Jan 30	8:30 AM - 11:50 AM	Coquina Salon E
Current trends: Powder Processing	Jan 30	1:30 PM - 5:20 PM	Coquina Salon E
9TH GLOBAL YOUNG INVESTIGATOR FORUM			
Advanced Ceramics and Coatings for Structural, Environmental and Functional Applications I	Jan 27	1:30 PM - 5:20 PM	Coquina Salon G
Novel Ceramic Processing Methods and Synthesis Routes	Jan 28	8:30 AM - 10:20 AM	Coquina Salon G
Careers in Science, Technology, Engineering and Mathematics (STEM)	Jan 28	10:20 AM - 11:20 AM	Coquina Salon G
Advanced and Nanostructured Materials	Jan 28	1:30 PM - 5:00 PM	Coquina Salon G
Multi-functional Materials for Water Catalysis	Jan 29	8:30 AM - 9:10 AM	Coquina Salon G
Advanced and Nanostructured Materials for Biomedical Applications	Jan 29	9:10 AM - 11:20 AM	Coquina Salon G
FS1: BIO-INSPIRED PROCESSING OF ADVANCED MATERIALS			
Bio-inspired Processing of Ceramics I	Jan 30	8:30 AM - 10:20 AM	Coquina Salon H
Bio-inspired Processing of Ceramics II	Jan 30	10:20 AM - 12:00 PM	Coquina Salon H
Mechanical Properties of Bio-inspired Ceramics I	Jan 30	1:30 PM - 3:20 PM	Coquina Salon H
Mechanical Properties of Bio-inspired Ceramics II	Jan 30	3:20 PM - 5:30 PM	Coquina Salon H
FS3: MOLECULAR-LEVEL PROCESSING AND CHEMICAL ENGINEERING OF FUNCTIONAL MATERIALS			
Simulation and Characterization of Polymer derived Ceramics	Jan 29	1:30 PM - 3:20 PM	Flagler A
Silicon Carbide and Nitride based Polymer derived Ceramics	Jan 29	3:20 PM - 5:10 PM	Flagler A
Polymer Derived Ceramics: Properties and Applications	Jan 30	8:30 AM - 10:20 AM	Flagler A
Polymer Derived Ceramics and Glasses	Jan 30	10:20 AM - 12:20 PM	Flagler A
Materials for Energy Applications	Jan 30	1:30 PM - 3:20 PM	Flagler A
Morphology Control in Materials Processing	Jan 30	3:20 PM - 5:30 PM	Flagler A
FS4: GREEN TECHNOLOGIES AND CERAMIC/CARBON REINFORCED POLYMERS			
Mechanical Behavior of Ceramic/Carbon Reinforced Polymers and Composites I	Jan 29	1:30 PM - 3:20 PM	Halifax A/B
Mechanical Behavior of Ceramic/Carbon Reinforced Polymers and Composites II	Jan 29	3:20 PM - 5:30 PM	Halifax A/B
Mechanical Behavior of Ceramic/Carbon Reinforced Polymers and Composites III	Jan 30	8:30 AM - 10:20 AM	Halifax A/B
Innovative Processing of Ceramics and Composites for Environmental Sustainability and to Minimize Energy Utilization and Pollution	Jan 30	10:30 AM - 12:20 PM	Halifax A/B
Recycling of Ceramics and Composite Wastes	Jan 30	1:30 PM - 4:00 PM	Halifax A/B
Environmental, Infrastructure, Energy, Biological, Space, Transportation, Building, and Sport Applications	Jan 30	4:00 PM - 5:10 PM	Halifax A/B
Innovative Processing to Minimize Energy Utilization, Recycling, and Reduction of Processing Waste	Jan 31	8:30 AM - 10:50 AM	Halifax A/B
SPECIAL FOCUSED SESSION ON DIVERSITY, ENTREPRENEURSHIP, AND COMMERCIALIZATION			
Jubilee Global Diversity Awards; Entrepreneurship and Commercialization	Jan 27	1:30 PM - 5:00 PM	Coquina Salon E

Sessions	Date	Time	Location
S1: MECHANICAL BEHAVIOR AND PERFORMANCE OF CERAMICS & COMPOSITES			
Environmental Effects and Thermo-mechanical Performance I	Jan 27	1:30 PM - 3:20 PM	Coquina Salon D
Environmental Effects and Thermo-mechanical Performance II	Jan 27	3:20 PM - 5:40 PM	Coquina Salon D
Processing-Microstructure-Mechanical Properties Correlation I	Jan 28	8:30 AM - 11:30 AM	Coquina Salon D
Processing-Microstructure-Mechanical Properties Correlation II	Jan 28	1:30 PM - 4:50 PM	Coquina Salon D
Fracture Mechanics and Failure Prediction I	Jan 29	8:30 AM - 11:50 AM	Coquina Salon D
Fibers and Coatings	Jan 29	1:30 PM - 3:10 PM	Coquina Salon D
Fracture Mechanics and Failure Prediction II	Jan 29	3:10 PM - 4:50 PM	Coquina Salon D
Small Scale Testing	Jan 30	8:30 AM - 10:10 AM	Coquina Salon D
Mechanics, Characterization Techniques, and Equipment	Jan 30	10:10 AM - 12:10 PM	Coquina Salon D
S2: ADVANCED CERAMIC COATINGS FOR STRUCTURAL, ENVIRONMENTAL, AND FUNCTIONAL APPLICATIONS			
Advanced Coatings for Extreme Environments	Jan 27	1:30 PM - 5:40 PM	Ponce de Leon
Environmental and Thermal Barrier Coatings I	Jan 28	8:30 AM - 12:00 PM	Ponce de Leon
Environmental and Thermal Barrier Coatings II	Jan 28	1:30 PM - 5:30 PM	Ponce de Leon
Environmental and Thermal Barrier Coatings III	Jan 29	8:30 AM - 10:20 AM	Ponce de Leon
CMAS Degradation of E/TBC and Mitigation Strategies I	Jan 29	10:20 AM - 11:50 AM	Ponce de Leon
CMAS Degradation of E/TBC and Mitigation Strategies II	Jan 29	1:30 PM - 4:40 PM	Ponce de Leon
S3: 17TH INTERNATIONAL SYMPOSIUM ON SOLID OXIDE CELLS (SOC): MATERIALS, SCIENCE AND TECHNOLOGY			
Progress in SOFC and SOEC Technology	Jan 27	1:30 PM - 3:50 PM	Crystal
SOC Stacks and Their Integration in the Systems	Jan 27	4:00 PM - 5:50 PM	Crystal
Novel Processing	Jan 28	8:30 AM - 10:20 AM	Crystal
Electrolytes and Sealants	Jan 28	10:30 AM - 11:50 AM	Crystal
Interconnects and Cr Getters	Jan 28	1:30 PM - 3:20 PM	Crystal
Stack / Cell Performance and Durability	Jan 28	3:30 PM - 5:20 PM	Crystal
Electrocatalysts	Jan 29	8:30 AM - 10:30 AM	Crystal
Coatings and Contacting Layers	Jan 29	10:30 AM - 12:10 PM	Crystal
Simulation and Materials	Jan 29	1:30 PM - 3:30 PM	Crystal
HT Electrolysis	Jan 29	3:30 PM - 6:00 PM	Crystal
Electrodes Development	Jan 30	8:30 AM - 12:10 PM	Crystal
Proton Conducting Fuel Cells	Jan 30	1:30 PM - 3:00 PM	Crystal
S4: ARMOR CERAMICS - CHALLENGES AND NEW DEVELOPMENTS			
Terminal Ballistics I & II	Jan 27	1:20 PM - 5:10 PM	St. Johns
Quasi-Static and Dynamic Behavior I	Jan 27	5:10 PM - 5:50 PM	St. Johns
Quasi-Static and Dynamic Behavior II	Jan 28	8:30 AM - 10:20 AM	St. Johns
Quasi-Static and Dynamic Behavior III	Jan 28	10:20 AM - 12:00 PM	St. Johns
Quasi-Static and Dynamic Behavior IV	Jan 28	1:30 PM - 5:00 PM	St. Johns
Synthesis and Processing I & II	Jan 29	8:30 AM - 12:00 PM	St. Johns
Synthesis and Processing III & IV	Jan 29	1:30 PM - 4:30 PM	St. Johns
S5: NEXT GENERATION BIOCERAMICS AND BIOCOMPOSITES			
Next Generation Bioceramics I	Jan 27	1:30 PM - 4:50 PM	Coquina Salon C
Next Generation Bioceramics II	Jan 28	8:30 AM - 11:30 AM	Coquina Salon C
Next Generation Bioceramics III	Jan 28	1:30 PM - 4:30 PM	Coquina Salon C
Next Generation Bioceramics IV	Jan 29	8:30 AM - 11:50 AM	Coquina Salon C

TECHNICAL SESSIONS BY SYMPOSIUM

Sessions	Date	Time	Location
S6: ADVANCED MATERIALS AND TECHNOLOGIES FOR RECHARGEABLE ENERGY STORAGE			
All Solid State Batteries	Jan 27	1:30 PM - 5:40 PM	Tomoka A
Li-ion Battery: Material Design	Jan 28	8:30 AM - 12:10 PM	Tomoka A
Thermoelectric Materials	Jan 28	1:30 PM - 3:10 PM	Tomoka A
Sulphur Battery and Liquid Electrolytes	Jan 28	3:10 PM - 5:00 PM	Tomoka A
Li-ion Battery Cathodes	Jan 29	8:30 AM - 10:20 AM	Tomoka A
Solid Electrolytes	Jan 29	10:20 AM - 12:30 PM	Tomoka A
Beyond Li-ion battery	Jan 29	1:30 PM - 3:20 PM	Tomoka A
Characterization of Materials for Batteries and Capacitors	Jan 29	3:20 PM - 4:40 PM	Tomoka A
Na-ion Battery	Jan 30	8:30 AM - 11:20 AM	Tomoka A
Li-ion Battery: Anode Materials and Cathode Materials	Jan 30	1:30 PM - 4:50 PM	Tomoka A
S7: 14TH INTERNATIONAL SYMPOSIUM ON FUNCTIONAL NANOMATERIALS AND THIN FILMS FOR SUSTAINABLE ENERGY HARVESTING, ENVIRONMENTAL, AND HEALTH APPLICATIONS			
Nanomaterials for Energy Conversion and Storage and Catalysis I	Jan 27	1:30 PM - 3:10 PM	Flagler A
Nanomaterials for Energy Conversion and Storage and Catalysis II	Jan 27	3:20 PM - 4:50 PM	Flagler A
Nanotoxicity, Drug-delivery, and Tissue Engineering with Tailored Nano-bioconjugates	Jan 28	8:30 AM - 10:00 AM	Flagler A
Synthesis, Functionalization, and Assembly of Inorganic and Hybrid Nanostructures I	Jan 28	10:20 AM - 11:50 AM	Flagler A
Metal Oxide Nanostructures for Sensing, Batteries, and Water-splitting Applications	Jan 28	1:30 PM - 3:20 PM	Flagler A
Synthesis, Functionalization, and Assembly of Inorganic and Hybrid Nanostructures II	Jan 28	3:20 PM - 5:10 PM	Flagler A
Nanomaterials for Energy Conversion and Storage and Catalysis III	Jan 29	8:30 AM - 10:20 AM	Flagler A
Nanomaterials for Energy Conversion and Storage and Catalysis IV	Jan 29	10:20 AM - 11:50 AM	Flagler A
S8: 14TH INTERNATIONAL SYMPOSIUM ON ADVANCED PROCESSING AND MANUFACTURING TECHNOLOGIES FOR STRUCTURAL AND MULTIFUNCTIONAL MATERIALS AND SYSTEMS (APMT14)			
Advanced Sintering Technologies I	Jan 27	1:30 PM - 6:00 PM	Coquina Salon A
Advanced Sintering Technologies II	Jan 28	8:30 AM - 12:00 PM	Coquina Salon A
Advanced Manufacturing and Processing I	Jan 28	1:30 PM - 4:50 PM	Coquina Salon A
Advanced Manufacturing and Processing II	Jan 29	8:30 AM - 12:00 PM	Coquina Salon A
Functional Materials and Composites	Jan 29	1:30 PM - 4:10 PM	Coquina Salon A
S9: POROUS CERAMICS: NOVEL DEVELOPMENTS AND APPLICATIONS			
Innovations in Processing Methods and Synthesis of Porous Ceramics I	Jan 29	1:30 PM - 3:20 PM	Coquina Salon F
Engineering Applications of Porous Ceramics I	Jan 29	3:20 PM - 5:00 PM	Coquina Salon F
Engineering Applications of Porous Ceramics II	Jan 30	8:30 AM - 10:20 AM	Coquina Salon F
Modeling and Properties of Porous Ceramics	Jan 30	10:20 AM - 11:50 AM	Coquina Salon F
Engineering Applications of Porous Ceramics III	Jan 30	1:30 PM - 3:00 PM	Coquina Salon F
Innovations in Processing Methods and Synthesis of Porous Ceramics II	Jan 30	3:20 PM - 5:30 PM	Coquina Salon F
Membranes and High SSA Ceramics	Jan 31	8:30 AM - 10:10 AM	Coquina Salon F
S10: MODELING, GENOME, INFORMATICS, AND MACHINE LEARNING			
Informatics, Genome and Machine Learning	Jan 29	1:30 PM - 3:20 PM	Coquina Salon G
Multi-scale Modeling of Processing and Performances I	Jan 29	3:20 PM - 5:30 PM	Coquina Salon G
Multi-scale Modeling of Processing and Performances II	Jan 30	8:30 AM - 10:20 AM	Coquina Salon G
Multi-scale Modeling of Processing and Performances III	Jan 30	10:20 AM - 12:10 PM	Coquina Salon G
Multi-scale Modeling of Processing and Performances IV	Jan 30	1:30 PM - 3:20 PM	Coquina Salon G
Modeling of Surfaces, Interfaces, and Grain Boundaries	Jan 30	3:20 PM - 5:30 PM	Coquina Salon G
Prediction of Crystal Structure and Related Properties I	Jan 31	8:30 AM - 10:20 AM	Coquina Salon G
Prediction of Crystal Structure and Related Properties II	Jan 31	10:20 AM - 11:40 AM	Coquina Salon G

Sessions	Date	Time	Location
S11: ADVANCED MATERIALS AND INNOVATIVE PROCESSING IDEAS FOR PRODUCTION ROOT TECHNOLOGIES			
Ceramics : Powder, Bulk and Characterization	Jan 27	1:30 PM - 5:40 PM	Tomoka B
Alloys and Compounds : New Concepts and Emerging Technologies for Enhanced Product Performance	Jan 28	9:00 AM - 12:00 PM	Tomoka B
Sustainable Energy Concepts and Applications I	Jan 28	1:30 PM - 4:10 PM	Tomoka B
Sustainable Energy Concepts and Applications II	Jan 29	9:00 AM - 12:00 PM	Tomoka B
S12: ON THE DESIGN OF NANO-LAMINATED TERNARY TRANSITION METAL CARBIDES/NITRIDES (MAX PHASES) AND BORIDES (MAB PHASES), AND THEIR 2D COUNTERPARTS (MXENES, MBENES)			
Mechanical Behavior of MAX Phases	Jan 27	1:30 PM - 3:20 PM	Coquina Salon F
Functional Behavior of MAX Phases	Jan 27	3:20 PM - 5:30 PM	Coquina Salon F
Oxidation Behavior of MAX Phases	Jan 28	8:10 AM - 10:00 AM	Coquina Salon F
Theoretical and Multifunctional Application of MAX Phases	Jan 28	10:00 AM - 12:10 PM	Coquina Salon F
Current Progress in Mxenes I	Jan 28	1:20 PM - 3:30 PM	Coquina Salon F
Design and Characterization of MAB Phases	Jan 28	3:30 PM - 4:30 PM	Coquina Salon F
Current Progress in MXenes II	Jan 29	8:30 AM - 11:40 AM	Coquina Salon F
S13: DEVELOPMENT AND APPLICATIONS OF ADVANCED CERAMICS AND COMPOSITES FOR NUCLEAR FISSION AND FUSION ENERGY SYSTEMS			
Novel Ceramics and Composites for Nuclear Systems I	Jan 27	1:30 PM - 3:20 PM	Coquina Salon H
Radiation Damage, Defect Production, Evolutions, and Interactions	Jan 27	3:20 PM - 5:10 PM	Coquina Salon H
Novel Ceramics and Composites for Nuclear Systems II	Jan 28	8:30 AM - 10:30 AM	Coquina Salon H
Mechanical Properties: Test Methods, Codes and Standards, and Design Methodology	Jan 28	10:30 AM - 12:10 PM	Coquina Salon H
Ceramic Fuel Materials, Technologies, and Characterization; TRISO Fuels	Jan 28	1:30 PM - 3:50 PM	Coquina Salon H
Joining Technologies for Reactor Components	Jan 28	3:50 PM - 5:10 PM	Coquina Salon H
Coating Technologies for Reactor Components	Jan 29	8:30 AM - 10:30 AM	Coquina Salon H
Chemical Compatibility and Corrosion	Jan 29	10:30 AM - 12:30 PM	Coquina Salon H
Material Technologies for Enhanced Accident Tolerance LWR Fuels and Core I	Jan 29	1:50 PM - 3:30 PM	Coquina Salon H
Material Technologies for Enhanced Accident Tolerance LWR Fuels and Core II	Jan 29	3:30 PM - 5:10 PM	Coquina Salon H
S14: CRYSTALLINE MATERIALS FOR ELECTRICAL, OPTICAL AND MEDICAL APPLICATIONS			
New Direction	Jan 27	1:30 PM - 3:20 PM	Halifax A/B
Optical Material I	Jan 27	3:20 PM - 5:20 PM	Halifax A/B
Optical Material II	Jan 28	9:00 AM - 12:00 PM	Halifax A/B
Optical Material III	Jan 28	1:30 PM - 5:00 PM	Halifax A/B
Optical Material IV	Jan 29	8:30 AM - 11:50 AM	Halifax A/B
S15: 4TH INTERNATIONAL SYMPOSIUM ON ADDITIVE MANUFACTURING AND 3-D PRINTING TECHNOLOGIES			
Design and Characterization	Jan 27	1:30 PM - 3:20 PM	Coquina Salon B
Binder Jetting and Powder Bed Fusion	Jan 27	3:20 PM - 4:20 PM	Coquina Salon B
Multi-Material and Hybrid Printing	Jan 27	4:20 PM - 5:00 PM	Coquina Salon B
Stereolithography I	Jan 28	8:30 AM - 10:20 AM	Coquina Salon B
Stereolithography II	Jan 28	10:20 AM - 11:50 AM	Coquina Salon B
Application of Materials and Components	Jan 28	1:30 PM - 2:20 PM	Coquina Salon B
Selective Laser Melting and Sintering I	Jan 28	2:20 PM - 3:20 PM	Coquina Salon B
Selective Laser Melting and Sintering II	Jan 28	3:20 PM - 5:00 PM	Coquina Salon B
Direct Writing and Ink Jet Printing I	Jan 29	8:30 AM - 10:20 AM	Coquina Salon B
Direct Writing and Ink Jet Printing II	Jan 29	10:20 AM - 12:00 PM	Coquina Salon B
Direct Writing and Ink Jet Printing III	Jan 29	1:30 PM - 3:20 PM	Coquina Salon B
Fused Deposition Modeling	Jan 29	3:20 PM - 4:40 PM	Coquina Salon B

TECHNICAL SESSIONS BY SYMPOSIUM

Sessions	Date	Time	Location
S16: GEOPOLYMERS, INORGANIC POLYMERS AND SUSTAINABLE MATERIALS			
Synthesis and Processing	Jan 29	1:30 PM - 3:20 PM	Tomoka C
Mechanical Properties	Jan 29	3:20 PM - 5:20 PM	Tomoka C
Conversion to Ceramics; Novel Applications; Phosphates	Jan 30	8:30 AM - 10:20 AM	Tomoka C
Waste Materials	Jan 30	10:20 AM - 12:00 PM	Tomoka C
Alkali Activated Materials	Jan 30	1:30 PM - 3:20 PM	Tomoka C
Infrastructure and Construction; Sustainable Materials	Jan 30	3:20 PM - 5:30 PM	Tomoka C
S17: ADVANCED CERAMIC MATERIALS AND PROCESSING FOR PHOTONICS AND ENERGY			
Advanced and Nanostructured Materials for Photonics, Electronics and Sensing I	Jan-27	1:30 PM - 3:20 PM	Tomoka C
Advanced and Nanostructured Materials for Photonics, Electronics and Sensing II	Jan-27	3:20 PM - 6:10 PM	Tomoka C
Advanced and Nanostructured Materials for Photonics, Electronics and Sensing III	Jan-28	8:30 AM - 10:10 AM	Tomoka C
Advanced and Nanostructured Materials for Photonics, Electronics and Sensing IV	Jan-28	10:10 AM - 12:10 PM	Tomoka C
Advanced and Nanostructured Materials for Photonics, Electronics and Sensing V	Jan-28	1:30 PM - 3:20 PM	Tomoka C
Multifunctional Materials I	Jan-28	3:20 PM - 5:20 PM	Tomoka C
Multifunctional Materials II	Jan 29	8:30 AM - 10:20 AM	Tomoka C
Multifunctional Materials III	Jan 29	10:20 AM - 12:10 PM	Tomoka C
S18: ULTRA-HIGH TEMPERATURE CERAMICS			
UHTC Applications and Oxidation	Jan 30	8:20 AM - 10:20 AM	Coquina Salon A
UHTC Simulation, Composites, and Carbides	Jan 30	10:20 AM - 12:00 PM	Coquina Salon A
UHTC Synthesis and Processing	Jan 30	1:30 PM - 5:20 PM	Coquina Salon A
UHTC: High Entropy Materials	Jan 31	8:30 AM - 10:10 AM	Coquina Salon A
UHTC Phase Equilibria and Properties	Jan 31	10:10 AM - 11:30 AM	Coquina Salon A
POSTER SESSIONS			
Poster Session A	Jan-28	5:00 PM - 8:00 PM	Ocean Center Arena
Poster Session B	Jan 29	5:00 PM - 7:30 PM	Ocean Center Arena

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Oral Presenters

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Behar Lafenetre, S.	29-Jan	11:10AM	Coquina Salon D	40
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Hsu, P.	29-Jan	9:40AM	Ponce de Leon	41
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Huang, O.D.	30-Jan	4:00PM	Tomoka C	64
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Huang, Y.	30-Jan	11:30AM	Crystal	60
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		K		
K L, S.	31-Jan	9:10AM	Coquina Salon F	66
Ka, I.	28-Jan	3:30PM	Coquina Salon G	19
Kabir, A.	27-Jan	2:40PM	Halifax A/B	16
Kabir, A.	28-Jan	10:30AM	Crystal	22
Kaghazchi, P.	28-Jan	9:30AM	Tomoka A	25
Kajihara, S.	29-Jan	2:40PM	Halifax A/B	39
Kalantar-zadeh, K.	29-Jan	8:30AM	Tomoka C	52
Kamboj, N.K.	29-Jan	9:10AM	Coquina Salon C	44
Kamecki, B.	30-Jan	9:30AM	Crystal	60
Kamiyama, S.	30-Jan	4:00PM	Halifax A/B	59
Kamseu, E.	29-Jan	2:30PM	Tomoka C	51
Kamseu, E.	29-Jan	4:30PM	Tomoka C	52
Kanazawa, S.	27-Jan	4:20PM	Coquina Salon D	10
Kane, K.	28-Jan	4:10PM	Ponce de Leon	22
Kane, K.	29-Jan	12:10PM	Coquina Salon H	49
Kaplan, W.D.	29-Jan	11:20AM	Coquina Salon A	46
Karakoti, A.	27-Jan	1:30PM	Coquina Salon C	12
Kartuzov, V.	28-Jan	3:20PM	St. Johns	24
Kato, T.	28-Jan	4:10PM	Coquina Salon A	28
Katoh, Y.	28-Jan	9:50AM	Coquina Salon H	30
Kawaguchi, N.	28-Jan	9:00AM	Halifax A/B	31
Kawahara, S.	27-Jan	3:20PM	Tomoka B	15
Keane, P.F.	29-Jan	4:50PM	Tomoka C	52
Kellici, S.	28-Jan	2:30PM	Coquina Salon F	30
Kelly, J.	28-Jan	9:10AM	Coquina Salon C	24
Kemp, J.W.	29-Jan	11:00AM	Coquina Salon B	51
Kikuchi, M.	27-Jan	1:50PM	Coquina Salon C	12
Kim, B.	28-Jan	2:10PM	Coquina Salon D	20
Kim, B.	30-Jan	3:20PM	Coquina Salon E	56
Kim, D.	30-Jan	8:30AM	Coquina Salon E	55
Kim, D.	30-Jan	1:30PM	Tomoka A	61
Kim, H.	30-Jan	4:50PM	Coquina Salon E	56
Kim, W.	29-Jan	11:10AM	Coquina Salon H	49
Kim, Y.	28-Jan	3:10PM	Coquina Salon H	31
Kim, Y.	30-Jan	2:00PM	Coquina Salon E	56
Kimura, T.	29-Jan	11:20AM	Halifax A/B	50
King, D.	28-Jan	3:50PM	Coquina Salon H	31
Kirihara, S.	28-Jan	9:40AM	Coquina Salon B	32
Kirihara, S.	29-Jan	9:00AM	Coquina Salon E	37
Kisailus, D.	28-Jan	2:30PM	Tomoka C	34
Kisailus, D.	28-Jan	3:50PM	Coquina Salon C	25
Kisailus, D.	29-Jan	8:30AM	Coquina Salon C	44
Kisailus, D.	29-Jan	10:30AM	Coquina Salon C	44
Kita, K.	29-Jan	3:50PM	Coquina Salon C	38
Kitaoka, S.	29-Jan	2:30PM	Coquina Salon E	37
Klang, K.	30-Jan	4:10PM	Coquina Salon F	62
Kleebe, H.	31-Jan	8:30AM	Coquina Salon C	66
Klemm, H.	28-Jan	8:50AM	Coquina Salon D	20
Klemm, H.	29-Jan	3:20PM	Coquina Salon B	51
Kobi, S.	29-Jan	12:10PM	Tomoka A	45
Kocjan, A.	27-Jan	3:50PM	Coquina Salon C	13
Komaya, T.	28-Jan	4:40PM	Crystal	23
Kondapalli, S.	29-Jan	10:20AM	Coquina Salon B	51
Konegger, T.	29-Jan	2:00PM	Coquina Salon C	38
Konegger, T.	30-Jan	3:20PM	Coquina Salon F	62
Kong, J.	28-Jan	9:30AM	Coquina Salon D	20
Kopp, D.	27-Jan	3:20PM	Coquina Salon A	14
Koshimizu, M.	27-Jan	3:50PM	Halifax A/B	17
Kowalski, B.	28-Jan	2:20PM	Ponce de Leon	21
Koyanagi, T.	29-Jan	2:50PM	Coquina Salon H	49
Kravchenko, O.	29-Jan	9:30AM	Coquina Salon E	37
Krenkel, W.	28-Jan	10:10AM	Coquina Salon D	20
Krogstad, J.A.	27-Jan	1:30PM	Ponce de Leon	10
Krogstad, J.A.	27-Jan	4:10PM	Coquina Salon H	16
Krogstad, J.A.	27-Jan	5:40PM	Coquina Salon A	14
Kroll, P.	29-Jan	1:30PM	Coquina Salon C	38
Kroll, P.	30-Jan	3:50PM	Coquina Salon G	63
Ku, N.	29-Jan	11:20AM	St. Johns	43
Kumar, R.	30-Jan	9:30AM	Coquina Salon C	57
Kumar, S.	29-Jan	8:30AM	Halifax A/B	50
Kuna, L.	29-Jan	10:10AM	Halifax A/B	50
Kuo, C.T.	29-Jan	3:20PM	Coquina Salon F	47
Kusnezoff, M.	27-Jan	2:30PM	Crystal	11
Kusnezoff, M.	27-Jan	4:10PM	Tomoka A	13
Kusnezoff, M.	29-Jan	5:40PM	Crystal	43
		L		
Lafourcade, P.	30-Jan	1:55PM	Coquina Salon G	63
Laine, R.M.	27-Jan	3:40PM	Tomoka A	13
Laine, R.M.	27-Jan	5:20PM	Tomoka A	13
Laine, R.M.	30-Jan	2:30PM	Coquina Salon C	58
Lambrinou, K.	28-Jan	10:50AM	Coquina Salon F	29
Lambrinou, K.	29-Jan	4:50PM	Coquina Salon H	50
Lancellotti, I.	30-Jan	2:30PM	Tomoka C	64
LaSalvia, J.	29-Jan	9:50AM	St. Johns	43
Le, J.	28-Jan	11:50AM	Coquina Salon H	31
Lee, D.	29-Jan	11:30AM	Tomoka B	48
Lee, J.	30-Jan	9:00AM	Crystal	60
Lee, K.	29-Jan	8:30AM	Ponce de Leon	40
Lee, K.	30-Jan	9:30AM	Coquina Salon E	55
Lee, S.	28-Jan	9:00AM	Tomoka B	28
Lee, S.	29-Jan	1:30PM	Coquina Salon E	37
Lee, S.	29-Jan	2:20PM	Coquina Salon A	46
Lee, S.	29-Jan	4:00PM	Crystal	42
Lei, C.	29-Jan	2:30PM	Tomoka A	45
Lei, L.	29-Jan	11:40AM	Coquina Salon A	46
Lences, Z.	30-Jan	10:50AM	Coquina Salon E	55
Leonard, H.	29-Jan	3:40PM	Coquina Salon B	51

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Leonard, R.L.	28-Jan	4:10PM	Coquina Salon C	25
Lertwittayanon, K.	27-Jan	5:20PM	Coquina Salon A	14
Li, F.	28-Jan	4:00PM	Coquina Salon G	20
Lies, N.	30-Jan	3:20PM	Tomoka C	64
Lin, F.	29-Jan	3:50PM	Tomoka A	45
Lin, Y.	30-Jan	2:00PM	Tomoka A	61
Lipilin, A.	28-Jan	8:30AM	Crystal	22
Liu, D.L.	29-Jan	1:50PM	Coquina Salon H	49
Liu, D.L.	30-Jan	11:30AM	Coquina Salon D	60
Liu, J.	28-Jan	8:30AM	Tomoka A	25
Liu, J.	29-Jan	2:50PM	Crystal	42
Liu, J.	30-Jan	9:00AM	Tomoka A	61
Liu, X.	28-Jan	4:40PM	Coquina Salon G	20
Lockhart, C.	28-Jan	9:20AM	Crystal	22
Long, J.T.	28-Jan	4:10PM	Halifax A/B	32
Lopes, F.P.	29-Jan	4:20PM	Halifax A/B	39
Lopes, F.P.	30-Jan	4:20PM	Tomoka C	64
Lopes, F.P.	30-Jan	4:40PM	Tomoka C	64
Lopes, F.P.	30-Jan	5:00PM	Tomoka C	64
Lowum, S.	27-Jan	4:10PM	Coquina Salon G	10
Lu, K.	29-Jan	11:30AM	Coquina Salon H	49
Lu, K.	29-Jan	11:50AM	Coquina Salon H	49
Lu, K.	29-Jan	2:00PM	Coquina Salon F	47
Lu, K.	30-Jan	8:30AM	Coquina Salon C	57
Lu, K.	30-Jan	4:20PM	Halifax A/B	59
Luo, J.	31-Jan	10:20AM	Coquina Salon G	67
Luscombe, C.	27-Jan	3:20PM	Tomoka C	18
Luukkonen, T.	29-Jan	3:40PM	Coquina Salon F	47
Lyons, J.	27-Jan	3:50PM	Coquina Salon F	15
M				
Ma, P.	29-Jan	9:00AM	Coquina Salon A	46
Mackey, J.	28-Jan	4:30PM	Coquina Salon D	21
Magdaluyo, E.d.	30-Jan	10:20AM	Tomoka C	64
Magnuson, M.	29-Jan	10:30AM	Coquina Salon F	48
Magnuson, M.	31-Jan	10:50AM	Coquina Salon G	67
Magrini, T.	30-Jan	11:20AM	Coquina Salon H	56
Mahato, D.K.	28-Jan	3:50PM	Coquina Salon E	19
Mahshid, S.S.	29-Jan	10:50AM	Coquina Salon G	38
Maillet, E.	27-Jan	2:00PM	Coquina Salon G	9
Malik, R.	27-Jan	3:50PM	Coquina Salon G	9
Malik, R.	29-Jan	11:40AM	Coquina Salon E	37
Mallick, D.D.	27-Jan	3:20PM	St. Johns	12
Mallik, P.K.	27-Jan	4:10PM	Coquina Salon C	13
Mandal, S.	28-Jan	9:30AM	Coquina Salon G	19
Mansour, R.	30-Jan	11:30AM	Coquina Salon D	60
Manzhos, S.	30-Jan	2:30PM	Tomoka A	61
Manzhos, S.	30-Jan	4:20PM	Coquina Salon G	63
Marconie, T.	29-Jan	2:10PM	St. Johns	43
Marsico, C.	28-Jan	2:50PM	Coquina Salon D	20
Martin, A.J.	29-Jan	2:00PM	Coquina Salon B	51
Martinazzo Rodrigues, E.	29-Jan	9:30AM	Coquina Salon G	38
Martucci, A.	29-Jan	11:20AM	Tomoka C	52
Marvel, C.	29-Jan	2:30PM	St. Johns	43
Masai, H.	28-Jan	11:30AM	Halifax A/B	31
Matsunaga, K.	31-Jan	9:30AM	Coquina Salon G	66
Matsuura, T.	28-Jan	4:30PM	Halifax A/B	32
McAleer, E.G.	30-Jan	11:00AM	Coquina Salon G	63
McCormack, S.J.	31-Jan	10:10AM	Coquina Salon A	67
McDowell, M.	27-Jan	2:00PM	Tomoka A	13
McEntire, B.J.	29-Jan	8:50AM	Coquina Salon C	44
McGarrity, K.	27-Jan	1:50PM	Ponce de Leon	10
McGarrity, K.	30-Jan	2:00PM	Coquina Salon A	65
McKittrick, J.	28-Jan	2:00PM	Halifax A/B	32
Mechnich, P.	29-Jan	11:30AM	Ponce de Leon	41
Medvedovski, E.	27-Jan	3:10PM	Ponce de Leon	11
Menzler, N.H.	28-Jan	3:30PM	Crystal	23
Mera, G.	30-Jan	10:50AM	Coquina Salon C	57
Mhin, S.	27-Jan	1:30PM	Coquina Salon G	9
Middleburgh, S.C.	30-Jan	10:20AM	Coquina Salon A	65
Miele, P.	30-Jan	1:30PM	Coquina Salon C	58
Mikulla, C.	29-Jan	11:10AM	Ponce de Leon	41
Miles, A.	28-Jan	4:20PM	Coquina Salon G	20
Milisavljevc, I.	29-Jan	9:20AM	Coquina Salon A	46
Misture, S.T.	28-Jan	9:00AM	Tomoka C	33
Mitic, V.	28-Jan	9:40AM	Coquina Salon A	27
Molin, S.	28-Jan	2:00PM	Crystal	22
Molin, S.	29-Jan	11:10AM	Crystal	42
Mondal, S.	30-Jan	5:00PM	Coquina Salon A	65
Moon, K.	28-Jan	11:40AM	Tomoka B	29
Morante, J.R.	30-Jan	2:00PM	Coquina Salon C	58
Moretti, E.	28-Jan	2:00PM	Flagler A	27
Moretti, E.	29-Jan	10:50AM	Tomoka C	52
Mori, Y.	28-Jan	11:00AM	Tomoka B	28
Morita, K.	30-Jan	4:20PM	Coquina Salon E	56
Motoyama, M.	29-Jan	10:50AM	Tomoka A	44
Mouche, P.	29-Jan	9:10AM	Coquina Salon H	49
Mougin, J.	29-Jan	3:30PM	Crystal	42
Mráz, S.	28-Jan	9:00AM	Coquina Salon F	29
Mudanyi, R.	27-Jan	5:00PM	Coquina Salon G	10
Mukaida, M.	28-Jan	2:00PM	Tomoka A	26
Murakami, S.	29-Jan	11:00AM	Flagler A	46
Murugavel, S.	30-Jan	8:30AM	Tomoka A	60
Myung, J.	30-Jan	11:00AM	Crystal	60
N				
Naccache, R.	28-Jan	4:50PM	Tomoka C	34
Nagaraju, H.T.	28-Jan	1:30PM	Coquina Salon H	31
Nahrstedt, V.	28-Jan	2:40PM	Flagler A	27
Nakai, A.	31-Jan	10:20AM	Halifax A/B	66
Nakajima, K.	29-Jan	10:40AM	Halifax A/B	50
Nakao, W.	29-Jan	10:30AM	Coquina Salon D	40
Nakata, T.	28-Jan	10:30AM	Tomoka B	28
Nakayama, T.	28-Jan	2:20PM	Tomoka B	29
Nakayama, T.	28-Jan	3:20PM	Coquina Salon A	28
Nakazawa, Y.	27-Jan	4:10PM	Tomoka B	15
Naleway, S.E.	30-Jan	8:30AM	Coquina Salon H	56
Nance, J.	29-Jan	2:10PM	Coquina Salon H	49
Nanda, J.	30-Jan	4:00PM	Tomoka A	61
Naraparaju, R.	29-Jan	1:30PM	Ponce de Leon	41
Narayan, R.	28-Jan	3:50PM	Tomoka C	34
Nasirmanesh, A.	30-Jan	2:20PM	Coquina Salon G	63
Neal, C.J.	28-Jan	11:30AM	Flagler A	27
Neatu, F.	28-Jan	4:10PM	Flagler A	27
Neatu, S.	27-Jan	3:20PM	Flagler A	14
Nechache, R.	28-Jan	1:30PM	Tomoka C	34
Neveu, A.	29-Jan	11:50AM	Tomoka A	45
Nguyen, H.D.	27-Jan	2:00PM	Tomoka B	15
Nguyen, H.D.	29-Jan	3:30PM	Coquina Salon A	46
Nguyen, Q.V.	30-Jan	3:20PM	Coquina Salon A	65
Nguyen, T.	28-Jan	9:30AM	Ponce de Leon	21
Ni, C.	29-Jan	9:00AM	St. Johns	43
Nishimura, K.	27-Jan	2:40PM	Tomoka B	15
Nozawa, T.	28-Jan	10:30AM	Coquina Salon H	30
O				
O'Toole, R.J.	28-Jan	11:10AM	Crystal	22
Obrovac, M.	28-Jan	9:00AM	Tomoka A	25
Ogasawara, K.	31-Jan	8:30AM	Coquina Salon G	66
Ogihara, S.	29-Jan	1:30PM	Halifax A/B	39
Ohashi, H.	28-Jan	11:20AM	Tomoka B	28
Ohtaki, M.	28-Jan	1:30PM	Tomoka A	26
Oji, B.	27-Jan	1:50PM	Halifax A/B	16
Okawa, A.	27-Jan	3:50PM	Tomoka B	15
Olson, N.S.	31-Jan	8:30AM	Coquina Salon F	66
Opila, E.	27-Jan	3:40PM	Coquina Salon D	10
Ordonez, E.	29-Jan	9:00AM	Coquina Salon B	50
Orgiu, E.	28-Jan	10:40AM	Tomoka C	33
Orikasa, Y.	29-Jan	1:30PM	Tomoka A	45
Ortona, A.	28-Jan	1:30PM	Coquina Salon B	33
Osada, M.	27-Jan	3:20PM	Halifax A/B	16
Osaka, A.	27-Jan	3:30PM	Coquina Salon C	13
Ozawa, N.	30-Jan	4:40PM	Coquina Salon G	63

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Name	Date	Time	Room	Page Number
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Paladino, B.	29-Jan	8:30AM	Coquina Salon H	49
Palmero, P.	30-Jan	11:30AM	Tomoka C	64
Pan, J.	28-Jan	4:50PM	Flagler A	27
Pan, W.	30-Jan	9:00AM	Coquina Salon E	55
Panakarajupally, R.	27-Jan	2:20PM	Coquina Salon D	10
Panthi, D.	28-Jan	5:00PM	Crystal	23
Parai, R.	30-Jan	4:40PM	Coquina Salon H	57
Parihar, S.S.	28-Jan	11:20AM	Coquina Salon A	28
Park, C.	27-Jan	4:30PM	Coquina Salon E	9
Park, J.	29-Jan	5:10PM	Halifax A/B	39
Park, K.	29-Jan	9:00AM	Tomoka B	48
Patel, D.	29-Jan	9:30AM	Coquina Salon H	49
Patel, M.K.	27-Jan	3:20PM	Coquina Salon H	16
Patel, T.	30-Jan	10:50AM	Coquina Salon F	62
Pawar, V.	28-Jan	11:10AM	Flagler A	26
Payne, H.E.	29-Jan	3:30PM	St. Johns	43
Pejchal, J.	27-Jan	4:50PM	Halifax A/B	17
Pelanconi, M.	27-Jan	2:00PM	Coquina Salon B	17
Pelz, J.	29-Jan	11:40AM	St. Johns	43
Perepichka, D.	28-Jan	10:10AM	Tomoka C	33
Persson, P.	29-Jan	11:00AM	Coquina Salon F	48
Peters, A.B.	28-Jan	3:20PM	Coquina Salon B	33
Petrie, C.	27-Jan	2:20PM	Coquina Salon H	16
Pfeiffer, S.	28-Jan	2:40PM	Coquina Salon B	33
Piat, R.	30-Jan	8:30AM	Coquina Salon G	62
Pietras, J.	27-Jan	5:00PM	Crystal	11
Pilania, G.	29-Jan	1:55PM	Coquina Salon G	47
Pinna, N.	28-Jan	1:30PM	Flagler A	27
Pinna, N.	29-Jan	9:00AM	Tomoka C	52
Pitike, K.	31-Jan	9:00AM	Coquina Salon G	66
Pittari, J.J.	27-Jan	5:30PM	St. Johns	12
Pittari, J.J.	28-Jan	11:00AM	St. Johns	23
Pol, V.	29-Jan	2:00PM	Tomoka A	45
Polo, F.	28-Jan	11:40AM	Tomoka C	34
Poloni, E.	30-Jan	11:40AM	Coquina Salon H	56
Pralong, V.	28-Jan	4:10PM	Tomoka A	26
Presby, M.J.	27-Jan	3:20PM	Coquina Salon G	9
Prikhna, T.	27-Jan	4:30PM	St. Johns	12
Pyare, R.	29-Jan	11:30AM	Coquina Salon C	44
		Q		
Qu, J.	29-Jan	4:10PM	Coquina Salon H	50
Quinn, G.D.	29-Jan	10:50AM	Coquina Salon D	40
		R		
Radovic, M.	28-Jan	8:10AM	Coquina Salon F	29
Raiman, S.S.	29-Jan	10:50AM	Coquina Salon H	49
Ramanuj, V.	30-Jan	2:40PM	Coquina Salon G	63
Ramesh, K.	28-Jan	8:30AM	St. Johns	23
Ramirez-Rico, J.	30-Jan	9:30AM	Coquina Salon H	56
Randall, C.	30-Jan	10:30AM	Halifax A/B	58
Reinheimer, T.	29-Jan	10:40AM	Coquina Salon B	51
Reisert, M.	27-Jan	2:30PM	Coquina Salon G	9
Ren, X.	28-Jan	11:40AM	Ponce de Leon	21
Ressler, A.	28-Jan	10:10AM	Coquina Salon C	24
Reveron, H.	28-Jan	2:10PM	Coquina Salon C	25
Ridley, M.J.	28-Jan	3:50PM	Ponce de Leon	22
Riera, R.A.	28-Jan	11:40AM	St. Johns	23
Riman, R.	30-Jan	11:30AM	Halifax A/B	58
Roesch, N.	30-Jan	3:20PM	Coquina Salon G	63
Rosei, F.	27-Jan	2:00PM	Flagler A	13
Rosenberger, A.T.	29-Jan	3:50PM	St. Johns	43
Rossetti, G.	29-Jan	10:20AM	Flagler A	45
Rossignol, S.	29-Jan	2:00PM	Tomoka C	51
Rousseau, B.	29-Jan	4:20PM	Coquina Salon F	47
Roy, P.K.	27-Jan	1:30PM	Halifax A/B	16
Ruggles-Wrenn, M.	27-Jan	2:00PM	Coquina Salon D	10
Ruggles-Wrenn, M.	27-Jan	3:20PM	Coquina Salon D	10
Rulis, P.	29-Jan	5:00PM	Coquina Salon G	48

Name	Date	Time	Room	Page Number
		S		
Sadia, Y.	30-Jan	9:50AM	Crystal	60
Sadia, Y.	30-Jan	11:50AM	Crystal	60
Sajgalik, P.	29-Jan	3:00PM	Coquina Salon A	46
Sakai, T.	29-Jan	3:20PM	Halifax A/B	39
Salem, A.	29-Jan	4:00PM	Coquina Salon B	51
Salem, J.	28-Jan	2:30PM	Coquina Salon E	19
Salem, J.	29-Jan	4:30PM	Coquina Salon D	40
Samuel, D.	30-Jan	3:40PM	Tomoka C	64
Santarelli, M.	27-Jan	4:00PM	Crystal	11
Santato, C.	29-Jan	10:20AM	Tomoka C	52
Santiago, D.	30-Jan	3:50PM	Coquina Salon C	58
Santoliquido, O.	28-Jan	10:50AM	Coquina Salon B	32
Sarrafi-Nour, R.	28-Jan	10:30AM	Ponce de Leon	21
Sato, Y.	28-Jan	1:30PM	Halifax A/B	32
Sattar, S.	30-Jan	11:10AM	Coquina Salon F	62
Sauceda, D.	28-Jan	11:30AM	Coquina Salon F	29
Schaedler, T.	28-Jan	8:30AM	Coquina Salon B	32
Schauperl, R.	29-Jan	5:00PM	Crystal	42
Schilm, J.	27-Jan	4:20PM	Coquina Salon B	17
Schilm, J.	28-Jan	11:30AM	Crystal	22
Schlup, A.	29-Jan	11:00AM	Halifax A/B	50
Schmidt-Verma, A.K.	28-Jan	3:50PM	Flagler A	27
Schmitt, M.	29-Jan	2:40PM	Ponce de Leon	41
Schuster, B.	27-Jan	2:30PM	St. Johns	12
Schwentenwein, M.	27-Jan	3:10PM	Coquina Salon C	12
Schwentenwein, M.	28-Jan	9:20AM	Coquina Salon B	32
Schwind, E.C.	30-Jan	11:40AM	Coquina Salon A	65
Scott, J.A.	30-Jan	9:40AM	Coquina Salon A	65
Seal, S.	28-Jan	2:00PM	Coquina Salon E	18
Sekino, T.	29-Jan	10:20AM	Coquina Salon A	46
Sen, S.	29-Jan	2:30PM	Coquina Salon C	38
Seo, D.	29-Jan	1:30PM	Tomoka C	51
Setera, B.	28-Jan	3:50PM	Halifax A/B	32
Sévin, L.	27-Jan	2:10PM	Ponce de Leon	11
Shaik, M.	28-Jan	9:10AM	Coquina Salon D	20
Shao, G.	29-Jan	4:20PM	Coquina Salon C	38
Sharma, R.	28-Jan	3:20PM	Halifax A/B	32
Shi, L.	29-Jan	8:30AM	Coquina Salon G	38
Shi, W.	28-Jan	4:00PM	Crystal	23
Shi, Y.	27-Jan	5:20PM	Coquina Salon D	10
Shi, Y.	30-Jan	1:30PM	Coquina Salon G	63
Shifa, T.A.	28-Jan	8:30AM	Tomoka C	33
Shin, D.	29-Jan	1:30PM	Coquina Salon G	47
Shin, T.	29-Jan	9:00AM	Crystal	41
Shinde, S.V.	28-Jan	4:50PM	Ponce de Leon	22
Shinomiya, K.	30-Jan	4:50PM	Halifax A/B	59
Shiomi, T.	27-Jan	4:30PM	Crystal	11
Shivprasad, A.P.	28-Jan	8:50AM	Coquina Salon H	30
Shoulders, T.	29-Jan	3:10PM	St. Johns	43
Silva, K.	30-Jan	9:20AM	Halifax A/B	58
Singh, D.	27-Jan	4:00PM	Coquina Salon B	17
Singh, G.	29-Jan	3:30PM	Coquina Salon H	50
Singh, G.	29-Jan	3:50PM	Coquina Salon H	50
Singh, G.	31-Jan	9:20AM	Halifax A/B	66
Singh, N.B.	28-Jan	10:20AM	Flagler A	26
Singh, P.	28-Jan	10:50AM	Coquina Salon G	19
Singh, P.	28-Jan	11:10AM	Coquina Salon F	29
Sinnott, S.B.	29-Jan	8:30AM	Coquina Salon F	48
Skripka, A.	29-Jan	9:10AM	Coquina Salon G	38
Smeacetto, F.	29-Jan	10:30AM	Crystal	42
Smith, C.S.	30-Jan	9:30AM	Coquina Salon D	59
Smith, D.S.	30-Jan	10:20AM	Coquina Salon F	62
Snead, L.	27-Jan	1:30PM	Coquina Salon H	16
Soares, D.	29-Jan	4:20PM	Tomoka A	45
Sobhani, S.	28-Jan	2:00PM	Coquina Salon B	33
Sokol, M.	27-Jan	2:00PM	Coquina Salon F	15
Soloveichik, G.L.	27-Jan	3:00PM	Crystal	11
Somers, N.	28-Jan	8:50AM	Coquina Salon C	24
Somers, N.	28-Jan	4:20PM	Coquina Salon E	19

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Song, X.	28-Jan	11:30AM	Coquina Salon B	32
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Sprio, S.	30-Jan	3:50PM	Coquina Salon H	57
Sprouster, D.	27-Jan	3:50PM	Coquina Salon H	16
Sprouster, D.	28-Jan	3:30PM	Coquina Salon H	31
Srivastava, A.	27-Jan	2:20PM	Coquina Salon F	15
Stanciu, L.	27-Jan	4:40PM	Coquina Salon A	14
Stand, L.M.	28-Jan	9:30AM	Halifax A/B	31
Stanfield, A.	31-Jan	8:30AM	Coquina Salon A	67
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Steveson, A.J.	30-Jan	9:00AM	Tomoka C	64
Stievano, L.	28-Jan	10:50AM	Tomoka A	25
Stokes, J.L.	28-Jan	11:00AM	Ponce de Leon	21
Strassburger, E.	27-Jan	1:30PM	St. Johns	12
Strong, K.T.	29-Jan	10:10AM	Coquina Salon D	40
Subhash, G.	28-Jan	1:30PM	St. Johns	23
Subotic, V.	29-Jan	4:30PM	Crystal	42
Suematsu, H.	28-Jan	10:20AM	Coquina Salon A	28
Sun, X.	28-Jan	9:40AM	St. Johns	23
Surappanahalli Rajanna, S.	31-Jan	9:30AM	Coquina Salon F	66
Süß, F.	28-Jan	8:30AM	Coquina Salon D	20
Suyama, S.	28-Jan	4:50PM	Coquina Salon H	31
Suzuki, T.S.	29-Jan	9:20AM	Halifax A/B	50
Suzuki, T.S.	30-Jan	2:30PM	Coquina Salon E	56
Swab, J.	28-Jan	10:20AM	St. Johns	23
Swab, J.	28-Jan	11:20AM	St. Johns	23
Swaminathan, B.	29-Jan	3:10PM	Coquina Salon D	40
Szymura, A.	28-Jan	9:30AM	Flagler A	26
T				
Tafu, M.	28-Jan	4:30PM	Coquina Salon C	25
Taheri, P.	31-Jan	8:50AM	Coquina Salon F	66
Takeda, M.	28-Jan	3:10PM	Tomoka B	29
Takemura, H.	28-Jan	10:50AM	Coquina Salon E	18
Takemura, S.	29-Jan	2:00PM	Halifax A/B	39
Tallon, C.	27-Jan	3:20PM	Coquina Salon E	9
Tamayo, A.	30-Jan	9:20AM	Coquina Salon F	61
Tamayo, A.	30-Jan	9:40AM	Coquina Salon F	61
Tatami, J.	28-Jan	9:20AM	Tomoka B	28
Tatami, J.	30-Jan	8:50AM	Coquina Salon D	59
Tatami, J.	30-Jan	1:30PM	Coquina Salon E	56
Tatara, R.	28-Jan	3:40PM	Tomoka A	26
Teo, J.	27-Jan	3:40PM	St. Johns	12
Terrani, K.	27-Jan	3:40PM	Coquina Salon B	17
Terrani, K.	28-Jan	8:30AM	Coquina Salon H	30
Terrones, D.	27-Jan	4:40PM	Coquina Salon G	10
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Toda, K.	28-Jan	2:30PM	Halifax A/B	32
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Tokoro, C.	28-Jan	2:30PM	Coquina Salon A	28
Tong, J.	31-Jan	8:30AM	Halifax A/B	66
Topka, K.	27-Jan	4:20PM	Ponce de Leon	11
Topka, K.	27-Jan	4:40PM	Ponce de Leon	11
Toprak, M.S.	28-Jan	9:00AM	Flagler A	26
Toussaint, G.	27-Jan	2:00PM	St. Johns	12
Trandafir, M.M.	28-Jan	2:50PM	Coquina Salon G	19
Travitzky, N.	29-Jan	10:50AM	Coquina Salon A	46
Tromas, C.	27-Jan	1:30PM	Coquina Salon F	15
Tsuchiya, T.	28-Jan	10:40AM	Halifax A/B	31
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Tumurugoti, P.	27-Jan	2:40PM	Coquina Salon B	17
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Upadhyay, K.	28-Jan	10:40AM	St. Johns	23
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Ur Rehman, A.	28-Jan	4:45PM	Coquina Salon B	33
Utlak, S.A.	29-Jan	2:20PM	Coquina Salon G	47
Uysal Sapanci, G.	29-Jan	4:10PM	St. Johns	43
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Vakifahmetoglu, C.	29-Jan	1:30PM	Coquina Salon F	47
Van der Biest, O.	29-Jan	9:40AM	Coquina Salon A	46
Vanazzi, M.	27-Jan	4:50PM	Coquina Salon H	16
Vargas, L.	28-Jan	10:20AM	Coquina Salon G	19
Varghese, O.K.	27-Jan	3:50PM	Tomoka C	18
Vetrone, F.	28-Jan	2:30PM	Coquina Salon C	25
Vetrone, F.	29-Jan	9:30AM	Tomoka C	52
Vieira, C.F.	30-Jan	2:00PM	Halifax A/B	59
Vignoles, G.L.	29-Jan	3:20PM	Coquina Salon G	47
Vinci, A.	30-Jan	10:50AM	Coquina Salon A	65
Virtudazo, R.V.	30-Jan	2:20PM	Halifax A/B	59
Vlasceanu, I.N.	30-Jan	9:20AM	Tomoka C	64
Vomiero, A.	27-Jan	2:30PM	Flagler A	13
W				
Wada, M.	28-Jan	9:50AM	Ponce de Leon	21
Wahl, L.	29-Jan	2:20PM	Coquina Salon B	51
Walock, M.J.	29-Jan	10:20AM	Ponce de Leon	41
Wang, C.	29-Jan	3:20PM	Tomoka A	45
Wang, J.	27-Jan	3:10PM	Tomoka A	13
Wang, J.	29-Jan	3:50PM	Coquina Salon E	37
Wang, Q.	29-Jan	11:30AM	Coquina Salon D	40
Wang, R.	28-Jan	10:50AM	Coquina Salon C	24
Wang, W.	28-Jan	10:50AM	Coquina Salon A	28
Warkentien, P.A.	27-Jan	4:40PM	Coquina Salon B	17
Weaver, E.	29-Jan	1:50PM	St. Johns	43
Weber, K.	28-Jan	9:50AM	Tomoka B	28
Weber, K.	29-Jan	2:00PM	Coquina Salon A	46
Weber, W.J.	27-Jan	8:50AM	Coquina Salon D	9
Webster, R.	29-Jan	3:40PM	Ponce de Leon	41
Weimer, A.W.	30-Jan	2:50PM	Tomoka A	61
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Wren, A.W.	28-Jan	11:10AM	Coquina Salon C	24
Wu, W.	28-Jan	1:50PM	Coquina Salon C	25
Wu, Y.	29-Jan	8:50AM	Halifax A/B	50
Wuchina, E.	30-Jan	8:30AM	Coquina Salon A	65
X				
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Yaginuma, M.	28-Jan	1:30PM	Crystal	22
Yamamoto, T.	30-Jan	9:40AM	Halifax A/B	58
Yamazaki, N.	28-Jan	9:10AM	Ponce de Leon	21
Yanagida, T.	27-Jan	4:20PM	Halifax A/B	17
Yang, J.	27-Jan	2:30PM	Coquina Salon A	14
Yang, Q.	28-Jan	2:40PM	St. Johns	24
Yassar, R.S.	28-Jan	4:30PM	Tomoka A	26
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Yoshida, K.	29-Jan	10:10AM	Coquina Salon E	37
Yoshimura, M.	27-Jan	1:30PM	Flagler A	13
Yuan, D.	28-Jan	10:20AM	Halifax A/B	31
Yue, Y.	30-Jan	1:30PM	Coquina Salon F	62
Yuezbasi, S.	30-Jan	9:00AM	Coquina Salon F	61
Yun, H.	27-Jan	1:40PM	Coquina Salon E	9
Z				
Zanchi, E.	29-Jan	10:50AM	Crystal	42
Zarrin, H.	27-Jan	5:10PM	Tomoka C	18
Zavattieri, P.	30-Jan	2:00PM	Coquina Salon H	57
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Zhang, X.	28-Jan	11:10AM	Halifax A/B	31
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Zhang, X.	30-Jan	8:30AM	Coquina Salon D	59
Zhang, Y.	28-Jan	10:20AM	Coquina Salon E	18
Zhang, Y.	30-Jan	9:10AM	Coquina Salon D	59
Zhitomirsky, I.	28-Jan	10:30AM	Coquina Salon C	24
Zhitomirsky, I.	28-Jan	2:00PM	Coquina Salon A	28
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Carvalho Costa, E.A.	29-Jan	5:00PM	Ocean Center Arena	52
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Chern Lin, J.	28-Jan	5:00PM	Ocean Center Arena	35
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Monday, January 27, 2020

Plenary Session

Room: Coquina Salon D

Session Chairs: Surojit Gupta, University of North Dakota; Valerie Wiesner, NASA Langley Research Center

8:30 AM

Opening Remarks and Awards

8:50 AM

(ICACC-PLEN-001-2020) Ion-Beam Modification and Nanostructure Evolution in Ceramics

W. J. Weber*[1]

1. University of Tennessee, Materials Science & Engineering, USA

9:30 AM

(ICACC-PLEN-002-2020) Development of precursor ceramics using organic silicon polymer

T. Ishikawa*[1]

1. Tokyo University of Science, Yamaguchi, Applied Chemistry, Japan

10:10 AM

Break

10:40 AM

(ICACC-PLEN-003-2020) Ceramic biomaterials: From traditional technologies to novel applications

K. Balazsi*[1]; C. Balazsi[1]

1. HAS Centre for Energy Research, Hungary

11:20 AM

(ICACC-PLEN-004-2020) Developing a Pathway to Microstructure-Aware Predictive Capability for the Shock/Dynamic Response of Materials

G. T. Gray*[1]

1. Los Alamos National Lab, USA

Special Focused Session on Diversity, Entrepreneurship, and Commercialization

Jubilee Global Diversity Awards; Entrepreneurship and Commercialization

Room: Coquina Salon E

Session Chairs: Surojit Gupta, University of North Dakota; Valerie Wiesner, NASA Langley Research Center

1:30 PM

Opening Remarks

1:40 PM

(ICACC-DIV-001-2020) Current Technological Advances in Multi-Ceramic Additive Manufacturing

H. Yun*[1]

1. Korea Institute of Materials Science, Republic of Korea

2:20 PM

(ICACC-DIV-002-2020) Ceramic and composite joints for nuclear applications

V. Casalegno*[1]

1. Politecnico di Torino, DISAT, Italy

3:00 PM

Break

3:20 PM

(ICACC-DIV-003-2020) Multi-scale thermal protective systems for extreme environments: Design, processing, properties and modeling

C. Tallon*[1]

1. Virginia Tech, Materials Science and Engineering, USA

4:00 PM

(ICACC-DIV-004-2020) Diversity and Inclusion in a large, international materials company (Invited)

K. Breder*[1]

1. Saint-Gobain, Saint-Gobain Research North America, USA

4:30 PM

(ICACC-DIV-005-2020) High Temperature Pressure (HTP) Boron Nitride Nanotube (BNNT): Discovery and Commercialization (Invited)

C. Park*[1]; S. Chu[2]; C. Fay[1]

1. NASA Langley Research Center, Advanced Materials and Processing Branch, USA
2. NASA Langley Research Center, National Institute of Aerospace, USA

9th Global Young Investigator Forum

Advanced Ceramics and Coatings for Structural, Environmental and Functional Applications I

Room: Coquina Salon G

Session Chairs: Matthew Appleby, NASA Glenn Research Center; Andrew Rosenberger, Purdue University

1:30 PM

(ICACC-GYIF-001-2020) Advantageous crystalline–amorphous phase boundary for water oxidation (Invited)

S. Mhin*[1]; H. Han[3]; Y. Chung[2]; T. Song[2]

1. Korea Institute of Industrial Technology, Heat Treatment R&D Group, Republic of Korea
2. Hanyang University, Republic of Korea
3. Hongik University, Republic of Korea

2:00 PM

(ICACC-GYIF-002-2020) Microstructure-based modeling of the thermomechanical properties of ceramic matrix composites (Invited)

E. Maillet*[1]; M. Moscinski[1]; A. Bagri[1]; P. Meyer[1]; D. Dunn[1]

1. GE Research, USA

2:30 PM

(ICACC-GYIF-003-2020) Influence of Hydrogen and Dual Atmosphere on the Defect Structure of Oxide Scales Formed on Stainless Steels (Invited)

M. Reisert*[1]; A. Aphale[1]; Y. Tsur[2]; P. Singh[1]

1. University of Connecticut, Materials Science and Engineering, USA
2. Technion - Israel Institute of Technology, Chemical Engineering, Israel

3:00 PM

Break

3:20 PM

(ICACC-GYIF-004-2020) Solid Particle Erosion in Gas-Turbine Grade Ceramic Matrix Composites and Protective Coatings (Invited)

M. J. Presby*[1]

1. NASA Glenn Research Center, USA

3:50 PM

(ICACC-GYIF-005-2020) Nano SiC - nano TiC composites fabricated via two-step sintering

R. Malik*[1]; Y. Kim[1]

1. University of Seoul, Dept. of Materials Science & Engineering, Republic of Korea

4:10 PM

(ICACC-GYIF-006-2020) Alternative Transport Phases for Cold Sintering (Invited)

S. Lowum*[1]; R. Floyd[1]; J. Maria[1]

1. Pennsylvania State University, Materials Science and Engineering, USA

4:40 PM

(ICACC-GYIF-007-2020) Characterization of Sphere Impact Response of Ice-templated Hierarchical Porous Ceramics

D. Terrones*[1]; S. Akurati[2]; D. Ghosh[2]

1. Old Dominion University, Mechanical Engineering, USA
2. Old Dominion University, Mechanical and Aerospace Engineering, USA

5:00 PM

(ICACC-GYIF-008-2020) ZrC-W composites prepared by reactive melt infiltration of Zr_2Cu alloy into binder-jet printed WC/ZrC preforms

R. Mudanyi*[1]; C. L. Cramer[2]; A. Elliott[2]; D. Kumar[1]

1. North Carolina A&T State University, Mechanical Engineering, USA
2. Oak Ridge National Lab, Manufacturing Demonstration Facility, USA

S1: Mechanical Behavior and Performance of Ceramics & Composites

Environmental Effects and Thermo-mechanical Performance I

Room: Coquina Salon D

Session Chair: Jonathan Salem, NASA Glenn Research Center

1:30 PM

(ICACC-S1-001-2020) Progress and Plans for CMC Research at NASA Glenn in 2020 (Invited)

J. E. Grady*[1]

1. NASA Glenn Research Center, Ceramic & Polymer Composites Branch, USA

2:00 PM

(ICACC-S1-002-2020) Creep in interlaminar shear of a Hi-Nicalon™/SiC-B_4C composite at 1300°C in air and in steam

M. Ruggles-Wrenn*[1]; T. Wallis[1]

1. Air Force Institute of Technology, Aeronautics & Astronautics, USA

2:20 PM

(ICACC-S1-003-2020) Fatigue Characterization of Melt-Infiltrated Ceramic Matrix Composites in a Combustion Facility

R. Panakarajupally*[1]; M. Kannan[1]; G. N. Morscher[1]

1. University of Akron, Mechanical Engineering, USA

2:40 PM

(ICACC-S1-004-2020) Comparison between the thermomechanical behavior of ceramic parts obtained by plasma spray and conventional sintering

V. Badea*[1]; A. Denoirjean[1]; G. Antou[1]; T. Chotard[1]

1. University of Limoges, IRCER, France

3:00 PM

Break

Environmental Effects and Thermo-mechanical Performance II

Room: Coquina Salon D

Session Chair: Joseph Grady, NASA Glenn Research Center

3:20 PM

(ICACC-S1-005-2020) Static Fatigue of Hi-Nicalon™-S Fiber at Elevated Temperature in Air, Steam and Silicic-Acid-Saturated Steam

S. Robertson[1]; M. Ruggles-Wrenn*[1]; R. Hay[2]; T. Shillig[1]; R. Mitchell[1]; B. Kroeger[1]; L. Gumucio[1]

1. Air Force Institute of Technology, Aeronautics & Astronautics, USA
2. Air Force Research Laboratory, USA

3:40 PM

(ICACC-S1-006-2020) New perspectives on boria-accelerated oxidation of silicon carbide

B. McFarland[1]; E. Opila*[1]

1. University of Virginia, USA

4:00 PM

(ICACC-S1-007-2020) Coupling Chemistry and Mechanics to Model Oxidation Embrittlement of SiC/BN/SiC Ceramic Matrix Composites

V. Collier*[1]; M. Begley[1]; W. Xu[2]; F. W. Zok[2]; R. McMeeking[2]

1. University of California, Santa Barbara, Materials, USA
2. University of California, Santa Barbara, USA

4:20 PM

(ICACC-S1-008-2020) Effect of oxygen content on oxidation resistance of SiC fibers

S. Kanazawa*[1]; N. Yamazaki[1]; K. Kubushiro[2]

1. IHI Corporation, Japan
2. IHI ASIA PACIFIC(Thailand)Co., Ltd., Thailand

4:40 PM

(ICACC-S1-009-2020) Oxidation of SiC fibers and bulk SiC at intermediate temperatures

V. Christensen*[1]; F. W. Zok[1]

1. University of California, Santa Barbara, Materials, USA

5:00 PM

(ICACC-S1-010-2020) High Temperature Mechanical Properties of Monolithic Tungsten Carbide

B. Currie*[1]; L. J. Vandeperre[2]; S. A. Humphry-Baker[2]

1. Imperial College, CASC, United Kingdom
2. Imperial College London, Materials, United Kingdom

5:20 PM

(ICACC-S1-011-2020) How to improve the potential of high-temperature thermal energy storage technologies through ceramic matrix composites

Y. Shi*[1]; F. Kessel[1]; D. Koch[1]; V. Stahl[2]; T. Lanz[2]; P. Vetter[2]; W. Kraft[2]; W. Ding[3]

1. DLR - German Aerospace Center, Institute of Structures and Design, Ceramic Composites and Structures, Germany
2. DLR - German Aerospace Center, Institute of Vehicle Concepts, Germany
3. DLR - German Aerospace Center, Institute of Engineering Thermodynamics, Germany

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

Advanced Coatings for Extreme Environments

Room: Ponce de Leon

Session Chairs: Peter Mechnich, DLR - German Aerospace Center; Eugene Medvedovski, Consultant

1:30 PM

(ICACC-S2-001-2020) Linking the Microstructural Evolution and Oxidization Behavior of Mixed Metal Diboride Coatings Deposited by Chemical Vapor Deposition

C. Romnes[2]; K. Canova[1]; Z. Tucker[1]; Z. Zhang[1]; J. R. Abelson[1]; J. A. Krogstad*[1]

1. University of Illinois at Urbana-Champaign, Materials Science and Engineering, USA
2. University of Illinois at Urbana-Champaign, Department of Nuclear, Plasma and Radiological Engineering, USA

1:50 PM

(ICACC-S2-002-2020) Relationship Between Bonding and Performance of Polymer-Derived Ceramic Thermal/ Environmental Barrier Coatings

K. McGarrity*[1]; H. Shulman[1]; P. Tumurugoti[2]; K. Ning[1]

1. Alfred University, Materials Science and Engineering, USA
2. Alfred University, USA

2:10 PM

(ICACC-S2-003-2020) Influence of doping on the improvement of thermo-mechanical and chemical properties of a stabilised hafnia for an ultra-high temperature thermal and environmental barrier

L. Sévin*[1]; A. Julian-Jankowiak[1]; J. Justin[1]; V. Razafindramanana[1]; F. Mauvy[2]; F. Rebillat[3]

1. ONERA, DMAS, France
2. ICMCB-CNRS, France
3. University Bordeaux, Laboratory of thermostuctural composites, France

2:30 PM

(ICACC-S2-004-2020) Growth Behaviour of Thermally Grown Oxides Alumina and Silica in High-Temperature Protective Coatings

K. Chen*[1]

1. National Research Council Canada, Aerospace Research Centre, Canada

2:50 PM

Break

3:10 PM

(ICACC-S2-005-2020) Erosion Studies of the Iron Boride Coatings for Protection of Tubing Components in Oil Production, Mineral Processing and Engineering Applications (Invited)

E. Medvedovski*[1]; M. Antonov[2]

1. Endurance Technologies Inc., Canada
2. Tallinn University of Technology, Mechanical and Industrial Engineering, Estonia

3:40 PM

(ICACC-S2-006-2020) Development of Materials of the Al_2O_3-Cr_2O_3-TiO_2 System for Surface Technologies

L. Berger*[1]; S. Conze[1]

1. Fraunhofer IKTS, Germany

4:00 PM

(ICACC-S2-007-2020) Bioactive coatings obtained by cold spray and atmospheric plasma spraying

A. Ion*[1]; F. Rossignol[1]; A. Denoirjean[1]

1. Institute of Research for Ceramics (IRCER), UMR CNRS 7315, France

4:20 PM

(ICACC-S2-008-2020) Advanced chemical vapor deposition routes for the production of SiO_2 barrier films at moderate temperature

K. Topka*[1]; S. Ponton[1]; H. Vergnes[1]; D. Samelor[2]; D. Sadowski[2]; V. Turq[3]; R. Laloo[3]; C. Genevois[4]; H. Lecoq[4]; C. Vahlas[2]; B. Caussat[1]

1. LGC, Université de Toulouse, CNRS, France
2. CIRIMAT, Université de Toulouse, CNRS, France
3. CIRIMAT-UPS-CHIMIE, Université Paul Sabatier, CNRS, France
4. CNRS CEMHTI UPR3079, Université d'Orléans, F-45071, France

4:40 PM

(ICACC-S2-009-2020) Development of a kinetic model for the moderate temperature chemical vapor deposition of SiO_2 films from TEOS, O_2 and O_3

K. Topka*[1]; G. Chliavoras[2]; H. Vergnes[1]; D. Samelor[3]; D. Sadowski[3]; C. Vahlas[3]; B. Caussat[1]

1. LGC, Université de Toulouse, CNRS, France
2. National Technical University of Athens, Greece
3. CIRIMAT, Université de Toulouse, CNRS, France

5:00 PM

(ICACC-S2-010-2020) Development of the First SCO Molecular Ceramic by Cool-SPS

L. El Khoury*[1]; N. Daro[1]; M. Marchivie[1]; M. Josse[1]

1. ICMCB-CNRS, France

5:20 PM

(ICACC-S2-011-2020) Multifunctional ceramic layers of hexagonal boron nitride and graphite

C. S. Chari*[1]; K. Faber[1]

1. California Institute of Technology, Materials Science, USA

S3: 17th International Symposium on Solid Oxide Cells (SOC): Materials, Science and Technology

Progress in SOFC and SOEC Technology

Room: Crystal

Session Chair: Narottam Bansal, NASA Glenn Research Center

1:30 PM

(ICACC-S3-001-2020) Overview of U.S. Department of Energy Office of Fossil Energy's Solid Oxide Fuel Cell Program (Invited)

P. Burke*[1]; S. D. Vora[1]

1. U.S. Department of Energy, National Energy Technology Laboratory, USA

2:00 PM

(ICACC-S3-002-2020) Development of Solid Oxide Fuel Cells in China (Invited)

M. Han*[1]

1. Tsinghua University, State Key Laboratory of Power Systems, Department of Energy and Power Engineering, China

2:30 PM

(ICACC-S3-003-2020) SOC Progress in Germany and EU (Invited)

M. Kusnezoff*[1]; A. Michaelis[1]

1. Fraunhofer IKTS, Germany

3:00 PM

(ICACC-S3-004-2020) High temperature proton- and oxide-conducting fuel cells and electrolyzers in ARPA-E portfolio (Invited)

G. L. Soloveichik*[1]

1. Advanced Research Projects Agency - Energy (ARPA-E), USA

3:30 PM

Break

SOC Stacks and Their Integration in the Systems

Room: Crystal

Session Chair: Patcharin Burke, Pennsylvania State University

4:00 PM

(ICACC-S3-005-2020) Demonstration of an industrial-size biogas-fed SOFC system: Experience, degradations, economy (Invited)

M. Santarelli*[1]; M. Gandiglio[2]; T. Hakala[2]; M. Rautanen[3]; M. Acri[4]; A. Hawkes[5]

1. Politecnico di Torino, Energy, Italy
2. CONVION Oy, Finland
3. VTT Technical Research Centre of Finland, Finland
4. SMAT spa, Italy
5. Imperial College, United Kingdom

4:30 PM

(ICACC-S3-006-2020) SOFC Stack and System Development for Automotive Use

T. Shiomi*[1]; M. Kamijo[1]

1. Nissan Motor Co., Ltd., EV System Laboratory, Japan

5:00 PM

(ICACC-S3-007-2020) Development and operation of Saint-Gobain's all-ceramic Solid Oxide Fuel Cell Stack (Invited)

J. Pietras*[1]; Y. Takagi[1]; B. Feldman[1]; S. Megel[2]; J. Schnetter[2]; S. Hielscher[2]; G. Ganzer[2]; M. Kusnezoff[2]

1. Saint-Gobain, USA
2. Fraunhofer IKTS, Germany

5:30 PM

(ICACC-S3-008-2020) Power to fuels: A giga-market channel for renewable energy

J. Hartvigsen[1]; S. Elangovan*[1]; S. Nigarura[2]

1. OXEON ENERGY LLC, USA
2. Global Tungsten Powders, USA

S4: Armor Ceramics - Challenges and New Developments

Terminal Ballistics I & II

Room: St. Johns

Session Chairs: Jerry LaSalvia, U.S. Army Research Laboratory; Brian Schuster, U.S. Army Research Laboratory

1:20 PM

Welcome and Opening Remarks

1:30 PM

(ICACC-S4-001-2020) Ballistic Testing and Characterization of Ceramic Armor Materials (Invited)

E. Strassburger*[1]

1. Fraunhofer Institute, High-Speed Dynamics, Germany

2:00 PM

(ICACC-S4-002-2020) Ballistic evaluation of boron carbide ceramic tiles (Invited)

G. Toussaint*[1]; B. Koch[2]; J. D. Hogan[2]

1. Defence Research and Development Canada, Canada
2. University of Alberta, Edmonton, Mechanical Engineering, Canada

2:30 PM

(ICACC-S4-003-2020) Incipient Fracture of Ceramics Under Impact (Invited)

B. Schuster*[1]; A. Tonge[1]; P. Jannotti[1]; T. Scharf[2]; N. Lorenzo[3]

1. US Army Research Laboratory, FCDD-RLW-B, USA
2. University of North Texas, Department of Material Science and Engineering, USA
3. US Army Research Laboratory, SURVICE Engineering, USA

3:00 PM

Break

3:20 PM

(ICACC-S4-004-2020) Using Laser-Driven Projectiles for Ceramic Armor Characterization

D. D. Mallick*[1]

1. US Army Research Laboratory, USA

3:40 PM

(ICACC-S4-005-2020) Impedance Matching Ceramic Matrix Composites for Better Armour Ceramics

J. Teo*[1]; E. Saiz Gutierrez[1]; L. J. Vandeperre[1]

1. Imperial College, Materials, United Kingdom

4:00 PM

(ICACC-S4-006-2020) Ceramic Components and Composites and their Application in Ballistic Protection (Invited)

R. Gadow*[1]

1. Institute for Manufacturing Technologies of Ceramic Components and Composites, University of Stuttgart, Germany

4:30 PM

(ICACC-S4-007-2020) Composite armor based on borides and carbides

T. Prikhna*[1]; R. A. Haber[2]; P. Barvitskyi[1]; A. Neshpor[3]; V. Moshchil[1]; C. Hwang[2]; A. Maznaya[4]; A. Kozyrev[1]; V. Muratov[4]; L. Devin[1]; M. Karpets[1]; S. Dub[1]; E. Prysiazhna[1]; A. Lokatkina[1]

1. Institute for Superhard Materials of the National Academy of Sciences of Ukraine, Ukraine
2. Rutgers University, Department of Material Science and Engineering, USA
3. Institute for Problems in Material Sciences of the National Academy of Sciences of Ukraine, Scientific and Technical Center "Composite Materials", Ukraine
4. Institute for Problems in Material Science, NAS Ukraine, Ukraine

4:50 PM

(ICACC-S4-008-2020) A Unified Analytical Model for the Dynamic Response of Armor Ceramics to Impact and Penetration

S. Bavdekar*[2]; S. Satapathy[1]; G. Subhash[2]

1. US Army Research Laboratory, FCDD-RLW-PB, USA
2. University of Florida, Mechanical and Aerospace Engineering, USA

Quasi-Static and Dynamic Behavior I

Room: St. Johns

Session Chairs: Sikhanda Satapathy, Army Research Laboratory; Ghatu Subhash, University of Florida

5:10 PM

(ICACC-S4-009-2020) Experimental analysis of thermally shocked ceramics as models of damaged behavior

J. D. Hogan*[1]; B. Koch[1]; T. Sano[2]

1. University of Alberta, Edmonton, Mechanical Engineering, Canada
2. Weapons and Materials Research Directorate, Combat Capabilities Development Command Army Research Laboratory, USA

5:30 PM

(ICACC-S4-010-2020) Dynamic Fragmentation Behavior of Confined Ceramics

J. J. Pittari*[1]; T. R. Walter[1]

1. CCDC Army Research Laboratory, Material Response and Design Branch, USA

S5: Next Generation Bioceramics and Biocomposites

Next Generation Bioceramics I

Room: Coquina Salon C

Session Chairs: Akiyoshi Osaka, Henan Univ of Sci & Tech; Masanori Kikuchi, National Institute for Materials Science (NIMS)

1:30 PM

(ICACC-S5-001-2020) Biomedical Applications of Cerium Oxide Nanoparticles: Applications, Mechanisms and the Road Ahead

A. Karakoti*[1]

1. University of Newcastle, Global Innovative Center for Advanced Nanomaterials, Australia

1:50 PM

(ICACC-S5-002-2020) Preparation of Gentamicin-Sulfate Loaded Hydroxyapatite/collagen Bone-Like Nanocomposite for Antibacterial Bone Void Fillers (Invited)

M. Kikuchi*[1]; S. Oshima[3]; K. Ozeki[3]; M. Honda[2]

1. National Institute for Materials Science (NIMS), Bioceramics Group, Japan
2. Meiji University, Japan
3. Ibaraki University, Japan

2:10 PM

(ICACC-S5-003-2020) Engineering of silicone-based mixtures for the digital light processing of akermanite scaffolds (Invited)

A. Dasan[3]; H. Elsayed[1]; J. Kraxner[3]; D. Galusek[2]; P. Colombo[1]; E. Bernardo*[1]

1. University of Padova, Department of Industrial Engineering, Italy
2. IIC SAS, Joint Glass centre, Slovakia
3. University of Trenčín, FunGlass (Centre for Functional and Surface Functionalized Glass), Slovakia

2:30 PM

(ICACC-S5-004-2020) Suspension Flame Sprayed Metal Doped Calcium Phosphate Coatings with Antibacterial Properties for Infection Prophylaxis (Invited)

R. Gadow*[1]; A. Killinger[1]; A. Bernstein[2]; M. Blum[1]

1. Institute for Manufacturing Technologies of Ceramic Components and Composites, University of Stuttgart, Germany
2. Musculoskeletal research lab, Clinics of Orthopedics and Trauma Surgery, Germany

2:50 PM

Break

3:10 PM

(ICACC-S5-005-2020) Lithography-based additive manufacturing of zirconia for dental and medical applications (Invited)

M. Schwentenwein*[1]; J. Rabitsch[1]; T. Konegger[2]; J. Homa[1]

1. Lithoz GmbH, Austria
2. TU Wien - Vienna University of Technology, Institute of Chemical Technologies and Analytics, Austria

3:30 PM

(ICACC-S5-006-2020) Hydroxyapatite nanoparticles due to direct conversion of calcium carbonate in phosphate solutions (Invited)

Y. Sun[2]; A. Osaka*[1]; G. Wang[2]

1. Okayama University/Henan Univ of Science & Tech, Japan
2. Henan University of Science & Tech, School Mat Science & Engineering, China

3:50 PM

(ICACC-S5-007-2020) Micro-to-nano surface roughening of 3Y-TZP for improved osseointegration and bacteria reduction (Invited)

A. Kocjan*[1]; J. Moritz[2]; A. Abram[1]; A. Dakskobler[3]; K. Ivicak-Kocjan[4]

1. Jozef Stefan Institute, Slovenia
2. Fraunhofer IWS, Germany
3. Vall-Cer d.o.o., Slovenia
4. National Institute of Chemistry, Slovenia

4:10 PM

(ICACC-S5-008-2020) Processing and Characterisation of Multifunctional Pressureless Sintered Al_2O_3-$CaTiO_3$ Nanocomposites (Invited)

P. K. Mallik*[1]; J. K. Sahoo[1]; S. Mallick[1]; S. Patnaik[1]

1. Indira Gandi Institute of Technology Sarang, Metallurgical and Materials Engineering, India

S6: Advanced Materials and Technologies for Rechargeable Energy Storage

All Solid State Batteries

Room: Tomoka A

Session Chairs: Palani Balaya, National University of Singapore; Olivier Guillon, Forschungszentrum Juelich

1:30 PM

(ICACC-S6-001-2020) Operando Analysis of All-Solid-State Battery Cathodes Using X-Ray Absorption Spectroscopy Measurements (Invited)

Y. Kimura[1]; T. Nakamura[1]; K. Amezawa*[1]

1. Tohoku University, IMRAM, Japan

2:00 PM

(ICACC-S6-002-2020) Interphase Formation and Chemo-Mechanics in Ceramic Electrolytes for Solid-State Batteries (Invited)

M. McDowell*[1]

1. Georgia Institute of Technology, Mechanical Engineering, Materials Science and Engineering, USA

2:30 PM

(ICACC-S6-003-2020) Room-temperature all-solid-state sodium batteries with robust ceramic interface between electrolyte and electrode materials

T. Lan[1]; Q. Ma[1]; C. Tsai[1]; F. Tietz[1]; O. Guillon*[1]

1. Forschungszentrum Juelich, IEK-1, Germany

2:50 PM

Break

3:10 PM

(ICACC-S6-004-2020) Synchrotron X-ray imaging of all solid state batteries and interfaces (Invited)

J. Wang*[1]

1. Harbin Institute of Technology, China

3:40 PM

(ICACC-S6-005-2020) Ion conducting polymers that emulate LiPON. Towards all solid-state batteries (ASBs) (Invited)

R. M. Laine*[1]; E. Temeche[1]; X. Zhang[1]

1. University of Michigan, Materials Science and Eng., USA

4:10 PM

(ICACC-S6-006-2020) Ceramic cathodes for all-solid-state batteries: Co-sintering of Li conductive oxide and active material

K. Waetzig[1]; J. Schilm[2]; J. Beaupain[1]; H. Auer[1]; K. Nikolowski[1]; M. Wolter[1]; M. Kusnezoff*[1]

1. Fraunhofer IKTS, Germany
2. Fraunhofer IKTS, Materials and components, Germany

4:40 PM

(ICACC-S6-007-2020) Investigation of scalable solid-state battery components

D. Dornbusch*[1]; R. Viggiano[1]; F. Dynys[1]

1. NASA Glenn Research Center, USA

5:00 PM

(ICACC-S6-008-2020) Electrochemical properties of $Na_2FeP_2O_7$ glass-ceramic cathode in all-solid-state battery

T. Honma*[1]; H. Yamauchi[2]; J. Ikejiri[2]; F. Sato[2]; T. Komatsu[3]

1. Nagaoka Univeristy of Technology, Department of Materials Science and Technology, Japan
2. Nippon Electric Glass Co., Ltd, Japan
3. Nagaoka University of Technology, Japan

5:20 PM

(ICACC-S6-009-2020) Ion conducting polymers that emulate LiPON. Precursor/PEO solid solutions as solid electrolytes: Towards all solid-state batteries (ASBs)

R. M. Laine*[1]; E. Temeche[1]; X. Zhang[1]

1. Dept of Materials Science and Eng, USA

S7: 14th International Symposium on Functional Nanomaterials and Thin Films for Sustainable Energy Harvesting, Environmental, and Health Applications

Nanomaterials for Energy Conversion and Storage and Catalysis I

Room: Flagler A

Session Chair: Yakup Gönüllü, University of Cologne

1:30 PM

(ICACC-S7-031-2020) Possible continuous (successive) fabrication of nano-structured ceramics via soft solution processing (Invited)

M. Yoshimura*[1]

1. National Cheng Kung University, Taiwan

2:00 PM

(ICACC-S7-001-2020) Multifunctional materials for emerging technologies (Invited)

F. Rosei*[1]

1. INRS, Canada

2:30 PM

(ICACC-S7-002-2020) Interfacial properties determine the functional behavior in composite nano-systems for energy harvesting (Invited)

A. Vomiero*[1]; I. Concina[1]; G. Solomon[1]; P. Ghamgosar[1]; M. Gilzad Kohan[1]

1. Lulea University of Technology, Engineering Sciences & Mathematics, Sweden

3:00 PM

Break

Nanomaterials for Energy Conversion and Storage and Catalysis II

Room: Flagler A

Session Chair: Alberto Vomiero, Lulea University of Technology

3:20 PM

(ICACC-S7-003-2020) Copper-nickel nanoalloys supported on mesoporous TiO_2 as efficient photocatalysts for H_2 production through water splitting reaction

S. Neatu*[1]; K. Belfaa[2]; A. Gardi[2]; M. M. Trandafir[1]; M. Florea[1]; F. Neatu[1]

1. National Institute of Materials Physics, Romania
2. Unite de Researche Electrochimie, Materiaux et Environnement (UREME), Faculte de Sciences de Gabes, Universite de Gabes, Tunisia

3:40 PM

(ICACC-S7-004-2020) New Aspects For Thermoelectricity "Hybrid and 3D Thermoelectric Materials" (Invited)

S. Ballikaya*[1]; E. Çelik[2]; M. S. Toprak[3]

1. Istanbul University, Physics, Turkey
2. University of Miami, Aerospace and Mechanical Eng., USA
3. KTH Royal Institute of Technology, Dept. of Applied Physics, Sweden

4:10 PM

(ICACC-S7-005-2020) Parallelizable electrocatalytic oxygen evolution reactions on metal phosphides

M. Je*[1]; H. Choi[1]

1. University of Cologne, Germany

4:30 PM

(ICACC-S7-006-2020) Piezoelectrics go lead-free: Potassium Sodium Niobate nanofibers for energy harvesting applications

A. Ichangi*[1]; A. Gomez[2]; N. Panayanthatta[3]; A. Verma[1]; T. Fischer[4]; S. Mathur[4]

1. University of Cologne, Institute of Inorganic Chemistry, Germany
2. Institut de Ciència de Materials de Barcelona, Spain
3. Institut IMEP-LaHC, France
4. University of Cologne, Institute of Inorganic Chemistry, Germany

4:50 PM

(ICACC-S7-007-2020) Nanocrystalline, transition metal oxide/oxy-chalcogenide nanostructures for high-current hydrogen evolution electrocatalysis

G. Giuffredi*[1]; A. Mezzetti[1]; A. Perego[1]; G. Tirelli[2]; P. Mazzolini[1]; F. Fumagalli[1]; F. Di Fonzo[1]

1. Istituto Italiano di Tecnologia, Italy
2. Politecnico di Milano, Italy

S8: 14th International Symposium on Advanced Processing and Manufacturing Technologies for Structural and Multifunctional Materials and Systems (APMT14)

Advanced Sintering Technologies I

Room: Coquina Salon A

Session Chairs: Richard Todd, University of Oxford; Hisayuki Suematsu, Nagaoka University of Technology

1:30 PM

(ICACC-S8-001-2020) High and Ultra-High Temperature Ceramic Matrix Composites Fabricated by Rapid Chemical Vapour Infiltration (Invited)

J. Binner*[1]; V. Venkatchalam[1]; M. Porter[1]

1. University of Birmingham, Metallurgy and Materials, United Kingdom

2:00 PM

(ICACC-S8-002-2020) Review of the total bond order density concept for structural and multifunctional materials with applications to material design and processing (Invited)

W. Ching*[1]

1. University of Missouri-Kansas City, USA

2:30 PM

(ICACC-S8-003-2020) Synthesis and mechanical properties of highly porous ultrafine-grain Si_3N_4 ceramics via carbothermal reduction-nitridation (Invited)

J. Yang*[1]; Q. Zhi[1]; B. Wang[1]

1. Xi'an Jiaotong University, State Key Laboratory for Mechanical Behavior of Materials, China

3:00 PM

Break

3:20 PM

(ICACC-S8-004-2020) Closed Loop Recycling of Ceramics (Invited)

R. Riman[1]; D. Kopp*[1]

1. Rutgers University, Materials Science & Engineering, USA

3:50 PM

(ICACC-S8-005-2020) Advanced ceramic foams from metakaolin-based aqueous suspensions actived with inorganic and organic bases (Invited)

A. Rincon[2]; H. Elsayed[1]; F. Dogrul[2]; E. Bernardo*[1]

1. University of Padova, Department of Industrial Engineering, Italy
2. University of Trencin, FunGlass (Centre for Functional and Surface Functionalized Glass), Slovakia

4:20 PM

(ICACC-S8-006-2020) Manufacturing of Ceramic Fiber reinforced Light Metals via Spark Plasma Sintering

M. Jiménez Martínez*[1]; R. Gadow[2]; F. Kern[1]

1. University of Stuttgart, Institute for Manufacturing Technologies of Ceramic Components and Composites, Germany
2. Institute for Manufacturing Technologies of Ceramic Components and Composites, University of Stuttgart, Germany

4:40 PM

(ICACC-S8-007-2020) Origin of high interfacial resistance in solid-state batteries: Interdiffusion and amorphous film formation

L. Stanciu*[1]

1. Purdue University, Materials Engineering, USA

5:00 PM

(ICACC-S8-008-2020) Effect of sintering aids, phase interface and grain boundaries on thermal conductivity of SiC ceramics fabricated by spark plasma sintering

Z. Chai*[1]; P. Xiao[1]

1. University of Manchester, Materials, United Kingdom

5:20 PM

(ICACC-S8-009-2020) Agar gelcasting of Al_2O_3 beads with different sizes through combination of dripping and novel rapid drying

K. Lertwittayanon*[1]; C. Phetkanchanamala[1]

1. Prince of Songkla University, Materials Science and Technology, Thailand

5:40 PM

(ICACC-S8-010-2020) Variation in Densification behavior of Yttria Stabilized Zirconia Processed by Spark Plasma Sintering

C. S. Smith[1]; N. J. Madden[1]; J. A. Krogstad*[1]

1. University of Illinois at Urbana-Champaign, Materials Science and Engineering, USA

S11: Advanced Materials and Innovative Processing Ideas for Production Root Technologies

Ceramics : Powder, Bulk and Characterization

Room: Tomoka B

Session Chairs: Byung-Koog Jang, Kyushu University; Sungwook Mhin, Korea Institute of Industrial Technology

1:30 PM

(ICACC-S11-001-2020) Control of morphology and oxidation state of metal oxides, using ionic liquids/deep eutectic solvents assisted synthesis (Invited)

O. Gomez Rojas*[1]; T. Nakayama[1]

1. Nagaoka University of Technology, Japan

2:00 PM

(ICACC-S11-002-2020) Nanoparticle synthesis of borides by pulsed discharge of compacted powder

H. D. Nguyen*[1]; M. Ngo[1]; Y. Tokoi[2]; T. Do[1]; T. Nakayama[1]; H. Suematsu[1]; K. Niihara[1]

1. Nagaoka University of Technology, Japan
2. National Institute of Technology, Oyama College, Japan

2:20 PM

(ICACC-S11-003-2020) Development of rheological techniques to analyse the flow of highly filled injection moulding compounds

A. Edwards*[1]

1. University of Birmingham, Chemical Engineering, United Kingdom

2:40 PM

(ICACC-S11-004-2020) Study about graphitization behavior of furan resin at the interface during C/C composite production

K. Nishimura*[1]; T. Irisawa[2]; T. Yamamoto[3]; Y. Tanabe[2]

1. Nagoya University, Engineering, Japan
2. Nagoya University, Japan
3. Nagoya University, Department of Materials and Design Innovation Engineering, Japan

3:00 PM

Break

3:20 PM

(ICACC-S11-005-2020) Preparation and Characterization of Natural Rubber with Nanodiamond Nanomatrix Structure (Invited)

S. Kawahara*[1]

1. Nagaoka University of Technology, Japan

3:50 PM

(ICACC-S11-006-2020) Role of TiC in the two-steps self-healing mechanism of $Y_2Ti_2O_7$-Y_2TiO_5 -TiC system

A. Okawa*[1]; T. Nguyen[2]; W. J. Paulo[1]; H. Iwasawa[1]; T. Nakayama[1]; T. Do[1]; H. Suematsu[1]; T. Suzuki[1]; T. Goto[1]; K. Niihara[1]

1. Nagaoka University of Technology, Extreme Energy-Density Research Institute, Japan
2. Kushiro National College of Technology, Department of Creative Engineering, Japan

4:10 PM

(ICACC-S11-007-2020) Evaluation of the Water Vapor Corrosion Resistance of $Y_2Ti_2O_7$ as Thermal/ Environmental Barrier Coating

Y. Nakazawa*[1]; T. Nguyen[2]; W. J. Paulo[1]; A. Okawa[1]; T. Nakayama[1]; T. Do[1]; T. Suzuki[1]; T. Goto[1]; K. Niihara[1]

1. Nagaoka University of Technology, Extreme Energy-Density Research Institute, Japan
2. Kushiro National College of Technology, Department of Creative Engineering, Japan

4:30 PM

(ICACC-S11-008-2020) Microstructural Properties and Sintering Behavior of Y_2O_3 by Spark Plasma Sintering (Invited)

B. Jang*[2]; B. Kim[1]

1. National Institute for Materials Science (NIMS), Research Center for Functional Materials, Japan
2. Kyushu University, Interdisciplinary Graduate School of Engineering Sciences, Japan

5:00 PM

(ICACC-S11-009-2020) Effect of SiC addition on $Yb_2Si_2O_7$ and its corrosion behavior in high temperature water vapor

K. Arai*[2]; T. Nguyen[1]; W. J. Paulo[2]; A. Okawa[2]; T. Nakayama[2]; T. Do[2]; T. Suzuki[2]; T. Goto[2]; K. Niihara[2]

1. Kushiro National College of Technology, Department of Creative Engineering, Japan
2. Nagaoka University of Technology, Extreme Energy-Density Research Institute, Japan

5:20 PM

(ICACC-S11-010-2020) Impact of Ceramic Raw Materials Variation on Investment Casting Refractories

E. Jones*[1]

1. University of Birmingham, Chemical Engineering, United Kingdom

S12: On the Design of Nano-Laminated Ternary Transition Metal Carbides/Nitrides (MAX Phases) and Borides (MAB Phases), and their 2D Counterparts (MXENES, MBENES)

Mechanical Behavior of MAX Phases

Room: Coquina Salon F

Session Chairs: Michel Barsoum, Drexel University; Thierry Cabioch, University of Poitiers

1:30 PM

(ICACC-S12-001-2020) Nanomechanical testing experiments to investigate elementary plastic deformation mechanisms in MAX phases (Invited)

C. Tromas*[1]; S. Parent[1]; A. Joulain[1]; L. Thilly[1]; P. Villechaise[1]; T. Ouisse[2]

1. Institut PPRIME, Physics and mechanics of materials, France
2. Grenoble INP, France

2:00 PM

(ICACC-S12-002-2020) Tensile Creep of Textured Ti_2AlC in the 1000–1150°C Temperature Range

M. Sokol*[1]; T. El-Melegy[1]; M. Barsoum[1]

1. Drexel University, Materials Science and Engineering, USA

2:20 PM

(ICACC-S12-003-2020) Intrinsic deformation and failure response of single crystal MAX phases

Z. Zhan[1]; H. Rathod[1]; T. Ouisse[2]; M. Radovic[1]; A. Srivastava*[1]

1. Texas A&M University, USA
2. Université Grenoble-Alpes, France

2:40 PM

(ICACC-S12-004-2020) Mechanical exfolation of MAX phase and $Mo_4Ce_4Al_7C_3$ single crystals

A. Gkountaras*[3]; Y. Kim[2]; J. Coraux[3]; S. Lisi[3]; V. Bouchiat[3]; M. Barsoum[1]; T. Ouisse[2]

1. Drexel University, Materials Science and Engineering, USA
2. Grenoble INP, France
3. CNRS, NEEL Institute, France

3:00 PM

Break

Functional Behavior of MAX Phases

Room: Coquina Salon F

Session Chairs: Miladin Radovic, Texas A&M University; Jie Zhang, Institute of Metal Research, Chinese Academy of Sciences

3:20 PM

(ICACC-S12-005-2020) Revealing the catalytic features of MAX phase (Invited)

M. Florea*[1]

1. National Institute of Materials Physics, Romania

3:50 PM

(ICACC-S12-006-2020) Role of intermediate intermetallics in the formation of MAX phases

J. Lyons*[1]; F. Giuliani[2]

1. Imperial College London, Materials, United Kingdom
2. Imperial College London, United Kingdom

4:10 PM

(ICACC-S12-007-2020) Multifunctional cellular MAX phase architectures

J. Gonzalez-Julian*[1]; M. Belmonte[2]; P. Miranzo[3]; M. I. Osendi[3]; W. Araki[4]; J. Malzbender[1]; R. Vassen[1]

1. Forschungszentrum Juelich, Germany
2. Institute of Ceramics and Glass, CSIC, Spain
3. Institute of Ceramics and Glass, CSIC, Ceramics, Spain
4. Saitama University, Japan

4:30 PM

(ICACC-S12-008-2020) Sol-gel based synthesis of selected MAX phases

C. Birkel*[1]; J. Siebert[1]

1. Arizona State University, School of Molecular Sciences, USA

4:50 PM

(ICACC-S12-009-2020) Synthesis and Characterization of Novel PEEK-MAX and PEEK-MoAlB Composites

S. Javaid*[1]; S. Gupta[1]

1. University of North Dakota, Mechanical Engineering, USA

S13: Development and Applications of Advanced Ceramics and Composites for Nuclear Fission and Fusion Energy Systems

Novel Ceramics and Composites for Nuclear Systems I

Room: Coquina Salon H

Session Chair: Young-Wook Kim, University of Seoul

1:30 PM

(ICACC-S13-001-2020) Composite Moderators for Advanced Nuclear Systems (Invited)

L. Snead*[1]; J. Trelewicz[1]; B. Cheng[1]; C. Ang[2]; N. Brown[2]

1. Stony Brook University, USA
2. University of Tennesse, Knoxville, USA

2:00 PM

(ICACC-S13-002-2020) Alternative Nuclear Fuel Materials by Rapid-Laser Chemical Vapor Deposition

S. Harrison*[1]; J. L. Schneiter[1]; J. Pegna[1]; R. K. Goduguchinta[1]; K. L. Williams[1]; E. G. Vaaler[1]

1. Free Form Fibers, USA

2:20 PM

(ICACC-S13-003-2020) Embedding Sensors in Additively Manufactured Silicon Carbide

C. Petrie*[1]; D. N. Leonard[1]; Y. Yang[1]; M. Trammel[1]; B. Jolly[1]; K. Terrani[1]

1. Oak Ridge National Laboratory, USA

2:40 PM

(ICACC-S13-004-2020) Fabrication and Characterization of SiC_f/SiC Composites Made by Polymer Infiltration and Pyrolysis (PIP) Process

Q. Zhang*[1]; H. Liu[2]; P. Xiao[1]

1. University of Manchester, Department of Materials, United Kingdom
2. University of Manchester, United Kingdom

3:00 PM

Break

Radiation Damage, Defect Production, Evolutions, and Interactions

Room: Coquina Salon H

Session Chair: Lance Snead, Stony Brook University

3:20 PM

(ICACC-S13-005-2020) Radiation effects in fluorite dervative oxides within the Sc_2O_3: $(Zr,Hf)O_2$ systems (Invited)

M. K. Patel*[1]

1. University of Liverpool, Mechanical Materials and Aerospace, United Kingdom

3:50 PM

(ICACC-S13-006-2020) Recovery of irradiation-induced defects in SiC: A pair distribution function analysis study

D. Sprouster*[1]; L. Snead[1]; T. Koyanagi[2]; Y. Katoh[2]; E. Dooryhee[3]

1. Stony Brook University, Materials Science and Chemical Engineering, USA
2. Oak Ridge National Laboratory, USA
3. Brookhaven National Laboratory, USA

4:10 PM

(ICACC-S13-007-2020) In Situ Observation of Radiation Enhanced Diffusivity in Nanoparticle Ceramics

N. J. Madden[1]; J. A. Krogstad*[1]

1. University of Illinois at Urbana-Champaign, Materials Science and Engineering, USA

4:30 PM

(ICACC-S13-008-2020) Methodology for Irradiation Creep Testing of SiC / SiC Composite Cladding

P. A. Champlin*[1]; C. Petrie[1]; K. R. Smith[1]

1. Oak Ridge National Lab, Reactor and Nuclear Systems Division, USA

4:50 PM

(ICACC-S13-009-2020) Radiation tolerance of stabilized alumina coatings: An in situ irradiation study

M. Vanazzi*[1]; F. Di Fonzo[1]; M. Li[2]

1. Center for Nano Science and Technology (CNST) - IIT, Italy
2. Argonne National Lab, USA

S14: Crystalline Materials for Electrical, Optical and Medical Applications

New Direction

Room: Halifax A/B

Session Chairs: Tetsuo Tsuchiya, National Institute of Advanced Industrial Science and Technology (AIST); Minoru Osada, Nagoya University

1:30 PM

(ICACC-S14-001-2020) Rare earth free ceramic magnet with high energy for motor applications

P. K. Roy*[1]; D. Shekhawat[1]

1. Indian Institute of Technology(BHU), Department of Ceramic Engineering, India

1:50 PM

(ICACC-S14-002-2020) Sintering, Characterization and Evaluation of Ceramics Recycled From Waste Soda-Lime-Silica Glass and White Corn Cob Ash

B. Oji*[1]

1. Federal Polytechnic Ado-Ekiti, Glass and Ceramics Technology, Nigeria

2:10 PM

(ICACC-S14-003-2020) Grain Size Dependent Properties in Transparent Dense Nanocrystalline Ceramics (Invited)

J. Wollmershauser*[1]; B. Feigelson[1]; H. Ryou[1]; E. Gorzkowski[1]

1. U.S. Naval Research Laboratory, Materials Science & Technology Division, USA

2:40 PM

(ICACC-S14-004-2020) Steady Non-classical Giant Electrostriction in Calcium Doped Cerium Oxide

A. Kabir*[1]; V. Esposito[2]

1. Technical University of Denmark, DTU Energy, Denmark
2. Technical University of Denmark, Denmark

3:00 PM

Break

Optical Material I

Room: Halifax A/B

Session Chair: Yiquan Wu, Alfred University

3:20 PM

(ICACC-S14-005-2020) Nanocrystal Technology for New Electronic Applications (Invited)

M. Osada*[1]

1. Nagoya University, IMaSS, Japan

3:50 PM

(ICACC-S14-006-2020) Fast quenching in scintillators observed by transient absorption spectroscopy (Invited)

M. Koshimizu*[1]; Y. Muroya[2]; S. Yamashita[3]; H. Yamamoto[4]; T. Yanagida[5]; Y. Fujimoto[1]; K. Asai[1]

1. Tohoku University, Department of Applied Chemistry, Japan
2. Osaka University, Japan
3. University of Tokyo, Japan
4. National Institute for Quantum and Radiological Science and Technology, Japan
5. Nara Institute of Science and Technology, Japan

4:20 PM

(ICACC-S14-007-2020) Development of crystalline scintillators for radiation detector applications (Invited)

T. Yanagida*[1]; N. Kawaguchi[1]

1. Nara Institute of Science and Technology, Japan

4:50 PM

(ICACC-S14-008-2020) Growth and Scintillation Properties of Perovskite Single Crystals (Invited)

J. Pejchal*[1]; V. Babin[1]; M. Buryi[1]; J. Barta[2]; C. Guguschev[3]; E. Mihokova[1]; P. Prusa[2]; K. Rubesova[4]; V. Jakes[4]; P. Zemenova[1]; R. Kral[1]; A. Beitlerova[1]; R. Kucerkova[1]; M. Schulze[5]; M. Nikl[1]

1. Institute of Physics, Czech Academy of Sciences, Czechia
2. Faculty of Nuclear Sciences and Physical Engineering, Czech Technical University, Czechia
3. Leibniz Institute for Crystal Growth, Germany
4. University of Chemistry and Technology, Czechia
5. SciDre Scientific Instruments Dresden Ltd., Germany

S15: 4th International Symposium on Additive Manufacturing and 3-D Printing Technologies

Design and Characterization

Room: Coquina Salon B

Session Chair: Dileep Singh, Argonne National Lab

1:30 PM

(ICACC-S15-001-2020) Developments and Challenges Related to Thermal Process Modeling of Metallic Laser Powder Bed Fusion to Advance Certification of Flight Hardware (Invited)

J. Fody*[1]; C. Lang[1]

1. NASA Langley Research Center, USA

2:00 PM

(ICACC-S15-002-2020) Design approaches of multifunctional ceramic architectures produced by additive manufacturing

M. Pelanconi*[1]; A. Ortona[1]

1. SUPSI, MEMTi, Switzerland

2:20 PM

(ICACC-S15-003-2020) Materials research and measurement needs for additive manufacturing of ceramic materials

A. J. Allen*[1]; I. Levin[1]

1. NIST, Materials Measurement Science Division, USA

2:40 PM

(ICACC-S15-004-2020) A comparative study of mechanical behavior of ceramics prepared by different additive manufacturing techniques

P. Tumurugoti*[1]; K. McGarrity[1]; K. Ning[1]; H. Shulman[1]

1. Alfred University, USA

3:00 PM

Break

Binder Jetting and Powder Bed Fusion

Room: Coquina Salon B

Session Chair: Joshua Fody, NASA Langley Research Center

3:20 PM

(ICACC-S15-005-2020) Hydrothermal-assisted Powder Bed Fusion of Ceramics for Achieving High Green Density

X. Song*[1]; F. Fei[1]

1. University of Iowa, Mechanical and Industrial Engineering, USA

3:40 PM

(ICACC-S15-006-2020) Progress on 3D-printing of high-purity and crystalline silicon carbide

K. Terrani*[1]; B. Jolly[1]; M. Trammel[1]; D. Richardson[1]; A. Schumacher[1]

1. Oak Ridge National Laboratory, USA

4:00 PM

(ICACC-S15-007-2020) Model-guided Irregular Powder Mixing for Feedstock Preparation in Ceramic Binder Jetting

D. Singh*[1]; M. Du[1]; M. Singh[2]

1. Argonne National Lab, USA
2. Ohio Aerospace Institute, USA

Multi-Material and Hybrid Printing

Room: Coquina Salon B

Session Chair: Soshu Kirihara, Osaka University

4:20 PM

(ICACC-S15-008-2020) Ceramic Additive Manufacturing Methods Applied to Sintered Glass Components with Novel Properties

J. Schilm*[1]; T. Moritz[2]; E. Schwarzer[2]; K. Waetzig[1]; D. Wagner[1]; S. Weingarten[2]; A. Michaelis[3]

1. Fraunhofer IKTS, Materials and components, Germany
2. Fraunhofer IKTS, Processes/Components, Germany
3. Fraunhofer IKTS, Germany

4:40 PM

(ICACC-S15-009-2020) Thermal Properties of 3D Printed Multi Materials

P. A. Warkentien*[1]; M. Singh[2]; M. C. Halbig[3]; H. Leonard[4]; A. Salem[5]

1. OSGC/Lorain County Community College, USA
2. Ohio Aerospace Institute, USA
3. NASA Glenn Research Center, USA
4. Rochester Institute of Technology, Mechanical Engineering, USA
5. Washington University in St. Louis, USA

S17: Advanced Ceramic Materials and Processing for Photonics and Energy

Advanced and Nanostructured Materials for Photonics, Electronics and Sensing I

Room: Tomoka C

Session Chair: Oomman Varghese, University of Houston

1:30 PM

(ICACC-S17-001-2020) Photogenerated catalytic processes of reduced graphene oxide decorated with V_2O_5 and WO_3 (Invited)

G. Fanchini*[1]

1. University of Western Ontario, Physics and Astronomy, Canada

2:00 PM

(ICACC-S17-002-2020) Pulsed laser deposition of metal-insulator transition materials (Invited)

M. Chaker*[1]

1. INRS, Energie materiaux télécommunications, Canada

2:30 PM

(ICACC-S17-003-2020) Fabrication and Application of Polycrystal Silver Nanowire Transparent conductive film by SDGs-oriented Organic Precursor Splay Painting Reduction method (Invited)

Y. Hayashi*[1]

1. Tohoku University, School of Engineering, Japan

3:00 PM

Break

Advanced and Nanostructured Materials for Photonics, Electronics and Sensing II

Room: Tomoka C

Session Chairs: Giovanni Fanchini, University of Western Ontario; Mohamed Chaker, INRS

3:20 PM

(ICACC-S17-004-2020) Effect of ligand selection on the grain growth of CZTSSe and graphitic carbon layers in thin film PVs (Invited)

C. Luscombe*[1]

1. University of Washington, Materials Science and Engineering, USA

3:50 PM

(ICACC-S17-005-2020) Oxide-chalcogenide heterojunctions for solar energy applications (Invited)

O. K. Varghese*[1]

1. University of Houston, Department of Physics, USA

4:20 PM

(ICACC-S17-006-2020) Tuning the charge transport properties in semiconducting nanomaterials for solar energy harvesting devices

D. Benetti*[1]; H. Zhao[4]; A. Vomiero[3]; F. Rosei[2]

1. INRS, Energy, Materials and Telecommunication, Canada
2. INRS, Canada
3. Lulea University of Technology, Engineering Sciences & Mathematics, Sweden
4. Qingdao University, College of physics, China

4:40 PM

(ICACC-S17-007-2020) Structure, Optical and Electronic properties of chemically engineered $BiFeO_3$ thin films for PV applications (Invited)

P. Machado[1]; I. Caño[1]; C. Escudero[2]; M. Tallarida[2]; M. Coll*[1]

1. ICMAB-CSIC, Superconducting Materials and Large Scale Nanostructures, Spain
2. ALBA Synchrotron, Spain

5:10 PM

(ICACC-S17-008-2020) Surface-Engineered 2D Hexagonal Boron Nitride Nanosheets for Energy Applications (Invited)

H. Zarrin*[1]; J. Kaur[1]

1. Ryerson Univeristy, Chemical Engineering, Canada

5:40 PM

(ICACC-S17-009-2020) Sr/$MgCl_2$-Carbon/Graphene oxide composites with high structural stability as robust ammonia carriers (Invited)

F. Akhtar*[1]; Z. Cao[1]

1. Lulea University of Technology, Department of Engineering Sciences and Mathematics, Sweden

Tuesday, January 28, 2020

4th Pacific Rim Engineering Ceramics Summit

Challenges and Opportunities for Ceramic Technologies I

Room: Coquina Salon E

Session Chair: Young-Wook Kim, University of Seoul

8:30 AM

(ICACC-PACRIM-001-2020) Challenges and opportunities for various ceramic technologies (Invited)

A. K. Bakshi*[1]

1. Morgan Advanced Materials, USA

9:00 AM

(ICACC-PACRIM-002-2020) Silicon Nitride: A summary of new findings for biomedical applications (Invited)

D. J. Bray*[1]; R. M. Bock[1]; B. J. McEntire[1]; G. Pezzotti[2]

1. SINTX Technologies, USA
2. Kyoto Institute of Technology, Japan

9:30 AM

(ICACC-PACRIM-003-2020) Easy conversion process of titanium surface covered with passive film into functional surface (Invited)

T. Ishikawa*[1]; K. Tsujikura[1]

1. Tokyo University of Science, Yamaguchi, Applied Chemistry, Japan

10:00 AM

Break

10:20 AM

(ICACC-PACRIM-004-2020) Current research on coupled electronic and atomic effects in ceramics (Invited)

Y. Zhang*[1]; W. J. Weber[2]

1. Oak Ridge National Lab, USA
2. University of Tennessee, Materials Science & Engineering, USA

10:50 AM

(ICACC-PACRIM-005-2020) Advanced Ceramics Industry in Japan and Introduction of JFCA Activities (Invited)

H. Takemura*[1]

1. Japan Fine Ceramics Association, Japan

11:20 AM

(ICACC-PACRIM-006-2020) Biomaterial with bioactive and antimicrobial function (Invited)

G. Turri*[1]; H. Muto[2]; T. Noshiro[2]

1. Namiki Precision of Europe SA, Switzerland
2. Adamant Namiki Precision Jewel Co., Ltd., Advanced R&D Dept, Japan

Applications of Engineering and Functional Ceramics

Room: Coquina Salon E

Session Chairs: Jingyang Wang, Shenyang National Laboratory for Materials Science, Institute of Metal Research, Chinese Academy of Sciences; Miki Inada, Kyushu University

1:30 PM

(ICACC-PACRIM-007-2020) Ceramics Marking and Drilling by Lasers (Invited)

S. Jiang*[1]

1. AdValue Photonics Inc, USA

2:00 PM

(ICACC-PACRIM-008-2020) Defected nano-cerium oxide: Biomedical properties (Invited)

S. Seal*[1]

1. University of Central Florida, Advanced Materials Processing and Analysis Center (AMPAC), Materials Science & Engineering, Nanoscience Technology Center (NSTC), Biionix cluster, College of Medicine, USA

2:30 PM

(ICACC-PACRIM-009-2020) Effects of Texture and Silica Content on Crack Growth of Boron Nitrides for Electric Propulsion (Invited)

J. Salem*[1]; J. Mackey[1]; H. Kamahwi[1]

1. NASA Glenn Research Center, Materials and Structures, USA

3:00 PM

Break

3:20 PM

(ICACC-PACRIM-010-2020) Additively Manufactured Motors for Electrified Aircraft (Invited)

M. C. Halbig*[1]

1. NASA Glenn Research Center, USA

3:50 PM

(ICACC-PACRIM-011-2020) Multifunctional Ceramics La_2ZnMnO_6 for magnetic and electric applications (Invited)

D. K. Mahato*[1]; D. N. Singh[1]

1. National Institute of Technology Patna (NITP), Physics, India

4:20 PM

(ICACC-PACRIM-012-2020) Influence of calcium phosphate ceramic substrate surface properties on biological cell invasion (Invited)

A. Leriche*[1]; M. Lasgorceix[1]; S. Chamary[1]; N. Somers[1]; J. Hornez[1]; L. Boilet[2]; S. Hocquet[2]; F. J. Cambier[2]; A. Daskalova[3]

1. Universite Polytechnique Hauts de France, LMCPA, France
2. Belgian Ceramic Research Centre, Belgium
3. Bulgarian Academy of Sciences, Institute of Electronics, Bulgaria

9th Global Young Investigator Forum

Novel Ceramic Processing Methods and Synthesis Routes

Room: Coquina Salon G

Session Chair: Giorgia Franchin, University of Padova

8:30 AM

(ICACC-GYIF-009-2020) Role of Graphene on the Mechanical, Structural, and Electrical Changes in Silicon Oxycarbide Ceramics

E. A. Barrios*[1]; R. Kuliiev[2]; N. Orlovskaya[2]; L. Zhai[3]

1. University of Central Florida, Materials Science and Engineering, USA
2. University of Central Florida, Mechanical and Aerospace Engineering, USA
3. University of Central Florida, NanoScience Technology Center and Department of Chemistry, USA

8:50 AM

(ICACC-GYIF-010-2020) First-principles thermodynamics calculations of thermal properties for environmental barrier coatings and their oxidation byproducts

C. Bodenschatz*[1]; G. Costa[2]; N. S. Jacobson[1]; C. W. Bauschlicher[3]; D. L. Myers[4]

1. NASA Glenn Research Center, USA
2. Vantage Partners, LLC, USA
3. NASA Ames Research Center, USA
4. East Central University, Chemistry, USA

9:10 AM

(ICACC-GYIF-011-2020) Novel Processing of Directionally Porous Sintered Barium Titanate Ceramics

J. John*[1]; R. Parai[1]; S. Akurati[1]; D. Ghosh[1]

1. Old Dominion University, Mechanical and Aerospace Engineering, USA

9:30 AM

(ICACC-GYIF-012-2020) Engineering of eco-friendly spinel-periclase refractories for RH degasser steelmaking (Invited)

S. Mandal*[1]; C. Kumar[3]; D. Kumar[2]

1. University of California, Irvine, Materials Science and Engineering, USA
2. Indian Institute of Technology, Department of Ceramic Engineering, India
3. TRL Krosaki Refractories Limited, India

10:00 AM

Break

Careers in Science, Technology, Engineering and Mathematics (STEM)

Room: Coquina Salon G

Session Chair: Giorgia Franchin, University of Padova

10:20 AM

(ICACC-GYIF-013-2020) Opportunities and Challenges for Advancing the Next Generation of Armor Ceramics (Invited)

L. Vargas*[1]

1. CCDC Army Research Laboratory, Physics of Soldier Protection to Defeat Evolving Theats, USA

10:50 AM

(ICACC-GYIF-029-2020) A career in Science or through Science? What to choose, how to choose? (Invited)

A. Vomiero

1. *Lulea University of Technology, Sweden

Advanced and Nanostructured Materials

Room: Coquina Salon G

Session Chairs: Daniele Benetti, Institut National de la Recherche Scientifique; Rebekah Webster, University of Virginia

1:30 PM

(ICACC-GYIF-015-2020) Cerium oxide nanoparticles abrogate therapy-induced tumor relapse via non-redox mechanisms (Invited)

F. Corsi*[1]; S. Briganti[2]; F. Capradossi[3]; S. Licoccia[1]; E. Traversa[4]; L. Ghibelli[3]

1. University of Rome "Tor Vergata", Chemical Science and Technologies, Italy
2. San Gallicano Dermatological Institute IRCCS, Italy
3. University of Rome Tor Vergata, Biology, Italy
4. King Abdullah University of Science and Technology, China

2:00 PM

(ICACC-GYIF-016-2020) Physico-chemical and biological properties of Ce, Mg, Sr and Zn (0.5 – 10 at.%) substituted hydroxyapatite nanopowders

M. Chirica*[1]; T. Tite[1]; I. Pasuk[1]; A. Kuncser[1]; S. Iconaru[1]; D. Predoi[1]; A. Popa[1]; G. Stan[1]; L. Albulescu[2]; G. Manda[2]; C. Tanase[2]; S. Nita[3]

1. National Institute of Materials Physics, Romania
2. "Victor Babes" National Institute of Pathology, Romania
3. National Institute for Chemical Pharmaceutical Research and Development, Romania

2:20 PM

(ICACC-GYIF-017-2020) $La_{0.6}Sr_{0.4}Fe_{0.8}Mn_{0.2}O_{3-\delta}$-based anode for SOFC applications: New insights on redox-stability and catalytic activity (Invited)

L. Duranti*[1]; I. Natali Sora[2]; F. Zurlo[1]; I. Luisetto[3]; S. Licoccia[1]; E. Di Bartolomeo[1]

1. University di Roma Tor Vergata, Department of Chemical Sciences and Technologies, Italy
2. University of Bergamo, Dept. of Engineering and Applied Science, Italy
3. ENEA C.R. Casaccia DTE-PCU-IPSE, Department of Energy Technologies, Italy

2:50 PM

(ICACC-GYIF-018-2020) La_2O_3-doped alumina as active catalytic support in CH_4 combustion

M. M. Trandafir*[1]; S. Neatu[1]; F. Neatu[1]; A. Stanoiu[1]; O. Florea[1]; C. Simion[1]; C. Cobianu[2]; M. Gheorghe[2]; L. Leonat[1]; M. Florea[1]

1. National Institute of Materials Physics, Romania
2. Nanom-Mems, Romania

3:10 PM

Break

3:30 PM

(ICACC-GYIF-019-2020) Solution-Processed P-type Copper Thiocyanate (CuSCN) Enhanced Sensitivity of PbS-QDs Based Photodiode (Invited)

I. Ka*[1]

1. INRS, emt, Canada

4:00 PM

(ICACC-GYIF-020-2020) 0D / 2D Hetero-structured nanomaterials for high efficient optoelectronic devices

F. Li*[1]; M. Zhang[1]; L. Shi[4]; D. Benetti[1]; Q. Wei[2]; F. Rosei[3]

1. Institut National de la Recherche Scientifique, Énergie Matériaux Télécommunications, Canada
2. University of Jinan, China
3. INRS, Canada
4. INRS, EMT, Canada

4:20 PM

(ICACC-GYIF-021-2020) Undergraduate Research: Design of Novel Materials from Ag-based Precursors

A. Miles*[1]; C. Matzke[1]; D. Gerard[1]; R. Riihinen[1]; N. Johnson[1]; S. Gupta[1]

1. University of North Dakota, Mechanical Engineering, USA

4:40 PM

(ICACC-GYIF-022-2020) "Green"Cu doped Zn-In-Se quantum dots for sustainable liquid luminescent solar concentrators

X. Liu*[1]; B. Luo[2]; J. Liu[1]; D. J. Luo[2]; D. Benetti[1]; F. Rosei[1]

1. University du Quebec, Institut National de la Recherche Scientifique, Centre - Energie Materiaux Telecommunications, Canada
2. Xi'an Jiaotong University, International Research Center for Renewable Energy & State Key Laboratory of Multiphase Flow in Power Engineering, China

S1: Mechanical Behavior and Performance of Ceramics & Composites

Processing-Microstructure-Mechanical Properties Correlation I

Room: Coquina Salon D

Session Chairs: Walter Krenkel, University of Bayreuth; Michael Jenkins, Bothell Engineering and Science Technologies

8:30 AM

(ICACC-S1-012-2020) Development of SiC/SiC ceramic matrix composites using a combination of PIP and LSI processes

F. Süß*[1]; T. Schneider[1]; M. Frieß[1]; R. Jemmali[1]; L. Klopsch[1]; D. Koch[2]

1. DLR - German Aerospace Center, Institute of Structures and Design, Germany
2. University of Augsburg, Institute of Materials Resource Management, Germany

8:50 AM

(ICACC-S1-013-2020) Development of non-oxide ceramic matrix composites for application in advanced gas turbine

H. Klemm*[1]; C. Steinborn[1]; K. Schönfeld[1]; A. Michaelis[2]

1. FhG IKTS Dresden, Germany
2. Fraunhofer IKTS, Germany

9:10 AM

(ICACC-S1-014-2020) Processing and properties evaluation of long and nano carbon fibers reinforced SiC-based hybrid composites

M. Shaik*[1]; S. P[2]; M. Kolan[3]; A. Khanra[4]; B. Saha[1]

1. ARCI, Centre for Non Oxide Ceramics, India
2. ARCI, Centre for Engineered Coatings, India
3. Shanghai Jiao Tong University, School of Materials Science and Engineering, China
4. National Institute of Technology (NIT), Metallurgical and Materials Engineering, India

9:30 AM

(ICACC-S1-015-2020) High Thermal Conductivity and High Mechanical Strength of Pressureless Sintered Silicon Nitride Ceramics with Rare-Earth Oxide Additives

J. Kong*[1]; W. Jung[1]; H. Ma[1]; D. Kim[1]

1. Korea Advanced Institute of Science and Engineering (KAIST), Material Science and Engineering, Republic of Korea

9:50 AM

Break

10:10 AM

(ICACC-S1-016-2020) Novel Ceramic/Metal Brake Disks

W. Krenkel*[1]

1. University of Bayreuth, Germany

10:30 AM

(ICACC-S1-017-2020) Tribological and mechanical behavior of 45S5 Bioglass®-based compositions containing alumina and strontium

M. S. Araujo*[1]; J. F. Bartolomé[2]; A. C. Da Silva[1]; S. R. Mello-Castanho[1]

1. Energy and Nuclear Research Institute, Center of Materials Science and Technology, Brazil
2. Consejo Superior de Investigaciones Científicas (CSIC), Spain

10:50 AM

(ICACC-S1-018-2020) Experimental study on carbon fiber reinforced SiC subjected to the unpenetrated impact and post-impact mechanical behavior

W. Hu*[1]

1. Northwestern Polytechnical University, School of aeronautics, China

11:10 AM

(ICACC-S1-019-2020) Toughening Additively Manufactured Ceramics by Laser Direct Deposition

X. Dong*[1]; J. Pappas[1]

1. Missouri University of Science & Technology, Mechanical and Aerospace Engineering, USA

Processing-Microstructure-Mechanical Properties Correlation II

Room: Coquina Salon D

Session Chairs: Raul Bermejo, Montanuniversitaet Leoben; Marina Ruggles-Wrenn, Air Force Institute of Technology

1:30 PM

(ICACC-S1-020-2020) Processing and Properties of Engineered Metal Matrix Composites Produced Via Co-Extrusion for High-Temperature Friction Stir Welding

P. Brune*[1]; G. Hilmas[1]; J. Watts[1]

1. Missouri University of Science & Technology, Materials Science and Engineering, USA

1:50 PM

(ICACC-S1-021-2020) Direct observation of failure in ice-templated ceramics under dynamic and quasistatic compressive loading conditions

S. Akurati*[1]; D. Ghosh[1]; M. Banda[1]; D. Terrones[1]

1. Old Dominion University, Mechanical and Aerospace Engineering, USA

2:10 PM

(ICACC-S1-022-2020) Investigation on optical properties, mechanical properties and low temperature degradation(LTD) of yttria-stabilized zirconia

B. Kim*[1]; D. Kim[2]

1. Korea Advanced Institute of Science and Engineering (KAIST), Republic of Korea
2. Korea Advanced Institute of Science and Engineering (KAIST), Dept. of Mater Sci & Eng, Republic of Korea

2:30 PM

(ICACC-S1-023-2020) Investigation on temperature dependent deformation mechanisms of flash sintered 3YSZ via in-situ microcompression test

J. Cho*[1]; Q. Li[1]; H. Wang[1]; Z. Fan[2]; J. Li[1]; S. Xue[1]; S. Vikrant[1]; H. Wang[1]; A. Mukherjee[3]; R. Garcia[1]; X. Zhang[1]

1. Purdue University, Materials Engineering, USA
2. Oak Ridge National Lab, USA
3. University of California, Davis, USA

2:50 PM

(ICACC-S1-024-2020) Mechanical performance and fractography of stereolithography-printed fully stabilized zirconia

C. Marsico*[1]; J. Kutsch[2]; M. Kauf[2]; D. D. Arola[1]

1. University of Washington, Materials Science and Engineering, USA
2. Technology Assessment & Transfer, Inc., USA

3:10 PM

Break

3:30 PM

(ICACC-S1-025-2020) Phase Relation in Zirconia: High pressure and Temperature synthesized of Orthorhombic Phases and its Mechanical Properties

N. Nishiyama[1]; P. Tinnakorn*[1]

1. Tokyo Institute of Technology, Materials science and engineering, Japan

3:50 PM

(ICACC-S1-026-2020) CALPHAD-guided Alloy Design and Processing for Improved Strength and Toughness in Titanium Boride (TiB) Ceramic Containing a Ductile Phase

J. Du*[1]; V. Jindal[2]; A. Sanders[2]; K. R. Chandran[2]

1. Rutgers University, Materials Science and Engineering, USA
2. The University of Utah, Materials Science and Engineering, USA

4:10 PM

(ICACC-S1-027-2020) Hall-Petch Behavior in Nanocrystalline $ZnAl_{2.01}O_4$ Sintered by Different Methods

L. E. Sotelo Martin*[1]; R. Castro[1]

1. University of California, Davis, Materials Science and Engineering, USA

4:30 PM

(ICACC-S1-028-2020) Lot-to-lot variability of BN grades for space electric propulsion applications

J. Mackey*[1]; J. Salem[2]; M. Stanford[2]; H. Kamhawi[1]

1. NASA Glenn Research Center, Space Electric Propulsion, USA
2. NASA Glenn Research Center, Materials and Structures, USA

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

Environmental and Thermal Barrier Coatings I

Room: Ponce de Leon

Session Chairs: Gustavo Costa, NASA Glenn Research Center; Bryan Harder, NASA Glenn Research Center

8:30 AM

(ICACC-S2-012-2020) T-EBC system concepts for SiC-based ceramics

J. Deijkers*[1]; H. Wadley[1]

1. University of Virginia, Materials Science & Engineering, USA

8:50 AM

(ICACC-S2-013-2020) Effects of Topcoat Modifications on Bond Coat Oxidation and Internal Stresses in Multilayer Si/$Yb_2Si_2O_7$ Environmental Barrier Coatings

B. R. Herren*[1]; C. Chuang[2]; J. Almer[2]; K. Lee[3]; K. Faber[1]

1. California Institute of Technology, USA
2. Argonne National Lab, USA
3. NASA Glenn Research Center, USA

9:10 AM

(ICACC-S2-014-2020) Effect of stabilization annealing on Ytterbium silicate phase transformation mechanism

N. Yamazaki*[1]; S. Kanazawa[1]; K. Kubushiro[2]

1. IHI Corporation, Japan
2. IHI ASIA Pacific(Thailand) Co., Ltd., Thailand

9:30 AM

(ICACC-S2-015-2020) Developing Environmental Barrier Coatings on Turbine Blades with Very-Fast Self-Crack Healing Ability by a Novel Thermal Process

T. Nguyen*[1]; T. Nakayama[2]; A. Okawa[2]; H. Iwasawa[2]; H. Suematsu[2]; T. Takahashi[1]; K. Niihara[2]

1. Kushiro National College of Technology, Department of Creative Engineering, Japan
2. Nagaoka University of Technology, Extreme Energy-Density Research Institute, Japan

9:50 AM

(ICACC-S2-016-2020) Improvement in oxygen shielding properties of $Yb_2Si_2O_7$ at high temperatures using discontinuous changes of chemical potentials

M. Wada*[1]; T. Matsudaira[1]; T. Yokoi[1]; N. Yamaguchi[1]; N. Kawashima[1]; T. Ogawa[1]; D. Yokoe[1]; T. Kato[1]; S. Kitaoka[1]; M. Takata[1]

1. Japan Fine Ceramics Center, Japan

10:10 AM

Break

10:30 AM

(ICACC-S2-017-2020) Effect of plasma spray deposition process history on polymorphism and cracking response of yttrium silicate environmental barrier coatings (Invited)

R. Sarrafi-Nour*[1]; C. Johnson[1]; L. Rosenzweig[1]; Y. Gao[1]; J. Wan[1]; K. Luthra[1]

1. GE Global Research, USA

11:00 AM

(ICACC-S2-018-2020) Solid Solutions in the $Yb_2Si_2O_7$-$Gd_2Si_2O_7$ and $Y_2Si_2O_7$-$Gd_2Si_2O_7$ Systems: Phase Transformations and Structure-Property Relationships

J. L. Stokes*[1]; B. J. Harder[1]; V. L. Wiesner[2]; D. E. Wolfe[3]

1. NASA Glenn Research Center, Environmental Effects and Coatings Branch, USA
2. NASA Glenn Research Center, Materials and Structures Division, USA
3. Pennsylvania State University, USA

11:20 AM

(ICACC-S2-019-2020) Function Graded Material (FGM) $Yb_2Si_2O_7$/Yb_2SiO_5 Volatilization Barrier for Durable TBC/EBC Architectures

E. Garcia Granados*[1]; E. J. Gildersleeve[1]; F. R. Caliari[1]; S. Sampath[1]

1. Stony Brook University, Center for Thermal Spray Research, USA

11:40 AM

(ICACC-S2-020-2020) Equiatomic quaternary rare earth silicate solid solutions for multifunctional thermal and environmental barrier coating materials

X. Ren*[1]; Z. Tian[1]; J. Zhang[1]; J. Wang[1]

1. Insitute of Metal Research, Chinese Academy of Sciences, Advanced Ceramics and Composites Division, China

Environmental and Thermal Barrier Coatings II

Room: Ponce de Leon

Session Chairs: Douglas Wolfe, Pennsylvania State University; Kang Lee, NASA Glenn Research Center

1:30 PM

(ICACC-S2-021-2020) Calorimetric Measurements of the Thermodynamic Properties of RE-Silicate Coating Materials (Invited)

G. Costa*[1]; B. J. Harder[2]; N. P. Bansal[1]; B. Kowalski[1]; J. L. Stokes[3]

1. NASA Glenn Research Center, USA
2. NASA Glenn Research Center, Environmental Effects and Coatings, USA
3. Pennsylvania State University, Materials Science and Engineering, USA

2:00 PM

(ICACC-S2-022-2020) Low-K, Durable Thermal/Environmental Barrier Coatings for SiC/SiC Ceramic Matrix Composites

A. Ghoshal*[1]; M. J. Walock[1]; C. Mock[1]; M. Murugan[1]; L. Bravo[1]; M. S. Pepi[1]; A. Nieto[2]; L. Fehrenbacher[5]; D. Hass[6]; A. Wright[3]; J. Luo[4]

1. US Army Research Laboratory, USA
2. Naval Postgraduate School, Dept. of Mechanical and Aerospace Engineering, USA
3. University of California, San Diego, Nanoengineering, USA
4. University of California, San Diego, USA
5. Tech Assess and Transfer Inc, USA
6. Directed Vapor Technologies, USA

2:20 PM

(ICACC-S2-023-2020) Novel Environmental Barrier Coatings for the protection of SiC components

B. Kowalski*[1]; J. L. Stokes[2]

1. NASA Glenn Research Center, USA
2. NASA Glenn Research Center, Environmental Effects and Coatings Branch, USA

2:40 PM

(ICACC-S2-024-2020) EB-PVD T/EBC systems for oxide fiber ceramic composites

T. Drtina*[1]; N. van der Laag[2]; P. Howell[2]; S. Lampenscherf[2]; C. G. Levi[1]

1. University of California, Santa Barbara, USA
2. Siemens, Germany

3:00 PM

Break

3:20 PM

(ICACC-S2-025-2020) High Temperature Oxidation Performance of Plasma Spray-Physical Vapor Deposition (PS-PVD) Environmental Barrier Coated SiC (Invited)

B. J. Harder*[1]; K. Lee[2]

1. NASA Glenn Research Center, Environmental Effects and Coatings, USA
2. NASA Glenn Research Center, USA

3:50 PM

(ICACC-S2-026-2020) Microstructure evolution of EBCs in high-temperature high-velocity water vapor

M. J. Ridley*[1]; E. J. Opila[1]

1. University of Virginia, Materials Science and Engineering, USA

4:10 PM

(ICACC-S2-027-2020) Steam oxidation kinetics of SiC coated with multilayer and single layer ytterbium disilicate environmental barrier coatings

K. Kane*[1]; E. Garcia[2]; S. Sampath[2]; B. A. Pint[1]

1. ORNL, MSTD, USA
2. Stony Brook University, Center for Thermal Spray Research, USA

4:30 PM

(ICACC-S2-028-2020) Deformation mechanisms of YSZ thermal barrier coating processed by air plasma spray and detonation gun thermal spray via in-situ microcompression tests

J. Cho*[1]; J. Li[1]; Z. Shang[1]; J. Lopez[2]; W. Jarosinski[2]; M. Gentleman[2]; V. Viswanathan[2]; S. Xue[1]; H. Wang[1]; X. Zhang[1]

1. Purdue University, Materials Engineering, USA
2. Praxair Surface Technologies, USA

4:50 PM

(ICACC-S2-029-2020) Segmentation Crack Formation Dynamics During Air Plasma Spraying of Ceramic Coatings

S. V. Shinde*[1]; E. J. Gildersleeve[1]; C. Johnson[1]; S. Sampath[1]

1. Stony Brook University, Center for Thermal Spray Research, USA

5:10 PM

(ICACC-S2-030-2020) A micromechanical image-based model for the sintering of an air-plasma sprayed (APS) thermal barrier coating (TBC)

X. Zhang*[1]; Y. Okajima[2]; K. Takeno[2]; T. Torigoe[2]; A. Cocks[1]

1. University of Oxford, Department of Engineering Science, United Kingdom
2. Mitsubishi Heavy Industries, Ltd., Japan

S3: 17th International Symposium on Solid Oxide Cells (SOC): Materials, Science and Technology

Novel Processing

Room: Crystal

Session Chair: Federico Smeacetto, Politecnico di Torino

8:30 AM

(ICACC-S3-009-2020) Possibility of SOFC forming by 3D printing (Invited)

A. Lipilin*[1]; V. A. Lipilina[2]

1. IEP UB RAS / SOFC-Technologies, LLC, Russian Federation
2. SOFK-Technologies, LLC, Russian Federation

9:00 AM

(ICACC-S3-010-2020) 3D Printing Solid Oxide Fuel Cells

Y. Du*[1]

1. Kent State University, USA

9:20 AM

(ICACC-S3-011-2020) Novel Sealing Approach for Improving SOFC Durability

C. Lockhart*[1]; N. J. Kidner[1]; D. Kopechek[1]; G. Arkenberg[1]; M. Seabaugh[1]; S. Swartz[1]

1. Nexceris LLC, USA

9:40 AM

(ICACC-S3-012-2020) Freeze casting and freeze drying of tubular solid oxide fuel cell supports

Y. Du[1]; T. Woodson*[1]

1. Kent State University, USA

10:00 AM

Break

Electrolytes and Sealants

Room: Crystal

Session Chair: Sebastian Molin, Gdansk University of Technology

10:30 AM

(ICACC-S3-013-2020) Tuning the electro-chemo-mechanical properties in defective cerium oxides

A. Kabir*[1]; V. Esposito[2]

1. Technical University of Denmark, DTU Energy, Denmark
2. Technical University of Denmark, Denmark

10:50 AM

(ICACC-S3-014-2020) Electrochemical Studies on Mixed Na^+ - O^{2-}ions Conducting Sodium Zirconium Gallate + YSZ Composite

P. Elahi*[1]; A. V. Virkar[1]

1. University of Utah, Materials Science and Engineering, USA

11:10 AM

(ICACC-S3-015-2020) Particle Atomic Layer Deposition of Alumina for Flash Sintering Yttria-Stabilized Zirconia

R. J. O'Toole*[1]; B. Yoon[3]; C. J. Gump[2]; R. Raj[3]; A. W. Weimer[1]

1. University of Colorado, Chemical and Biological Engineering, USA
2. ALD NanoSolutions, Inc., USA
3. University of Colorado, Mechanical Engineering, USA

11:30 AM

(ICACC-S3-016-2020) Effects of the paste compositions on the microstructure of reactive air brazed ceramic to metal components

K. Waetzig[1]; J. Schilm*[2]; W. Tillmann[3]; A. Eilers[3]; M. Manka[3]; L. Wojarski[3]

1. Fraunhofer IKTS, Germany
2. Fraunhofer IKTS, Materials and components, Germany
3. Technical University Dortmund, Institute of Materials Engineering, Germany

Interconnects and Cr Getters

Room: Crystal

Session Chair: Norbert Menzler, Forschungszentrum Jülich GmbH

1:30 PM

(ICACC-S3-017-2020) Degradation Characteristic of Ferritic Stainless Steel in SOFC for Automotive Use (Invited)

M. Yaginuma*[1]; T. Shiomi[1]; M. Abdul Jabbar[2]; N. Dale[2]

1. Nissan Motor Co., Ltd., EV System Laboratory, Japan
2. Nissan Motor Co., Ltd., Nissan Technical Center North America, USA

2:00 PM

(ICACC-S3-018-2020) High-temperature corrosion evaluation of Fe22Cr porous steels

S. Molin*[1]; M. Makowska[2]; J. Karczewski[1]; P. Z. Jasinski[1]

1. Gdansk University of Technology, Laboratory of Functional Materials, Faculty of Electronics, Telecommunications and Informatics, Poland
2. Paul Scherrer Institut, Photon Science Division, Switzerland

2:20 PM

(ICACC-S3-019-2020) Mass manufacturing of coated steel coils for Solid Oxide Cells: A journey of collaborative research and development

C. Bernuy-Lopez*[1]; L. Rioja-Monllor[1]; U. Bexell[1]; M. Stenström[1]; R. Berger[1]; J. Westlinder[1]

1. Sandvik Materials Technology, Sweden

2:40 PM

(ICACC-S3-020-2020) Thermal and Electrical Properties of LSM/LSCF Composite as Cr Gettering Material

Y. Chou*[1]; J. F. Bonnett[1]; N. L. Canfield[1]; J. Choi[1]; J. A. Silverstein[1]; J. W. Stevenson[2]

1. Pacific Northwest National Lab, Materials, USA
2. Pacific Northwest National Lab, USA

3:00 PM

Break

Stack / Cell Performance and Durability

Room: Crystal

Session Chair: John Hardy, Pacific Northwest National Laboratory

3:30 PM

(ICACC-S3-021-2020) Summarizing Jülich's results on long-term SOC stack tests and their post-test analysis (Invited)

N. H. Menzler*[1]; L. Blum[2]

1. Forschungszentrum Jülich GmbH, IEK-1, Germany
2. Forschungszentrum Jülich, IEK-3, Germany

4:00 PM

(ICACC-S3-022-2020) Two Dimensional Degradation Modeling of Planar Solid Oxide Fuel Cell under Practical Application Scenarios

W. Shi*[1]; M. Han[1]

1. Tsinghua Univeristy, State Key Laboratory of Power Systems, Department of Energy and Power Engineering, China

4:20 PM

(ICACC-S3-023-2020) Electrochemical properties of the Ruddlesden-Popper series, $La_{1.7}Ca_{0.3}Cu_{1-x}M_xO_{4+\delta}$ (M: Co, Fe), as solid oxide fuel cells cathode

K. Hwang*[1]; T. Shin[1]

1. Korea Institute of Ceramic Engineering and Technology (KICET), Republic of Korea

4:40 PM

(ICACC-S3-024-2020) Residual Stress Evaluation of YSZ in Metal-Supported Solid Oxide Fuel Cell

T. Komaya*[1]; Z. Ruhma[1]; S. Watanabe[1]; K. Kumada[2]; K. Sato[2]; K. Yashiro[1]; T. Kawada[1]

1. Tohoku University, Graduate School of Environmental Studies, Japan
2. Tohoku University, Fracture and Reliability Research Institute, Japan

5:00 PM

(ICACC-S3-025-2020) Extreme thermal cycling of micro-tubular solid oxide fuel cells using a miniature ceramic heater

D. Panthi*[1]; H. Feng[2]; Y. Du[2]

1. Kent State University Tuscarawas, Department of Engineering Technology, USA
2. Kent State University, College of Aeronautics and Engineering, USA

S4: Armor Ceramics - Challenges and New Developments

Quasi-Static and Dynamic Behavior II

Room: St. Johns

Session Chairs: Ghatu Subhash, University of Florida; Sikhanda Satapathy, Army Research Laboratory

8:30 AM

(ICACC-S4-011-2020) Behavior of Advanced Ceramics in Extreme Dynamic Environments (Invited)

K. Ramesh*[1]

1. Johns Hopkins University, Mechanical Engineering, USA

9:00 AM

(ICACC-S4-012-2020) Impact models for ceramics incorporating fragmentation and subsequent breakage

L. Graham-Brady*[1]; A. Bhattacharjee[1]; M. Cil[1]

1. Johns Hopkins University/APL, Civil Engineering, USA

9:20 AM

(ICACC-S4-013-2020) Quantifying Kinematics During High-Strain-Rate Loading of Granular Materials

A. Gupta*[1]; K. Ramesh[1]; R. Hurley[1]

1. Johns Hopkins University, Mechanical Engineering, USA

9:40 AM

(ICACC-S4-014-2020) Particle Size Effect on Dynamic Granular Flow of Boron Carbide

X. Sun*[1]; K. Ramesh[1]

1. Johns Hopkins University, Mechanical Engineering, USA

10:00 AM

Break

Quasi-Static and Dynamic Behavior III

Room: St. Johns

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

10:20 AM

(ICACC-S4-015-2020) Results from a Round Robin Exercise on Dynamic Compression Strength of Alumina: What Was Learned?

J. Swab*[1]; G. D. Quinn[2]

1. Army Research Laboratory, USA
2. American Dental Association Foundation, Paffenbarger Research Center, USA

10:40 AM

(ICACC-S4-016-2020) On the Dynamic Stress Equilibrium in a Split-Hopkinson Pressure Bar Experiment

K. Upadhyay*[1]; G. Subhash[1]; D. Spearot[1]

1. University of Florida, Mechanical and Aerospace Engineering, USA

11:00 AM

(ICACC-S4-017-2020) Investigating Compression Strength Anisotropy of Hot-Pressed Armor Ceramics

J. J. Pittari*[1]; J. Swab[2]; C. S. Meredith[2]

1. CCDC Army Research Laboratory, Material Response and Design Branch, USA
2. CCDC Army Research Laboratory, USA

11:20 AM

(ICACC-S4-018-2020) Static and Dynamic Compression Strength of Armor Ceramics

J. Swab*[1]; J. J. Pittari[2]; C. S. Meredith[1]

1. Army Research Laboratory, USA
2. CCDC Army Research Laboratory, Material Response and Design Branch, USA

11:40 AM

(ICACC-S4-019-2020) Dynamic Mechanical Characterization of BAM-B_4C Composites

R. A. Riera*[1]; S. Bavdekar[1]; M. DeVries[1]; G. Subhash[1]

1. University of Florida, Mechanical and Aerospace Engineering, USA

Quasi-Static and Dynamic Behavior IV

Room: St. Johns

Session Chairs: John Pittari, CCDC Army Research Laboratory; Jeffrey Swab, Army Research Laboratory

1:30 PM

(ICACC-S4-020-2020) Thermodynamics of Pressure-Induced and Shock-Induced Amorphization in Boron Carbide-Unraveling the Mystery Through MD Simulations and Experimental Data (Invited)

G. Subhash*[1]; A. Awasthi[1]; M. DeVries[1]

1. University of Florida, Mechanical and Aerospace Engineering, USA

2:00 PM

(ICACC-S4-021-2020) Influence of Crystal Orientation on Shock Response of Boron Carbide

A. Cheenady*[1]; M. DeVries[1]; A. Awasthi[1]; G. Subhash[1]

1. University of Florida, Mechanical and Aerospace Engineering, USA

2:20 PM

(ICACC-S4-022-2020) Quasi-plastic zone characterization of regular and Si-doped boron carbide

S. Xiang[1]; Q. Yang[2]; C. Hwang[2]; J. LaSalvia[3]; R. A. Haber[2]; K. Y. Xie*[1]

1. Texas A&M University, Materials Science and Engineering, USA
2. Rutgers University, Dept. of Materials Science and Engineering, USA
3. U.S. Army Research Laboratory, USA

2:40 PM

(ICACC-S4-023-2020) Suppressing of Amorphization in Boron Carbide: Silicon vs Boron Doping

Q. Yang*[2]; C. Marvel[1]; C. Hwang[2]; K. Christian[2]; M. C. Schaefer[2]; J. LaSalvia[3]; M. Harmer[1]; R. A. Haber[2]

1. Lehigh University, Dept. of Materials Science and Engineering, USA
2. Rutgers University, Dept. of Materials Science and Engineering, USA
3. U.S. Army Research Laboratory, USA

3:00 PM

Break

3:20 PM

(ICACC-S4-024-2020) Influence of Porosity on the Destruction of Rhombohedral Boron Carbide Under Shock Loads

V. Kartuzov*[1]; I. Kartuzov[1]; V. L. Bekenev[1]; O. V. Bystrenko[1]

1. IPMS NASU, Ukraine

3:40 PM

(ICACC-S4-025-2020) Small amount TiB_2 addition to improve mechanical properties of B_4C

C. Hwang*[1]; S. DiPietro[2]; K. Xie[3]; Q. Yang[1]; A. M. Celik[1]; A. U. Khan[1]; V. Domnich[1]; S. D. Walck[4]; K. J. Hemker[5]; R. A. Haber[1]

1. Rutgers University, Dept. of Materials Science and Engineering, USA
2. Exothermics, Inc, USA
3. Texas A&M University, USA
4. U.S. Army Research Laboratory, Survice Engineering Co., USA
5. Johns Hopkins University, Dept. of Mechanical Engineering, USA

4:00 PM

(ICACC-S4-026-2020) Static and Dynamic Properties of B_6O-B_4C Composite

K. Ghaffari*[1]; R. A. Riera[2]; S. Bavdekar[2]; G. Subhash[2]

1. University of Florida, Material Science and Engineering, USA
2. University of Florida, Mechanical and Aerospace Engineering, USA

4:20 PM

(ICACC-S4-027-2020) Preparation of TEM cross-sections of Knoop indented hot-pressed boron suboxide

K. D. Behler*[1]; J. LaSalvia[1]; S. D. Walck[1]; C. Marvel[2]; M. Harmer[2]

1. U.S. Army Research Lab, FCDD-RLW-ME, USA
2. Lehigh University, USA

4:40 PM

(ICACC-S4-028-2020) Understanding inverse Hall Petch relation in nanocrystalline zirconia

A. Bokov[1]; R. Castro*[1]

1. University of California, Davis, Material Science & Engineering, USA

S5: Next Generation Bioceramics and Biocomposites

Next Generation Bioceramics II

Room: Coquina Salon C

Session Chairs: Igor Zhitomirsky, McMaster University; Anthony Wren, Alfred University; Hendrik Heinz, University of Colorado Boulder

8:30 AM

(ICACC-S5-009-2020) Design of Bioceramics from the Molecular Scale: Molecular Recognition, Assembly, and Applications (Invited)

H. Heinz*[1]

1. University of Colorado Boulder, USA

8:50 AM

(ICACC-S5-010-2020) Synthesis of substituted β-tricalcium phosphate powders to improve their thermal stability and biological properties for bone regeneration

N. Somers*[1]; F. Jean[1]; M. Lasgorceix[1]; A. Thuault[1]; F. Petit[2]; A. Leriche[1]

1. University de Valenciennes, LMCPA, France
2. Belgian Ceramic Research Centre, Belgium

9:10 AM

(ICACC-S5-011-2020) Future of dental biomaterials: Gazing into Bob's crystal ball (Invited)

J. Kelly*[1]

1. University of Connecticut, School of Dental Medicine, USA

9:30 AM

(ICACC-S5-012-2020) Additive Manufacturing of Bioceramic Scaffolds by Combination of FDM and Slip Casting (Invited)

S. Esslinger*[1]; R. Gadow[2]

1. University of Stuttgart, GSaME, Germany
2. Institute for Manufacturing Technologies of Ceramic Components and Composites, University of Stuttgart, Germany

9:50 AM

Break

10:10 AM

(ICACC-S5-013-2020) Biomimetic bone scaffolds based on co-substituted calcium phosphates and chitosan (Invited)

A. Ressler*[1]; M. Antunović[1]; M. Ivanković[1]; H. Ivanković[1]

1. Faculty of Chemical Engineering and Technology, University of Zagreb, Croatia

10:30 AM

(ICACC-S5-014-2020) Electrochemical fabrication of composites for biomedical applications (Invited)

I. Zhitomirsky*[1]

1. McMaster University, Canada

10:50 AM

(ICACC-S5-015-2020) Nanostructured calcium phosphates: From biomineralization to biomaterials (Invited)

R. Wang*[1]

1. University of British Columbia, Materials Engineering, Canada

11:10 AM

(ICACC-S5-016-2020) Germanium Based Glass Polyalkenoate Cements for Orthopaedic Applications: Glass Characterization, Physical and Bioactive Properties (Invited)

S. Mokhtari[2]; A. Coughlan[3]; N. P. Mellott[4]; A. W. Wren*[1]

1. Alfred University, Kazuo Inamori School of Engineering, USA
2. Alfred University, Materials Science and Engineering, USA
3. University of Toledo, Dept of Bioengineering, USA
4. Michigan State University, Materials Science and Engineering, USA

Next Generation Bioceramics III

Room: Coquina Salon C

Session Chairs: David Kisailus, University of California, Riverside; Pavel Evdokimov, Lomonosov Moscow State University

1:30 PM

(ICACC-S5-017-2020) Binary Nitric Oxide-Isoprene Breath-Gas Sensing System for Monitoring Human Performance in High-Altitudes and Critical Care (Invited)

P. Gouma*[1]

1. The Ohio State University, MSE, USA

1:50 PM

(ICACC-S5-018-2020) Hybrid nanomanufacturing of hierarchical wearable devices for self-powered human-integrated sensors and interfaces (Invited)

W. Wu*[1]

1. Purdue University, School of Industrial Engineering; Birck Nanotechnology Center; Regenstrief Center for Healthcare Engineering, USA

2:10 PM

(ICACC-S5-019-2020) New zirconia-based ductile composites for biomedical applications: Opportunities and challenges (Invited)

H. Reveron*[1]

1. Univ Lyon, MATEIS UMR5510, Insa de Lyon, Ceramics and Composites Group, France

2:30 PM

(ICACC-S5-023-2020) Manipulating the Architecture of Lanthanide Doped Nanoparticles for Theranostics (Invited)

F. Vetrone*[1]

1. Institut National de la Recherche Scientifique, Université du Québec, Centre Énergie, Matériaux et Télécommunications, Canada

2:50 PM

Break

3:10 PM

(ICACC-S5-021-2020) Fabrication of novel complex-shaped macroporous biodegradable ceramics and hydrogel composites via various 3D printing technologies for tissue regeneration (Invited)

P. Evdokimov*[1]

1. Lomonosov Moscow State University, Chemistry Department/Materials Science Departmenet, Russian Federation

3:30 PM

(ICACC-S5-022-2020) Innovative solutions in order to produce multi bioceramic implants by 3D printing

C. Chaput*[1]; R. Gaignon[1]

1. 3DCERAM SINTO INC, USA

3:50 PM

(ICACC-S5-020-2020) Biological Blueprints Towards Next Generation Multiscale Composites (Invited)

D. Kisailus*[1]

1. UC Riverside, Chemical and Environmental Engineering, USA

4:10 PM

(ICACC-S5-024-2020) Luminescent Glass-Ceramic Materials in Imaging Applications (Invited)

R. L. Leonard*[1]; D. Berkowitz[1]; C. W. Bond[1]; A. Evans[1]; A. Howansky[3]; J. A. Johnson[1]; Y. Jin[5]; A. R. Lubinsky[2]; J. McDearman[1]; A. Petford-Long[4]; A. Thomas[1]

1. University of Tennessee Space Institute, Mechanical, Aerospace, and Biomedical Engineering, USA
2. Stony Brook University, Radiology, USA
3. Stony Brook Medicine, USA
4. Argonne National Lab, Materials Science Division, USA
5. Northwestern University, Materials Science & Engineering, USA

4:30 PM

(ICACC-S5-025-2020) Fluorapatite (FAp) nano-hybrid from dicalcium phosphate dihydrate (DCPD) : Preparation and its unique properties (Invited)

M. Tafu*[1]; T. Toshima[2]; N. Okajima[1]; A. Iwaori[1]; S. Takamatsu[1]

1. National Institute of Technology, Toyama College, Japan
2. National Institute of Technology, Toyama College, Department of Mechanical Engineering, Japan

S6: Advanced Materials and Technologies for Rechargeable Energy Storage

Li-ion Battery: Material Design

Room: Tomoka A

Session Chairs: Vilas Pol, Purdue University; Valerie Pralong, CNRS ENSICAEN

8:30 AM

(ICACC-S6-010-2020) Computational screen and design on electrochemical energy storage materials (Invited)

J. Liu*[1]

1. Shanghai Institute of Ceramics, Chinese Academy of Sciences, China

9:00 AM

(ICACC-S6-011-2020) Dry Processing Methods for Li-ion Battery Active Materials Synthesis (Invited)

M. Obrovac*[1]

1. Dalhousie University, Chemistry, Canada

9:30 AM

(ICACC-S6-012-2020) Effect of Doping on Mechanical and Chemical Stability of Cathode Materials: A Multiscale Modeling study (Invited)

L. Kuo[2]; R. Muecke[1]; P. Kaghazchi*[1]

1. Forschungszentrum Juelich, IEK-1, Germany
2. Freie Universität Berlin, Physikalische und Theoretische Chemie, Germany

10:00 AM

Break

10:20 AM

(ICACC-S6-013-2020) Stabilizing Electrode/Electrolyte Interface for Lithium Batteries (Invited)

Z. Chen*[1]

1. Argonne National Lab, USA

10:50 AM

(ICACC-S6-014-2020) Alkali-earth metals-sulfur systems: Tackling the drawbacks of inefficient Ca and Mg electrolytes (Invited)

Z. Meng[1]; A. Scafuri[5]; K. Pirnat[4]; R. Dedryvere[2]; M. Morcrette[3]; L. Stievano*[1]; R. Dominko[4]; R. Berthelot[1]

1. Université de Montpellier, Institut Charles Gernardt Montpellier, France
2. University of Pau - CNRS, IPREM, France
3. LRCS, France
4. National Institute of Chemistry, Slovenia
5. Alistore ERI, France

11:20 AM

(ICACC-S6-015-2020) Enhanced Lithium Transport in Epitaxial Thin Films for Lithium-ion Batteries (Invited)

M. Huijben*[1]

1. University of Twente, Netherlands

11:50 AM

(ICACC-S6-016-2020) Processing and Properties of Anisotropic Hierarchical Porous Ceramics for Li-ion Battery Electrodes – An Experimental and Numerical Investigation

M. Azami-Ghadkolai*[1]; S. Creager[2]; R. Bordia[1]

1. Clemson University, Materials Science and Engineering, USA
2. Clemson University, Chemistry, USA

Thermoelectric Materials

Room: Tomoka A

Session Chairs: Jon Goldsby, NASA Glenn Research Center; Palani Balaya, National University of Singapore

1:30 PM

(ICACC-S6-017-2020) Enhanced Thermoelectric Performance of Porous $SrTiO_3$ Ceramics Containing Exsolved Ni Nanoparticles (Invited)

M. Ohtaki*[1]; S. Hirata[1]; K. Suekuni[1]

1. Kyushu University, Interdisciplinary Graduate School of Engineering Sciences, Japan

2:00 PM

(ICACC-S6-018-2020) Enhanced Power Output in Polymer-based Thermoelectric Devices through Thermal and Electrical Matching (Invited)

M. Mukaida*[1]; K. Kirihara[1]; Q. Wei[1]

1. National Institute of Advanced Industrial Science and Technology (AIST), Department of Material and Chemistry, Japan

2:30 PM

(ICACC-S6-019-2020) Highly dense and nanostructured thermoelectric $Ca_{2-x}Dy_xMnO_4$ ceramics

M. Allani*[1]; A. Bahezre[1]; D. Bregiroux[1]; G. Rousse[2]; C. Laberty-Robert[1]

1. Sorbonne University, LCMCP- UMR7574, Faculty of Science & Engineering, Chemistry Education and Research Unit, France
2. Sorbonne University - Collège de France, France

2:50 PM

Break

Sulphur Battery and Liquid Electrolytes

Room: Tomoka A

Session Chairs: Lorenzo Stievano, Université de Montpellier; Yuki Orikasa, Ritsumeikan University

3:10 PM

(ICACC-S6-020-2020) Development of High Li ion Transport Electrolyte for Fast Charging of High Energy Density Li-ion Cells (Invited)

Z. Du*[1]; X. Wu[1]; D. L. Wood[1]; I. Belharouak[1]

1. Oak Ridge National Laboratory, USA

3:40 PM

(ICACC-S6-021-2020) Concentrated Electrolytes for Li Batteries: Physicochemical Properties and Electrochemical Reaction at Graphite Electrode (Invited)

R. Tatara*[1]; K. Ueno[1]; K. Dokko[1]; M. Watanabe[1]

1. Yokohama National University, Department of Chemistry and Biotechnology, Japan

4:10 PM

(ICACC-S6-022-2020) Exploration of new titano-niobate based oxide as ionic conductor

V. Pralong*[1]; A. Neveu[1]; E. Anger[1]

1. CNRS CRISMAT, France

4:30 PM

(ICACC-S6-023-2020) 2D Materials and Composites for Safe Lithium Batteries (Invited)

R. S. Yassar*[1]

1. University of Illinois at Chicago, USA

S7: 14th International Symposium on Functional Nanomaterials and Thin Films for Sustainable Energy Harvesting, Environmental, and Health Applications

Nanotoxicity, Drug-delivery, and Tissue Engineering with Tailored Nano-bioconjugates

Room: Flagler A

Session Chair: Thomas Fischer, University of Cologne

8:30 AM

(ICACC-S7-008-2020) Estrogen-DOTA-Radio Nano-Conjugates Recognize Breast Cancer Receptors (Invited)

S. Ilyas*[1]; S. Sahnoun[2]; K. Wennhold[3]; S. Hussain[4]; K. Schomaecker[2]; S. Mathur[1]

1. University of Cologne, Institute of Inorganic Chemistry, Germany
2. University Hospital of Cologne, Clinic and Polyclinic for Nuclear Medicine, Germany
3. University Hospital Cologne, Center for Molecular Medicine Cologne (CMMC) and Cologne Translational Immunology, Germany
4. University of Cologne, Institute of Biochemistry I, Germany

9:00 AM

(ICACC-S7-009-2020) Monitoring and Probing the stability and dissolution of nano-MoO_x contrast agents for XRFbioimaging (Invited)

M. S. Toprak*[1]

1. KTH Royal Institute of Technology, Dept. of Applied Physics, Sweden

9:30 AM

(ICACC-S7-010-2020) Smart Mesoporous Core-shell Nanovectors as Anticancer Drug Carriers

A. Szymura*[1]; S. Ilyas[1]; M. S. Hussain[2]; S. Mathur[1]

1. University of Cologne, Institute of Inorganic Chemistry, Germany
2. University of Cologne, Institute of Biochemistry I, Germany

9:50 AM

Break

Synthesis, Functionalization, and Assembly of Inorganic and Hybrid Nanostructures I

Room: Flagler A

Session Chair: Muhammet Toprak, KTH Royal Institute of Technology

10:20 AM

(ICACC-S7-011-2020) Transition of nanomorphology in ceramic systems: Multifunctional ceramics for energy storage, microelectronics, EOIR and radiation sensors (Invited)

N. B. Singh*[1]; F. Choa[2]; B. Arnold[3]; L. Kelly[3]; K. Mandal[4]

1. University of Maryland Baltimore County, Chemistry and Biochemistry, and Computer Science and Electrical Engineering, USA
2. University of Maryland Baltimore County, Computer Science and Electrical Engineering, USA
3. University of Maryland Baltimore County, Chemistry and Biochemistry, USA
4. Indian Institute of Technology (BHU), Chemistry, India

10:50 AM

(ICACC-S7-012-2020) Bioelectrochemical TiN|FDH Catalyst for CO_2 Reduction to HCOOH

F. Arena*[1]; G. Giuffredi[1]; S. Donini[1]; E. Parisini[1]; F. Di Fonzo[1]

1. Italian Institute of Technology, Italy

11:10 AM

(ICACC-S7-013-2020) Composite Formation of Cs/$CH_3NH_3PbI_3$ Perovskite System and its Influence on Physical Properties

V. Pawar*[1]; P. Singh[1]

1. Indian Institute of Technology(BHU), PHYSICS, India

11:30 AM

(ICACC-S7-014-2020) Spontaneous formation of Ternary Metal Oxide Nanomaterials from Cerium and High Valance Metallate precursors: VO_4^{3-} and MoO_4^{2-}

C. J. Neal*[1]; T. Sakthivel[1]; A. Jeyaranjan[1]; S. Seal[1]

1. University of Central Florida, Advanced Materials Processing and Analysis Center (AMPAC), Materials Science & Engineering, Nanoscience Technology Center (NSTC), USA

Metal Oxide Nanostructures for Sensing, Batteries, and Water-splitting Applications

Room: Flagler A

Session Chair: Yakup Gönüllü, University of Cologne

1:30 PM

(ICACC-S7-015-2020) Gas sensing of NiO-SCCNTs core-shell heterostructures: Optimization by radial modulation of the hole-accumulation layer (Invited)

N. Pinna*[1]

1. Humboldt-Universität zu Berlin, Department of Chemistry, Germany

2:00 PM

(ICACC-S7-016-2020) Shape-controlled Ce-Ti oxide systems for photocatalytic applications in the CO preferential oxidation

E. Moretti*[1]; A. Infantes-Molina[2]; E. Rodriguez-Castellon[2]; A. Talon[1]; A. Vomiero[3]

1. Ca' Foscari University of Venice, Department of Molecular Sciences and Nanosystems, Italy
2. University of Málaga, Department of Inorganic Chemistry, Crystallography and Mineralogy, Spain
3. Lulea University of Technology, Engineering Sciences & Mathematics, Sweden

2:20 PM

(ICACC-S7-017-2020) Engineering Interfacial Modification on Nanocrystaline Hematite Photoanodes: A Close Look into the Efficiency Parameters (Invited)

D. N. Muche[1]; F. L. de Souza*[1]

1. Federal University of ABC, Center of Natural Science and Humanity, Brazil

2:40 PM

(ICACC-S7-018-2020) Phase Selective Synthesis of $InFeO_3$ using Single Source Precursors

V. Nahrstedt*[1]; J. Januškevičius[2]; F. Maccari[3]; O. Gutfleisch[3]; S. Mathur[1]

1. University of Cologne, Institute of Inorganic Chemistry, Germany
2. Vilnius University, Lithuania
3. TU Darmstadt, Germany

3:00 PM

Break

Synthesis, Functionalization, and Assembly of Inorganic and Hybrid Nanostructures II

Room: Flagler A

Session Chair: Nicola Pinna, Humboldt-Universität zu Berlin

3:20 PM

(ICACC-S7-019-2020) Bioconjugated Nanoprobes: Tumor Specific Uptake and Localization (Invited)

S. Ilyas*[1]; K. Wennhold[2]; S. Hussain[3]; S. Mathur[1]

1. University of Cologne, Institute of Inorganic Chemistry, Germany
2. University Hospital Cologne, Center for Molecular Medicine Cologne (CMMC) and Cologne Translational Immunology, Germany
3. University of Cologne, Institute of Biochemistry I, Germany

3:50 PM

(ICACC-S7-020-2020) Superhydrophobic Functional Surfaces

A. K. Schmidt-Verma*[1]; A. Renner[1]; S. Mathur[1]

1. University of Cologne, Institute of Inorganic Chemistry, Germany

4:10 PM

(ICACC-S7-021-2020) Cost efficient oxygen generation through alkaline water electrolysis using Ni on SnO_2 mesoporous support-based electrocatalysts

F. Neatu*[1]; S. Neatu[1]; V. Diculescu[1]; M. M. Trandafir[1]; N. Petrea[2]; S. Somacescu[3]; F. Krumeich[4]; A. Knorpp[4]; J. van Bokhoven[4]; M. Florea[1]

1. National Institute of Materials Physics, Romania
2. Scientific Research Centre for CBRN Defence and Ecology, Romania
3. "Ilie Murgulescu" Institute of Physical Chemistry, Romanian Academy, Romania
4. ETH Zurich, Institute for Chemical and Bioengineering, Switzerland

4:30 PM

(ICACC-S7-022-2020) Oxide based high temperature thermoelectric devices: Multilayer fabrication and performance

F. R. Caliari*[1]; S. Sampath[1]

1. Stony Brook University, Center for Thermal Spray Research, USA

4:50 PM

(ICACC-S7-023-2020) Elegant Fabrication of Boron Nitride Aerogels Consisting of Varied Superstructures

J. Pan*[1]; J. Wang[1]

1. Chinese Academy of Sciences, Institute of Metal Research, China

S8: 14th International Symposium on Advanced Processing and Manufacturing Technologies for Structural and Multifunctional Materials and Systems (APMT14)

Advanced Sintering Technologies II

Room: Coquina Salon A

Session Chairs: Jon Binner, Loughborough University; Tadachika Nakayama, Nagaoka University of Technology

8:30 AM

(ICACC-S8-011-2020) Pressureless flash sintering of α-SiC using solid state sintering aids (Invited)

A. Gibson[1]; Y. Li[1]; R. I. Todd*[1]

1. University of Oxford, Department of Materials, United Kingdom

9:00 AM

(ICACC-S8-012-2020) Aligning α-Alumina Platelets via Uniaxial Pressing of Ceramic-filled Thermoplastic Polymer Blends for the Improvement of Final Sintered Transparency

W. J. Costakis*[1]; A. Schlup[1]; R. Trice[1]; J. P. Youngblood[1]

1. Purdue University, Department of Materials Engineering, USA

9:20 AM

(ICACC-S8-013-2020) Study of 3D printing of transparent ceramics

G. Zhang*[1]; D. Carloni[1]; Y. Wu[1]

1. Alfred University, Department of Materials Science, Kazuo Inamori School of Engineering, USA

9:40 AM

(ICACC-S8-014-2020) Microstructures Ceramic Designing by Voronoi Model and Fractals Geometry

V. Mitic*[1]; G. Lazovic[2]; D. Rancic[3]; I. Antolovic[3]; Z. Nikolic[4]; H. Fecht[5]

1. Serbian Academy of Sciences /Faculty of Electronic Engineering University Nis, Institute of Technical Sciences, Serbia
2. University of Belgrade, Faculty of Mechanical Engineering, Serbia
3. University of Nis, Faculty of Electronic Engineering, Serbia
4. University Nis, Serbia
5. University Ulm, Germany

10:00 AM

Break

10:20 AM

(ICACC-S8-015-2020) Numerical simulation of water molecule coordinates in $Sr_2CaCu_2O_y$ superconductor (Invited)

H. Suematsu*[1]; K. Kawai[1]; A. Fujimoto[2]; T. Do[1]; T. Nakayama[1]; K. Niihara[1]

1. Nagaoka University of Technology, Extreme Energy-Density Research Institute, Japan
2. National Institute of Technology, Numazu College, Japan

10:50 AM

(ICACC-S8-016-2020) Microstructure and anisotropic mechanical properties of $B_{6.5}C$-TiB_2-SiC-BN composites fabricated by reactive hot pressing (Invited)

W. Wang*[1]; Q. He[1]; H. Wang[1]; Z. Fu[2]

1. Wuhan University of Technology, China
2. Wuhan University of Technology, State Key Lab of Advanced Technology for Materials Synthesis and Processing, China

11:20 AM

(ICACC-S8-017-2020) Electric field-assisted softening and crystallization in glasses

S. S. Parihar*[1]; K. T. Strong[2]

1. Sandia National Laboratories, USA
2. Sandia National Laboratories, Material Mechanics and Tribology, USA

11:40 AM

(ICACC-S8-018-2020) Sintering of advanced ceramics by plastic deformation as dominant mechanism

W. Ji*[1]; Z. Fu[2]

1. Wuhan University of Technology, China
2. Wuhan University of Technology, State Key Lab of Advanced Technology for Materials Synthesis and Processing, China

Advanced Manufacturing and Processing I

Room: Coquina Salon A

Session Chairs: Jianfeng Yang, Xi'an Jiaotong University; Weimin Wang, Wuhan University of Technology

1:30 PM

(ICACC-S8-019-2020) Development of hybrid machining technique to process complex shape ceramics with very fine details (Invited)

F. J. Cambier*[1]; F. Petit[1]; C. Duterte[2]; A. Biernaux[2]

1. Belgian Ceramic Research Centre, Belgium
2. Optec SA, Belgium

2:00 PM

(ICACC-S8-020-2020) Advanced ceramic and composite electrodes for supercapacitors with high active mass loadings (Invited)

I. Zhitomirsky*[1]

1. McMaster University, Canada

2:30 PM

(ICACC-S8-021-2020) Novel electrical disintegration for selective dismantling between multi-material (Invited)

C. Tokoro*[1]

1. Waseda University, Japan

3:00 PM

Break

3:20 PM

(ICACC-S8-022-2020) Deposition Behavior of Cesium Molybdate on Stainless Steel 316 (Invited)

T. Do[1]; X. H. Hoang[1]; T. Nakayama*[2]; H. Suematsu[3]

1. Nagaoka University of Technology, Nuclear System Safety Engineering, Japan
2. Nagaoka University of Technology, Japan
3. Nagaoka University of Technology, Extreme Energy-Density Research Institute, Japan

3:50 PM

(ICACC-S8-023-2020) NDK and HDK composite networks for optimization of dielectric behavior

K. B. Häuser*[1]; J. R. Binder[1]; P. Agrawal[2]; R. Jakoby[2]

1. Karlsruhe Institute of Technology, Institute for Applied Materials (IAM), Germany
2. Technical University Darmstadt, IMP, Germany

4:10 PM

(ICACC-S8-024-2020) Structural change analysis of cerium and yttrium minerals in weathered residual rare earth ore by mechanochemical reaction

T. Kato*[1]; C. Tokoro[2]

1. Waseda University, Graduate School of Creative Science and Engineering, Japan
2. Waseda University, Japan

4:30 PM

(ICACC-S8-025-2020) Design of Lightweight and Durable Conductor for Electrical Propulsion

A. J. Goretski*[1]; A. S. Almansour[2]; A. Gorven[3]

1. Mississippi State University, USA
2. NASA Glenn Research Center, Mechanical Engineering, USA
3. Boise State University, Mechanical Engineering, USA

S11: Advanced Materials and Innovative Processing Ideas for Production Root Technologies

Alloys and Compounds : New Concepts and Emerging Technologies for Enhanced Product Performance

Room: Tomoka B

Session Chairs: Hyuksu Han, Hongik University; Sungwook Mhin, Korea Institute of Industrial Technology

9:00 AM

(ICACC-S11-011-2020) Microstructural segmentation and phase fraction of carbon steel weldment analysis using deep learning

S. Lee*[1]; J. Jang[1]; D. Van[1]; J. Park[1]; J. Kim[1]

1. Korea Aerospace University, Republic of Korea

9:20 AM

(ICACC-S11-012-2020) Direct observation of alumina slurry under applying shear field by optical coherence tomography (Invited)

J. Tatami*[1]; H. Takaba[1]; M. Iijima[1]; T. Takahashi[2]

1. Yokohama National University, Japan
2. Kanagawa Institute of Industrial Science and Technology, Japan

9:50 AM

(ICACC-S11-013-2020) High temperature fluidized bed spray coating – coating and calcination / reduction / oxidation or phase transformation in one step

A. Teiwes[1]; K. Weber*[1]

1. Glatt Ingenieurtechnik GmbH, Germany

10:10 AM

Break

10:30 AM

(ICACC-S11-014-2020) Development of room-temperature formable Mg alloy sheets with high strengths (Invited)

T. Nakata*[1]; H. Ohashi[1]; S. Kamado[1]

1. Nagaoka University of Technology, Mechanical Engineering, Japan

11:00 AM

(ICACC-S11-015-2020) Effect of Gd and Y contents on the age-hardening response and tensile properties of extruded Mg-Gd-Y based alloys

Y. Mori*[1]; T. Nakata[1]; S. Kamado[1]

1. Nagaoka University of Technology, Mechanical Engineering, Japan

11:20 AM

(ICACC-S11-016-2020) Enhancing room-temperature formability of a Mg-Al alloy sheet via micro-alloying

H. Ohashi*[1]; T. Nakata[1]; S. Kamado[1]

1. Nagaoka University of Technology, Mechanical Engineering, Japan

11:40 AM

(ICACC-S11-017-2020) Microstructure and Characteristics of Mo-Cu-X-N Coatings Deposited by Alloying Coatings

S. Kim[1]; H. Yoon[1]; K. Moon*[1]

1. KITECH, Republic of Korea

Sustainable Energy Concepts and Applications I

Room: Tomoka B

Session Chairs: Heechae Choi, University of Cologne; Hyuksu Han, Hongik University

1:30 PM

(ICACC-S11-018-2020) Recycling of Used Li-ion Batteries by New Lithium Separation Membrane using Ceramics Ionic Conductor (Invited)

T. Hoshino*[1]

1. National Institutes for Quantum and Radiological Science and Technology (QST), Breeding Functional Materials Development Group, Department of Blanket Systems Research, Rokkasho Fusion Institute, Fusion Energy Research and Development Directorate, Japan

2:00 PM

(ICACC-S11-019-2020) Laser-induced structural modification of $Na_2FeP_2O_7$ glass-ceramics for all-solid-state sodium ion battery

M. Hiratsuka*[1]; T. Honma[2]; T. Komatsu[3]

1. Nagaoka University of Technology, Materials Science and Technology, Japan
2. Nagaoka Univeristy of Technology, Department of Materials Science and Technology, Japan
3. Nagaoka University of Technology, Japan

2:20 PM

(ICACC-S11-020-2020) Investigation of pyroelectric power generation with sintered ceramics (Invited)

T. Nakayama*[1]

1. Nagaoka University of Technology, Japan

2:50 PM

Break

3:10 PM

(ICACC-S11-021-2020) Materials and Devices for Direct Thermal-to-Electrical Energy Conversion (Invited)

M. Takeda*[1]

1. Nagaoka University of Technology, Department of Mechanical Engineering, Japan

3:40 PM

(ICACC-S11-022-2020) Development of non-contact direct electrocaloric measurement method using high speed infrared camera (Invited)

M. Baba*[1]; M. Ejima[1]; N. Ishibashi[1]; S. Fukuda[1]; M. Takeda[1]

1. Nagaoka University of Technology, Department of Mechanical Engineering, Japan

S12: On the Design of Nano-Laminated Ternary Transition Metal Carbides/Nitrides (MAX Phases) and Borides (MAB Phases), and their 2D Counterparts (MXENES, MBENES)

Oxidation Behavior of MAX Phases

Room: Coquina Salon F

Session Chairs: Deniz Cakir, University of North Dakota; Konstantina Lambrinou, SCK-CEN

8:10 AM

(ICACC-S12-010-2020) Effect of Impurities on the Morphology and Spallation of the Oxide Formed by Oxidation of Cr_2AlC (Invited)

Y. Chen[1]; Z. Zhan[1]; D. Holta[1]; J. Smialek[2]; T. Ouisse[3]; M. Radovic*[1]

1. Texas A&M University, Materials Science & Engineering, USA
2. NASA Glenn Research Center, USA
3. Grenoble INP, France

8:40 AM

(ICACC-S12-011-2020) Oxidation behavior of V_2AlC coatings in air

C. Azina*[2]; S. Mráz[1]; M. M. Yildizhan[2]; J. Rosén[2]; J. Schneider[1]; P. Eklund[2]

1. RWTH Aachen University, Materials Chemistry, Germany
2. Linkoping University, Dept. of Physics, Chemistry, and Biology, Sweden

9:00 AM

(ICACC-S12-012-2020) Thermal stability enhancement of Cr_2AlC coatings on Zr by utilizing a double layer diffusion barrier

S. Mráz*[1]; M. Tyra[1]; M. to Baben[2]; M. Hans[1]; X. Chen[1]; F. Herrig[1]; K. Lambrinou[3]; J. Schneider[1]

1. Materials Chemistry, RWTH Aachen University, Germany
2. GTT Technologies, Germany
3. SCK-CEN, NMS, Belgium

9:20 AM

(ICACC-S12-013-2020) Oxidation resistance of $(Ti_xNb_{1-x})_2AlC$ MAX phases

E. Epifano*[1]; G. A. Hug[2]; A. Jancowiak[3]

1. ONERA, DMAS/LEM, France
2. ONERA, LEM, France
3. ONERA, France

9:40 AM

Break

Theoretical and Multifunctional Application of MAX Phases

Room: Coquina Salon F

Session Chairs: Jesus Gonzalez-Julian, Forschungszentrum Juelich; Mihaela Florea, National Institute of Materials Physics

10:00 AM

(ICACC-S12-014-2020) Structural characterization of the phase transition of Cr_2AlC under ion irradiation

T. Cabioch*[1]; F. Brenet[1]; J. Nicolaï[1]; M. Beaufort[1]

1. Institut PPRIME, France

10:20 AM

(ICACC-S12-015-2020) On the feasibility of MAX phase coatings on Zircaloy cladding for Enhanced Accident Tolerance Fuels in LWRs (Invited)

J. Zhang*[1]; Y. Lei[1]; J. Wang[1]

1. Insitute of Metal Research, Chinese Academy of Sciences, Shenyang National Laboratory for Materials Science, China

10:50 AM

(ICACC-S12-016-2020) Compatibility of the Zr_2AlC MAX phase with liquid lead-bismuth eutectic

K. Lambrinou*[1]; B. Tunca Altintas[1]; T. Lapauw[3]; C. Callaert[2]; J. Hadermann[2]; R. Delville[1]; E. Caspi[4]; M. Dahlqvist[5]; J. Rosen[5]; M. Amalraj[6]; K. Pradeep[7]; J. Schneider[6]; J. Vleugels[3]

1. SCK-CEN, Nuclear Materials Science Institute, Belgium
2. University of Antwerp, Department of Physics, Belgium
3. KU Leuven, Department of Materials Engineering, Belgium
4. Nuclear Research Centre-Negev, Physics Depratment, Israel
5. Linkoping University, Department of Physics, Chemistry, and Biology, Sweden
6. RWTH Aachen University, Materials Chemistry, Germany
7. Indian Institute of Technology, Department of Metallurgical and Materials Engineering, India

11:10 AM

(ICACC-S12-017-2020) Ab initio study of vacancy stability and migration in disordered MAX phase alloys

P. Singh*[1]; D. Sauceda[1]; R. Arroyave[1]

1. Texas A&M University, Materials Science and Engineering, USA

11:30 AM

(ICACC-S12-018-2020) Exploring the Effect of Cleavage-Stress and Shear-Stress on Structural, Electronic and Mechanical Properties of MAX Phase

D. Sauceda*[1]; P. Singh[1]; R. Arroyave[1]

1. Texas A&M University, Materials Science and Engineering, USA

Current Progress in Mxenes I

Room: Coquina Salon F

Session Chairs: Martin Magnuson, Linkoping University; De-en Jiang, University of California, Riverside

1:20 PM

(ICACC-S12-019-2020) Multilayered MXenes and Clays: The Interlayer Space, Cations, Polar and Nonpolar Solvents (Keynote)

M. Barsoum*[1]; M. Carey[1]; V. Natu[1]; L. Verger[1]

1. Drexel University, Materials Science and Engineering, USA

2:00 PM

(ICACC-S12-020-2020) Oxidation and stabilization of 2D MXene nanosheets (Invited)

M. Green*[1]; M. Radovic[2]; J. Lutkenhaus[1]

1. Texas A&M University, Chemical Engineering, USA
2. Texas A&M University, Materials Science & Engineering, USA

2:30 PM

(ICACC-S12-021-2020) New pathways in the synthesis of MXene plates, crumpled sheets, spheres, and scrolls

S. Kellici*[1]

1. London South Bank University, School of Engineering, United Kingdom

2:50 PM

(ICACC-S12-022-2020) Electrically conductive MXene coated glass fibers for damage-sensing epoxy composite applications

C. B. Hatter*[1]; Y. Gogotsi[1]

1. Drexel University, Materials Science and Engineering, USA

3:10 PM

Break

Design and Characterization of MAB Phases

Room: Coquina Salon F

Session Chair: Micah Green, Texas A&M University

3:30 PM

(ICACC-S12-023-2020) Perspectives on processing $AlFe_2B_2$ and related MAB phases for magnetocaloric applications (Invited)

R. Barua*[1]; B. T. Lejeune[2]; S. Vallone[4]; R. T. Ott[3]; K. G. Sandeman[4]; B. Frandsen[5]; M. Kramer[3]; L. Lewis[2]

1. Virginia Commonwealth University, Department of Mechanical & Nuclear Engineering, USA
2. Northeastern University, Department of Chemical Engineering, USA
3. Ames Laboratory (USDOE), Materials Sciences and Engineering, USA
4. Brooklyn College, CUNY, Department of Physics, USA
5. Brigham Young University, Department of Physics, USA

4:10 PM

(ICACC-S12-024-2020) Synthesis and Characterization of MAB Phases by Novel Manufacturing Methods

M. Dey*[1]; S. Gupta[1]

1. University of North Dakota, Mechanical Engineering, USA

S13: Development and Applications of Advanced Ceramics and Composites for Nuclear Fission and Fusion Energy Systems

Novel Ceramics and Composites for Nuclear Systems II

Room: Coquina Salon H

Session Chair: Caen Ang, University of Tennessee

8:30 AM

(ICACC-S13-010-2020) 3D-printed silicon carbide for nuclear energy applications

G. Vasudevamurthy[1]; K. Terrani*[1]

1. Oak Ridge National Lab, USA

8:50 AM

(ICACC-S13-011-2020) Thermophysical properties of sintered yttrium dihydride

A. P. Shivprasad*[1]; V. K. Mehta[2]; J. T. White[1]; M. W. Cooper[1]; T. A. Saleh[1]; J. R. Wermer[3]; E. P. Luther[3]; H. R. Trellue[2]; D. Rao[4]

1. Los Alamos National Lab, Materials Science and Technology Division, USA
2. Los Alamos National Lab, Nuclear and Nonproliferation, USA
3. Los Alamos National Lab, Sigma Division, USA
4. Los Alamos National Lab, Civilian Nuclear Programs, USA

9:10 AM

(ICACC-S13-012-2020) Fabrication and Characterization of Massive Crack-free Single-Phase Yttrium Hydride for High Temperature Moderator Application

X. Hu*[1]; K. Terrani[1]

1. Oak Ridge National Lab, USA

9:30 AM

(ICACC-S13-013-2020) A new neutron shielding material W-WB

M. Athanasakis[1]; C. McFadzean[1]; S. A. Humphry-Baker*[1]

1. Imperial College London, Materials, United Kingdom

9:50 AM

(ICACC-S13-014-2020) Design and Strategy for Next Generation Silicon Carbide Composites for Nuclear Energy

Y. Katoh*[1]; T. Koyanagi[1]; Y. Yang[1]; B. Jolly[1]; C. Ang[2]; T. Nozawa[3]; L. Snead[4]

1. Oak Ridge National Laboratory, USA
2. University of Tennessee, Nuclear Engineering, USA
3. National Institutes for Quantum and Radiological Science and Technology, Japan
4. Stony Brook University, USA

10:10 AM

Break

Mechanical Properties: Test Methods, Codes and Standards, and Design Methodology

Room: Coquina Salon H

Session Chair: Yutai Katoh, Oak Ridge National Laboratory

10:30 AM

(ICACC-S13-015-2020) Inter-laboratory round robin study on hoop tensile properties of SiC/SiC composite tubes

T. Nozawa*[1]; H. Sato[2]; K. Furumoto[3]; R. Ishibashi[4]; S. Yamashita[5]; T. Kawanishi[5]; T. Fukahori[5]

1. National Institutes for Quantum and Radiological Science and Technology, Japan
2. Toshiba Energy Systems & Solutions Corporation, Japan
3. Mitsubishi Nuclear Fuel Co., Ltd., Japan
4. Hitachi GE Nuclear Energy, Ltd., Japan
5. Japan Atomic Energy Agency, Japan

10:50 AM

(ICACC-S13-016-2020) SiC-SiC CMCs and Graphite for Nuclear Applications: Newly Published Parts of the ASME BPV Code, Section III, Division 5

M. G. Jenkins*[1]; S. T. Gonczy[2]; Y. Katoh[3]

1. Bothell Engineering and Science Technologies, USA
2. Gateway Materials Technology, USA
3. Oak Ridge National Laboratory, USA

11:10 AM

(ICACC-S13-017-2020) Compressive Strength of CMC Tubes Used as Components in Nuclear Applications: ASTM Draft Standard Using Axial Compression Loading

M. G. Jenkins*[1]; J. E. Gallego[1]

1. Bothell Engineering and Science Technologies, USA

11:30 AM

(ICACC-S13-018-2020) Development of Novel Flexure Test Methods for Nuclear Grade SiC/SiC Composite Tube

O. Adams[1]; J. Bao[1]; D. McCleeary[1]; X. Huang*[1]

1. University of South Carolina, Mechanical Engineering, USA

11:50 AM

(ICACC-S13-019-2020) Probabilistic Failure Analysis of SiC/SiC Composite Fuel Cladding under Multi-Axial Loading

J. Le*[1]; C. Hu[1]; J. Labuz[1]; T. Koyanagi[2]

1. University of Minnesota, USA
2. Oak Ridge National Laboratory, USA

Ceramic Fuel Materials, Technologies, and Characterization; TRISO Fuels

Room: Coquina Salon H

Session Chair: Kurt Terrani, Oak Ridge National Lab

1:30 PM

(ICACC-S13-020-2020) Stress Analysis and Failure Behavior of SiC_f/SiC_m Textile Composite tubes

H. T. Nagaraju*[1]; J. Nance[2]; B. Sankar[1]; G. Subhash[1]; R. Haftka[1]

1. University of Florida, Mechanical and Aerospace Engineering, USA
2. University of Florida, Material Science Engineering, USA

1:50 PM

(ICACC-S13-021-2020) Densification of ZrC for Fully Ceramic Microencapsulated fuels

C. Ang*[1]; L. Snead[2]; A. Gordon[1]; S. Judd[3]; K. M. Benensky[4]; Y. Katoh[1]

1. University of Tennessee, Nuclear Engineering, USA
2. Stony Brook University, Materials and Chemical Engineering, USA
3. Blue Origin, LLC, USA
4. Analytical Mechanics Associates, Inc., USA

2:10 PM

(ICACC-S13-022-2020) Oxidation testing and microstructural analysis of AGR matrix material

T. J. Gerczak*[1]; C. Contescu[1]; J. Hunn[1]; Y. Lee[1]; R. Mee[2]

1. Oak Ridge National Laboratory, USA
2. University of Tennessee, USA

2:30 PM

(ICACC-S13-023-2020) Microstructural inhomogeneity in sintered Fully Ceramic Microencapsulated fuels

C. Ang*[1]; E. Deters[1]; L. Snead[2]; D. Sprouster[2]; Y. Katoh[1]

1. University of Tennessee, Nuclear Engineering, USA
2. State University of New York, Stony Brook, USA

2:50 PM

Break

3:10 PM

(ICACC-S13-024-2020) Pressureless Sintering of Fully Ceramic Microencapsulated Fuels

Y. Kim*[1]; E. Kang[1]; K. Lim[2]

1. University of Seoul, Dept. of Materials Science & Engineering, Republic of Korea
2. KEPCO NF, Republic of Korea

3:30 PM

(ICACC-S13-025-2020) Non-Destructive Microstructural Analysis of Fully Ceramic Microencapsulated Fuels

D. Sprouster*[1]; C. Ang[2]; B. Ahmadi[3]; J. Favata[3]; S. Shahbazmohamadi[3]; L. Snead[1]; J. Trelewicz[1]

1. Stony Brook University, Department of Materials Science and Chemical Engineering, USA
2. University of Tennessee, Nuclear Engineering, USA
3. University of Connecticut, USA

Joining Technologies for Reactor Components

Room: Coquina Salon H

Session Chair: Takashi Nozawa, National Institutes for Quantum and Radiological Science and Technology

3:50 PM

(ICACC-S13-026-2020) Joining of Advanced Ceramic Structures for Nuclear Reactors

D. King*[1]; M. Doran[1]; A. Sathish[1]; J. Jarman[2]; J. Watts[2]; W. Fahrenholtz[2]; G. Hilmas[2]

1. UES, Inc., USA
2. Missouri University of Science & Technology, Materials Science and Engineering, USA

4:10 PM

(ICACC-S13-027-2020) Mechanical Properties of Fusion Welds in the SiC-ZrB_2-ZrC System

J. Jarman*[1]; J. Watts[1]; G. Hilmas[1]; W. Fahrenholtz[1]; D. King[2]

1. Missouri University of Science & Technology, Department of Material Science and Engineering, USA
2. UES, Inc., USA

4:30 PM

(ICACC-S13-028-2020) Pressure-less joining of SiC/SiC for LWR

M. Ferraris*[1]; V. Casalegno[1]; S. De La Pierre[1]; A. De Zanet[1]; K. Van Loo[2]; C. Lorrette[3]

1. Politecnico di Torino, DISAT, Italy
2. KULeuven, Netherlands
3. CEA, France

4:50 PM

(ICACC-S13-029-2020) Development of Joining Process Technology for CVI/CVD-SiC/SiC Core Materials

S. Suyama*[1]; M. Ukai[1]; M. Akimoto[1]; T. Nishimura[1]; S. Tajima[1]

1. Toshiba Energy Systems & Solutions Corporation, Japan

S14: Crystalline Materials for Electrical, Optical and Medical Applications

Optical Material II

Room: Halifax A/B

Session Chairs: Kenji Toda, Niigata University; Takayuki Yanagida, Nara Institute of Science and Technology

9:00 AM

(ICACC-S14-009-2020) Scintillation properties of fluoride neutron scintillators at elevated temperatures (Invited)

N. Kawaguchi*[1]; T. Kato[1]; T. Yanagida[1]

1. Nara Institute of Science and Technology, Japan

9:30 AM

(ICACC-S14-010-2020) Enhancing the energy resolution of KSr_2I_5:Eu scintillator by compositional engineering (Invited)

L. M. Stand*[2]; M. Zhuravleva[2]; M. Koschan[2]; E. Lukosi[1]; C. Melcher[2]

1. University of Tennessee, USA
2. University of Tennessee, Scintillation Materials Research Center, USA

10:00 AM

Break

10:20 AM

(ICACC-S14-011-2020) Air-stable metal-halide single crystal scintillator $Cs_3Cu_2I_5$: Intrinsic and with Tl doping

D. Yuan*[1]

1. National Institute for Materials Science (NIMS), Japan

10:40 AM

(ICACC-S14-012-2020) Flexible ceramics coating on metal or plastics substrate prepared by photo assisted metal organic deposition (Invited)

T. Tsuchiya*[1]; Y. Uzawa[1]; T. Nakajima[1]; I. Yamaguchi[1]; J. Nomoto[1]

1. National Institute of Advanced Industrial Science and Technology (AIST), Japan

11:10 AM

(ICACC-S14-013-2020) Properties of metal halide perovskites and their applications in optoelectronic devices

X. Zhang*[1]

1. Southern University of Science and Technology, China

11:30 AM

(ICACC-S14-014-2020) Relationship between elastic modulus and luminescent properties of phosphors (Invited)

H. Masai*[1]

1. National Institute of Advanced Industrial Science and Technology (AIST), Department of Materials and Chemistry, Japan

Optical Material III

Room: Halifax A/B

Session Chairs: Victoria Blair, US Army Research Laboratory; Dongsheng Yuan, National Institute for Materials Science (NIMS)

1:30 PM

(ICACC-S14-015-2020) Synthesis and photoluminescence of Eu^{2+}-activated silicate phosphors designed by crystal-site engineering (Invited)

Y. Sato*[1]; K. Tomita[2]; M. Kakihana[3]

1. Okayama University of Science, Department of Chemistry, Faculty of Science, Japan
2. Tokai University, Department of Chemistry, School of Science, Japan
3. Tohoku University, Institute of Multidisciplinary Research for Advanced Materials, Japan

2:00 PM

(ICACC-S14-016-2020) Single phase color tunable phosphors for solid-state lighting applications (Invited)

J. McKittrick*[1]; J. Ha[1]; Y. Kim[3]; E. Novitskaya[1]; Z. Wang[1]; O. Graeve[1]; S. Ong[2]; W. Im[3]

1. University of California, San Diego, USA
2. University of California, San Diego, Department of NanoEngineering, USA
3. Chonnam National University, Republic of Korea

2:30 PM

(ICACC-S14-017-2020) Synthesis of perovskite quantum dot materials using novel water-assisted solid-state reaction method (Invited)

K. Toda*[1]

1. Niigata University, Japan

3:00 PM

Break

3:20 PM

(ICACC-S14-018-2020) Magneto-Optical Materials for Infrared Isolators (Invited)

R. Sharma*[1]; C. Goncalves[2]; R. M. Gaume[1]; K. Richardson[1]

1. University of Central Florida, CREOL, USA
2. CREOL, OCL - GPCL, USA

3:50 PM

(ICACC-S14-019-2020) Optical performance of transition metal doped crystalline composites

B. Setera*[1]; D. Sachs[1]; C. Su[2]; B. Arnold[1]; F. Choa[1]; L. Singh[3]; K. Mandal[3]; C. Su[4]; N. B. Singh[1]

1. University of Maryland Baltimore County, Chemistry and Biochemistry and Computer Science and Electrical Engineering, USA
2. University of Maryland Baltimore County, Chemistry and Biochemistry, USA
3. Indian Institute of Technology(BHU), Chemistry, India
4. NASA Marshall Space Flight Center, USA

4:10 PM

(ICACC-S14-020-2020) Magnetic Field-Assisted Finishing of Fused Silica Laser Optics

J. T. Long*[1]; D. Poljak[1]; Y. Funamoto[2]; D. Shima[2]; H. Marui[2]; T. Kamimura[2]; H. Yamaguchi[3]

1. University of Florida, Materials Science and Engineering, USA
2. Osaka Institute of Technology, Engineering, Japan
3. University of Florida, Mechanical and Aerospace Engineering, USA

4:30 PM

(ICACC-S14-021-2020) Towards high-throughput R & D of solid state lasers by crystal engineering and informatics (Invited)

T. Matsuura*[1]; H. Koinuma[1]

1. SCT INC, Japan

S15: 4th International Symposium on Additive Manufacturing and 3-D Printing Technologies

Stereolithography I

Room: Coquina Salon B

Session Chair: Jens Bauer, University of California, Irvine

8:30 AM

(ICACC-S15-010-2020) Additive Manufacturing of Polymer-Derived Ceramic Composites (Invited)

K. A. Porter[1]; M. R. O'Masta[1]; P. P. Bui[1]; E. Stonkevitch[1]; Z. C. Eckel[1]; T. Schaedler*[1]

1. HRL Laboratories, USA

9:00 AM

(ICACC-S15-011-2020) New applications of hybrid multi-materials and smart design

C. Chaput*[1]; R. Gaignon[1]

1. 3DCERAM SINTO INC, USA

9:20 AM

(ICACC-S15-012-2020) Mechanical and microstructural properties of ceramics produced by lithographic additive manufacturing

M. Schwentenwein*[1]; T. Lube[2]; R. Danzer[2]; J. Homa[1]

1. Lithoz GmbH, Austria
2. Montanuniversitaet Leoben, Austria

9:40 AM

(ICACC-S15-013-2020) Fabrication of Ceramic Objects with Fluctuated Patterns by Ultraviolet Laser Stereolithography

S. Kirihara*[1]

1. Osaka University, Joining and Welding Research Institute, Japan

10:00 AM

Break

Stereolithography II

Room: Coquina Salon B

Session Chair: Tobias Schaedler, HRL Laboratories

10:20 AM

(ICACC-S15-014-2020) Two-Photon-Polymerized Nanoarchitected Materials and Metamaterials (Invited)

J. Bauer*[1]; C. Crook[1]; A. Guell Izard[1]; Z. C. Eckel[2]; T. Schaedler[2]; L. Valdevit[1]

1. University of California, Irvine, USA
2. HRL Laboratories, USA

10:50 AM

(ICACC-S15-015-2020) Design for AM and thermal treatment: The influence of topology on SLA 3D-printing, debinding and sintering of Alumina periodic architectures

O. Santoliquido*[1]; G. Bianchi[1]; R. König[1]; M. Spaggiari[1]; A. Ortona[1]

1. SUPSI, MEMTi, Switzerland

11:10 AM

(ICACC-S15-016-2020) Establishment of the Degree of Dispersion Effect in Stereolithography

M. K. Alazzawi*[1]; B. Beyoglu[1]; R. A. Haber[1]

1. Rutgers University, Materials Science and Engineering, USA

11:30 AM

(ICACC-S15-017-2020) Additive Manufacturing of Thin Shell Mold via A Support-Free Suspension-Enclosing Projection-Stereolithography Process

X. Song*[1]; L. He[1]

1. University of Iowa, Industrial and Systems Engineering, USA

Application of Materials and Components

Room: Coquina Salon B

Session Chair: Soshu Kirihara, Osaka University

1:30 PM

(ICACC-S15-018-2020) New designs and applications of porous ceramic components: The unmissable advantage of additive manufacturing (Invited)

A. Ortona*[1]

1. SUPSI, MEMTi, Switzerland

2:00 PM

(ICACC-S15-019-2020) Printing ceramic porous structures for high-temperature applications

S. Sobhani*[1]; P. Muhunthan[1]; E. Boigne[1]; S. M. Allan[2]; M. Ihme[1]

1. Stanford University, Mechanical Engineering, USA
2. Lithoz America, LLC, USA

Selective Laser Melting and Sintering I

Room: Coquina Salon B

Session Chair: Soshu Kirihara, Osaka University

2:20 PM

(ICACC-S15-020-2020) Selective Laser Sintering of Electroceramics for Radio Frequency and Microwave Applications

R. Gheisari*[1]; A. Goulas[1]; D. Engstrom[1]

1. Loughborough University, Mechanical Engineering, United Kingdom

2:40 PM

(ICACC-S15-021-2020) Doped ceramic granules for shaping of complex alumina components via laser additive manufacturing

S. Pfeiffer*[1]; K. Florio[2]; M. Makowska[3]; H. Van Swygenhoven[3]; K. Wegener[2]; C. Aneziris[4]; T. Graule[1]

1. Empa, Swiss Federal Laboratories for Materials Science and Technology, High Performance Ceramics, Switzerland
2. ETH Zurich, Institute of Machine Tools and Manufacturing, Switzerland
3. PSI, Photon Science Division, Switzerland
4. TU Freiberg, Institute of Ceramic, Glass and Construction Materials, Germany

3:00 PM

Break

Selective Laser Melting and Sintering II

Room: Coquina Salon B

Session Chair: Alberto Ortona, SUPSI

3:20 PM

(ICACC-S15-022-2020) Additive Manufacturing of Net-Shape Non-Oxides using Photothermochemically-assisted Reaction Bonding

A. B. Peters*[1]; D. Zhang[2]; M. Brupbacher[2]; A. Hernandez[1]; D. Nagle[1]; T. Mueller[1]; J. Spicer[1]

1. Johns Hopkins University, Materials Science and Engineering, USA
2. Johns Hopkins University, Applied Physics Lab, USA

3:40 PM

(ICACC-S15-023-2020) Additive Manufacturing of YSZ Ceramics by Laser Engineered Net Shaping

X. Yan[2]; Y. Chen[1]; F. Wang[2]; C. Kanger[2]; M. Sealy[2]; B. Cui*[2]

1. Oak Ridge National Laboratory, USA
2. University of Nebraska-Lincoln, USA

4:00 PM

(ICACC-S15-024-2020) Influence of Process Parameters on the Microstructure and Surface Properties of Laser Additive Manufactured Ti-6Al-4V Composite

Y. Du[1]; S. Fatoba*[1]; H. Feng[1]

1. Kent State University, USA

4:15 PM

(ICACC-S15-025-2020) Microstructural Enhancement and Performance of Additive Manufactured Ti-6Al-4V Composite Coatings

Y. Du[1]; S. Fatoba*[1]; H. Feng[1]

1. Kent State University, USA

4:30 PM

(ICACC-S15-026-2020) Effects of relative humidity at partially elevated temperature on 3D printed ordinary Portland cement (OPC) concrete

A. Ur Rehman*[1]; V. M. Sglavo[1]

1. University of Trento, Department of Industrial Engineering, Italy

4:45 PM

(ICACC-S15-027-2020) Influence of laser parameters and material properties in selective laser sintering and melting (SLS/M) of MgO-Al_2O_3 ceramics

A. Ur Rehman*[1]; L. TingTing[1]

1. Nanjing University of Science and Technology, School of Mechanical Engineering, China

S17: Advanced Ceramic Materials and Processing for Photonics and Energy

Advanced and Nanostructured Materials for Photonics, Electronics and Sensing III

Room: Tomoka C

Session Chair: Federico Polo, Ca' Foscari University of Venice

8:30 AM

(ICACC-S17-010-2020) 2D layered materials: A promising family for hydrogen production through water splitting (Invited)

T. A. Shifa*[1]

1. Luleå University of Technology, Department of Engineering Science and Mathematics, Sweden

9:00 AM

(ICACC-S17-011-2020) Multifunctional 2-D oxides: Key roles of defects and nm-scale synthesis (Invited)

S. T. Misture*[1]

1. Alfred University, MSE, USA

9:30 AM

(ICACC-S17-012-2020) Novel calcium ion conducting solid with NASICON-type structure (Invited)

N. Imanaka*[1]

1. Osaka University, Applied Chesistry, Japan

10:00 AM

Break

Advanced and Nanostructured Materials for Photonics, Electronics and Sensing IV

Room: Tomoka C

Session Chair: David Kisailus, University of California, Riverside

10:10 AM

(ICACC-S17-013-2020) Luminescent Organic Solids with Unusual Exciton Multiplicity (Invited)

E. Hamzehpoor[1]; C. Liu[1]; D. Perepichka*[1]

1. McGill University, Chemistry, Canada

10:40 AM

(ICACC-S17-014-2020) A Closer Look at Electron-Phonon Landascapes in Organic Crystals (Invited)

E. Orgiu*[1]

1. Institut National de la Recherche Scientifique (INRS), EMT Centre, Canada

11:10 AM

(ICACC-S17-015-2020) Molecular Approaches to Create Efficient Shortwave Infrared Emitters (Invited)

J. R. Caram*[1]

1. University of California, Los Angeles, Chemistry, USA

11:40 AM

(ICACC-S17-016-2020) Fine-tuning of photoluminescence and electrochemiluminescence in bifunctional organic dyes (Invited)

F. Polo*[1]; F. Rizzo[2]; G. Valenti[3]

1. Ca' Foscari University of Venice, Molecular Sciences and Nanosystems, Italy
2. National Research Council of Italy, Institute of Molecular Science and Technologies, Italy
3. University of Bologna, Department of Chemistry "G. Ciamician", Italy

Advanced and Nanostructured Materials for Photonics, Electronics and Sensing V

Room: Tomoka C

Session Chair: Alberto Vomiero, Lulea University of Technology

1:30 PM

(ICACC-S17-017-2020) Hightly efficient optical humidity sensors (Invited)

R. Nechache*[1]

1. Institut National de la Recherche Scientifique, Energy, Material and Telecommunications, Canada

2:00 PM

(ICACC-S17-018-2020) Hybrid organic-inorganic layers grown on metal-transition oxides as multifunctional materials for sensing and energy storage (Invited)

G. Condorelli*[1]; F. Monforte[1]

1. University of Catania, Dipartimento di Scienze Chimiche, Italy

2:30 PM

(ICACC-S17-019-2020) Multifunctional Nanomaterials for Structural, Energy and Water Related Applications

D. Kisailus*[1]

1. University of California, Riverside, Chemical and Environmental Engineering, USA

2:50 PM

Break

Multifunctional Materials I

Room: Tomoka C

Session Chair: Fiorenzo Vetrone, Institut National de la Recherche Scientifique, Université du Québec

3:20 PM

(ICACC-S17-020-2020) Lanthanide-based Materials and Molecules for Next-Generation Optical Probes (Invited)

E. Hemmer*[1]

1. University of Ottawa, Chemistry and Biomolecular Sciences, Canada

3:50 PM

(ICACC-S17-021-2020) Additive manufacturing using hybrid materials to create microdevices for drug delivery applications (Invited)

R. Narayan*[1]

1. NC State University, USA

4:20 PM

(ICACC-S17-022-2020) "Multichannel" Water Remediation by Transition Metal Oxides (Invited)

M. Epifani*[1]

1. CNR-IMM, Italy

4:50 PM

(ICACC-S17-023-2020) Carbon Dots - Towards Multifunctional Materials (Invited)

R. Naccache*[1]

1. Concordia University, Chemistry and Biochemistry, Canada

Poster Session A

Room: Ocean Center Arena

5:00 PM

(ICACC-S2-P001-2020) Particle Atomic Layer Deposition of Yttrium Oxide for Hydrolysis Protection and Sintering of Aluminum Nitride

R. J. O'Toole*[1]; C. Hill[1]; P. Buur[1]; C. Bartel[1]; C. J. Gump[2]; C. Musgrave[1]; A. W. Weimer[1]

1. University of Colorado, Boulder, Chemical and Biological Engineering, USA
2. ALD NanoSolutions, Inc., USA

(ICACC-S2-P003-2020) Morpho-structural evaluation on 4÷12 mol% Y_2O_3 doped Zirconia ceramics and their composites with Al_2O_3 prepared via classic and Spark Plasma Sintering

O. R. Vasile*[1]; A. V. Surdu[1]; A. C. Birca[1]; R. Trusca[1]; M. I. Vasile[2]; E. Tanasa[1]; B. S. Vasile[2]

1. University Politehnica from Bucharest, Faculty of Applied Chemistry and Materials Science, National Research Center for Micro and Nanomaterials, Romania
2. University Politehnica from Bucharest, Romania

(ICACC-S2-P004-2020) Effectiveness of the process of modification of SiOC-based materials with phosphate ions assisted with co-dopants

M. Gaweda*[1]; P. Jelen[1]; M. T. Sitarz[1]

1. AGH University of Science and Technology, Faculty of Materials Science and Ceramics, Poland

(ICACC-S4-P006-2020) Ballistic Performance of Yttrium Aluminum Garnet (YAG) transparent ceramic armor against 12.7mm Armor Piercing Incendiary

J. Deng*[1]; J. Zhang[1]; D. Wang[1]

1. Shanghai Institute of Ceramics, Chinese Academy of Sciences, State Key Laboratory of High Performance Ceramics and Superfine Microstructure, China

(ICACC-S4-P007-2020) Densification of Boron Suboxide (B_6O) by Spark Plasma Sintering

M. A. Arroyo-Green*[1]; R. A. Riera[1]; S. Bavdekar[1]; G. Subhash[1]

1. University of Florida, Mechanical and Aerospace Engineering, USA

(ICACC-S4-P008-2020) Alternative Method for Preparing Silicon Doped Boron Carbide

K. Christian*[1]; C. Hwang[1]; Q. Yang[1]; R. A. Haber[1]

1. Rutgers University, Dept. of Materials Science and Engineering, USA

(ICACC-S4-P009-2020) Processing and Characterizing Al-doped Boron Carbide Bulk Ceramic

Q. Yang*[1]; E. Gronske[1]; C. Hwang[1]; R. A. Haber[1]

1. Rutgers University, Materials Science and Engineering, USA

(ICACC-S4-P010-2020) Studying Amorphization in Rhombohedral Boron-Based Materials

M. C. Schaefer*[1]; R. A. Haber[1]

1. Rutgers University, Materials Science and Engineering, USA

(ICACC-S4-P011-2020) On the Densification of Ceramics with Bi-Modal Size Hard Inclusions

J. LaSalvia*[1]; A. A. DiGiovanni[1]; M. C. Guziewski[1]

1. CCDC Army Research Laboratory, USA

(ICACC-S4-P012-2020) Effects of Slurry Composition on Silicon Carbide Spray Dried Granules

L. Hlubb*[2]; T. Shoulders[1]

1. CCDC Army Research Laboratory, USA
2. US Army Research Laboratory, SEAP/CQL Program, USA

(ICACC-S4-P013-2020) Quantitative Characterization of Arc-Melted Si-doped Boron-Rich Ceramics

H. Wolf*[1]; Q. Yang[2]; K. D. Behler[3]; J. LaSalvia[4]; R. A. Haber[2]; M. Harmer[1]; C. Marvel[5]

1. Lehigh University, Department of Materials Science and Engineering, USA
2. Rutgers University, Materials Science and Engineering, USA
3. U.S. Army Research Lab, Multifunctional Materials Branch, USA
4. U.S. Army Research Laboratory, USA
5. Lehigh University, Department of Material Science and Engineering, USA

(ICACC-S4-P014-2020) Growth of high purity zone-refined boron carbide single crystals by laser diode floating zone method

M. Straker*[1]; A. Chauhan[2]; M. Sinha[3]; W. Phelan[3]; M. Chandrashekhar[4]; K. J. Hemker[2]; M. Spencer[5]

1. Morgan State University, Dept. of Physics and Engineering Physics, USA
2. Johns Hopkins University, Department of Mechanical Engineering, USA
3. Johns Hopkins University, Department of Chemistry, USA
4. University of South Carolina, Department of Electrical Engineering, USA
5. Morgan State University, Department of Electrical and Computer Engineering, USA

(ICACC-S4-P130-2020) Thermodynamically consistent modeling of ceramic fracture with piezoelectric effects

M. Greenfield*[1]; P. Greenfield[2]

1. The US Army Research Laboratory, WMRD, USA
2. Drexel University, Department of Mathematics, USA

(ICACC-S5-P015-2020) Investigation of substituted Bioactive glass/Hydroxyapatite Composite system on mechanical and biological performance

S. Yadav*[1]

1. IIT BHU, Ceramic Engineering, India

(ICACC-S5-P016-2020) Characterization and analysis of poly (vinyl alcohol) / attapulgite composite hydrogels in drug delivery systems

S. K. Marques*[1]; P. C. Gondim[2]; W. Acchar[3]

1. Federal Institute of Alagoas, Civil Engineering, Brazil
2. Federal Institute of Rio Grande do Norte, Brazil
3. Federal University of Rio Grande do Norte, Physics, Brazil

(ICACC-S7-P017-2020) Efficient oxygen reduction electrodes with carbon nanomaterials for proton exchange membrane fuel cell

D. Lee*[1]; H. Kim[1]

1. Korea Institute of Industrial Technology, Green Materials & Processes Group, Republic of Korea

(ICACC-S7-P018-2020) STEM observations of domain structures related piezoelectric properties in PZT thin films

T. Ozaki*[1]; G. Tan[2]; I. Kanno[2]

1. Osaka Research Institute of Industrial Science and Technology, Applied Material Chemistry, Japan
2. Kobe University, Mechanical Engineering, Japan

(ICACC-S7-P019-2020) Development of oxygen evolution catalysts based on Ni,Fe,Co oxyhydroxides by electrodeposition

S. Molin*[1]; K. Cysewska[1]; P. Z. Jasinski[1]

1. Gdansk University of Technology, Laboratory of Functional Materials, Faculty of Electronics, Telecommunications and Informatics, Poland

(ICACC-S7-P020-2020) Heterometallic Alkoxides as Single Source Precursors for the Generation of $InFeO_3$

V. Nahrstedt*[1]; J. Januškevičius[2]; F. Maccari[3]; O. Gutfleisch[3]; S. Mathur[1]

1. University of Cologne, Institute of Inorganic Chemistry, Germany
2. Vilnius University, Lithuania
3. TU Darmstadt, Germany

(ICACC-S7-P021-2020) Electrospinning of 1D nanofibers of Potassium Sodium Niobate for energy harvesting

A. Ichangi*[1]; A. Gomez[2]; N. Panayanthatta[3]; A. Verma[1]; T. Fischer[1]; S. Mathur[1]

1. University of Cologne, Institute of Inorganic Chemistry, Germany
2. Institut de Ciència de Materials de Barcelona, Spain
3. Institut IMEP-LaHC, France

(ICACC-S7-P022-2020) Tailored Magnetic Nanocomposites with Antibacterial and Adsorption Activity for the Remediation of Drinking Water

A. Szymura*[1]; S. Mathur[1]; I. Neundorf[2]

1. University of Cologne, Institute of Inorganic Chemistry, Germany
2. University of Cologne, Institute of Biochemistry, Germany

(ICACC-S7-P023-2020) Production of Ni/ $Ce_{1-x}Zr_xO_{2-\delta}$ doped with Nb, Ti materials in supercritical alcohol media for catalytic syngas production

Y. N. Bespalko*[1]; M. Simonov[1]; E. Smal[1]; K. Valeev[1]; V. Fedorova[1]; V. A. Sadykov[1]

1. Boreskov Institute of Catalysis, Heterogeneous catalysis, Russian Federation

(ICACC-S7-P024-2020) Quantification method for modified nanoparticles using the ESA effect

A. Renner[1]; M. Schütz[1]; A. K. Schmidt-Verma*[1]; D. Moog[1]; T. Fischer[1]; S. Mathur[1]

1. University of Cologne, Institute of Inorganic Chemistry, Germany

(ICACC-S8-P025-2020) Effects of SiC Particle Size and Concentration on the Thermal Properties of Reaction Bonded SiC Composites

J. Wang*[1]; A. McDannald[1]; M. Aghajanian[1]

1. M Cubed Technologies, USA

(ICACC-S8-P026-2020) Comparative investigation of grinding characteristics between single system and binary systems in uniaxial compression tests

Y. Ishii*[1]; Y. Nagata[1]; Y. Tsunazawa[2]; C. Tokoro[1]

1. Waseda University, Japan
2. National Institute of Advanced Industrial Science and Technology (AIST), Japan

(ICACC-S8-P027-2020) Densification of Samaria-Doped Ceria by AC Electric Field-Assisted Pressureless Sintering

S. L. Reis[1]; S. Gonçalves de Macedo Carvalho*[1]; E. N. Muccillo[1]; R. Muccillo[1]

1. Energy and Nuclear Research Institute, Brazil

(ICACC-S8-P028-2020) Boron and ß-Silicon carbide powders: Specialized development for advanced applications

T. Schmidt*[1]; S. E. Vogel[2]

1. Höganäs Germany GmbH, Applied Technology, Germany
2. North American Höganäs High Alloys LLC, Sales, USA

(ICACC-S8-P029-2020) Refractory Metal (RM) – Wrap: A pressure-less joining technique for ceramics

V. Casalegno*[1]; P. Gianchandani[2]; S. De La Pierre[1]; M. Salvo[3]; M. Ferraris[4]

1. Politecnico di Torino, DISAT, Italy
2. Mehran University of Engineering and Technology Jamshoro, Sindh, Pakistan, Pakistan
3. Politecnico di Torino, Italy
4. Politecnico di Torino, Department of Applied Science and Technology, Italy

(ICACC-S8-P030-2020) Energy – fractal nature and thermo dynamic in $BaTiO_3$ -ceramics doped by Y additives

V. Mitic*[1]; G. Lazovic[2]; C. Lu[3]; J. Manojlovic[4]; V. Paunovic[5]; S. Veljkovic[5]; H. Fecht[6]; B. Vlahovic[7]

1. Serbian Academy of Sciences /Faculty of Electronic Engineering University Nis, Institute of Technical Sciences, Serbia
2. University of Belgrade, Faculty of Mechanical Engineering, Serbia
3. Industrial Technology Research Institute, Taiwan
4. University of Nis, Faculty of Mechanical Engineering, Serbia
5. University of Nis, Faculty of Electronic Engineering, Serbia
6. Institute of Functional Nanosystems FNS, Ulm University, Germany
7. North Carolina Central University, USA

(ICACC-S8-P032-2020) Synthesis of Cs_2SiO_3 and $Cs_2Si_4O_9$ Glasses

T. Do*[1]; M. Koide[2]; T. Nakayama[2]; H. Suematsu[3]

1. Nagaoka University of Technology, Nuclear System Safety Engineering, Japan
2. Nagaoka University of Technology, Japan
3. Nagaoka University of Technology, Extreme Energy-Density Research Institute, Japan

(ICACC-S11-P033-2020) Partial amorphization and phase control of Cobalt nickel sulfide for an efficient oxygen evolution reaction

S. Mhin*[1]

1. Korea Institute of Industrial Technology, Heat treatment R&D group, Republic of Korea

(ICACC-S11-P034-2020) Preparation and Properties of Natural Rubber with Organic-inorganic Nanomatrix Structure

S. Kawahara*[1]

1. Nagaoka University of Technology, Japan

(ICACC-S11-P036-2020) Synthesis and thermoelectric properties of $CrSi_2$ dispersed with fine secondary phase

K. Uemura*[1]; M. Baba[2]; M. Takeda[2]

1. Nagaoka University of Technology, Department of Science of Technology Innovation, Japan
2. Nagaoka University of Technology, Japan

(ICACC-S11-P037-2020) Dental ridge augmentation by Ezechbone® implantation using a minimally invasive vestibular tunnel approach

S. Chiou[2]; J. Chern Lin[1]; C. Ju*[1]

1. National Cheng-Kung University, Materials Science and Engineering, Taiwan
2. Livingstone Dental Clinic, Taiwan

(ICACC-S11-P038-2020) A fast-healing Ca/P/S-based bone substitute for orthopedic applications

J. Chern Lin*[1]; S. Lan[3]; C. Hsu[2]; B. Yang[1]; C. Lin[4]; C. Ju[1]

1. National Cheng-Kung University, Materials Science and Engineering, Taiwan
2. National Cheng-Kung University Hospital, Orthopedics, Taiwan
3. National Cheng-Kung University Medical Center Dou-Liou Branch, Orthopedics, Taiwan
4. Joy Medical Devices Corporation, Taiwan

(ICACC-S12-P039-2020) Surface Chemistry of Ti_2CT_x

C. M. Hamm*[1]; M. Tran[2]; J. Siebert[1]; C. Birkel[1]

1. Arizona State University, School of Molecular Sciences, USA
2. Eduard-Zintl-Institut, Technische Universität Darmstadt, Germany

(ICACC-S12-P040-2020) Undergraduate Research: Tribology and Wettability of MAX/MAB Phases and Their Composites

C. Matzke*[1]; D. Gerard[1]; A. Miles[1]; N. Johnson[1]; R. Riihinen[1]; S. Javaid[1]; S. Gupta[1]

1. University of North Dakota, Mechanical Engineering, USA

(ICACC-S13-P041-2020) Development of SiC core material for LWR

M. Akimoto*[1]; S. Suyama[1]; M. Ukai[1]

1. Toshiba Corporation, Japan

(ICACC-S14-P042-2020) Floating zone growth of Be, Mg, Ca, Sr and Ba doped Ga_2O_3 crystals for scintillator uses

T. Yanagida*[1]; N. Kawaguchi[1]

1. Nara Institute of Science and Technology, Japan

(ICACC-S14-P043-2020) Growth and scintillation properties of neodymium activated $YAlO_3$

T. Yanagida*[1]; M. Akatsuka[1]; N. Kawaguchi[1]

1. Nara Institute of Science and Technology, Japan

(ICACC-S14-P044-2020) Analysis of CNWs grown on sputtered metal oxide and nitride

H. Choi*[1]; S. Kwon[1]; H. Kang[1]; W. Choi[1]

1. Hanbat National University, Electrical Engineering, Republic of Korea

(ICACC-S14-P045-2020) High light-yield self-activated scintillators based on thallium alkali-metal halides

M. Arai[1]; Y. Fujimoto[1]; K. Saeki[1]; M. Koshimizu*[1]; T. Yanagida[2]; K. Asai[1]

1. Tohoku University, Department of Applied Chemistry, Japan
2. Nara Institute of Science and Technology, Japan

(ICACC-S14-P046-2020) Excitation density effects on scintillation properties of Li-based scintillators for neutron detection

M. Koshimizu*[1]; A. Kimura[2]; S. Kurashima[2]; M. Taguchi[2]; T. Yanagida[3]; Y. Fujimoto[1]; K. Asai[1]

1. Tohoku University, Department of Applied Chemistry, Japan
2. National Institute of Quantum and Radiological Science and Technology, Japan
3. Nara Institute of Science and Technology, Japan

(ICACC-S14-P047-2020) Relationship between defect formation by X-ray irradiation and thermally stimulated luminescence of binary zinc phosphate glasses

H. Masai*[1]; G. Okada[4]; N. Kawaguchi[2]; T. Yanagida[3]

1. National Institute of Advanced Industrial Science and Technology (AIST), Department of Materials and Chemistry, Japan
2. Nara Institute of Science and Technology, Graduate School of Materials Science, Japan
3. Nara Institute of Science and Technology, Japan
4. Kanazawa Institute of Technology, Japan

(ICACC-S14-P048-2020) Luminescence of Sn^{2+} center in $ZnO-P_2O_5-B_2O_3$ glasses

H. Masai*[1]; T. Ohkubo[2]; T. Yanagida[3]

1. National Institute of Advanced Industrial Science and Technology (AIST), Department of Materials and Chemistry, Japan
2. Chiba University, Faculty of Engineering, Japan
3. Nara Institute of Science and Technology, Japan

(ICACC-S14-P049-2020) Radioluminescence Properties of Pr-doped Li_2O-GeO_2 Glasses

N. Kawaguchi*[1]; T. Kato[1]; T. Yanagida[1]

1. Nara Institute of Science and Technology, Japan

(ICACC-S14-P050-2020) Radioluminescence and Dosimetric Properties of Sn-doped $ZnO-P_2O_5-SiO_2$ Glasses

N. Kawaguchi*[1]; T. Kato[1]; T. Yanagida[1]

1. Nara Institute of Science and Technology, Japan

(ICACC-S15-P051-2020) Direct ink writing of kaolinite clay using lime, fly ash, and talc as additives

C. F. Revelo*[1]; H. Colorado[1]

1. Universidad de Antioquia, Colombia

(ICACC-S15-P052-2020) 3D printing ceramics using stereolithography

P. Evans*[1]; D. Yadav[1]; B. Butler[2]; K. Y. Xie[1]

1. Texas A&M University, Materials Science and Engineering, USA
2. ARL South, USA

(ICACC-S15-P053-2020) Influence of Meta-kaolin on Properties of 3D Printable Cementitious Mixture for Application in Additive Manufacturing

H. Nekkanti*[1]; P. Rangaraju[1]

1. Clemson University, CIVIL ENGINEERING, USA

(ICACC-S15-P054-2020) Extrusion-based 3D Printing of Yttria-stabilized Zirconia Nanoparticles through the Presence of Single Polymer Additive

A. B. Ozhan*[1]; W. Ali Saeed Aldulaimi[1]; C. Akaoglu[1]; O. Akbulut[1]; F. Afghah[2]; B. Koc[2]

1. Sabanci University, Materials Science and Nanoengineering, Turkey
2. 3D Bioprinting Laboratory, Sabanci University Nanotechnology Research and Application Center, Turkey

(ICACC-S15-P130-2020) Mitigating distortion in binder jet 3D printed ceramics

L. O. Grant*[1]; C. Higgs[2]; B. Herstein[2]; Z. Cordero[1]

1. Rice University, Materials Science & NanoEngineering (MSNE), USA
2. Rice University, Department of Mechanical Engineering, USA

(ICACC-S17-P055-2020) Structural-Luminescent Characterization of Eu^{3+}-Activated Spinel-Type $MgGa_2O_4$: Mn^{2+} Phosphors

Y. Shpotyuk*[1]; A. Luchechko[2]; O. Kravets[2]; J. Cebulski[1]

1. University of Rzeszow, Poland
2. Ivan Franko National University of Lviv, Ukraine

(ICACC-S17-P058-2020) Characterization of $Bi_{1-x}Eu_xFeO_3$ ceramics prepared by by spark plasma sintering

I. Surdu*[1]; R. Trusca[1]; B. S. Vasile[1]; P. Ganea[2]; V. Kuncser[2]

1. Politehnica University of Bucharest, Centre for Micro and Nanomaterials, Romania
2. National Institute of Materials Physics, Romania

(ICACC-S17-P059-2020) Optical properties of Eu substituted $BiFeO_3$ powders and ceramics prepared by sol-gel

A. V. Surdu*[1]; R. Trusca[1]; B. S. Vasile[1]; E. Vasile[1]; O. Oprea[1]

1. Politehnica University of Bucharest, Centre for Micro and Nanomaterials, Romania

(ICACC-GYIF-P060-2020) Effects of Morphology on the Compressive Mechanical Properties of Ice-templated Sintered Metal Oxides with Directional Porosity

T. Walters*[1]; J. Marin[1]; R. Parai[1]; B. Meechan[1]; S. A. Danquah[2]; D. Ghosh[1]

1. Old Dominion University, Mechanical and Aerospace Engineering, USA
2. Norfolk State University, Center for Materials Research, USA

(ICACC-GYIF-P061-2020) Processing and Mechanical Characterization of Ice-templated Alumina-Epoxy Composites

J. Marin*[1]; S. Akurati[1]; D. Ghosh[1]

1. Old Dominion University, Mechanical and Aerospace Engineering, USA

(ICACC-GYIF-P131-2020) Physico-chemical and biological characterization of phosphate bio-glass implant-type coatings fabricated by radio-frequency magnetron sputtering

M. Chirica*[1]; T. Tite[1]; A. Popa[1]; A. Galca[1]; L. Balescu[1]; G. Pelin-Popescu[3]; B. Stuart[2]; D. Grant[2]; G. Stan[1]

1. National Institute of Materials Physics, Romania
2. University of Nottingham, United Kingdom
3. National Institute for Lasers, Plasma and Radiation Physics, Romania

(ICACC-GYIF-P132-2020) Ternary and quaternary modified silica with transition metal for ethanol transformation

F. Neatu[1]; M. M. Trandafir*[1]; S. Neatu[1]; M. Florea[1]

1. National Institute of Materials Physics, Romania

(ICACC-GYIF-P135-2020) Undergraduate Research: Design of Novel Hydrogel based Functional Materials

S. Majerus*[1]; M. Dunn[1]; K. Tamondong[1]; A. Miles[1]; S. Gupta[1]

1. University of North Dakota, Mechanical Engineering, USA

(ICACC-WW-P067-2020) Wear mechanism of spark plasma sintered MWCNTs reinforced zirconia composites under dry sliding conditions

S. Lamnini*[1]; C. Balazsi[2]; K. Balazsi[3]

1. Institute for Technical Physics and Materials Science, Centre for Energy Research, Hungary
2. HAS Centre for Energy Research, Hungary
3. Centre for Energy Research HAS, Thin Film Physics, Hungary

(ICACC-WW-P062-2020) Wetting Properties Of Molten CaO-MgO-Al_2O_3 Silicates On Model Environmental Barrier Coating Materials

A. Velazquez Plaza*[1]

1. University of Florida, Department of Materials Science and Engineering, USA

(ICACC-WW-P063-2020) Bioceramics in the $Ca_2P_2O_7$ – $Mg_2P_2O_7$ system with a tailored architecture, fabricated via stereolithography, for personalised bone-tissue engineering

G. Kazakova*[1]; T. Safronova[2]; V. Putlayev[1]; I. Selezneva[3]; V. Zaitsev[4]

1. Lomonosov Moscow State University, Materials Science Department, Russian Federation
2. Lomonosov Moscow Sate University, Chemistry Department, Russian Federation
3. Institute of Theoretical and Experimental Biophysics of RAS, Russian Federation
4. FSBI NMR Center of Traumatology and Orthopedics n.a. N.N. Priorov of the Ministry of Health of Russia, Russian Federation

(ICACC-WW-P064-2020) Effect of Multi-Element Doping on Cubic Phase Stabilization of $Li_7La_3Zr_2O_{12}$ by Using Waste Materials

E. Cici[1]; A. F. Buluc*[1]; K. B. Dermenci[1]; S. Turan[1]

1. Eskisehir Technical University, Department of Material Science and Engineering, Turkey

(ICACC-WW-P065-2020) Particle-Specific Design of a Grafted Copolymer Enables 3D Printing of Highly-Loaded Ceramic Inks

L. Zemberekci*[1]; C. Akaoglu[1]; O. Akhlaghi[1]; N. Khani[1]; Z. Bajestani[1]; A. Hodaei[1]; O. Akbulut[1]; F. Afghah[2]; B. Koc[2]

1. Sabanci University, Materials Science and Nanoengineering, Turkey
2. 3D Bioprinting Laboratory, Sabanci University Nanotechnology Research and Application Center, Turkey

(ICACC-WW-P066-2020) Preparation of UV- curable $MgAl_2O_4$ slurry for stereolithography- based additive manufacturing

P. Zubrzycka*[1]; M. Borlaf[1]; M. Radecka[2]; T. Graule[1]

1. Empa, Laboratory for High Performance Ceramics, Switzerland
2. AGH University of Science and Technology, Poland

Wednesday, January 29, 2020

4th Pacific Rim Engineering Ceramics Summit

Challenges and Opportunities for Ceramic Technologies II

Room: Coquina Salon E

Session Chairs: Manabu Fukushima, National Institute of Advanced Industrial Science and Technology (AIST); Zoltan Lences, Institute of Inorganoc Chemistry, Slovak Academy of Sciences

8:30 AM

(ICACC-PACRIM-013-2020) Current Trends and Future Directions of Ceramic Membrane Technology for Water Treatment (Invited)

I. Song*[1]; J. Ha[1]; J. Lee[1]

1. Korea Institute of Materials Science, Republic of Korea

9:00 AM

(ICACC-PACRIM-014-2020) Stereolithographic Additive Manufacturing of Ceramic Components for Energy Storage (Invited)

S. Kirihara*[1]

1. Osaka University, Joining and Welding Research Institute, Japan

9:30 AM

(ICACC-PACRIM-015-2020) Understanding the Stochastic Variability in Ice-Templated Ceramic through Micro-Mechanical Modeling (Invited)

O. Kravchenko*[1]; S. Sattar[2]; S. Kravchenko[3]

1. Old Dominion University, Department of Mechanical and Aerospace Engineering, USA
2. Old Dominion University, USA
3. Purdue University, USA

10:00 AM

Break

10:10 AM

(ICACC-PACRIM-016-2020) Development of High Performance SiC-Based Ceramics and Composites (Invited)

K. Yoshida*[1]

1. Tokyo Institute of Technology, Laboratory for Advanced Nuclear Energy, Institute of Innovative Research, Japan

10:40 AM

(ICACC-PACRIM-017-2020) Additive Manufacturing of Ceramics using Preceramic Polymers (Invited)

G. Franchin[1]; H. Elsayed[1]; P. Colombo*[1]; K. Huang[1]

1. University of Padova, Industrial Engineering, Italy

11:10 AM

(ICACC-PACRIM-018-2020) Structural Analysis of $BaTiO_{3-x}(OH)_x$ tetragonal nanorods fabricated by hydrothermal precipitation method (Invited)

M. Inada*[1]

1. Kyushu University, Center of Advanced Instrumental Analaysis, Japan

11:40 AM

(ICACC-PACRIM-019-2020) Porous SiC ceramics with excellent thermal insulation performance and high mechanical strength

R. Malik*[1]; Y. Kim[1]

1. University of Seoul, Dept. of Materials Science & Engineering, Republic of Korea

Current trends: Coatings

Room: Coquina Salon E

Session Chairs: Hua-Tay Lin, Guangdong University of Technology; In-Hyuck Song, Korea Institute of Materials Science

1:30 PM

(ICACC-PACRIM-020-2020) Plasma Resistant YOF Coatings for the Silicon Wafer Processing Equipments (Invited)

S. Lee*[1]; Y. Oh[1]

1. Korea Institute of Ceramic Engineering and Technology (KICET), Republic of Korea

2:00 PM

(ICACC-PACRIM-021-2020) Advancing Development of Environmental Barrier Coatings Resistant to Attack by Molten Calcium-Magnesium-Aluminosilicate (CMAS) (Invited)

V. L. Wiesner[1]; J. L. Stokes[2]; N. P. Bansal[3]; G. Costa[3]; B. Kowalski[2]; M. J. Presby[2]; C. Bodenschatz[4]; B. S. Good[5]; M. Kulis[2]; B. J. Harder*[4]

1. NASA Langley Research Center, Advanced Materials and Processing Branch, USA
2. NASA Glenn Research Center, Environmental Effects and Coatings Branch, USA
3. NASA Glenn Research Center, USA
4. NASA Glenn Research Center, Environmental Effects and Coatings, USA
5. NASA Glenn Research Center, Durability and Protective Coatings Branch, USA

2:30 PM

(ICACC-PACRIM-022-2020) Strategies for improving oxygen shielding performance of multilayer EBCs (Invited)

S. Kitaoka*[1]; T. Matsudaira[1]; M. Wada[1]; M. Tanaka[1]; T. Ogawa[1]

1. Japan Fine Ceramics Center, Japan

3:00 PM

Break

3:20 PM

(ICACC-PACRIM-023-2020) Chemical Vapor Deposition and Microcantilever Beam Testing of Alumina–hafnia Eutectic Composite Films (Invited)

A. Ito*[1]

1. Yokohama National University, Environment and Information Sciences, Japan

3:50 PM

(ICACC-PACRIM-024-2020) RE-silicate multifunctional thermal and environmental barrier coatings: Current status and perspectives (Invited)

J. Wang*[1]

1. Shenyang National Laboratory for Materials Science, Institute of Metal Research, Chinese Academy of Sciences, Advanced Ceramics and Composites Division, China

4:20 PM

(ICACC-PACRIM-025-2020) Development of Aluminum Nitride Piezoelectric Thin Film by Doping (Invited)

M. Uehara*[1]; S. Anggraini[1]; K. Hirata[1]; H. Yamada[1]; M. Akiyama[1]

1. National Institute of Advanced Industrial Science and Technology (AIST), Japan

4:50 PM

(ICACC-PACRIM-026-2020) Porous Functional Nitride Ceramics and their Applications (Invited)

F. Chen*[1]; M. Jia[1]; Q. Shen[1]; L. Zhang[1]

1. Wuhan University of Technology, State Key Lab of Advanced Technology for Materials Synthesis and Processing, China

9th Global Young Investigator Forum

Multi-functional materials for water catalysis

Room: Coquina Salon G

Session Chair: Daniele Benetti, Institut National de la Recherche Scientifique

8:30 AM

(ICACC-GYIF-023-2020) MOF-templated TiO_2/Quantum Dots heterojunction as photoanode for efficient Photoelectrochemical Hydrogen Generation

L. Shi*[1]; D. Benetti[1]; F. Li[1]; Q. Wei[2]; F. Rosei[1]

1. Institut National de la Recherche Scientifique, Énergie Matériaux Télécommunications, Canada
2. University of Jinan, Chemitsry, China

8:50 AM

(ICACC-GYIF-024-2020) Ferroelectric polarization-enhanced charge separation in ferroelectric-metal oxide semiconductor hybrid for photoelectrochemical applications

M. Zhang*[1]; F. Li[1]; D. Benetti[1]; L. Shi[4]; R. Nechache[2]; X. Qi[5]; F. Rosei[3]

1. Institut National de la Recherche Scientifique, Énergie Matériaux Télécommunications, Canada
2. Ecole de technologie Superieure, Electrical Engineering, Canada
3. INRS, Canada
4. INRS, EMT, Canada
5. Northeastern University, China

Advanced and Nanostructured Materials for Biomedical Applications

Room: Coquina Salon G

Session Chair: To be determined, ACerS

9:10 AM

(ICACC-GYIF-025-2020) Spectral tuning of the small and bright Li-based rare-earth nanoparticles

A. Skripka*[1]; T. Cheng[1]; C. Jones[2]; J. Marques-Hueso[2]; F. Vetrone[1]

1. Institut National de la Recherche Scientifique, Canada
2. Heriot-Watt University, United Kingdom

9:30 AM

(ICACC-GYIF-026-2020) Luminescent lanthanide-doped nanomaterials as promising bioimaging probes (Invited)

E. Martinazzo Rodrigues*[1]; I. Halimi[1]; E. Hemmer[1]

1. University of Ottawa, Chemistry and Biomolecular Sciences, Canada

10:00 AM

Break

10:20 AM

(ICACC-GYIF-027-2020) Rare-earth-doped optical materials: Properties, limits and enhancement strategies (Invited)

F. Enrichi*[1]

1. Ca' Foscari University of Venice, Department of Molecular Sciences and Nanosystems, Italy

10:50 AM

(ICACC-GYIF-028-2020) Advanced bio/nanomaterials for point-of-care molecular detection in rapid sensory devices (Invited)

S. S. Mahshid*[1]

1. Sunnybrook Research Institute, University of Toronto, Biological Sciences Platform, Canada

FS3: Molecular-level Processing and Chemical Engineering of Functional Materials

Simulation and Characterization of Polymer derived Ceramics

Room: Coquina Salon C

Session Chairs: Sanjay Mathur, University of Cologne; Emanuel Ionescu, Technical University Darmstadt

1:30 PM

(ICACC-FS3-001-2020) Simulations of Polymer Pyrolysis: Converting Polysiloxanes into Silicon Oxycarbide Ceramics (Invited)

P. Kroll*[1]; I. Ponomarev[1]

1. University of Texas, Arlington, USA

2:00 PM

(ICACC-FS3-002-2020) Porosity evolution during the pyrolytic conversion of preceramic polysilazane materials (Invited)

T. Konegger*[1]; C. Drechsel[1]; H. Peterlik[2]

1. TU Wien - Vienna University of Technology, Institute of Chemical Technologies and Analytics, Austria
2. University of Vienna, Faculty of Physics, Austria

2:30 PM

(ICACC-FS3-003-2020) Short- and Intermediate- Range Structure of Polymer Derived Ceramics: Results from Multi-Nuclear Solid-State NMR Spectroscopy (Invited)

S. Sen*[1]

1. University of California, Davis, Materials Science & Engineering, USA

3:00 PM

Break

Silicon Carbide and Nitride based Polymer derived Ceramics

Room: Coquina Salon C

Session Chairs: Thomas Konegger, TU Wien - Vienna University of Technology; Sabyasachi Sen, University of California, Davis

3:20 PM

(ICACC-FS3-004-2020) SiC/C Composites from Molecular Precursors (Invited)

R. Bordia*[1]; S. Arreguin[2]; Y. Yang[2]; F. Ohuchi[2]; T. Konegger[3]

1. Clemson University, Materials Science and Engineering, USA
2. University of Washington, USA
3. TU Wien - Vienna University of Technology, Institute of Chemical Technologies and Analytics, Austria

3:50 PM

(ICACC-FS3-005-2020) A polymer blend method for designing improved silicon carbide based materials (Invited)

K. Kita*[1]; M. Fukushima[1]; H. Hyuga[1]; M. Hotta[1]

1. National Institute of Advanced Industrial Science and Technology (AIST), Japan

4:20 PM

(ICACC-FS3-006-2020) Synthesis of polymer-derived SiCNO ceramic aerogel and relative composites for electromagnetic absorption applications (Invited)

G. Shao*[1]

1. Zhengzhou University, School of Materials Science and Engineering, China

4:50 PM

(ICACC-FS3-007-2020) Single-source-precursor synthesis and phase evolution of mesoporous VN/Si_3N_4 nanocomposites

E. Ionescu*[1]

1. Technical University Darmstadt, Materials Science, Germany

FS4: Green Technologies and Ceramic/Carbon Reinforced Polymers

Mechanical Behavior or Ceramic/Carbon Reinforced Polymers and Composites I

Room: Halifax A/B

Session Chairs: Hiroshi Tsuda, National Institute of Advanced Industrial Science and Technology (AIST); Toshihira Irisawa, Nagoya University

1:30 PM

(ICACC-FS4-001-2020) Evaluation of Nonlinear Mechanical Behavior in Fiber Reinforced Laminated Composites (Invited)

S. Ogihara*[1]

1. Tokyo University of Science, Japan

2:00 PM

(ICACC-FS4-002-2020) Deformation Behavior of Continuous Carbon Fiber Reinforced PA6 during V-Shape Molding

S. Takemura*[1]; S. Kobayashi[2]; T. Osada[1]

1. Tokyo Metropolitan University, Mechanical Systems Engineering, Japan
2. Tokyo Metropolitan University, Mechanical Engineering, Japan

2:20 PM

(ICACC-FS4-003-2020) Residual Internal Pressure Strength Evaluation of Composite Pipe Subjected to Out-of-Plane Impact Loading using Finite Element Method

S. Fukumoto*[1]; S. Kobayashi[2]; T. Osada[1]

1. Tokyo Metropolitan University, Mechanical System Engineering, Japan
2. Tokyo Metropolitan University, Mechanical Engineering, Japan

2:40 PM

(ICACC-FS4-004-2020) Self-deployment force of CFRP bistable open sectional partial cylindrical beam

S. Kajihara*[1]; T. Aoki[1]

1. University of Tokyo, Aeronautics and Astronautics, Japan

3:00 PM

Break

Mechanical Behavior or Ceramic/Carbon Reinforced Polymers and Composites II

Room: Halifax A/B

Session Chairs: Henry Colorado, Universidad de Antioquia; Satoshi Kobayashi, Tokyo Metropolitan University

3:20 PM

(ICACC-FS4-005-2020) Effect of Crystal State on Static Bending Poperties of Carbon Fiber Reinforced Polyamide 6 (Invited)

T. Sakai*[1]; R. Fukushima[1]; N. B. Shamsudim[1]; K. Kageyama[1]

1. Saitama University, Japan

3:50 PM

(ICACC-FS4-006-2020) Influence of Ceramic Architecture and Loading Orientation on Compressive Response of Ice-templated Hierarchical Ceramic-polymer Composites (Invited)

D. Ghosh*[1]; S. Akurati[1]; J. Marin[1]

1. Old Dominion University, Mechanical and Aerospace Engineering, USA

4:20 PM

(ICACC-FS4-007-2020) Tensile Behavior of Polymeric Composites Reinforced by Jute Fabric for Piping Repair

M. O. Moreira[1]; K. Silva[1]; R. G. Almeida[1]; F. P. Lopes*[1]; E. A. Carvalho[1]; C. F. Vieira[2]

1. State University of Northern Rio de Janeiro, Advanced Materials Laboratory, Brazil
2. State University of the North Fluminense, Advanced Materials Laboratory, Brazil

4:40 PM

(ICACC-FS4-008-2020) Strain/displacement distribution measurement technique using grid patterns and its application to CFRP (Invited)

H. Tsuda*[1]; S. Ri[1]; Q. Wang[1]; P. Xia[1]

1. National Institute of Advanced Industrial Science and Technology (AIST), Japan

5:10 PM

(ICACC-FS4-009-2020) Evaluation of Interfacial and Mechanical Properties of Various Thermally-Recycled Carbon Fibers/Recycled PET Composites

J. Park*[1]; Y. Baek[1]; P. Shin[1]; J. Kim[1]; L. K. DeVries[2]

1. Gyeongsang National University, Materials Eng. & Convergence Technology, Republic of Korea
2. The University of Utah, Mechanical Engineering, USA

S1: Mechanical Behavior and Performance of Ceramics & Composites

Fracture Mechanics and Failure Prediction I

Room: Coquina Salon D

Session Chairs: Jonathan Salem, NASA Glenn Research Center; Jon Mackey, University of Akron

8:30 AM

(ICACC-S1-029-2020) Additive manufacturing of Silicon Nitride: First results and way forward

S. Behar Lafenetre*[1]; P. Grasset[1]; L. Cornillon[1]; N. Louh[1]; M. Villemaire[1]; C. Schick[2]; C. Chaput[2]; N. Rousselet[2]; F. Gant[3]

1. Thales Alenia Space, France
2. 3DCeram, France
3. CNES, France

8:50 AM

(ICACC-S1-030-2020) Failure strength of silicon nitride for space applications

S. Behar Lafenetre*[1]; N. Louh[1]; L. Cornillon[1]; P. Grasset[1]; M. Such-Taboada[2]

1. Thales Alenia Space, France
2. ESA, Netherlands

9:10 AM

(ICACC-S1-031-2020) Design of damage tolerant and crack-free layered ceramics with textured microstructure

R. Bermejo*[1]; A. Hofer[1]; R. L. Walton[4]; O. Ševeček[3]; G. L. Messing[2]

1. MontanUniversityet Leoben, Materials Science, Austria
2. Pennsylvania State University, USA
3. Brno University of Technology, Czechia
4. Pennsylvania State University, Materials Science and Engineering, USA

9:30 AM

(ICACC-S1-032-2020) Fracture mechanics of dense and porous repeated laminate-ceramics

S. Ikari*[1]; W. Nakao[1]; S. Kawai[2]; T. Sawada[2]

1. Yokohama National University, Graduate school of Engineering, Japan
2. LIXIL, Japan

9:50 AM

Break

10:10 AM

(ICACC-S1-033-2020) R-Curve Measurements of PZT as a Function of Poling Direction

K. T. Strong*[1]; S. Grutzik[2]; C. Diantonio[3]; T. Diebold[1]; T. Chavez[3]

1. Sandia National Laboratories, Material Mechanics and Tribology, USA
2. Sandia National Laboratories, Component Science & Mechanics, USA
3. Sandia National Laboratories, USA

10:30 AM

(ICACC-S1-034-2020) Evaluation of competitive model between self-healing and crack propagation in fiber reinforced self-healing ceramics

W. Nakao*[1]

1. Yokohama National University, Japan

10:50 AM

(ICACC-S1-035-2020) On Terminal Crack Velocities in Glasses and Ceramics

G. D. Quinn*[1]

1. NIST, USA

11:10 AM

(ICACC-S1-036-2020) Zerodur® strength behavior for space applications

S. Behar Lafenetre*[1]; L. Cornillon[1]; P. Grasset[1]; F. Gant[2]

1. Thales Alenia Space, France
2. CNES, France

11:30 AM

(ICACC-S1-037-2020) Direct In Situ Observation of Toughening and Fatigue Behavior in Alumina/Graphene Nanocomposites

Q. Wang*[1]; C. Ramirez[1]; N. P. Padture[1]

1. Brown University, School of Engineering, USA

Fibers and Coatings

Room: Coquina Salon D

Session Chair: Amjad Almansour, NASA Glenn Research Center

1:30 PM

(ICACC-S1-038-2020) Rare-earth disilicate fiber coatings for SiC/SiC CMCs

E. E. Boakye*[1]; P. Mogilevsky[1]; T. Key[1]; T. A. Parthasarathy[1]; M. Cinibulk[2]; R. Hay[2]; S. Opeka[1]; R. Corns[1]

1. UES Inc., Materials Science, USA
2. Air Force Research Laboratory, USA

1:50 PM

(ICACC-S1-039-2020) Experimental Characterization of Elastic Stiffness and Delamination Toughness in Commercial Thermal Barrier Coating Systems

J. Alidoost*[1]; K. J. Hemker[1]

1. Johns Hopkins University, Mechanical Engineering, USA

2:10 PM

(ICACC-S1-040-2020) Effects of Boria on Rare Earth Silicate Environmental Barrier Coatings

R. Guarriello*[1]; E. J. Opila[1]

1. University of Virginia, Materials Science and Engineering, USA

2:30 PM

(ICACC-S1-041-2020) Single Fiber Creep Performance of Silicon Carbide Fiber Materials

S. Harrison*[1]; J. L. Schneiter[1]; J. Pegna[1]; R. K. Goduguchinta[1]; K. L. Williams[1]; E. G. Vaaler[1]

1. Free Form Fibers, USA

2:50 PM

Break

Fracture Mechanics and Failure Prediction II

Room: Coquina Salon D

Session Chair: Emmanuel Boakye, UES Inc.

3:10 PM

(ICACC-S1-042-2020) Micromechanical Characterization of Damage Evolution in CMCs

B. Swaminathan*[1]; N. R. McCarthy[5]; A. S. Almansour[2]; K. M. Sevener[3]; J. D. Kiser[4]; S. Daly[5]

1. University of California, Santa Barbara, Materials, USA
2. NASA Glenn Research Center, Mechanical Engineering, USA
3. University of Michigan, Materials Science and Engineering Dept., USA
4. NASA Glenn Research Center, Ceramic and Polymer Composites, USA
5. University of California, Santa Barbara, Mechanical Engineering, USA

3:30 PM

(ICACC-S1-043-2020) Use of Acoustic Emission to Assess Damage in EBC-CMC Systems

A. S. Almansour*[1]; K. Lee[2]; J. Setlock[3]; J. D. Kiser[1]; D. Gorican[4]; A. Gorven[5]

1. NASA Glenn Research Center, Ceramic & Polymer Composites Branch, USA
2. NASA Glenn Research Center, Environmental Effects and Coatings Branch, USA
3. University of Toledo at NASA Glenn Research Center, Environmental Effects & Coatings Branch, USA
4. Vantage Partners, LLC at NASA Glenn Research Center, Ceramic & Polymer Composites Branch, USA
5. Boise State University at NASA Glenn Research Center, Ceramic & Polymer Composites Branch, USA

3:50 PM

(ICACC-S1-044-2020) Experimental and analytical studies on damage evolution behavior of an orthogonal 3-D woven SiC fiber/SiC matrix composite under tensile loading

K. Hachisu*[1]; Y. Ikarashi[1]; T. Ogasawara[1]; T. Aoki[2]

1. Tokyo University of Agriculture and Technology, Japan
2. Japan Aerospace Exploration Agency, Advanced Composite Research Center, Institute of Aeronautical Technology, Japan

4:10 PM

(ICACC-S1-045-2020) Advanced Techniques for Design and Analysis of Composite Structures

T. Douglas*[1]

1. Wasatch Composite Analysis, USA

4:30 PM

(ICACC-S1-046-2020) Failure Analysis of Brittle Single Crystals

J. Salem*[1]

1. NASA Glenn Research Center, Materials and Structures, USA

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

Environmental and Thermal Barrier Coatings III

Room: Ponce de Leon

Session Chair: Douglas Wolfe, Pennsylvania State University

8:30 AM

(ICACC-S2-031-2020) Effects of Substrate on the Steam Oxidation Behavior of Modified Si/$Yb_2Si_2O_7$ Environmental Barrier Coatings (Invited)

K. Lee*[1]

1. NASA Glenn Research Center, USA

9:00 AM

(ICACC-S2-032-2020) Comparative Analysis of Furnace Cycle Durability of Thermal Barrier Coatings Applied on Flat and Cylindrical Geometries

E. J. Gildersleeve*[1]; S. Sampath[2]

1. Stony Brook University, Materials Science, USA
2. Stony Brook University, Center for Thermal Spray Research, USA

9:20 AM

(ICACC-S2-033-2020) Laser Thermal Gradient Testing of Multilayer, Multimaterial Thermal Barrier Coatings

Y. Wu[2]; P. Hsu*[1]; M. H. McCay[2]; E. Croy[2]; Y. Wang[1]; E. J. Gildersleeve[3]; S. Sampath[4]

1. Florida Institute of Technology, Mechanical Engineering, USA
2. Florida Institute of Technology, Center for Advanced Coatings, USA
3. Stony Brook University, Materials Science, USA
4. Stony Brook University, Center for Thermal Spray Research, USA

9:40 AM

(ICACC-S2-034-2020) A Parametric Finite Element Study of the Thermal Barrier Coating Fractures

Y. Wu[2]; P. Hsu*[1]; M. H. McCay[2]; Y. Wang[1]

1. Florida Institute of Technology, Mechanical Engineering Program, USA
2. Florida Institute of Technology, Center for Advanced Coatings, USA

10:00 AM

Break

CMAS Degradation of E/TBC and Mitigation Strategies I

Room: Ponce de Leon

Session Chair: Ravisankar Naraparaju, DLR - German Aerospace Center

10:20 AM

(ICACC-S2-035-2020) Improving the resistance of thermal barrier coatings to molten particulates through blending with rare-earth oxides (Invited)

M. J. Walock*[1]; C. Mock[2]; A. Ghoshal[1]; M. Murugan[1]; M. S. Pepi[3]

1. US Army Research Laboratory, Vehicle Technologies Directorate, USA
2. SURVICE Engineering, USA
3. US Army Research Laboratory, Weapons and Materials Research Directorate, USA

10:50 AM

(ICACC-S2-036-2020) TBC lifetime dependence on CMAS dose rate and history

B. Jun*[1]; E. H. Jordan[2]; R. C. Cooper[2]; N. E. Jonsson[1]

1. University of Connecticut, Materials Science, USA
2. University of Connecticut, Mechanical Engineering, USA

11:10 AM

(ICACC-S2-037-2020) Influence of Microstructure on Lifetime and CMAS Resistance of EB-PVD Gadolinium Zirconate Thermal Barrier Coatings

C. Mikulla*[1]; R. Naraparaju[1]; U. Schulz[1]

1. DLR - German Aerospace Center, Institute of Materials Research, Germany

11:30 AM

(ICACC-S2-038-2020) Thermochemical effects related to CMAS-type corrosion of APS Y_2O_3 coatings

P. Mechnich*[1]

1. DLR - German Aerospace Center, Institute of Materials Research, Germany

CMAS Degradation of E/TBC and Mitigation Strategies II

Room: Ponce de Leon

Session Chairs: Peter Mechnich, DLR - German Aerospace Center; Michael Schmitt, Pennsylvania State University

1:30 PM

(ICACC-S2-039-2020) Novel magnetron sputtered ceramic YSiFe oxide as CMAS-resistant coatings for thermal and environmental barrier coatings (Invited)

R. Naraparaju*[1]; A. Ott[1]; U. Schulz[1]; P. Mechnich[1]

1. DLR - German Aerospace Center, Institute of Materials Research, Germany

2:00 PM

(ICACC-S2-040-2020) High-Temperature Interactions between Rare-Earth Pyrosilicate Thermal Environmental Barrier Coating Ceramics and Calcia-Magnesia-Aluminosilicate(CMAS)

L. R. Turcer*[1]; H. Sternlicht[1]; C. Watts[1]; M. Koval[1]; H. Garces[1]; N. P. Padture[1]

1. Brown University, School of Engineering, USA

2:20 PM

(ICACC-S2-041-2020) Influence of calcium-magnesium-alumino-silicate (CMAS) on environmental barrier coating materials: Comparative study on pure and composite rare earth silicates

M. Wolf*[1]; D. E. Mack[1]; R. Vassen[1]; O. Guillon[1]

1. Forschungszentrum Juelich, IEK1, Germany

2:40 PM

(ICACC-S2-042-2020) Object Oriented Finite Element Analysis of Erosion and CMAS Degradation in Complex Materials

M. Schmitt*[3]; J. Schreiber[3]; B. J. Harder[2]; D. E. Wolfe[1]

1. Pennsylvania State University, USA
2. NASA Glenn Research Center, Environmental Effects and Coatings, USA
3. HAMR Industries LLC, USA

3:00 PM

Break

3:20 PM

(ICACC-S2-043-2020) Na_2SO_4 Interactions with Air Plasma Sprayed $Yb_2Si_2O_7$ /Si/SiC Systems

L. A. Herweyer*[1]

1. University of Virginia, Materials Science and Engineering, USA

3:40 PM

(ICACC-S2-044-2020) Experimental viscosity of CMAS melts as a function of composition and temperature

R. Webster*[1]; E. Opila[1]

1. University of Virginia, Materials Science & Engineering, USA

4:00 PM

(ICACC-S2-045-2020) Dissolution Kinetics of Thermal Barrier Oxides in Molten Silicates

C. S. Holgate*[1]; Y. Yang[1]; D. L. Poerschke[2]; C. G. Levi[1]

1. University of California, Santa Barbara, Materials, USA
2. University of Minnesota, Chemical Engineering and Materials Science, USA

S3: 17th International Symposium on Solid Oxide Cells (SOC): Materials, Science and Technology

Electrocatalysts

Room: Crystal

Session Chair: Prabhakar Singh, University of Connecticut

8:30 AM

(ICACC-S3-026-2020) High Entropy Alloy Fuel Electrode for Direct Internal Reforming of Carbonaceous Fuels in Advanced SOFCs (Invited)

B. Hu*[1]; S. Belko[1]; A. Aphale[1]; R. Kumar[1]; A. Dongare[1]; R. Bhattacharya[2]; P. Singh[1]

1. University of Connecticut, Materials Science and Engineering, USA
2. UES, InC, USA

9:00 AM

(ICACC-S3-027-2020) Intelligent Behavior of $La(Sr)_{n+1}Fe(M=Mn, Co, Ni)O_{3n+1}$ based Perovskite Oxide Electrodes and Propane fuel SOFC (Invited)

T. Shin*[1]

1. Korea Institute of Ceramic Engineering & Technology, Energy Materials Center, Republic of Korea

9:30 AM

(ICACC-S3-028-2020) Study of Synthesis anomaly in cathode material $PrBaCo_2O_{6-\delta}$

A. S. Bangwal*[1]; P. Singh[1]

1. Indian Institute of Technology(BHU), PHYSICS, India

9:50 AM

(ICACC-S3-029-2020) Synthesis and study of Calcium doped High Entropy Perovskite Oxide $La(Co_{0.2}Cr_{0.2}Fe_{0.2}Mn_{0.2}Ni_{0.2})O_3$ for Solid Oxide Fuel Cell Cathode part

S. Gajjala*[1]; R. Koc[1]

1. Southern Illinois University Carbondale, Mechanical Engineering and Energy Processes, USA

10:10 AM

Break

Coatings and Contacting Layers

Room: Crystal

Session Chair: Mihails Kusnezoff, Fraunhofer IKTS

10:30 AM

(ICACC-S3-030-2020) MnCo-based spinels on Crofer22APU by electrophoretic method: Compositional modifications and performance in stack

F. Smeacetto*[1]; A. Sabato[1]; H. Javed[2]; E. Zanchi[1]; S. Molin[3]; G. Cempura[4]; K. Herbrig[2]; C. Walter[2]

1. Politecnico di Torino, Applied Science and Technology, Italy
2. Sunfire GmbH, Germany
3. Gdansk University of Technology, Laboratory of Functional Materials, Faculty of Electronics, Telecommunications and Informatics, Poland
4. AGH University of Science and Technology, Poland

10:50 AM

(ICACC-S3-031-2020) In-situ Fe-doped MnCo spinel coatings on Crofer 22 APU and AISI 441 interconnects: Microstructural, electrical and oxidation properties

E. Zanchi*[1]; S. Molin[2]; A. Sabato[1]; B. Talic[3]; G. Cempura[4]; A. R. Boccaccini[5]; F. Smeacetto[1]

1. Politecnico di Torino, Applied Science and Technology, Italy
2. Gdansk University of Technology, Laboratory of Functional Materials, Faculty of Electronics, Telecommunications and Informatics, Poland
3. Technical University of Denmark, Energy Conversion and Storage, Denmark
4. AGH University of Science and Technology, Poland
5. University of Erlangen-Nuremberg, Institute of Biomaterials, Germany

11:10 AM

(ICACC-S3-032-2020) Development and testing of MnCo based spinel protective coatings prepared by spray pyrolysis

S. Molin*[1]; B. Kamecki[1]; D. Szymczewska[1]; F. Smeacetto[2]; P. Z. Jasinski[1]

1. Gdansk University of Technology, Laboratory of Functional Materials, Faculty of Electronics, Telecommunications and Informatics, Poland
2. Politecnico di Torino, Applied Science and Technology, Italy

11:30 AM

(ICACC-S3-033-2020) Optimization and Validation of LSCo-Mullite Composite Contact Material for Solid Oxide Fuel Cells

Y. Chou*[1]; N. L. Canfield[1]; J. F. Bonnett[1]; J. Choi[1]; J. W. Stevenson[2]

1. Pacific Northwest National Lab, Materials, USA
2. Pacific Northwest National Lab, USA

11:50 AM

(ICACC-S3-034-2020) Improving Anode Current Collection of Anode Supported Tubular Solid Oxide Fuel Cells

Y. Du[1]; H. Feng*[1]

1. Kent State University, USA

Simulation and Materials

Room: Crystal

Session Chair: Kevin Huang, University of South Carolina

1:30 PM

(ICACC-S3-035-2020) Atomic-scale Modeling of Materials for Solid Oxide Cells (Invited)

I. Castelli*[1]

1. Technical University of Denmark, Department of Energy Conversion and Storage, Denmark

2:00 PM

(ICACC-S3-036-2020) Computational Design of Perovskite-type Oxide Electrode to Achieve the Improved Catalytic Activity through Exsolution Phenomena (Invited)

K. Kim[1]; J. Han*[1]

1. POSTECH, Chemical Engineering, Republic of Korea

2:30 PM

(ICACC-S3-037-2020) Investigation of Prospective Catalyst from Co and Fe doped $LaAlO_3$ Perovskites

X. Gao*[1]; J. Irvine[1]

1. University of St Andrews, United Kingdom

2:50 PM

(ICACC-S3-038-2020) Theoretical and Experimental Evaluation of $BaCo_xFe_yZr_zO_{3-d}$ (BFCZ) as cathode for SOFC

J. Liu*[1]; R. Jacobs[2]; B. Na[1]; H. Abernathy[1]; S. Lee[1]; D. Morgan[2]; T. Kalapos[1]; G. Hackett[1]

1. NETL, USA
2. University of Wisconsin, Department of Materials Science and Engineering, USA

3:10 PM

Break

HT Electrolysis

Room: Crystal

Session Chair: John Pietras, Saint-Gobain

3:30 PM

(ICACC-S3-039-2020) Solid Oxide Cells developments: From materials to system (Invited)

J. Mougin*[1]; J. Laurencin[1]; S. Di Iorio[1]; J. Aicart[1]; J. Vulliet[2]; P. Coddet[2]; P. Cloetens[3]; M. Hubert[3]

1. CEA, Liten, France
2. CEA, DMAT, France
3. ESRF, France

4:00 PM

(ICACC-S3-040-2020) Experimental and Numerical Study on the Performance of Solid Oxide Electrolysis Cells (Invited)

S. Lee*[1]; T. Yang[1]; Y. Fan[1]; J. Liu[1]; T. Kalapos[1]; H. Abernathy[1]; G. Hackett[1]

1. National Energy Technology Laboratory, USA

4:30 PM

(ICACC-S3-041-2020) Solid oxide cells as power-to-gas-to-power systems: Experimental and numerical study on their performance and system degradation (Invited)

V. Subotic*[1]

1. Graz University of Technology, Austria

5:00 PM

(ICACC-S3-042-2020) Highly Efficient SOE System Design - Update on AVL's SOE activities

R. Schauperl*[1]

1. AVL List GmbH, Austria

5:20 PM

(ICACC-S3-043-2020) Electrochemical Evaluation under High Temperature CO_2 and H_2O Co-Electrolysis

M. Heringer Boucas*[1]; J. Irvine[1]; L. Sammes[1]

1. University of St Andrews, Chemistry, United Kingdom

5:40 PM

(ICACC-S3-044-2020) Co-Electrolysis: From stack performance map to energy and cost efficient hydrocarbons production

M. Kusnezoff*[1]; S. Megel[1]; C. Rix[1]; P. Adam[1]; G. Herz[1]; E. Reichelt[1]; M. Jahn[1]; N. Trofimenko[1]; A. Michaelis[1]

1. Fraunhofer IKTS, Germany

S4: Armor Ceramics - Challenges and New Developments

Synthesis and Processing I & II

Room: St. Johns

Session Chairs: Lionel Vargas, US Army Research Laboratory; Nicholas Ku, CCDC - Army Research Laboratory

8:30 AM

(ICACC-S4-029-2020) Microstructure and Properties of superhard SiC-bonded diamond materials (Invited)

M. Herrmann*[1]

1. Fraunhofer IKTS, Germany

9:00 AM

(ICACC-S4-030-2020) Mechanical and thermal characteristics of interfaces and defects in diamond/SiC composites (Invited)

Y. Zhang[4]; C. Hsu[2]; T. Wang[1]; P. Karandikar[3]; C. Ni*[1]

1. University of Delaware, Department of Materials Science and Engineering, USA
2. University of Delaware, USA
3. M Cubed Technology, Inc., R&D, USA
4. University of Delaware, Material Science and Engineering, USA

9:30 AM

(ICACC-S4-031-2020) Reaction Sintered Silicon Carbon Diamond Composites via Optimized Particle Distributions

A. A. DiGiovanni*[1]; J. LaSalvia[2]; K. D. Behler[3]; M. Guziewski[1]

1. US Army Research Laboratory, Ceramics and Transparent Materials, USA
2. U.S. Army Research Laboratory, USA
3. U.S. Army Research Laboratory, Multifunctional Materials Branch, USA

9:50 AM

(ICACC-S4-032-2020) Densification of Model Hot-Pressed Diamond-Ceramic Composites with Bi-Modal Diamond Particle Size

J. LaSalvia*[1]; K. D. Behler[1]; A. A. DiGiovanni[1]

1. U.S. Army Research Laboratory, FCDD-RLW-ME, USA

10:10 AM

Break

10:30 AM

(ICACC-S4-033-2020) Multimaterial Printing of Silica-Titania Glass: Prediction and Tuning of Ink Rheology (Invited)

N. Dudukovic*[1]

1. Lawrence Livermore National Laboratory, USA

11:00 AM

(ICACC-S4-034-2020) Additive Manufacturing of Transparent Armor Ceramics: One-Step Laser Direct Deposited Magnesium Aluminate Spinel Ceramics

J. Pappas[1]; X. Dong*[1]

1. Missouri University of Science & Technology, Mechanical and Aerospace Engineering, USA

11:20 AM

(ICACC-S4-035-2020) Methylcellulose binder systems for direct ink writing of carbide ceramic suspensions

N. Ku*[1]; B. Gray[1]; J. Pelz[2]; A. T. Rosenberger[1]; L. Vargas[1]

1. CCDC - Army Research Laboratory, Ceramics and Transparent Materials Branch, USA
2. University of California, San Diego, MATS, USA

11:40 AM

(ICACC-S4-036-2020) Direct Ink Writing for Functionally Graded Ceramics

J. Pelz*[1]; N. Ku[2]; M. A. Meyers[1]; L. Vargas[2]

1. University of California, San Diego, MATS, USA
2. U.S. Army Research Laboratory, USA

Synthesis and Processing III & IV

Room: St. Johns

Session Chairs: Steve Kilczewski, Army Research Laboratory; Kristopher Behler, U.S. Army Research Lab

1:30 PM

(ICACC-S4-037-2020) Simultaneous improvements of strength and toughness in topologically interlocked ceramics

F. Barthelat*[1]; M. Mirkhalaf[2]

1. University of Colorado, Mechanical Engineering, USA
2. University of Sydney, Mechanical Engineering, Australia

1:50 PM

(ICACC-S4-038-2020) Effect of Sintering Parameters on Room-Temperature Injection Molded, Pressurelessly Sintered Boron Carbide Components

E. Weaver*[1]; R. Trice[2]; J. P. Youngblood[2]

1. Purdue University, USA
2. Purdue University, Department of Materials Engineering, USA

2:10 PM

(ICACC-S4-039-2020) Optimizing Dispersion of Boron Carbide and Sintering Aids for Colloidal Processing and Pressureless Sintering

T. Marconie*[1]; J. P. Youngblood[1]; R. Trice[1]

1. Purdue University, Department of Materials Engineering, USA

2:30 PM

(ICACC-S4-040-2020) Structures and Compositions of Grain Boundary Complexions in Eu-Doped Boron Suboxide

C. Marvel*[1]; K. D. Behler[2]; J. Synowczynski-Dunn[2]; B. C. Hornbuckle[2]; J. LaSalvia[2]; M. Harmer[1]

1. Lehigh University, Department of Material Science and Engineering, USA
2. U.S. Army Research Lab, FCDD-RLW-ME, USA

2:50 PM

Break

3:10 PM

(ICACC-S4-041-2020) A study of the effect of magnesium on boron suboxide densification and mechanical properties

T. Shoulders*[1]; K. D. Behler[1]; J. LaSalvia[1]

1. CCDC Army Research Laboratory, USA

3:30 PM

(ICACC-S4-042-2020) Effect of Heating Rate, Temperature and Additive Content on the Densification and Microstructure of Hot-Pressed Boron Suboxide (B_6O)

H. E. Payne*[1]; K. D. Behler[1]; J. LaSalvia[1]; C. Marvel[2]; T. Shoulders[1]; M. Harmer[2]

1. US Army Research Laboratory, FCDD-RLW-ME, USA
2. Lehigh University, Department of Material Science and Engineering, USA

3:50 PM

(ICACC-S4-043-2020) Flash Sintering of Boron Carbide

A. T. Rosenberger*[1]; R. E. Brennan[2]; S. Raju[1]; A. L. Fry[3]

1. Oak Ridge Associated Universities, USA
2. US Army Research Laboratory, USA
3. U.S. Army Research Laboratory, ORISE, USA

4:10 PM

(ICACC-S4-044-2020) Multi-Phase Armor Production and Characterization Involving B_4C–SiC–TiC with SPS Technique

G. Uysal Sapanci*[1]

1. ROKETSAN, Turkey

S5: Next Generation Bioceramics and Biocomposites

Next Generation Bioceramics IV

Room: Coquina Salon C

Session Chairs: Nikhil Kamboj, Tallinn University of Technology; Ashutosh Goel, Rutgers University; Bryan McEntire, SINTX Technologies

8:30 AM

(ICACC-S5-026-2020) Biological Crystallization of Ultrahard Teeth and Translation to Multi-Functional Materials

D. Kisailus*[1]

1. University of California, Riverside, Chemical and Environmental Engineering, USA

8:50 AM

(ICACC-S5-027-2020) Nitric Oxide Releasing Ceramics for Prevention of Periprosthetic Joint Infections (Invited)

B. J. McEntire*[1]; G. Pezzotti[2]

1. SINTX Technologies, Research & Development, USA
2. Kyoto Institute of Technololgy, Ceramic Physics Laboratory, Materials Science Division, Japan

9:10 AM

(ICACC-S5-028-2020) Additive manufacturing of silicon-wollastonite/bioactive glass based biomaterials by Selective Laser Melting (Invited)

N. K. Kamboj*[1]; M. A. Rodríguez Barbero[2]; C. Rodrigo[2]; J. Kazantseva[3]; I. Hussainova[1]

1. Tallinn University of Technology, Mechanical and Industrial Engineering, Estonia
2. Instituto de Ceramica y Vidrio (ICV-CSIC), Spain
3. Cellln Technologies LLC, Tallinn, Estonia

9:30 AM

(ICACC-S5-029-2020) Modified polymer-derived SiOC ceramics for medical applications

M. Gaweda*[1]; W. Simka[2]; M. Sowa[2]; A. R. Boccaccini[3]; M. T. Sitarz[1]

1. AGH University of Science and Technology, Faculty of Materials Science and Ceramics, Poland
2. Silesian University of Technology, Department of Inorganic Chemistry, Analytical Chemistry and Electrochemistry Faculty of Chemistry, Poland
3. University of Erlangen-Nuremberg, Institute of Biomaterials, Germany

9:50 AM

Break

10:10 AM

(ICACC-S5-030-2020) Structural design of borosilicate based bioactive glasses (Invited)

A. Goel*[1]; N. Stone-Weiss[3]; R. Youngman[2]; H. Eckert[6]; A. Pedone[5]; E. M. Pierce[4]; N. J. Smith[7]

1. Rutgers University, USA
2. Corning Incorporated, Science & Technology Division, USA
3. Rutgers University, Materials Science and Engineering, USA
4. Oak Ridge National Lab, Environmental Sciences Division, USA
5. University of Modena and Reggio Emilia, Italy
6. University of Muenster, Germany
7. Corning Incorporated, USA

10:30 AM

(ICACC-S5-031-2020) Impact-resistant biological coatings of the mantis shrimp dactyl club

D. Kisailus*[1]

1. University of California, Riverside, Chemical and Environmental Engineering, USA

10:50 AM

(ICACC-S5-032-2020) Synthesis and characterization of electro thermally poled Li_2O doped Borate- based bioactive glass

S. Jaiswal*[1]

1. IIT (BHU), Varanasi, Ceramic Engineering, India

11:10 AM

(ICACC-S5-033-2020) Studies on In vitro bioactivity, Cytocompatibility and mechanochemical properties of SrO modified 1393 glass scaffold

A. Ali*[1]

1. Indian Institute of Technology(BHU), Ceramic Engineering, India

11:30 AM

(ICACC-S5-034-2020) ZnO modified 1393 bioactive scaffolds with enhanced cytocompatibility and mechanical performance

R. Pyare*[1]

1. Indian Institute of Technology(BHU), Ceramic Engineering, India

S6: Advanced Materials and Technologies for Rechargeable Energy Storage

Li-ion Battery Cathodes

Room: Tomoka A

Session Chairs: Jagjit Nanda, Oak Ridge National Lab; Ilias Belharouak, Oak Ridge National Lab

8:30 AM

(ICACC-S6-024-2020) Advanced Characterisations of Nanostructured Li-rich Disordered Rock-salts (Invited)

M. Diaz Lopez*[1]; P. Chater[2]; H. Playford[1]; Y. Joly[3]; P. Bordet[3]; V. Pralong[4]

1. STFC Rutherford Appleton Laboratory, ISIS, United Kingdom
2. Diamond light source, United Kingdom
3. Institut Néel, CNRS, France
4. CNRS ENSICAEN, France

9:00 AM

(ICACC-S6-025-2020) Towards cobalt free cathode materials for Lithium ion batteries (Invited)

M. Wohlfahrt-Mehrens*[1]; P. Axmann[1]; M. Mancini[1]; N. Jobst[1]

1. ZSW - Zentrum für Sonnenenergie- und Wasserstoff-Forschung, Baden-Württemberg, Germany

9:30 AM

(ICACC-S6-026-2020) Interface Modification To Enhance Disordered Li-Rich Material Performances (Invited)

J. Colin*[1]; D. Peralta[1]; A. Boulineau[1]; J. Ducros[1]; J. Martin[1]

1. Université Grenoble Alpes, CEA-LITEN, France

10:00 AM

Break

Solid Electrolytes

Room: Tomoka A

Session Chairs: Olivier Guillon, Forschungszentrum Juelich; Palani Balaya, National University of Singapore

10:20 AM

(ICACC-S6-027-2020) Processing of LATP-Based Solid Electrolytes for All-Solid-State Li-Ion Batteries (Invited)

M. J. Hoffmann*[1]; N. Schiffmann[1]; E. C. Bucharsky[1]; G. Schell[1]

1. Karlsruhe Institute of Technology (KIT), Institute of Applied Materials (IAM-KWT), Germany

10:50 AM

(ICACC-S6-028-2020) Understanding Li Plating/Stripping Behaviors on Oxide Solid Electrolytes using the In-Situ SEM Technique (Invited)

M. Motoyama*[1]

1. Nagoya University, Department of Materials Design Innovation Engineering, Japan

11:20 AM

(ICACC-S6-029-2020) Understanding Li-ion transport and conductivity in Ga- and Al-substituted garnet-type $Li_7La_3Zr_2O_{12}$ solid electrolytes using atomistic simulations (Invited)

J. Carrasco*[1]; F. Garcia Daza[2]; M. Bonilla[2]; E. Akhmatskaya[2]

1. CIC Energigune, Spain
2. Basque Center for Applied Mathematics, Spain

11:50 AM

(ICACC-S6-030-2020) Exploration of the system Li-P-S-O

A. Neveu*[1]; C. Jordy[2]; V. Pelé[2]; V. Pralong[1]

1. CNRS ENSICAEN, France
2. SAFT, France

12:10 PM

(ICACC-S6-031-2020) Development of air stable Li-La-Zirconate (cubic garnet) based solid electrolyte for all-solid-state Li-ion batteries

S. Kobi*[1]; A. Verma[1]; A. Mukhopadhyay[1]

1. Indian Institute of Technology Bombay, Metallurgical Engineering and Materials Science, India

Beyond Li-ion battery

Room: Tomoka A

Session Chairs: Chongmin Wang, Pacific Northwest National Lab; Dany Carlier, ICMCB

1:30 PM

(ICACC-S6-032-2020) Development of Electrode Materials for Multivalent Rechargeable Battery (Invited)

Y. Orikasa*[1]

1. Ritsumeikan University, Applied Chemistry, Japan

2:00 PM

(ICACC-S6-033-2020) Designing Electrode Architectures for Safer Rechargeable Batteries (Invited)

V. Pol*[1]

1. Purdue University, Chemical Engineering, USA

2:30 PM

(ICACC-S6-034-2020) Investigation of Metallic Dendrite Growth in Electrolytes

C. Lei*[1]; A. V. Virkar[1]

1. University of Utah, Materials Science and Engineering, USA

2:50 PM

Break

Characterization of Materials for Batteries and Capacitors

Room: Tomoka A

Session Chairs: Dany Carlier, ICMCB; Chongmin Wang, Pacific Northwest National Lab

3:20 PM

(ICACC-S6-035-2020) Insights Gained by Microscopy and Spectroscopy Diagnosis of Materials for Better Batteries (Invited)

C. Wang*[1]

1. Pacific Northwest National Lab, USA

3:50 PM

(ICACC-S6-036-2020) Charge Distribution Guided by Grain Crystallographic Orientations in Polycrystalline Battery Materials (Invited)

Z. Xu[1]; Z. Jiang[2]; Y. Liu[2]; F. Lin*[1]

1. Virginia Tech, Chemistry, USA
2. SLAC National Accelerator Lab, USA

4:20 PM

(ICACC-S6-037-2020) Tungsten oxide and carbide composite electrodes for electrochemical capacitors synthesized by Hot Filament Vapor Deposition technique

D. Soares*[1]; R. Vicentini[2]; G. Singh[1]; A. Peterlevitz[2]; H. Zanin[2]

1. Kansas State University, Mechanical and Nuclear Engineering Dept., USA
2. Advanced Energy Storage Division, Center for Innovation on New Energies; Carbon Sci-Tech Labs, School of Electrical and Computer Engineering, University of Campinas, Brazil

S7: 14th International Symposium on Functional Nanomaterials and Thin Films for Sustainable Energy Harvesting, Environmental, and Health Applications

Nanomaterials for Energy Conversion and Storage and Catalysis III

Room: Flagler A

Session Chair: Narsingh Singh, University of Maryland Baltimore County

8:30 AM

(ICACC-S7-024-2020) Origins of extraordinarily high C-rate of nonstoichiometric $TiNb_2O_7$ Li-ion Battery Anode: Enhanced polaron-dominating carrier transport and volume expansion (Invited)

H. Choi*[1]

1. University of Cologne, Germany

9:00 AM

(ICACC-S7-025-2020) Black and colored titania films for enhanced photocatalysis under visible light

M. Wong*[1]; M. Pylnev[1]

1. National Dong Hwa University, Materials Science and Engineering, Taiwan

9:20 AM

(ICACC-S7-026-2020) Atomic Layer Deposition as a Tool to Produce Ceramic Photonic Materials with High-temperature Stability

K. P. Furlan*[1]; T. Krekeler[2]; M. Ritter[2]; R. Blick[3]; R. Zierold[3]; G. A. Schneider[1]; R. Janssen[1]

1. Hamburg University of Technology, Institute of Advanced Ceramics, Germany
2. Hamburg University of Technology, Electron Microscopy Unit, Germany
3. Universitaet Hamburg, Center for Hybrid Nanostructures, Georgia

9:40 AM

(ICACC-S7-027-2020) Data-driven Creation of an Inorganic Nanotube Database

I. Castelli*[1]

1. Technical University of Denmark, Department of Energy Conversion and Storage, Denmark

10:00 AM

Break

Nanomaterials for Energy Conversion and Storage and Catalysis IV

Room: Flagler A

Session Chair: Thomas Fischer, University of Cologne

10:20 AM

(ICACC-S7-028-2020) Towards stable and low-PGM fuel cell cathode with Hierarchical Nanostructured Ceramic Thin Film as non-carbon support

G. Rossetti*[1]; F. Di Fonzo[2]; A. Casalegno[1]

1. Politecnico di Milano, Italy
2. Istituto Italiano di Tecnologia, Italy

10:40 AM

(ICACC-S7-029-2020) Nanostructured Ceramics for Hybrid Organic Photoelectrochemical Water Splitting: The Role of Charge Selective Layers

A. Alfano*[1]; A. Mezzetti[1]; F. Di Fonzo[1]

1. Italian Institute of Technology, Center for NanoScience and Technology, Italy

11:00 AM

(ICACC-S7-030-2020) Characterization of Piezoelectric MEMS Vibration Energy Harvesters using Lead-free $BiFeO_3$ Film under Random Vibration

S. Murakami*[1]; T. Yoshimura[2]; M. Aramaki[2]; K. Satoh[1]; Y. Kanaoka[1]; K. Tsuda[3]; N. Fujimura[2]

1. Osaka Research Institute of Industrial Science and Technology, Research Division of Electronic and Mechanical Systems, Japan
2. Osaka Prefecture University, Graduate School of Engineering, Japan
3. Osaka Research Institute of Industrial Science and Technology, Research Division of Product Reliability, Japan

S8: 14th International Symposium on Advanced Processing and Manufacturing Technologies for Structural and Multifunctional Materials and Systems (APMT14)

Advanced Manufacturing and Processing II

Room: Coquina Salon A

Session Chairs: Shu Yin, IMRAM, Tohoku University; Pavol Sajgalik, Institute of Inorganic Chemistry, Slovak Academy of Sciences

8:30 AM

(ICACC-S8-026-2020) Harnessing spontaneous polarisation to enhance chemical processes (Invited)

S. Dunn*[1]

1. LSBU, Engineering, United Kingdom

9:00 AM

(ICACC-S8-027-2020) Hydroxylated High-entropy Alloy as Highly Efficient Catalyst for Electrochemical Oxygen Evolution Reaction

P. Ma*[1]; S. Zhang[1]; M. Zhang[1]; J. Gu[2]; L. Zhang[1]; W. Ji[2]; Z. Fu[2]

1. Wuhan University of Technology, China
2. Wuhan University of Technology, State Key Lab of Advanced Technology for Materials Synthesis and Processing, China

9:20 AM

(ICACC-S8-028-2020) Growth of YAG films on YAG single-crystal substrate via a sol-gel method

I. Milisavljevc*[1]; Y. Wu[1]

1. Alfred University, New York State College of Ceramics, USA

9:40 AM

(ICACC-S8-029-2020) Textured Monoclinic Lanthanum Titanate Prepared by Magnetic Alignment

O. Van der Biest*[1]; L. Zhang[1]; Z. Sun[1]; J. Vleugels[1]

1. K U Leuven, Materials Engineering, Belgium

10:00 AM

Break

10:20 AM

(ICACC-S8-030-2020) Design of Alumina/Titanium Composites and their Multifunctions with Room-temperature Crack Healing (Invited)

S. Shi[1]; S. Chou[1]; T. Goto[1]; T. Sekino*[1]

1. Osaka University, The Institute of Scientific and Industrial Research, Japan

10:50 AM

(ICACC-S8-031-2020) Laminated Object Manufacturing of Ceramic-based Composites (Invited)

N. Travitzky*[1]

1. University of Erlangen-Nuremberg, Materials Science, Germany

11:20 AM

(ICACC-S8-032-2020) Controlling Grain Growth of Alumina by Solute-Drag and Solute-Acceleration

R. Moshe[1]; P. Ghosh[1]; L. Rudnik[1]; R. Marder[1]; W. D. Kaplan*[1]

1. Technion - Israel Institute of Technology, Dept. of Materials Science and Engineering, Israel

11:40 AM

(ICACC-S8-033-2020) Bioprocess-Inspired Microscale Additive Manufacturing of Multilayered TiO_2/Polymer Composites with Enamel-like Structures and Excellent Mechanical Properties

L. Lei*[1]

1. Wuhan University of Technology, China

Functional Materials and Composites

Room: Coquina Salon A

Session Chair: Tohru Sekino, Osaka University

1:30 PM

(ICACC-S8-034-2020) Morphology Control and Gas Sensing Property of Nitride / Oxynitride Based Materials (Invited)

S. Yin*[1]

1. IMRAM, Tohoku University, Japan

2:00 PM

(ICACC-S8-035-2020) Generation of highly-active battery-materials with unique spray pyrolysis equipment

T. Jähnert[1]; K. Weber*[1]

1. Glatt Ingenieurtechnik GmbH, Germany

2:20 PM

(ICACC-S8-036-2020) Influence of Crystal Orientation on Dielectric Properties of [001] Textured $BaTiO_3$ Fabricated by Template Grain Growth

S. Lee*[1]; J. Wang[1]; D. Kim[1]

1. Korea Advanced Institute of Science and Engineering (KAIST), Dept. of Mater Sci & Eng, Republic of Korea

2:40 PM

(ICACC-S8-037-2020) Stable Pd@Cu Core–Shell Nanocubes with Finely-Tuned Sizes for the Reduction of Nitroaromatics

G. Zhang*[1]; J. Feng[3]; Z. Fu[2]

1. Wuhan University of Technology, School of Chemistry, Chemical Engineering and Life Science, China
2. Wuhan University of Technology, State Key Lab of Advanced Technology for Materials Synthesis and Processing, China
3. University of California, Department of Chemistry, USA

3:00 PM

(ICACC-S8-038-2020) Micro-cantilever testing of Si_3N_4 based ceramics with different sintering additives (Invited)

P. Sajgalik*[1]

1. Institute of Inorganic Chemistry, Slovak Academy of Sciences, Ceramic Department, Slovakia

3:30 PM

(ICACC-S8-039-2020) B and B-W nanoparticle preparation by pulsed discharge of compacted powder

H. D. Nguyen*[1]; M. Ngo[1]; Y. Tokoi[3]; T. Do[2]; T. Nakayama[1]; H. Suematsu[1]; K. Niihara[1]

1. Nagaoka University of Technology, Japan
2. Nagaoka University of Technology, Nuclear System Safety Engineering, Japan
3. National Institute of Technology, Oyama College, Department of Innovative Electrical and Electronics Engineering, Japan

3:50 PM

(ICACC-S8-040-2020) Fabrication of Porous and Magnetic Ceramic Microparticles via Stop Flow Lithography

A. Alcaraz-Ramirez*[1]

1. Purdue University, Materials Engineering, USA

S9: Porous Ceramics: Novel Developments and Applications

Innovations in Processing Methods and Synthesis of Porous Ceramics I

Room: Coquina Salon F

Session Chair: Paolo Colombo, University of Padova

1:30 PM

(ICACC-S9-001-2020) Porous polymer derived ceramics (Invited)

C. Vakifahmetoglu*[1]

1. Izmir Institute of Technology, Materials Science and Engineering, Turkey

2:00 PM

(ICACC-S9-002-2020) Porous SiOC bulk ceramic based on perhydropolysilazane (PHPS) and polysiloxane (PSO) pyrolysis

N. Yang[1]; K. Lu*[1]

1. Virginia Tech, USA

2:20 PM

(ICACC-S9-003-2020) Automated 3D-Assembly of Modular Ceramic Composite Structures

J. M. Biggemann*[1]; M. Stumpf[1]; P. Greil[1]; T. Fey[1]

1. Friedrich-Alexander University Erlangen-Nürnberg, Department Material Science and Engineering, Germany

2:40 PM

(ICACC-S9-004-2020) Fabrication and Characterization of Mechanical Properties for Hydroxyapatite – Poly(lactic acid) Unidirectional Porous Scaffolds

Y. Zusho*[1]; S. Kobayashi[1]; T. Osada[1]

1. Tokyo Metropolitan University, Mechanical Systems Engineering, Japan

3:00 PM

Break

Engineering Applications of Porous Ceramics I

Room: Coquina Salon F

Session Chair: Tobias Fey, Friedrich-Alexander University Erlangen-Nürnberg

3:20 PM

(ICACC-S9-005-2020) Hierarchical Pore Structures via Freeze Casting With Preceramic Polymers and Block Copolymers

C. T. Kuo*[1]; L. M. Rueschhoff[2]; M. B. Dickerson[2]; K. Faber[3]

1. California Institute of Technology, Material Science, USA
2. Air Force Research Laboratory, Materials and Manufacturing Directorate, USA
3. California Institute of Technology, USA

3:40 PM

(ICACC-S9-006-2020) Ag or Cu-modified geopolymer foams, 3D-printed scaffolds, and granules for water treatment

T. Luukkonen*[1]; J. Yliniemi[1]; G. Franchin[2]; P. Colombo[2]

1. University of Oulu, Fibre and Particle Engineering Unit, Finland
2. University of Padova, Industrial Engineering, Italy

4:00 PM

(ICACC-S9-007-2020) Porous ceramics - from processing to novel applications

T. Fey*[1]; J. M. Biggemann[2]

1. Friedrich-Alexander University Erlangen-Nürnberg, Department Material Science and Engineering, Germany
2. Institute of Glass and Ceramics, Material Science and Engineering, Germany

4:20 PM

(ICACC-S9-008-2020) Influence of the texture on the conductive-radiative behavior of SiC-based cellular ceramics up to very high-temperature

B. Rousseau*[1]; B. Afeef[1]; V. Jerome[2]; F. Yann[1]

1. LTeN UMR CNRS 6607, France
2. IUSTI UMR CNRS 7343, France

4:40 PM

(ICACC-S9-009-2020) Development of radiant porous burners working at 1500°C: Composition and microstructure of Si-SiC based reticulated structures

G. Bianchi*[1]

1. SUPSI, DTI-MEMTI, Switzerland

S10: Modeling, Genome, Informatics, and Machine Learning

Informatics, Genome and Machine Learning

Room: Coquina Salon G

Session Chair: Jingyang Wang, Shenyang National Laboratory for Materials Science, Institute of Metal Research, Chinese Academy of Sciences

1:30 PM

(ICACC-S10-001-2020) Machine Learning Approach to Predict Phase Stability of Complex Oxide Systems (Invited)

D. Shin*[1]; J. Lee[2]; I. Jung[2]

1. Oak Ridge National Laboratory, USA
2. Seoul National University, Republic of Korea

1:55 PM

(ICACC-S10-002-2020) Machine Learning for Novel and Improved Ceramic and Single-Crystal Scintillators (Invited)

G. Pilania*[1]; A. Talapatra[1]; C. Stanek[1]; B. P. Uberuaga[1]

1. Los Alamos National Laboratory, Materials Science and Technology Division, USA

2:20 PM

(ICACC-S10-003-2020) Machine learning approach to predict thermal expansion of oxides

S. A. Utlak*[1]; D. Shin[1]; C. Bridges[2]; S. Lee[3]

1. Oak Ridge National Lab, Materials Science and Technology Division, USA
2. Oak Ridge National Laboratory, Chemical Sciences Division, USA
3. Oak Ridge National Lab, Computer Science and Mathematics Division, USA

2:40 PM

(ICACC-S10-004-2020) Computational study of physical properties of 55 chalcogenide crystals

S. A. Hasan*[1]; K. Baral[1]; W. Ching[2]

1. University of Missouri, Kansas City, Department of Physics and Astronomy, USA
2. University of Missouri-Kansas City, USA

3:00 PM

Break

Multi-scale Modeling of Processing and Performances I

Room: Coquina Salon G

Session Chairs: Dongwon Shin, Oak Ridge National Laboratory; Ghanshyam Pilania, Los Alamos National Lab

3:20 PM

(ICACC-S10-005-2020) Modeling of ablation roughness of carbon/carbon composites from micrometer to centimeter and its consequences on transfer phenomena (Invited)

G. L. Vignoles*[1]; X. Lamboley[1]; J. Lachaud[2]; C. Levet[1]; J. Couzi[3]; J. Mathiaud[3]

1. University Bordeaux, LCTS - Lab for ThermStructural Composites, France
2. University Bordeaux, I2M, France
3. CEA, DAM/CESTA, France

3:50 PM

(ICACC-S10-006-2020) Ab initio modeling of high entropy alloy ceramic (TiNbTaZrMo)C (Invited)

W. Ching*[1]; S. San[1]

1. University of Missouri-Kansas City, USA

4:20 PM

(ICACC-S10-007-2020) Non-Destructive Electrical Characterization of Ceramic Microstructures: Inside and Outside the Furnace

M. C. Golt*[1]; E. Hernandez-Rivera[1]; K. Strawhecker[1]; S. Kilczewski[1]

1. CCDC - Army Research Laboratory, USA

4:40 PM

(ICACC-S10-008-2020) Modelling of heat and mass transfer based on X-ray Computerized Tomography scans in porous carbon/carbon composites

C. Charles*[1]; G. Vignoles[1]; C. Descamps[2]

1. LCTS - CNRS, France
2. Safran ceramics, France

5:00 PM

(ICACC-S10-009-2020) Molecular Template Model Building Methods for Amorphous Molecular Solids (Invited)

P. Rulis*[1]

1. University of Missouri - Kansas City, Physics and Astronomy, USA

S11: Advanced Materials and Innovative Processing Ideas for Production Root Technologies

Sustainable Energy Concepts and Applications II

Room: Tomoka B

Session Chairs: Tadachika Nakayama, Nagaoka University of Technology; Sungwook Mhin, Korea Institute of Industrial Technology

9:00 AM

(ICACC-S11-023-2020) Synthesis of transition metal (TM: Co, Mn, Ni, Fe) based sulfides as an efficient electrocatalysts for overall water splitting

K. Park*[1]; J. Jeon[1]; J. Lee[3]; H. Han[4]; N. Oh[1]; S. Mhin[2]

1. Hanyang University, Division of Materials Science and Engineering, Republic of Korea
2. Korea Institute of Industrial Technology, Heat treatment R&D group, Republic of Korea
3. Korea Institute of Industrial Technology, Republic of Korea
4. Hongik University, Department of Materials Science and Engineering, Republic of Korea

9:20 AM

(ICACC-S11-024-2020) Electronically Double-layered Metal Boride Hollow Nanoprism as an Excellent and Robust Water Oxidation Electrocatalysts (Invited)

H. Han*[1]; Y. Hong[3]; S. Mhin[2]

1. Hongik University, Materials Science and Engineering, Republic of Korea
2. KITECH, Republic of Korea
3. KITECH, Republic of Korea

9:50 AM

(ICACC-S11-025-2020) Optimization of oxygen concentration in rGO/g-C_3N_4 heterojunction for photoelectrochemical water splitting

M. Je*[1]; Y. Sim[2]; U. Sim[2]; H. Choi[1]

1. University of Cologne, Germany
2. Chonnam National University, Republic of Korea

10:10 AM

Break

10:30 AM

(ICACC-S11-026-2020) Phase Engineered 2D Transition Metal Dichalcogenides and their Applications (Invited)

W. Choi*[1]

1. University of North Texas, Department of Materials Science & Engineering, USA

11:00 AM

(ICACC-S11-027-2020) Mapping defect equilibria using density functional theory calculations and thermodynamic modeling for photochemical reaction boosting (Invited)

H. Choi*[1]

1. University of Cologne, Germany

11:30 AM

(ICACC-S11-028-2020) First-Principles calculations on charge carrier effective masses of $La_{0.5}Sr_{0.5}FeO_3$ under high temperature and low oxygen partial pressure (Invited)

D. Lee*[1]; Y. Shin[1]

1. Pohang University of Science and Technology(POSTECH), Materials Science and Engineering, Republic of Korea

S12: On the Design of Nano-Laminated Ternary Transition Metal Carbides/Nitrides (MAX Phases) and Borides (MAB Phases), and their 2D Counterparts (MXENES, MBENES)

Current Progress in MXenes II

Room: Coquina Salon F

Session Chairs: Surojit Gupta, University of North Dakota; Athanasios Gkountaras, CNRS

8:30 AM

(ICACC-S12-025-2020) Structure-Property Relationships of MXenes (Keynote)

S. B. Sinnott*[1]

1. The Pennsylvania State University, Materials Science and Engineering, USA

9:10 AM

(ICACC-S12-026-2020) Energy storage properties of MXenes (Invited)

D. Cakir*[1]; C. Sevik[2]; F. Peeters[3]; O. Gulseren[4]

1. University of North Dakota, Physics and Astrophysics, USA
2. Eskisehir Technical University, Turkey
3. University of Antwerp, Belgium
4. Bilkent University, Turkey

9:40 AM

(ICACC-S12-027-2020) Understanding Pseudocapacitive Energy Storage in MXenes (Invited)

D. Jiang*[1]

1. University of California, Riverside, USA

10:10 AM

Break

10:30 AM

(ICACC-S12-028-2020) Termination Species and Chemical Bonding in MXenes Investigated by X-ray Spectroscopy and ab initio Theory (Invited)

M. Magnuson*[1]

1. Linkoping University, Sweden

11:00 AM

(ICACC-S12-029-2020) MXene surface chemistry (Invited)

P. Persson*[1]

1. Linkoping University, Department of Physics, Chemistry and Biology, Sweden

11:30 AM

Final Discussion

S13: Development and Applications of Advanced Ceramics and Composites for Nuclear Fission and Fusion Energy Systems

Coating Technologies for Reactor Components

Room: Coquina Salon H

Session Chair: Konstantina Lambrinou, SCK-CEN

8:30 AM

(ICACC-S13-030-2020) Multifunctional nanoceramic barrier for DEMO breeding blanket concepts

B. Paladino*[1]; M. Vanazzi[1]; D. Iadicicco[1]; P. Munoz[2]; T. Hernandez[2]; S. Bassini[3]; M. Utili[3]; F. Di Fonzo[1]

1. Italian Institute of Technology (IIT), Italy
2. CIEMAT, Spain
3. ENEA, Italy

8:50 AM

(ICACC-S13-031-2020) Ceramic oxide coatings for Water Reactors: From selection of materials to coating development

M. Cabrioli*[1]; E. Frankberg[1]; M. Vanazzi[1]; K. Van Loo[2]; J. Vleugels[2]; K. Lambrinou[3]

1. Istituto Italiano di Tecnologia (IIT), Italy
2. Katholieke Universiteit Leuven (KU Leuven), Belgium
3. SCK-CEN, NMS, Belgium

9:10 AM

(ICACC-S13-032-2020) Development of coatings on SiC for LWR fuel cladding

P. Mouche*[1]; T. Koyanagi[1]; Y. Katoh[1]

1. Oak Ridge National Laboratory, USA

9:30 AM

(ICACC-S13-033-2020) Micro-mechanical testing of Cr coated Silicon Carbide

D. Patel*[1]; T. Koyanagi[2]; P. Mouche[2]; Y. Katoh[2]

1. University of Michigan, Nuclear Engineering, USA
2. Oak Ridge National Laboratory, USA

9:50 AM

(ICACC-S13-034-2020) Particle Atomic Layer Deposition of Tungsten Nitride as a Hydrogen Environmental Barrier Coating

S. Bull*[1]; W. W. McNeary[3]; C. Adkins[2]; T. Champ[1]; C. Hill[1]; R. O'Brien[2]; C. Musgrave[1]; A. W. Weimer[1]

1. University of Colorado Boulder, Chemical Engineering, USA
2. Idaho National Lab, USA
3. National Renewable Energy Laboratory, USA

10:10 AM

Break

Chemical Compatibility and Corrosion

Room: Coquina Salon H

Session Chair: Konstantina Lambrinou, SCK-CEN

10:30 AM

(ICACC-S13-035-2020) Application of Empirical Transition-State Theory to Corrosion of SiC in Light Water Reactors

P. J. Doyle*[1]; S. Raiman[2]

1. University of Tennessee, Nuclear Engineering, USA
2. Oak Ridge National Lab, USA

10:50 AM

(ICACC-S13-036-2020) Hydrothermal Corrosion and Irradiation of Dual-Purpose Coatings on Silicon Carbide

S. S. Raiman*[2]; P. J. Doyle[1]; T. Koyanagi[2]; Y. Katoh[2]

1. University of Tennessee, Nuclear Engineering, USA
2. Oak Ridge National Laboratory, USA

11:10 AM

(ICACC-S13-037-2020) Evaluation of Coatings on SiC Ceramics for Hydrothermal Corrosion Protection

W. Kim*[1]; D. Kim[1]; H. Lee[1]; J. Park[1]

1. Korea Atomic Energy Research Institute, Republic of Korea

11:30 AM

(ICACC-S13-038-2020) High Temperature Oxidation Behaviors of SiC Under Air/Water Vapor Ingress Conditions

Y. Cho[1]; K. Lu*[1]

1. Virginia Tech, USA

11:50 AM

(ICACC-S13-039-2020) High Temperature Oxidation Behaviors of Nuclear Graphite Under Water Vapor Ingress

Y. Cho[1]; K. Lu*[1]

1. Virginia Tech, USA

12:10 PM

(ICACC-S13-040-2020) Differences in steam oxidation kinetics and scale volatility between monolithic SiC variants and SiC/SiC composite

K. Kane*[1]; S. Uwanyuze[2]; B. A. Pint[1]

1. ORNL, MSTD, USA
2. University of Connecticut, Materials Science and Engineering, USA

Material Technologies for Enhanced Accident Tolerance LWR Fuels and Core I

Room: Coquina Salon H

Session Chair: Weon-Ju Kim, Korea Atomic Energy Research Institute

1:50 PM

(ICACC-S13-041-2020) In situ characterization of the damage and fracture in SiC cladding and TRISO fuel particles at elevated temperatures

D. L. Liu*[1]; S. Knol[2]; M. Davies[3]; A. Vreeling[2]; P. Xu[4]; R. Lu[4]; E. J. Lahoda[4]; R. O. Ritchie[5]

1. University of Bristol, School of Physics, United Kingdom
2. NRG, Netherlands
3. USNC, USA
4. Westinghouse Electric Company, USA
5. Lawrence Berkeley National Laboratory, USA

2:10 PM

(ICACC-S13-042-2020) Characterization of heterogeneity distribution of SiC_f/SiC_m composite using X-ray computed tomography (XCT)

J. Nance*[1]; H. T. Nagaraju[2]; G. Subhash[2]; R. Haftka[2]; B. Sankar[2]

1. University of Florida, Material Science Engineering, USA
2. University of Florida, Mechanical and Aerospace Engineering, USA

2:30 PM

(ICACC-S13-043-2020) X-ray tomography characterization of neutron irradiated SiC–SiC composites

J. D. Arregui-Mena*[1]; T. Koyanagi[2]; E. Cakmak[2]; G. Singh[3]; C. Deck[4]; Y. Katoh[2]

1. Oak Ridge National Lab, Nuclear Materials Science & Technology Group, USA
2. Oak Ridge National Laboratory, USA
3. University of Tennessee, USA
4. General Atomics, USA

2:50 PM

(ICACC-S13-044-2020) Application of laser flash method in measurement of thermal diffusivity of SiC composite tubes

T. Koyanagi*[1]; H. Wang[1]; J. D. Arregui-Mena[1]; Y. Katoh[1]

1. Oak Ridge National Laboratory, USA

3:10 PM

Break

Material Technologies for Enhanced Accident Tolerance LWR Fuels and Core II

Room: Coquina Salon H

Session Chair: Takaaki Koyanagi, Oak Ridge National Laboratory

3:30 PM

(ICACC-S13-045-2020) Thermomechanical Analysis of SiC-SiC Cladding with U_3Si_2 Fuel System

G. Singh*[1]; R. Sweet[1]; A. Nelson[2]; J. Harp[2]; B. Wirth[1]; Y. Katoh[2]

1. University of Tennessee Knoxville, USA
2. Oak Ridge National Laboratory, USA

3:50 PM

(ICACC-S13-046-2020) Impact of Control Blade on the Deformation Behavior of SiC-SiC Channel Box in a BWR

G. Singh*[1]; J. Gorton[1]; D. Schappel[1]; B. S. Collins[2]; N. Brown[1]; B. Wirth[1]

1. University of Tennessee Knoxville, USA
2. Oak Ridge National Lab, USA

4:10 PM

(ICACC-S13-047-2020) Grid-to-Rod Fretting Wear of Accident-Tolerant Fuel Claddings in Pressurized Water

J. Qu*[1]; C. Kumara[1]; B. Reed[1]; R. Lu[2]

1. Oak Ridge National Laboratory, Materials Science and Technology Division, USA
2. Westinghouse Electric Company, USA

4:30 PM

(ICACC-S13-048-2020) Status of Accident Tolerant Fuel SiC Modeling at General Atomics

C. P. Ellis*[1]; R. Hon[1]

1. General Atomics, Nuclear Technologies and Materials, USA

4:50 PM

(ICACC-S13-049-2020) Accelerated Development of MAX Phases for Accident-Tolerant Fuels (ATFs)

K. Lambrinou*[1]

1. SCK-CEN, NMS, Belgium

S14: Crystalline Materials for Electrical, Optical and Medical Applications

Optical Material IV

Room: Halifax A/B

Session Chairs: Tohru Suzuki, National Institute for Materials Science; James Wollmershauser, U.S. Naval Research Laboratory

8:30 AM

(ICACC-S14-022-2020) Structural and Electrical Properties of Co^{2+} ions Substituted Fe_2O_3-Li_2O-B_2O_3-Bi_2O_3 Glass Ceramics

S. Kumar*[1]

1. Deenbandhu Chhotu Ram University of Sc. Tech. Murthal, Physics, India

8:50 AM

(ICACC-S14-023-2020) Processing and characterization of high-entropy sesquioxide optical ceramics (Invited)

G. Zhang[1]; Y. Wu*[1]

1. Alfred University, Kazuo Inamori School of Engineering, USA

9:20 AM

(ICACC-S14-024-2020) Control of transparency in polycrystalline ceramics by colloidal processing and SPS (Invited)

T. S. Suzuki*[1]

1. National Institute for Materials Science, Ceramics Processing Group, Japan

9:50 AM

Break

10:10 AM

(ICACC-S14-025-2020) Mesoscale Modeling of Light Transmission Modulation in Ceramics (Invited)

L. Kuna*[1]; J. Mangeri[2]; J. Wollmershauser[3]; E. Gorzkowski[3]; S. Nakhmanson[4]

1. University of Connecticut, Physics, USA
2. Institute of Physics, Czech Academy of Sciences, Dielectrics, USA
3. U.S. Naval Research Laboratory, USA
4. University of Connecticut, Materials Science and Engineering, USA

10:40 AM

(ICACC-S14-026-2020) Doping Effect on the Kinetics and Thermodynamics of Sintering of Yttrium Oxide

K. Nakajima*[1]; R. Castro[1]

1. University of California, Davis, Material Science & Engineering, USA

11:00 AM

(ICACC-S14-027-2020) Effect of Pressure During Hot-Pressing Transparent Alumina using Platelet-Morphology Powder

A. Schlup*[1]; W. Costakis[1]; R. Trice[2]; J. P. Youngblood[3]

1. Purdue University, Materials Engineering, USA
2. Purdue University, Department of Materials Engineering, USA
3. Purdue University, School of Materials Engineering, USA

11:20 AM

(ICACC-S14-028-2020) Microstructures of Laser-sintered Alumina Body (Invited)

T. Kimura*[1]; S. Suehiro[1]

1. Japan Fine Ceramics Center, Japan

S15: 4th International Symposium on Additive Manufacturing and 3-D Printing Technologies

Direct Writing and Ink Jet Printing I

Room: Coquina Salon B

Session Chair: Paolo Colombo, University of Padova

8:30 AM

(ICACC-S15-028-2020) Rheological controls of slurry for direct-writing of 3D green structures (Invited)

H. Abe*[1]

1. Osaka University, Japan

9:00 AM

(ICACC-S15-029-2020) Additive manufacturing using the direct ink writing technique of ceramic pastes typically used in traditional ceramics industry

E. Ordonez*[1]; H. Colorado[2]; J. M. Gallego[3]

1. Universidad de Antioquia, Mechanical Engineering, Colombia
2. Universidad de Antioquia, Colombia
3. SUMICOL, Colombia

9:20 AM

(ICACC-S15-030-2020) Direct Ink Writing of hierarchically porous geopolymeric structures for environmental applications

G. Franchin*[1]; R. Botti[1]; K. Goulart De Oliveira[1]; C. Bai[2]; M. L. D'Agostini[1]; G. Zangarini[1]; P. Colombo[1]

1. University of Padova, Industrial Engineering, Italy
2. Harbin Engineering University, College of Material Science and Chemical Engineering, China

9:40 AM

(ICACC-S15-031-2020) Direct Write Additive Manufacturing and Characterization of Battery Electrodes with Engineered Architecture and Porosity

A. Gorven*[1]; A. S. Almansour[2]; A. Salem[4]; M. Singh[3]

1. Boise State University, Mechanical Engineering, USA
2. NASA Glenn Research Center, Mechanical Engineering, USA
3. Ohio Aerospace Institute, USA
4. Washington University, Mechanical Engineering, USA

10:00 AM

Break

Direct Writing and Ink Jet Printing II

Room: Coquina Salon B

Session Chair: Hiroya Abe, Osaka University

10:20 AM

(ICACC-S15-032-2020) Evaluating the Effect of Rheology and Printing Parameters on Direct Writing

S. Kondapalli*[1]; M. K. Alazzawi[2]; B. Beyoglu[1]; R. A. Haber[1]

1. Rutgers, The State University of New Jersey, Materials Science and Engineering, USA
2. Rutgers University, Materials Science and Engineering, USA

10:40 AM

(ICACC-S15-033-2020) Polymerizable ceramic ink system for thin inkjet-printed dielectric layers

T. Reinheimer*[1]; J. R. Binder[1]

1. Karlsruhe Institute of Technology, Institute for Applied Materials (IAM), Germany

11:00 AM

(ICACC-S15-034-2020) Preceramic polymer based additive manufacturing of ceramic composite structures with tailored microstructures

J. W. Kemp*[1]; L. Rueschhoff[2]; B. G. Compton[1]

1. University of Tennessee, Mechanical, Aerospace, and Biomedical Engineering, USA
2. Air Force Research Lab, Materials and Manufacturing Directorate, USA

11:20 AM

(ICACC-S15-035-2020) 3D printing of sol-gel and melt-derived glass-ceramics for bone regeneration

E. Fiume*[1]; F. Baino[1]; J. Massera[3]; D. Massai[2]; C. Bignardi[2]; E. Verné[1]

1. Politecnico di Torino, Department of Applied Science and Technology, Italy
2. Politecnico di Torino, Department of Mechanical and Aerospace Engineering, Italy
3. Tampere University of Technology, Biomeditech Institute and Faculty of Biomedical Sciences and Engineering, Finland

Direct Writing and Ink Jet Printing III

Room: Coquina Salon B

Session Chair: Michael Halbig, NASA Glenn Research Center

1:30 PM

(ICACC-S15-036-2020) Sol-Gel Derived Inks for 3d Printed Glass Optics (Invited)

R. J. Dylla-Spears*[1]; K. Sasan[1]; T. Fears[1]; N. Dudukovic[1]; M. Johnson[1]; D. Nguyen[1]; T. Yee[1]; O. Herrera[1]; C. Mah[1]; A. Lange[1]

1. Lawrence Livermore National Laboratory, Optics and Materials Science & Technology, USA

2:00 PM

(ICACC-S15-037-2020) Quantifying the Link between Rheology and Printability for Ceramic On-Demand Extrusion

A. J. Martin*[1]; J. Watts[1]; G. Hilmas[1]; M. C. Leu[2]; T. Huang[3]

1. Missouri University of Science & Technology, Materials Science and Engineering, USA
2. Missouri University of Science & Technology, Mechanical & Aerospace Engineering, USA
3. Kansas City National Security Campus, USA

2:20 PM

(ICACC-S15-039-2020) Robocasting of reaction bonded silicon carbide structures

L. Wahl*[1]; N. Travitzky[1]

1. Friedrich-Alexander-University Erlangen-Nürnberg, Material Science and Engineering, Germany

2:40 PM

Break

Fused Deposition Modeling

Room: Coquina Salon B

Session Chair: Rebecca Dylla-Spears, Lawrence Livermore National Laboratory

3:20 PM

(ICACC-S15-040-2020) Ceramic matrix composites fabricated by Fused Filament Fabrication (FFF)

H. Klemm*[1]; J. Abel[1]; A. Michaelis[2]; M. Singh[3]

1. FhG IKTS Dresden, Germany
2. Fraunhofer IKTS, Germany
3. Ohio Aerospace Institute, USA

3:40 PM

(ICACC-S15-041-2020) Multi-Material Additive Manufacturing of High Temperature Polymers for Electric Aircraft Applications

H. Leonard*[1]; A. Salem[2]; M. C. Halbig[3]; M. Singh[4]

1. Rochester Institute of Technology, Mechanical Engineering, USA
2. University of Washington, USA
3. NASA Glenn Research Center, USA
4. Ohio Aerospace Institute, USA

4:00 PM

(ICACC-S15-042-2020) Additive Manufacturing of Multi-Material Structures for Enhanced Multifunctional Performance

A. Salem*[1]; H. Leonard[2]; M. C. Halbig[3]; M. Singh[4]

1. Washington University in St. Louis, USA
2. Rochester Institute of Technology, Mechanical Engineering, USA
3. NASA Glenn Research Center, USA
4. Ohio Aerospace Institute, USA

4:20 PM

(ICACC-S15-043-2020) Tribological Behavior of 3D Printed Multilayered Composites

S. Abu Aldam*[1]; M. C. Halbig[2]; M. Singh[3]; S. Gupta[1]

1. University of North Dakota, Mechanical Engineering, USA
2. NASA Glenn Research Center, USA
3. Ohio Aerospace Institute, USA

S16: Geopolymers, Inorganic Polymers and Sustainable Materials

Synthesis and Processing

Room: Tomoka C

Session Chair: Waltraud Kriven, University of Illinois at Urbana-Champaign

1:30 PM

(ICACC-S16-001-2020) Synthesis of High-Surface Area Organo-Modified Aluminosilicates from Geopolymerization (Invited)

D. Seo*[1]; W. Zhang[1]; S. Chen[1]

1. Arizona State University, School of Molecular Sciences, USA

2:00 PM

(ICACC-S16-002-2020) Thermal behavior of several clay mixtures: Geopolymer synthesis (Invited)

S. Rossignol*[1]

1. IRCER, France

2:30 PM

(ICACC-S16-003-2020) Ferrosilicates formation during the geopolymerization of Natural Fe-rich aluminosilicate precursors (Invited)

E. Kamseu*[1]; R. C. Kaze[4]; J. N. Nouping Fekoua[1]; U. C. Melo[4]; S. Rossignol[2]; C. Leonelli[3]

1. MIPROMALO, Research, Cameroon
2. Laboratoire SPCTS, France
3. University of Modena and Reggio Emilia, Department of Engineering "Enzo Ferrari", Italy
4. University of Yaoundé I, Laboratory of Applied Inorganic Chemistry, Cameroon

3:00 PM

Break

Mechanical Properties

Room: Tomoka C

Session Chair: Patrick Keane, University of South Australia

3:20 PM

(ICACC-S16-004-2020) Effect of porosity on the mechanical response of geopolymer composites (Invited)

A. Akono*[1]; W. M. Kriven[2]; S. Koric[2]

1. Northwestern University, Civil and Environmental Engineering, USA
2. University of Illinois at Urbana-Champaign, USA

3:50 PM

(ICACC-S16-005-2020) Fracture Behavior of Metakaolin-based Geopolymers Reinforced with Carbon Nanofibers

A. Akono*[1]

1. Northwestern University, Civil and Environmental Engineering, USA

4:10 PM

(ICACC-S16-006-2020) Basalt Minirod-Reinforced Geopolymer Composites

V. Chadha*[1]; W. M. Kriven[2]

1. University of Illinois at Urbana-Champaign, Materials Sciences, USA
2. University of Illinois at Urbana-Champaign, USA

4:30 PM

(ICACC-S16-007-2020) High strength geopolymers using feldspathic solid solutions: Mechanical properties and Microstructure

A. Nana[3]; R. C. Kaze[4]; H. Tchakoute Kouamo[4]; M. C. Bignozzi[5]; E. Kamseu*[1]; C. Leonelli[2]

1. MIPROMALO, Research, Cameroon
2. University of Modena and Reggio Emilia, Department of Engineering "Enzo Ferrari", Italy
3. University of Dschang, Research Unit of Noxious Chemistry and Environmental Engineering, Cameroon
4. University of Yaoundé I, Laboratory of Applied Inorganic Chemistry, Cameroon
5. University of Bologna, DICAM, Italy

4:50 PM

(ICACC-S16-008-2020) Mechanical Properties of Flax and Hemp Felt Geopolymer Composites

P. F. Keane*[1]; W. M. Kriven[1]

1. University of Illinois at Urbana-Champaign, USA

S17: Advanced Ceramic Materials and Processing for Photonics and Energy

Multifunctional Materials II

Room: Tomoka C

Session Chairs: Elisa Moretti, Ca' Foscari University of Venice; Clara Santato, Ecole Polytechnque de Montreal

8:30 AM

(ICACC-S17-024-2020) Towards the creation of catalytic structures using liquid metal processes (Invited)

K. Kalantar-zadeh*[1]

1. UNSW, School of Chemical Engineering, Australia

9:00 AM

(ICACC-S17-025-2020) $Zn_{0.35}Co_{0.65}O$: A Stable and Highly Active Oxygen Evolution Catalyst Formed by Zinc Leaching and Tetrahedral Coordinated Cobalt in Wurtzite Structure (Invited)

N. Pinna*[1]

1. Humboldt-Universität zu Berlin, Department of Chemistry, Germany

9:30 AM

(ICACC-S17-026-2020) Multi-Functional Lanthanide-Doped Nanoparticles and their Applications (Invited)

F. Vetrone*[1]

1. Institut National de la Recherche Scientifique, Université du Québec, Centre Énergie, Matériaux et Télécommunications, Canada

10:00 AM

Break

Multifunctional Materials III

Room: Tomoka C

Session Chair: Nicola Pinna, Humboldt-Universität zu Berlin

10:20 AM

(ICACC-S17-027-2020) Towards ion-gated phototransistors as photocatalytic sensors (Invited)

C. Santato*[1]

1. Ecole Polytechnque de Montreal, Canada

10:50 AM

(ICACC-S17-028-2020) Flower-like Ce-Ti oxide systems for the CO preferential oxidation in H_2-rich stream under simulated solar light irradiation (Invited)

E. Moretti*[1]; A. Infantes-Molina[2]; E. Rodriguez-Castellon[2]; A. Talon[1]; A. Vomiero[3]

1. Ca' Foscari University of Venice, Department of Molecular Sciences and Nanosystems, Italy
2. University of Malaga, Department of Inorganic Chemistry, Crystallography and Mineralogy, Spain
3. Lulea University of Technology, Engineering Sciences & Mathematics, Sweden

11:20 AM

(ICACC-S17-029-2020) Silk-titanate nanosheets composites for biophotonic and plasmonic devices (Invited)

E. Colusso[1]; G. Perotto[3]; F. Omenetto[2]; A. Martucci*[1]

1. University of Padova, Industrial Engineering, Italy
2. Tufts University, USA
3. IIT Genova, Italy

11:50 AM

(ICACC-S17-030-2020) Complex nano-structured sponges for sensing- and energy-applications (Invited)

G. Westin*[1]

1. Uppsala University, Sweden

Poster Session B

Room: Ocean Center Arena

5:00 PM

(ICACC-S1-P067-2020) Development of Artificial Pedra Using Granite and Epoxy

E. A. Carvalho Costa*[1]; M. Menezes[1]; S. N. Monteiro[3]; C. F. Vieira[2]

1. Universidade Estadual do Norte Fluminense Darcy Ribeiro, Centro de Ciência e Tecnologia, Brazil
2. State University of the North Fluminense, Advanced Materials Laboratory, Brazil
3. Instituto Militar de Engenharia, Centro de Ciência e Tecnologia, Brazil

(ICACC-S1-P068-2020) Electrical properties of 8YSZ – ScCeSZ composite

T. G. Fujimoto*[1]; E. N. Muccillo[1]

1. IPEN, Brazil

(ICACC-S1-P069-2020) ASTM International Standards for Properties & Performance of Advanced Ceramics – High-Quality, Technical Rigor for Academe, Government and Industry

M. G. Jenkins*[1]; J. Salem[2]; S. T. Gonczy[3]; G. D. Quinn[4]; J. Helfinstine[5]

1. Bothell Engineering and Science Technologies, USA
2. NASA Glenn Research Center, Materials and Structures, USA
3. Gateway Materials Technology, USA
4. American Dental Association Foundation, Paffenbarger Research Center, USA
5. Corning Incorporated, Consultant, USA

(ICACC-S1-P070-2020) Mechanical Properties of Spark Plasma Sintered B_4C

R. Kuliiev*[1]; N. Orlovskaya[1]; H. Hyer[2]; Y. Sohn[2]

1. University of Central Florida, Mechanical and Aerospace Engineering, USA
2. University of Central Florida, Materials Science and Engineering, USA

(ICACC-S1-P071-2020) Metal matrix composite for electronic packaging

S. Kumar*[1]

1. IIT BHU, Ceramic Engineering, India

(ICACC-S1-P072-2020) Electric potential change of glasses by polishing with thermally oxide silicon

R. Fukuzaki*[1]; S. Suda[1]

1. Shizuoka University, Engineering, Japan

(ICACC-S1-P073-2020) Characterization of Properties of Ceramic Mass for Production of Pressed and Burned Blocks for Structural Masonry

N. A. Cerqueira*[1]; A. Azevedo[2]; G. d. Xavier[3]; C. F. Vieira[4]

1. Centro Universitário Redentor, Engenharia, Brazil
2. Federal Fluminense University, Department of Agricultural Engineering and Environment, Brazil
3. State University of North Fluminense, Civil Engineering, Brazil
4. State University of the North Fluminense, Advanced Materials Laboratory, Brazil

(ICACC-S1-P074-2020) Experimental Analysis and Numerical Simulation of Mechanical Behavior In Breaking Pressed and Burned Blocks of Red Ceramic

N. A. Cerqueira*[1]; A. Azevedo[2]; C. F. Vieira[3]

1. Centro Universitário Redentor, Engenharia, Brazil
2. Federal Fluminense University, Department of Agricultural Engineering and Environment, Brazil
3. State University of the North Fluminense, Advanced Materials Laboratory, Brazil

(ICACC-S1-P075-2020) Improve Sensitivity of Electrical Resistance In High Temperature CMC Using Carbon Monofilament SiC Fibers

J. ElRassi*[1]; R. Panakarajupally[1]; M. Kannan[1]; Y. P. Singh[1]; G. N. Morscher[1]

1. University of Akron, Mechanical Engineering Dept., USA

(ICACC-S1-P076-2020) Corrosion Resistance of 2D Nanomaterial-based Coatings on Stainless Steel Substrates

S. Mujib*[1]; S. Mukherjee[1]; D. Soares[1]; Z. Ren[1]; G. Singh[1]

1. Kansas State University, Mechanical and Nuclear Engineering, USA

(ICACC-S1-P077-2020) Effect of Alkali-Silane Treatment on the Water Absorption of Kenaf Fibre Reinforced Polypropylene Composites

R. Paskaramoorthy*[1]; O. Asumani[1]

1. University of the Witwatersrand, South Africa

(ICACC-S1-P078-2020) Nondestructive ultrasonic elastic modulus measurement of high-temperature ceramic electrical conductor and insulators

M. Fein[1]; P. Hsieh*[1]; R. Woodside[1]

1. National Energy Technology Laboratory, USA

(ICACC-S1-P138-2020) Mechanical Properties Characterization of C/C Composite through Experiment and Simulation

G. Singh*[1]; J. Li[1]; H. Li[1]; A. Fok[1]

1. University of Minnesota, USA

(ICACC-S3-P079-2020) Characteristics of $Sr_{0.92}Y_{0.08}Ti_{1-x}V_xO_{3-\delta}$ anode using CH_4 fuel in solid oxide fuel cells

J. Yun*[1]; J. Kim[1]; G. Jang[1]

1. Chonnam National University, Chemical Engineering, Republic of Korea

(ICACC-S3-P080-2020) Investigating Sr Vapor Phase Evolution from LSM/YSZ and LSCF Cathodes During Sintering

J. S. Hardy[1]; C. A. Coyle[1]; N. L. Canfield[1]; S. M. Mahserejian[2]; J. W. Stevenson[1]; B. Kirby*[2]

1. Pacific Northwest National Laboratory, Materials Science, USA
2. Pacific Northwest National Laboratory, USA

(ICACC-S3-P081-2020) Microstructure of Anode-Supported SOFCs Fabricated by Low-Energy Microwave Sintering

S. Ito*[1]; S. Suda[1]; T. Fujitate[2]

1. Shizuoka University, Engineering, Japan
2. NISSIN Inc., Research & Development Group, Japan

(ICACC-S3-P082-2020) Numerical Investigation of the Optimum Design of Solid Oxide Fuel Cell Electrodes

T. Yang*[1]; H. Abernathy[2]; S. Lee[2]; J. Liu[2]; B. Na[1]; T. Kalapos[2]; G. Hackett[1]

1. National Energy Technology Laboratory, USA
2. Leidos Research Support Team, USA

(ICACC-S3-P083-2020) Microstructure and electrical properties of 8YSZ-LSGM composite electrolytes

T. G. Fujimoto*[1]; E. N. Muccillo[1]

1. IPEN, Brazil

(ICACC-S3-P084-2020) Influence of dysprosium co-doping on enhancement of electrical conductivity of samarium-doped ceria electrolyte

S. L. Reis*[1]; E. N. Muccillo[1]

1. Energy and Nuclear Research Institute, Brazil

(ICACC-S3-P085-2020) Modification of $(Mn,Cu)_3O_4$ spinels by iron substitution for potential material for interconnect protective coating

J. Ignaczak[1]; P. Z. Jasinski[1]; S. Molin*[1]

1. Gdansk University of Technology, Laboratory of Functional Materials, Faculty of Electronics, Telecommunications and Informatics, Poland

(ICACC-S3-P086-2020) Reliability of the Electrical Conductivity Relaxation (ECR) technique: An Experimental Strategy to Enhance Accuracy of the Kinetic Parameters

B. Na*[1]; T. Yang[1]; S. Lee[1]; J. Liu[1]; H. Abernathy[1]; T. Kalapos[1]; G. Hackett[1]

1. National Energy Technology Laboratory, USA

(ICACC-S3-P133-2020) Innovative approach of Anode Functional Layer (AFL) design for Solid Oxide Fuel Cell system

D. Kang*[1]; J. Noh[1]; J. Myung[1]

1. Incheon national university, Dept. of Materials Science and Engineering, Republic of Korea

(ICACC-S3-P134-2020) In-situ nano structured electrode design for symmetric Solid Oxide Fuel Cell application

D. Kyung[1]; E. Lee*[1]; J. Myung[1]

1. Incheon national university, Dept. of Materials Science and Engineering, Republic of Korea

(ICACC-S6-P087-2020) Crystallization of the $Na_2Fe_xNi_{1-x}P_2O_7$ glass and ability of cathode for sodium ion batteries

Y. Ji*[1]; T. Honma[1]; T. Komatsu[2]

1. Nagaoka Univeristy of Technology, Department of Materials Science and Technology, Japan
2. Nagaoka University of Technology, Japan

(ICACC-S6-P088-2020) Two dimensional nanomaterials functionalized by polymer-derived ceramic as stable battery electrodes

D. Soares*[1]; G. Singh[1]

1. Kansas State University, Mechanical and Nuclear Engineering Dept., USA

(ICACC-S6-P089-2020) Rechargeable Li-O_2 Battery Architectures Based on Multilayered Li^+-Selective Solid Membranes

Y. Choi[1]; K. Jung[2]; H. Kim[1]; J. Moon[2]; J. Lee*[1]

1. Chosun University, Materials Science and Engineering, Republic of Korea
2. Research Institute of Industrial Science and Technology, Materials Research Division, Republic of Korea

(ICACC-S6-P090-2020) Biomass derived carbons and PDC functionalized carbon composite for electrochemical energy storage

S. Mujib*[1]; B. Vessalli[2]; W. Bizzo[3]; T. Mazon[4]; G. Singh[5]

1. Kansas State University, Mechanical & Nuclear Engineering, USA
2. Centro de Tecnologia da Informação Renato Archer (CTI), Brazil
3. University of Campinas – UNICAMP, Mechanical Engineering, Brazil
4. CTI, Brazil
5. Kansas State University, Mechanical and Nuclear Engineering Dept., USA

(ICACC-S6-P091-2020) Electrospun SiOC Ceramic Fiber Mats as Freestanding Electrodes for Electrochemical Energy Storage Applications

S. Mujib*[1]; R. Cuccato[2]; S. Mukherjee[1]; G. Franchin[3]; P. Colombo[3]; G. Singh[1]

1. Kansas State University, Mechanical & Nuclear Engineering, USA
2. University of Padua, Italy
3. University of Padova, Industrial Engineering, Italy

(ICACC-S6-P092-2020) Cerium Oxide/Graphene Aerogels for Electrochemical Energy Storage Applications

A. Jeyaranjan*[1]; C. J. Neal[1]; T. Sakthivel[1]; S. Seal[1]

1. University of Central Florida, Materials Science & Engineering, USA

(ICACC-S9-P093-2020) Titania microspheres obtained by internal gelation method and its photocatalytic activity

G. L. Oliveira*[1]; G. P. Silva[1]; M. Andreoli[1]; L. A. Gênova[1]

1. Energy and Nuclear Research Institute, Materials science and technology center, Brazil

(ICACC-S9-P094-2020) Robust porous ceramics via freeze casting of viscous solutions

N. Arai[1]; C. Keck*[1]; K. Faber[1]

1. California Institute of Technology, Materials science, USA

(ICACC-S9-P095-2020) Fabrication of Ceramic Diffuser for Subsurface Irrigation Application

R. M. Ramos*[1]

1. Mindanao State University Iligan Institute of Technology, Ceramics Engineering and Material Science, Philippines

(ICACC-S9-P096-2020) A new approach to develop high porosity ceramic foam

V. Pandey*[1]; K. Mohanta[1]; A. Kumar[1]; M. Yadav[1]; A. Gupta[1]

1. Indian Institute of Technology(BHU), Ceramic Engineering, India

(ICACC-S9-P097-2020) Theoretical and Experimental Investigations of Particle Engulfment of High-aspect Ratio Particles in Freeze Casting

C. T. Kuo*[1]; K. Faber[2]

1. California Institute of Technology, Material Science, USA
2. California Institute of Technology, USA

(ICACC-S9-P098-2020) Gel-casting of porous alumina supports with platinum nanoparticles as catalyst

S. Hooshmand[1]; J. Nordin[2]; C. Salameh[3]; F. Akhtar*[1]

1. Lulea University of Technology, Engineering Sciences and Mathematics, Sweden
2. Akzo Nobel Pulp and Performance Chemicals AB, Sweden
3. Ecole Nationale Supérieure de Chimie de Montpellier, Institut Européen des Membranes, France

(ICACC-S10-P099-2020) Effects of Oxide Layer at Al/Fe Sliding Interface on Tribological Behavior: Molecular Dynamics Simulation

Y. Sato*[2]; Y. Wang[1]; N. Miyazaki[2]; Y. Ootani[2]; N. Ozawa[2]; M. Kubo[2]

1. Department of Mechanical Systems Engineering, Tohoku University, Japan
2. Institute for Materials Research, Tohoku University, Japan

(ICACC-S10-P100-2020) Formation, Wear, and Regeneration Mechanism of Tribofilm of Silicon Carbide in Water Lubrication: Molecular Dynamics Simulation

M. Kawaura*[1]; S. Yamashita[1]; Y. Wang[2]; N. Miyazaki[1]; Y. Ootani[1]; N. Ozawa[1]; M. Kubo[1]

1. Institute for Materials Research, Tohoku University, Engineering, Japan
2. Department of Mechanical Systems Engineering, Tohoku University, Japan

(ICACC-S10-P101-2020) Drying and analysis of mechanical and thermal behaviour of kaolin as ceramic material

D. Kumar*[1]

1. Indian Institute of Technology(BHU), CERAMIC ENGINEERING, India

(ICACC-S10-P102-2020) Molecular Dynamics Simulation of Pt Nano-Particle Sintering on Porous Carbon for Polymer Electrolyte Fuel Cell

K. Onodera*[2]; Y. Wang[1]; N. Miyazaki[2]; Y. Ootani[2]; N. Ozawa[2]; M. Kubo[2]

1. Department of Mechanical Systems Engineering, Tohoku University, Japan
2. Institute for Materials Research, Tohoku University, Japan

(ICACC-S10-P103-2020) DFT Study of the Effect of Rare Earth Dopants on the Cohesive Energy of Amorphous Si - B_6O Interface

J. S. Dunn*[1]; K. D. Behler[1]; J. LaSalvia[1]; C. Marvel[2]; M. Harmer[2]

1. U.S. Army Research Laboratory, USA
2. Lehigh University, Materials Science and Engineering, USA

(ICACC-S10-P104-2020) DFT Study of the Impact of Impurities in SiC Bulk and Grain Boundaries

C. Atkinson[2]; M. Guziewski[1]; P. Alpay[2]; S. P. Coleman*[1]

1. US Army Research Laboratory, USA
2. University of Connecticut, Materials Science and Engineering, USA

(ICACC-S16-P105-2020) Modeling heat of reaction and compressive strength of geopolymers

S. Akhbarifar*[1]; W. Gong[1]; W. Lutze[1]; I. Pegg[1]

1. The Catholic University of America, Physics, USA

(ICACC-S16-P106-2020) Development of roof tiles based on alkali activated-materials

A. Azevedo*[1]; M. Marvila[2]; C. Vieira[2]; B. C. Mendes[3]; L. Pedroti[3]; G. Girondi[2]

1. Federal Fluminense University, Department of Agricultural Engineering and Environment, Brazil
2. UENF, LAMAV, Brazil
3. UFV, DEC, Brazil

(ICACC-S16-P107-2020) Investigating Chemical, Physical and Mechanical Properties of Eco-cement Produced Using Mineral Sources from Pulp and Paper Mills and Granite Waste

A. L. Oliveira Júnior[1]; B. C. Mendes*[1]; L. G. Pedroti[1]; G. J. Brigolini[2]; J. F. Carvalho[1]

1. Federal University of Viçosa, Civil Engineering, Brazil
2. Federal University Of Ouro Preto, Civil Engineering, Brazil

(ICACC-S16-P108-2020) Alternative geomaterials using laterites: Reactivity and properties of use

R. C. Kaze[3]; P. Sanz Camacho[4]; G. Lecomte-Nana*[1]; M. Duttine[4]; E. Kamseu[2]; A. Wattiaux[4]; U. C. Melo[3]

1. IRCER, University of Limoges, ENSIL-ENSCI, France
2. MIPROMALO, Research, Cameroon
3. University of Yaoundé I, Laboratory of Applied Inorganic Chemistry, Faculty of Science, Cameroon
4. Université de Bordeaux, Bordeaux INP, CNRS, ICMCB UMR 5026, France

(ICACC-S16-P136-2020) Effect of the use of a fruit waste (Musa paradisiaca) onto the microstructure and the densification of a kaolino-illitic clay from Central African Republic (RCA)

R. Serewane Deramne*[1]; G. Lecomte-Nana[1]; C. Peyratout[1]; G. Tchangbedji[2]

1. Universy of Limoges, IRCER, ENSIL-ENSCI, France
2. University of Lomé, GTVD, FDS, Togo

(ICACC-S16-P137-2020) Production of Ceramic Wall Tiles Utilizing Siliceous Iron-rich Material from Northern Mindanao, Philippines

M. Puti-an[2]; E. d. Magdaluyo*[1]; E. Salamangkit-Mirasol[4]; M. Zabala[5]; M. Fuji[3]; R. V. Virtudazo[2]

1. University of the Philippines, Philippines
2. Mindanao State University-Iligan Institute of Technology, Philippines
3. Nagoya Institute of Technology, Japan
4. Department of Materials Science and Engineering (Ceramic Engineering Program), College of Engineering, Mariano Marcos State University, Philippines
5. Research and Development Department, Yamada Technology Corporation, Philippines

(ICACC-S18-P109-2020) Structural modification on EB-PVD thermal barrier coatings subjected to advanced cryogenic gradients, oxidation and thermal shock

B. S. Vasile*[1]; A. V. Surdu[1]; R. Trusca[1]; A. C. Birca[1]; A. Sobetkii[2]; M. Corban[2]; M. Botan[3]; R. Piticescu[2]

1. University Politehnica from Bucharest, Romania
2. National R&D Institute for Nonferrous and Rare Metals, Romania
3. National Institute for Aerospace Research "Elie Carafoli", Romania

(ICACC-S18-P110-2020) Fabrication of Reaction Bonded TiB_2/Si Composites and Property Study

J. Wang*[1]; A. McDannald[1]; M. Aghajanian[1]

1. M Cubed Technologies, USA

(ICACC-S18-P111-2020) Atomic Layer Deposition of Ultra-High Temperature Ceramics as Hydrogen Environmental Barrier Coatings for Nuclear Thermal Propulsion

S. Bull*[1]; T. Champ[1]; W. W. McNeary[3]; C. Adkins[2]; R. O'Brien[2]; C. Musgrave[1]; A. W. Weimer[1]

1. University of Colorado, Boulder, Chemical and Biological Engineering, USA
2. Idaho National Lab, USA
3. National Renewable Laboratory, USA

(ICACC-S18-P112-2020) Preparation and Structure of SiOC Fibers Derived from Cyclic Silazane/PAA Hybrid Precursor

Z. Ren*[1]

1. Kansas State University, Mechanical and Nuclear Engineering, USA

(ICACC-S18-P113-2020) Preparation and characterization of electrospun SiOC ceramic fiber mat from cyclic siloxane and organic spinning agent

Z. Ren*[1]

1. Kansas State University, Mechanical and Nuclear Engineering, USA

(ICACC-S18-P114-2020) Flash spark plasma sintering of pure TiB_2

S. Failla*[1]; S. Fu[2]; S. Grasso[2]; D. Sciti[1]

1. National Research Council of Italy- Institute of Science and Technology for Ceramics, Department of Chemical Science and Materials Technologies (DSCTM), Italy
2. Southwest Jiaotong University, Key Laboratory of Advanced Technologies of Materials, Ministry of Education, School of Materials Science and Engineering, China

(ICACC-S18-P115-2020) High Temperature Testing of the Potassium Vapor Resistance of Ceramic Components in Magnetohydrodynamic Generator Systems

M. S. Bowen*[1]; R. Woodside[2]; D. P. Cann[1]; P. Hsieh[2]

1. Oregon State University, Mechanical, Industrial and Manufacturing Engineering, USA
2. National Energy Technology Laboratory, USA

(ICACC-S18-P116-2020) Intrinsic Mechanical Properties of Zirconium Carbide Ceramics

N. Korklan*[1]; G. Hilmas[1]; W. Fahrenholtz[1]

1. Missouri University of Science & Technology, Dept. of Materials Science and Engineering, USA

(ICACC-S18-P118-2020) Effect of Preferentially Oriented GNPs on Spark Plasma Sintered Advanced Ceramics

J. Rennotte*[1]; G. Bister[1]; J. Erauw[1]; V. Dupont[1]

1. Belgian Ceramic Resaerch Centre, R&D, Belgium

(ICACC-FS4-P119-2020) Luminescent film for asphalt roads using polystyrene waste combined with strontium aluminate

E. Gutierrez*[3]; E. Ordonez[2]; H. Colorado[1]

1. Universidad de Antioquia, Colombia
2. Universidad de Antioquia, Mechanical Engineering, Colombia
3. Universidad Antonio Nariño, Mechanical Engineering, Colombia

(ICACC-FS4-P120-2020) Incorporation of Civil Construction Waste (CCW) for the production of structural blocks of red ceramics

A. Azevedo*[1]; M. Marvila[2]; C. Vieira[2]; B. C. Mendes[3]; L. Pedroti[3]; G. Girondi[2]; D. Cecchin[1]

1. Federal Fluminense University, Department of Agricultural Engineering and Environment, Brazil
2. UENF, LAMAV, Brazil
3. UFV, DEC, Brazil

(ICACC-FS4-P121-2020) Colloidal Technique for Applying CFRPP to Multi-Material Structure

Y. Ota*[1]; T. Yamamoto[1]

1. Nagoya University, Department of Materials and Design Innovation Engineering, Japan

(ICACC-FS4-P122-2020) Physical, mechanical and microstructural characterization of clay bricks containing bauxite tailings

B. C. Mendes*[1]; C. Costa[1]; B. Louzada[1]; P. Drumond[1]; L. Pedroti[1]; C. F. Vieira[2]; A. Azevedo[3]

1. Federal University of Viçosa, Civil Engineering, Brazil
2. State University of the North Fluminense, Advanced Materials Laboratory, Brazil
3. Federal Fluminense University, Department of Agricultural Engineering and Environment, Brazil

(ICACC-FS4-P123-2020) Recycling of Sewage Sludge into Clay Bricks

C. F. Vieira*[1]; I. Oliveira Rangel Areias[1]; G. G. Delaqua[1]; S. Neves Monteiro[2]; H. Colorado[3]

1. State University of the North Fluminense, Advanced Materials Laboratory, Brazil
2. Military Institute of Engineering, Materials Science Department, Brazil
3. Universidad de Antioquia, Colombia

(ICACC-FS4-P124-2020) Removal of phosphate and fluoride ions in waste water by using waste gypsum board and usage of collected fluorapatite (FAp) for adsorbent of ammonia gas

F. Ninomiya*[1]; N. Sasakawa[1]; A. Iwaori[1]; S. Takamatsu[1]; T. Toshima[1]

1. National Institude of Technology, Toyama College, Japan

(ICACC-FS4-P125-2020) Effect of fluorapatite (FAp) on reactivity of dicalcium phosphate dihydrate (DCPD) with fluoride ions in the environments

N. Okajima*[1]; M. Tafu[1]; Y. Hata[1]; S. Takamatsu[1]; T. Toshima[1]; M. Takada[2]; Y. Hagino[2]

1. National Institute of Technology, Toyama College, Japan
2. Fudo Tetra Corporation, Japan

(ICACC-FS4-P126-2020) A study of local diatomaceous earth (Kapatagan, Northern Mindanao Philippines) as an additive for the Commercial Ceramic Wall

J. . Catama-an[1]; E. d. Magdaluyo[2]; E. Salamangkit-Mirasol[4]; M. Zabala[3]; H. Razavi-Khosroshahi[5]; M. Fuji[5]; R. V. Virtudazo*[1]

1. Mindanao State University-Iligan Institute of Technology, Department of Materials & Resources Engineering and Technology (Ceramic Engineering Program), Philippines
2. University of the Philippines, Philippines
3. Yamada Technology Corporation, Research and Development Department, Philippines
4. Mariano Marcos State University, Department of Materials Science and Engineering (Ceramic Engineering Program), Philippines
5. Nagoya Institute of Technology, Japan

(ICACC-FS4-P127-2020) Evaluation of the incorporation of eucalyptus firewood ash on clayey ceramic

T. E. Lima*[1]; C. F. Vieira[1]

1. State University of the North Fluminense, Advanced Materials Laboratory, Brazil

(ICACC-FS4-P128-2020) Effect of molding condition on Thermoplastic Polyimide Impregnation behavior to Plain Woven Carbon Fabrics

S. Kobayashi*[1]; S. Kazano[1]; T. Osada[1]

1. Tokyo Metropolitan University, Mechanical Engineering, Japan

(ICACC-FS4-P129-2020) Reuse of iron ore tailing, from the disaster involving the Fundão's dam rupture, in the production of clay bricks

B. C. Mendes*[1]; L. G. Pedroti[1]; C. Vieira[2]; M. Ferreira Fontes[3]; A. Azevedo[4]; A. L. Oliveira Júnior[1]

1. Federal University of Viçosa, Civil Engineering, Brazil
2. State University of Northest Fluminense, LAMAV, Brazil
3. Federal University of Viçosa, Soil Department, Brazil
4. Federal Fluminense University, Department of Agricultural Engineering and Environment, Brazil

Thursday, January 30, 2020

4th Pacific Rim Engineering Ceramics Summit

Current trends: Energy Issues

Room: Coquina Salon E

Session Chairs: Junichi Tatami, Yokohama National University; Tohru Suzuki, National Institute for Materials Science

8:30 AM

(ICACC-PACRIM-027-2020) Nano-structural Engineering and Characterization of Electrode Materials for High-Areal-Capacity and Stable Lithium-Sulfur Batteries (Invited)

D. Kim*[1]

1. Korea Advanced Institute of Science and Engineering (KAIST), Dept. of Mater Sci & Eng, Republic of Korea

9:00 AM

(ICACC-PACRIM-028-2020) A new approach to observe the motion of oxygen ions in solid oxide electrolytes (Invited)

W. Pan*[1]

1. Tsinghua University, State key lab of new ceramics and fine processing, China

9:30 AM

(ICACC-PACRIM-029-2020) Enhancement of thermoelectric performance by in-situ generation of defect structures (Invited)

K. Lee*[1], S. Kim[1]

1. Yonsei University, South Korea
2. University of Seoul, South Korea

10:00 AM

Break

10:20 AM

(ICACC-PACRIM-030-2020) Role of ceramic research in emerging energy technologies (Invited)

C. Balazsi*[1]; K. Balazsi[2]

1. HAS Centre for Energy Research, Hungary
2. Centre for Energy Research HAS, Thin Film Physics, Hungary

10:50 AM

(ICACC-PACRIM-031-2020) Transparent/translucent $MgAl_2O_4$ and MgAlON–based phosphors for solid state lighting and photocatalytic applications (Invited)

Z. Lences*[1]; M. Radwan[1]; P. Petriskova[1]; A. Czimerova[1]; P. Sajgalik[1]

1. Institute of Inorganic Chemistry, Slovak Academy of Sciences, Ceramic Department, Slovakia

11:20 AM

(ICACC-PACRIM-032-2020) Design of Novel Sustainable Materials by Incorporating Principles of Circular Economy (Invited)

S. Gupta*[1]

1. University of North Dakota, Mechanical Engineering, USA

Current trends: Powder Processing

Room: Coquina Salon E

Session Chairs: Surojit Gupta, University of North Dakota; Michael Halbig, NASA Glenn Research Center

1:30 PM

(ICACC-PACRIM-033-2020) Room temperature densification of nitride particle-dispesed MgO ceramics (Invited)

J. Tatami*[1]; E. Takahashi[2]; T. Takahashi[2]

1. Yokohama National University, Japan
2. Kanagawa Institute of Industrial Science and Technology, Japan

2:00 PM

(ICACC-PACRIM-034-2020) Exploring New Additive Compositions for Sintering of Silicon Carbide Ceramics at Low Temperatures (Invited)

Y. Kim*[1]; S. Kultayeva[1]

1. University of Seoul, Dept. of Materials Science & Engineering, Republic of Korea

2:30 PM

(ICACC-PACRIM-035-2020) Orientation control in ceramics by external fields (Invited)

T. S. Suzuki*[1]

1. National Institute for Materials Science, Ceramics Processing Group, Japan

3:00 PM

Break

3:20 PM

(ICACC-PACRIM-036-2020) Spark Plasma Sintering of Fine-grained Transparent Ceramics (Invited)

B. Kim*[1]

1. National Institute for Materials Science, Fine-Grained Refractory Materials Group, Japan

3:50 PM

(ICACC-PACRIM-037-2020) Fabrication of transparent γ-AlON and its plasma etching properties in comparison with other transparent ceramics (Invited)

D. Yoon*[1]

1. Yeungnam University, School of Materials Science and Engineering, Republic of Korea

4:20 PM

(ICACC-PACRIM-038-2020) Effect of DC Current on High Temperature Flow Behavior of Polycrystalline Zirconia Ceramics (Invited)

K. Morita*[1]; H. Yoshida[2]; B. Kim[1]

1. National Institute for Materials Science (NIMS), Japan
2. The University of Tokyo, Department of Materials Science, Japan

4:50 PM

(ICACC-PACRIM-039-2020) Improved thermal conductivity of silicon nitride by intentional oxygen removal (Invited)

H. Kim*[1]; Y. Li[1]; Y. Park[1]; J. Ko[2]; M. Kim[1]; H. Kim[1]

1. Korea Institute of Materials Science, Republic of Korea
2. KIMS (Korea Institute of Materials Science), Republic of Korea

FS1: Bio-inspired Processing of Advanced Materials

Bio-inspired Processing of Ceramics I

Room: Coquina Salon H

Session Chair: Florian Bouville, ETH Zürich

8:30 AM

(ICACC-FS1-001-2020) Bioinspired advanced ceramics from freeze casting and energized fields (Invited)

S. E. Naleway*[1]; I. Nelson[1]; T. Yin[1]; D. Porter[1]; P. Wadsworth[1]; M. Mroz[1]

1. University of Utah, Department of Mechanical Engineering, USA

9:00 AM

(ICACC-FS1-002-2020) Pore size and morphology tunability through coarsening during freeze casting (Invited)

N. Arai*[1]; P. Voorhees[3]; K. Faber[2]

1. California Institute of Technology, Materials science, USA
2. California Institute of Technology, USA
3. Northwestern University, Materials Science and Engineering, USA

9:30 AM

(ICACC-FS1-003-2020) Biotemplated carbon electrodes: From local atomic structure to electrochemical properties (Invited)

J. Ramirez-Rico*[1]; A. Gomez-Martin[1]; J. M. Fernandez[1]

1. Universidad de Sevilla, Spain

10:00 AM

Break

Bio-inspired Processing of Ceramics II

Room: Coquina Salon H

Session Chair: Joaquin Ramirez-Rico, Universidad de Sevilla

10:20 AM

(ICACC-FS1-004-2020) Designing Materials from Their Solute State: The Pre-nucleation Cluster Pathway and the Use of Non-Classical Nucleation Theory in Materials Chemistry (Invited)

D. Gebauer*[1]

1. Leibniz University of Hannover, Institute of Inorganic Chemistry, Germany

10:50 AM

(ICACC-FS1-005-2020) Multi-time and length-scale analysis of calcium carbonate room temperature sintering (Invited)

M. Haug[1]; A. Studart[1]; F. Bouville*[2]

1. ETH Zürich, Complex Materials, United Kingdom
2. Imperial College London, Department of Materials, United Kingdom

11:20 AM

(ICACC-FS1-006-2020) Bioinspired functional composites: Transparent, strong, and tough

T. Magrini*[1]; F. Bouville[2]; A. Lauria[1]; H. Le Ferrand[1]; T. Niebel[1]; A. Studart[1]

1. ETH Zürich, Department of Materials, Switzerland
2. Imperial College, Department of Materials, United Kingdom

11:40 AM

(ICACC-FS1-007-2020) Multifunctional metal–ceramic composites with nacre-like architecture

E. Poloni*[1]; F. Bouville[2]; T. Niebel[1]; A. Studart[1]; C. Dreimol[1]

1. ETH Zurich, Complex Materials, Switzerland
2. Imperial College, United Kingdom

Mechanical Properties of Bio-inspired Ceramics I

Room: Coquina Salon H

Session Chair: Simone Sprio, National Research Council of Italy

1:30 PM

(ICACC-FS1-008-2020) Ultra-tough and impact resistant glasses with bioinspired architectures (Invited)

F. Barthelat*[1]; Z. Yin[2]; F. Hannard[2]

1. University of Colorado, Mechanical Engineering, USA
2. McGill University, Mechanical Engineering, Canada

2:00 PM

(ICACC-FS1-009-2020) Bioinspired Architected Materials: When geometry enables novel mechanisms and better performance (Invited)

M. Shishehbor[1]; M. Hosseini[1]; J. Rivera[2]; N. Yaraghi[2]; N. Suksangpanya[1]; D. Kisailus[2]; P. Zavattieri*[1]

1. Purdue University, Lyles School of Civil Engineering, USA
2. University of California, Riverside, Chemical and Environmental Engineering, USA

2:30 PM

(ICACC-FS1-010-2020) Effect of microstructure and architecture on the mechanical behavior of bio-inspired layered ceramics (Invited)

R. Bermejo*[1]

1. Montanuniversitaet Leoben, Structural and Functional Ceramics, Austria

3:00 PM

Break

Mechanical Properties of Bio-inspired Ceramics II

Room: Coquina Salon H

Session Chair: Raul Bermejo, Montanuniversitaet Leoben

3:20 PM

(ICACC-FS1-011-2020) The Structural Form (Invited)

L. Frattari*[1]

1. Altair, USA

3:50 PM

(ICACC-FS1-012-2020) A nature-inspired unconventional process generates 3-D biomorphic ceramics with unusual mechanical performance and enhanced biological behaviour (Invited)

S. Sprio*[1]; A. Ruffini[1]; S. Panseri[1]; M. Montesi[1]; R. Cavuoto[3]; F. Salamanna[2]; M. Fini[2]; D. Bigoni[3]; A. Tampieri[4]

1. National Research Council of Italy, Institute of Science and Technology for Ceramics, Italy
2. Laboratory of Preclinical and Surgical Studies, Rizzoli-RIT Department, IRCCS-Rizzoli Orthopedic Institute, Italy
3. University of Trento, Department of Civil, Environmental and Mechanical Engineering, Italy
4. National Research Council of Italy, Institute of science and technology for ceamics, Italy

4:20 PM

(ICACC-FS1-013-2020) Mechanical characterization and constitutive behavior of 3-D supercrystalline ceramic-organic nanocomposites

B. Bor*[1]; D. Giuntini[1]; B. Domènech[1]; M. V. Swain[2]; G. A. Schneider[1]

1. Hamburg University of Technology, Advanced Ceramics, Germany
2. University of Sydney, Aerospace, Australia

4:40 PM

(ICACC-FS1-014-2020) Processing of Directionally Porous Sintered Lithium Titanate (LTO) Employing Ice-templating and Characterization of Compressive Mechanical Properties

R. Parai*[1]; D. Ghosh[1]; T. Walters[1]; J. Marin[1]; B. Meechan[1]; S. A. Danquah[2]; G. Koenig[3]

1. Old Dominion University, Mechanical and Aerospace Engineering, USA
2. Norfolk State University, Center for Materials Research, USA
3. University of Virginia, Department of Chemical Engineering, USA

5:00 PM

(ICACC-FS1-015-2020) Processing bio-inspired graphene/alumina composites for lightweight bearings (Invited)

V. Garcia Rocha*[1]; G. Menendez[1]; S. Evans[1]; G. Min[1]

1. Cardiff University, School of Engineering, United Kingdom

FS3: Molecular-level Processing and Chemical Engineering of Functional Materials

Polymer Derived Ceramics: Properties and Applications

Room: Coquina Salon C

Session Chairs: Aleksander Gurlo, Technische Universitaet Berlin; Gabriela Mera, TU Darmstadt

8:30 AM

(ICACC-FS3-008-2020) Polymer Derived Functional High Temperature Materials (Invited)

K. Lu*[1]; N. Yang[1]; D. Erb[1]

1. Virginia Tech, USA

9:00 AM

(ICACC-FS3-009-2020) Functional ceramics via precursor chemistry coupled with forming methods (Invited)

M. Balestrat[1]; A. Lale[1]; O. Hanzel[2]; Z. Lences[2]; P. Sajgalik[2]; S. Bernard*[1]

1. CNRS, IRCER, France
2. Institute of Inorganic Chemistry, Slovak Academy of Sciences, Ceramic Department, Slovakia

9:30 AM

(ICACC-FS3-010-2020) Precursor-derived $TiNb_2O_7$ based nano-composites for lithium-ion batteries (Invited)

R. Kumar*[1]

1. Indian Institute of Technology Madras, Metallurgical and Materials Engineering, India

10:00 AM

Break

Polymer Derived Ceramics and Glasses

Room: Coquina Salon C

Session Chairs: Kathy Lu, Virginia Tech; Ravi Kumar, IIT BHU

10:20 AM

(ICACC-FS3-011-2020) Thiol-ene click chemistry assisted additive manufacturing of ceramics from preceramic polymers (Invited)

A. Gurlo*[1]; X. Wang[1]

1. Technische Universitaet Berlin, Chair of Advanced Ceramic Materials, Germany

10:50 AM

(ICACC-FS3-012-2020) Molecular Approaches Towards Novel Functional Composites Containing Low-Dimensional Nanocarbon (Invited)

G. Mera*[1]

1. TU Darmstadt, Materials Science, Germany

11:20 AM

(ICACC-FS3-013-2020) Aluminate glasses: Chemistry, phase composition and luminescence (Invited)

R. Klement[2]; K. Haladejova[2]; M. Majerova[3]; J. Kraxner[2]; E. Bernardo[4]; D. Galusek*[1]

1. IIC SAS, Joint Glass centre, Slovakia
2. Alexander Dubcek University of Trencin, FunGlass, Slovakia
3. Institute of Measurement SAS, Slovakia
4. University of Padova, Dipartimento di Ingegneria Meccanica, Italy

11:50 AM

(ICACC-FS3-014-2020) Upcycling of iron rich inorganic waste in functional glass-ceramics (Invited)

A. Rincon[1]; P. Rabelo Monich[1]; D. Desideri[1]; E. Bernardo*[1]

1. University of Padova, Department of Industrial Engineering, Italy

Materials for Energy Applications

Room: Coquina Salon C

Session Chairs: Thomas Fischer, University of Cologne; Akihiko Ito, Yokohama National University

1:30 PM

(ICACC-FS3-015-2020) 2D materials-based nanostructured interfaces for membrane and energy applications (Invited)

P. Miele*[1]

1. Ecole Nationale Superieure de Chimie de Montpellier, France

2:00 PM

(ICACC-FS3-016-2020) Chemical Engineering of Functional Materials for Improved Electrodes: Application to technologies for an effective energy transition (Invited)

J. R. Morante*[1]

1. IREC, Catalonian Institute for Energy Research, Spain

2:30 PM

(ICACC-FS3-017-2020) Ion conducting polymers that emulate LiPON as ceramic adhesives, coatings, binders: Towards all solid-state batteries (ASBs) (Invited)

R. M. Laine*[1]; E. Temeche[1]; X. Zhang[1]

1. University of Michigan, Materials Science and Eng., USA

3:00 PM

Break

Morphology Control in Materials Processing

Room: Coquina Salon C

Session Chairs: J. Morante, IREC, Catalonian Institute for Energy Research; Richard Laine, University of Michigan

3:20 PM

(ICACC-FS3-018-2020) Precursor Chemistry and Strategies for Nanowires of Metastable Composition (Invited)

S. Barth*[1]

1. Goethe University Frankfurt, Physics Institute, Germany

3:50 PM

(ICACC-FS3-019-2020) Fabrication of Boron Nitride Fibers by Forcespinning Method

D. Santiago*[1]; M. Lizcano[1]

1. NASA Glenn Research Center, Materials and Structure Division, USA

4:10 PM

(ICACC-FS3-020-2020) High-speed Epitaxial Growth of Functional Oxide Films Using Metal-organic Chemical Vapor Deposition and Their Luminescence and Magnetic Responses (Invited)

A. Ito*[1]

1. Yokohama National University, Environment and Information Sciences, Japan

4:40 PM

(ICACC-FS3-021-2020) Influence of precursor chemistry in magnetic field CVD (mfCVD) (Invited)

T. Fischer*[1]; D. Stadler[1]; S. Mathur[1]

1. University of Cologne, Institute of Inorganic Chemistry, Germany

FS4: Green Technologies and Ceramic/Carbon Reinforced Polymers

Mechanical Behavior or Ceramic/Carbon Reinforced Polymers and Composites III

Room: Halifax A/B

Session Chairs: James Hemrick, Oak Ridge National Laboratory; Hua-Tay Lin, Guangdong University of Technology

8:30 AM

(ICACC-FS4-010-2020) Prediction of notched strength of thin-ply CFRP laminates with various ratios of 0-degree layer (Invited)

R. Higuchi*[1]; R. Aoki[1]; T. Yokozeki[1]

1. University of Tokyo, Department of Aeronautics and Astronautics, Japan

9:00 AM

(ICACC-FS4-011-2020) Mesoscale modeling of intra-laminar fatigue damage in composite laminates considering ply thickness

R. Aoki*[1]; R. Higuchi[1]; T. Yokozeki[1]

1. University of Tokyo, Department of Aeronautics and Astronautics, Japan

9:20 AM

(ICACC-FS4-012-2020) Qualification of Polymeric Composites for Piping Repair by Compressive Testing

K. Silva*[1]; M. O. Moreira[1]; R. G. Almeida[1]; F. P. Lopes[1]; E. A. Carvalho[1]; C. F. Vieira[2]

1. State University of Northern Rio de Janeiro, Advanced Materials Laboratory, Brazil
2. State University of the North Fluminense, Advanced Materials Laboratory, Brazil

9:40 AM

(ICACC-FS4-013-2020) Enhancement of Bending Strength, Thermal Stability and Recyclability of Carbon-Fiber-Reinforced Thermoplastics by Using Silica Nano Colloids (Invited)

T. Yamamoto*[1]; S. Yabushita[1]

1. Nagoya University, Department of Materials and Design Innovation Engineering, Japan

10:10 AM

Break

Innovative Processing of Ceramics and Composites for Environmental Sustainability and to Minimize Energy Utilization and Pollution

Room: Halifax A/B

Session Chairs: Gurpreet Singh, Kansas State University; Satoshi Kobayashi, Tokyo Metropolitan University

10:30 AM

(ICACC-FS4-014-2020) Cold Sintering: A Natural Path to a Sustainable Sintering Process and Possibly a Circular Economy (Invited)

C. Randall*[1]

1. Penn State University, Materials Science and Engineering, USA

11:00 AM

(ICACC-FS4-015-2020) Understanding and Designing Interfaces and Defects in Perovskite Solar Cells (Invited)

J. Correa-Baena*[1]

1. Georgia Institute of Technology, School of Materials Science and Engineering, USA

11:30 AM

(ICACC-FS4-016-2020) Carbonate Ceramics via Microbial Curing (Invited)

R. Riman*[1]; D. Kopp[1]; P. Kim[1]; C. Ma[1]

1. Rutgers University, Materials Science & Engineering, USA

12:00 PM

(ICACC-FS4-017-2020) Ceramic composites as a way to mitigate pollution worldwide

H. Colorado*[1]

1. Universidad de Antioquia, Colombia

Recycling of Ceramics and Composite Wastes

Room: Halifax A/B

Session Chair: Henry Colorado, Universidad de Antioquia

1:30 PM

(ICACC-FS4-018-2020) Recycling of Refractory Ceramic Waste Materials (Invited)

J. G. Hemrick*[1]; J. Waters[1]

1. Reno Refractories, Inc., R&D, USA

2:00 PM

(ICACC-FS4-019-2020) Use of Glass Polishing Sludge Waste to Produce Clayey Rustic Floor Tiles

C. F. Vieira*[1]; G. G. Delaqua[1]; H. Colorado[2]

1. State University of the North Fluminense, Advanced Materials Laboratory, Brazil
2. Universidad de Antioquia, Colombia

2:20 PM

(ICACC-FS4-020-2020) Utilization of Local Quarry Waste Material from Northern Mindanao, Philippines for the Production of Ceramic Wall Tiles

M. Ventures[1]; E. d. Magdaluyo[3]; E. Salamangkit-Mirasol[4]; M. Zabala[5]; M. Fuji[2]; R. V. Virtudazo*[1]

1. Mindanao State University-Iligan Institute of Technology, Department of Materials & Resources Engineering and Technology (Ceramic Engineering Program), Philippines
2. Nagoya Institute of Technology, Japan
3. University of the Philippines, Philippines
4. Mariano Marcos State University, Department of Materials Science and Engineering (Ceramic Engineering Program), Philippines
5. Yamada Technology Corporation, Research and Development Department, Philippines

2:40 PM

(ICACC-FS4-021-2020) Recycling Strategies for Glass-reinforced Themoset Composite Materials (Invited)

S. Bull*[1]; A. Yadav[1]

1. Newcastle University, Engineering, United Kingdom

3:10 PM

Break

3:30 PM

(ICACC-FS4-022-2020) Damage evaluation of recycle carbon fibers in focusing on reuse for CFRPs (Invited)

T. Irisawa*[1]

1. Nagoya University, Japan

Environmental, Infrastructure, Energy, Biological, Space, Transportation, Building, and Sport Applications

Room: Halifax A/B

Session Chair: Gustavo Costa, NASA Glenn Research Center

4:00 PM

(ICACC-FS4-023-2020) Temperature response of CFRP exposed to simulated lightning current

S. Kamiyama*[1]; Y. Hirano[2]; T. Okada[2]; T. Sonehara[3]; T. Ogasawara[1]

1. Tokyo University of Agriculture and Technology, Mechanical System Engineering, Japan
2. Japan Aerospace Exploration Agency, Japan
3. Shoden Corporation, Japan

4:20 PM

(ICACC-FS4-024-2020) Polymer Derived Silicon Oxynitride (SiON) Coatings for Corrosion Protection of Steels (Invited)

K. Lu*[1]

1. Virginia Tech, USA

4:50 PM

(ICACC-FS4-025-2020) Examination of the applicability of topology optimization technique for designing truss-lattice structures made of unidirectional CFRP

K. Shinomiya*[1]; T. Ogasawara[1]

1. Tokyo University of Agriculture and Technology, Mechanical System Engineering, Japan

S1: Mechanical Behavior and Performance of Ceramics & Composites

Small Scale Testing

Room: Coquina Salon D

Session Chair: Matthew Appleby, NASA Glenn Research Center

8:30 AM

(ICACC-S1-047-2020) In situ studies on mechanical behavior of flash-sintered TiO_2

J. Li[1]; J. Cho[1]; H. Charalambous[2]; H. Wang[1]; X. Phuah[1]; T. Tsakalakos[3]; A. Mukherjee[4]; N. Bernstein[5]; S. Hellberg[5]; H. Wang[1]; X. Zhang*[1]

1. Purdue University, Materials Engineering, USA
2. Argonne National Lab, USA
3. Rutgers University, USA
4. University of California, Davis, USA
5. Naval Research Laboratory, USA

8:50 AM

(ICACC-S1-048-2020) Measurement of mechanical properties of $BaTiO_3$ layer in multi-layered ceramic capacitor using a microcantilever beam specimen

J. Tatami*[1]; H. Yamaguchi[1]; M. Iijima[1]

1. Yokohama National University, Japan

9:10 AM

(ICACC-S1-049-2020) In-situ study on diamond/SiC interfacial strength of diamond/SiC composite

Y. Zhang*[1]; C. Hsu[2]; P. Karandikar[3]; C. Ni[1]

1. University of Delaware, Material Science and Engineering, USA
2. University of Delaware, USA
3. M Cubed Technology, Inc., R&D, USA

9:30 AM

(ICACC-S1-050-2020) Characterizing the Influence of Crystal Orientation on Twin Nucleation in Ferroelastic Ceramics

C. S. Smith*[1]; J. A. Krogstad[1]

1. University of Illinois at Urbana-Champaign, Materials Science and Engineering, USA

9:50 AM

Break

Mechanics, Characterization Techniques, and Equipment

Room: Coquina Salon D

Session Chair: Kevin Strong, Sandia National Laboratories

10:10 AM

(ICACC-S1-051-2020) Photoluminescence Spectroscopy to Map Residual Stresses in Glass-to-Metal Seals

E. Huntley*[1]; K. T. Strong[1]; S. P. Meserole[2]; T. Diebold[1]

1. Sandia National Laboratories, Materials Mechanics and Tribology, USA
2. Sandia National Laboratories, Applied Optical/Plasma Science, USA

10:30 AM

(ICACC-S1-052-2020) Modeling the effects of transverse matrix crack damage accumulation and microstructure on electrical resistivity of melt-infiltrated ceramic matrix composites

M. P. Appleby*[1]; E. Maillet[2]; G. N. Morscher[3]

1. NASA Glenn Research Center, USA
2. GE Research, USA
3. University of Akron, Mechanical Engineering Dept., USA

10:50 AM

(ICACC-S1-053-2020) Acoustic Emission Monitoring of Microcracking in Woven SIC/SIC Ceramic Matrix Composites

P. Ealy*[1]; G. N. Morscher[2]; A. Ritchey[3]

1. University of Akron, Mechanical, USA
2. University of Akron, Mechanical Engineering Dept., USA
3. Rolls-Royce, USA

11:10 AM

(ICACC-S1-054-2020) Flexural Strength of CMC Tubes Used as Components in Nuclear Applications: ASTM Draft Standard Using Transverse Loading for Flexural Behaviour

M. G. Jenkins*[1]; J. E. Gallego[1]

1. Bothell Engineering and Science Technologies, USA

11:30 AM

(ICACC-S1-055-2020) Life Prediction of Carbon-Reinforced CMCs in Oxidizing Environment Using Electrical Resistance

R. Mansour*[1]

1. Teledyne Scientific Company, Composite Materials, USA

11:30 AM

(ICACC-S1-056-2020) Real Time Imaging of the Failure Process in WHIPOX Alumina CMCs Using High Temperature X-ray Tomography

D. L. Liu*[1]; J. Ell[2]; H. Barnard[2]; S. Reh[3]; R. O. Ritchie[2]

1. University of Bristol, School of Physics, United Kingdom
2. Lawrence Berkeley National Laboratory, USA
3. DLR - German Aerospace Center, Germany

S3: 17th International Symposium on Solid Oxide Cells (SOC): Materials, Science and Technology

Electrodes Development

Room: Crystal

Session Chair: Shiwoo Lee, National Energy Technology Laboratory

8:30 AM

(ICACC-S3-045-2020) An Active and Resilient Isostructured Bilayer Oxygen Electrode for Intermediate-Temperature Reversible Solid Oxide Cells (Invited)

K. Huang*[1]

1. University of South Carolina, Mechanical Engineering, USA

9:00 AM

(ICACC-S3-046-2020) Chemically Assisted Electrodeposition: A Facile and Versatile Route to Prepare Perovskite Oxide Thin Films and Nanostructures for SOFC Applications (Invited)

J. Lee*[1]

1. Chosun University, Materials Science and Engineering, Republic of Korea

9:30 AM

(ICACC-S3-047-2020) Electrocatalytically Active Cathode Interlayers for IT-SOFC Prepared by Spray Pyrolysis

B. Kamecki*[2]; J. Karczewski[1]; P. Z. Jasinski[2]; S. Molin[2]

1. Gdansk University of Technology, Poland
2. Gdansk University of Technology, Laboratory of Functional Materials, Faculty of Electronics, Telecommunications and Informatics, Poland

9:50 AM

(ICACC-S3-048-2020) Activation energies of oxidation and diffusion of $(La_{1-x}Sr_x)Ni_{0.9}Mn_{0.1}O_{4+\delta}$

Y. Sadia*[1]; M. A. Niania[2]; S. Skinner[2]

1. Ben-Gurion University of the Negev, Material Engneering, Israel
2. Imperial College London, United Kingdom

10:10 AM

Break

10:30 AM

(ICACC-S3-049-2020) Study of Direct Electrochemical Oxidation of Methane at Ceria/gas Interface (Invited)

W. Jung*[1]

1. Korea Advanced Institute of Science and Engineering (KAIST), DMSE, Republic of Korea

11:00 AM

(ICACC-S3-050-2020) Nano-metal socketed electrode for high perfomance RSOCs (Invited)

J. Myung*[1]

1. Incheon national university, Dept. of Materials Science and Engineering, Republic of Korea

11:30 AM

(ICACC-S3-051-2020) Enhancing Low-Temperature Solid Oxide Fuel Cell Performance and Durability by Tuning Surface Chemistry

Y. Huang*[1]; I. Robinson[1]; E. Ostrovskiy[1]; S. Horlick[1]; E. D. Wachsman[1]

1. University of Maryland, USA

11:50 AM

(ICACC-S3-052-2020) Structure control of Ni impregnated YSZ using spark plasma sintering (SPS)

Y. Sadia*[1]; N. Madar[1]; S. Kalabukhov[1]; Y. Gelbstein[1]; N. Frage[1]

1. Ben-Gurion University of the Negev, Material Engneering, Israel

Proton Conducting Fuel Cells

Room: Crystal

Session Chair: Mihails Kusnezoff, Fraunhofer IKTS

1:30 PM

(ICACC-S3-053-2020) Promising nanocomposites materials for oxygen- and proton-conducting membranes: Structural and transport properties, performance of catalytic membrane reactors (Invited)

Y. N. Bespalko*[1]; N. F. Eremeev[1]; V. A. Sadykov[1]

1. Boreskov Institute of Catalysis, Heterogeneous catalysis, Russian Federation

2:00 PM

(ICACC-S3-054-2020) Ceramic Proton Conductors: From Energy Conversion to Green Chemistry

M. E. Ivanova*[1]; W. Deibert[1]; C. Lenser[1]; N. H. Menzler[1]; O. Guillon[2]

1. Forschungszentrum Juelich GmbH, IEK-1, Germany
2. Forschungszentrum Juelich, IEK-1, Germany

2:20 PM

(ICACC-S3-055-2020) Bilayer Electrolyte for Proton Conducting Solid Oxide Electrolysis Cells

H. Tian*[1]; W. Li[1]; G. Bo[1]; L. Ma[1]; X. Liu[2]

1. West Virginia University, USA
2. West Virginia University, Mechanical & Aerospace Engineering, USA

2:40 PM

(ICACC-S3-056-2020) Microstructure evolution in nickel and yttrium doped barium zirconate thin-films

D. Jennings*[1]; S. Ricote[2]; J. Santiso[4]; I. Reimanis[3]

1. Colorado School of Mines, Materials and Metallurgical Engineering, USA
2. Colorado School of Mines, Mechanical Engineering, USA
3. Colorado School of Mines, USA
4. Catalan Institute of Nanoscience and Nanotechnology, Spain

S6: Advanced Materials and Technologies for Rechargeable Energy Storage

Na-ion Battery

Room: Tomoka A

Session Chair: Sevi Murugavel, University of Delhi

8:30 AM

(ICACC-S6-038-2020) Size Induced Structural Changes and Charge Transport Mechanism in maricite-$NaFePO_4$: An In-Depth Study by Experimental and Simulations (Invited)

S. Murugavel*[1]

1. University of Delhi, Physics and Astrophysics, India

9:00 AM

(ICACC-S6-039-2020) Understanding the reversible anionic redox in new layered Na-ion cathodes (Invited)

J. Liu*[1]

1. Oak Ridge National Laboratory, USA

9:30 AM

(ICACC-S6-040-2020) Solid State NMR Characterization of Vanadium Fluorophosphates for Na-ion Batteries (Invited)

H. Nguyen[1]; P. Sanz Camacho[1]; J. Olchowka[1]; C. Masquelier[3]; L. Croguennec[2]; D. Carlier*[1]

1. ICMCB, France
2. ICMCB-CNRS, France
3. LRCS, France

10:00 AM

Break

10:20 AM

(ICACC-S6-041-2020) P3-$Na_{0.8}Fe_{0.5}Mn_{0.5}O_2$ layered oxide as cathode material for Na-ion batteries

A. Tripathi[1]; S. G. Reddy[1]; P. Balaya*[1]

1. National University of Singapore, Department of Mechanical Engineering, Singapore

10:40 AM

(ICACC-S6-042-2020) Mastering of particle size and morphology of the puckered layer γ'-V_2O_5 polymorph for enhanced Na electrochemical properties

R. Baddour-Hadjean*[1]; N. Emery[1]; B. Laik[1]; D. Batyrbekuly[1]; z. Bakenov[2]; J. Pereira-Ramos[1]

1. CNRS, ICMPE, France
2. National Laboratory Astana, Center for Energy and Advanced Materials Science, Kazakhstan

11:00 AM

(ICACC-S6-043-2020) Active materials for Na ion batteries

M. Balordi[1]; M. Bini[2]; M. Broglia*[1]; G. Carini[1]; D. Capsoni[2]; F. Cernuschi[1]; A. Gentile[3]; S. Marchionna[1]; M. Nuti[2]; I. Quinzeni[2]; R. Ruffo[3]

1. RSE - Ricerca Sistema Energetico, Italy
2. Università degli Studi di Pavia, Chemistry Department, Italy
3. Università degli Studi Milano Bicocca, Materials Science Department, Italy

Li-ion Battery: Anode Materials and Cathode Materials

Room: Tomoka A

Session Chairs: Palani Balaya, National University of Singapore; Do Kyung Kim, Korea Advanced Institute of Science and Engineering (KAIST)

1:30 PM

(ICACC-S6-044-2020) Nano-engineering and Characterization of Electrode Materials for High-Areal-Capacity and Stable Lithium-Sulfur Batteries (Invited)

J. Yun[1]; R. Ponraj[1]; D. Kim*[1]

1. Korea Advanced Institute of Science and Engineering (KAIST), Dept. of Mater Sci & Eng, Republic of Korea

2:00 PM

(ICACC-S6-045-2020) Solvent-Free Preparation of High Energy, Binder-Free Electrodes Enabled by Dry Compressible Holey Graphene (Invited)

Y. Lin*[1]; J. W. Connell[2]

1. National Institute of Aerospace, USA
2. NASA Langley Research Center, Advanced Materials and Processing Branch, USA

2:30 PM

(ICACC-S6-046-2020) Is n- and p- substitutionally doped C60 a promising material for Li ion batteries? A mechanistic study

Y. Chen[2]; C. Cho[3]; S. Manzhos*[1]

1. INRS, EMT, Canada
2. National University of Singapore, Singapore
3. Pusan National University, Republic of Korea

2:50 PM

(ICACC-S6-047-2020) Why ALD Nanofilms on Cathode Materials Improve Li-ion Battery Performance

A. Hoskins[1]; W. W. McNeary[2]; S. Millican[3]; X. Liang[4]; A. W. Weimer*[2]

1. University of Colorado Boulder, Chemical Engineering, USA
2. University of Colorado, Boulder, Chemical and Biological Engineering, USA
3. University of Colorado, Department of Chemical and Biological Engineering, USA
4. Missouri University of Science & Technology, USA

3:10 PM

Break

3:30 PM

(ICACC-S6-048-2020) Performance of High Energy and High Power Lithium-Ion Cells (Invited)

R. Bugga*[1]; F. C. Krause[1]; E. J. Brandon[1]

1. Jet Propulsion Laboratory, Electrochemical Technologies, USA

4:00 PM

(ICACC-S6-049-2020) Early Transition Metal Doped Layered Oxide Lithium-ion Cathodes with No Cobalt (Invited)

J. Nanda*[1]; E. Self[1]; D. Darbar[1]; I. Belharouak[1]

1. Oak Ridge National Lab, USA

4:30 PM

(ICACC-S6-050-2020) Surface Energy Measurement of Nanocrystalline $LiNiO_2$ Cathode Material

S. Dahl*[1]; R. Castro[2]

1. University of California, Davis, Chemical Engineering, USA
2. University of California, Davis, Material Science & Engineering, USA

S9: Porous Ceramics: Novel Developments and Applications

Engineering Applications of Porous Ceramics II

Room: Coquina Salon F

Session Chair: David Smith, University of Limoges

8:30 AM

(ICACC-S9-010-2020) Interface modification for the adsorption of viruses on porous ceramics structures and nanofibers (Invited)

T. Graule*[1]; K. Domagala[1]; S. Yuezbasi[1]

1. Empa, Laboratory for High Performance Ceramics, Switzerland

9:00 AM

(ICACC-S9-011-2020) Development of Copper (oxide)/alumina Granules for Effective Virus Removal from Water

S. Yuezbasi*[1]; J. Mazurkow[1]; K. Domagala[1]; S. Pfeiffer[1]; T. Graule[1]

1. Empa, Laboratory for High Performance Ceramics, Switzerland

9:20 AM

(ICACC-S9-012-2020) Sustained release of antiviral drugs in surface functionalized organic-inorganic hybrid particles

A. Tamayo*[1]; A. Martin-Illana[2]; R. Cazorla-Luna[2]; F. Notario-Perez[2]; J. Rubio[1]; M. Veiga-Ochoa[2]

1. Institute of Ceramics and Glass, CSIC, Spain
2. Universidad Complutense de Madrid, Facultad de Farmacia, Spain

9:40 AM

(ICACC-S9-013-2020) Structural and electrochemical characteristics of (oxy)cabide derived carbons obtained through wet and dry etching of polymer derived ceramics

A. Tamayo*[1]; M. A. Rodriguez[2]; A. Mazo[1]; J. Rubio[1]; F. Rubio[1]

1. Institute of Ceramics and Glass, CSIC, Spain
2. University of Extremadura, Spain

10:00 AM

Break

Modeling and Properties of Porous Ceramics

Room: Coquina Salon F

Session Chair: Thomas Graule, Empa

10:20 AM

(ICACC-S9-014-2020) Role of neck formation between particles in the thermal conductivity of green and partially sintered oxide ceramics (Invited)

D. S. Smith*[1]; J. Martinez[1]; S. Oummadi[1]; A. Alzina[1]; B. Nait-Ali[1]

1. University of Limoges, IRCER, France

10:50 AM

(ICACC-S9-015-2020) Mechanical Performance of Block Copolymer-Templated Ceramics and Nanocomposites

T. Patel*[1]; D. Street[1]; J. Bowen[1]; R. Wheeler[1]; L. Rueschhoff[1]; M. Cinibulk[1]; M. B. Dickerson[2]

1. Air Force Research Laboratory, USA
2. Air Force Research Laboratory, Materials and Manufacturing Directorate, USA

11:10 AM

(ICACC-S9-016-2020) Micromechanical modeling of ice-templated porous ceramics using smeared cracking approach

S. Sattar*[1]; S. Kravchenko[2]; O. Kravchenko[1]

1. Old Dominion University, USA
2. Purdue University, USA

11:30 AM

(ICACC-S9-017-2020) 3-D Visualization of Unfired (Green) Al_2O_3 Dry-Pressed Bodies

I. P. Maher[1]; R. A. Haber*[2]

1. Coorstek, USA
2. Rutgers University, Materials Science and Engineering, USA

Engineering Applications of Porous Ceramics III

Room: Coquina Salon F

Session Chair: Manabu Fukushima, National Institute of Advanced Industrial Science and Technology (AIST)

1:30 PM

(ICACC-S9-018-2020) Recent Advances in Development of Glass Foams (Invited)

Y. Yue*[1]; J. König[2]; R. R. Petersen[3]; M. B. Ostergaard[4]

1. Aalborg University, Denmark
2. Jozef Stefan Institute, Advanced Materials, Slovenia
3. Skamol, Department of R&D, Denmark
4. Aalborg University, Chemistry and Bioscience, Denmark

2:00 PM

(ICACC-S9-019-2020) Gas Flow Method for Determining Wall Permeability of Particuluate Filters for Pressure Drop Model Development

M. L. Anderson*[1]; R. Stafford[1]

1. Cummins Inc., USA

2:20 PM

(ICACC-S9-020-2020) Controlled Permeability and Strength of Red Firing Clay Ceramic Filter Tempered with Iron Rich Oxide Material and Treated Mine Waste

L. I. Cabalo*[1]; E. Ibarra[1]

1. Mindanao State University-Iligan Institute of Technology, Department of Materials Resource and Technology, Philippines

2:40 PM

Break

Innovations in Processing Methods and Synthesis of Porous Ceramics II

Room: Coquina Salon F

Session Chair: Yuanzheng Yue, Aalborg University

3:20 PM

(ICACC-S9-021-2020) Freeze-casting of porous polysilazane-derived ceramics (Invited)

T. Konegger*[2]; R. Obmann[2]; G. Mikl[2]; S. Schörpf[1]; R. Liska[1]

1. TU Wien, Institute of Applied Synthetic Chemistry, Austria
2. TU Wien, Institute of Chemical Technologies and Analytics, Austria

3:50 PM

(ICACC-S9-022-2020) Microstructure Evolution, Structural Stability, and Compressive Mechanical Properties in Ice-templated Sintered Ceramics with Directional Porosity

D. Ghosh*[1]; M. Banda[1]

1. Old Dominion University, Mechanical and Aerospace Engineering, USA

4:10 PM

(ICACC-S9-023-2020) Biomimetic freeze-cast ceramics and their property -porosity relations

K. Klang*[1]; K. G. Nickel[2]; T. Fey[1]

1. Friedrich-Alexander University Erlangen-Nürnberg, Department Material Science and Engineering, Germany
2. University Tuebingen, Applied Mineralogy, Germany

4:30 PM

(ICACC-S9-024-2020) Effect of platelet raw particles on strength and thermal conductivity of gelation freezing derived thermal insulators

M. Fukushima*[1]; Y. Yoshizawa[1]

1. National Institute of Advanced Industrial Science and Technology (AIST), Japan

4:50 PM

(ICACC-S9-025-2020) Freeze casting of feather–light, cellulose–nanofiber–reinforced γ–Al_2O_3 foams

H. Hudelja*[1]; A. Kocjan[2]

1. Jozef Stefan Institute, Nanostructured materials, Slovenia
2. Jozef Stefan Institute, Slovenia

5:10 PM

(ICACC-S9-026-2020) Porous Geopolymers Heterogeneous Catalysts for Biodiesel Production

P. Colombo*[1]; R. Botti[1]; M. Iinnocentini[2]; C. Paschoalato[2]; D. Flumignan[3]

1. University of Padova, Industrial engineering, Italy
2. University of Ribeirão Preto, Course of Chemical Engineering, Brazil
3. São Paulo Federal Institute of Education, Science and Technology, Brazil

S10: Modeling, Genome, Informatics, and Machine Learning

Multi-scale Modeling of Processing and Performances II

Room: Coquina Salon G

Session Chair: Gerard Vignoles, University Bordeaux

8:30 AM

(ICACC-S10-010-2020) Effect of irregular pores and inclusions on elastic properties of composites (Invited)

R. Piat*[1]; P. A. Happ[2]; I. Tsukrov[3]; B. Drach[4]

1. Darmstadt University of Applied Science, Germany
2. University of Applied Sciences Darmstadt, Mathematics and Natural Sciences, Germany
3. University of New Hampshire, USA
4. University of New Mexico, USA

8:55 AM

(ICACC-S10-011-2020) Quest for clean perovskite-based materials for optoelectronic applications: Insights from first-principles (Invited)

G. Giorgi*[1]; M. Palummo[2]

1. The University of Perugia, Department of Civil & Environmental Engineering, Italy
2. University of Rome "Tor Vergata", Department of Physics, Italy

9:20 AM

(ICACC-S10-012-2020) Mesoscale Modeling of the Formation of Line Compounds in Reaction-Bonded Materials such as SiC

P. Goins*[1]; S. P. Coleman[1]; M. C. Guziewski[1]

1. US Army Research Laboratory, USA

9:40 AM

(ICACC-S10-013-2020) Evaluating effects of irregular inclusions and interactions on elastic properties of composites

P. A. Happ*[1]; R. Piat[1]

1. Darmstadt University of Applied Science, Germany

10:00 AM

Break

Multi-scale Modeling of Processing and Performances III

Room: Coquina Salon G

Session Chairs: Romana Piat, Darmstadt University of Applied Science; Giacomo Giorgi, The University of Perugia

10:20 AM

(ICACC-S10-014-2020) Multi-Scale Modeling of Hierarchical Microstructures in Diamond-SiC

S. P. Coleman*[1]

1. US Army Research Laboratory, USA

10:40 AM

(ICACC-S10-015-2020) Understanding the Energetics and Structure of Interfaces in Silicon Carbide-Diamond Composites using High-Throughput Atomistic Simulations and Machine Learning

M. C. Guziewski*[1]; D. Trujillo[2]; S. P. Coleman[1]; P. Alpay[2]

1. US Army Research Laboratory, USA
2. University of Connecticut, Materials Science and Engineering, USA

11:00 AM

(ICACC-S10-016-2020) Modeling Polymeric Binder Removal in Porous Green Bodies

E. G. McAleer*[1]; E. K. Akdoğan[1]; J. Matthewson[1]; R. A. Haber[1]

1. Rutgers University, Material Science and Engineering, USA

11:20 AM

(ICACC-S10-017-2020) Simulation and Permeability and tortuosity of ceramics foams based on μCT

T. Fey*[1]

1. Friedrich-Alexander University Erlangen-Nürnberg, Department Material Science and Engineering, Germany

11:40 AM

(ICACC-S10-033-2020) 2040 Vision Study: NASA's TTT Implementation activities

S. Arnold*[1]

1. NASA Glenn Research Center, Materials and Structures Division, USA

Multi-scale Modeling of Processing and Performances IV

Room: Coquina Salon G

Session Chairs: Peter Kroll, University of Texas, Arlington; Notker Roesch, TU Munich

1:30 PM

(ICACC-S10-018-2020) 2D microstructural modeling of transverse cracking during pyrolysis process of carbon fiber reinforced plastics (Invited)

Y. Shi*[1]; J. Neraj[1]

1. DLR - German Aerospace Center, Institute of Structures and Design, Ceramic Composites and Structures, Germany

1:55 PM

(ICACC-S10-019-2020) A mesoscopic model with non-linear elasticity and phase transformation framework for the twinning-buckling behavior of TATB under dynamic loading: A Molecular Dynamics inferred constitutive law (Invited)

P. Lafourcade*[1]

1. CEA, France

2:20 PM

(ICACC-S10-020-2020) Development of a Finite Element Model for Quasi-statically indented Oxide/Oxide Ceramic Matrix Composite in Ambient Environement

A. Nasirmanesh*[1]; A. K. Singh[1]

1. Baylor University, Mechanical Engineering, USA

2:40 PM

(ICACC-S10-021-2020) Numerical Simulation of Densification in Porous Preforms by Chemical Vapor Infiltration

V. Ramanuj*[1]; R. Sankaran[1]; B. Jolly[1]; R. Lowden[1]

1. Oak Ridge National Laboratory, USA

3:00 PM

Break

Modeling of Surfaces, Interfaces, and Grain Boundaries

Room: Coquina Salon G

Session Chairs: Yuan Shi, DLR - German Aerospace Center, Institute of Structures and Design; Paul Lafourcade, CEA

3:20 PM

(ICACC-S10-022-2020) Reduced Centers of the MoV Oxide Catalysts for Selective Hydrocarbon Oxidation (Invited)

A. Genest[2]; W. Li[2]; T. Fjermestad[2]; J. Arce Ramos[2]; G. P. Rugg[2]; N. Roesch*[1]

1. TU Munich, Germany
2. Institute of High Performance Computing, Singapore

3:50 PM

(ICACC-S10-023-2020) Genesis of "Free" Carbon in Silicon Oxycarbide Ceramics (Invited)

P. Kroll*[1]

1. University of Texas, Arlington, USA

4:20 PM

(ICACC-S10-024-2020) Role of organic cation-centered states in formamidinium lead iodide: Bulk vs nanoparticle models (Invited)

S. Manzhos*[1]; G. Giorgi[2]

1. INRS, EMT, Canada
2. The University of Perugia, Department of Civil & Environmental Engineering, Italy

4:40 PM

(ICACC-S10-025-2020) First-Principles Study of Enhanced Tolerance to Impurity on Metal-Oxide/Pt in Polymer Electrolyte Fuel Cell Anode

N. Ozawa*[1]; M. Kubo[1]

1. Tohoku University, Institute for Materials Research, Japan

5:00 PM

(ICACC-S10-026-2020) Parallelization of multi-step catalytic reactions: DFT-thermodynamics and Experiments

H. Choi*[1]

1. University of Cologne, Germany

S16: Geopolymers, Inorganic Polymers and Sustainable Materials

Conversion to Ceramics; Novel Applications; Phosphates

Room: Tomoka C

Session Chair: Dong-Kyun Seo, Arizona State University

8:30 AM

(ICACC-S16-009-2020) Tailorable thermal expansion in ceramics synthesized by geopolymer crystallization (Invited)

A. J. Steveson*[1]; W. M. Kriven[1]

1. University of Illinois at Urbana-Champaign, USA

9:00 AM

(ICACC-S16-010-2020) Crystallographic studies of the leucite-pollucite system synthesized by geopolymer crystallization

A. J. Steveson*[1]; W. M. Kriven[1]

1. University of Illinois at Urbana-Champaign, USA

9:20 AM

(ICACC-S16-011-2020) Geopolymer materials for high-frequency antenna applications

I. N. Vlasceanu*[1]; A. Gharzouni[1]; O. Tantot[2]; E. Martinod[2]; V. Bertrand[2]; N. Feix[2]; M. Lalande[2]; C. Elissalde[3]; S. Rossignol[1]

1. IRCER, France
2. Xlim, France
3. ICMCB-CNRS, France

9:40 AM

(ICACC-S16-012-2020) Calcium phosphate cement with car tire waste

C. F. Revelo[1]; H. Colorado*[1]

1. Universidad de Antioquia, Colombia

10:00 AM

Break

Waste Materials

Room: Tomoka C

Session Chair: Nishant Garg, University of Illinois Urbana-Champaign

10:20 AM

(ICACC-S16-013-2020) Production of Porous Geopolymer Brick from Philippine Gold Mine Tailings

L. de Leon[1]; P. Labastida[1]; E. Labastida[1]; E. d. Magdaluyo*[1]

1. University of the Philippines, Philippines

10:40 AM

(ICACC-S16-014-2020) Evaluation of geopolymer mortar based on a binary blend of class F fly ash and ground glass fiber using a sodium silicate-free activator

O. A. Amer*[1]; P. Rangaraju[1]; H. R. Dezfouli[1]

1. Clemson University, Civil Engineering, USA

11:00 AM

(ICACC-S16-015-2020) Extensive reuse of waste glass in geopolymer-like materials (Invited)

D. Ramteke[2]; D. Galusek[3]; P. Colombo[1]; E. Bernardo*[1]

1. University of Padova, Department of Industrial Engineering, Italy
2. University of Trencin, FunGlass (Centre for Functional and Surface Functionalized Glass), Slovakia
3. IIC SAS, Joint Glass centre, Slovakia

11:30 AM

(ICACC-S16-016-2020) Alkali-activation of mineral waste: Effect of composition and curing on final properties (Invited)

B. Coppola[1]; T. Jean-Marc[1]; L. Montanaro[1]; P. Palmero*[1]

1. Politecnico di Torino, Applied Science and Technology, Italy

Alkali Activated Materials

Room: Tomoka C

Session Chair: Enrico Bernardo, University of Padova

1:30 PM

(ICACC-S16-017-2020) Dissolution of Calcined Clays at the Atomic Scale: Evidence of Reactive Al(V) Sites (Invited)

N. Garg*[1]

1. University of Illinois Urbana-Champaign, Civil and Environmental Engineering, USA

2:00 PM

(ICACC-S16-018-2020) Durability of alkali-activated materials based on carbon fly-ash (Invited)

M. C. Bignozzi*[1]

1. University of Bologna, DICAM, Italy

2:30 PM

(ICACC-S16-019-2020) Alkali activation: An option for waste valorization and inertization (Invited)

I. Lancellotti*[1]; C. Leonelli[1]; L. Barbieri[1]

1. University of Modena and Reggio Emilia, Department of Engineering "Enzo Ferrari", Italy

3:00 PM

Break

Infrastructure and Construction; Sustainable Materials

Room: Tomoka C

Session Chairs: Ange-Therese Akono, Northwestern University; Sylvie Rossignol, Laboratoire SPCTS

3:20 PM

(ICACC-S16-020-2020) Compositional Optimization of Metakaolin-based Geopolymer Mortar

N. Lies*[1]; O. D. Huang[1]; M. Radovic[1]

1. Texas A&M University, Materials Science & Engineering, USA

3:40 PM

(ICACC-S16-021-2020) Thermal Conductivity and Flexure Strength of Geopolymer Composites for Geothermal Housing Foundations

D. Samuel*[1]; A. Stumpf[2]; W. M. Kriven[1]

1. University of Illinois at Urbana-Champaign, Materials Science and Engineering, USA
2. Prairie Research Institute, Illinois State Geological Survey, USA

4:00 PM

(ICACC-S16-022-2020) Development of Metakaolin-based Geopolymer as Alternative Soil Stabilizer

O. D. Huang*[1]; R. Samuel[2]; A. Banerjee[3]; A. Puppala[2]; M. Radovic[1]

1. Texas A&M University, Materials Science & Engineering, USA
2. University of Texas at Arlington, Civil Engineering, USA
3. University of Texas at Arlington Research Institute, AIS Division, USA

4:20 PM

(ICACC-S16-023-2020) Study of compressive strength of polymeric composites with epoxy resin and piassava particules

J. P. Carvalho[1]; A. C. Neves[1]; F. P. Lopes*[1]; S. N. Monteiro[2]; C. F. Vieira[1]

1. State University of the North Fluminense, Advanced Materials Laboratory, Brazil
2. Military Institute of Engineering, Brazil

4:40 PM

(ICACC-S16-024-2020) Analysis of polimeric composites reinforced by piassava to create a high performace floor

J. P. Carvalho[1]; A. C. Neves[1]; F. P. Lopes*[1]; S. N. Monteiro[2]; C. F. Vieira[1]

1. State University of the North Fluminense, Advanced Materials Laboratory, Brazil
2. Military Institute of Engineering, Materials Science Department, Brazil

5:00 PM

(ICACC-S16-025-2020) Use of Bamboo Waste as a Strength in Composite Manufacturing for use as OSB Panels (Invited)

M. D. Lopes[1]; F. P. Lopes*[1]; C. F. Vieira[1]

1. State University of the North Fluminense, Advanced Materials Laboratory, Brazil

S18: Ultra-High Temperature Ceramics

UHTC Applications and Oxidation

Room: Coquina Salon A

Session Chair: William Fahrenholtz, Missouri University of Science & Technology

8:30 AM

(ICACC-S18-001-2020) Current and Future UHTC Research (Invited)

E. Wuchina*[1]

1. Office of Naval Research, USA

9:00 AM

(ICACC-S18-002-2020) Porous ZrB_2 for transpiration cooling of hypersonic vehicles

R. Hedgecock*[1]; L. J. Vandeperre[2]

1. Imperial College, Materials, United Kingdom
2. Imperial College London, Materials, United Kingdom

9:20 AM

(ICACC-S18-003-2020) Oxidation of $(Hf_{0.2}Zr_{0.2}Ti_{0.2}Ta_{0.2}Nb_{0.2})C$ and $(Hf_{0.2}Zr_{0.2}Ti_{0.2}Ta_{0.2}Nb_{0.2})B_2$ at 1800°C

L. Backman*[1]; J. Gild[2]; T. J. Harrington[3]; K. Vecchio[3]; J. Luo[2]; E. J. Opila[1]

1. University of Virginia, Materials Science and Engineering, USA
2. University of California, San Diego, Materials Science and Engineering Program, USA
3. University of California, San Diego, Department of NanoEngineering, USA

9:40 AM

(ICACC-S18-004-2020) In-Depth Characterization of Selective Oxidation Products of Hafnium Carbide at 1300°C

J. A. Scott*[1]; X. He[2]; D. Lipke[1]

1. Missouri University of Science & Technology, Materials Science and Engineering, USA
2. University of Missouri, Columbia, USA

10:00 AM

Break

UHTC Simulation, Composites, and Carbides

Room: Coquina Salon A

Session Chair: Eric Wuchina, Office of Naval Research

10:20 AM

(ICACC-S18-005-2020) Diborides: Modelling the influence of isotope ratio on material properties and in-reactor behaviour for nuclear fuels and beyond (Invited)

S. C. Middleburgh*[1]; L. J. Evitts[1]; F. Martini[1]; I. Ipatova[1]; M. Rushton[1]; W. E. Lee[2]

1. Bangor University, Nuclear Futures Institute, United Kingdom
2. Imperial College London, Materials, United Kingdom

10:50 AM

(ICACC-S18-006-2020) Fabrication and characterization of carbon fibre reinforced UHTC composites (Invited)

A. Vinci*[1]; L. Zoli[1]; D. Sciti[1]

1. ISTEC-CNR, Italy

11:20 AM

(ICACC-S18-007-2020) Effect of Carbon Stoichiometry on Thermal Properties of Zirconium Carbide Ceramics

Y. Zhou*[1]; W. Fahrenholtz[1]; G. Hilmas[1]

1. Missouri University of Science & Technology, Dept. of Materials Science and Engineering, USA

11:40 AM

(ICACC-S18-008-2020) Mechanical and Thermal Properties of Zeta Phase Tantalum Carbide at Elevated Temperatures

E. C. Schwind*[1]; G. Hilmas[1]; W. Fahrenholtz[1]

1. Missouri University of Science & Technology, Dept. of Materials Science and Engineering, USA

UHTC Synthesis and Processing

Room: Coquina Salon A

Session Chairs: Bai Cui, University of Nebraska, Lincoln; Emanuel Ionescu, Technical University Darmstadt

1:30 PM

(ICACC-S18-009-2020) Polymer-Derived Ultra-High Temperature Ceramics (UHTCs) and Related Materials (Invited)

E. Ionescu*[1]

1. Technical University Darmstadt, Materials Science, Germany

2:00 PM

(ICACC-S18-010-2020) On the Thermal Decomposition Mechanisms of Differing Polymer-Derived SiBCN Ceramics

K. McGarrity*[1]; H. Shluman[1]; P. Tumurugoti[1]; K. Ning[1]

1. Alfred University, USA

2:20 PM

(ICACC-S18-011-2020) Polymer-Derived (Hf,Ta/Ti)C/SiC Nanocomposites with Excellent High-Temperature Oxidation Resistance

E. Ionescu*[1]

1. Technical University Darmstadt, Materials Science, Germany

2:40 PM

(ICACC-S18-012-2020) Low-cost synthesis of $(Hf_{1-x}Zr_x)B_2$ solid solution fine powders via CTR and AMR methods

J. Belisario*[1]; S. Mondal[1]; Z. Cheng[1]; A. Durygin[1]

1. Florida International University, Mechanical and Materials Engineering, USA

3:00 PM

Break

3:20 PM

(ICACC-S18-013-2020) Synthesis of multi-composition UHTC powders using wet or dry process (Invited)

Q. V. Nguyen*[1]; H. Lee[1]; J. Kim[1]; S. Lee[1]; S. McCormack[2]

1. Korea Institute of Materials Science, Republic of Korea
2. University of Illinois at Urbana-Champaign, USA

3:50 PM

(ICACC-S18-014-2020) Mechanisms of Laser Shock Processing of Ceramic Materials (Invited)

F. Wang[1]; X. Yan[1]; C. Zhang[1]; L. Deng[1]; Y. Lu[1]; M. Nastasi[1]; B. Cui*[1]

1. University of Nebraska-Lincoln, USA

4:20 PM

(ICACC-S18-015-2020) Hafnium Diboride-Tantalum Diboride Solid Solutions formed by Spark Plasma Sintering

C. Zhang*[1]; A. Agarwal[1]; B. Boesl[1]

1. Florida International University, Mechanical and Materials Engineering, USA

4:40 PM

(ICACC-S18-016-2020) Fabrication and shaping of ZrB_2-SiC Composites by reaction bonding with various precursors and consolidation techniques

T. G. Aguirre[1]; C. L. Cramer*[1]; R. Lowden[2]

1. Oak Ridge National Lab, Energy & Transportation Science Division, Energy and Environmental Sciences Directorate, USA
2. Oak Ridge National Lab, MSTD, USA

5:00 PM

(ICACC-S18-017-2020) Synthesis of multicomponent bulk metal nitride $(Nb_{1/3}Ta_{1/3}Ti_{1/3})N$ via reaction flash sintering

S. Mondal*[1]; A. Durygin[1]; J. Belisario[1]; V. Drozd[1]; Z. Cheng[1]

1. Florida International University, Mechanical and Materials Engineering, USA

Friday, January 31, 2020

FS3: Molecular-level Processing and Chemical Engineering of Functional Materials

Precursor and Materials Chemistry

Room: Coquina Salon C

Session Chairs: Thomas Fischer, University of Cologne; Sven Barth, Goethe University Frankfurt

8:30 AM

(ICACC-FS3-022-2020) Structure and chemical composition of (0001) inversion boundaries in piezotronic ZnO bicrystals (Invited)

H. Kleebe*[1]; M. Trapp[1]

1. Technical University of Darmstadt, Material Science, Germany

9:00 AM

(ICACC-FS3-023-2020) Polymer-derived cobalt-doped amorphous silica with hydrogen affinity (Invited)

S. Tada[1]; S. Ando[1]; Y. Daiko[1]; S. Honda[1]; S. Bernard[2]; Y. Iwamoto*[1]

1. Nagoya Institute of Technology, Japan
2. CNRS, IRCER, France

FS4: Green Technologies and Ceramic/Carbon Reinforced Polymers

Innovative Processing to Minimize Energy Utilization, Recycling, and Reduction of Processing Waste

Room: Halifax A/B

Session Chairs: Steve Bull, Newcastle University; Manabu Fukushima, AIST

8:30 AM

(ICACC-FS4-026-2020) Integrated Additive Manufacturing and Laser Processing for the Fabrication of Protonic Ceramic Electrochemical Cells (Invited)

J. Tong*[1]

1. Clemson University, Materials Science and Engineering, USA

9:00 AM

(ICACC-FS4-027-2020) Additive manufacturing of kaolinite-based clay with electric arc furnace steel dust

E. Ordonez[2]; H. Colorado*[1]

1. Universidad de Antioquia, Colombia
2. Universidad de Antioquia, Mechanical Engineering, Colombia

9:20 AM

(ICACC-FS4-028-2020) Carbon rich-polymer derived ceramic fibers and mats for energy applications (Invited)

G. Singh*[1]; Z. Ren[1]; C. Gervais[2]

1. Kansas State University, Mechanical and Nuclear Engineering Dept., USA
2. UPMC, LCMCP, France

9:50 AM

(ICACC-FS4-029-2020) Nano-Lignin - A Unique Material System for Designing High Performance Materials (Invited)

S. C. Borrillo[1]; S. Javaid[1]; M. Dey[1]; S. Gupta*[1]

1. University of North Dakota, Mechanical Engineering, USA

10:20 AM

(ICACC-FS4-030-2020) Continuous Forming and Secondary Processing Technology for Long Composite Materials (Invited)

A. Nakai*[1]

1. GIFU University, Faculty of Engineering, Japan

S9: Porous Ceramics: Novel Developments and Applications

Membranes and High SSA Ceramics

Room: Coquina Salon F

Session Chair: Thomas Konegger, TU Wien - Vienna University of Technology

8:30 AM

(ICACC-S9-027-2020) Development of Thermally Stable Aerogels for Aerospace Applications

N. S. Olson*[1]; F. I. Hurwitz[2]; J. A. Krogstad[1]

1. University of Illinois at Urbana-Champaign, Materials Science and Engineering, USA
2. NASA Glenn Research Center, USA

8:50 AM

(ICACC-S9-028-2020) Dynamic Hysteresis Scanning of SiCO Aerogels

P. Taheri*[1]; P. Kroll[1]; J. Kenvin[2]; J. Lang[1]

1. University of Texas, Arlington, USA
2. Micromeritics, USA

9:10 AM

(ICACC-S9-029-2020) Preparation and Gas Separation study of Ceramic supported Membrane Reactor for Hydrogen Production from Syngas

C. D[1]; S. K L*[2]; M. C D[3]

1. M V J College of Engineering, Chemical Engineering, India
2. Siddaganga Institute of Technology, Chemical Engineering, India
3. Bharat Heavy Electricals Ltd, Ceramic Technological Institute, India

9:30 AM

(ICACC-S9-030-2020) Studies on effect of various parameters that affect the effective waste water treatment using submerged ceramic membrane bioreactor

S. Surappanahalli Rajanna*[1]; G. Madhu[1]; S. Easwaran[1]; C. Madhusoodana[2]

1. M S Ramaiah Institute of Technology, Bangalore, Chemical Engineering, India
2. BHEL, Ceramic Division, India

S10: Modeling, Genome, Informatics, and Machine Learning

Prediction of Crystal Structure and Related Properties I

Room: Coquina Salon G

Session Chair: Jingyang Wang, Shenyang National Laboratory for Materials Science, IMR

8:30 AM

(ICACC-S10-027-2020) Creation of predictive models of 4f-5d transition energy of Ce^{3+} in garnet-type oxides using only structural parameters of host crystals as attributes (Invited)

K. Ogasawara*[1]

1. Kwansei Gakuin University, Department of Chemistry, Japan

9:00 AM

(ICACC-S10-028-2020) Predicting the phase stability of high entropy pyrochlore oxides (Invited)

K. Pitike*[1]

1. Oak Ridge National Laboratory, Materials Science and Technology Division, USA

9:30 AM

(ICACC-S10-029-2020) Light-Illumination Dependent Electronic and Atomic Structures of Glide Dislocations in Inorganic Semiconductors (Invited)

K. Matsunaga*[1]

1. Nagoya University, Materials Physics, Japan

10:00 AM

Break

Prediction of Crystal Structure and Related Properties II

Room: Coquina Salon G

Session Chairs: Katsuyuki Matsunaga, Nagoya University; Krishna Chaitanya Pitike, Oak Ridge National Lab

10:20 AM

(ICACC-S10-030-2020) Modeling General Grain Boundaries (GBs): From Computing GB Diagrams to Understanding GB Superstructures and an Electric Field Induced GB Transition (Invited)

C. Hu[1]; J. Nie[1]; Z. Yu[2]; J. Luo*[1]

1. University of California, San Diego, USA
2. Fuzhou University, China

10:50 AM

(ICACC-S10-031-2020) Transition Metal Diborides Investigated by X-ray Spectroscopy and Ab-Initio Electronic-Structure Calculations (Invited)

M. Magnuson*[1]

1. Linkoping University, Sweden

11:20 AM

(ICACC-S10-032-2020) DFT Study of the Cleavage Planes in Σ9 {122} SiC -3C Grain Boundary

J. S. Dunn*[1]; S. P. Coleman[1]; M. C. Guziewski[1]; C. M. Carlin[1]

1. U.S. Army Research Laboratory, USA

S18: Ultra-High Temperature Ceramics

UHTCs: High Entropy Materials

Room: Coquina Salon A

Session Chair: William Fahrenholtz, Missouri University of Science & Technology

8:30 AM

(ICACC-S18-018-2020) Hardness and Young's Modulus Anisotropy in High Entropy Boride Ceramics

A. Stanfield*[2]; L. Feng[2]; F. Monteverde[1]; G. Hilmas[2]; W. Fahrenholtz[2]

1. CNR-ISTEC, Italy
2. Missouri University of Science & Technology, Dept. of Materials Science and Engineering, USA

8:50 AM

(ICACC-S18-019-2020) A High Entropy Route to Tough Ceramics

M. Hossain*[1]; T. M. Borman[1]; D. Brenner[2]; J. Maria[1]

1. Pennsylvania State University, Materials Science and Engineering, USA
2. North Carolina State University, Materials Science and Engineering, USA

9:10 AM

(ICACC-S18-020-2020) Asynchronously Patterned Pulsed Sputtering (APPS) for Rapid UHTC Compositional Exploration

T. M. Borman*[1]; M. Hossain[2]; J. Maria[1]

1. Pennsylvania State University, Materials Science and Engineering, USA
2. Pennsylvania State University, USA

9:30 AM

(ICACC-S18-021-2020) Synthesis, densification, and characterization of high-entropy carbide ceramics

L. Feng*[1]; W. Fahrenholtz[1]; G. Hilmas[1]

1. Missouri University of Science & Technology, Dept. of Materials Science and Engineering, USA

9:50 AM

Break

UHTC Phase Equilibria and Properties

Room: Coquina Salon A

Session Chair: William Fahrenholtz, Missouri University of Science & Technology

10:10 AM

(ICACC-S18-022-2020) Phase Equilibria and Symmetry relations in the HfO_2-Ta_2O_5-TiO_2 system up to 3000C (Invited)

S. J. McCormack*[1]; K. Tseng[4]; R. Weber[2]; S. Ushakov[3]; A. Navrotsky[3]; W. M. Kriven[4]

1. University of California, Davis, Materials Science and Engineering, USA
2. MDI, USA
3. University of California, Davis, Peter A. Rock Thermolab and NEAT ORU, USA
4. University of Illinois at Urbana-Champaign, USA

10:40 AM

(ICACC-S18-023-2020) Direct consideration of point defects in CALPHAD modelling of zirconium carbide (Invited)

T. Davey*[1]; Y. Chen[1]

1. Tohoku University, School of Engineering, Japan

11:10 AM

(ICACC-S18-024-2020) Solute Characterization and Mechanical Properties of $(Zr,Ta)B_2$ Ceramics

A. N. Dorner*[1]; D. J. Barton[2]; G. B. Thompson[2]; G. Hilmas[1]; W. Fahrenholtz[1]

1. Missouri University of Science & Technology, Materials Science and Engineering, USA
2. University of Alabama, Metallurgical and Materials Engineering, USA

NOTES

ANTI HARASSMENT POLICY

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1. ACerS Executive Director, **Mark Mecklenborg**, ph 614-794-5829 / email: ExecDirector@ceramics.org
2. ACerS President, **Tatsuki Ohji** / email: ACerSPresident@ceramics.org

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All reports of harassment will be directed immediately to the ACerS leadership team who may consult with and engage other ACerS staff, leaders and legal counsel as appropriate. Conference security and/or local law enforcement may be involved, as appropriate based on the specific circumstances. In response to a report of harassment, the ACerS leadership team or ACerS staff will take appropriate action. Such actions range from a verbal warning to ejection from the event without a refund. Repeat offenders may be subject to further disciplinary action, such as being banned from participating in future ACerS conferences or events and/or permanently expelled from ACerS membership.

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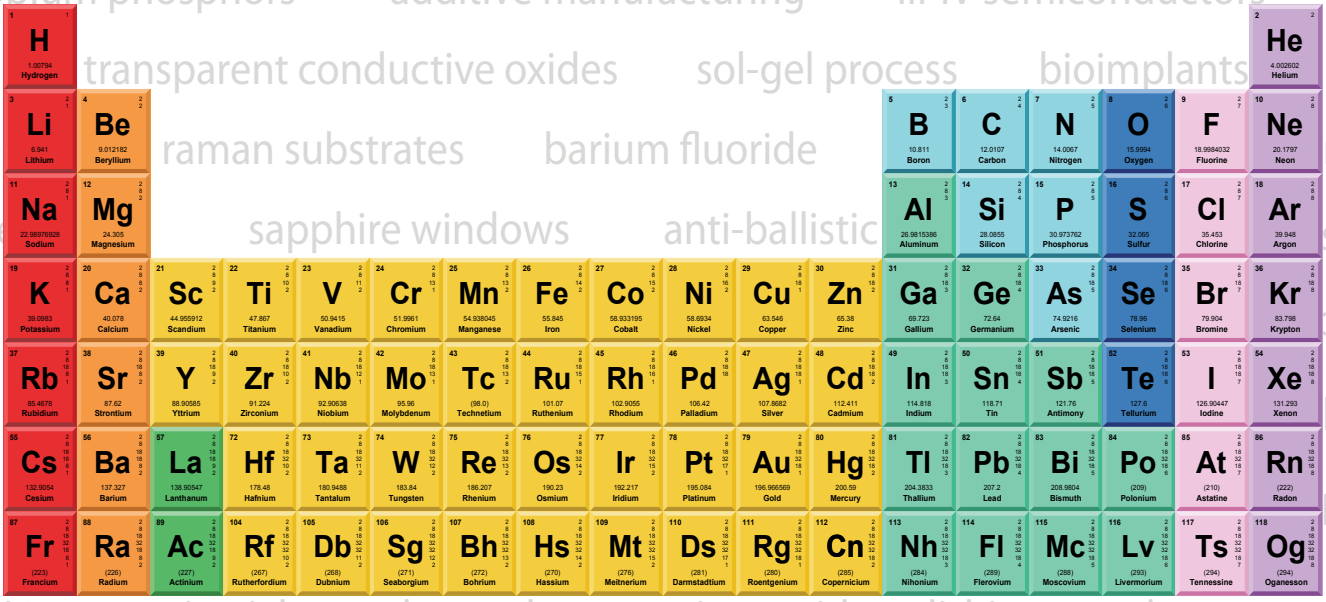

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