

# 2018

## CONFERENCE ON ELECTRONIC AND ADVANCED MATERIALS

January 17 – 19, 2018 | DoubleTree by Hilton Orlando at Sea World Conference Hotel | Orlando, Fla., USA

### CONFERENCE PROGRAM

The 2018 meeting has expanded programming and is organized by  
ACerS Electronics and Basic Science Divisions.



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# welcome



**Brady Gibbons**  
Electronics Division



**Jon Ihlefeld**  
Electronics Division



**Rick Ubic**  
Electronics Division



**Wayne Kaplan**  
Basic Science Division



**John Blendell**  
Basic Science Division

Welcome to the 2018 Conference on Electronic and Advanced Materials (EAM 2018)—organized by the Electronics Division and the Basic Science Division of The American Ceramic Society (ACerS). You may notice we have a new name:

We hope it reflects the expanded programming on the nature of ceramic materials and theories governing their processing. This conference is the 9th in a series of annual international meetings, and provides a forum for exchanging scientific knowledge on the fundamental nature of ceramic materials, grand challenges that ceramic materials can solve, and the new applications they can drive.

The 2018 technical program includes plenary talks, invited lectures, contributed papers, poster presentations—including an interactive multimedia experience for selected posters—and open discussions. EAM 2018 features symposia focused on complex oxide and chalcogenide semiconductors, thermal energy conversion, multifunctional nanocomposites, superconductors, ion-conducting ceramics, and materials for millimeter-wave applications. Other symposia emphasize broader themes covering sustainable processing, microstructural evolution, and integration; effects of surfaces and interfaces on processing, transport, and properties; mesoscale phenomena; and computational design of materials.

In addition to the technical symposia, EAM 2018 includes additional activities and events such as the poster and networking session Wednesday, 5:30-7:30 p.m. in Orange A/B and the Basic Science Division's tutorial on "Defect Chemistry in Perovskite Ceramics and Its Impact on Materials Processing and Properties" Wednesday evening, 7:45-9:45 p.m. in Citrus A. The conference dinner and awards banquet will be held on Thursday, 7:00-9:00 p.m. in Orange A/B. The student poster and presentation award winners will be announced during this event. The grand finale of the meeting will again be a light-hearted session entitled "Failure: the Greatest Teacher" Friday, 5:15-6:15 p.m. in Magnolia A/B. All of these activities are included in the meeting registration, and everyone is strongly encouraged to attend!

We are pleased to build on the previous successes of this conference series in providing a distinctive forum to address emerging needs, opportunities and key challenges in the field of advanced and/or electronic materials and applications. We anticipate that this year's meeting will continue to highlight the most recent scientific advances and technological innovations in the field, and to facilitate the interactions and collaborations that will help to shape its future.

The Electronics Division, Basic Science Division, symposium organizers, and ACerS staff thank you for joining us for EAM 2018. We hope you have a rewarding and beneficial meeting experience and very much look forward to your continued participation in future EAM meetings.

P.S. Please be reminded that no photography, audio recording, or videotaping of presenters in oral sessions is permitted. See policy on pg iv.

# table of contents

Sponsors .....	i
Schedule at a Glance .....	ii
Regulations .....	iv
Plenary Speakers .....	v
Floorplan/Symposia .....	vi – vii
Special Events .....	viii

## Final Program

Wednesday morning .....	2 – 7
Wednesday afternoon .....	7 – 12
Thursday morning .....	13 – 16
Thursday afternoon .....	16 – 20
Friday morning .....	20 – 24
Friday afternoon .....	24 – 25

### Basic Science Division Officers:

Chair: **Dunbar Birnie**, Rutgers University, USA  
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Secretary: **Kristen Brosnan**, GE Global Research Center, USA

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# conference sponsors

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# schedule at a glance

## TUESDAY, JANUARY 16, 2018

Conference registration 5:00 p.m. – 6:30 p.m.

## WEDNESDAY, JANUARY 17, 2018

Conference registration 7:30 a.m. – 6:00 p.m.

Plenary session I – Roger DeSouza,  
RWTH Aachen University 8:30 a.m. – 9:30 a.m.

Coffee Break 9:30 a.m. – 10:00 a.m.

Concurrent technical sessions 10:00 a.m. – 5:30 p.m.

Poster session set up 12:30 p.m. – 5:00 p.m.

Lunch on own 12:30 p.m. – 2:00 p.m.

Coffee break 3:30 p.m. – 4:00 p.m.

Poster session & reception 5:30 p.m. – 7:30 p.m.

Basic Science Division tutorial – Defect chemistry in  
perovskite ceramics and its impact on materials  
processing and properties 7:40 p.m. – 9:45 p.m.

Orange D

Nautilus and Orange lobbies

Orange A/B, Cypress A/B, Citrus A/B,  
Magnolia A/B, Nautilus A/B

Orange C/D

Nautilus and Orange lobbies

Orange C/D

Citrus A

## THURSDAY, JANUARY 18, 2018

Conference registration 7:30 a.m. – 6:00 p.m.

Plenary session II – Judith MacManus-Driscoll,  
University of Cambridge 8:30 a.m. – 9:30 a.m.

Concurrent technical sessions 10:00 a.m. – 5:30 p.m.

Lunch on own 12:30 p.m. – 2:00 p.m.

New member refreshment break 1:30 p.m. – 2:00 p.m.

Coffee break 3:30 p.m. – 4:00 p.m.

Student & Young Professionals reception 5:30 p.m. – 6:30 p.m.

Conference dinner 7:00 p.m. – 9:00 p.m.

Orange D

Orange A/B, Cypress A/B, Citrus A/B,  
Magnolia A/B, Nautilus A/B

Orange lobby

Nautilus and Orange lobbies

Barefoot Bar

Orange C/D

## FRIDAY, JANUARY 20, 2017

Conference registration 7:30 a.m. – 5:00 p.m.

Concurrent technical sessions 8:30 a.m. – 5:00 p.m.

Lunch on own 12:30 p.m. – 2:00 p.m.

Failure – the greatest teacher 5:15 p.m. – 6:15 p.m.

Orange A/B, Cypress A/B, Citrus A/B,  
Magnolia A/B, Nautilus A/B

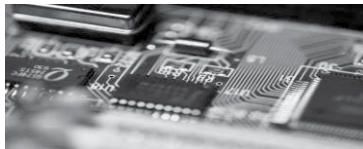
Magnolia A/B

*Current as of December 8, 2017*

The logo for Radiant Technologies, Inc. features the word "RADIANT" in a large, bold, sans-serif font. Below it, "TECHNOLOGIES, INC." is written in a smaller, all-caps font. To the right of the text is a stylized graphic element consisting of a vertical line and a curved line that resembles a sine wave or a signal trace.

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No photography/recording

Cell phones silent



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

## 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.

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# plenary speakers



**Roger DeSouza**

8:30 – 9:30 a.m | Orange D | Wednesday, January 17, 2018

**Roger DeSouza**, professor, RWTH Aachen University, Institut fuer Physikalische Chemie

Title: ***Using transport studies to reveal the myriad secrets of SrTiO<sub>3</sub>***

Biography: Roger A. De Souza obtained a B. Eng in Material Science and Engineering in 1992 and a Ph.D. in Materials Science in 1996 from Imperial College London. After spending two years as a post-doctoral researcher at the University of Karlsruhe, he moved to the Max-Planck Institute for Solid State Research in Stuttgart. In 2002 he joined the Institute of Physical Chemistry at RWTH Aachen University, where he received his professorial degree (Habilitation) in 2011 and was promoted to Professor in 2017. The De Souza group performs fundamental research, encompassing both experimental and computational approaches, on complex oxides for energy and information technologies. One particular theme is characterising and understanding transport processes in these oxides and at their extended defects.



**Judith  
MacManus-  
Driscoll**

8:30 – 9:30 a.m | Orange D | Thursday, January 18, 2018

**Judith MacManus-Driscoll**, professor, Department of Materials Science,  
University of Cambridge

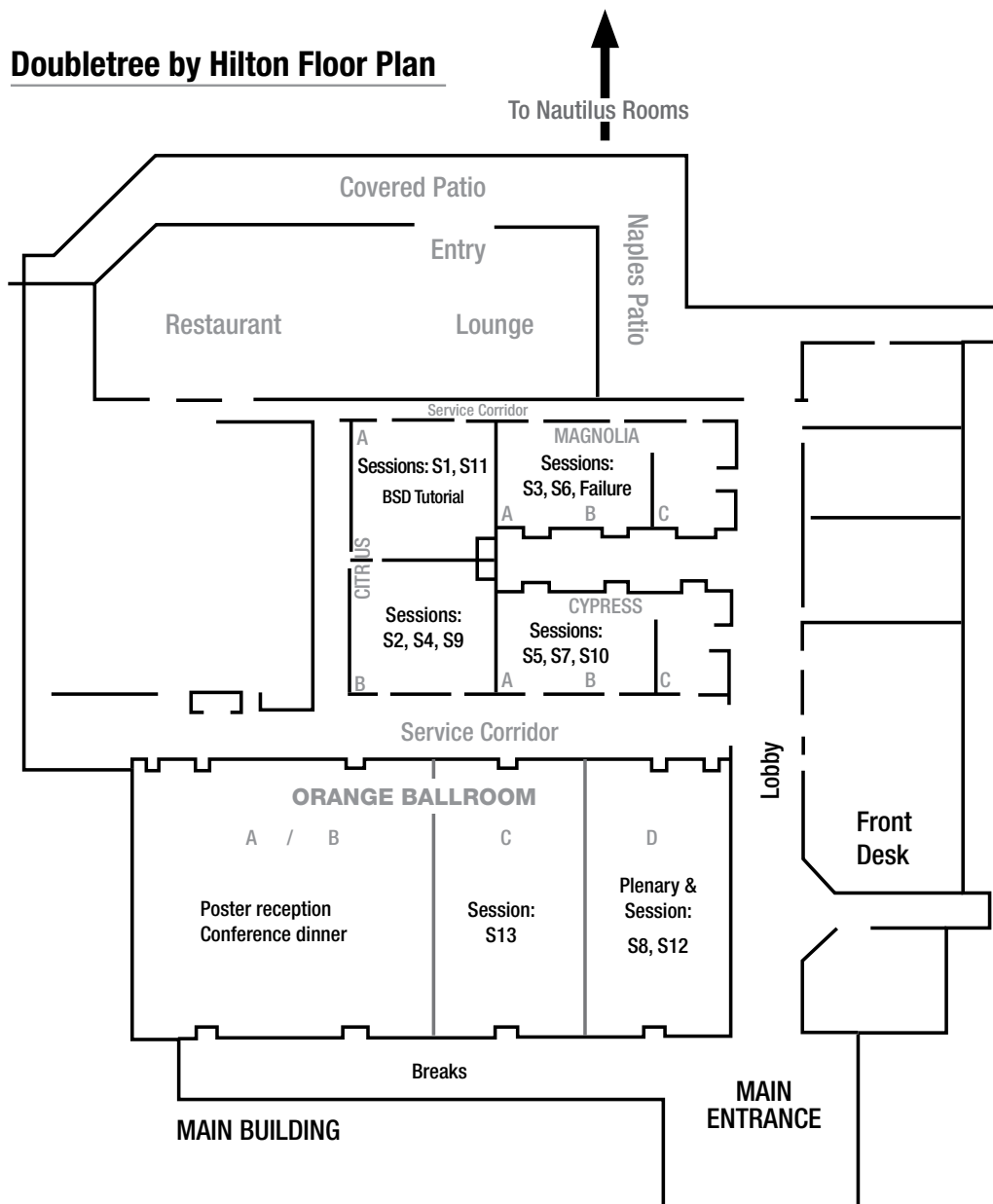
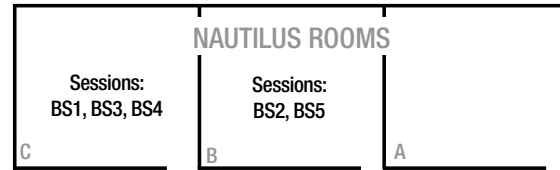
Title: ***New materials paradigm in oxide epitaxial nanocomposite thin films and the realization of enhanced functionalities***

Biography: Judith Driscoll's is a Professor in the Materials Science dept. at the University of Cambridge. Her research is in the area of electronic oxide thin films, i.e. superconductors, ferroelectrics, multiferroics, magnetics and semiconductors. She is also a Long Term visiting staff at Los Alamos National Lab, a position she's held for more than 10 years.

Judith was an undergraduate at Imperial College in London where she won the Governor's prize for top student. She was a Dee Scholar at the University of Cambridge where she earned her PhD. She was an IBM Fellow for her postdoctoral research at Stanford University and IBM Almaden. She was a Reader at Imperial College from 1995 until 2003. She moved to Cambridge in 2003 and became Full Professor in 2008. She is a Fellow of Trinity College and also a Fellow of the Institute of Physics, American Physical Society and the US Materials Research Society. In 2015, she won the Institute of Physics Joule Medal, and the Royal Academy of Engineering Armourers and Brasiers Prize. In 2017, she won the IEEE James Wong award.

Judith has published over 350 research papers which have been cited more than 10,000 times and she has an h-index of 48. She has more than 10 patents, several of which have been taken up by industry worldwide. She is also Founding Editor (in 2013) of the journal, APL Materials, from the American Institute of Physics.

# floor plan





# symposia

## The 2018 Organizing Committee

**Brady Gibbons**, Electronics Division  
**Jon Ihlefeld**, Electronics Division  
**Rick Ubic**, Electronics Division

**Wayne Kaplan**, Basic Science Division  
**John Blendell**, Basic Science Division

### ELECTRONICS DIVISION

#### S1. Complex Oxide and Chalcogenide Semiconductors: Research and Applications

**Jayakanth Ravichandran**, University of Southern California, USA; **Bharat Jalan**, University of Minnesota, USA; **Rafael Jaramillo**, Massachusetts Institute of Technology, USA; **Anderson Janotti**, University of Delaware, USA; **Yuval Golan**, Ben Gurion University of the Negev, Israel; **Ryan Comes**, Auburn University, USA

#### S2. Energy Applications of Electronic and Ferroic Ceramics: Synthesis, Characterization, and Theory

**Paul G. Evans**, University of Wisconsin-Madison, USA; **S. Pamir Alpay**, University of Connecticut, USA; **Brahim Dkhil**, CentraleSupélec/CNRS, France; **Daniel Schreiber**, US Army Research Laboratory, USA; **Quanxi Jia**, State University of New York at Buffalo, USA

#### S3. Multiscale Structure-Property Relationships and Advanced Characterization of Functional Ceramics

**David W. McComb**, The Ohio State University, USA; **Abhijit Pramanick**, City University of Hong Kong, Hong Kong; **Julian Walker**, The Pennsylvania State University, USA; **John E Daniels**, University of New South Wales, Australia; **Arno Merkle**, Carl Zeiss Microscopy, USA; **Hugh Simons**, Technical University of Denmark, Denmark

#### S4. Agile Design of Electronic Materials: Aligned Computational and Experimental Approaches

**Mina Yoon**, Oak Ridge National Laboratory, USA; **Venkatesh Botu**, Corning Incorporated, USA; **Lan Li**, Boise State University, USA; **Scott Retterer**, Oak Ridge National Laboratory, USA

#### S5. Ion-Conducting Ceramics

**Hui (Claire) Xiong**, Boise State University, USA; **Fanglin (Frank) Chen**, University of South Carolina, USA; **Jeff Sakamoto**, University of Michigan, USA; **Erik Spoeerke**, Sandia National Laboratories, USA; **Jing Xu**, Iowa State University, USA

#### S6. Electronics Materials for 5G Telecommunications Applications

**Nate Orloff**, National Institute of Standards and Technology, USA; **Chris Long**, National Institute of Standards and Technology, USA; **Geoff Brennecke**, Colorado School of Mines, USA

#### S7. Mesoscale Phenomena in Ceramic Materials

**Edward Gorzkowski**, Naval Research Laboratory, USA; **Serge M. Nakhmanson**, University of Connecticut, USA; **Olle Heinonen**, Argonne National Laboratory, USA; **Paul Evans**, University of Wisconsin, USA

#### S8. Multifunctional Nanocomposites

**Aiping Chen**, Los Alamos National Laboratory, USA; **Hyoungjeen Jeon**, Pusan National University, Korea; **James Rondinelli**, Northwestern University, USA; **Judith L. MacManus-Driscoll**, University of Cambridge, United Kingdom; **Roman Engel-Herbert**, The Pennsylvania State University, USA; **Junwoo Son**, Pohang University of Science and Technology, Korea

#### S9. Substitution and Sustainability in Functional Materials and Devices

**Ian M Reaney**, University of Sheffield, United Kingdom; **Ruzhong Zuo**, Hefei University of Technology, China; **David P Cann**, Oregon State University, USA; **Derek C. Sinclair**, University of Sheffield, United Kingdom

#### S10. Synthesis and Processing Science of Thin Films and Single Crystals – The Details of Engineering Structure-Property Relationships

**Elizabeth A. Paisley**, Sandia National Laboratories, USA; **Jon-Paul Maria**, North Carolina State University, USA; **Paul Clem**, Sandia National Laboratories, USA; **Mark. D. Losego**, Georgia Institute of Technology, USA; **Ronald Polcawich**, U.S. Army Research Laboratory, USA

#### S11. Superconducting Materials and Applications

**Gang Wang**, Institute of Physics, Chinese Academy of Sciences, China; **Haiyan Wang**, Purdue University, USA; **Tim Haugan**, Air Force Research Laboratory, USA; **Charles Rong**, US Army Research Laboratory, USA

#### S12. Thermal Transport and Storage in Functional Materials and Devices

**Alp Sehrioglu**, Case Western Reserve University, USA; **Patrick Hopkins**, University of Virginia, USA; **Brian Donovan**, US Naval Academy, USA; **Mark Losego**, Georgia Institute of Technology, USA

#### S13. Advanced Electronic Materials: Processing, Structures, Properties, and Applications

**Shujun Zhang**, University of Wollongong, Australia; **Xiaoli Tan**, Iowa State University, USA; **Kyle Webber**, Friedrich-Alexander Universität Erlangen-Nürnberg, Germany; **Satoshi Wada**, University of Yamanashi, Japan; **Rudeger (Derek) Wilke**, Sandia National Laboratories, USA

#### Student Awards and Competition:

**Hui (Claire) Xiong**, Boise State University, USA

### BASIC SCIENCE DIVISION

#### S1: Computational and Data Sciences for the 21st Century Ceramics Research

**Ming Tang**, Rice University, USA; **Jeffrey Rickman**, Lehigh University, USA

#### S2: Electro-magnetic Field Effects on Ceramic Processing: Fundamental Mechanisms and New Applications

**Klaus van Benthem**, University of California - Davis, USA; **Martha Mecartney**, University of California - Irvine, USA

#### S3: Experimental and Theoretical insights on Interfaces of Ceramics

**Christina Scheu**, Max-Planck-Institut für Eisenforschung GmbH (MPIE), Germany; **Dominique Chatain**, Aix-Marseille University, CNRS, CINaM, France

#### S4: Fundamentals of Mechanical Response

**Ivar Reimanis**, Colorado School of Mines, USA; **Gerhard Dehm**, Max-Planck-Institute für Eisenforschung GmbH, Germany

#### S5: Morphology Evolution and Microstructure Characterization

**Dan Lewis**, Rensselaer Polytechnic Institute, USA; **Helen Chan**, Lehigh University, USA

#### Basic Science Division Tutorial: Defect Chemistry in Perovskite Ceramics and its impact on Materials Processing and Properties

**Wolfgang Rheinheimer**, Karlsruhe Institute of Technology, Germany; **Rachel Zucker**, University of California – Berkeley, USA

# special events

## Poster Session and Welcome Reception

Wednesday, January 17

5:30 p.m. – 7:30 p.m. | Orange A/B

Renew acquaintances and get to know new faces within the EAM community during the poster session and welcome reception

## Basic Science Division Tutorial

Wednesday, January 17

7:40 p.m. – 9:45 p.m. | Citrus A

**Defect chemistry in perovskite ceramics and its impact on materials processing and properties**

- 7:40 p.m. Introduction
- 7:45 p.m. **Derek Sinclair**, University of Sheffield  
*Impact of defect chemistry on materials properties in oxides*
- 8:25 p.m. **Roger de Souza**, RWTH Aachen University  
*Ion Transport in Oxides*
- 9:05 p.m. **Elizabeth Dickey**, North Carolina State University  
*Fundamentals of Point Defect Thermodynamics in Ceramics*

## New Member Refreshment Break

Thursday, January 18

1:30pm – 2:00 p.m. | Orange A/B lobby

Learn how to make the most of your new ACerS membership and meet other new members.

## Student and Young Professional Reception

Thursday, January 18

5:30 p.m. – 6:30 p.m. | Barefoot Bar

Following a long day of sessions, join with other students and young professionals at this informal reception.

## Conference Dinner

Thursday, January 18

7:00 p.m. – 9:00 p.m. | Orange A/B

All conference attendees are invited to attend the conference dinner. Poster session awards will be announced at this event.

## Failure - the Greatest Teacher

Friday, January 19,

5:15 p.m. – 6:15 p.m. | Magnolia A/B

Come hear recognized leaders in the field discuss failure—and perhaps recount some of their most spectacular learning experiences—during a frank and friendly discussion in a relaxed atmosphere.

- 5:15 p.m. Introduction
- 5:25 p.m. **Jurgen Roedel**, Technical University-Darmstadt  
*Antiferroelectrics, Relaxors, polar, non-polar, R3m*
- 5:55 p.m. **Nate Orloff**, National Institute of Standards & Technology  
*Hip to be Square*
- 6:10 p.m. **Jacob Jones**, North Carolina State University  
*The limits of diffraction and pragmatism*

## Welcome 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 this page, or visit the ACerS registration desk to learn more.

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

# ACerS young professionals network speakers

<b>Turan Birol</b>	University of Minnesota, USA
<b>Victoria Blair</b>	U.S. Army Research Laboratory, USA
<b>Lyndsey Denis</b>	Pennsylvania State University, USA
<b>Brian Donovan</b>	USA Naval Academy, USA
<b>Richard Floyd</b>	Pennsylvania State University, USA
<b>Brian Foley</b>	Georgia Institute of Technology, USA
<b>Till Frömling</b>	Technische Universität Darmstadt, Germany
<b>Panchapakesan Ganesh</b>	Oak Ridge National Laboratory, USA
<b>Ran Gao</b>	University of California, Berkeley, USA
<b>Julia Glaum</b>	Norwegian University of Science and Technology NTNU, Norway
<b>Michael Golt</b>	U.S. Army Research Laboratory, USA
<b>Edward Gorzkowski</b>	Naval Research Laboratory, USA
<b>Er-Jia Guo</b>	Oak Ridge National Laboratory, USA
<b>Xia Hong</b>	University of Nebraska-Lincoln, USA
<b>Jacob Ivy</b>	Colorado School of Mines, USA
<b>Rafael Jaramillo</b>	Massachusetts Institute of Technology, USA
<b>Gang Jian</b>	Jiangsu University of Science and Technology, China
<b>David Kok</b>	University of California, Irvine, USA
<b>Jurij Koruza</b>	Technische Universität Darmstadt, Germany
<b>James LeBeau</b>	North Carolina State University, USA
<b>David Lowing</b>	Purdue University, USA
<b>Lane Martin</b>	University of California, Berkeley, USA
<b>Elizabeth Paisley</b>	Sandia National Laboratories, USA
<b>Eric Patterson</b>	U.S. Naval Research Laboratory, USA
<b>Krishna Chaitanya Pitike</b>	University of Connecticut, USA
<b>Abhijit Pramanick</b>	City University of Hong Kong, Hong Kong
<b>Elizabeth Radue</b>	University of Virginia, USA
<b>Wolfgang Rheinheimer</b>	Karlsruhe Institute of Technology, Germany
<b>Christina Rost</b>	University of Virginia, USA
<b>Whitney Schmidt</b>	University of Sheffield, United Kingdom
<b>Sean Smith</b>	Sandia National Laboratories, USA
<b>Margo Staruch</b>	U.S. Naval Research Laboratory, USA
<b>Michael Susner</b>	Air Force Research Laboratory, USA
<b>Austin Travis</b>	University of California, Irvine, USA
<b>Tedi-Marie Usher</b>	Oak Ridge National Laboratory, USA
<b>Gang Wang</b>	Institute of Physics, Chinese Academy of Sciences, China
<b>Rui Wu</b>	University of Cambridge, United Kingdom
<b>Stephen Xie</b>	University of Florida, USA
<b>Kesong Yang</b>	University of California, San Diego, USA

# CALL FOR PAPERS

Submit your abstracts by February 12, 2018

## MATERIALS CHALLENGES IN ALTERNATIVE AND RENEWABLE ENERGY (MCARE 2018)

August 20 - 23, 2018

Sheraton Vancouver Wall Centre Hotel | Vancouver, BC, Canada

### TECHNICAL PROGRAM

- MATERIALS FOR SOLAR FUEL PRODUCTION AND APPLICATIONS
- ADVANCED ELECTROCHEMICAL MATERIALS FOR ENERGY STORAGE
- MATERIALS CHALLENGES IN PEROVSKITE AND NEXT GENERATION SOLAR CELLS
- FERROELECTRICS AND MULTIFERROICS FOR ENERGY GENERATION, CONVERSION, AND STORAGE
- MATERIALS CHALLENGES IN DIRECT THERMAL-TO-ELECTRICAL ENERGY CONVERSION AND THERMAL ENERGY HARNESSING FOR EFFICIENT INNOVATIVE APPLICATIONS
- MATERIALS FOR SPECTRAL ENERGY CONVERSION
- ADVANCED MATERIALS FOR SOLID OXIDE FUEL CELLS AND HIGH TEMPERATURE ELECTROLYSIS
- LIFECYCLE CONSIDERATIONS FOR ENERGY MATERIALS
- CRITICAL MATERIALS FOR ENERGY
- MATERIALS AND PROCESS CHALLENGES FOR SUSTAINABLE NUCLEAR ENERGY
- SUSTAINABLE, ECO-FRIENDLY ADVANCED MATERIALS AND NANODEVICES
- YOUNG SCIENTISTS FORUM ON FUTURE ENERGY MATERIALS AND DEVICES

Hosted and organized by:



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Also organized by:



## Oral Presenters

Name	Date	Time	Room	Page Number	Name	Date	Time	Room	Page Number
<b>A</b>									
Aigner, R.	17-Jan	10:15AM	Magnolia A/B	5	Fast, D.	18-Jan	4:30PM	Citrus B	18
Akkopru Akgun, B.	17-Jan	11:15AM	Cypress A/B	6	Finkel, P.	17-Jan	11:30AM	Citrus B	5
Alamgir, F.M.	18-Jan	11:15AM	Nautilus B	13	Finnis, M.W.	17-Jan	10:00AM	Nautilus C	4
Alem, N.	17-Jan	3:00PM	Orange D	8	Floyd, R.	17-Jan	4:30PM	Citrus B	9
Alpay, P.	18-Jan	10:00AM	Cypress A/B	14	Foley, B.	17-Jan	10:45AM	Orange D	6
Altermann, F.J.	17-Jan	11:30AM	Nautilus B	4	Foley, B.	19-Jan	11:00AM	Orange C	24
An, L.	18-Jan	10:00AM	Nautilus B	13	Fox, A.	18-Jan	3:00PM	Orange C	20
Anderson, K.	17-Jan	3:45PM	Nautilus B	8	Freeman, C.	18-Jan	12:15PM	Citrus B	15
Arroyave, R.	19-Jan	12:00PM	Citrus B	21	Frolov, T.	18-Jan	4:30PM	Nautilus C	16
					Frömling, T.	19-Jan	11:15AM	Cypress A/B	22
					Fujimoto, K.	19-Jan	11:15AM	Citrus B	21
<b>B</b>					<b>G</b>				
Bayer, T.J.	19-Jan	10:30AM	Magnolia A/B	22	Gabriel, J.J.	18-Jan	5:00PM	Citrus B	18
Beechem, T.E.	19-Jan	9:00AM	Orange C	23	Ganesh, P.	19-Jan	2:45PM	Citrus B	24
Bell, A.J.	18-Jan	4:30PM	Orange C	20	Gao, L.	18-Jan	11:45AM	Orange C	16
Bhattacharyya, R.	19-Jan	11:45AM	Cypress A/B	22	Gao, R.	18-Jan	2:30PM	Cypress A/B	18
Bian, J.	17-Jan	11:45AM	Orange C	7	Gheorghiu, N.	17-Jan	12:00PM	Citrus A	6
Biol, T.	19-Jan	3:00PM	Orange D	25	Gibbons, B.	18-Jan	11:30AM	Citrus B	15
Bishara, H.	18-Jan	5:30PM	Orange C	20	Glaum, J.	17-Jan	4:45PM	Orange C	11
Biswas, A.	18-Jan	2:30PM	Orange D	19	Golt, M.C.	19-Jan	9:30AM	Citrus B	20
Blair, V.L.	18-Jan	5:30PM	Nautilus B	17	Gozdzowski, E.	17-Jan	3:15PM	Nautilus B	7
Bonnough, S.W.	17-Jan	5:30PM	Citrus A	10	Gray, A.	18-Jan	3:45PM	Citrus A	17
Borman, T.M.	17-Jan	5:00PM	Cypress A/B	10	Green, R.J.	18-Jan	2:30PM	Citrus A	17
Boston, R.	17-Jan	2:00PM	Citrus B	9	Grimley, E.D.	17-Jan	10:30AM	Nautilus C	4
Brahlek, M.	19-Jan	9:15AM	Orange D	23	Grimley, E.D.	17-Jan	4:30PM	Orange D	8
Brova, M.J.	17-Jan	3:00PM	Orange C	11	Guo, E.	18-Jan	11:45AM	Orange D	15
Bullard, T.	17-Jan	4:45PM	Citrus A	10	Guo, J.	17-Jan	11:00AM	Orange C	7
Butler, B.D.	17-Jan	11:30AM	Orange D	6					
<b>C</b>					<b>H</b>				
Cabral, M.J.	18-Jan	2:30PM	Orange C	20	Hagerstrom, A.	17-Jan	3:00PM	Magnolia A/B	8
Cai, L.	17-Jan	11:15AM	Magnolia A/B	5	Hall, D.A.	19-Jan	11:00AM	Magnolia A/B	22
Carter, J.	17-Jan	11:30AM	Nautilus C	4	Hallsteinsen, I.	19-Jan	11:15AM	Orange D	23
Chambers, S.	19-Jan	2:00PM	Orange D	24	Han, H.	19-Jan	9:30AM	Orange C	23
Chan, S.	17-Jan	3:30PM	Nautilus C	7	Harrington, G.	19-Jan	9:45AM	Orange D	23
Chen, J.	19-Jan	10:30AM	Orange C	23	Harris, D.T.	17-Jan	2:00PM	Cypress A/B	9
Chen, L.	17-Jan	4:00PM	Nautilus B	8	Harris, W.	18-Jan	11:00AM	Magnolia A/B	14
Chen, L.	18-Jan	2:00PM	Nautilus C	16	Hartman, S.T.	18-Jan	11:15AM	Nautilus C	13
Chen, W.	17-Jan	12:15PM	Citrus B	5	Haugan, T.J.	17-Jan	4:15PM	Citrus A	10
Chen, Y.	18-Jan	2:45PM	Citrus B	18	He, Q.	18-Jan	5:00PM	Orange D	19
Cheng, C.Y.	17-Jan	11:30AM	Cypress A/B	6	Heath, J.P.	17-Jan	5:00PM	Citrus B	9
Chi, M.	18-Jan	4:30PM	Cypress A/B	19	Heisig, T.	18-Jan	4:30PM	Citrus A	17
Choi, S.	18-Jan	5:30PM	Orange D	19	Herisson de Beauvoir, T.	17-Jan	11:15AM	Orange C	7
Chopdekar, R.V.	18-Jan	10:00AM	Orange D	15	Herrera, G.M.	17-Jan	11:00AM	Citrus B	5
Choudhary, K.	19-Jan	3:30PM	Citrus B	24	Hinterstein, M.	18-Jan	4:15PM	Magnolia A/B	18
Clarke, D.R.	17-Jan	10:00AM	Orange D	6	Hong, S.	18-Jan	4:30PM	Orange D	19
Cockayne, E.	18-Jan	10:00AM	Nautilus C	13	Hong, X.	18-Jan	3:00PM	Orange D	19
Comes, R.	19-Jan	10:30AM	Orange D	23	Huang, J.	19-Jan	11:45AM	Orange D	23
					Huang, W.	19-Jan	9:15AM	Orange C	23
<b>D</b>					Huddleston, W.	18-Jan	5:15PM	Cypress A/B	19
Dawley, N.	17-Jan	2:30PM	Magnolia A/B	8	Huey, B.	19-Jan	3:15PM	Citrus B	24
De Souza, R.A.	17-Jan	8:40AM	Orange D	4	Hughes, L.A.	18-Jan	4:00PM	Nautilus B	17
Denis, L.M.	18-Jan	4:00PM	Magnolia A/B	18	Huijben, M.	19-Jan	4:15PM	Orange D	25
Dickens, P.	17-Jan	4:45PM	Cypress A/B	10	Hwang, H.	19-Jan	9:45AM	Orange C	23
Dickey, E.C.	18-Jan	10:45AM	Nautilus B	13					
Dolgos, M.	18-Jan	11:15AM	Citrus B	15	<b>I</b>				
Donovan, B.F.	17-Jan	11:00AM	Orange D	6	Ito, Y.	17-Jan	12:00PM	Citrus B	5
Drisko, J.	17-Jan	4:45PM	Magnolia A/B	8					
Du, Y.	19-Jan	9:00AM	Cypress A/B	22	<b>J</b>				
Dursun, S.	17-Jan	3:15PM	Orange C	11	Jain, A.	19-Jan	10:45AM	Citrus B	21
					Jalan, B.	19-Jan	8:45AM	Orange D	23
<b>E</b>					Jana, A.	18-Jan	5:30PM	Nautilus C	16
Egami, T.	18-Jan	5:00PM	Magnolia A/B	18	Janotti, A.	19-Jan	11:00AM	Citrus A	21
Evans, J.T.	17-Jan	4:00PM	Orange C	11	Jaramillo, R.	18-Jan	4:15PM	Citrus A	17
					Jaramillo, R.	19-Jan	9:45AM	Citrus A	21
<b>F</b>					Jeen, H.	19-Jan	9:30AM	Orange D	23
Fan, Z.	18-Jan	2:45PM	Orange C	20	Jennings, D.	18-Jan	10:30AM	Nautilus B	13
Fancher, C.	17-Jan	11:45AM	Citrus B	5	Jeong, J.	19-Jan	2:30PM	Citrus A	24
Farghadany, E.	18-Jan	5:30PM	Cypress A/B	19	Jia, J.	17-Jan	2:30PM	Citrus A	10

# Presenting Author List

## Oral Presenters

Name	Date	Time	Room	Page Number	Name	Date	Time	Room	Page Number
Jian, G.	19-Jan	8:30AM	Orange D	22	Mitic, V.	17-Jan	12:00PM	Orange C	7
Jin, K.	17-Jan	2:00PM	Citrus A	10	Mitzi, D.	18-Jan	10:30AM	Citrus A	14
Jones, J.L.	18-Jan	2:00PM	Orange C	20	Moore, R.	19-Jan	11:30AM	Citrus A	21
<b>K</b>					Moshe, R.	17-Jan	11:45AM	Nautilus B	4
Kalkur, T.S.	17-Jan	10:45AM	Magnolia A/B	5	Muccillo, E.N.	19-Jan	11:00AM	Cypress A/B	22
Kan, D.	19-Jan	10:45AM	Orange D	23	Müller, M.P.	18-Jan	5:00PM	Cypress A/B	19
Kelley, K.	17-Jan	4:00PM	Cypress A/B	9	Mundy, J.	18-Jan	4:00PM	Orange D	19
Khatun, N.	18-Jan	11:30AM	Cypress A/B	14	Murakami, S.	18-Jan	10:30AM	Citrus B	15
Kim, E.	17-Jan	4:00PM	Magnolia A/B	8	Muralt, P.R.	19-Jan	2:30PM	Orange C	25
Kim, J.	19-Jan	4:30PM	Orange D	25	Murphy, R.	19-Jan	9:45AM	Cypress A/B	22
Kim, S.	18-Jan	11:00AM	Orange C	15	<b>N</b>				
Klemm, R.A.	17-Jan	5:00PM	Citrus A	10	Nahm, S.	18-Jan	10:30AM	Orange C	15
Koh, L.	17-Jan	2:45PM	Citrus B	9	Nakhmanson, S.	18-Jan	10:30AM	Cypress A/B	14
Kok, D.	18-Jan	3:00PM	Nautilus B	16	Newman, N.	19-Jan	11:45AM	Orange C	24
Koruza, J.	19-Jan	11:30AM	Magnolia A/B	22	<b>O</b>				
Kotsonis, G.N.	17-Jan	5:15PM	Cypress A/B	10	Olevsky, E.A.	18-Jan	11:30AM	Nautilus C	13
Kreisel, J.	19-Jan	9:15AM	Magnolia A/B	21	Olevsky, E.A.	18-Jan	2:30PM	Nautilus B	16
Krogstad, J.A.	17-Jan	2:30PM	Nautilus C	7	Orloff, N.	17-Jan	10:00AM	Magnolia A/B	5
Kumar, A.	19-Jan	12:00PM	Orange C	24	Ormstrup, J.	17-Jan	11:15AM	Citrus B	5
Kumar, S.	18-Jan	2:45PM	Cypress A/B	19	Osofsky, M.	19-Jan	2:30PM	Orange D	24
Kuna, L.	18-Jan	11:15AM	Cypress A/B	14	<b>P</b>				
Kusne, A.	18-Jan	4:00PM	Citrus B	18	Pachuta, K.G.	18-Jan	3:15PM	Cypress A/B	19
<b>L</b>					Paisley, E.A.	17-Jan	3:00PM	Cypress A/B	9
Lange, K.	17-Jan	4:00PM	Citrus A	10	Patel, T.	17-Jan	10:00AM	Citrus B	4
Langenberg, E.	19-Jan	12:15PM	Orange C	24	Paterson, A.	18-Jan	5:00PM	Orange C	20
Law, S.	19-Jan	9:00AM	Citrus A	21	Patterson, B.M.	18-Jan	10:30AM	Magnolia A/B	14
LeBeau, J.	17-Jan	2:00PM	Orange D	8	Patterson, E.	17-Jan	11:30AM	Orange C	7
Lee, H.	18-Jan	2:00PM	Orange D	19	Paudel, H.P.	18-Jan	12:00PM	Nautilus C	13
Lee, H.	18-Jan	2:45PM	Citrus A	17	Paul, J.T.	18-Jan	2:30PM	Citrus B	18
Lee, H.	19-Jan	10:30AM	Cypress A/B	22	Pitike, K.	18-Jan	11:00AM	Cypress A/B	14
Lee, J.	19-Jan	2:00PM	Citrus A	24	Popovic, N.B.	17-Jan	5:00PM	Magnolia A/B	8
Lee, S.	18-Jan	11:45AM	Cypress A/B	14	Pramanick, A.	19-Jan	11:45AM	Magnolia A/B	22
Lei, L.	19-Jan	9:30AM	Cypress A/B	22	Psychogiou, D.	17-Jan	4:15PM	Magnolia A/B	8
LeSar, R.	19-Jan	8:30AM	Citrus B	20	Pulskamp, J.	17-Jan	12:00PM	Magnolia A/B	5
Levin, I.	18-Jan	2:45PM	Magnolia A/B	17	<b>R</b>				
Lewis, D.	18-Jan	5:00PM	Nautilus C	16	Radovic, M.	18-Jan	4:45PM	Citrus A	17
Li, L.	17-Jan	10:30AM	Orange D	6	Radue, E.	17-Jan	4:45PM	Orange D	8
Li, L.	19-Jan	2:30PM	Citrus B	24	Radue, E.	19-Jan	11:30AM	Orange C	24
Li, Q.	18-Jan	4:00PM	Orange C	20	Rajan, K.	19-Jan	10:15AM	Citrus B	20
Liu, M.	17-Jan	5:00PM	Orange D	9	Rajan, K.	19-Jan	2:00PM	Citrus B	24
Liu, X.	17-Jan	4:15PM	Orange D	8	Ran, S.	17-Jan	11:30AM	Citrus A	6
Long, D.	17-Jan	4:15PM	Orange C	11	Randall, C.	17-Jan	3:45PM	Citrus B	9
Lookman, T.	18-Jan	2:00PM	Citrus B	18	Rappe, A.M.	18-Jan	11:00AM	Citrus A	14
Losego, M.D.	17-Jan	4:30PM	Cypress A/B	10	Rappe, A.M.	18-Jan	2:30PM	Nautilus C	16
Lowing, D.	17-Jan	3:00PM	Nautilus B	7	Reaney, I.M.	18-Jan	10:45AM	Citrus B	15
Luo, J.	18-Jan	4:00PM	Nautilus C	16	Reaney, I.M.	19-Jan	8:30AM	Orange C	23
<b>M</b>					Reimanis, I.	17-Jan	10:50AM	Nautilus B	4
MacManus-Driscoll, J.	18-Jan	8:40AM	Orange D	13	Rheinheimer, W.	17-Jan	11:15AM	Nautilus B	4
Mahjouri-Samani, M.	19-Jan	10:30AM	Citrus A	21	Rickman, J.	17-Jan	2:00PM	Nautilus B	7
Manjón Sanz, A.M.	18-Jan	2:30PM	Magnolia A/B	17	Rickman, J.	19-Jan	9:00AM	Citrus B	20
Mannodi-Kanakkithodi, A.	18-Jan	11:00AM	Nautilus C	13	Rödel, J.	17-Jan	11:45AM	Nautilus C	4
Mannodi-Kanakkithodi, A.	19-Jan	11:30AM	Citrus B	21	Rohrer, G.	17-Jan	10:25AM	Nautilus B	4
Mantri, S.	18-Jan	11:45AM	Magnolia A/B	14	Rojac, T.	19-Jan	2:00PM	Orange C	25
Marksz, E.	17-Jan	11:45AM	Magnolia A/B	5	Rost, C.M.	17-Jan	5:30PM	Cypress A/B	10
Marquis, E.	18-Jan	10:00AM	Magnolia A/B	14	<b>S</b>				
Martin, L.W.	17-Jan	10:00AM	Cypress A/B	5	Sabino, F.P.	19-Jan	3:30PM	Citrus A	24
Martin, L.W.	18-Jan	11:15AM	Orange D	15	Saremi, S.	17-Jan	10:30AM	Cypress A/B	6
Martin, S.W.	18-Jan	4:00PM	Cypress A/B	19	Saxena, M.	19-Jan	3:15PM	Orange C	25
Matt, C.E.	19-Jan	11:15AM	Citrus A	21	Schmidt, W.L.	17-Jan	2:30PM	Citrus B	9
McComb, D.W.	17-Jan	11:00AM	Nautilus C	4	Schneider, G.A.	17-Jan	3:15PM	Nautilus C	7
McComb, D.W.	18-Jan	11:30AM	Magnolia A/B	14	Schneider, G.A.	18-Jan	4:30PM	Nautilus B	17
McDowell, M.	17-Jan	11:45AM	Cypress A/B	6	Sebastian, M.	17-Jan	3:45PM	Citrus A	10
Meisenheimer, P.B.	17-Jan	4:00PM	Orange D	8	Seifert, D.U.	17-Jan	4:15PM	Citrus B	9
Michie, M.J.	17-Jan	12:00PM	Nautilus B	4	Selbach, S.M.	18-Jan	4:30PM	Magnolia A/B	18
Milne, S.J.	18-Jan	10:00AM	Citrus B	15	Seshadri, R.	18-Jan	11:30AM	Citrus A	14
Misirliloglu, B.	19-Jan	3:00PM	Orange C	25	Sheldon, B.W.	17-Jan	2:00PM	Nautilus C	7
Misture, S.T.	17-Jan	2:30PM	Nautilus B	7					
Misture, S.T.	18-Jan	2:00PM	Magnolia A/B	17					

## Oral Presenters

Name	Date	Time	Room	Page Number	Name	Date	Time	Room	Page Number
Shi, J.	19-Jan	3:00PM	Citrus A	24					
Shimizu, T.	17-Jan	2:30PM	Cypress A/B	9					
Shoemaker, D.P.	18-Jan	3:00PM	Magnolia A/B	18	Wachsman, E.D.	18-Jan	2:00PM	Cypress A/B	18
Shrout, T.	17-Jan	2:00PM	Orange C	10	Wada, S.	17-Jan	10:00AM	Orange C	7
Simons, H.W.	19-Jan	9:45AM	Magnolia A/B	21	Walker, J.	18-Jan	12:15PM	Orange C	16
Sinclair, D.C.	18-Jan	11:00AM	Citrus B	15	Walker, J.	18-Jan	3:15PM	Orange C	20
Sinclair, D.C.	19-Jan	12:00PM	Cypress A/B	22	Wallis, T.M.	17-Jan	2:00PM	Magnolia A/B	8
Smith, K.A.	18-Jan	3:00PM	Cypress A/B	19	Wan, D.	18-Jan	12:00PM	Citrus B	15
Smith, S.W.	17-Jan	2:45PM	Cypress A/B	9	Wang, G.	17-Jan	10:45AM	Citrus A	6
Soler, R.	17-Jan	3:00PM	Nautilus C	7	Wang, Z.	17-Jan	2:30PM	Orange D	8
Spreitzer, M.	17-Jan	10:30AM	Orange C	7	Wang, Z.	18-Jan	2:00PM	Citrus A	17
Srolovitz, D.J.	17-Jan	10:00AM	Nautilus B	4	West, A.R.	19-Jan	11:30AM	Cypress A/B	22
Staruch, M.	18-Jan	5:15PM	Orange C	20	Whitelock, H.	18-Jan	10:45AM	Cypress A/B	14
Steffes, J.	19-Jan	9:00AM	Magnolia A/B	21	Wilson, A.A.	17-Jan	11:15AM	Orange D	6
Surta, T.W.	18-Jan	12:15PM	Nautilus C	13	Won, S.	18-Jan	11:15AM	Orange C	16
Susner, M.A.	17-Jan	10:30AM	Citrus A	6	Woo, J.	18-Jan	12:00PM	Orange C	16
Susner, M.A.	19-Jan	9:30AM	Citrus A	21	Wu, J.	17-Jan	10:00AM	Citrus A	6
					Wu, J.	17-Jan	3:00PM	Citrus A	10
					Wu, R.	18-Jan	10:30AM	Orange D	15
		<b>T</b>							
Takahashi, R.	19-Jan	4:00PM	Orange D	25					
Talley, K.R.	18-Jan	5:45PM	Orange C	20	Xie, S.	18-Jan	4:45PM	Citrus B	18
Tidrow, S.	17-Jan	10:30AM	Citrus B	5					
Todd, R.I.	18-Jan	2:00PM	Nautilus B	16					
Tong, J.	19-Jan	8:30AM	Cypress A/B	22					
Travis, A.W.	17-Jan	12:00PM	Nautilus C	4	Yamaura, K.	17-Jan	11:00AM	Citrus A	6
Trolier-McKinstry, S.	17-Jan	10:45AM	Cypress A/B	6	Yang, C.	19-Jan	2:45PM	Orange C	25
Tsen, A.	19-Jan	8:30AM	Citrus A	21	Yang, K.	17-Jan	10:45AM	Nautilus C	4
Tsur, Y.	18-Jan	3:15PM	Nautilus B	17	Ye, Z.	17-Jan	2:30PM	Orange C	11
					Yoshida, H.	18-Jan	5:00PM	Nautilus B	17
					Yoshimura, M.	18-Jan	10:30AM	Nautilus C	13
		<b>U</b>							
Uršič, H.	19-Jan	8:30AM	Magnolia A/B	21					
Usher, T.	18-Jan	5:30PM	Magnolia A/B	18					
Usui, T.	17-Jan	10:45AM	Citrus B	5					
		<b>V</b>							
van Benthem, K.	18-Jan	5:45PM	Nautilus B	17	Zhai, J.	18-Jan	10:00AM	Orange C	15
Veazey, R.A.	17-Jan	4:45PM	Citrus B	9	Zhang, K.H.	19-Jan	4:45PM	Orange D	25
Viehland, D.	18-Jan	3:00PM	Nautilus C	16	Zhang, L.	18-Jan	11:00AM	Orange D	15
Viola, G.	19-Jan	12:00PM	Magnolia A/B	22	Zhang, L.	18-Jan	3:15PM	Citrus B	18
					Zhang, S.	18-Jan	10:00AM	Citrus A	14
					Zhang, S.	18-Jan	11:30AM	Orange C	16
					Zhang, Y.	18-Jan	11:45AM	Nautilus B	13
					Zhuk, M.	17-Jan	4:30PM	Orange C	11

## Poster Presenters

Name	Date	Time	Room	Page Number	Name	Date	Time	Room	Page Number
Al-Aaraji, M.N.	17-Jan	5:30PM	Orange A/B	11	Kuna, L.	17-Jan	5:30PM	Orange A/B	11
Al-Hamed, F.H.	17-Jan	5:30PM	Orange A/B	12	Lester, H.	17-Jan	5:30PM	Orange A/B	11
Banys, J.	17-Jan	5:30PM	Orange A/B	11	Li, H.	17-Jan	5:30PM	Orange A/B	12
Brodie, J.	17-Jan	5:30PM	Orange A/B	12	Mitic, V.	17-Jan	5:30PM	Orange A/B	12
Colton, Z.	17-Jan	5:30PM	Orange A/B	12	Muccillo, R.	17-Jan	5:30PM	Orange A/B	11
El-Faouri, S.	17-Jan	5:30PM	Orange A/B	12	Mula, S.	17-Jan	5:30PM	Orange A/B	11
Frömling, T.	17-Jan	5:30PM	Orange A/B	12	Myers, C.	17-Jan	5:30PM	Orange A/B	12
Gheorghiu, N.	17-Jan	5:30PM	Orange A/B	12	Panasyuk, G.Y.	17-Jan	5:30PM	Orange A/B	12
Gorzowski, E.	17-Jan	5:30PM	Orange A/B	12	Patel, T.	17-Jan	5:30PM	Orange A/B	12
Grimley, C.	17-Jan	5:30PM	Orange A/B	11	Pitike, K.	17-Jan	5:30PM	Orange A/B	11
Gupta, S.K.	17-Jan	5:30PM	Orange A/B	12	Rath, M.	17-Jan	5:30PM	Orange A/B	12
Haugan, T.J.	17-Jan	5:30PM	Orange A/B	12	Reis, S.L.	17-Jan	5:30PM	Orange A/B	11
Heath, J.P.	17-Jan	5:30PM	Orange A/B	12	Samanta, S.	17-Jan	5:30PM	Orange A/B	11
Huddleston, W.	17-Jan	5:30PM	Orange A/B	11	Sarangi, V.	17-Jan	5:30PM	Orange A/B	11
Ivanov, M.	17-Jan	5:30PM	Orange A/B	11	Sebastian, M.	17-Jan	5:30PM	Orange A/B	12
Ivy, J.	17-Jan	5:30PM	Orange A/B	12	Sun, Z.	17-Jan	5:30PM	Orange A/B	12
Kennedy, C.D.	17-Jan	5:30PM	Orange A/B	12	Watson, B.H.	17-Jan	5:30PM	Orange A/B	12
Kim, Y.	17-Jan	5:30PM	Orange A/B	12	Wright, B.L.	17-Jan	5:30PM	Orange A/B	12

## Wednesday, January 17, 2018

### Plenary Session I

Room: Orange D

Session Chair: Wayne Kaplan, Technion - Israel Inst of Tech

**8:30 AM**

#### Introduction

Wayne Kaplan, Technion - Israel Inst of Tech; Brady Gibbons, Oregon State University

**8:40 AM**

#### (EAM-PLEN- 001-2018) Using transport studies to reveal the myriad secrets of SrTiO<sub>3</sub>

R. A. De Souza\*<sup>1</sup>

1. RWTH Aachen University, Institute of Physical Chemistry, Germany

**9:30 AM**

#### Break

## BASIC SCIENCE DIV S3: Experimental and Theoretical Insights on Interfaces of Ceramics

### Experimental and theoretical insights on interfaces of ceramics

Room: Nautilus C

Session Chair: Christina Scheu, Max-Planck-Institute for Eisenforschung GmbH

**10:00 AM**

#### (EAM-BASIC-S3-001-2018) Dynamic simulation of oxygen transport through oxide films (Invited)

M. P. Tautschig<sup>1</sup>; N. M. Harrison<sup>1</sup>; M. W. Finnis\*<sup>1</sup>

1. Imperial College London, United Kingdom

**10:30 AM**

#### (EAM-BASIC-S3-002-2018) Understanding grain structure and phase coexistence in ferroelectric HfO<sub>2</sub> by STEM and crystal chemistry

E. D. Grimley\*<sup>1</sup>; T. Schenk<sup>2</sup>; T. Mikolajick<sup>2</sup>; U. Schroeder<sup>2</sup>; J. LeBeau<sup>1</sup>

1. North Carolina State University, Materials Science and Engineering, USA

2. NaMLab gGmbH, Germany

**10:45 AM**

#### (EAM-BASIC-S3-003-2018) $\delta$ -Doping Effects on Electronic and Energetic Properties of LaAlO<sub>3</sub>/SrTiO<sub>3</sub> Heterostructure: First-Principles Analysis of 23 Transition-Metal Dopants

J. Cheng<sup>1</sup>; J. Luo<sup>1</sup>; K. Yang\*<sup>1</sup>

1. University of California San Diego, Department of NanoEngineering, USA

**11:00 AM**

#### (EAM-BASIC-S3-004-2018) STEM Imaging and Analysis of Defects and Interfaces in Complex Oxides (Invited)

D. W. McComb\*<sup>1</sup>

1. The Ohio State University, USA

**11:30 AM**

#### (EAM-BASIC-S3-005-2018) Effect of a single grain boundary on resistance degradation of bicrystal SrTiO<sub>3</sub>

J. Carter\*<sup>1</sup>; T. J. Bayer<sup>1</sup>; C. Randall<sup>1</sup>

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

**11:45 AM**

#### (EAM-BASIC-S3-006-2018) Bicrystal piezotronics

J. Rödel\*<sup>1</sup>; P. Keil<sup>1</sup>; T. Frömling<sup>1</sup>; M. Trapp<sup>1</sup>; H. Kleebe<sup>1</sup>; N. Novak<sup>1</sup>

1. Technische Universität Darmstadt, Germany

**12:00 PM**

#### (EAM-BASIC-S3-007-2018) Thermal conductivity measurements of ceramic composites with the 3 omega method

A. W. Travis\*<sup>1</sup>; M. Mecartney<sup>1</sup>

1. University of California, Irvine, USA

## BASIC SCIENCE DIV S5: Morphology Evolution and Microstructure Characterization

### Experimental Studies of Microstructure Evolution

Room: Nautilus B

Session Chair: Helen Chan, Lehigh University

**10:00 AM**

#### (EAM-BASIC-S5-001-2018) Grain Boundary Migration in Polycrystals: A disconnection perspective (Invited)

D. J. Srolovitz\*<sup>1</sup>; J. Han<sup>1</sup>; S. Thomas<sup>1</sup>; K. Chen<sup>1</sup>; Y. Xiang<sup>2</sup>; L. Zhang<sup>2</sup>

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

2. Hong Kong University of Science and Technology, Mathematics, Hong Kong

**10:25 AM**

#### (EAM-BASIC-S5-002-2018) 3D observations of the evolution of grain morphology during grain growth (Invited)

A. Bhattacharya<sup>1</sup>; Y. Shen<sup>1</sup>; C. Hefferan<sup>1</sup>; S. Li<sup>1</sup>; J. Lind<sup>1</sup>; R. Suter<sup>1</sup>; G. Rohrer\*<sup>1</sup>

1. Carnegie Mellon University, USA

**10:50 AM**

#### (EAM-BASIC-S5-003-2018) Morphological Changes in Oxides Doped with Nickel: The Role of Oxide Particle Size (Invited)

I. Reimanis\*<sup>1</sup>; A. Morrissey<sup>2</sup>

1. Colorado School of Mines, USA

2. CoorsTek, USA

**11:15 AM**

#### (EAM-BASIC-S5-004-2018) Impact of Fe-dopant on grain growth in strontium titanate: Experimental evidence for solute drag

W. Rheinheimer\*<sup>1</sup>; M. J. Hoffmann<sup>2</sup>

1. Karlsruhe Institute of Technology, Institute for Applied Materials, Germany

2. University of Karlsruhe, Institute for Applied Materials (IAM-KM), Germany

**11:30 AM**

#### (EAM-BASIC-S5-005-2018) Influence of Defect Chemistry on the Grain Growth of Barium Strontium Titanate

F. J. Altermann\*<sup>1</sup>; W. Rheinheimer<sup>1</sup>; M. J. Hoffmann<sup>1</sup>

1. Karlsruhe Institute of Technology, Institute for Applied Materials – Ceramic Materials and Technologies, Germany

**11:45 AM**

#### (EAM-BASIC-S5-006-2018) The Influence of Impurities and Second Phase Particles on the Microstructural Evolution of Alumina

R. Moshe\*<sup>1</sup>; W. D. Kaplan<sup>1</sup>

1. Technion - Israel Institute of Technology, Israel

**12:00 PM**

#### (EAM-BASIC-S5-007-2018) Surface Faceting of Barium Strontium Titanate Alloys

M. J. Michie\*<sup>1</sup>; F. J. Altermann<sup>2</sup>; W. Rheinheimer<sup>2</sup>; C. Handwerker<sup>1</sup>; J. Blendell<sup>1</sup>

1. Purdue University, Materials Engineering, USA

2. Karlsruhe Institute of Technology, Germany

## ELECTRONICS DIV S2: Energy Applications of Electronic and Ferroic Ceramics: Synthesis, Characterization, and Theory

### Energy Applications of Electronic and Ferroic Ceramics

Room: Citrus B

Session Chair: Paul Evans, University of Wisconsin

**10:00 AM**

#### (EAM-ELEC-S2-001-2018) Flexocaloric Response of Epitaxial Ferroelectric Films (Invited)

H. Khassaf<sup>1</sup>; T. Patel\*<sup>1</sup>; R. Hebert<sup>1</sup>; P. Alpay<sup>1</sup>

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



**10:30 AM****(EAM-ELEC-S2-002-2018) NSMM Modeling and Design of Energy Conversion Materials**S. Tidrow\*<sup>1</sup>

1. Alfred University, USA

**10:45 AM****(EAM-ELEC-S2-003-2018) Electrocaloric effects in Pb(Nb,Zr,Sn,Ti)O<sub>3</sub> ceramics near ferroelectric and antiferroelectric phase transitions**T. Usui\*<sup>1</sup>; S. Hirose<sup>1</sup>; X. Moya<sup>2</sup>; N. D. Mathur<sup>2</sup>

1. Murata Manufacturing Co., Ltd., Japan
2. University of Cambridge, United Kingdom

**11:00 AM****(EAM-ELEC-S2-004-2018) Local electronic structure and covalent character in TiO<sub>2</sub> and BCZT electroceramics by core-hole spectroscopies.**G. M. Herrera\*<sup>1</sup>; O. Solis<sup>2</sup>; A. Reyes-Rojas<sup>3</sup>; L. Fuentes-Cobas<sup>3</sup>

1. CONACyT-CIMAV, Physics of Materials, Mexico
2. CIMAV, Nanotech, Mexico
3. CIMAV, Physics of Materials, Mexico

**11:15 AM****(EAM-ELEC-S2-005-2018) The kinetics and grain orientation dependence of the electric field induced phase transition in Sm modified BiFeO<sub>3</sub> ceramics**J. Ormstrup\*<sup>1</sup>; M. Makarovic<sup>2</sup>; M. Majkut<sup>3</sup>; T. Rojac<sup>2</sup>; J. Walker<sup>4</sup>; H. W. Simons<sup>1</sup>

1. Technical University of Denmark, Physics, Denmark
2. Jozef Stefan Institute, Electronic Ceramics, Slovenia
3. ESRF, France
4. Materials Research Institute, USA

**11:30 AM****(EAM-ELEC-S2-006-2018) Magnetoelectric vibrational energy harvesters utilizing a phase transitional approach**M. Staruch<sup>1</sup>; J. Yoo<sup>2</sup>; N. Jones<sup>2</sup>; P. Finkel\*<sup>1</sup>

1. U.S. Naval Research Laboratory, USA
2. Naval Surface Warfare Center Carderock Division, USA

**11:45 AM****(EAM-ELEC-S2-007-2018) Time Resolved Neutron Single Crystal Diffraction: A Technique to Probe Polarization Switching in Organic Ferroelectrics**C. Fancher\*<sup>1</sup>; A. Schultz<sup>2</sup>; C. Hoffmann<sup>1</sup>; X. Wang<sup>1</sup>

1. Oak Ridge National Lab, USA
2. Argonne National Lab, USA

**12:00 PM****(EAM-ELEC-S2-008-2018) Growth of orientation-controlled epitaxial (K, Na)NbO<sub>3</sub> thick films and their ferroelectric and piezoelectric properties**Y. Ito\*<sup>1</sup>; A. Tateyama<sup>1</sup>; Y. Nakamura<sup>1</sup>; T. Shimizu<sup>1</sup>; M. Kurosawa<sup>1</sup>; H. Funakubo<sup>1</sup>; H. Uchida<sup>2</sup>; T. Shiraishi<sup>3</sup>; T. Kiguchi<sup>3</sup>; T. J. Konno<sup>3</sup>; M. Ishikawa<sup>3</sup>

1. Tokyo Institute of Technology, Japan
2. Sophia University, Japan
3. Tohoku University, Japan
4. Toin University of Yokohama, Japan

**12:15 PM****(EAM-ELEC-S2-009-2018) Study of Bonding Material Utilizing Cold Sintering for High-Temperature Energy Harvesting Piezoelectric Device**W. Chen\*<sup>2</sup>; A. Gurdal<sup>3</sup>; S. Tuncdemir<sup>3</sup>; J. Guo<sup>2</sup>; C. Randall<sup>1</sup>

1. Pennsylvania State University, Materials Science and Engineering, USA
2. Pennsylvania State University, Material Research Institute, USA
3. Solid State Ceramics, Inc, USA

**ELECTRONICS DIV S6: Electronics Materials for 5G Telecommunications Applications****Electronics Materials for 5G Telecommunications Applications I**

Room: Magnolia A/B

Session Chairs: Nate Orloff, NIST; Geoff Brennecka, Colorado School of Mines

**10:00 AM****(EAM-ELEC-S6-001-2018) What is 5G and how can materials help?**N. Orloff\*<sup>2</sup>; C. Long<sup>2</sup>; G. L. Brennecka<sup>1</sup>

1. Colorado School of Mines, USA
2. NIST, USA
3. National Institute of Standards and Technology, Communications Technology Laboratory, USA

**10:15 AM****(EAM-ELEC-S6-002-2018) Bulk Acoustic Wave (BAW) RF filters for 5th Generation Telecommunication (Invited)**R. Aigner\*<sup>1</sup>

1. Qorvo, Acoustic R&D, USA

**10:45 AM****(EAM-ELEC-S6-003-2018) Tunable and Switchable RF blocks Based on Barium Strontium Titanate Films (Invited)**T. S. Kalkur\*<sup>1</sup>

1. University of Colorado Colorado Springs, Electrical and Computer Engineering, USA

**11:15 AM****(EAM-ELEC-S6-004-2018) mm-Wave dielectric property study of glass and ceramics (Invited)**L. Cai\*<sup>1</sup>

1. Corning Incorporated, Science and Technology, USA

**11:45 AM****(EAM-ELEC-S6-005-2018) How to Measure Relative Permittivity of Thin-Films and Substrates from 100 Hz to 125 GHz**E. Marks\*<sup>2</sup>; N. Orloff<sup>1</sup>; A. Hagerstrom<sup>2</sup>; C. Long<sup>2</sup>; J. Booth<sup>2</sup>; I. Takeuchi<sup>1</sup>

1. University of Maryland, Materials Science And Engineering, USA
2. National Institute of Standards and Technology, Communications Technology Laboratory (CTL), USA

**12:00 PM****(EAM-ELEC-S6-006-2018) PZT Based RF MEMS for Military and 5G Telecommunications Applications (Invited)**J. Pulskamp\*<sup>1</sup>; S. Bedair<sup>1</sup>; R. Rudy<sup>1</sup>; R. Benoit<sup>1</sup>; D. M. Potrepka<sup>1</sup>; R. G. Polcawich<sup>2</sup>

1. U.S. Army Research Laboratory, Sensors & Electron Devices Directorate, USA
2. US Army Research Laboratory, USA

**ELECTRONICS DIV S10: Synthesis and Processing Science of Thin Films and Single Crystals - The Details of Engineering Structure-Property Relationships****Pioneers in Synthesis**

Room: Cypress A/B

Session Chairs: Jon-Paul Maria, North Carolina State University; Elizabeth Paisley, Sandia National Laboratories

**10:00 AM****(EAM-ELEC-S10-001-2018) The Good, The Bad, and The Ugly – Redefining the Role of Defects in Complex-Oxide Thin Films (Invited)**L. W. Martin\*<sup>1</sup>

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

**10:30 AM****(EAM-ELEC-S10-002-2018) Electronic Transport and Ferroelectric Switching in Ion-Bombarded, Defect-Engineered BiFeO<sub>3</sub> Thin Films**S. Saremi\*<sup>1</sup>; R. Xu<sup>1</sup>; L. Dedon<sup>1</sup>; R. Gao<sup>1</sup>; L. W. Martin<sup>1</sup>

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

**10:45 AM****(EAM-ELEC-S10-003-2018) Reliability of Piezoelectric Microelectromechanical Systems (Invited)**S. Trolrier-McKinstry\*<sup>1</sup>

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

**11:15 AM****(EAM-ELEC-S10-004-2018) Understanding the defect chemistry controlling DC resistance degradation in PZT films**B. Akkopru Akgun\*<sup>1</sup>; T. J. Bayer<sup>1</sup>; K. Tsuji<sup>1</sup>; C. Randall<sup>1</sup>; M. Lanagan<sup>2</sup>; S. Trolrier-McKinstry<sup>1</sup>

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

**11:30 AM****(EAM-ELEC-S10-005-2018) Nucleation Studies of In-situ Sputtered Lead Zirconate Titanate Thin Films**C. Y. Cheng\*<sup>1</sup>; K. Grove<sup>2</sup>; B. Gibbons<sup>2</sup>; R. Benoit<sup>3</sup>; D. M. Potrepka<sup>3</sup>; J. Mulcahy<sup>3</sup>; G. R. Fox<sup>4</sup>; R. G. Polcawich<sup>5</sup>; S. Trolrier-McKinstry<sup>1</sup>

1. Pennsylvania State University, Materials Science and Engineering, USA
2. Oregon State University, School of Mechanical, Industrial, and Mechanical Engineering, USA
3. US Army Research Laboratory, Sensors and Electron Devices Directorate, USA
4. Fox Materials Consulting, LLC, USA
5. Defense Advanced Research Projects Agency, USA

**11:45 AM****(EAM-ELEC-S10-006-2018) Investigating the Dynamic Evolution of Ceramic Materials in Energy Storage Systems (Invited)**M. McDowell\*<sup>1</sup>; F. J. Quintero Cortes<sup>2</sup>

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

**ELECTRONICS DIV S11: Superconducting Materials and Applications****Superconducting Materials I**

Room: Citrus A

Session Chair: Gang Wang, Institute of Physics, Chinese Academy of Sciences

**10:00 AM****(EAM-ELEC-S11-001-2018) Electronic nematicity in a copper oxide superconductor (Invited)**J. Wu\*<sup>1</sup>

1. Brookhaven National Laboratory, Condensed Matter Physics, USA

**10:30 AM****(EAM-ELEC-S11-002-2018) Single Crystal Growth and Doping of Possible Chromium Analogues to Fe-based Superconductors**M. A. Susner\*<sup>2</sup>; R. Jishi<sup>2</sup>; J. Rodriguez<sup>2</sup>; T. Bullard<sup>3</sup>; T. J. Haugan<sup>1</sup>

1. Air Force Research Lab, AFRL/RQJM, USA
2. California State University, Los Angeles, Department of Physics and Astronomy, USA
3. Air Force Research Lab, Aerospace Systems Directorate, USA

**10:45 AM****(EAM-ELEC-S11-003-2018) Phase diagram of single-crystalline Eu(Fe<sub>1-x</sub>Co<sub>x</sub>)<sub>2</sub>As<sub>2</sub> (x ≤ 0.24) grown by transition metal arsenide flux**G. Wang\*<sup>1</sup>; W. R. Meier<sup>2</sup>; W. E. Straszheim<sup>3</sup>; J. Slagle<sup>3</sup>; S. Bud'ko<sup>3</sup>; P. C. Caneld<sup>2</sup>

1. Institute of Physics, Chinese Academy of Sciences, China
2. Ames Laboratory, Iowa State University, USA
3. Civil and Construction Engineering Department, Iowa State University, USA

**11:00 AM****(EAM-ELEC-S11-004-2018) Large negative magnetoresistance of a nearly Dirac material EuMnSb<sub>2</sub> (Invited)**K. Yamaura\*<sup>1</sup>

1. National Institute for Materials Science, Japan

**11:30 AM****(EAM-ELEC-S11-005-2018) Thermal expansion and high magnetic field electrical transport measurements on Fe substituted URu<sub>2</sub>Si<sub>2</sub> (Invited)**S. Ran\*<sup>1</sup>

1. University of Maryland, Material Science and Engineering, USA

**12:00 PM****(EAM-ELEC-S11-006-2018) Carbon's allotropy towards becoming the lightest magnetic superconductor (Invited)**N. Gheorghiu\*<sup>2</sup>; C. Ebbing<sup>3</sup>; T. J. Haugan<sup>1</sup>

1. Air Force Research Lab, AFRL/RQJM, USA
2. UES, Inc., USA
3. University of Dayton Research Institute, USA

**ELECTRONICS DIV S12: Thermal Transport and Storage in Functional Materials and Devices****Thermal Transport and Storage**

Room: Orange D

Session Chair: Alp Sehirliglu, Case Western Reserve University

**10:00 AM****(EAM-ELEC-S12-001-2018) What is the likely value of the thermal conductivity of my ceramic material? (Invited)**D. R. Clarke\*<sup>1</sup>

1. Harvard University, School of Engineering and Applied Sciences, USA

**10:30 AM****(EAM-ELEC-S12-002-2018) Tuning Thermal Transport in Two-Dimensional Transition Metal Dichalcogenides**L. Li\*<sup>1</sup>

1. Boise State University, Micron School of Materials Science and Engineering, USA

**10:45 AM****(EAM-ELEC-S12-003-2018) Phonon Thermal Transport in Ultra-Wide Bandgap β-Ga<sub>2</sub>O<sub>3</sub>**B. Foley\*<sup>1</sup>; S. Graham<sup>1</sup>

1. Georgia Institute of Technology, George W. Woodruff School of Mechanical Engineering, USA

**11:00 AM****(EAM-ELEC-S12-004-2018) Characterization of thermal transport across cracks in optical materials**B. F. Donovan\*<sup>2</sup>; J. LaFlam<sup>1</sup>; R. Warzoha<sup>1</sup>

1. United States Naval Academy, Mechanical Engineering, USA
2. United States Naval Academy, Physics, USA

**11:15 AM****(EAM-ELEC-S12-005-2018) Thermal conductivity mapping of iridium oxide using a combined non-contact and contact mode scanning hot probe technique**A. A. Wilson\*<sup>2</sup>; M. Rivas<sup>1</sup>

1. US Army Research Laboratory, Sensors and Electron Devices Directorate, USA

**11:30 AM****(EAM-ELEC-S12-006-2018) Characterizing Novel Transducers for High Temperature Thermal Measurements Using Time Domain Thermoreflectance**B. D. Butler\*<sup>1</sup>; C. M. Rost<sup>1</sup>; J. L. Braun<sup>1</sup>; K. Ferri<sup>2</sup>; L. Backman<sup>3</sup>; C. Dawes<sup>2</sup>; T. M. Borman<sup>2</sup>; E. J. Opila<sup>3</sup>; J. Maria<sup>2</sup>; P. E. Hopkins<sup>1</sup>

1. University of Virginia, Mechanical and Aerospace Engineering, USA
2. North Carolina State University, USA
3. University of Virginia, Materials Science & Engineering, USA

## **ELECTRONICS DIV S13: Advanced Electronic Materials: Processing, Structure, Properties, and Applications**

### **Advanced Electronic Materials I: Processing**

Room: Orange C

Session Chairs: Satoshi Wada, University of Yamanashi;  
Matjaz Spreitzer, Jozef Stefan Institute

**10:00 AM**

#### **(EAM-ELEC-S13-001-2018) Strange Low Temperature Preparation of Perovskite-based Nano-complex Ceramics by Solvothermal Solidification Method (Invited)**

S. Wada\*<sup>1</sup>

1. University of Yamanashi, Material Science and Technology, Japan

**10:30 AM**

#### **(EAM-ELEC-S13-002-2018) Growth Peculiarities of Pb(Mg<sub>1/3</sub>Nb<sub>2/3</sub>)O<sub>3</sub>-PbTiO<sub>3</sub> Epitaxial Thin Films on SrTiO<sub>3</sub> Substrates Using Pulsed-Laser Deposition (Invited)**

M. Spreitzer\*<sup>1</sup>; U. Gabor<sup>1</sup>; H. Uršič<sup>2</sup>; E. Tchernychova<sup>3</sup>; D. Suvorov<sup>1</sup>

1. Jozef Stefan Institute, Advanced Materials Department, Slovenia
2. Jozef Stefan Institute, Electronic Ceramics Department, Slovenia
3. National Institute of Chemistry, Department of Materials Chemistry, Slovenia

**11:00 AM**

#### **(EAM-ELEC-S13-003-2018) Utilizing Cold Sintering Process for the Fabrication of Microwave dielectric materials and devices**

J. Guo\*<sup>1</sup>; N. Pfeiffenberger<sup>2</sup>; A. Baker<sup>1</sup>; H. Guo<sup>2</sup>; M. Lanagan<sup>3</sup>; C. Randall<sup>3</sup>

1. Pennsylvania State University, USA
2. Pennsylvania State University, Dept. of Engineering Science and Mechanics, USA
3. Pennsylvania State University, Materials Science and Engineering, USA
4. Pennsylvania State University, Materials Research Institute, USA
5. SABIC, USA

**11:15 AM**

#### **(EAM-ELEC-S13-004-2018) Low temperature sintering techniques: Paving the way to new ceramic materials**

T. Herisson de Beauvoir\*<sup>1</sup>; A. Ndayishimiye<sup>3</sup>; J. Guo<sup>2</sup>; Z. Xuetong<sup>1</sup>; G. Goglio<sup>3</sup>; C. Elissalde<sup>3</sup>; M. Josse<sup>2</sup>; C. Randall<sup>1</sup>

1. Material Research Institute - Pennsylvania State University, USA
2. Pennsylvania State University, Materials Science and Engineering, USA
3. ICMCB-CNRS, France

**11:30 AM**

#### **(EAM-ELEC-S13-005-2018) Freeze-Casting of High Temperature Dielectric Composites**

E. Patterson\*<sup>2</sup>; M. Baczkowski<sup>3</sup>; E. Gorzkowski<sup>1</sup>

1. Naval Research Lab, USA
2. ASEE, USA
3. University of Connecticut, USA

**11:45 AM**

#### **(EAM-ELEC-S13-006-2018) Dielectric and energy storage properties of Na(Nb<sub>1-x</sub>Ta<sub>x</sub>)O<sub>3</sub> ceramics prepared by spark plasma sintering**

J. Bian\*<sup>2</sup>; D. Suvorov<sup>1</sup>

1. Jozef Stefan Institute, Advanced Materials, Slovenia
2. Shanghai University, Department of Inorganic Materials, China

**12:00 PM**

#### **(EAM-ELEC-S13-007-2018) Ceramics Intergranular Contacts in the Frame of Fractal Hull**

V. Mitic\*<sup>1</sup>; L. Kocić<sup>2</sup>; V. Paunović<sup>2</sup>

1. Serbian Academy of Sciences, Institute of Technical Sciences, Serbia
2. Faculty of Electronic Engineering, University of Nis, Serbia

## **BASIC SCIENCE DIV S4: Fundamentals of Mechanical Response**

### **Mechanical Behavior**

Room: Nautilus C

Session Chairs: Ivar Reimanis, Colorado School of Mines;  
Gerhard Dehm, Max-Planck-Institute for Eisenforschung GmbH

**2:00 PM**

#### **(EAM-BASIC-S4-001-2018) Chemo-Mechanical Failure Mechanisms in Ceramic Nanocomposites (Invited)**

B. W. Sheldon\*<sup>1</sup>

1. Brown University, School of Engineering, USA

**2:30 PM**

#### **(EAM-BASIC-S4-002-2018) Ferroelastic switching as a route to enhanced toughness: Understanding the role of coercive stress (Invited)**

C. S. Smith<sup>1</sup>; J. A. Krogstad\*<sup>1</sup>

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

**3:00 PM**

#### **(EAM-BASIC-S4-003-2018) Combining high strength and moderate ductility in a novel ceramic coating: A combined ab initio and micromechanical study on Mo<sub>2</sub>BC**

R. Soler\*<sup>1</sup>; S. Gleich<sup>1</sup>; H. Bolvardi<sup>2</sup>; C. Kirchlechner<sup>1</sup>; J. M. Schneider<sup>2</sup>; C. Scheu<sup>1</sup>; G. Dehm<sup>1</sup>

1. Max-Planck-Institute for Eisenforschung GmbH, Germany
2. RWTH Aachen University, Germany

**3:15 PM**

#### **(EAM-BASIC-S4-004-2018) Organically linked iron oxide nanoparticle supercrystals with exceptional isotropic mechanical properties**

G. A. Schneider\*<sup>1</sup>; B. Domenech<sup>1</sup>; D. Giuntini<sup>1</sup>; B. Bor<sup>1</sup>; D. Benke<sup>1</sup>

1. Hamburg University of Technology, Germany

**3:30 PM**

#### **(EAM-BASIC-S4-005-2018) Bond length, elastic and thermal properties as a function of crystallite-size in unary nano-oxides**

S. Chan\*<sup>1</sup>

1. Columbia University, Applied Physics, USA

## **BASIC SCIENCE DIV S5: Morphology Evolution and Microstructure Characterization**

### **Modeling and Characterization**

Room: Nautilus B

Session Chair: Dan Lewis, Rensselaer Polytechnic Institute

**2:00 PM**

#### **(EAM-BASIC-S5-008-2018) Microstructure and Kinetics Associated with First-Order Phase Transformations (Invited)**

J. Rickman\*<sup>1</sup>

1. Lehigh University, Materials Science and Engineering, USA

**2:30 PM**

#### **(EAM-BASIC-S5-009-2018) In-situ SEM study of crystal faceting and surfaces during selective reduction of metals from oxides (Invited)**

S. T. Misture\*<sup>1</sup>

1. Alfred University, MSE, USA

**3:00 PM**

#### **(EAM-BASIC-S5-010-2018) Surface Faceting Behavior in NiO-MgO**

D. Lowing\*<sup>1</sup>; C. Handwerker<sup>1</sup>; J. Blendell<sup>1</sup>

1. Purdue University, USA

**3:15 PM**

#### **(EAM-BASIC-S5-011-2018) Novel Processing Routes to Bulk Nanostructured Ceramics (Invited)**

E. Gorzkowski\*<sup>1</sup>

1. Naval Research Lab, USA

**3:45 PM****(EAM-BASIC-S5-012-2018) Innovative Processing and Scalable Consolidation of Metal-Ceramic Nanocomposites**K. Anderson\*; R. P. Vinci<sup>1</sup>; H. M. Chan<sup>1</sup>

1. Lehigh University, USA

**4:00 PM****(EAM-BASIC-S5-013-2018) Modeling Domain and Topological Defect Structure Evolution in Hexagonal Manganite Using Phase-field Simulations (Invited)**F. Xue<sup>1</sup>; X. Wang<sup>2</sup>; S. Cheong<sup>3</sup>; L. Chen\*<sup>1</sup>

1. The Pennsylvania State University, Materials Science and Engineering, USA
2. Beijing University of Technology, China
3. Rutgers University, USA

**ELECTRONICS DIV S6: Electronics Materials for 5G Telecommunications Applications****Electronics Materials for 5G Telecommunications Applications II**

Room: Magnolia A/B

Session Chairs: Nate Orloff, NIST; Thomas Wallis, National Institute of Standards and Technology

**2:00 PM****(EAM-ELEC-S6-007-2018) Microwave Characterization of Nanomaterials for 5G Applications (Invited)**T. M. Wallis\*<sup>1</sup>; S. Berweger<sup>1</sup>; P. Kabos<sup>1</sup>

1. National Institute of Standards and Technology, Applied Physics Division, USA

**2:30 PM****(EAM-ELEC-S6-008-2018) Defect Mitigating (SrTiO<sub>3</sub>)<sub>n</sub>(BaTiO<sub>3</sub>)<sub>m</sub>SrO Superlattices for mmWave Tunable Dielectrics (Invited)**N. Dawley\*<sup>1</sup>; X. Lu<sup>2</sup>; A. Hagerstrom<sup>2</sup>; G. Olsen<sup>3</sup>; M. Holtz<sup>2</sup>; C. Lee<sup>1</sup>; J. Zhang<sup>1</sup>; C. Fennie<sup>3</sup>; D. Muller<sup>3</sup>; N. Orloff<sup>1</sup>; J. Booth<sup>2</sup>; D. Schlom<sup>1</sup>

1. Cornell University, Materials Science and Engineering, USA
2. NIST, USA
3. Cornell University, Applied and Engineering Physics, USA

**3:00 PM****(EAM-ELEC-S6-009-2018) Broadband nonlinear dielectric spectroscopy of materials with polar nano-regions (Invited)**A. Hagerstrom\*<sup>1</sup>; E. Marks<sup>2</sup>; C. Long<sup>1</sup>; N. Orloff<sup>1</sup>

1. National Institute of Standards and Technology, Communications Technology Laboratory, USA
2. University of Maryland, Materials Science And Engineering, USA

**3:30 PM****Break****4:00 PM****(EAM-ELEC-S6-010-2018) Enhanced Quality Factor of Mg<sub>2</sub>TiO<sub>4</sub>-based Ceramics at Microwave Frequencies**E. Kim\*<sup>1</sup>

1. Kyonggi University, Department of Materials Engineering, Republic of Korea

**4:15 PM****(EAM-ELEC-S6-011-2018) Continuously tunable acoustic-wave-resonator-based RF filters for next generation wireless communication transceivers**D. Psychogiou\*<sup>1</sup>

1. University of Colorado, Boulder, Electrical Computed and Energy Engineering, USA

**4:45 PM****(EAM-ELEC-S6-012-2018) Tunable Photoconductive Resistor for Multi-State Calibrations and Materials Characterization**J. Drisko\*<sup>1</sup>; X. Ma<sup>2</sup>; J. Davila-Rodriguez<sup>1</sup>; J. Booth<sup>1</sup>; A. Feldman<sup>1</sup>; F. Quinlan<sup>1</sup>; N. Orloff<sup>1</sup>; C. Long<sup>1</sup>

1. National Institute of Standards and Technology, USA
2. Lehigh University, USA

**5:00 PM****(EAM-ELEC-S6-013-2018) Nondestructive Electrical Property Measurements by Multireflect Thru to 110GHz**N. B. Popovic\*<sup>2</sup>; J. Drisko<sup>2</sup>; S. E. Shaheen<sup>1</sup>; E. Garbozi<sup>2</sup>; C. Long<sup>2</sup>; N. Orloff<sup>2</sup>

1. University of Colorado, Boulder, Electrical Engineering, USA
2. National Institute of Standards and Technology, USA

**ELECTRONICS DIV S8: Multifunctional Nanocomposites****Thin Film Growth: A STEM Study**

Room: Orange D

Session Chair: Hyoungjeen Jeon, Pusan National University

**2:00 PM****(EAM-ELEC-S8-001-2018) Native formation of oxide/oxide and oxide/nitride nano-composites (Invited)**J. LeBeau\*<sup>1</sup>; J. Dycus<sup>1</sup>; W. Xu<sup>1</sup>; P. Bowes<sup>1</sup>; K. Mirrielees<sup>1</sup>; E. D. Grimley<sup>1</sup>; D. Irving<sup>1</sup>

1. North Carolina State University, Materials Science & Engineering, USA

**2:30 PM****(EAM-ELEC-S8-002-2018) Atomic-Scale Analysis of Phases of Layered In<sub>2</sub>Se<sub>3</sub> for high performance photodetectors (Invited)**Z. Wang\*<sup>1</sup>

1. International Iberian Nanotechnology Laboratory (INL), Department of Quantum Materials, Science and Technology, Portugal

**3:00 PM****(EAM-ELEC-S8-003-2018) Metrology of polar displacements across interfaces and domain walls in complex oxides: A high resolution aberration-corrected electron microscopy study (Invited)**N. Alem\*<sup>1</sup>

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

**3:30 PM****Break****Thin Film Growth and Functionalities**

Room: Orange D

Session Chair: Julia Mundy, Harvard University

**4:00 PM****(EAM-ELEC-S8-004-2018) Magnetic and structural order and deviations from rule of mixtures in entropy stabilized oxide heterostructures**P. B. Meisenheimer\*<sup>1</sup>; T. Kratofil<sup>1</sup>; J. Heron<sup>1</sup>

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

**4:15 PM****(EAM-ELEC-S8-005-2018) Synthesis of Ruddlesden-Popper strontium iridate epitaxial thin films by kinetic control**X. Liu\*<sup>1</sup>; Y. Cao<sup>1</sup>; B. Pal<sup>1</sup>; S. Middey<sup>4</sup>; M. Kareev<sup>1</sup>; Y. Choi<sup>3</sup>; P. Shafer<sup>2</sup>; D. Haskel<sup>1</sup>; E. Arenholz<sup>2</sup>; J. Chakhalian<sup>1</sup>

1. Rutgers University, Physics & Astronomy, USA
2. Lawrence Berkeley National Laboratory, USA
3. Argonne National Laboratory, USA
4. Indian Institute of Science, India

**4:30 PM****(EAM-ELEC-S8-006-2018) On the epitaxial relationships between CdO thin films and sapphire substrates**E. D. Grimley\*<sup>1</sup>; K. Kelley<sup>1</sup>; E. Sachet<sup>1</sup>; J. Maria<sup>1</sup>; J. LeBeau<sup>1</sup>

1. North Carolina State University, Materials Science and Engineering, USA

**4:45 PM****(EAM-ELEC-S8-007-2018) Time-dependent thermorefectivity of doped CdO thin films with mid-IR surface plasmon polaritons**E. Radue\*<sup>2</sup>; E. Runnerstrom<sup>1</sup>; J. Maria<sup>1</sup>; P. E. Hopkins<sup>2</sup>

1. North Carolina State University, Materials Science and Engineering, USA
2. University of Virginia, Mechanical and Aerospace Engineering, USA

**5:00 PM****(EAM-ELEC-S8-008-2018) Interface-Thickness Optimization of Lead-Free Oxide Multilayer Capacitors for High-Performance Energy Storage (Invited)**M. Liu<sup>\*</sup>; Z. Sun<sup>1</sup>; L. Wang<sup>2</sup>; Z. Liang<sup>2</sup>; Q. Fan<sup>2</sup>; L. Lu<sup>2</sup>; C. Ma<sup>3</sup>; X. Lou<sup>2</sup>; H. Wang<sup>2</sup>; C. Jia<sup>2</sup>

1. Xi'an Jiaotong University, School of Microelectronics, China
2. Xi'an Jiaotong University, China
3. Xi'an Jiaotong University, Material Science and Engineering, China

**ELECTRONICS DIV S9: Substitution and Sustainability in Functional Materials and Devices****Substitution and Sustainability in Functional Materials I**

Room: Citrus B

Session Chair: Derek Sinclair, University of Sheffield

**2:00 PM****(EAM-ELEC-S9-001-2018) Low-temperature bio-inspired synthesis of functional oxides (Invited)**R. Boston<sup>\*</sup>; I. M. Reaney<sup>1</sup>; D. C. Sinclair<sup>1</sup>

1. University of Sheffield, Materials Science & Engineering, United Kingdom

**2:30 PM****(EAM-ELEC-S9-003-2018) Thermoelectric property optimization of reduced Sr<sub>1-3x/2</sub>RE<sub>x</sub>TiO<sub>3-δ</sub>**W. L. Schmidt<sup>\*</sup>; G. D. Lewin<sup>1</sup>; A. Iyasara<sup>1</sup>; D. C. Sinclair<sup>1</sup>; I. M. Reaney<sup>1</sup>

1. University of Sheffield, Materials Science & Engineering, United Kingdom

**2:45 PM****(EAM-ELEC-S9-004-2018) Materials and manufacturing supply chain life cycle sustainability: The next frontier (Invited)**L. Koh<sup>\*</sup>

1. The University of Sheffield, Advanced Resource Efficiency Centre, United Kingdom

**3:15 PM****Break****3:45 PM****(EAM-ELEC-S9-005-2018) Grain Boundary Engineering Opportunities for Novel Composites with the Aid of Cold Sintering (Invited)**C. Randall<sup>\*</sup>; J. Guo<sup>3</sup>; Z. Xuetong<sup>3</sup>; T. Herisson de Beauvoir<sup>1</sup>

1. MRI - Pennsylvania State University, USA
2. Pennsylvania State University, Materials Science and Engineering, USA
3. Pennsylvania State University, USA

**4:15 PM****(EAM-ELEC-S9-006-2018) Development of Lead-free PTCR Materials**D. U. Seifert<sup>\*</sup>; M. J. Hoffmann<sup>1</sup>; M. Hinterstein<sup>1</sup>

1. Karlsruhe Institute of Technology, Institute for Applied Materials, Germany

**4:30 PM****(EAM-ELEC-S9-007-2018) Material characteristics from Cold Sintering Process (CSP) compared to conventional sintering**R. Floyd<sup>\*</sup>; X. Kang<sup>1</sup>; J. Maria<sup>2</sup>

1. North Carolina State University, USA
2. Pennsylvania State University, USA

**4:45 PM****(EAM-ELEC-S9-008-2018) The Influence of Electrode Geometry on the Average and Local Electrical Responses of Electroceramics**R. A. Veazey<sup>\*</sup>; J. S. Dean<sup>1</sup>; A. S. Gandy<sup>1</sup>; D. C. Sinclair<sup>1</sup>

1. University of Sheffield, Materials Science and Engineering, United Kingdom

**5:00 PM****(EAM-ELEC-S9-009-2018) Finite Element Modelling of the Electrical Microstructure of Rough Interfaces**J. P. Heath<sup>\*</sup>; J. S. Dean<sup>1</sup>; J. Harding<sup>1</sup>; D. C. Sinclair<sup>1</sup>

1. University of Sheffield, Material Science and Engineering, United Kingdom

**ELECTRONICS DIV S10: Synthesis and Processing Science of Thin Films and Single Crystals - The Details of Engineering Structure-Property Relationships****Refined Synthesis Routes to Advance and Enable Properties I**

Room: Cypress A/B

Session Chair: Mark Losego, Georgia Institute of Technology

**2:00 PM****(EAM-ELEC-S10-007-2018) Disorder and fluctuations in superconducting BaPb<sub>1-x</sub>Bi<sub>x</sub>O<sub>3</sub> epitaxial thin films (Invited)**D. T. Harris<sup>\*</sup>; N. Campbell<sup>2</sup>; R. Uecker<sup>2</sup>; D. Schlom<sup>1</sup>; M. Rzchowski<sup>1</sup>; C. Eom<sup>1</sup>

1. University of Wisconsin-Madison, Materials Science and Engineering, USA
2. University of Wisconsin - Madison, Physics, USA
3. Leibniz Institute for Crystal Growth, Germany
4. Cornell University, Department of Materials Science and Engineering, USA

**2:30 PM****(EAM-ELEC-S10-008-2018) Domain switching in epitaxial ferroelectric HfO<sub>2</sub> films**T. Shimizu<sup>\*</sup>; T. Mimura<sup>1</sup>; T. Kiguchi<sup>2</sup>; T. Shiraishi<sup>2</sup>; A. Akama<sup>2</sup>; T. J. Konno<sup>2</sup>; O. Sakata<sup>3</sup>; K. Yoshio<sup>3</sup>; H. Funakubo<sup>1</sup>

1. Tokyo Institute of Technology, Japan
2. Tohoku University, Japan
3. National Institute for Materials Science (NIMS), Japan

**2:45 PM****(EAM-ELEC-S10-009-2018) Thickness Dependence of Pyroelectric and Ferroelectric Response in (Hf,Zr)O<sub>2</sub>**S. W. Smith<sup>\*</sup>; M. D. Henry<sup>1</sup>; J. Ihlefeld<sup>2</sup>

1. Sandia National Laboratories, USA
2. University of Virginia, Department of Materials Science and Engineering, USA

**3:00 PM****(EAM-ELEC-S10-010-2018) Domain Wall Contribution to Room Temperature Phonon Scattering in Epitaxial PbZr<sub>0.20</sub>Ti<sub>0.80</sub>O<sub>3</sub> on SrTiO<sub>3</sub>**E. A. Paisley<sup>\*</sup>; B. M. Foley<sup>1</sup>; J. Gaskins<sup>1</sup>; D. Scrymgeour<sup>1</sup>; J. Michael<sup>1</sup>; B. McKenzie<sup>1</sup>; D. Medlin<sup>1</sup>; J. Maria<sup>2</sup>; P. E. Hopkins<sup>3</sup>; J. Ihlefeld<sup>2</sup>

1. Sandia National Laboratories, USA
2. North Carolina State University, Materials Science and Engineering, USA
3. University of Virginia, Department of Materials Science and Engineering, USA
4. University of Virginia, Mechanical and Aerospace Engineering, USA

**3:15 PM****Break****Refined Synthesis Routes to Advance and Enable Properties II**

Room: Cypress A/B

Session Chair: Sean Smith, Sandia National Laboratories

**4:00 PM****(EAM-ELEC-S10-011-2018) Novel plasmonic metamaterials enabled by epitaxial CdO multilayer heterostructures (Invited)**K. Kelley<sup>\*</sup>; J. Maria<sup>1</sup>; E. Runnerstrom<sup>1</sup>; E. Sachtel<sup>1</sup>

1. North Carolina State University, Materials Science and Engineering, USA

**4:30 PM****(EAM-ELEC-S10-012-2018) Quantifying the Processing Kinetics of Vapor Phase Infiltration for Organic-Inorganic Hybrid Materials Synthesis**M. D. Losego<sup>\*1</sup>; C. Leng<sup>1</sup>

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

**4:45 PM****(EAM-ELEC-S10-013-2018) Development of lattice-matched Mg<sub>1-x</sub>Ca<sub>x</sub>O gate oxides for (Al)GaN power transistors**P. Dickens<sup>\*4</sup>; E. A. Paisley<sup>3</sup>; B. Gunning<sup>3</sup>; S. W. Smith<sup>2</sup>; M. Brumbach<sup>3</sup>; S. Atcitty<sup>3</sup>; M. D. Losego<sup>1</sup>; J. Maria<sup>2</sup>; J. Ihlefeld<sup>4</sup>

1. Georgia Institute of Technology, School of Materials Science and Engineering, USA
2. North Carolina State University, Materials Science and Engineering, USA
3. Sandia National Laboratories, USA
4. Sandia National Laboratories, 1816, USA
5. Sandia National Laboratories, Electronic, Optical, and Nano Materials, USA
6. University of Virginia, Department of Materials Science and Engineering, USA

**5:00 PM****(EAM-ELEC-S10-014-2018) High Entropy Ultra-High Temperature Thin Films: Synthesis and Characterization**T. M. Borman<sup>\*1</sup>; M. D. Hossain<sup>1</sup>; Z. Rak<sup>1</sup>; D. Brenner<sup>1</sup>; T. Harrington<sup>3</sup>; K. S. Vecchio<sup>3</sup>; E. A. Paisley<sup>2</sup>; J. Maria<sup>1</sup>

1. North Carolina State University, Materials Science and Engineering, USA
2. Sandia National Laboratories, USA
3. University of California, San Diego, Department of NanoEngineering, USA

**5:15 PM****(EAM-ELEC-S10-015-2018) Evidence for Entropy Stabilization in Oxide Thin Film Growth**G. N. Kotsonis<sup>\*1</sup>; C. M. Rost<sup>2</sup>; D. T. Harris<sup>3</sup>; J. Maria<sup>1</sup>

1. North Carolina State University, Materials Science and Engineering, USA
2. University of Virginia, Mechanical and Aerospace Engineering, USA
3. University of Wisconsin - Madison, Materials Science and Engineering, USA

**5:30 PM****(EAM-ELEC-S10-016-2018) Underlying Mechanisms Controlling Thermal Properties in Entropy Stabilized Oxide Thin Films**C. M. Rost<sup>\*1</sup>; J. L. Braun<sup>1</sup>; G. N. Kotsonis<sup>2</sup>; D. T. Harris<sup>3</sup>; J. Maria<sup>2</sup>; P. E. Hopkins<sup>1</sup>

1. University of Virginia, Mechanical and Aerospace Engineering, USA
2. North Carolina State University, Materials Science and Engineering, USA
3. University of Wisconsin Madison, Materials Science and Engineering, USA

**ELECTRONICS DIV S11: Superconducting Materials and Applications****Superconducting Materials II**

Room: Citrus A

Session Chair: Timothy Haugan, U.S. Air Force Research Laboratory

**2:00 PM****(EAM-ELEC-S11-007-2018) High-throughput syntheses and fast screening of cuprate and FeSe thin films (Invited)**K. Jin<sup>\*1</sup>

1. Institute of Physics, Chinese Academy of Sciences, National Lab for Superconductivity, China

**2:30 PM****(EAM-ELEC-S11-008-2018) Growth of atomically flat NbN thin films and development of in situ two-coil mutual inductance technique (Invited)**J. Jia<sup>\*1</sup>

1. Shanghai Jiao Tong University, Physics and Astronomy, China

**3:00 PM****(EAM-ELEC-S11-009-2018) Manipulation of micro-strain to generate strong and isotropic artificial pinning centers in YBCO nanocomposite films (Invited)**J. Wu<sup>\*1</sup>

1. University of Kansas, USA

**3:30 PM****Break****3:45 PM****(EAM-ELEC-S11-010-2018) Comparison of the Flux Pinning Landscape of YBa<sub>2</sub>Cu<sub>3</sub>O<sub>7-δ</sub> Thin Films with Single and Mixed Phase Additions BaMO<sub>3</sub> + Z: M = Hf, Sn, Zr and Z = Y<sub>2</sub>O<sub>3</sub>, Y<sub>2</sub>BaCuO<sub>5</sub>**M. Sebastian<sup>\*1</sup>; T. Bullard<sup>4</sup>; C. Ebbing<sup>1</sup>; G. Panasyuk<sup>4</sup>; J. Huang<sup>5</sup>; C. F. Tsai<sup>5</sup>; W. Zhang<sup>5</sup>; H. Wang<sup>3</sup>; B. Gautum<sup>2</sup>; C. Shihong<sup>2</sup>; J. Wu<sup>2</sup>; T. J. Haugan<sup>2</sup>

1. UDRI, USA
2. Air Force Research Lab, AFRL/RQQM, USA
3. University of Kansas, Dept. of Astronomy & Physics, USA
4. UES, USA
5. Purdue University, Dept. of Materials Engineering, USA

**4:00 PM****(EAM-ELEC-S11-011-2018) Comparison of edge-barrier pinning in micron scale YBCO bridges made by photolithography and ultrafast laser ablation**K. Lange<sup>\*1</sup>; J. Bulmer<sup>1</sup>; A. Di Bernardo<sup>2</sup>; J. Feighan<sup>2</sup>; T. J. Haugan<sup>3</sup>; W. O'Neill<sup>1</sup>; J. Robinson<sup>2</sup>; M. Sparkes<sup>1</sup>

1. University of Cambridge, Institute for Manufacturing, United Kingdom
2. University of Cambridge, Department of Materials Science & Metallurgy, United Kingdom
3. US Air Force Research Lab, AFRL/RQQM, USA

**4:15 PM****(EAM-ELEC-S11-012-2018) Development of High-Energy-Density Superconducting-Magnetic-Energy-Storage (SMES) for Aerospace Applications (Invited)**T. J. Haugan<sup>\*2</sup>; T. Bullard<sup>1</sup>

1. UES Inc, U.S. Air Force Research Laboratory, USA
2. U.S. Air Force Research Laboratory, USA

**4:45 PM****(EAM-ELEC-S11-013-2018) Tunable Broadband Radiation Generated Via Ultrafast Laser Illumination of an Inductively Charged Superconducting Ring**T. Bullard<sup>\*5</sup>; J. Bulmer<sup>3</sup>; M. Ferdinandus<sup>4</sup>; J. Murphy<sup>2</sup>; T. J. Haugan<sup>1</sup>

1. Air Force Research Lab, AFRL/RQQM, USA
2. University of Dayton Research Institute, USA
3. University of Cambridge, Department of Materials Science and Metallurgy, United Kingdom
4. Air Force Institute of Technology, USA
5. UES Inc., USA

**5:00 PM****(EAM-ELEC-S11-014-2018) Terahertz emission from the intrinsic Josephson junctions of high-symmetry thermally-managed Bi<sub>2</sub>Sr<sub>2</sub>CaCu<sub>2</sub>O<sub>8+δ</sub> microstrip antennas (Invited)**R. A. Klemm<sup>\*1</sup>

1. University of Central Florida, Physics, USA

**5:30 PM****(EAM-ELEC-S11-015-2018) Possible terahertz emissions from the intrinsic Josephson junction in thermally managed annular microstrip antennas of the Bi<sub>2</sub>Sr<sub>2</sub>CaCu<sub>2</sub>O<sub>8+δ</sub>**S. W. Bonnough<sup>\*1</sup>; R. A. Klemm<sup>1</sup>

1. University of Central Florida, Physics, USA

**ELECTRONICS DIV S13: Advanced Electronic Materials: Processing, Structure, Properties, and Applications****Advanced Electronic Materials II: Ferroelectric Materials**

Room: Orange C

Session Chair: Zuo-Guang Ye, Simon Fraser University

**2:00 PM****(EAM-ELEC-S13-008-2018) Recent Developments in Relaxor-PT Piezoelectric Ceramics and Crystals (Invited)**T. Shrout<sup>\*1</sup>; F. Li<sup>1</sup>; D. Lin<sup>1</sup>; J. Luo<sup>2</sup>

1. Pennsylvania State University, USA
2. TRS Technologies, INC., USA

2:30 PM

**(EAM-ELEC-S13-009-2018) Multiferroic Morphotropic Phase Boundaries and Related Properties in BiFeO<sub>3</sub>-Based Solid Solutions (Invited)**Z. Ye\*<sup>1</sup>

1. Simon Fraser University, Canada

3:00 PM

**(EAM-ELEC-S13-010-2018) Stabilization and Sintering of Pb(In<sub>1/2</sub>Nb<sub>1/2</sub>)O<sub>3</sub>-Pb(Zn<sub>1/3</sub>Nb<sub>2/3</sub>)O<sub>3</sub>-PbTiO<sub>3</sub> Ceramics**M. J. Brova\*<sup>1</sup>; B. H. Watson<sup>1</sup>; Y. Chang<sup>1</sup>; E. R. Kupp<sup>1</sup>; J. Wu<sup>1</sup>; M. A. Fanton<sup>2</sup>; R. J. Meyer<sup>2</sup>; G. L. Messing<sup>1</sup>

1. The Pennsylvania State University, Material Science and Engineering, USA
2. The Pennsylvania State University, Applied Research Laboratory, USA

3:15 PM

**(EAM-ELEC-S13-011-2018) Hard-Piezoelectric Ceramics for Low Temperature Co-Fired Multilayer Piezoelectric Transformers**S. Dursun\*<sup>1</sup>; A. Gurdal<sup>2</sup>; S. Tuncdemir<sup>2</sup>; C. Randall<sup>2</sup>

1. Pennsylvania State University, Materials Research Institute, USA
2. Pennsylvania State University, Materials Science and Engineering, USA
3. Solid State Ceramics, Inc., USA

3:30 PM

Break

**Reliability of Electronic Materials and Devices**

Room: Orange C

Session Chair: Matthew Cabral, North Carolina State University

4:00 PM

**(EAM-ELEC-S13-012-2018) Complexity of Test for Non-linear Components and Systems**J. T. Evans\*<sup>1</sup>

1. Radiant Technologies, Inc., USA

4:15 PM

**(EAM-ELEC-S13-013-2018) Effects of Boundary Conditions on Resistance Degradation of SrTiO<sub>3</sub>**D. Long\*<sup>1</sup>; B. Cai<sup>1</sup>; E. C. Dickey<sup>1</sup>

1. North Carolina State University, Materials Science and Engineering, USA

4:30 PM

**(EAM-ELEC-S13-014-2018) Hygroscopic and Piezoelectric Properties of KNN-based Ceramics**M. Zhuk\*<sup>1</sup>; J. Glaum<sup>1</sup>; M. Einarsrud<sup>1</sup>

1. Norwegian University of Science and Technology, Department of Materials Science and Engineering, Norway

4:45 PM

**(EAM-ELEC-S13-015-2018) Impact of porosity on piezoelectric and mechanical performance of BaTiO<sub>3</sub> ceramics**K. Skaar Fedje<sup>1</sup>; M. Einarsrud<sup>1</sup>; J. Glaum\*<sup>1</sup>

1. Norwegian University of Science and Technology NTNU, Materials Science and Engineering, Norway

**Poster Session**

Room: Orange A/B

5:30 PM

**(EAM-P001-2018) Electric-field assisted bonding of YSZ/alumina bilayers**C. Grimley\*<sup>1</sup>; A. Prette<sup>2</sup>; J. Schwartz<sup>2</sup>; E. C. Dickey<sup>1</sup>

1. North Carolina State University, Materials Science and Engineering, USA
2. Lucideon, United Kingdom
3. Pennsylvania State University, Department of Engineering Science and Mechanics, USA

**(EAM-P002-2018) Ab-initio electrochemistry of transition-metal interfaces**S. Mula\*<sup>1</sup>; V. Kolluru<sup>1</sup>; K. Mathew<sup>1</sup>; R. G. Hennig<sup>1</sup>

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

**(EAM-P003-2018) Electrocaloric effect, dielectric, ferroelectric and piezoelectric properties in normal and relaxor phases of La-doped PZT(65/35)**S. Samanta\*<sup>1</sup>; V. Sankaranarayanan<sup>1</sup>; K. Sethupathi<sup>1</sup>

1. Indian Institute of Technology Madras, Department of Physics, India

**(EAM-P004-2018) Effect of Mn-addition on broadband dielectric properties of PMN-10PT ceramics**R. Katiliute<sup>1</sup>; M. Ivanov\*<sup>1</sup>; M. Vrabelj<sup>2</sup>; L. Fulanovic<sup>2</sup>; A. Bradesko<sup>2</sup>; Z. Kutnjak<sup>2</sup>; B. Malic<sup>2</sup>; J. Banyš<sup>1</sup>

1. Vilnius University, Lithuania
2. Jozef Stefan Institute, Slovenia

**(EAM-P005-2018) Dielectric Response of the Methylammonium Lead Halide Solar Cell Absorbers**I. Anusca<sup>2</sup>; S. Balciunas<sup>1</sup>; P. Gemeiner<sup>2</sup>; S. Svirskas<sup>1</sup>; M. Sanljalp<sup>3</sup>; G. Lackner<sup>2</sup>; C. Fettkenhauer<sup>2</sup>; J. Belovickis<sup>1</sup>; V. Samulionis<sup>1</sup>; M. Simenas<sup>1</sup>; E. Tornau<sup>4</sup>; M. Ivanov<sup>1</sup>; B. Dkhil<sup>1</sup>; J. Banyš\*<sup>1</sup>; S. V. Vladimirov<sup>3</sup>; D. C. Lupascu<sup>3</sup>

1. Vilnius University, Lithuania
2. CentraleSupélec CNRS-UMR8580 Université Paris-Saclay, France
3. University of Duisburg-Essen, Germany
4. Center for Physical Sciences and Technology, Lithuania

**(EAM-P006-2018) Enhanced Curie temperature and piezoelectric properties of Sn doped (x)(Ba<sub>0.82</sub>Ca<sub>0.13</sub>Sn<sub>0.05</sub>)TiO<sub>3</sub> - (1-x) Ba(Zr<sub>0.15</sub>Ti<sub>0.85</sub>)O<sub>3</sub> perovskite system**V. Sarangi\*<sup>1</sup>; A. Pramanick<sup>1</sup>

1. City University of Hong Kong, Materials Science and Engineering, Hong Kong

**(EAM-P007-2018) Influence of KBT on the structure and ferroelectric properties of BCZT ceramics**M. N. Al-Aaraji\*<sup>1</sup>

1. University of Manchester, School of Materials, United Kingdom

**(EAM-P008-2018) Ab-Initio Prediction of Novel 2D Group-III Oxides by Evolutionary Algorithms**H. Lester\*<sup>1</sup>; B. Revard<sup>1</sup>; M. Ashton<sup>1</sup>; D. Gluhovic<sup>1</sup>; R. G. Hennig<sup>1</sup>

1. University of Florida, Materials Science and Engineering, USA
2. Cornell University, USA

**(EAM-P009-2018) Effects of Dysprosium Oxide on Sintering Behavior and Electrical Conductivity of Samarium Doped Ceria**S. L. Reis\*<sup>1</sup>; E. N. Muccillo<sup>1</sup>

1. Energy and Nuclear Research Institute, Brazil

**(EAM-P010-2018) Samaria-doped ceria with impregnation of molten lithium/potassium carbonate for application as CO<sub>2</sub> separation membranes**T. Porfiro<sup>1</sup>; E. N. Muccillo<sup>1</sup>; F. Marques<sup>2</sup>; R. Muccillo\*<sup>1</sup>

1. Energy and Nuclear Research Institute, Brazil
2. University of Aveiro, Portugal

**(EAM-P011-2018) Freeze casting of LAGP electrolyte for textured 3D all-solid-state lithium-ion battery multifunctional composites**W. Huddleston\*<sup>1</sup>; F. Dynys<sup>2</sup>; A. Sehrliglu<sup>1</sup>

1. Case Western Reserve University, Department of Materials Science and Engineering, USA
2. NASA Glenn Research Center, USA

**(EAM-P012-2018) Shape and size dependent phase transformations and field-induced behavior in ferroelectric nanoparticles**K. Pitike\*<sup>1</sup>; J. Mangeri<sup>1</sup>; H. Whitelock<sup>2</sup>; T. Patel<sup>1</sup>; P. Dyer<sup>1</sup>; O. Heinonen<sup>3</sup>; P. Alpay<sup>1</sup>; S. Nakhmanson<sup>1</sup>

1. University of Connecticut, Materials Science and Engineering, USA
2. University of Connecticut, Department of Physics, USA
3. Argonne National Lab, Material Science Division, USA

**(EAM-P013-2018) Mesoscale modeling of stress induced band-gap attenuation in ZnO Nanowires**L. Kuna\*<sup>1</sup>; J. Mangeri<sup>1</sup>; P. Gao<sup>2</sup>; S. Nakhmanson<sup>2</sup>

1. University of Connecticut, Physics, USA
2. University of Connecticut, Institute of Materials Science, USA

**(EAM-P014-2018) Dielectric Properties of Ferroelectric Materials on Aerospace Alloys**T. Patel<sup>\*1</sup>; P. Alpay<sup>1</sup>; R. Hebert<sup>1</sup>

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

**(EAM-P015-2018) Effect of Gd<sub>2</sub>O<sub>3</sub> additives on the electrical properties of ZnO varistor at different temperatures**F. H. Al-Hamed<sup>\*1</sup>

1. Najran University, Saudi Arabia

**(EAM-P016-2018) Evaluation of coloration behavior with york-shell structured core-shell a-Fe<sub>2</sub>O<sub>3</sub> nanorod**R. Yu<sup>1</sup>; G. An<sup>1</sup>; Y. Kim<sup>\*1</sup>

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

**(EAM-P018-2018) Finite Element Modelling of Poly(Methyl Methacrylate)/Methyl Ammonium Lead Iodide Composites**C. D. Kennedy<sup>\*1</sup>; J. S. Dean<sup>1</sup>; D. C. Sinclair<sup>1</sup>; I. M. Reaney<sup>1</sup>

1. The University of Sheffield, Material Science and Engineering, United Kingdom

**(EAM-P019-2018) Electrical conductivity of ceria electrodes for use in MHD generators**B. L. Wright<sup>\*1</sup>; M. Johnson<sup>1</sup>; D. Cann<sup>1</sup>; K. Kwong<sup>2</sup>; C. Woodside<sup>2</sup>1. Oregon State Univ, School of Mechanical, Industrial, and Manufacturing Engineering, USA  
2. U.S. Department of Energy, National Energy Technology Laboratory, USA**(EAM-P020-2018) Electric-Field Induced Strains in (Bi<sub>0.5</sub>Na<sub>0.5</sub>)TiO<sub>3</sub>-(Bi<sub>0.5</sub>K<sub>0.5</sub>)TiO<sub>3</sub>-Based Piezoceramics**S. K. Gupta<sup>\*1</sup>; M. Hilliker<sup>1</sup>; D. Cann<sup>1</sup>

1. Oregon State Univ, School of Mechanical, Industrial, and Manufacturing Engineering, USA

**(EAM-P021-2018) When do parallel pathways influence the brick work layer model in electroceramics and how should we analyse their impedance spectra?**J. P. Heath<sup>\*1</sup>; J. S. Dean<sup>1</sup>; J. Harding<sup>1</sup>; D. C. Sinclair<sup>1</sup>

1. University of Sheffield, Material Science and Engineering, United Kingdom

**(EAM-P022-2018) Comparative study of macroscopic and nanoscale polarization switching in large area PLD grown PZT thin films**M. Rath<sup>\*1</sup>

1. IIT Madras, Physics, India

**(EAM-P023-2018) Field- and temperature-driven transitions in graphitic samples as signatures of superconducting fluctuations**N. Gheorghiu<sup>\*2</sup>; C. Ebbing<sup>2</sup>; T. J. Haugan<sup>1</sup>1. Air Force Research Lab, AFRL/RQOM, USA  
2. UES, Inc., USA  
3. University of Dayton Research Institute, USA**(EAM-P024-2018) Status of Cryogenic/Superconducting Drivetrain Technologies for Electric Propulsion of Aircraft**T. J. Haugan<sup>\*1</sup>; G. Panasyuk<sup>2</sup>1. U.S. Air Force Research Laboratory, USA  
2. UES Inc, U.S. Air Force Research Laboratory, USA**(EAM-P025-2018) Comparison Study of the Flux Pinning Enhancement of YBa<sub>2</sub>Cu<sub>3</sub>O<sub>7-δ</sub> Superconductor with BaHfO<sub>3</sub> and Y<sub>2</sub>O<sub>3</sub> Single and Mixed Phase Additions**M. Sebastian<sup>\*2</sup>; C. Ebbing<sup>2</sup>; T. Bullard<sup>2</sup>; W. Zhang<sup>4</sup>; J. Huang<sup>4</sup>; H. Wang<sup>4</sup>; B. Gautum<sup>5</sup>; C. Shihong<sup>2</sup>; J. Wu<sup>2</sup>; T. J. Haugan<sup>1</sup>1. Air Force Research Lab, AFRL/RQOM, USA  
2. UDRI, USA  
4. Purdue University, School of Materials Engineering, USA  
5. University of Kansas, Dept. of Physics & Astronomy, USA  
6. UES, USA**(EAM-P026-2018) YBa<sub>2</sub>Cu<sub>3</sub>O<sub>7</sub> thin films with large, congruent, columnar Y<sub>2</sub>BaCuO<sub>5</sub> pinning centers: Magnetization creep and decay**C. Myers<sup>\*1</sup>; M. Sebastian<sup>2</sup>; M. A. Susner<sup>2</sup>; M. D. Sumption<sup>1</sup>; T. J. Haugan<sup>2</sup>1. Ohio State University, Materials Science and Engineering, USA  
2. Air Force Research Lab, Aerospace Systems Directorate, USA**(EAM-P027-2018) Calorimetric Measurements of YBCO Conductors and Cables at High dB/dt in a Stator Machine Environment**T. J. Haugan<sup>\*1</sup>; J. P. Murphy<sup>2</sup>; M. D. Sumption<sup>3</sup>; E. W. Collings<sup>3</sup>; T. Bullard<sup>5</sup>1. U.S. Air Force Research Laboratory, AFRL/RQOM, USA  
2. University of Dayton Research Inc, U.S. AFRL, USA  
3. The Ohio State University, USA  
5. UES Inc, U.S. Air Force Research Laboratory, USA**(EAM-P028-2018) Quasistatic Phononic Energy Transport between Nanoparticles Mediated by a Molecule**G. Y. Panasyuk<sup>\*2</sup>; K. L. Yerkes<sup>3</sup>; T. J. Haugan<sup>1</sup>1. Air Force Research Lab, AFRL/RQOM, USA  
2. UES Inc., USA  
3. Air Force Research Lab, AFRL/RQOM, USA**(EAM-P029-2018) Designing Electromechanical Properties of (Na<sub>1/2</sub>Bi<sub>1/2</sub>)TiO<sub>3</sub>-Based Ferroelectrics Through A-Site Non-Stoichiometry**T. Frömling<sup>\*1</sup>; S. Steiner<sup>1</sup>; A. Ayrikian<sup>2</sup>; M. Dürrschnabel<sup>1</sup>; M. Leopoldo<sup>1</sup>; H. Kleebe<sup>1</sup>; H. Hutter<sup>2</sup>; K. G. Webber<sup>2</sup>; M. Acosta<sup>4</sup>1. Technische Universität Darmstadt, Materials Science, Germany  
2. Friedrich-Alexander-Universität Erlangen-Nürnberg, Materials Science and Engineering, Germany  
3. Technische Universität Wien, Institute of Chemical Technologies and Analytics, Austria  
4. University of Cambridge, Materials Science and Metallurgy, United Kingdom**(EAM-P030-2018) Fractal Hull of Grains Cluster Boundary of Ceramics and Micro Impedances**V. Mitic<sup>\*1</sup>; V. Paunovic<sup>2</sup>; L. Kocic<sup>2</sup>1. Serbian Academy of Sciences, Institute of Technical Sciences, Serbia  
2. Faculty of Electronic Engineering, University of Nis, Serbia**(EAM-P031-2018) Lead Free Thick Films Produced via Aerosol Deposition**E. Gorzkowski<sup>\*1</sup>; E. Patterson<sup>3</sup>; S. D. Johnson<sup>1</sup>; D. Park<sup>2</sup>1. Naval Research Laboratory, USA  
2. Korea Institute of Materials Science, Republic of Korea  
3. ASEE, USA**(EAM-P032-2018) Cold Sintering Process of Magnetodielectrics for Radio Frequency (RF) Applications**S. El-Faouri<sup>\*1</sup>; I. M. Reaney<sup>1</sup>

1. University of Sheffield, Materials Science and Engineering, United Kingdom

**(EAM-P033-2018) Investigation of the Sintering and Microstructural Evolution of CuO-doped Ternary Relaxor-PbTiO<sub>3</sub> Ceramics**B. H. Watson<sup>\*1</sup>; M. J. Brova<sup>1</sup>; Y. Chang<sup>1</sup>; E. R. Kupp<sup>1</sup>; J. Wu<sup>1</sup>; M. A. Fanton<sup>1</sup>; R. J. Meyer<sup>1</sup>; G. L. Messing<sup>1</sup>

1. Pennsylvania State University, Materials Science &amp; Engineering, USA

**(EAM-P034-2018) Giant Energy Storage Performances and Wide Temperature Range of Lead-free Capacitors with Different Orientation on LSMO buffers**Z. Sun<sup>\*1</sup>; M. Liu<sup>1</sup>

1. Xi'an Jiaotong University, School of Microelectronics, China

**(EAM-P035-2018) Processing and properties of textured polycrystalline LiTaO<sub>3</sub> ceramics**J. Ivy<sup>\*1</sup>; G. L. Brennecke<sup>1</sup>

1. Colorado School of Mines, USA

**(EAM-P036-2018) Interfacial Charge Polarization in a Nano-Domained Polymer-Derived Amorphous SiAlCN Ceramic**H. Li<sup>\*1</sup>; L. An<sup>1</sup>

1. University of Central Florida, Materials Science and Engineering, USA

**(EAM-P037-2018) Temperature Stable Dielectrics Based on BaTiO<sub>3</sub>-Bi(Zn<sub>1/2</sub>Ti<sub>1/2</sub>)O<sub>3</sub>-La(Zn<sub>1/2</sub>Ti<sub>1/2</sub>)O<sub>3</sub>-Pb(Ni<sub>1/3</sub>Nb<sub>2/3</sub>)O<sub>3</sub>**Z. Colton<sup>\*1</sup>; D. Cann<sup>1</sup>

1. Oregon State Univ, School of Mechanical, Industrial, and Manufacturing Engineering, USA

**(EAM-P038-2018) Investigation of the Structural Changes of HfO<sub>2</sub> Powders through Doping with Gd and Sr**J. Brodie<sup>\*1</sup>; B. S. Johnson<sup>1</sup>; J. L. Jones<sup>1</sup>

1. North Carolina State University, Materials Science and Engineering, USA



### Basic Science Division Tutorial: Defect Chemistry in Perovskite Ceramics and its impact on Materials Processing and Properties

Room: Citrus A

7:40 PM

Introduction

7:45 PM

Derek Sinclair, Univ of Sheffield

8:25 PM

Roger de Souza, RWTH Aachen Univ

9:05 PM

Elizabeth Dickey, NC State Univ

## Thursday, January 18, 2018

### Plenary Session II

Room: Orange D

Session Chair: Brady Gibbons, Oregon State University

8:30 AM

Introduction

8:40 AM

**(EAM-PLEN- 002-2018) New Materials Paradigm In Oxide Epitaxial Nanocomposite Thin Films and The Realisation of Enhanced Functionalities**

J. MacManus-Driscoll\*<sup>1</sup>

1. University of Cambridge, Dept. of Materials Science, United Kingdom

9:30 AM

Break

### BASIC SCIENCE DIV S5: Morphology Evolution and Microstructure Characterization

#### Processing to Control Microstructure

Room: Nautilus B

Session Chair: Scott Misture, Alfred University

10:00 AM

**(EAM-BASIC-S5-014-2018) Electric-field induced rapid sintering and welding of ceramics (Invited)**

L. An\*<sup>1</sup>

1. University of Central Florida, USA

10:30 AM

**(EAM-BASIC-S5-015-2018) Characterization and Microscopy of Yttrium-doped Barium Zirconate with Nickel Additions for Catalysis Applications**

D. Jennings\*<sup>1</sup>; M. Knight<sup>1</sup>; I. Reimanis<sup>1</sup>

1. Colorado School of Mines, Materials and Metallurgical Engineering, USA

10:45 AM

**(EAM-BASIC-S5-016-2018) Electric Field Effects on Crystallization and Microstructure Evolution in BaTiO<sub>3</sub> (Invited)**

E. C. Dickey\*<sup>1</sup>

1. North Carolina State University, Materials Science and Engineering, USA

11:15 AM

**(EAM-BASIC-S5-017-2018) Epitaxial and Atomically-Thin Metal Films on Graphene: Unique Properties of a Morphologically Constrained System (Invited)**

F. M. Alamgir\*<sup>1</sup>

1. Georgia Institute of Technology, School of Materials Science and Technology, USA

11:45 AM

**(EAM-BASIC-S5-018-2018) Plane-like monocrystalline AB<sub>2</sub>Nb<sub>2</sub>O<sub>9</sub> (A=Ca, Sr, Ba) with preferential (00l) facets for enhancement photocatalytic activity**

Y. Zhang\*<sup>1</sup>

1. Sichuan University, Materials Science and Engineering, China

### Joint Session: Basic Science Symp 1 and Electronics Symp 4

#### Defect Physics and Chemistry

Room: Nautilus C

Session Chairs: Ming Tang, Rice University; Jeffrey Rickman, Lehigh University

10:00 AM

**(EAM-JOINT-014-2018) Mn doping in SrTiO<sub>3</sub> : A combined DFT and experimental investigation (Invited)**

E. Cockayne\*<sup>1</sup>; K. F. Garrity<sup>1</sup>; R. A. Maier<sup>1</sup>; I. Levin<sup>1</sup>

1. NIST, USA

10:30 AM

**(EAM-JOINT-015-2018) Formation of Un-common Valences and Defects in Perovskite Lattice via Revisiting Madelung Energy and Site Potential (Invited)**

M. Yoshimura\*<sup>1</sup>

1. Tokyo Institute of Technology, Materials and Structures Laboratory, Japan

11:00 AM

**(EAM-JOINT-016-2018) Energetics of Intrinsic and Extrinsic Defects in Lead-based Hybrid Perovskites from First Principles Computations**

A. Mannodi-Kanakkithodi\*<sup>1</sup>; D. H. Cao<sup>2</sup>; N. Jeon<sup>2</sup>; A. Martinson<sup>2</sup>; M. K. Chan<sup>1</sup>

1. Argonne National Lab, Center for Nanoscale Materials, USA

2. Argonne National Lab, Materials Science Division, USA

11:15 AM

**(EAM-JOINT-017-2018) Multiferroism in Iron-based Oxyfluoride Perovskites**

S. T. Hartman\*<sup>1</sup>; S. B. Cho<sup>2</sup>; A. S. Thind<sup>1</sup>; R. Mishra<sup>2</sup>

1. Washington University in St. Louis, Institute of Materials Science and Engineering, USA

2. Washington University in St. Louis, Mechanical Engineering and Materials Science, USA

11:30 AM

**(EAM-JOINT-018-2018) Multi-Scale Modeling of Sintering of Ceramic Materials with Tailored Structure (Invited)**

E. A. Olefsky\*<sup>1</sup>

1. San Diego State University, USA

12:00 PM

**(EAM-JOINT-019-2018) Study of Tritium Solubility and Diffusivity in Lithium Aluminate and Lithium Zirconate pellets**

H. P. Paudel\*<sup>1</sup>

1. National Energy Technology Lab, Functional Material Designs, USA

12:15 PM

**(EAM-JOINT-020-2018) Exploring the rich defect chemistry of amorphous carbon using a combination of experiments and theory**

T. W. Surta\*<sup>1</sup>; Z. Li<sup>1</sup>; D. Fast<sup>1</sup>; X. Ji<sup>1</sup>; P. A. Greaney<sup>2</sup>; M. Dolgos<sup>1</sup>

1. Oregon State University, Chemistry, USA

2. University of California, Riverside, USA

## **ELECTRONICS DIV S1: Complex Oxide and Chalcogenide Semiconductors: Research and Applications**

### **Emerging Chalcogenide Materials for Electronic, Photonic and Energy Applications**

Room: Citrus A

Session Chair: Jayakanth Ravichandran, Columbia University

**10:00 AM**

#### **(EAM-ELEC-S1-001-2018) Chalcogenide Perovskites for Photovoltaics (Invited)**

S. Zhang\*<sup>1</sup>

1. Rensselaer Polytechnic Institute, Physics, USA

**10:30 AM**

#### **(EAM-ELEC-S1-002-2018) Kesterite-Inspired Chalcogenide Semiconductors for Thin-Film Photovoltaics (Invited)**

D. Mitzi\*<sup>1</sup>

1. Duke Univ., USA

**11:00 AM**

#### **(EAM-ELEC-S1-003-2018) Functional electronic responses from chalcogenide materials: New opportunities (Invited)**

A. M. Rappe\*<sup>1</sup>

1. University of Pennsylvania, Chemistry, USA

**11:30 AM**

#### **(EAM-ELEC-S1-004-2018) Complex Sulfide Materials for Electrochemical Energy Storage Applications (Invited)**

R. Seshadri\*<sup>1</sup>

1. University of California Santa Barbara, Materials, USA

## **ELECTRONICS DIV S3: Multiscale Structure-property Relationships and Advanced Characterization of Functional Ceramics**

### **Imaging and Analytical Techniques I**

Room: Magnolia A/B

Session Chairs: David McComb, The Ohio State University; Arno Merkle, XRE

**10:00 AM**

#### **(EAM-ELEC-S3-001-2018) Oxide scale structures and mechanisms of oxidation on Ni and Ti alloys (Invited)**

T. Barth<sup>1</sup>; K. Chou<sup>1</sup>; P. Chu<sup>1</sup>; E. Marquis\*<sup>1</sup>

1. University of Michigan, USA

**10:30 AM**

#### **(EAM-ELEC-S3-002-2018) Characterization of Advanced Materials using X-ray Tomography and X-ray Fluorescence (Invited)**

B. M. Patterson\*<sup>1</sup>; K. Henderson<sup>1</sup>; N. Cordes<sup>1</sup>; J. Mertens<sup>1</sup>; J. Williams<sup>2</sup>; N. Chawla<sup>2</sup>; X. Xiao<sup>3</sup>

1. Los Alamos National Lab, Materials Science and Technology, USA
2. Arizona State University, 4D Materials Science, USA
3. Argonne National Lab, X-ray Sciences Division, USA

**11:00 AM**

#### **(EAM-ELEC-S3-003-2018) Leveraging Navigation and Sampling Strategies for Multiscale Imaging and Characterization of Functional Materials (Invited)**

W. Harris\*<sup>1</sup>; L. Lavery<sup>1</sup>; H. Bale<sup>1</sup>; T. Volkenandt<sup>1</sup>; S. Freitag<sup>1</sup>

1. Carl Zeiss Microscopy, USA

**11:30 AM**

#### **(EAM-ELEC-S3-004-2018) Development of Multiscale Correlative 3D Imaging for Ceramics**

D. W. McComb\*<sup>1</sup>; I. Boona<sup>1</sup>

1. The Ohio State University, USA

**11:45 AM**

#### **(EAM-ELEC-S3-005-2018) Ferroelectric Domain Continuity over Grain Boundaries**

S. Mantri\*<sup>1</sup>; J. Oddershede<sup>2</sup>; D. Damjanovic<sup>2</sup>; J. Daniels<sup>1</sup>

1. University of New South Wales, Materials Science and Engineering, Australia
2. EPFL, Switzerland
3. Xnovo Technology, Denmark

## **ELECTRONICS DIV S7: Mesoscale Phenomena in Ceramic Materials**

### **Mesoscale Phenomena in Ceramic Materials**

Room: Cypress A/B

Session Chairs: Edward Gorzkowski, Naval Research Lab; Serge Nakhmanson, University of Connecticut

**10:00 AM**

#### **(EAM-ELEC-S7-001-2018) Mesoscopic Modeling of Electrocaloric, Elastocaloric and Flexocaloric Properties of Ferroelectrics (Invited)**

P. Alpay\*<sup>1</sup>; T. Patel<sup>1</sup>; H. Khassaf<sup>1</sup>

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

**10:30 AM**

#### **(EAM-ELEC-S7-002-2018) New developments in Ferret, an open-source code for simulating complex behavior of electroactive materials at mesoscale**

J. Mangeri<sup>1</sup>; L. Kuna<sup>1</sup>; K. Pitike<sup>2</sup>; P. Alpay<sup>2</sup>; O. Heinonen<sup>3</sup>; S. Nakhmanson\*<sup>2</sup>

1. University of Connecticut, Physics, USA
2. University of Connecticut, Materials Science and Engineering, USA
3. Argonne National Laboratory, USA

**10:45 AM**

#### **(EAM-ELEC-S7-003-2018) Real nanoparticles have curves: Exploring polar phase transformations in Superellipsoidal nanoparticles**

H. Whitelock\*<sup>1</sup>; K. Pitike<sup>2</sup>; J. Mangeri<sup>1</sup>; T. Patel<sup>2</sup>; P. Dyer<sup>2</sup>; P. Alpay<sup>2</sup>; S. Nakhmanson\*<sup>2</sup>

1. University of Connecticut, Physics, USA
2. University of Connecticut, Materials Science & Engineering, USA

**11:00 AM**

#### **(EAM-ELEC-S7-004-2018) Predicting ferroelectric phase-transition temperatures in perovskite oxides: Influence of exchange-correlation functional choice**

K. Pitike\*<sup>1</sup>; S. F. Yuk<sup>2</sup>; Y. Li<sup>3</sup>; M. Eisenbach<sup>3</sup>; S. Nakhmanson<sup>1</sup>; V. R. Cooper<sup>2</sup>

1. University of Connecticut, Materials Science and Engineering, USA
2. Oak Ridge National Laboratory, Materials Science and Technology Division, USA
3. Oak Ridge National Laboratory, National Center for Computational Sciences, USA

**11:15 AM**

#### **(EAM-ELEC-S7-005-2018) Mesoscale modeling of electro- and elasto-optic effects in polycrystalline ceramics**

L. Kuna\*<sup>1</sup>; J. Mangeri<sup>1</sup>; E. Gorzkowski<sup>2</sup>; J. Wollmershauser<sup>2</sup>; S. Nakhmanson<sup>3</sup>

1. University of Connecticut, Physics, USA
2. Office of Naval Research, USA
3. University of Connecticut, Institute of Materials Science, USA

**11:30 AM**

#### **(EAM-ELEC-S7-006-2018) Effect of Ga-V co-doping in dielectric properties of TiO<sub>2</sub>**

N. Khatun\*<sup>1</sup>; S. Sen<sup>1</sup>

1. Indian Institute of Technology Indore, Physics, India

**11:45 AM**

#### **(EAM-ELEC-S7-007-2018) Electric Properties of Thermally Grown TiO<sub>2</sub> Layer on Ti Metal for Perovskite Solar Cells**

S. Lee\*<sup>1</sup>; J. Lee<sup>1</sup>

1. University of Pittsburgh, Mechanical Engineering and Materials Science, USA

## **ELECTRONICS DIV S8: Multifunctional Nanocomposites**

### **Coupling between Ferroelectricity and Ferromagnetism**

Room: Orange D

Session Chair: Daisuke Kan, Institute for Chemical Research

**10:00 AM**

#### **(EAM-ELEC-S8-009-2018) Room temperature strain and charge-mediated magnetoelectric effects in multiferroic complex oxide heterostructures (Invited)**

R. V. Chopdekar<sup>\*1</sup>; Y. Takamura<sup>1</sup>

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

**10:30 AM**

#### **(EAM-ELEC-S8-010-2018) New Vertical Aligned Nanocomposite Films with Strong Room Temperature Converse Magnetolectric Effect (Invited)**

R. Wu<sup>\*1</sup>; S. Cho<sup>1</sup>; A. Kursumovic<sup>1</sup>; J. MacManus-Driscoll<sup>1</sup>

1. University of Cambridge, United Kingdom

**11:00 AM**

#### **(EAM-ELEC-S8-011-2018) Tuning Spin Relaxations in Ultrathin Epitaxial SrIrO<sub>3</sub> Thin Films via Ferroelectric Gating**

L. Zhang<sup>\*1</sup>; M. Han<sup>2</sup>; X. Zhang<sup>1</sup>; X. Jiang<sup>1</sup>; X. Xu<sup>1</sup>; Y. Zhu<sup>2</sup>; X. Hong<sup>1</sup>

1. University of Nebraska - Lincoln, Physics and Astronomy, USA
2. Brookhaven National Laboratory, Condensed Matter Physics and Materials Science, USA

**11:15 AM**

#### **(EAM-ELEC-S8-017-2018) Emergent and Tunable Toroidal Order and Phase Coexistence in Ferroic Superlattices (Invited)**

L. W. Martin<sup>\*1</sup>

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

**11:45 AM**

#### **(EAM-ELEC-S8-013-2018) Revealing the hidden magnetic interfaces by polarized neutron reflectometry (Invited)**

E. Guo<sup>\*1</sup>

1. Oak Ridge National Lab, USA

## **ELECTRONICS DIV S9: Substitution and Sustainability in Functional Materials and Devices**

### **Substitution and Sustainability in Functional Materials II**

Room: Citrus B

Session Chair: Ian Reaney, University of Sheffield

**10:00 AM**

#### **(EAM-ELEC-S9-010-2018) High Temperature Dielectric and Pb-free Piezoelectric Ceramics based on Relaxor Ferroelectrics: Properties and Challenges in Determining Mechanisms (Invited)**

A. Zeb<sup>3</sup>; Z. Aslam<sup>1</sup>; A. Brown<sup>1</sup>; R. Brydson<sup>1</sup>; J. Forrester<sup>1</sup>; D. A. Hall<sup>2</sup>; S. ullah Jan<sup>3</sup>; T. Roncal-Herrero<sup>1</sup>; S. J. Milne<sup>\*1</sup>

1. University of Leeds, Materials, United Kingdom
2. University of Manchester, School of Materials, United Kingdom
3. Islamia College, Pakistan

**10:30 AM**

#### **(EAM-ELEC-S9-011-2018) High strain (0.4%) Bi(Mg<sub>2/3</sub>Nb<sub>1/3</sub>)O<sub>3</sub>-BaTiO<sub>3</sub>-BiFeO<sub>3</sub> lead-free piezoelectrics**

S. Murakami<sup>\*1</sup>; A. Mostaed<sup>1</sup>; D. Wang<sup>1</sup>; A. Khesro<sup>1</sup>; A. Feteira<sup>2</sup>; D. C. Sinclair<sup>1</sup>; I. M. Reaney<sup>1</sup>

1. The University of Sheffield, Materials Science and Engineering, United Kingdom
2. Sheffield Hallam University, Materials Engineering and Research Institute, United Kingdom

**10:45 AM**

#### **(EAM-ELEC-S9-012-2018) High Temperature PbO-free Piezoelectrics**

I. M. Reaney<sup>\*1</sup>

1. University of Sheffield, Materials Science and Engineering, United Kingdom

\*Denotes Presenter

**11:00 AM**

#### **(EAM-ELEC-S9-013-2018) Suppression of electrical conductivity and switching of conduction mechanisms in 'stoichiometric' (Na<sub>0.5</sub>Bi<sub>0.5</sub>TiO<sub>3</sub>)<sub>1-x</sub>(BiAlO<sub>3</sub>)<sub>x</sub> (0 ≤ x ≤ 0.08) solid solutions**

F. Yang<sup>2</sup>; Y. Wu<sup>2</sup>; D. C. Sinclair<sup>\*1</sup>

1. University of Sheffield, Materials Science & Engineering, United Kingdom
2. University of Sheffield, United Kingdom

**11:15 AM**

#### **(EAM-ELEC-S9-014-2018) Aqueous Deposition of Thin Film Potassium Sodium Niobate Using Simple Cluster Precursors**

D. Fast<sup>1</sup>; M. Clark<sup>1</sup>; M. Dolgos<sup>\*1</sup>

1. Oregon State University, Chemistry, USA

**11:30 AM**

#### **(EAM-ELEC-S9-015-2018) Electronic and Ionic Conduction in (Bi<sub>0.5</sub>Na<sub>0.5</sub>)TiO<sub>3</sub>-(Bi<sub>0.5</sub>K<sub>0.5</sub>)TiO<sub>3</sub>-based Thin Films (Invited)**

J. Walenza-Slabe<sup>1</sup>; A. Fox<sup>1</sup>; K. Grove<sup>1</sup>; M. Bahmer<sup>1</sup>; B. Gibbons<sup>\*1</sup>

1. Oregon State University, USA

**12:00 PM**

#### **(EAM-ELEC-S9-016-2018) Electron transport and visible light absorption in a plasmonic photocatalyst based on strontium niobate**

D. Wan<sup>\*1</sup>; B. Yan<sup>1</sup>; T. C. Asmara<sup>2</sup>; M. R. Motapothula<sup>1</sup>; T. V. Venkatesan<sup>1</sup>

1. National University of Singapore, NUSNNI, Singapore
2. National University of Singapore, Singapore Synchrotron Light Source, Singapore

**12:15 PM**

#### **(EAM-ELEC-S9-017-2018) Simulations of High Entropy Materials (Invited)**

C. Freeman<sup>\*1</sup>; G. Anand<sup>1</sup>; C. Handley<sup>1</sup>; R. Ward<sup>1</sup>; J. Harding<sup>1</sup>

1. University of Sheffield, Dept of Materials Science and Engineering, United Kingdom

## **ELECTRONICS DIV S13: Advanced Electronic Materials: Processing, Structure, Properties, and Applications**

### **Lead Free Piezoelectric and Dielectrics for Energy Storage and Conversion**

Room: Orange C

Session Chairs: Jiwei Zhai, Tongji University; Sahn Nahm, Korea University

**10:00 AM**

#### **(EAM-ELEC-S13-016-2018) Enhancing Piezoelectric Properties in (K,Na)NbO<sub>3</sub>-Based Ceramics by Texture Engineering (Invited)**

J. Zhai<sup>\*1</sup>

1. School of Materials Science and Engineering, Tongji University, China

**10:30 AM**

#### **(EAM-ELEC-S13-017-2018) Effect of tetragonal-pseudocubic polymorphic phase transition on the piezoelectric properties of (Na<sub>0.5</sub>K<sub>0.5</sub>)(Nb<sub>1-x</sub>Sb<sub>x</sub>)O<sub>3</sub>-SrTiO<sub>3</sub> ceramics (Invited)**

D. Kim<sup>1</sup>; T. Lee<sup>2</sup>; S. Cho<sup>1</sup>; K. Lee<sup>1</sup>; C. Kang<sup>2</sup>; S. Nahm<sup>\*1</sup>

1. Korea University, Department of Materials Science and Engineering, Republic of Korea
2. Korea University, Nano-Bio-Information-Technology Convergeng, KU-KIST Graduate School of Convergeng Science and Technology, Republic of Korea
3. Korea Institute of Science and Technology, Electronic Materials Center, Republic of Korea

**11:00 AM**

#### **(EAM-ELEC-S13-018-2018) Small-scale Flexible Energy Devices using Lead-free Piezoelectric Thin Films**

S. Kim<sup>\*1</sup>; S. Won<sup>1</sup>; M. Kawahara<sup>2</sup>; C. Koo<sup>3</sup>; A. Kingon<sup>1</sup>

1. Brown University, School of Engineering, USA
2. Kojundo Chemical Laboratory, Japan
3. Quintess Co. L.Td., Republic of Korea

**11:15 AM****(EAM-ELEC-S13-019-2018) Lead-free Piezoelectric Thin Films: Materials and Devices**S. Won\*<sup>1</sup>; C. Koo<sup>2</sup>; A. Kingon<sup>1</sup>; S. Kim<sup>2</sup>

1. Brown University, USA
2. Brown University, School of Engineering, USA
3. Quintess Co. Ltd., Republic of Korea

**11:30 AM****(EAM-ELEC-S13-020-2018) The Energy Storage Behavior of Lead Free Perovskite Dielectric Ceramics**S. Zhang\*<sup>1</sup>

1. University of Wollongong, ISEM, Australia

**11:45 AM****(EAM-ELEC-S13-021-2018) Atmosphere Controlled Sintering of Textured (Na,K)NbO<sub>3</sub> Ceramic for Enhanced Piezoelectric Properties**L. Gao\*<sup>1</sup>; S. Dursun<sup>1</sup>; E. Hennig<sup>2</sup>; S. Zhang<sup>3</sup>; C. Randall<sup>1</sup>

1. Pennsylvania State University, USA
2. PI Ceramic GmbH, Germany
3. University of Wollongong, Australia

**12:00 PM****(EAM-ELEC-S13-022-2018) Growth and electrical properties of NaNbO<sub>3</sub> thin film grown on TiN/Si substrate using PLD**J. Woo\*<sup>1</sup>; T. Lee<sup>2</sup>; H. Hwang<sup>1</sup>; S. Nahm<sup>2</sup>

1. Korea University, Nano-Bio-Information-Technology Converging KU-KIST Graduate School of Converging Science and Technology, Republic of Korea
2. Korea University, Materials Science and Engineering, Republic of Korea

**12:15 PM****(EAM-ELEC-S13-023-2018) Electrical leakage and loss in rare-earth modified bismuth ferrite ceramics**J. Walker\*<sup>1</sup>; M. Makarovic<sup>2</sup>; S. M. Selbach<sup>3</sup>; S. E. Trolrier-McKinstry<sup>1</sup>; T. Rojac<sup>2</sup>

1. Pennsylvania State University, Materials Research Institute, USA
2. Jozef Stefan Institute, Electronic Ceramics Department, Slovenia
3. Norwegian University of Science and Technology, Department of Materials Science and Engineering, Norway

**BASIC SCIENCE DIV S1: Computational and Data Sciences for 21st Century Ceramics Research****Ferroelectrics and Other Functional Ceramics**

Room: Nautilus C

Session Chair: Jeffrey Rickman, Lehigh University

**2:00 PM****(EAM-BASIC-S1-001-2018) Computational Understanding and Prediction of Polar States in Ferroelectric Heterostructures Using Phase-field Method (Invited)**L. Chen\*<sup>1</sup>; Z. Hong<sup>1</sup>

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

**2:30 PM****(EAM-BASIC-S1-002-2018) The search for new materials: Blending smart algorithms and deep physics (Invited)**A. M. Rappe\*<sup>1</sup>

1. University of Pennsylvania, Chemistry, USA

**3:00 PM****(EAM-BASIC-S1-003-2018) Nanopillars with E-field accessible multi-state (N ≥ 4) magnetization with giant magnetization changes in self-assembled BiFeO<sub>3</sub>-CoFe<sub>2</sub>O<sub>4</sub>/Pb(Mg<sub>1/3</sub>Nb<sub>2/3</sub>)-38at%PbTiO<sub>3</sub> heterostructures (Invited)**D. Viehland\*<sup>1</sup>; J. Li<sup>1</sup>; X. Tang<sup>1</sup>

1. Virginia Tech, Materials Science and Engineering, USA

**3:30 PM****Break****Material Interfaces: Structure, Properties and Evolution**

Room: Nautilus C

Session Chair: Jeffrey Rickman, Lehigh University

**4:00 PM****(EAM-BASIC-S1-004-2018) Computing Grain Boundary 'Phase' Diagrams: Recent Progresses and Future Directions (Invited)**J. Luo\*<sup>1</sup>

1. University of California, San Diego, USA

**4:30 PM****(EAM-BASIC-S1-005-2018) Atomistic simulations of grain boundary phase transitions (Invited)**T. Frolov\*<sup>1</sup>; Q. Zhu<sup>4</sup>; A. R. Oganov<sup>3</sup>; R. E. Rudd<sup>1</sup>

1. Lawrence Livermore National Lab, USA
2. Stony Brook University, USA
3. Stony Brook University, USA
4. University of Nevada, Las Vegas, USA

**5:00 PM****(EAM-BASIC-S1-006-2018) A Framework to Study Heterogeneous Factors that Influence Grain Growth (Invited)**D. Lewis\*<sup>1</sup>; A. Baskaran<sup>1</sup>

1. Rensselaer Polytechnic Institute, Materials Science and Engineering, USA

**5:30 PM****(EAM-BASIC-S1-007-2018) Microstructural Evolution of Lithium Electrodeposits in Liquid Electrolytes (Invited)**A. Jana\*<sup>1</sup>; S. I. Woo<sup>1</sup>; K. S. Vikrant<sup>1</sup>; R. E. Garcia<sup>1</sup>

1. Purdue University, School of Materials Engineering, USA

**BASIC SCIENCE DIV S2: Electromagnetic Field Effects on Ceramic Processing: Fundamental Mechanisms and New Applications****Electromagnetic Field Effects on Ceramic Processing**

Room: Nautilus B

Session Chairs: Klaus van Benthem, University of California, Davis; Martha Mecartney

**2:00 PM****(EAM-BASIC-S2-007-2018) Flash sintering of ceramics: What is the role of the electric field? (Invited)**R. I. Todd\*<sup>1</sup>; E. Zapata-Solvas<sup>2</sup>; S. Falco<sup>3</sup>; M. Yoshida<sup>4</sup>; W. Ji<sup>5</sup>; Z. Fu<sup>6</sup>

1. University of Oxford, Department of Materials, United Kingdom
2. Imperial College London, Centre for Nuclear Engineering. Dpt. of Materials, United Kingdom
3. University of Oxford, Department of Engineering Science, United Kingdom
4. Gifu University, Japan
5. Wuhan University of Technology, China
6. Wuhan University of Technology, State Key Lab of Advanced Technology for Materials Synthesis and Processing, China

**2:30 PM****(EAM-BASIC-S2-001-2018) Thermal Runaway in Flash Spark Plasma and Microwave Sintering (Invited)**E. A. Olefsky\*<sup>1</sup>

1. San Diego State University, USA

**3:00 PM****(EAM-BASIC-S2-003-2018) Flash Sintering of a Two- and Three-Phase Composites Constituted of Alumina, Spinel, and Ytria-Stabilized Zirconia**D. Kok\*<sup>1</sup>; E. Sortino<sup>2</sup>; D. Yadav<sup>3</sup>; S. J. McCormack<sup>3</sup>; K. Tseng<sup>3</sup>; W. M. Kriven<sup>3</sup>; R. Raj<sup>2</sup>; M. Mecartney<sup>1</sup>

1. University of California, Irvine, Chemical Engineering and Material Science, USA
2. University of Colorado, Boulder, USA
3. University of Illinois at Urbana-Champaign, USA

**3:15 PM****(EAM-BASIC-S2-008-2018) Impedance studies on flash sintering**Y. Tsur<sup>\*1</sup>; N. Shomrat<sup>2</sup>; S. Baltianski<sup>1</sup>

1. Technion - Israel Institute of Technology, Chemical Engineering, Israel
2. Technion - Israel Institute of Technology, GTEP, Israel

**3:30 PM****Break****4:00 PM****(EAM-BASIC-S2-002-2018) Grain Boundary Core Structures Impacted by Electric Field Application in SrTiO<sub>3</sub> Bicrystals (Invited)**L. A. Hughes<sup>\*1</sup>; K. van Benthem<sup>1</sup>

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

**4:30 PM****(EAM-BASIC-S2-006-2018) High electric fields and currents in ceramics - Possible contributions to densification (Invited)**G. A. Schneider<sup>\*1</sup>

1. Hamburg University of Technology, Germany

**5:00 PM****(EAM-BASIC-S2-005-2018) Electric-current-controlled synthesis of BaTiO<sub>3</sub> under a high DC electric field at elevated temperatures (Invited)**H. Yoshida<sup>\*1</sup>; Y. Nakagawa<sup>2</sup>; A. Uehashi<sup>2</sup>; T. Yamamoto<sup>2</sup>

1. National Institute for Materials Science (NIMS), Japan
2. Nagoya University, Materials Design Innovation Engineering, Japan

**5:30 PM****(EAM-BASIC-S2-004-2018) Flash Sintering of Li-ion conducting lithium lanthanum titanate for Li-air batteries**V. L. Blair<sup>\*2</sup>; S. V. Raju<sup>3</sup>; A. Fry<sup>3</sup>; M. Kornecki<sup>3</sup>; J. Wolfenstine<sup>1</sup>; R. E. Brennan<sup>1</sup>

1. US Army Research Laboratory, USA
2. US Army Research Laboratory, Weapons and Materials Research Directorate, USA
3. ORAU, USA
4. SURVICE Engineering, USA

**5:45 PM****(EAM-BASIC-S2-009-2018) Electric Fields Effects on Sintering and Grain Growth in MgAl<sub>2</sub>O<sub>4</sub>**W. Qin<sup>1</sup>; K. van Benthem<sup>\*1</sup>

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

**ELECTRONICS DIV S1: Complex Oxide and Chalcogenide Semiconductors: Research and Applications****Complex Oxide Heterostructures: Effect of Dimensionality and Correlation**

Room: Citrus A

Session Chair: Anderson Janotti, University of Delaware

**2:00 PM****(EAM-ELEC-S1-005-2018) Probing electron-boson interactions in 2D electron liquids at the surface of transition metal oxides using ARPES (Invited)**Z. Wang<sup>\*1</sup>

1. Ningbo Institute of Materials Technology and Engineering, Chinese Academy of Sciences, China

**2:30 PM****(EAM-ELEC-S1-009-2018) Resonant X-ray Reflectometry of Oxide Heterostructures**R. J. Green<sup>\*1</sup>; G. Sawatzky<sup>1</sup>

1. University of British Columbia, Physics & Astronomy, Canada

**2:45 PM****(EAM-ELEC-S1-007-2018) Two-Dimensional Hole Gas at Oxide Interfaces (Invited)**H. Lee<sup>\*1</sup>; N. Campbell<sup>2</sup>; J. Lee<sup>3</sup>; T. J. Asel<sup>4</sup>; T. R. Paudel<sup>5</sup>; H. Zhou<sup>6</sup>; J. Lee<sup>1</sup>; B. Noesges<sup>4</sup>; L. J. Brillson<sup>4</sup>; S. Oh<sup>3</sup>; E. Y. Tsybal<sup>5</sup>; M. Rzchowski<sup>2</sup>; C. Eom<sup>1</sup>

1. University of Wisconsin-Madison, Materials Science and Engineering, USA
2. University of Wisconsin-Madison, Department of Physics, USA
3. SungKyunkwan University, Republic of Korea
4. Ohio State University, Department of Physics, USA
5. University of Nebraska-Lincoln, Department of Physics and Astronomy, USA
6. Argonne National Lab, Advanced Photon Source 433E-095, USA

**3:15 PM****Break****3:45 PM****(EAM-ELEC-S1-008-2018) Probing Electronic Structure at the Unit Cell Level with Standing-Wave Photoemission (Invited)**A. Gray<sup>\*1</sup>

1. Temple University, Department of Physics, USA

**4:15 PM****(EAM-ELEC-S1-010-2018) FTIR study of SmNiO<sub>3</sub> thin films: Electron-phonon coupling, polarons, and a bad metal**R. Jaramillo<sup>\*1</sup>

1. Massachusetts Institute of Technology, USA

**4:30 PM****(EAM-ELEC-S1-011-2018) Verification of oxygen exchange processes during resistive switching in SrTiO<sub>3</sub> based memristive devices**T. Heisig<sup>\*2</sup>; U. Gries<sup>1</sup>; C. Baeumer<sup>2</sup>; M. P. Müller<sup>1</sup>; D. Mueller<sup>2</sup>; R. A. De Souza<sup>1</sup>; R. Dittmann<sup>2</sup>

1. RWTH Aachen University, Institute of Physical Chemistry, Germany
2. Forschungszentrum Juelich, Peter Gruenberg Institute, Germany

**4:45 PM****(EAM-ELEC-S1-006-2018) Synchrotron light exposes buried physical phenomena: Low dimensional electronic system at Transition Metal Oxides**M. Radovic<sup>\*1</sup>

1. Paul Scherrer Institut, Swiss Light Source, Switzerland

**ELECTRONICS DIV S3: Multiscale Structure-property Relationships and Advanced Characterization of Functional Ceramics****Multiscale Structure-property Relationships I**

Room: Magnolia A/B

Session Chairs: Abhijit Pramanick, City University of Hong Kong;

Julian Walker, Pennsylvania State University

**2:00 PM****(EAM-ELEC-S3-006-2018) Characterizing disordered ensembles of 2-D materials: Massively defective MnO<sub>2</sub> nanosheet assemblies (Invited)**S. T. Misture<sup>\*1</sup>

1. Alfred University, MSE, USA

**2:30 PM****(EAM-ELEC-S3-007-2018) Study of the local structure and domain wall motion under application of electric fields of (1-x) BaZr<sub>0.2</sub>Ti<sub>0.8</sub>O<sub>3</sub>-xBa<sub>0.7</sub>Ca<sub>0.3</sub>TiO<sub>3</sub>**A. M. Manjón Sanz<sup>\*2</sup>; C. M. Culbertson<sup>2</sup>; D. Hou<sup>1</sup>; J. L. Jones<sup>1</sup>; M. Dolgos<sup>2</sup>

1. North Carolina State University, Dept. of Materials Science & Engineering, USA
2. Oregon State University, Chemistry, USA

**2:45 PM****(EAM-ELEC-S3-008-2018) Coupling of emergent octahedral rotations to polarization in (K,Na)NbO<sub>3</sub>**I. Levin<sup>\*1</sup>; V. Krayzman<sup>1</sup>

1. NIST, USA

**3:00 PM****(EAM-ELEC-S3-009-2018) In situ synthesis and discovery of functional inorganic materials (Invited)**D. P. Shoemaker\*<sup>1</sup>

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

**3:30 PM****Break****4:00 PM****(EAM-ELEC-S3-010-2018) Domain Reorientation in Declamped {001} Pb(Zr<sub>0.3</sub>Ti<sub>0.7</sub>)O<sub>3</sub> Thin Films**L. M. Denis\*<sup>1</sup>; G. Esteves<sup>2</sup>; J. Walker<sup>1</sup>; J. L. Jones<sup>2</sup>; S. Trolier-McKinstry<sup>1</sup>

1. Pennsylvania State University, Materials Science and Engineering, USA
2. North Carolina State University, Materials Science and Engineering, USA

**4:15 PM****(EAM-ELEC-S3-011-2018) In operando texture analysis of electroceramics at phase boundaries**M. Hinterstein\*<sup>1</sup>; K. Lee<sup>1</sup>; D. U. Seifert<sup>1</sup>; A. Studer<sup>2</sup>; M. Etter<sup>3</sup>; M. J. Hoffmann<sup>1</sup>

1. Karlsruhe Institute of Technology, Institute of Applied Materials, Germany
2. Australian Nuclear Science and Technology Organization, Bragg Institute, Australia
3. Deutsches Elektronensynchrotron, Germany

**4:30 PM****(EAM-ELEC-S3-012-2018) Combined total scattering and first principles approach to understand structural disorder (Invited)**S. M. Selbach\*<sup>1</sup>; B. Jiang<sup>1</sup>; S. Skjærvo<sup>1</sup>; Q. Meier<sup>2</sup>; E. Bozin<sup>3</sup>; S. Billinge<sup>4</sup>; M. Feygenson<sup>5</sup>; N. Spaldin<sup>6</sup>; T. Grande<sup>1</sup>

1. NTNU Norwegian University of Science and Technology, Department of Materials Science and Engineering, Norway
2. ETH Zurich, Materials Theory, Switzerland
3. Brookhaven National Laboratory, Condensed Matter Physics and Materials Science Department, USA
4. Columbia University, Department of Applied Physics and Applied Mathematics, USA
5. Forschungszentrum Juelich, Germany

**5:00 PM****(EAM-ELEC-S3-013-2018) Characterizing local atomic dynamics in real space and time (Invited)**T. Egami\*<sup>1</sup>

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

**5:30 PM****(EAM-ELEC-S3-014-2018) The local structural origin of temperature-stable permittivity in BaTiO<sub>3</sub> – Bi(Zn<sub>1/2</sub>Ti<sub>1/2</sub>)O<sub>3</sub> ceramics (Invited)**T. Usher\*<sup>1</sup>; D. Hou<sup>2</sup>; J. S. Forrester<sup>3</sup>; N. Raengthon<sup>4</sup>; N. Triamnak<sup>5</sup>; D. Cann<sup>6</sup>; K. L. Page<sup>1</sup>; J. L. Jones<sup>2</sup>

1. Oak Ridge National Lab, Chemical and Engineering Materials, USA
2. North Carolina State University, Materials Science and Engineering, USA
3. University of Leeds, School of Chemical and Process Engineering, United Kingdom
4. Chulalongkorn University, Department of Materials Science, Thailand
5. Silpakorn University, Department of Materials Science and Engineering, Thailand
6. Oregon State Univ, School of Mechanical, Industrial, and Manufacturing Engineering, USA

**ELECTRONICS DIV S4: Agile Design of Electronic Materials: Aligned Computational and Experimental Approaches****Materials by Design: Computational/experimental Emerging Strategies for Searching, Designing, and Discovering New Electronic Materials**

Room: Citrus B

Session Chair: Venkatesh Botu, Corning Incorporated

**2:00 PM****(EAM-ELEC-S4-001-2018) Learning from data to guide experiments to find materials with targeted properties (Invited)**T. Lookman\*<sup>1</sup>

1. Los Alamos National Lab, Theoretical Division, USA

**2:30 PM****(EAM-ELEC-S4-002-2018) High-Throughput Prediction of Two-Dimensional MX<sub>3</sub> for Spintronics Applications**Y. Zhang<sup>1</sup>; M. Ashton<sup>1</sup>; J. T. Paul\*<sup>1</sup>; J. Gabriel<sup>1</sup>; D. Gluhovic<sup>1</sup>; R. G. Hennig<sup>1</sup>

1. University of Florida, Material Science and Engineering, USA

**2:45 PM****(EAM-ELEC-S4-003-2018) Topological states and phonon couplings in electronic materials under large strains (Invited)**Y. Chen\*<sup>1</sup>

1. The University of Hong Kong, Department of Mechanical Engineering, Hong Kong

**3:15 PM****(EAM-ELEC-S4-004-2018) High-Temperature Quantum Anomalous Hall Effect on Post-Transition-Metal-Decorated Graphane**L. Zhang\*<sup>1</sup>; C. Park<sup>1</sup>; M. Yoon<sup>1</sup>

1. Oak Ridge National Laboratory, Center for Nanophase Materials Science, USA

**3:30 PM****Break****4:00 PM****(EAM-ELEC-S4-005-2018) Autonomous phase mapping for the lab and the beamline (Invited)**A. Kusne\*<sup>1</sup>; B. DeCost<sup>1</sup>; J. Hattrick-Simpers<sup>1</sup>; I. Takeuchi<sup>2</sup>

1. National Institute of Standards and Technology, USA
2. University of Maryland, USA

**4:30 PM****(EAM-ELEC-S4-006-2018) Atomic and Electronic Structure in Amorphous InGaZnO<sub>4</sub>**D. Fast\*<sup>1</sup>

1. Oregon State University, Chemistry, USA

**4:45 PM****(EAM-ELEC-S4-007-2018) Prediction of hybrid organic-inorganic elpasolite formation via convex hull phase diagram analysis**S. Xie\*<sup>1</sup>; M. Sexton<sup>1</sup>; J. Xue<sup>1</sup>; S. R. Phillpot<sup>1</sup>; R. G. Hennig<sup>1</sup>

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

**5:00 PM****(EAM-ELEC-S4-008-2018) Computational Discovery of Candidate Replacements for Pb in orthorhombic CH<sub>3</sub>NH<sub>3</sub>PbI<sub>3</sub> for solar cell applications**J. J. Gabriel\*<sup>1</sup>; S. Xie<sup>1</sup>; K. Choudhary<sup>2</sup>; M. Sexton<sup>1</sup>; S. R. Phillpot<sup>1</sup>; J. Xue<sup>1</sup>; R. G. Hennig<sup>1</sup>

1. University of Florida, Materials Science and Engineering, USA
2. National Institute of Standards and Technology, USA

**ELECTRONICS DIV S5: Ion-conducting Ceramics****Cation Conducting Ceramics for Energy Storage**

Room: Cypress A/B

Session Chairs: Hui Xiong, Boise State University; Erik Spoeke, Sandia National Laboratories

**2:00 PM****(EAM-ELEC-S5-001-2018) Safe, High-Energy-Density, Solid-State Li Batteries (Invited)**E. D. Wachsmann\*<sup>1</sup>

1. University of Maryland, USA

**2:30 PM****(EAM-ELEC-S5-002-2018) Strain Effects on Ionic Transport in Perovskite Oxides**R. Gao\*<sup>1</sup>; A. Jain<sup>2</sup>; S. Pandya<sup>1</sup>; Y. Dong<sup>3</sup>; L. Dedon<sup>1</sup>; S. Saremi<sup>1</sup>; A. Luo<sup>1</sup>; H. Zhou<sup>3</sup>; T. Chen<sup>4</sup>; N. H. Perry<sup>4</sup>; D. Trinkle<sup>2</sup>; L. W. Martin<sup>1</sup>

1. University of California, Berkeley, Materials Science and Engineering, USA
2. University of Illinois at Urbana-Champaign, Materials Science and Engineering, USA
3. Argonne National Lab, X-ray Science Division, Advanced Photon Source, USA
4. Kyushu University, International Institute for Carbon-Neutral Energy Research (WPI-I2CNER), Japan

**2:45 PM****(EAM-ELEC-S5-003-2018) Fabrication and excellent Li<sup>+</sup> conductivity of a novel NASICON-type solid electrolyte**S. Kumar\*; T. Pareek<sup>1</sup>; S. Dwivedi<sup>1</sup>; A. Yadav<sup>1</sup>; A. Verma<sup>1</sup>; S. Sen<sup>1</sup>

1. Indian Institute of Technology Indore, Metallurgy Engineering and Materials Science, India

**3:00 PM****(EAM-ELEC-S5-004-2018) Understanding Electrochemical and Structural Behaviors of Irradiation Induced Defects in TiO<sub>2</sub>**K. A. Smith\*; A. Savva<sup>1</sup>; Y. Wang<sup>2</sup>; D. Su<sup>3</sup>; S. Hwang<sup>3</sup>; J. Wharry<sup>4</sup>; H. Xiong<sup>1</sup>

1. Boise State University, Material Science and Engineering, USA
2. Los Alamos National Laboratory, Ion Beam Materials Laboratory, USA
3. Brookhaven National Laboratory, Center for Functional Nanomaterials, USA
4. Purdue University, Nuclear Engineering, USA

**3:15 PM****(EAM-ELEC-S5-005-2018) Compositional Changes of Chemically Exfoliated Lithium Cobalt Oxide**K. G. Pachuta\*; A. Sehirlioglu<sup>1</sup>; E. Pentzer<sup>2</sup>

1. Case Western Reserve University, Materials Science and Engineering, USA
2. Case Western Reserve University, Chemistry, USA

**3:30 PM****Break****Mechanisms for Ion Transport**

Room: Cypress A/B

Session Chairs: Hui Xiong, Boise State University; Miaofang Chi, Oak Ridge National Lab

**4:00 PM****(EAM-ELEC-S5-006-2018) Towards New All Solid State Li and Na Batteries: Glass the Enabling Material (Invited)**S. W. Martin\*<sup>1</sup>

1. Iowa State University, Materials Science & Engineering, USA

**4:30 PM****(EAM-ELEC-S5-007-2018) Microscopic Insights into Conductivity and Stability of Solid Electrolyte Interface (Invited)**M. Chi\*; J. Sakamoto<sup>2</sup>; N. Dudney<sup>1</sup>

1. Oak Ridge National Lab, Materials Science and Technology Division, USA
2. University of Michigan, USA

**5:00 PM****(EAM-ELEC-S5-008-2018) SIMS Study of Oxygen Diffusion in Monoclinic HfO<sub>2</sub>**M. P. Müller\*; R. A. De Souza<sup>1</sup>

1. RWTH Aachen University, Institute for Physical Chemistry, Germany

**5:15 PM****(EAM-ELEC-S5-009-2018) Electrical conductivity and microstructure in sintered Li<sub>4</sub>Ti<sub>5</sub>O<sub>12</sub> anodes for structural batteries**W. Huddleston\*; F. Dynys<sup>2</sup>; A. Sehirlioglu<sup>1</sup>

1. Case Western Reserve University, Department of Materials Science and Engineering, USA
2. NASA Glenn Research Center, USA

**5:30 PM****(EAM-ELEC-S5-010-2018) Effect of thickness on epitaxial growth and transport properties of solid electrolyte LiLaTiO<sub>3</sub> thin film fabricated by pulsed laser deposition**E. Farghadany\*; A. Sehirlioglu<sup>1</sup>

1. Case Western Reserve University, Materials Science and Engineering, USA

**ELECTRONICS DIV S8: Multifunctional Nanocomposites****Strain Effect**

Room: Orange D

Session Chair: Rui Wu, University of Cambridge

**2:00 PM****(EAM-ELEC-S8-014-2018) Strain control of oxygen exchange kinetics in Ruddlesden-Popper oxides (Invited)**H. Lee\*<sup>1</sup>

1. Oak Ridge National Lab, USA

**2:30 PM****(EAM-ELEC-S8-015-2018) Enhanced magnetic properties in microstructured manganites (Invited)**A. Biswas\*; H. Jeon<sup>2</sup>; I. Kwak<sup>1</sup>; D. Grant<sup>1</sup>

1. University of Florida, Physics, USA
2. Pusan National University, Physics, Republic of Korea

**3:00 PM****(EAM-ELEC-S8-016-2018) Nanoscale Strain and Doping Modulation of Magnetic Anisotropy in (La,Sr)MnO<sub>3</sub> Nanostructures and Heterostructures (Invited)**X. Hong\*<sup>1</sup>

1. University of Nebraska-Lincoln, Physics and Astronomy, USA

**3:30 PM****Break****Ferroelectricity**

Room: Orange D

Session Chair: Robert Green, University of Saskatchewan

**4:00 PM****(EAM-ELEC-S8-012-2018) Phase Coexistence in Multiferroic BiFeO<sub>3</sub>-based Superlattices (Invited)**J. Mundy\*<sup>1</sup>

1. Harvard University, USA

**4:30 PM****(EAM-ELEC-S8-018-2018) Room-temperature relaxor ferroelectricity and photovoltaic effects in SnTiO<sub>3</sub>/Si thin film heterostructures (Invited)**S. Hong\*<sup>3</sup>; R. Agarwal<sup>1</sup>; Y. Sharma<sup>4</sup>; S. Chang<sup>5</sup>; C. Sohn<sup>1</sup>; K. Pitike<sup>2</sup>; S. Nakhmanson<sup>2</sup>; C. Takoudis<sup>5</sup>; H. Lee<sup>1</sup>; J. F. Scott<sup>6</sup>; R. Katiyar<sup>4</sup>

1. Oak Ridge National Lab, Materials Science and Technology Division, USA
2. University of Connecticut, Materials Science and Engineering, USA
3. Korea Advanced Institute of Science and Engineering (KAIST), Materials Science and Engineering, Republic of Korea
4. University of Puerto-Rico, Department of Physics and Institute for Functional Nanomaterials, USA
5. University of Illinois at Chicago, Department of Chemical Engineering, USA
6. University of St. Andrews, School of Physics and Astronomy, United Kingdom

**5:00 PM****(EAM-ELEC-S8-019-2018) Permanent ferroelectric retention of BiFeO<sub>3</sub> mesocrystal in a BiFeO<sub>3</sub>-CoFe<sub>2</sub>O<sub>4</sub> nanocomposite (Invited)**Q. He\*<sup>1</sup>

1. Durham University, Physics, United Kingdom

**5:30 PM****(EAM-ELEC-S8-020-2018) Complication of ferroelectricity to enhance electrostrain (Invited)**S. Choi\*<sup>1</sup>

1. Pohang University of Science and Technology(POSTECH), Materials Science & Engineering, Republic of Korea

## **ELECTRONICS DIV S13: Advanced Electronic Materials: Processing, Structure, Properties, and Applications**

### **Characterization of Materials I: Crystal Structure**

Room: Orange C

Session Chairs: Jacob Jones, North Carolina State University; Zhongming Fan, Iowa State University

#### **2:00 PM**

#### **(EAM-ELEC-S13-024-2018) Polarization rotation and field-induced phase transitions in ferroelectric ceramics (Invited)**

J. L. Jones<sup>\*1</sup>; D. Hou<sup>1</sup>; C. Zhao<sup>1</sup>

1. North Carolina State University, Dept. of Materials Science & Engineering, USA

#### **2:30 PM**

#### **(EAM-ELEC-S13-025-2018) Correlating local chemistry with local structure in relaxor ferroelectrics**

M. J. Cabral<sup>\*1</sup>; S. Zhang<sup>2</sup>; B. Reich<sup>3</sup>; E. C. Dickey<sup>1</sup>; J. LeBeau<sup>1</sup>

1. North Carolina State University, Materials Science and Engineering, USA
2. University of Wollongong, Institute for Superconducting & Electronic Materials, Australia
3. North Carolina State University, Department of Statistics, USA

#### **2:45 PM**

#### **(EAM-ELEC-S13-026-2018) In situ TEM study of polarization fatigue in a BZT-BCT ceramic**

Z. Fan<sup>\*1</sup>; X. Tan<sup>1</sup>

1. Iowa State University, USA

#### **3:00 PM**

#### **(EAM-ELEC-S13-027-2018) In-situ Piezoelectric Response Measurements of Lead-free, Bismuth-based, Piezoelectric Thin Films**

A. Fox<sup>\*1</sup>; B. Gibbons<sup>1</sup>; H. Funakubo<sup>2</sup>

1. Oregon State University, MIME, USA
2. Tokyo Institute of Technology, Japan

#### **3:15 PM**

#### **(EAM-ELEC-S13-028-2018) Thin film stress in piezoelectrics for adjustable optics**

J. Walker<sup>\*2</sup>; T. Liu<sup>3</sup>; M. Tendulkar<sup>3</sup>; D. N. Burrows<sup>4</sup>; C. DeRoo<sup>5</sup>; E. Hertz<sup>2</sup>; V. Cotroneo<sup>5</sup>; P. Reid<sup>5</sup>; E. D. Schwartz<sup>5</sup>; T. Jackson<sup>3</sup>; S. E. Trolier-McKinstry<sup>2</sup>

2. Pennsylvania State University, Materials Research Institute, USA
3. Pennsylvania State University, Electrical Engineering, USA
4. Pennsylvania State University, Astronomy and Astrophysics, USA
5. Harvard University, Harvard Smithsonian Center for Astrophysics, USA

#### **3:30 PM**

#### **Break**

## **Advanced Electronic Materials III: Piezoelectric Crystals**

Room: Orange C

Session Chairs: Qiang Li, Tsinghua University; Andrew Bell, University of Leeds

#### **4:00 PM**

#### **(EAM-ELEC-S13-029-2018) Domain configuration evolution in PMN-PT single crystals near MPB under a radial poling field (Invited)**

Q. Li<sup>\*1</sup>; Y. Zhou<sup>1</sup>; C. XU<sup>1</sup>; Q. Yan<sup>1</sup>

1. Tsinghua University, Department of Chemistry, China

#### **4:30 PM**

#### **(EAM-ELEC-S13-030-2018) Low Temperature Properties of Ferroelectric and Relaxor Materials (Invited)**

A. J. Bell<sup>\*1</sup>

1. University of Leeds, School of Chemical and Process Engineering, United Kingdom

#### **5:00 PM**

#### **(EAM-ELEC-S13-031-2018) High-Temperature Solution Growth and Characterization of (1-x)PbTiO<sub>3</sub>-xBi(Zn<sub>2/3</sub>Nb<sub>1/3</sub>)O<sub>3</sub> Piezo-/ferroelectric Single Crystals**

A. Paterson<sup>\*1</sup>; J. Zhao<sup>2</sup>; Z. Liu<sup>2</sup>; X. Wu<sup>2</sup>; W. Ren<sup>2</sup>; Z. Ye<sup>1</sup>

1. Simon Fraser University, Canada
2. Xi'an Jiaotong University, China

#### **5:15 PM**

#### **(EAM-ELEC-S13-032-2018) Ferroic and Multiferroic Behavior in Fe doped BaTiO<sub>3</sub> single crystals**

M. Staruch<sup>\*1</sup>; M. Cain<sup>2</sup>; P. Thompson<sup>3</sup>; P. Finkel<sup>1</sup>

1. U.S. Naval Research Laboratory, USA
2. Queen Mary University of London, United Kingdom
3. European Synchrotron Radiation Facility, France

#### **5:30 PM**

#### **(EAM-ELEC-S13-033-2018) Highly sensitive mechanical pressure detection by piezoelectric AlN thin films**

H. Bishara<sup>\*1</sup>; S. Berger<sup>1</sup>

1. Technion - Israel Institute of Technology, Materials Science and Engineering, Israel

#### **5:45 PM**

#### **(EAM-ELEC-S13-034-2018) Combinatorial studies on the effect of boron addition to the aluminum-scandium nitride system**

K. R. Talley<sup>\*1</sup>; G. L. Brennecke<sup>1</sup>; S. Manna<sup>1</sup>; A. Zakutayev<sup>2</sup>; C. Packard<sup>1</sup>; C. Ciobanu<sup>1</sup>; Y. Chen<sup>1</sup>

1. Colorado School of Mines, Metallurgical Materials and Engineering, USA
2. National Renewable Energy Laboratory, USA

## **Friday, January 19, 2018**

### **Joint Session: Basic Science Symp 1 and Electronics Symp 4**

#### **Data Science and High-throughput Approaches I**

Room: Citrus B

Session Chair: Mina Yoon, Oak Ridge National Laboratory

#### **8:30 AM**

#### **(EAM-JOINT-001-2018) Informatics and the Materials Tetrahedron (Invited)**

R. LeSar<sup>\*1</sup>

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

#### **9:00 AM**

#### **(EAM-JOINT-002-2018) Data Analytics using Canonical Correlation Analysis and Monte Carlo Simulation (Invited)**

J. Rickman<sup>\*1</sup>

1. Lehigh University, Materials Science and Engineering, USA

#### **9:30 AM**

#### **(EAM-JOINT-003-2018) Disrupting the Ceramic R&D Model and Discovery of Processing-Structure-Property Relationships through Automated Characterization and Data Science**

M. C. Golt<sup>\*1</sup>

1. U.S. Army Research Laboratory, USA

#### **9:45 AM**

#### **Break**

#### **10:15 AM**

#### **(EAM-JOINT-004-2018) Informatics Driven Design of Ceramics (Invited)**

K. Rajan<sup>\*1</sup>

1. University at Buffalo: the State Univ. of New York, Materials Design and Innovation, USA



**10:45 AM****(EAM-JOINT-005-2018) Density functional theory calculations and data mining for new thermoelectrics discovery (Invited)**A. Jain\*<sup>1</sup>

1. Lawrence Berkeley National Laboratory, USA

**11:15 AM****(EAM-JOINT-006-2018) High-throughput powder exploration method for materials informatics**K. Fujimoto\*<sup>1</sup>; A. Aimi<sup>1</sup>; S. Maruyama<sup>2</sup>

1. Tokyo University of Science, Japan
2. Tohoku University, Japan

**11:30 AM****(EAM-JOINT-007-2018) Scoping the Polymer Genome: Rational Design of Polymer Dielectrics (Invited)**A. Mannodi-Kanakithodi\*<sup>1</sup>; H. D. Tran<sup>2</sup>; C. Kim<sup>2</sup>; R. Ramprasad<sup>2</sup>

1. Argonne National Lab, Center for Nanoscale Materials, USA
2. University of Connecticut, USA

**12:00 PM****(EAM-JOINT-008-2018) Beyond High-throughput: Towards an Optimal, Autonomous Computational Materials Discovery Platform (Invited)**R. Arroyave\*<sup>1</sup>; A. Talapatra<sup>1</sup>; S. Boluki<sup>2</sup>; X. Qian<sup>2</sup>; E. R. Dougherty<sup>2</sup>

1. Texas A&M University, Materials Science and Engineering, USA
2. Texas A&M University, Electrical and Computer Engineering, USA

**ELECTRONICS DIV S1: Complex Oxide and Chalcogenide Semiconductors: Research and Applications****Chalcogenide Thin Films and Heterostructures**

Room: Citrus A

Session Chairs: Jayakanth Ravichandran, Columbia University; Rafael Jaramillo, Massachusetts Institute of Technology

**8:30 AM****(EAM-ELEC-S1-012-2018) New Phase Transitions in Atomically Thin Quantum Materials (Invited)**A. Tsen\*<sup>1</sup>

1. University of Waterloo, Canada

**9:00 AM****(EAM-ELEC-S1-013-2018) High-quality growth of chalcogenide topological insulators (Invited)**S. Law\*<sup>1</sup>

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

**9:30 AM****(EAM-ELEC-S1-014-2018) Single crystal growth, characterization, and in situ manipulation of van der Waals gapped  $\text{CuInP}_2\text{S}_6/\text{In}_4\text{P}_3\text{P}_2\text{S}_6$  heterostructures**M. A. Susner\*<sup>1</sup>; M. McGuire<sup>2</sup>; P. Ganesh<sup>2</sup>; M. Chyavnavichyus<sup>2</sup>; P. Maksymovych<sup>2</sup>

1. AFRL, Aerospace Systems Directorate, USA
2. Oak Ridge National Lab, USA

**9:45 AM****(EAM-ELEC-S1-015-2018) Persistent photoconductivity due to hole-hole correlation in chalcogenides, with applications to neuromorphic computing and chemical sensors**R. Jaramillo\*<sup>1</sup>

1. Massachusetts Institute of Technology, USA

**10:00 AM****Break****10:30 AM****(EAM-ELEC-S1-016-2018) Laser-Assisted Synthesis, Processing, and Spectroscopy of 2D Metal Chalcogenides and Heterostructures (Invited)**M. Mahjouri-Samani\*<sup>1</sup>

1. Auburn University, Electrical and Computer Engineering, USA

**11:00 AM****(EAM-ELEC-S1-017-2018) Electronic and optical properties of  $2\text{D-In}_2\text{Se}_3$** A. Janotti\*<sup>1</sup>; W. Li<sup>1</sup>; F. Sabino<sup>1</sup>

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

**11:15 AM****(EAM-ELEC-S1-018-2018) Imaging orbitals and defects in superconducting  $\text{FeSe}/\text{SrTiO}_3$** C. E. Matt\*<sup>1</sup>; T. Webb<sup>1</sup>; H. Pirie<sup>1</sup>; D. Huang<sup>1</sup>; S. Fang<sup>1</sup>; E. Kaxiras<sup>1</sup>; J. Hoffman<sup>1</sup>

1. Harvard University, Dept. of Physics, USA

**11:30 AM****(EAM-ELEC-S1-020-2018) Cross-interface coupling of electrons and phonons in oxide-chalcogenide heterostructures**R. Moore\*<sup>1</sup>

1. SLAC National Accelerator Laboratory, USA

**ELECTRONICS DIV S3: Multiscale Structure-property Relationships and Advanced Characterization of Functional Ceramics****Imaging and Analytical Techniques II**

Room: Magnolia A/B

Session Chairs: David McComb, The Ohio State University; Julian Walker, Pennsylvania State University; Abhijit Pramanick, City University of Hong Kong; Hugh Simons, Technical University of Denmark

**8:30 AM****(EAM-ELEC-S3-015-2018) Relaxor-ferroelectric domain structure in  $\text{Pb}(\text{Mg}_{1/3}\text{Nb}_{2/3})\text{O}_3$  and  $\text{Pb}(\text{Sc}_{1/2}\text{Nb}_{1/2})\text{O}_3$ -based polycrystalline materials determined by piezo-response force microscopy (Invited)**H. Uršič\*<sup>1</sup>; M. Otonicar<sup>1</sup>; T. Rojac<sup>1</sup>; M. Vrabelj<sup>1</sup>; B. Malic<sup>1</sup>

1. Jozef Stefan Institute, Electronic Ceramics Department, Slovenia

**9:00 AM****(EAM-ELEC-S3-016-2018) Nanoscale three-dimensional imaging of ferroelectric and electronic properties in multiferroic  $\text{BiFeO}_3$  thin films**J. Steffes\*<sup>1</sup>; B. Huey<sup>1</sup>; R. Ramesh<sup>2</sup>

1. University of Connecticut, Materials Science and Engineering, USA
2. University of California, Berkeley, Materials Science and Engineering, USA

**9:15 AM****(EAM-ELEC-S3-017-2018) Probing strain in oxide heterostructures and ultrathin films by Raman spectroscopy (Invited)**J. Kreisel\*<sup>1</sup>

1. Luxembourg Institute of Science and Technology, Materials Research and technology, Luxembourg

**9:45 AM****(EAM-ELEC-S3-018-2018) In-situ imaging of long-range symmetry breaking in ferroelectric ceramics**H. W. Simons\*<sup>2</sup>; A. B. Haugen<sup>2</sup>; C. Detlefs<sup>5</sup>; H. F. Poulsen<sup>3</sup>; J. Daniels<sup>4</sup>; D. Damjanovic<sup>1</sup>

1. Swiss Federal Institute of Technology in Lausanne - EPFL, Ceramics Laboratory, Switzerland
2. Technical University of Denmark, Energy conversion and storage, Denmark
3. Technical University of Denmark, Physics, Denmark
4. University of New South Wales, Materials Science & Engineering, Australia
5. ESRF, France

**9:45 AM****Break**

**Multiscale Structure Property Relationships II**

Room: Magnolia A/B

Session Chairs: Abhijit Pramanick, City University of Hong Kong;  
Julian Walker, Pennsylvania State University**10:30 AM****(EAM-ELEC-S3-019-2018) Synergetic Effects between Experimental Studies and Simulation to Reveal Mechanisms Involved in Resistance Degradation (Invited)**T. J. Bayer\*<sup>1</sup>; J. Wang<sup>1</sup>; J. Carter<sup>1</sup>; R. Wang<sup>1</sup>; S. Sahu<sup>1</sup>; A. Klein<sup>2</sup>; L. Chen<sup>1</sup>; C. Randall<sup>1</sup>

1. Pennsylvania State University, Materials Science and Engineering, USA
2. TU Darmstadt, Institute of Materials Science, Germany

**11:00 AM****(EAM-ELEC-S3-020-2018) Actuation Mechanisms in Core-Shell Structured BiFeO<sub>3</sub>-BaTiO<sub>3</sub> Ceramics (Invited)**D. A. Hall\*<sup>1</sup>

1. University of Manchester, School of Materials, United Kingdom

**11:30 AM****(EAM-ELEC-S3-021-2018) Polarization and strain dynamics in polycrystalline ferroelectric/ferroelastic materials: An experimental approach and mechanistic description**J. Schultheiß<sup>1</sup>; Y. A. Genenko<sup>1</sup>; R. Khachatryan<sup>1</sup>; L. Liu<sup>2</sup>; J. Daniels<sup>2</sup>; J. Koruza\*<sup>1</sup>

1. TU Darmstadt, Germany
2. University of New South Wales, Australia

**11:45 AM****(EAM-ELEC-S3-022-2018) Stabilization of Polar Nano Regions in Pb-free ferroelectrics**A. Pramanick\*<sup>1</sup>; W. Dmowski<sup>2</sup>; T. Egami<sup>2</sup>; A. Budisuharto<sup>1</sup>; F. Weyland<sup>1</sup>; N. Novak<sup>2</sup>; A. Christianson<sup>2</sup>; D. Abernathy<sup>3</sup>; M. Jorgensen<sup>4</sup>

1. City University of Hong Kong, Hong Kong
2. Oak Ridge National Lab, USA
3. Technical University Darmstadt, Germany
4. Aarhus University, Denmark

**12:00 PM****(EAM-ELEC-S3-023-2018) Electric field-induced transitions in electro-active materials (Invited)**G. Viola\*<sup>2</sup>; J. Walker<sup>1</sup>; Y. Tian<sup>5</sup>; M. Salvo<sup>2</sup>; M. Reece<sup>3</sup>; H. Yan<sup>3</sup>

1. Pennsylvania State University, Materials Research Institute, USA
2. Politecnico di Torino, Italy
3. Queen Mary University of London, United Kingdom
5. Jiatong University, China

**ELECTRONICS DIV S5: Ion-conducting Ceramics****Novel Ion Conducting Materials**

Room: Cypress A/B

Session Chairs: Fanlin (Frank) Chen, University of South Carolina;  
Ho Nyung Lee, Oak Ridge National Lab**8:30 AM****(EAM-ELEC-S5-011-2018) 3D Printing of Protonic ceramic Energy devices (Invited)**S. MU<sup>2</sup>; Y. Hong<sup>1</sup>; J. Lei<sup>1</sup>; Z. Zhao<sup>1</sup>; F. Peng<sup>1</sup>; H. Xiao<sup>1</sup>; J. Tong\*<sup>1</sup>

1. Clemson University, USA
2. Clemson University, USA

**9:00 AM****(EAM-ELEC-S5-012-2018) Ion intercalation induced structural change and phase transitions in epitaxial oxide thin film (Invited)**Y. Du\*<sup>1</sup>

1. Pacific Northwest National Lab, USA

**9:30 AM****(EAM-ELEC-S5-013-2018) Assessment of Sr<sub>2</sub>Fe<sub>1-x</sub>MoO<sub>6</sub> as Potential Cr-tolerant Solid Oxide Fuel Cell Electrode**L. Lei\*<sup>1</sup>; F. Chen<sup>1</sup>

1. University of South Carolina, USA

**9:45 AM****(EAM-ELEC-S5-014-2018) A New Hybrid SOFC Catalyst for Enhanced Stability and Performance**R. Murphy\*<sup>1</sup>; Y. Chen<sup>1</sup>; S. Yoo<sup>1</sup>; K. Pei<sup>1</sup>; B. Doyle<sup>1</sup>; M. Liu<sup>1</sup>

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

**10:00 AM****Break****Oxygen Conductors**

Room: Cypress A/B

Session Chairs: Yingge Du, PNNL; Jianhua Tong, Clemson University

**10:30 AM****(EAM-ELEC-S5-015-2018) High ionic conductivity at (111) fluorite-bixbyite interfaces (Invited)**H. Lee\*<sup>1</sup>

1. Oak Ridge National Lab, USA

**11:00 AM****(EAM-ELEC-S5-016-2018) Influence of Gallium-Based Additives on Microstructure and Ionic Conductivity of Doped-Lanthanum Gallate**S. L. Reis<sup>2</sup>; E. N. Muccillo\*<sup>1</sup>

1. Energy and Nuclear Research Institute, Brazil
2. Institute of Nuclear Energy Research, CCTM, Brazil

**11:15 AM****(EAM-ELEC-S5-017-2018) On the ionic conduction mechanism in B-Site acceptor doped Na<sub>0.5</sub>Bi<sub>0.5</sub>TiO<sub>3</sub>**S. Steiner<sup>1</sup>; L. Koch<sup>1</sup>; K. Meyer<sup>1</sup>; S. In-Tae<sup>1</sup>; K. Albe<sup>1</sup>; T. Frömling\*<sup>1</sup>

1. Technische Universität Darmstadt, Materials Science, Germany

**11:30 AM****(EAM-ELEC-S5-018-2018) p-type electronic conductivity in yttria-stabilised zirconia ceramic electrolytes**A. R. West\*<sup>1</sup>

1. University of Sheffield, Materials Science & Engineering, United Kingdom

**11:45 AM****(EAM-ELEC-S5-019-2018) Conductivity Study of B-site Ga<sup>3+</sup> Doped Na<sub>0.54</sub>Bi<sub>0.46</sub>TiO<sub>3-δ</sub>**R. Bhattacharyya\*<sup>1</sup>; S. Omar<sup>1</sup>

1. Indian Institute of Technology Kanpur, Materials Science and Engineering, India

**12:00 PM****(EAM-ELEC-S5-020-2018) Optimisation of oxide-ion conductivity in acceptor-doped Na<sub>0.5</sub>Bi<sub>0.5</sub>TiO<sub>3</sub> perovskite: approaching the limit?**F. Yang<sup>2</sup>; M. Li<sup>1</sup>; L. Li<sup>2</sup>; Y. Wu<sup>2</sup>; E. Pradal Velazquez<sup>2</sup>; D. C. Sinclair\*<sup>1</sup>

1. University of Sheffield, Materials Science & Engineering, United Kingdom
2. University of Sheffield, United Kingdom
4. University of Nottingham, United Kingdom

**ELECTRONICS DIV S8: Multifunctional Nanocomposites****Transport**

Room: Orange D

Session Chair: Zhongchang Wang, World Premier International Research Center, Advanced Institute for Materials Research

**8:30 AM****(EAM-ELEC-S8-021-2018) Dielectric performance of polymer-based composites containing core-shell Ni-TiO<sub>2</sub> particle fillers**G. Jian\*<sup>1</sup>; C. Zhang<sup>1</sup>; H. Shao<sup>1</sup>; C. Wong<sup>2</sup>

1. Jiangsu University of Science and Technology, Materials Science and Engineering, China
2. Georgia Institute of Technology, Materials Science and Engineering, USA

**8:45 AM****(EAM-ELEC-S8-022-2018) Novel Radical-based Molecular Beam Epitaxy Approach for Metal Oxide Films Containing Elements of Low Oxidation Potential (Invited)**B. Jalan\*<sup>1</sup>

1. University of Minnesota, USA

**9:15 AM****(EAM-ELEC-S8-023-2018) Revealing electron correlations effects in the ultraclean perovskite metal SrVO<sub>3</sub>**M. Brahlek\*<sup>2</sup>; L. Zhang<sup>2</sup>; T. Biroli<sup>3</sup>; R. Engel-Herbert<sup>2</sup>

2. Pennsylvania State University, Materials Science and Engineering, USA
3. University of Minnesota, Department of Chemical Engineering and Materials Science, USA

**9:30 AM****(EAM-ELEC-S8-024-2018) Reversible redox reaction of SrFe<sub>0.8</sub>Co<sub>0.2</sub>O<sub>3-δ</sub> thin films in ambient gas condition**J. Lee<sup>1</sup>; E. Ahn<sup>2</sup>; T. Jeon<sup>3</sup>; J. Cho<sup>3</sup>; H. Jeon\*<sup>1</sup>

1. Pusan National University, Department of Physics, Republic of Korea
2. Pusan National University, Extreme Physics Institute, Republic of Korea
3. Pohang University of Science and Technology(POSTECH), Pohang Accelerator Laboratory, Republic of Korea
4. Pusan National University, Department of Physics Education, Republic of Korea

**9:45 AM****(EAM-ELEC-S8-025-2018) Tailoring mixed-ionic electronic conductivity in PCO/STO heterostructures**G. Harrington\*<sup>1</sup>; N. H. Perry<sup>2</sup>; K. Sasaki<sup>3</sup>; B. Yildiz<sup>5</sup>; H. L. Tuller<sup>3</sup>

1. Kyushu University, Center for Co-Evolutional Social Systems, Japan
2. Kyushu University, International Institute for Carbon-Neutral Energy Research (I2CNER), Japan
3. Massachusetts Institute of Technology, Department of Materials Science and Engineering, USA
4. Kyushu University, Center for Co-Evolutional Social Systems, Japan
5. Massachusetts Institute of Technology, Department of Nuclear Science and Engineering, USA

**10:00 AM****Break****Magnetism**

Room: Orange D

Session Chair: Xia Hong, University of Nebraska-Lincoln

**10:30 AM****(EAM-ELEC-S8-026-2018) Two-Phase Pillars in Nanocomposites Grown by Molecular Beam Epitaxy**R. Comes\*<sup>1</sup>; D. E. Perea<sup>2</sup>; S. Spurgeon<sup>2</sup>; M. Blanchet<sup>1</sup>; U. Ubeh<sup>1</sup>

1. Auburn University, Physics, USA
2. Pacific Northwest National Lab, USA

**10:45 AM****(EAM-ELEC-S8-027-2018) Interface engineering of transition metal oxides as a new route for exploring functional properties (Invited)**D. Kan\*<sup>1</sup>

1. Institute for Chemical Research, Japan

**11:15 AM****(EAM-ELEC-S8-028-2018) Controlling magnetic spin reconstructions by geometrical lattice engineering (Invited)**I. Hallsteinsen\*<sup>1</sup>; K. Kjærnes<sup>1</sup>; M. Moreau<sup>1</sup>; A. Grutter<sup>2</sup>; M. Nord<sup>3</sup>; R. Holmestad<sup>3</sup>; S. Selbach<sup>4</sup>; E. Arenholz<sup>5</sup>; T. Tybell<sup>1</sup>

1. Norwegian University of Science and Technology, Department of Electronic Systems, Norway
2. National Institute for Science and Technology, Center for Neutron Research, USA
3. Norwegian University of Science and Technology, Department of Physics, Norway
4. Norwegian University of Science and Technology, Department of Material science and engineering, Norway
5. Lawrence Berkeley National Laboratory, Advanced Light Source, USA

**11:45 AM****(EAM-ELEC-S8-029-2018) Multifunctional Oxide-Metal Vertically Aligned Nanocomposite Thin Films (Invited)**J. Huang\*<sup>1</sup>; L. Li<sup>1</sup>; Q. Su<sup>3</sup>; H. Wang<sup>1</sup>

1. Purdue University, USA
3. University of Nebraska, Lincoln, USA

**ELECTRONICS DIV S13: Advanced Electronic Materials: Processing, Structure, Properties, and Applications****Materials Design, New Materials and Structures, Their Emerging Applications (I)**

Room: Orange C

Session Chair: Tadej Rojac, Jozef Stefan Institute

**8:30 AM****(EAM-ELEC-S13-035-2018) Microwave Ceramics: 5G and beyond (Invited)**I. M. Reaney\*<sup>1</sup>

1. University of Sheffield, Materials Science and Engineering, United Kingdom

**9:00 AM****(EAM-ELEC-S13-036-2018) Tunable and Multistate Infrared Plasmonics via Ferroelectric Domain Reconfiguration**T. E. Beechem\*<sup>1</sup>; M. Goldflam<sup>1</sup>; M. Sinclair<sup>1</sup>; D. Peters<sup>1</sup>; J. Ihlefeld<sup>2</sup>

1. Sandia National Laboratories, Optical Sciences, USA
2. University of Virginia, Department of Materials Science and Engineering, USA

**9:15 AM****(EAM-ELEC-S13-037-2018) Metal oxide transistors via polyethylenimine doping: Interplay of doping, microstructure, metal cation, and charge transport**W. Huang\*<sup>1</sup>; A. Facchetti<sup>1</sup>

1. Northwestern University, Chemistry, USA

**9:30 AM****(EAM-ELEC-S13-038-2018) Ultrathin  $\alpha$ -Fe<sub>2</sub>O<sub>3</sub> Nanoflakes on TiO<sub>2</sub> Nanotubes: Effect of Morphology on Photoelectrocatalytic Water Splitting Hydrogen Generation**H. Han\*<sup>1</sup>

1. Los Alamos National Lab, USA

**9:45 AM****(EAM-ELEC-S13-039-2018) Synaptic Plasticity and Metaplasticity Behavior in Ta<sub>2</sub>O<sub>5</sub> Thin film for Artificial Synapse Applications**H. Hwang\*<sup>1</sup>; J. Woo<sup>1</sup>; T. Lee<sup>2</sup>; S. Nahm<sup>2</sup>

1. Korea University, Nano-Bio-Information-Technology Converging, KU-KIST Graduate School of Converging Science and Technology, Republic of Korea
2. Korea University, Department of Materials Science and Engineering, Republic of Korea

**10:00 AM****Break****Characterization of Materials II: Crystal Structure and Properties**

Room: Orange C

Session Chairs: Jun Chen, University of Science and Technology Beijing; Brian Foley, Georgia Institute of Technology

**10:30 AM****(EAM-ELEC-S13-040-2018) Origin of High Performance Piezoelectrics of Pb-Based Perovskites (Invited)**J. Chen\*<sup>1</sup>; L. Fan<sup>1</sup>; H. Liu<sup>1</sup>; Y. Ren<sup>2</sup>; X. Xing<sup>1</sup>

1. University of Science and Technology Beijing, Department of Physical Chemistry, China
2. Argonne National Lab, X-ray Science Division, USA

**11:00 AM****(EAM-ELEC-S13-041-2018) Intrinsic and Extrinsic Influences on Phonon Thermal Transport Processes in Electronic Materials (Invited)**B. Foley\*<sup>1</sup>

1. Georgia Institute of Technology, George W. Woodruff School of Mechanical Engineering, USA

**11:30 AM****(EAM-ELEC-S13-042-2018) Pump-probe measurements of Vanadium dioxide above and below the bandgap**E. Radue\*<sup>1</sup>; S. Kittiwatanakul<sup>1</sup>; P. E. Hopkins<sup>1</sup>

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

**11:45 AM****(EAM-ELEC-S13-043-2018) Identifying the fundamental mechanisms that limit the performance of modern microwave ceramics**N. Newman\*<sup>1</sup>; A. Sayyadishahraki<sup>2</sup>; J. Gonzales<sup>1</sup>

1. Arizona State University, Materials Program, USA
2. Tarbiat Modares University, Department of Materials Science and Engineering, Islamic Republic of Iran

**12:00 PM****(EAM-ELEC-S13-044-2018) Probing the trap levels in the wide band gap TiO<sub>2</sub> by Deep Level Transient Spectroscopy**A. Kumar\*<sup>1</sup>; S. Mondal<sup>2</sup>; G. Aman<sup>3</sup>; K. Rao<sup>2</sup>

1. Indira Gandhi National Tribal University, Amarkantak, MP, INDIA, Department of Physics, India
2. Indian Institute of Science, Department of Physics, India
3. University of Cincinnati, Department of Electrical Engineering, USA

**12:15 PM****(EAM-ELEC-S13-045-2018) Engineering ferroelectric domain architectures in PbTiO<sub>3</sub> thin films**E. Langenberg\*<sup>2</sup>; N. Domingo<sup>1</sup>; E. Smith<sup>2</sup>; H. Nair<sup>2</sup>; H. Paik<sup>2</sup>; G. Catalan<sup>1</sup>; D. Schlom<sup>2</sup>

1. Catalan Institute of Nanoscience and Nanotechnology (ICN2), CSIC, Barcelona Institute of Science and Technology, Spain
2. Cornell University, Department of Materials Science and Engineering, USA

**Joint Session: Basic Science Symp 1 and Electronics Symp 4****Data Science and High-throughput Approaches II**

Room: Citrus B

Session Chair: Ming Tang, Rice University

**2:00 PM****(EAM-JOINT-009-2018) Enhancing agile chemical selection for multifunctional ceramic through informatics (Invited)**K. Rajan\*<sup>1</sup>

1. University at Buffalo: the State Univ. of New York, Materials Design and Innovation, USA

**2:30 PM****(EAM-JOINT-010-2018) High-Throughput Computational Studies of Two-Dimensional Transition Metal Dichalcogenides**L. Li\*<sup>1</sup>

1. Boise State University, Micron School of Materials Science and Engineering, USA

**2:45 PM****(EAM-JOINT-011-2018) Functional Defects by Design: A High-Throughput Approach to Energy Materials Discovery (Invited)**P. Ganesh\*<sup>1</sup>

1. Oak Ridge National Lab, USA

**3:15 PM****(EAM-JOINT-012-2018) High Throughput Scanning Probe Microscopy of Multiferroic Thin Film Properties**J. Steffes<sup>1</sup>; P. Ashby<sup>2</sup>; R. Cordier<sup>1</sup>; B. Huey\*<sup>1</sup>

1. University of Connecticut, Institute of Materials Science, USA
2. LBNL, Molecular Foundry, USA

**3:30 PM****(EAM-JOINT-013-2018) Towards Efficient Optoelectronic Material Design using Density Functional Theory, Experiments and Machine Learning**K. Choudhary\*<sup>1</sup>

1. National Institute of Standards and Technology, MML, USA

**ELECTRONICS DIV S1: Complex Oxide and Chalcogenide Semiconductors: Research and Applications****Growth and Characterization of Oxides**

Room: Citrus A

Session Chair: Abhinav Prakash, University of Minnesota

**2:00 PM****(EAM-ELEC-S1-021-2018) Highly Stoichiometric SrTiO<sub>3</sub> Thin Films Grown via Metal-organic Pulsed Laser Deposition (Invited)**J. Lee\*<sup>1</sup>; A. L. Edgeton<sup>1</sup>; N. Campbell<sup>2</sup>; H. Lee<sup>1</sup>; B. Noesges<sup>3</sup>; T. R. Paudel<sup>4</sup>; J. L. Schad<sup>1</sup>; Y. Ma<sup>1</sup>; E. Y. Tsymbal<sup>1</sup>; L. J. Brillson<sup>5</sup>; D. A. Tenne<sup>5</sup>; M. Rzechowski<sup>5</sup>; C. Eom<sup>1</sup>

1. University of Wisconsin-Madison, Materials Science and Engineering, USA
2. University of Wisconsin-Madison, Physics, USA
3. Ohio State University, Physics, USA
4. University of Nebraska, Lincoln, Physics and Astronomy, USA
5. Boise State University, Physics, USA

**2:30 PM****(EAM-ELEC-S1-022-2018) Atomic and electronic structure of point, line, and planar defects in perovskite oxides (Invited)**J. Jeong\*<sup>1</sup>; H. Yun<sup>1</sup>; M. Topsakal<sup>1</sup>; P. Xu<sup>1</sup>; A. Prakash<sup>1</sup>; B. Jalan<sup>1</sup>; A. Mkhoyan<sup>1</sup>

1. University of Minnesota, Chemical Engineering and Materials Science, USA

**3:00 PM****(EAM-ELEC-S1-023-2018) A Semiconductor/VO<sub>2</sub> Hybrid (Invited)**Y. Wang<sup>1</sup>; J. Shi\*<sup>1</sup>

1. Rensselaer Polytechnic Institute, USA

**3:30 PM****(EAM-ELEC-S1-024-2018) Pathway to p-type doping of metal-oxide semiconductors**F. P. Sabino\*<sup>1</sup>; A. Janotti<sup>1</sup>

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

**ELECTRONICS DIV S8: Multifunctional Nanocomposites****Functionalities: Electronic**

Room: Orange D

Session Chair: Ryan Comes, Auburn University

**2:00 PM****(EAM-ELEC-S8-030-2018) Origin of Gap State Photoemission in n-SrTiO<sub>3</sub>(001) (Invited)**S. Chambers\*<sup>1</sup>

1. Pacific Northwest National Laboratory, Physical and Computational Sciences Directorate, USA

**2:30 PM****(EAM-ELEC-S8-031-2018) Application of metamaterial nano-engineering for increasing the superconducting critical temperature (Invited)**M. Osofsky\*<sup>1</sup>; V. Smolyaninova<sup>2</sup>; T. Gresock<sup>2</sup>; S. Saha<sup>3</sup>; B. Yost<sup>2</sup>; C. Jensen<sup>2</sup>; J. Prestigiacomi<sup>1</sup>; H. Kim<sup>1</sup>; N. Bassim<sup>2</sup>; R. Greene<sup>2</sup>; I. Smolyaninov<sup>3</sup>

1. Naval Research Laboratory, USA
2. Towson University, USA
3. University of Maryland, USA
5. McMaster University, Canada

**3:00 PM****(EAM-ELEC-S8-032-2018) Tuning the Plasma Frequency in Correlated Transition Metal Oxides (Invited)**T. Biroš\*<sup>1</sup>

1. University of Minnesota, USA

**3:30 PM****Break****Functionalities: Electrochemical**

Room: Orange D

Session Chair: Abhinav Prakash, University of Minnesota

**4:00 PM****(EAM-ELEC-S8-033-2018) Self-assembled metal nanopillars embedded in oxide semiconductor photoelectrode for photoelectrochemical water splitting (Invited)**R. Takahashi\*<sup>1</sup>

1. Institute for Solid State Physics, University of Tokyo, Japan

**4:15 PM****(EAM-ELEC-S8-034-2018) Cathode/electrolyte nanocomposite films for enhanced 3D solid-state batteries**M. Huijben\*<sup>1</sup>

1. University of Twente, Netherlands

**4:30 PM****(EAM-ELEC-S8-035-2018) Three-Dimensional Nanostructured Oxides Heterostructures for Enhanced Photoelectrochemical Performance**I. Choi<sup>1</sup>; H. Jeong<sup>1</sup>; J. Kim\*<sup>1</sup>

1. Pohang University of Science and Technology(POSTECH), Materials Science and Engineering, Republic of Korea

**4:45 PM****(EAM-ELEC-S8-036-2018) Tuning the Electronic Structure of NiO by Li doping for Electrocatalytic Water Oxidation (Invited)**K. H. Zhang\*<sup>1</sup>

1. Xiamen University, College of Chemistry and Chemical Engineering, China

**ELECTRONICS DIV S13: Advanced Electronic Materials: Processing, Structure, Properties, and Applications****Materials Design, New Materials and Structures, Their Emerging Applications II**

Room: Orange C

Session Chair: Ian Reaney, University of Sheffield

**2:00 PM****(EAM-ELEC-S13-046-2018) Dynamics of Conducting Domain Walls in Polycrystalline BiFeO<sub>3</sub> and its Effect on Macroscopic Electrical and Electromechanical Properties (Invited)**T. Rojac\*<sup>1</sup>; A. Bencan<sup>1</sup>; H. Uršič<sup>2</sup>; B. Jancar<sup>1</sup>; M. Makarovic<sup>1</sup>; A. Bradesko<sup>1</sup>; B. Malic<sup>1</sup>; G. Drazic<sup>3</sup>; L. Liu<sup>4</sup>; J. Daniels<sup>4</sup>; D. Damjanovic<sup>2</sup>

1. Jozef Stefan Institute, Electronic Ceramics Department, Slovenia
2. Swiss Federal Institute of Technology in Lausanne - EPFL, Ceramics Laboratory, Switzerland
3. National Institute of Chemistry, Laboratory for Materials Chemistry, Slovenia
4. University of New South Wales, School of Materials Science and Engineering, Australia

**2:30 PM****(EAM-ELEC-S13-047-2018) Oxygen deficient gadolinium doped ceria as colossal dielectric constant and varistor thin film material**M. Hadad<sup>1</sup>; P. R. Muralt\*<sup>1</sup>

1. EPFL, Materials Science and Engineering, Switzerland

**2:45 PM****(EAM-ELEC-S13-048-2018) Transparent Heteroepitaxy (Ba, La) SnO<sub>3</sub>/Muscovite for Flexible Optoelectronics**C. Yang\*<sup>1</sup>; M. Yen<sup>1</sup>; K. Kim<sup>2</sup>; Y. Chu<sup>1</sup>

1. National Chiao Tung University, Materials Science and Engineering, Taiwan
2. Seoul National University, Physics and Astronomy, Republic of Korea

**3:00 PM****(EAM-ELEC-S13-049-2018) Dependence of leakage on polarization and its implications for resistive switching**B. Misirlioglu\*<sup>2</sup>; O. M. Moradi<sup>2</sup>; C. M. Sen<sup>2</sup>; L. Pintilie<sup>1</sup>; A. Boni<sup>1</sup>

1. NIMP, Romania
2. Sabanci University, Faculty of Engineering and Natural Sciences, Turkey

**3:15 PM****(EAM-ELEC-S13-050-2018) Detailed Investigation of Thermoelectric Properties of A-site Doped Sr<sub>2</sub>TiMoO<sub>6</sub> Based Double Perovskites**M. Saxena\*<sup>1</sup>; T. Maiti<sup>1</sup>

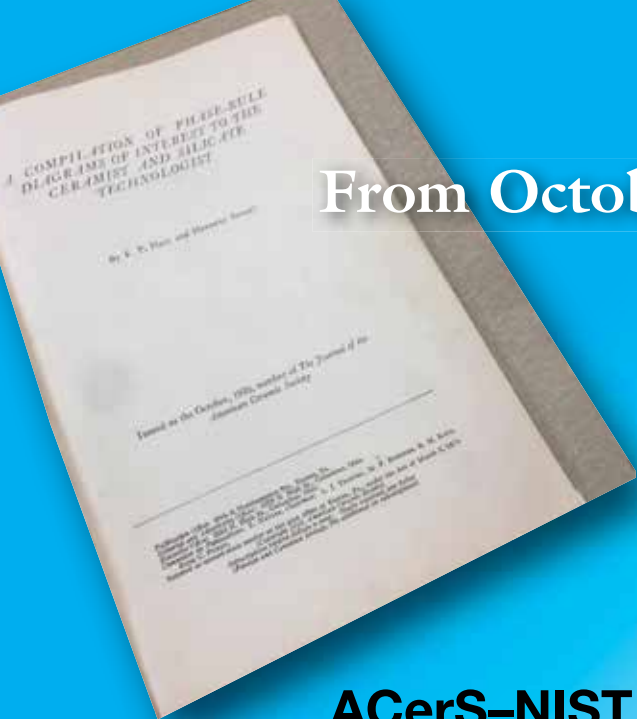
1. Indian Institute of Technology Kanpur, Materials Science and Engineering, India

**Failure - the Greatest Teacher**

Room: Magnolia A/B

**5:15 PM****Introduction****5:25 PM****Jurgen Roedel, TU-Darmstadt****5:55 PM****Nate Orloff, NIST****6:10 PM****Jacob Jones, NC State Univ**





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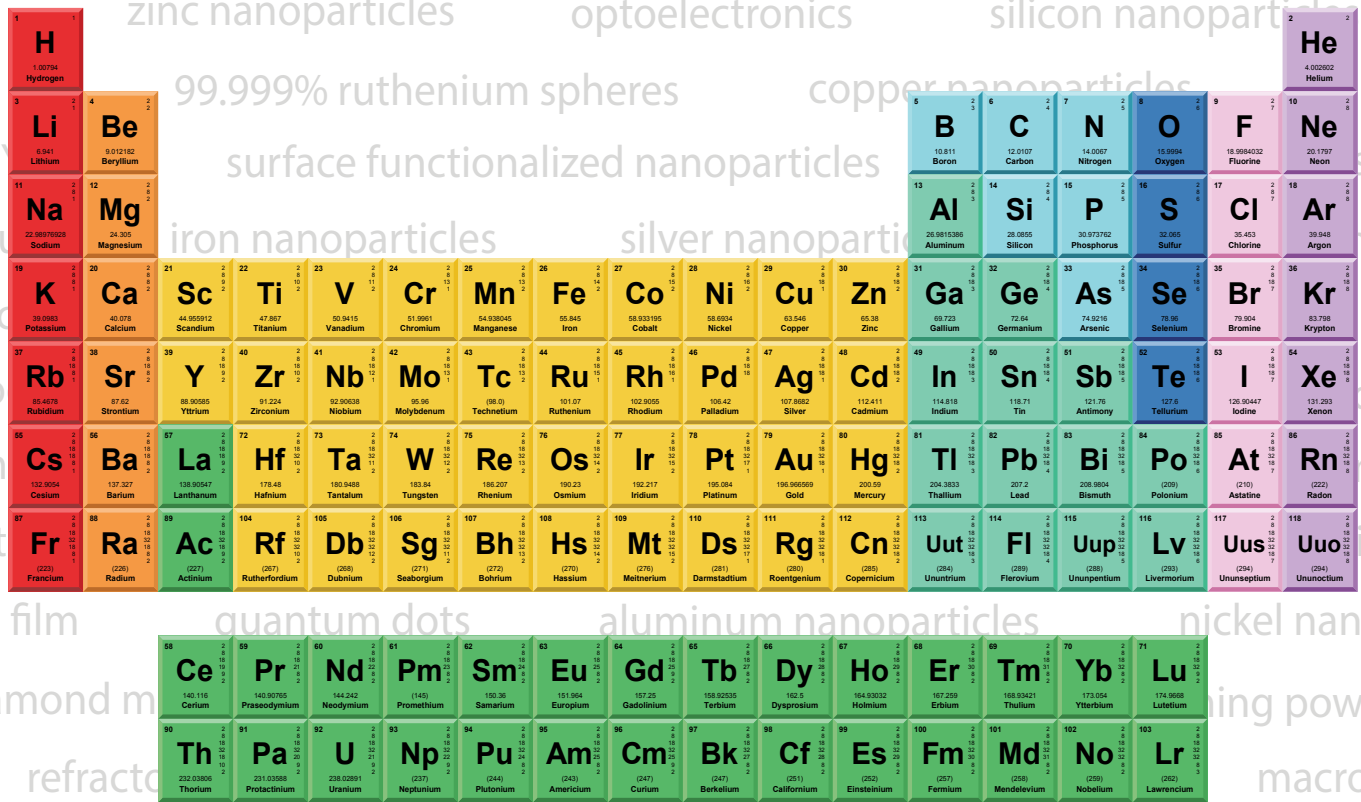
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