

ELECTRONIC MATERIALS AND APPLICATIONS (EMA 2020)

ORGANIZED BY THE ACeRS ELECTRONICS AND BASIC SCIENCE DIVISIONS

January 22 – 24, 2020 | DoubleTree by Hilton Orlando at Sea World Conference Hotel | Orlando, FL, USA

CONFERENCE PROGRAM



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ceramics.org/ema2020

WELCOME

On behalf of The American Ceramic Society's Electronics and Basic Science Divisions, welcome to the 2020 Conference on Electronic Materials and Applications (EMA 2020). We are glad you could join us for this international conference focused on fundamental properties and processing of ceramic and electroceramic materials and their applications in electronic, electro/mechanical, magnetic, dielectric, and optical components, devices, and systems.

As in past years, the 2020 technical program includes plenary talks, invited lectures, contributed papers, poster presentations and open discussions. A full schedule is included here, as well on our EMA 2020 app (QR codes included on the front of this guide). You will find symposia focused on advanced characterization methods; processing, properties, and applications of advanced electronic materials; ferroic oxides; complex oxide films; mesoscale properties of electronic materials; complex oxide and chalcogenide semiconductors; superconducting and magnetic materials; structure-property relationships in relaxors; defect structures; ion conductors; basic science and electronic applications in microstructure evolution; materials for 5G telecommunications; thermal transport; functional materials for biomedical applications, molecular and hybrid ferroelectrics and optoelectronic applications; and material design.

We would also like to call your attention to the multiple networking opportunities available to facilitate collaborations for scientific and technical advances related to materials, components, devices, and systems. Special lunchtime sessions will be geared toward students and young professionals. The grand finale of the meeting will again be the popular "Failure: The Greatest Teacher" where established researchers discuss the great ideas that they've had that did not work out for one reason or another. We hope to see you there!

THANK YOU FOR YOUR PARTICIPATION.

ORGANIZING COMMITTEE



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Thursday	14 – 21
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SCHEDULE AT A GLANCE

TUESDAY, JANUARY 21, 2020

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

WEDNESDAY, JANUARY 22, 2020

Conference registration 7:30 a.m. – 6:00 p.m. Main Lobby
Plenary session 1 8:30 a.m. – 9:30 a.m. Orange A
Coffee break 9:30 a.m. – 10:00 a.m.
Concurrent technical sessions 10:00 a.m. – 5:30 p.m. Orange A&B, Citrus A&B,
Cypress B&C, Magnolia A and B/C
Poster session set up 12:30 p.m. – 5:00 p.m. Orange C/D
ACerS journal workshop: Expand your impact 12:30 p.m. – 1:45 p.m. Orange B
Lunch on own 12:30 p.m. – 2:00 p.m.
Coffee break 3:30 p.m. – 4:00 p.m. Orange Foyer
Poster session & reception 5:30 p.m. – 7:30 p.m. Orange C/D
Basic Science Division tutorial 7:40 p.m. – 9:45 p.m. Citrus A

THURSDAY, JANUARY 23, 2020

Conference registration 7:30 a.m. – 6:00 p.m. Main Lobby
Plenary session 2 8:30 a.m. – 9:30 a.m. Orange A
Coffee break 9:30 a.m. – 10:00 a.m.
Concurrent technical sessions 10:00 a.m. – 5:30 p.m. Orange A&B, Citrus A&B,
Cypress B&C, Magnolia A and B/C
History of Ferroelectrics seminar 12:30 p.m. – 1:45 p.m. Orange B
Lunch on own 12:30 p.m. – 2:00 p.m.
Coffee break 3:30 p.m. – 4:00 p.m. Orange Foyer
Student & Young Professionals reception 5:30 p.m. – 6:30 p.m. Harbor Terrace
Conference dinner 7:00 p.m. – 9:00 p.m. Orange C/D

FRIDAY, JANUARY 25, 2019

Conference registration 7:30 a.m. – 4:00 p.m. Main Lobby
Coffee break 10:00 a.m. – 10:30 a.m.
Concurrent technical sessions 8:30 a.m. – 5:00 p.m. Orange A, Citrus A&B, Cypress B&C,
Magnolia A and B/C
Student event: Lunch with a Pro 12:30 p.m. Meet at Registration
Lunch on own 12:30 p.m. – 2:00 p.m.
Failure: The greatest teacher 5:00 p.m. – 6:00 p.m. Orange B

Welcome from The American Ceramic Society (ACerS)

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

If you are a new member or joining us for the first time, please

see the events available for you on page iv, or visit the ACerS registration desk to learn more.

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

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

MEETING REGULATIONS



Cell phones
silent

During oral sessions conducted during Society meetings, unauthorized photography, videotaping, and audio recording is strictly prohibited for two reasons:

- (1) conference presentations are the intellectual property of the presenting authors and are protected, and
- (2) engaging in photography, videotaping, or audio recording is disruptive to the presenter and the audience.

Failure to comply may result in the removal of the offender from the session or from the remainder of the meeting.

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



No photography/
recording

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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.

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PLENARY SPEAKERS

Wednesday, January 22
8:30 – 9:30 AM | Orange A



Rijnders

Prof. dr. ing. A.J.H.M. (Guus) Rijnders, MESA+ Institute for Nanotechnology, University of Twente, Netherlands
Title: **Novel Functionalities in Atomically Controlled Oxide Heterostructures by Pulsed Laser Deposition**

Thursday, January 23
8:30 – 9:30 AM | Orange A



Dickey

Prof. Elizabeth Dickey, Associate head of Department of Materials Science and Engineering, North Carolina State University. USA
Title: **Defect Disorder and Dynamics in Functional Oxides**

SPECIAL EVENTS

Electronics Division Workshops

Wed, Jan. 22 | 12:30 – 1:45 pm | Orange B

ACERS JOURNAL WORKSHOP:

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

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

Lunch will be provided

Thurs, Jan. 23 | 12:30 – 1:45 pm | Orange B

100 YEARS OF FERROELECTRICITY—

Susan Trolier-McKinstry, Department of Materials Science and Engineering and Materials Research Institute, The Pennsylvania State University

Sponsored by:



The phenomenon of ferroelectricity has provided both a platform for studying the fundamental physics of cooperative phenomenon, as well as the foundation of commercially important products in capacitors, piezoelectrics, electrooptics, thermistors, and memory. This presentation will discuss the history of ferroelectricity from its discovery through a series of major milestones in our understanding and utilization of the phenomenon.

Lunch will be provided

Poster Session and Welcome Reception

Wed, Jan. 23 | 5:30 p.m. – 7:30 p.m. | Orange C/D

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

Basic Science Division Tutorial

Wed, Jan. 22 | 7:45 – 9:45 p.m. | Citrus A

ADVANCES IN ELECTRON MICROSCOPY

- 7:40 p.m. Introduction
- 7:45 p.m. **Shen Dillon**, University of Illinois at Urbana, Champaign – **In situ electron microscopy: Opportunities and challenges for ceramic science**
- 8:15 p.m. **David McComb**, The Ohio State University – **Probing chemistry, structure, and function on the atomic scale using analytical electron microscopy**

Student and Young Professional Reception

Thurs, Jan. 23 | 5:30 p.m. – 6:30 p.m. | Harbor Terrace

Conference Dinner

Thurs, Jan. 23 | 7 p.m. – 9 p.m. | Orange C/D

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

Failure – the Greatest Teacher

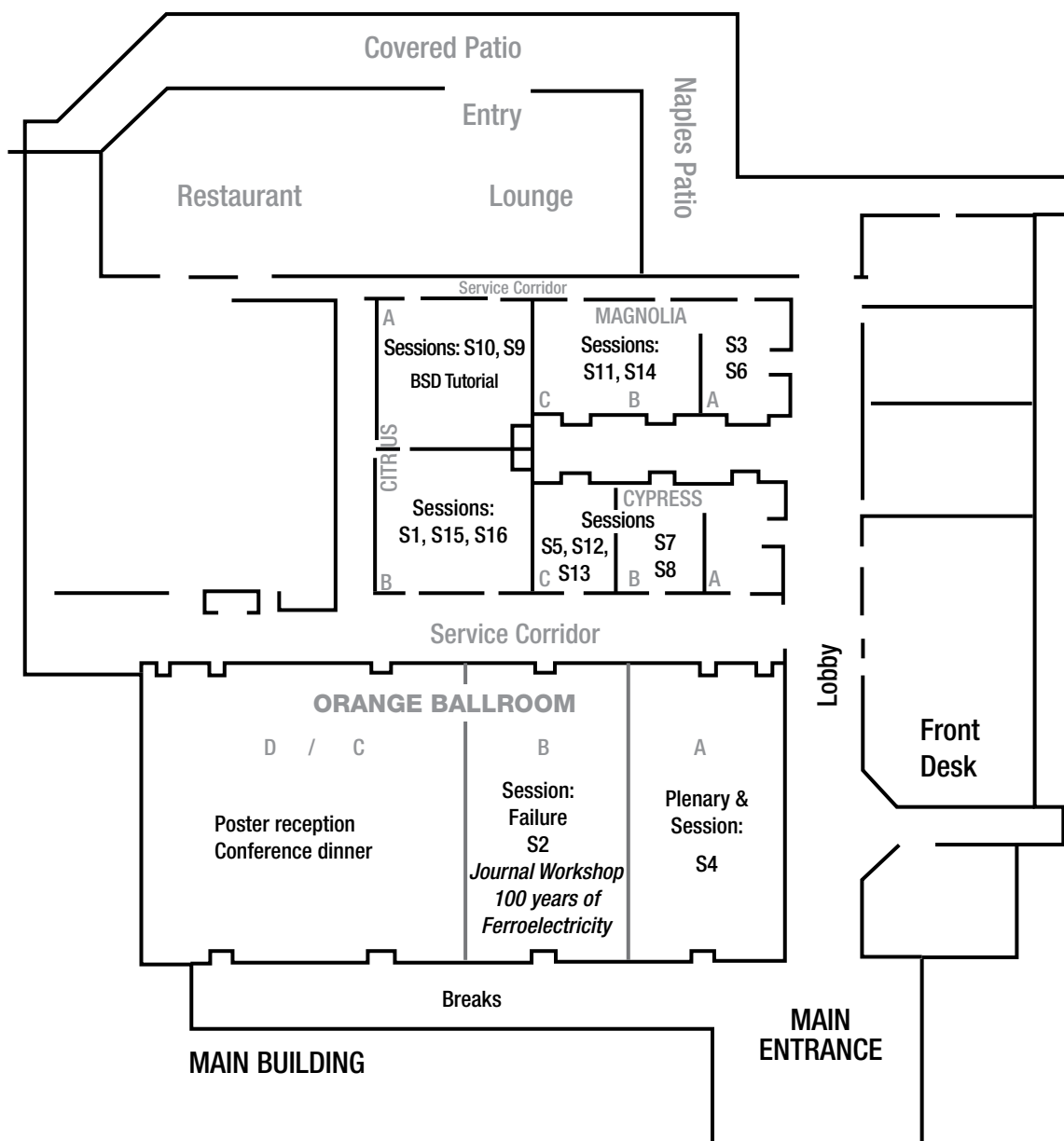
Fri, Jan. 24 | 5:00 p.m. – 6:00 p.m. | Orange B

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.

- 5:00 p.m. **Bryan Huey**, University of Connecticut—**Bulldozing through nanoscale mistakes (er... DISCOVERIES!)**
- 5:30 p.m. **John Blendell**, Purdue University—**Sintering – Science, art or luck?**

FLOOR PLAN

Doubletree by Hilton Floor Plan



S1: CHARACTERIZATION OF STRUCTURE-PROPERTY RELATIONSHIPS IN FUNCTIONAL CERAMICS

David W. McComb, The Ohio State University, USA; Abhijit Pramanick, City University of Hong Kong, China; Christopher Fancher, Oak Ridge National Laboratory, USA; James LeBeau, Massachusetts Institute of Technology, USA; Hadass Sternlicht, Brown University, USA

S2: ADVANCED ELECTRONIC MATERIALS: PROCESSING STRUCTURES, PROPERTIES, AND APPLICATIONS

Kyle Webber, Friedrich-Alexander Universität Erlangen-Nürnberg, Germany; Satoshi Wada, University of Yamanashi, Japan; Eric Patterson, Naval Research Laboratory, USA; Shujun Zhang, University of Wollongong, Australia

S3: FRONTIERS IN FERROIC OXIDES: SYNTHESIS, STRUCTURE, PROPERTIES, AND APPLICATIONS

John Heron, University of Michigan, USA; Jiamian Hu, University of Wisconsin Madison, USA; Josh Agar, Lehigh University, USA

S4: COMPLEX OXIDE THIN FILM MATERIALS DISCOVERY: FROM SYNTHESIS TO STRAIN/INTERFACE ENGINEERED EMERGENT PROPERTIES

Elizabeth Paisley, Sandia National Laboratories, USA; Hyoungjeen Jeon, Pusan National University, South Korea; Jon-Paul Maria, Pennsylvania State University, USA; James Rondinelli, Northwestern University, USA; Sean Smith, Sandia National Laboratories, USA; Judith L. MacManus-Driscoll, University of Cambridge, United Kingdom; Yingge Du, Pacific Northwest Laboratory, USA; Aiping Chen, Los Alamos National Laboratory, USA

S5: MESOSCALE PHENOMENA IN FERROIC NANOSTRUCTURES: BEYOND THE THIN-FILM PARADIGM

Edward Gorzkowski, Naval Research Laboratory, USA; Serge M. Nakhmanson, University of Connecticut, USA; Seungbum Hong, KAIST, Republic of Korea

S6: COMPLEX OXIDE AND CHALCOGENIDE SEMICONDUCTORS: RESEARCH AND APPLICATIONS

Rafael Jaramillo, Massachusetts Institute of Technology, USA; Ryan Comes, Auburn University, USA; Andriy Zakutayev, National Renewable Energy Laboratory, USA; Jian Shi, Rensselaer Polytechnic Institute, USA

S7: SUPERCONDUCTING AND MAGNETIC MATERIALS: FROM BASIC SCIENCE TO APPLICATIONS

Gang Wang, Institute of Physics, Chinese Academy of Sciences, China; Michael Susner, Air Force Research Laboratory, USA; Timothy Haugan, Air Force Research Laboratory, USA; Haiyan Wang, Purdue University, USA; Charles Rong, CIV US ARMY RDECOM ARL, USA; Bing Lv, University of Texas at Dallas, USA

S8: STRUCTURE-PROPERTY RELATIONSHIPS IN RELAXOR CERAMICS

Marco Deluca, Materials Center Leoben Forschung GmbH, Austria; Prasanna V. Balachandran, University of Virginia, USA; Antonio Feteira, Sheffield Hallam University, United Kingdom; Jiri Hlinka, Institute of Physics, Academy of Sciences of the Czech Republic, Czech Republic

S9: ION CONDUCTING CERAMICS

Hua Zhou, Argonne National Laboratory, USA; Erik Spoerke, Sandia National Laboratory, USA; Wei Tong, Lawrence Berkeley National Laboratory, USA; Jon Ihlefeld, University of Virginia, Charlottesville, USA

S10: POINT DEFECTS AND TRANSPORT IN CERAMICS

Elizabeth Dickey, North Carolina State University, USA; Yanhao Dong, Massachusetts Institute of Technology, USA; Derek Sinclair, University of Sheffield, United Kingdom; Roger A. DeSouza, RWTH Aachen University, Germany

S11: NEW DIRECTIONS IN SINTERING AND MICROSTRUCTURE CONTROL FOR ELECTRONIC APPLICATIONS

Wolfgang Rheinheimer, Purdue University, USA; Lauren Hughes, Lawrence Berkeley National Laboratory, USA; John Blendell, Purdue University, USA; Klaus van Benthem, University of California Davis, USA

S12: ELECTRONIC MATERIALS APPLICATIONS IN 5G TELECOMMUNICATIONS

Nate Orloff, National Institute of Standards and Technology, USA; Geoff Brennecka, Colorado School of Mines, USA; Ling Cai, Corning, USA; Turan Birol, University of Minnesota, USA; Mitch Wallis, National Institute of Standards and Technology, USA

S13: THERMAL TRANSPORT IN FUNCTIONAL MATERIALS AND DEVICES

Brian M. Foley, Georgia Institute of Technology, USA; Brian F. Donovan, United States Naval Academy, USA

S14: AGILE DESIGN OF ELECTRONIC MATERIALS: ALIGNED COMPUTATIONAL AND EXPERIMENTAL APPROACHES AND MATERIALS INFORMATICS

Mina Yoon, Center for Nanophase Materials Science, Oak Ridge National Laboratory, USA; Aloysius Soon, Yonsei University, South Korea; Sergey Levchenko, Skolkovo Institute of Science and Technology, Russia; Payam Kaghazchi, Institut für Energie und Klimaforschung (IEK-1), Forschungszentrum Jülich, Germany

S15: FUNCTIONAL MATERIALS FOR BIOLOGICAL APPLICATIONS

Jennifer Andrew, University of Florida, USA; Julia Glaum, Norwegian University of Science and Technology, Norway

S16: MOLECULAR, INORGANIC, AND HYBRID FERROELECTRICS FOR OPTO-ELECTRONIC AND ELECTRONIC APPLICATIONS

Alexander Colsmann, Material Research Center for Energy Systems (MZE), Karlsruhe Institute of Technology, Germany; Tobias Leonhard, Material Research Center for Energy Systems (MZE), Karlsruhe Institute of Technology, Germany; Julian Walker, Department of Materials Science and Engineering, Norwegian University of Science and Technology, Norway; Lauren Garten, Material Science and Technology Division, US Naval Research Lab, USA

FAILURE: THE GREATEST TEACHER

Geoff Brennecka, Colorado School of Mines, USA

STUDENT AWARDS AND COMPETITION

Edward Gorzkowski, Naval Research Laboratory, USA

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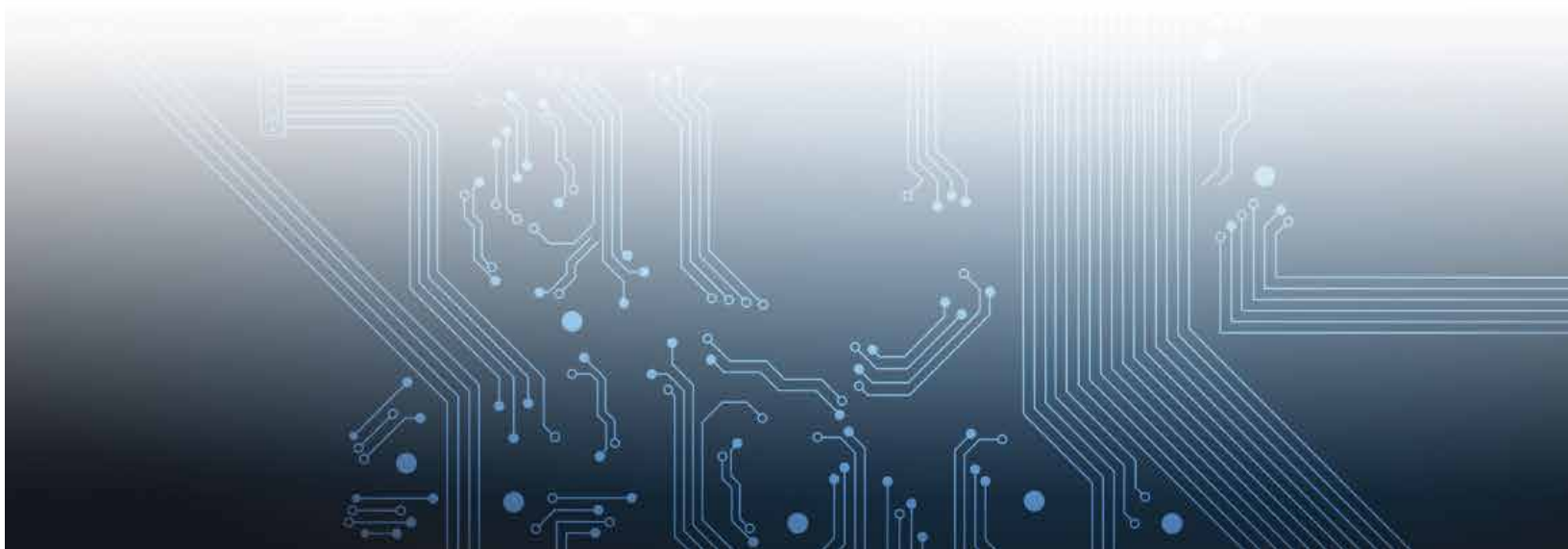
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IC TECHNOLOGY:

Processing: • Fabrication of Integrated Ferroelectric and MEMs substrates

Fabricating: • Platinized Wafers
• PZT Coated Wafers
• Electrode Deposition and Patterning
• Integrated Ferroelectric Capacitors

Innovating: • Sensors and Education



TECHNICAL SESSIONS BY SYMPOSIUM

Sessions	Date	Time	Location
PLENARY SESSION			
Plenary Session I	Jan. 22, 2020	8:30 a.m. - 10:00 a.m.	Orange A
Plenary Session II	Jan. 23, 2020	8:30 a.m. - 10:00 a.m.	Orange A
Poster Session	Jan. 22, 2020	5:30 p.m. - 7:30 p.m.	Orange C/D
S1: CHARACTERIZATION OF STRUCTURE-PROPERTY RELATIONSHIPS IN FUNCTIONAL CERAMICS			
Probing Structure Property Correlations in Ceramics	Jan. 22, 2020	10:00 a.m. - 12:00 p.m.	Citrus B
Advanced Electron Microscopy Methods for Characterization of Functional Ceramics	Jan. 22, 2020	2:00 p.m. - 5:30 p.m.	Citrus B
Probing Defects and Disorder in Functional Ceramics	Jan. 23, 2020	10:00 a.m. - 11:30 a.m.	Citrus B
S2: ADVANCED ELECTRONIC MATERIALS: PROCESSING STRUCTURES, PROPERTIES, AND APPLICATIONS			
Applications of Advanced Electronic Materials	Jan. 22, 2020	10:00 a.m. - 12:15 p.m.	Orange B
Electromechanical Properties and Structure of Bulk and Film Electronic Materials	Jan. 22, 2020	2:00 p.m. - 5:30 p.m.	Orange B
Lead-free and Relaxor Ferroelectrics	Jan. 23, 2020	10:00 a.m. - 11:30 a.m.	Orange B
Synthesis of Electronic Materials and the Role of Defects	Jan. 23, 2020	2:00 p.m. - 5:00 p.m.	Orange B
S3: FRONTIERS IN FERROIC OXIDES: SYNTHESIS, STRUCTURE, PROPERTIES, AND APPLICATIONS			
Ferroelectric and Dielectric Oxides	Jan. 22, 2020	10:00 a.m. - 12:30 p.m.	Magnolia A
Magnetism, Structure, and Defects in Transition Metal Oxides	Jan. 22, 2020	2:00 p.m. - 5:30 p.m.	Magnolia A
Ferroelectric Architectures and Devices	Jan. 23, 2020	10:00 a.m. - 12:30 p.m.	Magnolia A
S4: COMPLEX OXIDE THIN FILM MATERIALS DISCOVERY: FROM SYNTHESIS TO STRAIN/INTERFACE ENGINEERED EMERGENT PROPERTIES			
Enhanced Functionality through Advanced Synthesis	Jan. 22, 2020	10:00 a.m. - 12:30 p.m.	Orange A
Advanced Complex Oxide Thin Film Synthesis I	Jan. 22, 2020	2:00 p.m. - 3:45 p.m.	Orange A
Advanced Synthesis II	Jan. 22, 2020	4:00 p.m. - 5:30 p.m.	Orange A
Engineered Interface Phenomena I	Jan. 23, 2020	10:00 a.m. - 12:15 p.m.	Orange A
Engineered Interface Phenomena II	Jan. 23, 2020	2:00 p.m. - 4:00 p.m.	Orange A
Machine Learning Driven Synthesis	Jan. 23, 2020	4:00 p.m. - 5:15 p.m.	Orange A
Novel Synthesis Techniques	Jan. 24, 2020	9:30 a.m. - 11:15 a.m.	Orange A
S5: MESOSCALE PHENOMENA IN FERROIC NANOSTRUCTURES: BEYOND THE THIN-FILM PARADIGM			
Modeling, Simulation and Processing	Jan. 24, 2020	8:30 a.m. - 12:45 p.m.	Cypress C
S6: COMPLEX OXIDE AND CHALCOGENIDE SEMICONDUCTORS: RESEARCH AND APPLICATIONS			
Design and Discovery of Complex-Structured Semiconductors	Jan. 23, 2020	2:00 p.m. - 5:45 p.m.	Magnolia A
Low Dimensional Systems	Jan. 24, 2020	8:30 a.m. - 12:30 p.m.	Magnolia A
Advanced Characterization of Physical and Chemical Properties	Jan. 24, 2020	2:00 p.m. - 4:45 p.m.	Magnolia A
S7: SUPERCONDUCTING AND MAGNETIC MATERIALS: FROM BASIC SCIENCE TO APPLICATIONS			
Superconducting and Magnetic Materials I	Jan. 23, 2020	2:00 p.m. - 4:00 p.m.	Cypress B
Superconducting and Magnetic Materials II	Jan. 23, 2020	4:00 p.m. - 5:45 p.m.	Cypress B
2D Correlated Materials I	Jan. 24, 2020	8:00 a.m. - 10:30 a.m.	Cypress B
2D Correlated Materials II	Jan. 24, 2020	10:30 a.m. - 12:30 p.m.	Cypress B
Tailoring Properties of Superconducting and Magnetic Materials	Jan. 24, 2020	2:00 p.m. - 4:00 p.m.	Cypress B
Application of Superconducting Materials	Jan. 24, 2020	4:00 p.m. - 5:30 p.m.	Cypress B



Sessions	Date	Time	Location
S8: STRUCTURE–PROPERTY RELATIONSHIPS IN RELAXOR CERAMICS			
Local Structure of Relaxors I	Jan. 22, 2020	10:00 a.m. - 12:30 p.m.	Cypress B
Local Structure of Relaxors II	Jan. 22, 2020	2:00 p.m. - 2:30 p.m.	Cypress B
Perovskite/Non-perovskite Relaxors I	Jan. 22, 2020	2:30 p.m. - 5:00 p.m.	Cypress B
Perovskite/Non-perovskite Relaxors II	Jan. 23, 2020	10:00 a.m. - 11:00 a.m.	Cypress B
Novel Relaxors	Jan. 23, 2020	11:00 a.m. - 11:45 a.m.	Cypress B
Advanced Characterization of Relaxors	Jan. 23, 2020	11:45 a.m. - 12:30 p.m.	Cypress B
S9: ION CONDUCTING CERAMICS			
Ion Conducting Ceramics for Solid-State Battery	Jan. 23, 2020	2:00 p.m. - 5:15 p.m.	Citrus A
Fundamental Processes and Characterizations in Ion Conducting Ceramics for Energy Storage	Jan. 24, 2020	8:30 a.m. - 11:00 a.m.	Citrus A
Emerging Ion Conducting Ceramics: Oxide and Halide	Jan. 24, 2020	11:00 a.m. - 12:00 p.m.	Citrus A
S10: POINT DEFECTS AND TRANSPORT IN CERAMICS			
Predictive Point Defect Energetics and Equilibria from Density Functional Theory and other Computational Methods	Jan. 22, 2020	10:00 a.m. - 12:30 p.m.	Citrus A
Structure and Mobility of Defects and Defect Complexes	Jan. 22, 2020	2:00 p.m. - 5:30 p.m.	Citrus A
Defect Mediated Properties (Conductivity, Grain Growth, Creep, Magnetism, Ferroelectric Imprint, Dielectric Degradation)	Jan. 23, 2020	10:00 a.m. - 12:30 p.m.	Citrus A
S11: NEW DIRECTIONS IN SINTERING AND MICROSTRUCTURE CONTROL FOR ELECTRONIC APPLICATIONS			
New Directions in Sintering and Microstructure Control	Jan. 24, 2020	8:30 a.m. - 12:30 p.m.	Magnolia B/C
S12: ELECTRONIC MATERIALS APPLICATIONS IN 5G TELECOMMUNICATIONS			
Industry and 5G	Jan. 22, 2020	10:00 a.m. - 12:20 p.m.	Cypress C
Theory, Modeling, and New Measurement Modalities in 5G	Jan. 22, 2020	2:00 p.m. - 5:30 p.m.	Cypress C
5G Measurement Science	Jan. 23, 2020	10:00 a.m. - 12:30 p.m.	Cypress C
Industry Panel and Tutorials	Jan. 23, 2020	2:00 p.m. - 3:45 p.m.	Cypress C
S13: THERMAL TRANSPORT IN FUNCTIONAL MATERIALS AND DEVICES			
Thermal Transport	Jan. 23, 2020	4:00 p.m. - 5:15 p.m.	Cypress C
S14: AGILE DESIGN OF ELECTRONIC MATERIALS: ALIGNED COMPUTATIONAL AND EXPERIMENTAL APPROACHES AND MATERIALS INFORMATICS			
Materials by Design	Jan. 22, 2020	10:00 a.m. - 12:45 p.m.	Magnolia B/C
Predictive Modeling/Novel Phenomena	Jan. 22, 2020	2:00 p.m. - 5:30 p.m.	Magnolia B/C
High-throughput Approaches/Data Analytics I	Jan. 23, 2020	10:00 a.m. - 12:30 p.m.	Magnolia B/C
High-throughput Approaches/Data Analytics II	Jan. 23, 2020	2:00 p.m. - 3:45 p.m.	Magnolia B/C
Multiscale modeling	Jan. 23, 2020	4:00 p.m. - 5:30 p.m.	Magnolia B/C
S15: FUNCTIONAL MATERIALS FOR BIOLOGICAL APPLICATIONS			
Synthesis, Functionalization, and Characterization of Biomaterials	Jan. 24, 2020	8:30 a.m. - 12:00 p.m.	Citrus B
Therapeutic, Diagnostic, and Biosensing Applications	Jan. 24, 2020	2:00 p.m. - 3:15 p.m.	Citrus B
S16: MOLECULAR, INORGANIC, AND HYBRID FERROELECTRICS FOR OPTOELECTRONIC AND ELECTRONIC APPLICATIONS			
Metal-organic Halide Perovskites	Jan. 23, 2020	2:00 p.m. - 3:45 p.m.	Citrus B
Beyond Metal-organic Halide Perovskites	Jan. 23, 2020	3:45 p.m. - 5:30 p.m.	Citrus B
FAILURE: THE GREATEST TEACHER			
Failure: The Greatest Teacher	Jan. 24, 2020	5:30 p.m. - 6:30 p.m.	Orange A

SUBMIT YOUR ABSTRACT

DUE MARCH 15, 2020

DAVID L. LAWRENCE CONVENTION CENTER | PITTSBURGH, PENNSYLVANIA, USA

ACERS ANNUAL MEETING at

Technical Meeting and Exhibition

MS & T 20

MATERIALS SCIENCE & TECHNOLOGY

OCTOBER 4 – 8, 2020

Organizers:



MATSCITECH.ORG/MST20

Oral Presenters

Name	Date	Time	Room	Page Number	Name	Date	Time	Room	Page Number					
A														
Afshari, E.	22-Jan	3:15PM	Cypress C	11	Ferreira, P.	22-Jan	2:30PM	Citrus B	5					
Agarwal, R.	24-Jan	2:30PM	Magnolia A	22	Ferri, K.	22-Jan	2:45PM	Orange A	8					
Almonte, F.	22-Jan	5:15PM	Magnolia A	7	Fichthorn, K.	23-Jan	5:00PM	Magnolia B/C	20					
Andrew, J.	24-Jan	11:15AM	Citrus B	25	Fields, S.	22-Jan	10:30AM	Orange A	8					
Arinzeh, T.L.	24-Jan	2:00PM	Citrus B	25	Finkel, P.	22-Jan	4:15PM	Cypress B	9					
Artrith, N.	22-Jan	10:30AM	Magnolia B/C	11	Fix, T.	23-Jan	3:45PM	Citrus B	21					
Aryana, K.	23-Jan	5:00PM	Cypress C	19	Fleig, J.	23-Jan	10:00AM	Citrus A	18					
B														
Babakhani, A.	22-Jan	2:30PM	Cypress C	11	Fonseca, E.C.	23-Jan	5:30PM	Cypress B	17					
Balachandran, P.	23-Jan	4:45PM	Orange A	16	Fox, A.	22-Jan	3:30PM	Cypress C	11					
Balke Wisinger, N.	23-Jan	4:45PM	Citrus B	21	Franco, A.A.	23-Jan	4:30PM	Magnolia B/C	20					
Banys, J.	22-Jan	2:30PM	Cypress B	9	Frömling, T.	23-Jan	11:00AM	Citrus A	18					
Barzi, E.	24-Jan	2:30PM	Cypress B	23	Frömling, T.	23-Jan	3:45PM	Orange B	15					
Bauers, S.	24-Jan	8:30AM	Magnolia A	22	Funni, S.	23-Jan	10:45AM	Orange B	15					
Beechem, T.E.	22-Jan	5:00PM	Orange A	9	G									
Blanchet, M.	23-Jan	2:45PM	Magnolia A	17	Gabor, U.	22-Jan	4:30PM	Cypress B	10					
Blendell, J.	24-Jan	5:30PM	Orange B	25	Garten, L.	22-Jan	10:00AM	Magnolia A	7					
Börgers, J.M.	22-Jan	11:15AM	Citrus A	10	Ghosh, A.	23-Jan	2:15PM	Magnolia B/C	20					
Borman, T.M.	24-Jan	10:45AM	Orange A	21	Giri, A.	23-Jan	4:00PM	Cypress C	19					
Boston, R.	24-Jan	11:30AM	Magnolia B/C	24	Glaum, J.	24-Jan	9:00AM	Citrus B	25					
Bowes, P.C.	22-Jan	11:45AM	Citrus A	10	Grabowski, C.	22-Jan	12:00PM	Cypress C	11					
Bram, M.	24-Jan	11:00AM	Magnolia B/C	24	Gradauskaite, E.	22-Jan	10:30AM	Magnolia A	7					
Brennecka, G.L.	22-Jan	12:15PM	Cypress C	11	Gross, M.	23-Jan	3:15PM	Citrus A	18					
Brown, H.G.	22-Jan	4:00PM	Citrus B	5	Grove, K.M.	22-Jan	2:30PM	Orange B	6					
C														
Celuch, M.	23-Jan	3:30PM	Cypress C	19	Grudt, R.	23-Jan	4:30PM	Orange B	15					
Chae, S.	24-Jan	10:00AM	Orange A	21	Guan, F.	24-Jan	12:15PM	Magnolia B/C	25					
Chang, Y.	23-Jan	10:00AM	Cypress B	17	Guennou, M.	22-Jan	12:00PM	Cypress B	9					
Chen, A.	22-Jan	11:30AM	Orange A	8	Gulgun, M.A.	22-Jan	10:30AM	Citrus B	5					
Chen, Z.	24-Jan	8:30AM	Citrus A	24	Gupta, I.	22-Jan	4:45PM	Orange B	6					
Chen, Z.	24-Jan	11:45AM	Magnolia A	22	Gupta, S.K.	23-Jan	11:30AM	Cypress B	18					
Choi, W.	22-Jan	11:00AM	Orange A	8	Guyot-Sionnest, P.	24-Jan	10:30AM	Magnolia A	22					
Choudhary, K.	22-Jan	5:15PM	Orange B	6	H									
Choudhary, K.	23-Jan	3:00PM	Cypress B	17	Haile, S.M.	23-Jan	10:45AM	Citrus B	14					
Choudhary, K.	23-Jan	5:15PM	Citrus B	21	Hall, D.A.	22-Jan	2:00PM	Orange B	6					
Chu, B.	22-Jan	10:00AM	Orange B	6	Harrington, G.	22-Jan	4:00PM	Citrus A	10					
Cleri, A.	22-Jan	5:15PM	Orange A	9	Haugan, T.J.	24-Jan	3:30PM	Cypress B	23					
Coll, M.	23-Jan	4:15PM	Citrus B	21	Hayden, J.	22-Jan	10:45AM	Orange A	8					
Coll, M.	24-Jan	10:30AM	Orange A	21	Hennig, R.G.	23-Jan	3:15PM	Cypress B	17					
Colsmann, A.	23-Jan	3:00PM	Citrus B	21	Hermann, R.	22-Jan	2:30PM	Magnolia A	7					
Comes, R.B.	22-Jan	3:00PM	Magnolia A	7	Heron, J.	24-Jan	9:30AM	Orange A	21					
Conley, J.F.	22-Jan	5:00PM	Orange B	6	Hill, M.D.	22-Jan	10:45AM	Cypress C	11					
Creange, N.	22-Jan	11:00AM	Cypress B	9	Hire, A.C.	23-Jan	5:15PM	Cypress B	17					
D														
Dickey, E.C.	23-Jan	8:40AM	Orange A	14	Hlinka, J.	23-Jan	10:30AM	Magnolia A	15					
Dillon, S.J.	24-Jan	9:00AM	Magnolia B/C	24	Hosseini, S.	23-Jan	4:45PM	Cypress C	19					
Dittmann, R.	23-Jan	10:30AM	Citrus A	18	Hu, J.	24-Jan	10:30AM	Citrus A	24					
Dkhil, B.	22-Jan	4:45PM	Orange A	8	Huang, B.	22-Jan	11:30AM	Magnolia B/C	12					
Dolgos, M.	22-Jan	3:00PM	Orange B	6	Huddleston, W.	23-Jan	4:30PM	Citrus A	18					
Dong, X.	24-Jan	2:00PM	Cypress B	23	Huey, B.	24-Jan	10:30AM	Cypress C	22					
Donovan, B.F.	23-Jan	4:30PM	Cypress C	19	Huey, B.	24-Jan	5:00PM	Orange B	25					
Dorey, R.A.	24-Jan	12:00PM	Magnolia B/C	24	Hughes, L.A.	22-Jan	3:00PM	Citrus B	5					
Du, Y.	24-Jan	9:00AM	Citrus A	24	Hwang, J.	22-Jan	3:00PM	Citrus A	10					
Dubey, A.	22-Jan	11:45AM	Magnolia A	7	Hwang, W.	22-Jan	5:00PM	Magnolia B/C	12					
E														
El Baggari, I.	22-Jan	5:00PM	Citrus B	5	I									
El Marssi, M.	22-Jan	11:30AM	Magnolia A	7	Ihlefeld, J.	22-Jan	10:00AM	Orange A	8					
Ellison, C.	23-Jan	12:15PM	Cypress C	19	Irving, D.L.	22-Jan	10:30AM	Citrus A	10					
Enright, L.	22-Jan	5:15PM	Cypress C	11	Ivanova, M.E.	22-Jan	2:30PM	Magnolia B/C	12					
Evans, P.G.	22-Jan	4:15PM	Magnolia A	7	Ivry, Y.	22-Jan	11:00AM	Citrus B	5					
F														
Fan, Z.	23-Jan	11:45AM	Citrus A	18	Ivry, Y.	24-Jan	11:45AM	Cypress C	22					
Fancher, C.	22-Jan	11:45AM	Citrus B	5	J									
Farghadany, E.	22-Jan	2:30PM	Orange A	8	Jalan, B.	23-Jan	4:30PM	Magnolia A	17					
Fattakhova-Rohlfing, D.	22-Jan	2:00PM	Magnolia B/C	12	Janolin, P.	23-Jan	12:00PM	Citrus A	19					
Feng, Z.	23-Jan	4:00PM	Citrus A	18	Jeen, H.	22-Jan	11:45AM	Orange A	8					
G														
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HG														

Presenting Author List

Oral Presenters

Name	Date	Time	Room	Page Number	Name	Date	Time	Room	Page Number
Kaplan, W.D.	22-Jan	10:00AM	Citrus B	5					
Kaplan, W.D.	24-Jan	9:30AM	Magnolia B/C	24					
Kaspar, T.	23-Jan	11:45AM	Orange A	16					
Kelley, K.	22-Jan	10:45AM	Magnolia A	7					
Khalsa, G.	22-Jan	3:00PM	Cypress C	11					
Khan, A.	23-Jan	11:15AM	Magnolia A	15					
Khanbareh, H.	24-Jan	8:30AM	Citrus B	25					
Kioupakis, E.	23-Jan	4:00PM	Magnolia A	17					
Klemm, R.	24-Jan	8:30AM	Cypress B	23					
Kler, J.	22-Jan	5:15PM	Citrus A	10					
Kolluru, V.	22-Jan	12:30PM	Magnolia B/C	12					
Kopyt, P.	23-Jan	10:00AM	Cypress C	19					
Koshy, P.	24-Jan	10:30AM	Citrus B	25					
Kotomin, E.A.	23-Jan	4:00PM	Magnolia B/C	20					
Kotsonis, G.N.	24-Jan	10:15AM	Orange A	21					
Kovacs, C.J.	24-Jan	4:00PM	Cypress B	23					
Kozlowski, G.	24-Jan	4:30PM	Cypress B	23					
Kulik, P.	23-Jan	11:00AM	Cypress C	19					
Kuna, L.	24-Jan	8:30AM	Cypress C	21					
Kutnjak, Z.	22-Jan	11:30AM	Cypress B	9					
		L							
Lanagan, M.	23-Jan	10:30AM	Cypress C	19					
Lau, C.	24-Jan	10:30AM	Cypress B	23					
Lau, D.	23-Jan	11:30AM	Citrus A	18					
LeBeau, J.M.	22-Jan	10:00AM	Cypress B	9					
Lee, H.	23-Jan	10:00AM	Orange A	15					
Lee, J.	22-Jan	3:00PM	Magnolia B/C	12					
Lee, J.	22-Jan	4:00PM	Magnolia B/C	12					
Levchenko, S.	23-Jan	2:00PM	Magnolia B/C	20					
Levin, I.	22-Jan	10:30AM	Cypress B	9					
Li, F.	23-Jan	10:00AM	Orange B	14					
Li, S.	24-Jan	9:30AM	Cypress B	23					
Li, Y.	22-Jan	4:45PM	Magnolia A	7					
Liu, Y.	22-Jan	4:30PM	Orange B	6					
Lucero, M.	23-Jan	11:15AM	Citrus B	14					
Lucero, M.	23-Jan	5:00PM	Citrus A	18					
Luo, J.	24-Jan	10:30AM	Magnolia B/C	24					
		M							
Ma, J.	23-Jan	2:30PM	Cypress B	17					
Mahato, D.K.	22-Jan	11:30AM	Orange B	6					
Maksymovych, P.	23-Jan	4:30PM	Cypress B	17					
Mantri, S.	23-Jan	11:00AM	Magnolia A	15					
Maune, H.	22-Jan	11:45AM	Cypress C	11					
May, S.	23-Jan	5:00PM	Magnolia A	17					
McComb, D.W.	22-Jan	4:45PM	Citrus B	5					
McGarrahan, J.	22-Jan	5:00PM	Citrus A	10					
Mebane, D.S.	22-Jan	10:00AM	Citrus A	10					
Meisenheimer, P.B.	22-Jan	4:00PM	Magnolia A	7					
Mimura, K.	23-Jan	2:45PM	Orange B	15					
Misra, S.	22-Jan	4:15PM	Orange A	8					
Misture, S.T.	24-Jan	9:45AM	Citrus A	24					
Mitic, V.	23-Jan	10:30AM	Orange B	14					
Mohapatra, P.	22-Jan	11:00AM	Orange B	6					
Mpourmpakis, G.	22-Jan	10:00AM	Magnolia B/C	11					
Mueller, D.N.	22-Jan	2:00PM	Citrus A	10					
		N							
Nakhmanson, S.	22-Jan	4:30PM	Cypress C	11					
Nakhmanson, S.	24-Jan	9:00AM	Cypress C	21					
Need, R.F.	23-Jan	2:30PM	Orange A	16					
Nemati, A.	23-Jan	3:00PM	Orange B	15					
Nemati, E.	24-Jan	2:30PM	Citrus B	25					
Newman, N.	22-Jan	5:00PM	Cypress C	11					
Ngai, J.	23-Jan	2:00PM	Orange A	16					
Nguyen, T.D.	24-Jan	2:45PM	Citrus B	25					
Nikkel, J.	23-Jan	2:30PM	Orange B	15					
Ning, K.	23-Jan	4:45PM	Orange B	15					
Nordlander, J.	24-Jan	11:00AM	Orange A	21					
		O							
Ok, J.	23-Jan	10:45AM	Orange A	16					
Orloff, N.	22-Jan	10:00AM	Cypress C	10					
Orloff, N.	23-Jan	3:00PM	Cypress C	19					
Osofsky, M.	24-Jan	11:30AM	Cypress B	23					
Otonicar, M.	23-Jan	12:00PM	Cypress B	18					
		P							
Pachuta, K.	23-Jan	4:45PM	Citrus A	18					
Pan, X.	22-Jan	12:00PM	Orange A	8					
Patterson, E.A.	24-Jan	12:15PM	Cypress C	22					
Paudel, B.	23-Jan	11:00AM	Orange A	16					
Paul, J.T.	23-Jan	2:45PM	Magnolia B/C	20					
Penn, A.N.	22-Jan	4:30PM	Citrus B	5					
Penn, A.N.	23-Jan	11:15AM	Orange A	16					
Perry, N.H.	22-Jan	2:30PM	Citrus A	10					
Phan, B.	23-Jan	2:30PM	Citrus B	20					
Phommakesone, S.	23-Jan	2:30PM	Cypress C	19					
Pierantoni, L.	22-Jan	3:45PM	Cypress C	11					
Pilania, G.	23-Jan	11:30AM	Magnolia B/C	20					
Plokhikh, A.	24-Jan	11:00AM	Cypress C	22					
Ponomareva, I.	22-Jan	2:00PM	Cypress B	9					
Pramanick, A.	22-Jan	11:15AM	Cypress B	9					
Pramanick, A.	23-Jan	10:30AM	Citrus B	14					
Provence, S.R.	23-Jan	3:00PM	Magnolia B/C	20					
		R							
Ramirez, F.F.	23-Jan	11:00AM	Magnolia B/C	20					
Ranjan, R.	23-Jan	10:00AM	Citrus B	14					
Ranjan, R.	23-Jan	11:45AM	Cypress B	18					
Rappe, A.M.	23-Jan	10:30AM	Magnolia B/C	20					
Rappe, A.M.	23-Jan	2:00PM	Citrus B	20					
Ravichandran, J.	24-Jan	3:00PM	Magnolia A	22					
Reaney, I.M.	23-Jan	11:00AM	Cypress B	18					
Reid, T.K.	22-Jan	5:15PM	Magnolia B/C	12					
Reuter, K.	23-Jan	10:00AM	Magnolia B/C	20					
Rheinheimer, W.	24-Jan	11:15AM	Magnolia B/C	24					
Rijal, B.	22-Jan	11:00AM	Citrus A	10					
Rijnders, G.	22-Jan	8:40AM	Orange A	5					
Rodriguez, B.	24-Jan	9:30AM	Citrus B	25					
Rohrer, G.	24-Jan	8:30AM	Magnolia B/C	24					
Rondinelli, J.	24-Jan	9:30AM	Magnolia A	22					
Rothemund, R.	22-Jan	10:15AM	Cypress C	11					
Rowe, T.	22-Jan	4:00PM	Cypress B	9					
Rozic, B.	22-Jan	11:15AM	Orange B	6					
Ryu, G.	22-Jan	3:15PM	Citrus A	10					
		S							
Salski, B.	23-Jan	11:15AM	Cypress C	19					
Samarth, N.	24-Jan	9:00AM	Magnolia A	22					
Scheu, C.	22-Jan	2:00PM	Citrus B	5					
Schleife, A.	23-Jan	3:00PM	Magnolia A	17					
Schultz, J.W.	23-Jan	11:45AM	Cypress C	19					
Seal, S.	24-Jan	11:30AM	Citrus B	25					
Sebastian, M.	24-Jan	3:00PM	Cypress B	23					
Sharma, Y.	22-Jan	12:00PM	Magnolia A	7					
Shcherbakov, D.L.	24-Jan	3:15PM	Cypress B	23					
Shi, J.	24-Jan	11:30AM	Magnolia A	22					
Shoemaker, D.	24-Jan	3:30PM	Magnolia A	22					
Singamaneni, S.	23-Jan	3:00PM	Orange A	16					
Skoropata, E.	23-Jan	10:30AM	Orange A	16					
Smith, K.	22-Jan	2:00PM	Cypress C	11					
Song, J.	23-Jan	2:45PM	Citrus B	21					
Spanier, J.E.	24-Jan	9:15AM	Cypress C	21					
Spoerke, E.	23-Jan	3:00PM	Citrus A	18					
Spreitzer, M.	24-Jan	11:15AM	Cypress C	22					
Staruch, M.L.	23-Jan	11:00AM	Orange B	15					
Sternlicht, H.	22-Jan	11:30AM	Citrus B	5					
Sun, Z.	22-Jan	12:00PM	Orange B	6					

Oral Presenters

Name	Date	Time	Room	Page Number	Name	Date	Time	Room	Page Number
T					X				
Takamura, H.	22-Jan	4:30PM	Citrus A	10	Xie, S.R.	23-Jan	2:30PM	Magnolia B/C	20
Takeuchi, I.	23-Jan	2:00PM	Magnolia A	16	Xiong, H.	24-Jan	11:00AM	Citrus A	24
Takeuchi, I.	23-Jan	4:00PM	Orange A	16	Y				
Tan, A.Z.	22-Jan	4:45PM	Magnolia B/C	12	Yamaura, K.	23-Jan	2:00PM	Cypress B	17
Thapa, S.	23-Jan	2:30PM	Magnolia A	16	Yang, J.	22-Jan	11:45AM	Orange B	6
Trassin, M.	22-Jan	11:00AM	Magnolia A	7	Yazawa, K.	23-Jan	10:45AM	Magnolia A	15
Tretiak, S.	23-Jan	12:00PM	Magnolia B/C	20	Ye, Z.	22-Jan	3:00PM	Cypress B	9
Trolier-McKinstry, S.	22-Jan	2:00PM	Orange A	8	Yildiz, B.	22-Jan	12:00PM	Citrus A	10
U					Yildiz, B.	23-Jan	2:30PM	Citrus A	18
Updegrave, A.	23-Jan	12:00PM	Cypress C	19	Yoon, S.	23-Jan	11:30AM	Orange A	16
Uršič, H.	22-Jan	4:00PM	Orange B	6	Yoshimura, M.	22-Jan	12:00PM	Magnolia B/C	12
V					Yoshimura, M.	22-Jan	12:15PM	Magnolia B/C	12
Velarde, G.	22-Jan	2:45PM	Orange B	6	Yu, H.	23-Jan	4:30PM	Orange A	16
W					Z				
Wallis, T.M.	23-Jan	3:15PM	Cypress C	19	Zaengle, T.	24-Jan	11:45AM	Magnolia B/C	24
Wang, C.	23-Jan	2:00PM	Citrus A	18	Zakutayev, A.	22-Jan	4:30PM	Magnolia B/C	12
Wang, G.	23-Jan	5:00PM	Cypress B	17	Zhang, B.	22-Jan	3:00PM	Orange A	8
Wang, J.	24-Jan	9:15AM	Citrus B	25	Zhang, D.	22-Jan	4:30PM	Orange A	8
Wang, K.	23-Jan	2:00PM	Orange B	15	Zhang, G.	22-Jan	10:30AM	Orange B	6
Wang, L.	22-Jan	2:15PM	Orange A	8	Zhang, L.	22-Jan	11:00AM	Magnolia B/C	12
Wang, X.	24-Jan	12:00PM	Magnolia A	22	Zhang, X.	24-Jan	12:00PM	Cypress B	23
Wangoh, L.	24-Jan	9:30AM	Citrus A	24	Zhou, X.	23-Jan	4:00PM	Cypress B	17
Ward, T.Z.	22-Jan	2:00PM	Magnolia A	7	Zhou, Y.	24-Jan	11:30AM	Citrus A	24
Webber, K.G.	23-Jan	10:30AM	Cypress B	17	Zhuang, C.	22-Jan	11:15AM	Cypress C	11
Wen, H.	23-Jan	10:00AM	Magnolia A	15	Zou, K.	24-Jan	2:00PM	Magnolia A	22
Wood, V.	24-Jan	11:00AM	Magnolia A	22	Zupancic, M.	23-Jan	2:45PM	Orange A	16
Woodward, P.	24-Jan	8:00AM	Cypress B	23					
Wu, J.	24-Jan	11:00AM	Cypress B	23					
Wu, Y.	22-Jan	11:30AM	Citrus A	10					

Poster Presenters

Name	Date	Time	Room	Page Number	Name	Date	Time	Room	Page Number
A					J				
Aimi, A.	22-Jan	5:30PM	Orange C/D	14	Jin, W.	22-Jan	5:30PM	Orange C/D	13
B					Johnson, J.	22-Jan	5:30PM	Orange C/D	12
Balciunas, S.	22-Jan	5:30PM	Orange C/D	13	K				
Bartek, N.	22-Jan	5:30PM	Orange C/D	12	Kang, K.	22-Jan	5:30PM	Orange C/D	13
Brummel, I.A.	22-Jan	5:30PM	Orange C/D	13	Kaur Chhina, M.	22-Jan	5:30PM	Orange C/D	13
C					Kim, C.	22-Jan	5:30PM	Orange C/D	12
Culbertson, C.M.	22-Jan	5:30PM	Orange C/D	12	Kim, Y.	22-Jan	5:30PM	Orange C/D	13
D					L				
de Oliveira Machado, D.H.	22-Jan	5:30PM	Orange C/D	13	Lee, G.	22-Jan	5:30PM	Orange C/D	14
Dixon, K.E.	22-Jan	5:30PM	Orange C/D	13	M				
G					Mantri, S.	22-Jan	5:30PM	Orange C/D	13
Galib, R.	22-Jan	5:30PM	Orange C/D	14	Mitic, V.	22-Jan	5:30PM	Orange C/D	13
Ghosh, A.	22-Jan	5:30PM	Orange C/D	14	N				
Gliebe, K.	22-Jan	5:30PM	Orange C/D	13	Nayak, S.	22-Jan	5:30PM	Orange C/D	13
H					O				
Hilario, M.	22-Jan	5:30PM	Orange C/D	13	Ortiz, L.	22-Jan	5:30PM	Orange C/D	14
Hirt, B.D.	22-Jan	5:30PM	Orange C/D	13	P				
Hoque, M.	22-Jan	5:30PM	Orange C/D	14	Paterson, A.	22-Jan	5:30PM	Orange C/D	13
Huddleston, W.	22-Jan	5:30PM	Orange C/D	13	Paudel, R.	22-Jan	5:30PM	Orange C/D	13

Presenting Author List

Poster Presenters

<u>Name</u>	<u>Date</u>	<u>Time</u>	<u>Room</u>	<u>Page Number</u>	<u>Name</u>	<u>Date</u>	<u>Time</u>	<u>Room</u>	<u>Page Number</u>
		Q					W		
Qi, J.	22-Jan	5:30PM	Orange C/D	13	Waqar, M.	22-Jan	5:30PM	Orange C/D	13
		R					Y		
Reichelderfer, V.T.	22-Jan	5:30PM	Orange C/D	13	Yang, P.	22-Jan	5:30PM	Orange C/D	13
		S					Z		
Sorenson, J.	22-Jan	5:30PM	Orange C/D	13	Zheng, D.	22-Jan	5:30PM	Orange C/D	13
		T							
Toledo, R.P.	22-Jan	5:30PM	Orange C/D	14					

Wednesday, January 22, 2020

Plenary Session I

Room: Orange A

Session Chair: Alp Sehirlioglu, Case Western Reserve University

8:30 AM

Introduction

8:40 AM

(EMA-PLEN-001-2020) Novel Functionalities in Atomically Controlled Oxide Heterostructures by Pulsed Laser Deposition

G. Rijnders*¹

1. University of Twente, MESA+ Institute for Nanotechnology, Netherlands

9:30 AM

Break

S1: Characterization of Structure–Property Relationships in Functional Ceramics

Probing Structure Property Correlations in Ceramics

Room: Citrus B

Session Chair: Abhijit Pramanick, City University of Hong Kong

10:00 AM

(EMA-S1-001-2020) Influence of Adsorption on Equilibrium Metal-Ceramic Orientation Relationships (Invited)

H. Nahor¹; T. Mao¹; W. D. Kaplan*¹

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

10:30 AM

(EMA-S1-002-2020) Nanocomposite Electrolyte: New insights into Interactions between different oxide surfaces and a salt matrix above T_g (Invited)

M. A. Gulgun*¹; S. Shawuti¹; S. Mete¹; M. Sezen²; C. Ow-Yang¹

1. Sabanci University, FENS MatSE and NanoEng, Turkey
2. Sabanci University Nanotechnology Application Center, Turkey

11:00 AM

(EMA-S1-003-2020) Multiscale electro-mechanical response in ferroelectrics (Invited)

Y. Ivry*¹; M. Barzilay¹; H. Elangoval¹; A. Hershkovitz¹

1. Technion - Israel Institute of Technology, Israel

11:30 AM

(EMA-S1-004-2020) Anisotropy at Interfaces in Rare-Earth Pyrosilicates for High-Temperature Coatings and Halide Perovskites for Solar Cells

H. Sternlicht*¹; D. Huber²; D. W. McComb²; N. P. Padture¹

1. Brown University, School of Engineering, USA
2. The Ohio State University, USA

11:45 AM

(EMA-S1-005-2020) Time-Resolved Neutron Scattering Reveals Insight into Proton Motion in Organic Ferroelectric

C. Fancher*¹; A. Schultz²; C. Hoffmann¹; X. Wang¹

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

Advanced Electron Microscopy Methods for Characterization of Functional Ceramics

Room: Citrus B

Session Chairs: Chris Fancher, Oak Ridge National Lab; Hadas Sternlicht, Brown University

2:00 PM

(EMA-S1-006-2020) Hematite for light induced water splitting: Improving efficiency by tuning distribution of Sn dopants at the atomic scale (Invited)

S. Zhang¹; C. Scheu*¹

1. Max-Planck-Institut fuer Eisenforschung, Germany

2:30 PM

(EMA-S1-007-2020) Understanding the Structure of LiMn₂O₄ by Aberration-Corrected HAADF STEM and Differential Phase Contrast (Invited)

P. Ferreira*¹

1. IST/INL, Portugal and University of Texas, Austin, MSE, USA

3:00 PM

(EMA-S1-008-2020) Correlation between structure and chemistry at delithiated LiFePO₄ interface characterized by 4D-STEM and X-ray microscopy (Invited)

L. A. Hughes*¹; B. Savitzky¹; H. Deng²; N. Jin²; E. Lomeli²; P. Herring³; W. Chueh²; C. Ophus¹; A. Minor¹

1. Lawrence Berkeley National Laboratory, USA
2. Stanford University, Materials Science and Engineering, USA
3. Toyota Research Institute, USA

3:30 PM

Break

4:00 PM

(EMA-S1-009-2020) Mapping Electric Fields Using Advanced Detectors in Scanning Transmission Electron Microscopy (Invited)

H. G. Brown*¹; Z. Chen²; T. C. Peterson⁴; H. Cheng⁴; N. Shibata²; C. Ophus¹; J. Ciston¹; L. J. Allen⁵; S. Findlay⁶

1. Lawrence Berkeley National Laboratory, Molecular Foundry, USA
2. The University of Tokyo, Japan
3. Cornell University, School of engineering and applied physics, USA
4. Monash University, Monash Centre for Electron Microscopy, Australia
5. The University of Melbourne, School of Physics, Australia
6. Monash University, School of Physics and Astronomy, Australia

4:30 PM

(EMA-S1-010-2020) Quantifying Octahedral Distortion in Complex Oxide Perovskites with iDPC-STEM

A. N. Penn*¹; A. Kumar²; D. P. Kumah¹; J. M. LeBeau²

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

4:45 PM

(EMA-S1-011-2020) Investigation of Anti-Phase Boundaries in Ferromagnetic Thin Films using Scanning Transmission Electron Microscopy

A. Trout¹; I. Pinchuk²; W. Amamou²; R. E. Williams³; R. K. Kawakami²; D. W. McComb*¹

1. The Ohio State University, Dept. of Materials Science and Engineering, USA
2. The Ohio State University, Dept. of Physics, USA
3. The Ohio State University, Center for Electron Microscopy and Analysis, USA

5:00 PM

(EMA-S1-012-2020) Visualizations of Complex Charge-Ordered Phases in Colossal Magnetoresistive Manganites (Invited)

I. El Baggari*¹; D. Baek²; B. Savitzky¹; M. Zachman³; R. Hovden⁴; L. Kourkoutis³

1. Cornell University, Department of Physics, USA
2. Cornell University, School of Electrical and Computer Engineering, USA
3. Cornell University, School of Applied and Engineering Physics, USA
4. University of Michigan, Department of Materials Science & Engineering, USA

Highlighted title = Young Professional presentation

*Denotes Presenter

S2: Advanced Electronic Materials: Processing Structures, Properties, and Applications

Applications of Advanced Electronic Materials

Room: Orange B

Session Chair: Till Frömling, Technische Universität Darmstadt

10:00 AM

(EMA-S2-001-2020) Large flexoelectric response in ferroelectric ceramics: Mechanisms and potential applications (Invited)

B. Chu*¹

1. University of Science and Technology of China, Department of Materials Science and Engineering, China

10:30 AM

(EMA-S2-002-2020) Three-dimensional interconnected ferroelectric ceramic foam-based flexible composites for highly efficient mechanical and thermal energy harvesting (Invited)

G. Zhang*¹; S. Jiang¹; Q. Wang²

1. Huazhong University of Science and Technology, China
2. Pennsylvania State University, USA

11:00 AM

(EMA-S2-003-2020) Ultrahigh efficiency relaxor antiferroelectric ceramics for energy storage applications

P. Mohapatra*¹; Z. Fan¹; J. Cui¹; X. Tan¹

1. Iowa State Univ, Mater. Sci. & Eng., USA

11:15 AM

(EMA-S2-004-2020) Recent developments in dielectric cooling based on perovskite ferroelectric ceramics

B. Rozic*¹; A. Bradesko²; U. Plaznik³; B. Malič²; T. Rojac²; Q. Zhang⁴; A. Kitanovski¹; Z. Kutnjak⁵

1. Jozef Stefan Institute, Department of Condensed Matter Physics, Slovenia
2. Jozef Stefan Institute, Electronic Ceramics Department, Slovenia
3. University of Ljubljana, Faculty of Mechanical Engineering, Slovenia
4. Pennsylvania State University, Materials research institute, USA
5. Jozef Stefan Institute, Slovenia

11:30 AM

(EMA-S2-005-2020) Rare Earth Based Multifunctional Perovskite Ceramic Materials for electronic and magnetic applications

D. K. Mahato*¹; D. Singh¹

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

11:45 AM

(EMA-S2-006-2020) Gate-defined Quantum Confinement in few-layer Black Phosphorus Transistor

J. Yang*¹; S. Che¹; K. Watanabe²; T. Taniguchi²; S. Moon³; D. Smirnov³; R. Chen¹; C. Lau¹

1. The Ohio State University, Physics, USA
2. National Institute for Materials Science (NIMS), Japan
3. National High Magnetic Field Laboratory, USA

12:00 PM

(EMA-S2-007-2020) Progress Report for Energy Storage Ferroelectrics: From Bulks to Films

Z. Sun*¹

1. Shaanxi University of Science and Technology, China

Electromechanical Properties and Structure of Bulk and Film Electronic Materials

Room: Orange B

Session Chair: Margo Staruch, US Naval Research Laboratory

2:00 PM

(EMA-S2-008-2020) Critical Role of Residual Stress in Polycrystalline Ferroelectrics (Invited)

D. A. Hall*¹

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

2:30 PM

(EMA-S2-009-2020) Ferroelectric and Piezoelectric Properties of Thin Film (1-x)BNKT-(x)SrZrO₃

K. M. Grove*¹; D. Cann²; B. Gibbons³; S. K. Gupta²; P. Mardilovich⁴

1. Oregon State University, Materials Science, USA
2. Oregon State University, School of Mechanical, Industrial, and Manufacturing Engineering, USA
3. Oregon State University, USA
4. Xaar, United Kingdom

2:45 PM

(EMA-S2-010-2020) Quantifying Pyroelectric Contributions in PbZr_{1-x}Ti_xO₃ Thin Films

G. Velarde*¹; S. Pandya¹; L. Zhang¹; D. Garcia¹; E. Lupi¹; R. Gao¹; J. Wilbur²; C. Dames²; L. W. Martin¹

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

3:00 PM

(EMA-S2-011-2020) Understanding the Structure-Property Relationship in Lead-Free Piezoelectric [1-x](Ba,Zr,Ti)O₃-[x](Ba,Ca)TiO₃ Through Total Scattering Studies (Invited)

C. M. Culbertson¹; A. Manjon-Sanz²; D. Hou³; J. L. Jones³; M. Dolgos*²

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

3:30 PM

Break

4:00 PM

(EMA-S2-012-2020) Piezo-response force microscopy: From sample preparation to combination with other techniques (Invited)

H. Uršič*¹; U. Prah¹; M. Šadl¹; T. Rojac¹; B. Malič¹

1. Jozef Stefan Institute, Electronic Ceramics Department, Slovenia

4:30 PM

(EMA-S2-013-2020) Electronic properties of bismuth iodide (Bi₄I₄) Thin Films

Y. Liu*²; R. Chen²; S. Li¹; X. Liu¹; T. Taniguchi³; K. Watanabe³; B. Lv¹; F. Zhang¹; C. Lau²

1. University of Texas, Dallas, USA
2. The Ohio State University, Department of Physics, USA
3. National Institute for Materials Science (NIMS), Japan

4:45 PM

(EMA-S2-014-2020) Influencing mechanism of sulfurization temperature on grain growth of Cu₂ZnSnS₄ thin films prepared by ethanol based solutions

I. Gupta*¹; B. C. Mohanty¹

1. Thapar Institute of Engineering and Technology, School of Physics and Material Sciences, India

5:00 PM

(EMA-S2-015-2020) Measuring barrier heights of electrodes with ferroelectric Hf_{0.58}Zr_{0.42}O₂ films using internal photoemission (IPE) spectroscopy

M. Jenkins¹; S. Smith²; M. D. Henry²; M. Brumbach²; P. Davids²; J. Ihlefeld²; J. F. Conley*¹

1. Oregon State University, School of EECS and Materials Science, USA
2. Sandia National Laboratories, USA
3. University of Virginia, Department of Materials Science and Engineering, USA

5:15 PM

(EMA-S2-016-2020) High-throughput Density Functional Perturbation Theory and Machine Learning Predictions of Infrared, Piezoelectric and Dielectric Responses

K. Choudhary*¹

1. National Institute of Standards and Technology, MML, USA

S3: Frontiers in Ferroic Oxides: Synthesis, Structure, Properties, and Applications

Ferroelectric and Dielectric Oxides

Room: Magnolia A

Session Chair: Joshua Agar, Lehigh

10:00 AM

(EMA-S3-001-2020) Search and Stabilization of Metastable Ferroelectric Materials: SrHfO₃ (Invited)

L. Garten^{*1}; S. Dwaraknath²; J. Walker³; J. Mangum³; P. Ndione⁴; Y. Park⁵; D. Beaton⁶; V. Gopalan⁷; B. Gorman⁸; L. Schelhas⁹; M. F. Toney⁶; S. Trolier-McKinstry⁷; K. Persson⁸; D. Ginley⁴

1. U.S. Naval Research Lab, Material Science, USA
2. Norwegian University of Science and Technology, Materials Science and Engineering, Norway
3. Colorado School of Mines, USA
4. National Renewable Energy Lab, USA
5. Pennsylvania State University, USA
6. SLAC, USA
7. Pennsylvania State University, Materials Science and Engineering, USA
8. University of California Berkeley, USA
9. Lawrence Berkeley National Laboratory, USA

10:30 AM

(EMA-S3-002-2020) Robust In-Plane Ferroelectricity in Ultrathin Epitaxial Aurivillius Films

E. Gradauskaitė^{*1}; M. Campanini²; R. Erni²; B. Biswas³; C. Schneider³; M. Fiebig³; M. D. Rossell⁴; M. Trassin¹

1. ETH Zurich, Department of Materials, Switzerland
2. Empa, Swiss Federal Laboratories for Materials Science and Technology, Electron Microscopy Center, Switzerland
3. Paul Scherrer Institute, Laboratory for Multiscale Materials Experiments, Switzerland

10:45 AM

(EMA-S3-003-2020) Thickness and strain dependence of piezoelectric coefficient in BaTiO₃ thin films

K. Kelley^{*1}; R. Vasudevan¹; N. Balke Wisinger¹; S. Kalinin¹; L. Collins¹; D. Yilmaz²; P. Ganesh³

1. Oak Ridge National Laboratory, Center for Nanophase Materials Sciences, USA
2. Pennsylvania State University, USA
3. Oak Ridge National Lab, USA

11:00 AM

(EMA-S3-004-2020) Watching ferroelectricity emerging during complex oxide thin film growth in real time (Invited)

M. Trassin^{*1}

1. ETH Zurich, Department of Materials, Switzerland

11:30 AM

(EMA-S3-005-2020) Antiferroelectric like structure and photovoltaic effect in BiFeO₃/LaFeO₃ superlattices

M. El Marssi^{*1}; J. Belhadi¹; S. Yousfi¹; B. Carcan¹; H. Bouyanfif¹

1. Université de Picardie Jules Verne, LPMC, France

11:45 AM

(EMA-S3-006-2020) Exploring Ferroelectric and Photocatalytic Properties of Ba and Mn co-doped Bismuth Ferrite (BiFeO₃) Nanoparticles

A. Dubey^{*1}; M. E. Castillo¹; S. V. Vladimir¹; D. C. Lupascu¹

1. University of Duisburg-Essen, Institute for Materials Science, Germany

12:00 PM

(EMA-S3-007-2020) Synthesis of Self-Assembled Room Temperature Multiferroic BiFeO₃-LiFe_{0.8}O₈ Nanocomposites (Invited)

Y. Sharma^{*1}; T. Z. Ward²; A. Chen³

1. Los Alamos National Lab, CINT, USA
2. Oak Ridge National Lab, USA
3. Los Alamos National Lab, USA

Magnetism, Structure, and Defects in Transition Metal Oxides

Room: Magnolia A

Session Chair: John Heron, University of Michigan

2:00 PM

(EMA-S3-008-2020) Order from Disorder in Entropic Oxide Films (Invited)

T. Z. Ward^{*1}; Y. Sharma¹; A. Mazza¹

1. Oak Ridge National Lab, USA

2:30 PM

(EMA-S3-009-2020) Antiferromagnetism survives extreme chemical disorder in high-entropy oxides (Invited)

R. Hermann^{*1}

1. Oak Ridge National Laboratory, USA

3:00 PM

(EMA-S3-010-2020) Structural and Electronic Phenomena in Jahn-Teller Active Mn Spinel Thin Films (Invited)

R. B. Comes^{*1}

1. Auburn University, Dept. of Physics, USA

3:30 PM

Break

4:00 PM

(EMA-S3-011-2020) Electronic and magnetic interplay in entropy stabilized oxide thin films

P. B. Meisenheimer^{*1}; L. Williams¹; S. Sung¹; P. Shafer²; M. Trassin³; R. Hovden¹; E. Kioupakis¹; J. Heron¹

1. University of Michigan, Materials Science and Engineering, USA
2. Lawrence Berkeley National Laboratory, USA
3. ETH Zurich, Switzerland

4:15 PM

(EMA-S3-012-2020) New Probes for Magnetism Nanoscale Garnets: Insights into Spin-Seebeck-Effect Materials (Invited)

P. G. Evans^{*1}; S. Marks¹; S. Geprägs²; M. Dietlein²; Y. Joly³; M. Dai¹; J. Hu¹; L. Bouchenoir⁴; P. Thompson⁵; T. Schull⁶; M. Richard⁶; R. Gross²; G. Carbone⁷; D. Mannix⁸

1. University of Wisconsin, Materials Science and Engineering, USA
2. Bayerische Akademie der Wissenschaften, Walther-Meißner-Institut, Germany
3. Institut Néel, France
4. European Synchrotron Radiation Facility, XMaS, France
5. ESRF, France
6. Aix Marseille Université, France
7. MAX IV Laboratory, Sweden
8. European Spallation Source, Sweden

4:45 PM

(EMA-S3-013-2020) Microwave spintronics in magnetic insulators: From fundamental to hybrid systems (Invited)

Y. Li^{*1}

1. Argonne National Laboratory, Materials Science Division, USA

5:15 PM

(EMA-S3-014-2020) Magnetic Domain Patterns in Isolated and Interacting Islands of Nanofabricated La_{0.7}Sr_{0.3}MnO₃

F. Almonte^{*1}; L. Ortiz¹; D. Sasaki²; J. Song¹; W. Linthicum¹; R. Chopdekar³; Y. Takamura²; B. Huey¹

1. University of Connecticut, Materials Science and Engineering, USA
2. University of California, Davis, Materials Science and Engineering, USA
3. Lawrence Berkeley National Laboratory, ALS, USA

S4: Complex Oxide Thin Film Materials Discovery: From Synthesis to Strain/Interface Engineered Emergent Properties

Enhanced Functionality through Advanced Synthesis

Room: Orange A

Session Chairs: Elizabeth Paisley, Sandia National Laboratories;
Jon-Paul Maria

10:00 AM

(EMA-S4-001-2020) Hafnium Zirconium Oxide Ferroelectric Performance: Roles of Thickness, Electrode Stress, and Oxygen Vacancies (*Pioneer in Synthesis*) (Invited)

J. Ihlefeld^{*}; S. Fields¹; S. Smith²; M. D. Henry²; S. Wolfley²; T. S. Luk²; M. Brumbach²;
C. Fancher²; S. T. Jaszewski¹; C. Constantin¹; G. Esteves²; M. Rodriguez²; P. Davids²

1. University of Virginia, Department of Materials Science and Engineering, USA
2. Sandia National Laboratories, USA
3. Oak Ridge National Lab, USA
4. James Madison University, Department of Physics and Astronomy, USA

10:30 AM

(EMA-S4-002-2020) Metal Nitride stress and chemistry effects on polarization and cycling performance of $\text{Hf}_{0.58}\text{Zr}_{0.42}\text{O}_2$ films

S. Fields^{*}; S. Smith²; M. D. Henry²; S. Wolfley²; M. Rodriguez²; C. Fancher²; G. Esteves²;
P. Davids²; J. Ihlefeld¹

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

10:45 AM

(EMA-S4-003-2020) Ferroelectric Properties of Thin Film $\text{Zn}_{1-x}\text{Mg}_x\text{O}$

J. Hayden^{*}; J. Maria¹

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

11:00 AM

(EMA-S4-004-2020) Combined Polar Distortion Leading to Ferroelectric Ferromagnet in 1D Tetrahedral Chain Network (Invited)

W. Choi^{*1}

1. SungKyunKwan University, Physics, Republic of Korea

11:30 AM

(EMA-S4-005-2020) Tuning functional properties in manganite heterostructures: Strain or stoichiometry?

A. Chen^{*1}

1. Los Alamos National Lab, USA

11:45 AM

(EMA-S4-006-2020) Enhanced magnetism in oxygen deficient $\text{Ga}_{0.5}\text{Fe}_{1.5}\text{O}_{3-\delta}$ epitaxial thin films

H. Kim¹; H. Jeon^{*1}

1. Pusan National University, Physics, Republic of Korea

12:00 PM

(EMA-S4-007-2020) Emergent Novel Functionalities of Ultrathin Freestanding Crystalline Oxide Perovskites (Invited)

X. Pan^{*1}

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

Advanced Complex Oxide Thin Film Synthesis I

Room: Orange A

Session Chair: Jon Ihlefeld, University of Virginia

2:00 PM

(EMA-S4-008-2020) Defect Chemistry and Reliability in Doped PZT Films

B. Akkopru Akgun¹; W. Zhu¹; C. Randall¹; M. Lanagan²; S. Trolrier-McKinstry^{*1}

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

2:15 PM

(EMA-S4-009-2020) Dynamic Phase Segregation to Avoid High Unstable Ni Valence in Strontium Nickel Oxide Epitaxial Thin Films

L. Wang^{*1}; Z. Yang¹; M. Bowden¹; S. Chambers²; Y. Du¹

1. Pacific Northwest National Laboratory, USA
2. Pacific Northwest National Laboratory, Physical Sciences Division, USA

2:30 PM

(EMA-S4-010-2020) Defect Structures in $\text{Li}_{3x}\text{Nd}_{(2/3-x)\text{M}(1/3-2x)}\text{TiO}_3$ Single Crystal Thin Films

E. Farghadany^{*1}; N. Bagues Salguero²; R. E. Williams²; D. W. McComb²; A. Sehirlioglu³

1. Case Western Reserve University, Materials Science and Engineering, USA
2. The Ohio State University, USA
3. Case Western Reserve University, USA

2:45 PM

(EMA-S4-011-2020) Investigating the Intergranular Region of ZnO Varistors via Thin Film Prototypes

K. Ferri^{*1}; R. Floyd¹; S. Lowum¹; E. A. Paisley²; C. DiAntonio²; J. Maria¹

1. Pennsylvania State University, Materials Science and Engineering, USA
2. Sandia National Laboratories, USA

3:00 PM

(EMA-S4-012-2020) Tuning Magnetic Anisotropy in Co-BaZrO₃ Vertical Aligned Nanocomposites for Memory Device Integration

B. Zhang^{*1}; J. Huang¹; J. Jian¹; B. Rutherford²; L. Li²; S. Misra¹; X. Sun¹; H. Wang¹

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

3:15 PM

Break

Advanced Synthesis II

Room: Orange A

Session Chair: Yingge Du, PNNL

4:00 PM

(EMA-S4-013-2020) Integration of Highly Anisotropic BTO-metal Vertical Nanocomposite Thin Films on Silicon

M. Kalaswad^{*1}; D. Zhang²; B. Zhang¹; H. Wang²; X. Wang²

1. Purdue University, Electrical and Computer Engineering, USA
2. Purdue University, Materials Engineering, USA

4:15 PM

(EMA-S4-014-2020) Self-assembled ordered three-phase Au-BaTiO₃-ZnO vertically aligned nanocomposites achieved by a templating method

S. Misra^{*1}; L. Li¹; D. Zhang¹; Z. Qi¹; J. Jian¹; M. Fan¹; H. Chen²; X. Zhang¹; H. Wang¹

1. Purdue University, Materials Engineering, USA
2. Los Alamos National Lab, USA

4:30 PM

(EMA-S4-015-2020) Tunable Optical Properties in Self-Assembled Oxide-Metal Hybrid Thin Films via Au-Phase Geometry Control: from Nanopillar to Nanodisk

D. Zhang^{*1}; S. Misra¹; L. Li¹; X. Wang¹; J. Jian¹; P. Lu²; X. Gao¹; X. Sun¹; Z. Qi¹; M. Kalaswad²;
X. Zhang¹; H. Wang¹

1. Purdue University, Materials Engineering, USA
2. Purdue University, Electrical and Computer Engineering, USA
3. Sandia National Laboratories, USA

4:45 PM

(EMA-S4-016-2020) Raman and electronic responses of graphene controlled with ferroelectric domains

B. Dkhil^{*1}

1. Université Paris-Saclay, Laboratoire Structures, France

5:00 PM**(EMA-S4-017-2020) Designer phonons to sculpt infrared properties**

T. E. Beechem^{*1}; E. A. Paisley²; S. Smith³; P. E. Hopkins³; J. Ihlefeld⁴; J. Howe⁴; E. Hoglund⁵; J. Matson⁶; T. Folland⁶; J. Caldwell⁶; R. Engel-Herbert⁵

1. Sandia National Laboratories, Optical Sciences, USA
2. Sandia National Laboratories, USA
3. University of Virginia, Mechanical and Aerospace Engineering, USA
4. University of Virginia, Department of Materials Science and Engineering, USA
5. The Pennsylvania State University, Materials Science and Engineering, USA
6. Vanderbilt University, USA

5:15 PM**(EMA-S4-018-2020) Plasmonic Absorption Tunability in Indium-Doped Cadmium Oxide Thin Films**

A. Cleri^{*1}; E. Runnerstrom¹; J. Nordlander²; J. Tomko³; P. E. Hopkins³; J. Nolen⁵; J. Caldwell⁶; J. Maria²

1. Pennsylvania State University, Materials Science and Engineering, USA
2. Pennsylvania State University, USA
3. University of Virginia, Mechanical and Aerospace Engineering, USA
4. US Army Research Office, USA
5. Vanderbilt University, USA

S8: Structure-Property Relationships in Relaxor Ceramics**Local Structure of Relaxors I**

Room: Cypress B

Session Chairs: Ian Reaney, University of Sheffield; Yunfei Chang, Harbin Institute of Technology

10:00 AM**(EMA-S8-001-2020) A Hopeless Mess No More: Connecting Structure, Chemistry, and Polarization in PMN-PT Relaxor Ferroelectrics (Invited)**

J. M. LeBeau^{*1}; A. Kumar¹; J. Baker²; S. Zhang³; D. L. Irving²; E. C. Dickey²

1. Massachusetts Institute of Technology, Materials Science and Engineering, USA
2. North Carolina State University, Materials Science and Engineering, USA
3. University of Wollongong, ISEM, Australia

10:30 AM**(EMA-S8-002-2020) Branching Bi-displacement directions and nanoscale polar heterogeneities in ferroelectric $K_{0.5}Bi_{0.5}TiO_3$ (Invited)**

I. Levin^{*1}

1. NIST, USA

11:00 AM**(EMA-S8-003-2020) Local Structure Quantification in the Relaxor Ferroelectric $Ba_5SmSn_3Nb_7O_{30}$**

N. Creange^{*1}; M. J. Cabral¹; Z. Yang²; X. Zhu²; X. Chen²; E. C. Dickey¹

1. North Carolina State University, Materials Science and Engineering, USA
2. Zhejiang University, Department of Materials Science and Engineering, China

11:15 AM**(EMA-S8-004-2020) Application of pair distribution function method for characterization of atomic structure in Pb-free dielectric and electrocaloric materials**

A. Pramanick^{*1}

1. City University of Hong Kong, Applied Physics and Materials Science, Hong Kong

11:30 AM**(EMA-S8-005-2020) $BaZr_xTi_{1-x}O_3$: Lead-free isovalent relaxor ferroelectric or dipolar glass**

C. Filipic¹; Z. Kutnjak^{*1}; R. Pirc¹; G. Canu²; J. Petzelt³

1. Jozef Stefan Institute, Slovenia
2. Institute for Energetics and Interphases, National Research Council, Italy
3. Academy of Sciences of the Czech Republic, Institute of Physics, Czechia

11:45 AM**(EMA-S8-006-2020) Origin of relaxor behaviour in B-site modified barium titanate polycrystals**

V. Kaliyaperumal Veerapandiyani^{*1}; M. Popov¹; P. Groszewicz²; J. Spitaler¹; G. Canu²; V. Buscaglia²; M. Deluca¹

1. Materials Center Leoben Forschung GmbH, Austria
2. National Research Council of Italy, Institute of Condensed Matter Chemistry and Technologies for Energy, Italy
3. Technical University Darmstadt, Faculty of Chemistry, Germany

12:00 PM**(EMA-S8-007-2020) Crystal growth, lattice dynamics and instabilities of $BaZrO_3$ (Invited)**

C. Toulouse¹; D. Amoroso²; C. Xin³; P. Veber⁴; M. Ciomaga-Hatnean⁵; G. Balakrishnan⁵; R. Haumont⁶; F. Bourdarot⁷; M. Maglione⁸; P. Ghosez⁹; J. Kreisel¹; M. Guennou^{*1}

1. University of Luxembourg, Luxembourg
2. CNR-SPIN, Italy
3. Luxembourg Institute of Science and Technology, Luxembourg
4. Institut Lumière Matière, France
5. University of Warwick, United Kingdom
6. Université Paris Saclay, France
7. Institut Laue Langevin, France
8. ICMCB-CNRS, France
9. University of Liège, Belgium

Local Structure of Relaxors II

Room: Cypress B

Session Chairs: Kyle Webber, Friedrich-Alexander-Universität Erlangen-Nürnberg; Mojca Otonicar, Jozef Stefan Institute

2:00 PM**(EMA-S8-008-2020) Phase evolution in the ferroelectric relaxor $Ba(Ti_{1-x}Zr_x)O_3$ from first-principles-based simulations (Invited)**

C. Mentzer¹; S. Lisenkov¹; Z. Fthenakis¹; I. Ponomareva^{*1}

1. University of South Florida, USA

Perovskite/Non-perovskite Relaxors I

Room: Cypress B

Session Chairs: Kyle Webber, Friedrich-Alexander-Universität Erlangen-Nürnberg; Mojca Otonicar, Jozef Stefan Institute

2:30 PM**(EMA-S8-009-2020) What is common between relaxors and dipolar glasses? Are they different? (Invited)**

J. Banys^{*1}; S. Svirskas¹; R. Grigalaitis¹; D. Adamchuk¹; J. Macutkevicius¹; S. Balciunas¹; D. Jablonskas¹

1. Vilnius University, Faculty of Physics, Lithuania

3:00 PM**(EMA-S8-010-2020) Percolation and Ferroelectric-to-Relaxor-to-Dielectric Crossover in Lead-free Perovskite Solid Solutions (Invited)**

Z. Ye^{*1}; J. Zhuang²; A. A. Bokov¹

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

3:30 PM**Break****4:00 PM****(EMA-S8-011-2020) Determination of Structure and Property Relationships in the $(1-x)NaNbO_3-(x)BaZrO_3$ Solid Solution**

T. Rowe^{*1}; M. Dolgos¹

1. University of Calgary, Chemistry, Canada

4:15 PM**(EMA-S8-012-2020) Thermally Induced Phase Switching in Mechanically Biased Single Crystal Relaxors**

P. Finkel^{*1}; M. L. Staruch¹; S. Lofland²; S. Young³; E. A. Patterson¹

1. US Naval Research Laboratory, USA
2. Rowan University, Dept. of Physics, USA
3. University of Missouri, Kansas City, USA

4:30 PM**(EMA-S8-013-2020) Structure of epitaxial PMN-PT thin films around the MPB (Invited)**

U. Gabor^{*1}; I. Rafalovskyi²; N. Daneu³; A. Matavz⁴; V. Bobnar⁴; Z. Samardzija⁵; D. Suvorov³; J. Hlinka²; M. Spreitzer³

1. Peter Grünberg Institute, Forschungszentrum Jülich, Electronic Materials (PGI-7), Germany
2. Institute of Physics of the Czech Academy of Sciences, Department of Dielectrics, Czechia
3. Jozef Stefan Institute, Advanced Materials, Slovenia
4. Jozef Stefan Institute, Condensed Matter Physics, Slovenia
5. Jozef Stefan Institute, Nanostructured Materials, Slovenia

S10: Point Defects and Transport in Ceramics**Predictive Point Defect Energetics and Equilibria from Density Functional Theory and other Computational Methods**

Room: Citrus A

Session Chair: Elizabeth Dickey, North Carolina State University

10:00 AM**(EMA-S10-001-2020) Data Driven Pathways to Computationally Fast and Scientifically Accurate Models For Surfaces and Interfaces in Ionic Solids (Invited)**

D. S. Mebane^{*1}

1. West Virginia University, Mechanical and Aerospace Engineering, USA

10:30 AM**(EMA-S10-002-2020) Beyond the Brouwer approximation: Point defects in oxides from first principles (Invited)**

D. L. Irving^{*1}; J. Baker¹; P. C. Bowes¹; Y. Wu¹

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

11:00 AM**(EMA-S10-003-2020) First Principle Studies of Point Charge Defect in Phosphorene**

B. Rijal^{*1}; A. Z. Tan¹; R. G. Hennig¹; C. Freysoldt²

1. University of Florida, Materials Science and Engineering, USA
2. Max-Planck-Institut für Eisenforschung GmbH, Germany

11:15 AM**(EMA-S10-004-2020) Simulation studies of oxygen diffusion in Sr-doped LaMnO₃**

J. M. Börgers^{*1}; R. A. De Souza¹

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

11:30 AM**(EMA-S10-005-2020) Grain size-dependent conductivity of Al-doped SrTiO₃ from multiscale simulation**

Y. Wu^{*1}; P. C. Bowes¹; J. Baker¹; D. L. Irving¹

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

11:45 AM**(EMA-S10-006-2020) Modeling Space Charge Control of the Spin States of the Oxygen-Vacancy Complex in AlN**

P. C. Bowes^{*1}; Y. Wu¹; J. Baker¹; D. L. Irving¹

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

12:00 PM**(EMA-S10-007-2020) Electrochemical proton intercalation for energy efficient neuromorphic computing (Invited)**

B. Yildiz^{*1}

1. Massachusetts Institute of Technology, USA

Structure and Mobility of Defects and Defect Complexes

Room: Citrus A

Session Chair: Elizabeth Dickey, North Carolina State University

2:00 PM**(EMA-S10-008-2020) There is no Fe⁴⁺: What X-Ray spectroscopy can tell you about point defects (and what not) (Invited)**

D. N. Mueller^{*1}

1. Forschungszentrum Juelich, Peter Gruenberg Institute, Germany

2:30 PM**(EMA-S10-009-2020) In situ optical absorption as a probe of defect equilibria and kinetics in oxide thin films (Invited)**

E. Skiba¹; H. Buckner¹; T. Chen²; N. Kim²; E. Ertekin²; N. H. Perry^{*1}

1. University of Illinois at Urbana-Champaign, Materials Science & Engineering, USA
2. University of Illinois at Urbana-Champaign, Mechanical Science & Engineering, USA
3. Kyushu University, I2CNER, Japan

3:00 PM**(EMA-S10-010-2020) Atomic Scale Microscopy of Point Defects and Their Complexes in Beta-Ga₂O₃**

J. Johnson¹; H. Huang¹; J. Hwang^{*1}

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

3:15 PM**(EMA-S10-011-2020) Oxygen partial pressure dependence of electrical conductivity in Fe-doped Ga₂O₃ single crystal**

G. Ryu^{*1}; P. Reddy¹; R. Collazo¹; E. C. Dickey¹

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

3:30 PM**Break****4:00 PM****(EMA-S10-012-2020) Concentration and mobility of defects in rare-earth substituted ceria: Effects of strain, interfaces, and defect association (Invited)**

G. Harrington^{*1}

1. Kyushu University, Center for Co-Evolutional Social Systems, Japan

4:30 PM**(EMA-S10-013-2020) Transport and surface exchange properties of n-type mixed conductors (Invited)**

H. Takamura^{*1}

1. Tohoku University, Department of Materials Science, Japan

5:00 PM**(EMA-S10-014-2020) Effects of Electrode Composition and Potential on Moisture Incorporation and Degradation of Dielectrics and Piezoelectrics**

J. McGarrahan^{*1}; E. C. Dickey¹

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

5:15 PM**(EMA-S10-015-2020) Ion Transport in SrTiO₃ antiphase boundaries**

J. Kler^{*1}; R. A. De Souza¹

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

S12: Electronic Materials Applications in 5G Telecommunications**Industry and 5G**

Room: Cypress C

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

10:00 AM**(EMA-S12-001-2020) What is 5G and how can materials help?**

N. Orloff^{*1}

1. NIST, Communications Technology Laboratory, USA

10:15 AM

(EMA-S12-002-2020) Evolution of RF content and the challenges of developing complex RF modules and first filter prototypes for 5G (Invited)

R. Rothmund*¹
1. Qorvo, USA

10:45 AM

(EMA-S12-003-2020) Novel Low Dielectric Constant, High Q, Temperature Compensated Microwave Dielectric System for 5G mm-wave based Applications (Invited)

M. D. Hill*¹; S. Polisetty¹; D. Firor²; H. Hancock²; D. Cruickshank¹
1. Skyworks RF Ceramics (Trans-Tech Inc.), Research and Development, USA
2. Skyworks RF Ceramics (Trans-Tech Inc.), New Product Development, USA
3. Skyworks Ireland, Research and Development, Ireland

11:15 AM

(EMA-S12-004-2020) High performance ultra-thin alumina ribbon ceramics and multilayer RF devices (Invited)

C. Zhuang*¹; N. Z. Zhelev¹; C. Kim¹; S. Seok¹; H. Kim¹; W. Bouton¹; M. Badding¹
1. Corning Incorporated, USA

11:45 AM

(EMA-S12-005-2020) RF Modeling of Tunable Varactors with Thin Oxide Electrodes (Invited)

H. Maune*¹; D. Walk¹; P. Komissinskiy²; L. Alff²; R. Jakoby¹
1. Technische Universität Darmstadt, Institute for Microwave Engineering and Photonics, Germany
2. Technische Universität Darmstadt, Advanced Thin Film Technology, Germany

12:00 PM

(EMA-S12-006-2020) Dielectric Characterization of Materials for Copper Clad Laminates at Microwave Frequencies

C. Grabowski*¹
1. SABIC, USA

12:15 PM

(EMA-S12-007-2020) Realization and properties of the first nitride perovskite LaWN₃

K. Talley¹; R. Sherbondy²; J. Mangum¹; C. Perkins²; R. Woods-Robinson³; B. Gorman¹; A. Mehta⁴; G. L. Brenneka*¹; A. Zakutayev²
1. Colorado School of Mines, USA
2. National Renewable Energy Laboratory, USA
3. University of California, Berkeley, USA
4. SLAC National Accelerator Laboratory, USA

Theory, Modeling, and New Measurement Modalities in 5G

Room: Cypress C

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

2:00 PM

(EMA-S12-008-2020) A Transmission-Line Integrated Terahertz Source for Large-Amplitude Optoelectronic Signal Synthesis (Invited)

K. Smith*¹; A. D. Feldman²; N. Orloff³; C. Long¹; N. Jungwirth¹; B. Bosworth¹
1. National Institute of Standards and Technology, RF Technology Division, USA
2. National Institute of Standards and Technology, USA
3. NIST, Communications Technology Laboratory, USA

2:30 PM

(EMA-S12-009-2020) Frequency-Comb-Based Detection for Broadband Millimeter-Wave/Terahertz Sensing (Invited)

B. Jamali¹; A. Babakhani*¹
1. University of California, Los Angeles, USA

3:00 PM

(EMA-S12-010-2020) Towards ultrafast control of dielectric response through optical phonon excitation (Invited)

G. Khalsa*¹; N. Benedek¹; J. Moses¹
1. Cornell University, USA

Highlighted title = Young Professional presentation

*Denotes Presenter

3:15 PM

(EMA-S12-011-2020) Circuit Design at Extreme: Pushing the Limits of Silicon (Invited)

E. Afshari*¹; M. Tavakoli Taba¹; L. Chen¹
1. University of Michigan, USA

3:30 PM

(EMA-S12-012-2020) The ever-increasing importance of data science and data engineering for rapidly evolving technology: Why to learn programing + how to get started

A. Fox*¹
1. Qorvo Inc., USA

3:45 PM

(EMA-S12-013-2020) Bridging the Gap between Electromagnetic and Quantum Transport in the Analysis of Nanomaterials-based Devices (Invited)

L. Pierantoni*¹
1. Università Politecnica della Marche, Dipartimento Ingegneria dell'Informazione, Italy

4:00 PM

Break

4:30 PM

(EMA-S12-014-2020) Computational studies of transitional behavior in dielectrics at mesoscale (Invited)

J. Mangeri¹; D. Zhu²; K. Co³; P. Alpay³; A. Hagerstrom⁴; N. Orloff⁴; S. Nakhmanson*³
1. Institute of Physics, Czech Academy of Sciences, Dielectrics, Czechia
2. Wuhan University, School of Civil Engineering, China
3. University of Connecticut, Materials Science and Engineering, USA
4. NIST, Communications Technology Laboratory, USA

5:00 PM

(EMA-S12-015-2020) Using first principles methods to understand and optimize the properties of microwave ceramic dielectrics for 5G systems (Invited)

N. Newman*¹; J. Gonzales¹; C. Muhich²
1. Arizona State University, Materials Program, USA
2. Arizona State University, Chemical Engineering, USA

5:15 PM

(EMA-S12-016-2020) W-band dielectric property characterization of yttria-stabilized zirconia at high temperature

L. Enright*¹; M. Telmer²; M. Hilario³; A. E. Baros⁴; B. W. Hoff⁴
1. University of Connecticut, Materials Science and Engineering, USA
2. Carnegie Mellon University, USA
3. University of Southern California, USA
4. Air Force Research Lab, USA

S14: Agile Design of Electronic Materials: Aligned Computational and Experimental Approaches and Materials Informatics

Materials by Design

Room: Magnolia B/C

Session Chair: Mina Yoon, Oak Ridge National Laboratory

10:00 AM

(EMA-S14-001-2020) Modeling Bimetallic Nanoparticles: From Stability to Catalysis (Invited)

G. Mpourmpakis*¹
1. University of Pittsburgh, Chemical Engineering, USA

10:30 AM

(EMA-S14-002-2020) Modeling of Complex Inorganic Materials for Energy Applications with First Principles and Machine Learning Models (Invited)

N. Artrith*¹
1. Columbia University, Chemical Engineering, USA

11:00 AM**(EMA-S14-003-2020) Prediction of Two-Dimensional Organic Topological Materials in Several Metal Organic Frameworks (Invited)**L. Zhang^{*1}; M. Yoon²

1. University of Tennessee, USA
2. Oak Ridge National Laboratory, USA

11:30 AM**(EMA-S14-004-2020) Anomalous Dirac Plasmons in 1D Electrides (Invited)**B. Huang^{*1}

1. Beijing Computational Science Research Center, China

12:00 PM**(EMA-S14-005-2020) Defect Formation in Various Oxide Lattices by Re-Visiting of Madelung Lattice Energy and Lattice Site Potentials**M. Yoshimura^{*1}

1. National Cheng Kung University, Hi-GEM & PCGMR, Mater. Sci. & Eng., Taiwan

12:15 PM**(EMA-S14-006-2020) Lattice and Valence Stability in Perovskite Oxide Lattice by Re-Visiting of Madelung Lattice Energy and Lattice Site Potentials**M. Yoshimura^{*1}

1. National Cheng Kung University, Hi-GEM & PCGMR, Mater. Sci. & Eng., Taiwan

12:30 PM**(EMA-S14-007-2020) Genetic algorithm for prediction of surface phase diagrams of 2D films on substrate**V. Kolluru^{*1}; P. Ghanekar²; J. Greeley²; R. G. Hennig¹

1. University of Florida, Materials Science and Engineering, USA
2. Purdue University, Department of Chemical Engineering, USA

Predictive Modeling/Novel Phenomena

Room: Magnolia B/C

Session Chair: Aloysius Soon, Yonsei University

2:00 PM**(EMA-S14-008-2020) Ceramic lithium and sodium ion conductors for solid state batteries: From bulk structure to functional device (Invited)**D. Fattakhova-Rohlfing^{*1}

1. Forschungszentrum Juelich, Institute of Energy and Climate Research IEK-1, Germany

2:30 PM**(EMA-S14-009-2020) Ceramic Proton Conductors based on Perovskites for Energy and Environmental Applications (Invited)**M. E. Ivanova^{*1}; N. H. Menzler¹; O. Guillon¹

1. Forschungszentrum Jülich GmbH, IEK-1, Germany

3:00 PM**(EMA-S14-010-2020) Role of the MA cation on fundamental properties of hybrid halide perovskites (Invited)**J. Lee^{*1}

1. Korea Institute of Science and Technology, Republic of Korea

3:30 PM**Break****4:00 PM****(EMA-S14-011-2020) Kinetic-controlled solid-phase bulk heteroepitaxy of formamidinium lead halide perovskite (Invited)**J. Lee^{*1}; S. Tan¹; T. Han⁶; L. Zhang⁵; C. Park²; M. Yoon³; Y. Yang¹

1. SungKyunKwan University, SKKU Advanced Institute of Nanotechnology (SAINT) and Department of Nanoengineering, Republic of Korea
2. Oak Ridge National Laboratory, Center for Nanophase Materials Science, USA
3. Oak Ridge National Laboratory, USA
4. University of California, Los Angeles, Department of Materials Science and Engineering and California NanoSystems Institute, USA
5. University of Tennessee, Knoxville, Department of Physics and Astronomy, USA
6. Hanyang University, Division of Materials Science and Engineering, Republic of Korea

4:30 PM**(EMA-S14-012-2020) Computational Prediction and Experimental Realization of New Nitride Materials**S. Bowers¹; K. Heinselmann¹; E. Arca¹; W. Sun³; C. Bartel³; A. Holder²; S. Lany¹; G. Ceder³; A. Zakutayev^{*1}

1. National Renewable Energy Laboratory, USA
2. University of Colorado, USA
3. University of California, USA

4:45 PM**(EMA-S14-013-2020) Energetics and electronic properties of dopants, defects, and defect complexes in 2D transition metal dichalcogenides from first-principles**A. Z. Tan^{*1}; C. Freysoldt²; A. Kozhakhmetov³; J. A. Robinson³; R. G. Hennig¹

1. University of Florida, USA
2. Max-Planck-Institut für Eisenforschung GmbH, Germany
3. The Pennsylvania State University, USA

5:00 PM**(EMA-S14-014-2020) Polymorphic expressions in epitaxially strained alkali-metal niobates**W. Hwang^{*1}; S. Yoon¹; A. Soon¹

1. Yonsei university, Republic of Korea

5:15 PM**(EMA-S14-015-2020) Mechanical Control of Topological Properties: A First Principles Analysis of Bi₂Se₃, Bi₂Te₃, and As₂Te₃**T. K. Reid^{*1}; P. Alpay¹; A. Balatsky²; S. Nayak¹

1. University of Connecticut, Materials Science and Engineering and Institute of Materials Science, USA
2. KTH Royal Institute of Technology, Nordita, Sweden

Poster Session

Room: Orange C/D

5:30 PM**(EMA-SP001-2020) Improving the electrical and ferroelectric properties of lead iron niobate by decreasing calcination temperature**N. Bartek^{*1}; S. V. Vladimir¹; D. C. Lupascu¹

1. University of Duisburg-Essen, Institute for Materials Science, Germany

(EMA-SP002-2020) Oxide Ion Conduction Mechanisms in Sodium Bismuth Titanate (Na_{0.5}Bi_{0.5}TiO₃)C. M. Culbertson^{*1}; R. McQuade²; A. Paterson³; M. Lucero⁴; M. Dolgos⁵; Z. Feng⁶; D. Cann²

1. Oregon State University, Chemistry, USA
2. Oregon State University, School of Mechanical, Industrial, and Manufacturing Engineering, USA
3. University of Calgary, Canada
4. Oregon State University, Chemical Engineering, USA
5. University of Calgary, Chemistry, Canada
6. Oregon State University, School of Chemical, Biological, and Environmental Engineering, USA

(EMA-P003-2020) Growth of Silicon Nanowires on Silicon wafer for Improving Optical and Photovoltaic PropertiesD. K. Shah¹; H. Lee¹; Y. Son¹; M. Akhtar¹; O. Yang¹; C. Kim^{*1}

1. Chonbuk National University, Semiconductor and Chemical Engineering, Republic of Korea

(EMA-SP004-2020) Coupling of Electrochemical and Mechanical Properties in MoS₂ ElectrodesJ. Johnson^{*1}; A. Mann¹

1. Rutgers University, Materials Science and Engineering, USA

(EMA-P005-2020) Electrical conductivity of synthesized diamonds in corrections with fractal nature analysisS. Veljkovic²; V. Mitic^{*1}; G. Lazovic³; V. Paunovic²; M. Mohr⁴; H. Fecht⁴

1. Institute of Technical Sciences of SASA/University of Nis, Faculty of Electronic Engineering, Serbia
2. University of Nis, Faculty of Electronic Engineering, Serbia
3. University of Belgrade, Faculty of Mechanical Engineering, Serbia
4. Institute of Functional Nanosystems FNS, Ulm University, Germany

(EMA-P006-2020) Physical Characterization of α , β -FeOOH nanorod by controlling aspect ratio and silica coatingY. Kim^{*1}

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

(EMA-SP007-2020) Bio-wastes derived $\text{Ca}_2\text{SiO}_4\text{:Sm}^{3+}$ phosphors for solid state lighting applicationsM. Kaur Chhina^{*1}; K. Singh¹

1. Thapar Institute of Engineering and Technology, School of Physics and Materials Science, India

(EMA-SP008-2020) W-Band Dielectric Constant Measurements of Slip-Cast Polycrystalline Alumina of Different Porosity by Varying Sintering TemperatureM. Hilario^{*1}

1. University of Southern California, USA

(EMA-SP009-2020) Photo-induced electrical behavior under gas incidence in 1at%Er³⁺ doped SnO₂ based thin filmsD. H. de Oliveira Machado^{*1}; J. H. Dias da Silva¹; L. V. de Andrade Scalvi¹

1. Sao Paulo State University, Physis, Brazil

(EMA-SP010-2020) Creating High Temperature Ferroelectrics by using Ternary Components with Limited SolubilityB. D. Hirt^{*1}; A. Sehirlioglu²; B. Kowalski³

1. Case Western Reserve University, Material Science and Engineering, USA
2. Case Western Reserve University, USA
3. NASA Glenn Research Center, USA

(EMA-P011-2020) Effects of Gap Filling, Surface Roughness and Metal Work Function on Fast Rise Breakdown for Dielectric Filled Air GapJ. Sorenson^{*1}; C. Gomez¹; P. Yang¹

1. Sandia National Laboratories, Electrical, Optical and Nano-Materials, USA

(EMA-P012-2020) Fast-Rise Breakdown Mechanisms for a Varistor Filled Air GapC. Gomez¹; S. Andrews²; J. Sorenson¹; P. Yang^{*1}

1. Sandia National Laboratories, Electrical, Optical and Nano-Materials, USA
2. Sandia National Laboratories, Connectors and LACs, USA

(EMA-SP013-2020) The thermoelectric transport properties of polycrystalline SnSe-SnTe solid solutionsW. Jin^{*1}; J. Cho¹; K. Park¹; S. Muhammad³; J. Kim⁴; C. Park²

1. Seoul National University, Material Science and Engineering, Republic of Korea
2. Seoul National University, Republic of Korea
3. National University of Sciences and Technology, School of Material Science and Engineering, Pakistan
4. Korea Institute of Science and Technology, Republic of Korea

(EMA-P015-2020) Dielectric Properties of Barium Titanate Based CompositesS. Balciunas^{*1}; A. Karpavicius¹; M. Ivanov¹; J. Banys¹; S. Wada²

1. Vilnius University, Faculty of physics, Lithuania
2. University of Yamanashi, Material Science and Technology, Japan

(EMA-P016-2020) Ferroic Domain Continuity over Grain BoundariesS. Mantri^{*1}; J. Daniels¹

1. UNSW Sydney, Materials Science and Engineering, Australia

(EMA-SP017-2020) Fabrication of Lead-Free (K,Na)NbO₃ Piezoelectric Thin Films by Sputtering with Improved Electromechanical ResponseM. Waqar^{*1}; K. Yao²; S. J. Pennycook³; J. Wang³

1. National University of Singapore, NUS Graduate School for Integrative Sciences and Engineering, Singapore
2. A*STAR (Agency for Science, Technology and Research), Institute of Materials Research and Engineering (IMRE), Singapore
3. National University of Singapore, Department of Materials Science and Engineering, Singapore

(EMA-SP018-2020) Pulsed Laser Deposition of Lithium Cobalt Oxide Single Crystal FilmsK. Gliebe^{*1}; A. Sehirlioglu²

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

(EMA-P019-2020) Sr-vacancy-controlled ferroelectricity in SrTiO₃ epitaxial thin filmsK. Kang^{*1}; H. Seo²; O. Kwon²; K. Lee³; J. Bae⁴; M. Chu⁵; S. Chae³; Y. Kim²; W. Choi⁶

1. Los Alamos National Lab, USA
2. SungKyunkwan University, Republic of Korea
3. Seoul National University, Republic of Korea
4. Korea Basic Science Institute, Republic of Korea
5. National Taiwan University, Taiwan
6. SungKyunkwan University, Physics, Republic of Korea

(EMA-SP020-2020) Piezoresponse Predictions in Novel Ferroelectric NanostructuresV. T. Reichelderfer^{*1}; L. Kuna¹

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

(EMA-SP021-2020) Study of Perovskite and Spinel Complex Oxide Films and Nanocomposites Grown for Catalytic BehaviorR. Paudel^{*1}; R. B. Comes¹; M. Blanchet¹; A. Burton²; B. Farnum²

1. Auburn University, Physics, USA
2. Auburn University, Chemistry, USA

(EMA-P023-2020) Effect of low energy ion irradiation on the properties of superconducting iron pnictide and magnesium boride thin filmsM. Nazir¹; Z. Xu³; N. Peng²; R. P. Webb²; D. Zheng^{*1}

1. Institute of Physics Chinese Academy of Sciences, China
2. University of Surrey, United Kingdom
3. Institute of Electrical Engineering Chinese Academy of Sciences, China

(EMA-P024-2020) Length scale dependence of the structure of (1-x)Na_{1/2}Bi_{1/2}TiO₃-xPbTiO₃ via pair distribution functionsA. Paterson^{*1}; A. Goetzee-Barral²; A. N. Johnson³; A. J. Bell⁴; M. Dolgos¹

1. University of Calgary, Chemistry, Canada
2. University of Leeds, United Kingdom
3. Oregon State University, USA
4. University of Leeds, Institute for Materials Research, United Kingdom

(EMA-P025-2020) Relaxor behavior and electrothermal properties of Sn and Nb modified (Ba,Ca)TiO₃ Pb-free relaxor ferroelectricsS. Nayak^{*1}; S. Venkateshwarlu¹; F. Marlton²; F. Weyland³; N. Novak⁴; D. Maurya⁵; Y. Veerabhadraiah¹; O. Borkiewicz²; K. Beyer²; M. Jørgensen²; A. Pramanick¹

1. City University of Hong Kong, Department of Materials Science and Engineering, Hong Kong
2. Aarhus University, Interdisciplinary Nanoscience Center, Denmark
3. Institute of Materials Science, Germany
4. Jozef Stefan Institute, Slovenia
5. Virginia Tech, Department of Materials Science and Engineering, USA
6. Argonne National Laboratory, USA

(EMA-SP026-2020) Microstructural and Compositional Effects of Lithium Content on Perovskite La_{1-x}Li_{3x}TaO₃ Ion ConductorsI. A. Brummel^{*1}; H. J. Brown-Shaklee²; J. Ihlefeld²

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

(EMA-SP027-2020) Nano-Porous Niobium Oxide Formed Via Electrochemical Anodization as a Negative Electrode for Sodium-ion BatteriesP. Barnes¹; K. E. Dixon^{*1}; B. Bernal¹; H. Xiong¹

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

(EMA-SP028-2020) Processing and characterization of LTO-Ni-LLTO composite anodesW. Huddleston^{*1}; F. Dynys²; A. Sehirlioglu³

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

(EMA-SP035-2020) Stable high permittivity and low dielectric loss of Ce-doped SrTiO₃ ceramicsJ. Qi^{*1}; C. Randall¹

1. Pennsylvania State University, Materials Research Institute, USA

Highlighted title = Young Professional presentation

*Denotes Presenter

(EMA-SP029-2020) Thermal properties of ZrB₂ and (Hf_{0.2}Zr_{0.2}Ti_{0.2}Ta_{0.2}Nb_{0.2})B₂

M. Hoque*²; J. L. Braun²; J. Gild²; D. Olson²; K. Aryana²; J. Tomko⁴; Y. R. Koh²; R. Galib²; J. Gaskins²; W. Fahrenholtz²; J. Luo⁶; P. E. Hopkins¹

1. University of Virginia, Department of Mechanical and Aerospace Engineering, Department of Materials Science and Engineering, Department of Physics, USA
2. University of Virginia, Mechanical and Aerospace Engineering, USA
3. University of California, San Diego, Materials Science and Engineering Program, USA
4. University of Virginia, Department of Materials Science and Engineering, USA
5. Missouri University of Science & Technology, Dept. of Materials Science and Engineering, USA
6. University of California, San Diego, USA

(EMA-SP030-2020) Study of ultrafast carrier dynamics in GaAs by mid-IR pump-probe spectroscopy

R. Galib*¹; J. Tomko²; D. Olson¹; J. Gaskins¹; P. E. Hopkins¹

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

(EMA-SP031-2020) Two-dimensional CuI on Cu(111): A first-principles investigation

G. Lee*¹; T. Lee¹; A. Soon¹

1. Yonsei University, Department of Materials Science & Engineering and Center for Artificial Synesthesia Materials Discovery, Republic of Korea

(EMA-P032-2020) Development of the algorithm for automatic, reliable, and high-throughput structural refinement method using the Rietveld analysis

A. Aimi*¹; K. Fujimoto¹

1. Tokyo University of Science, Pure and Applied Chemistry, Japan

(EMA-SP033-2020) Design of novel molecular ferroelectrics using first-principles based and machine learning approaches

A. Ghosh*¹; L. Louis¹; K. Pitike¹; S. Poddar²; S. Ducharme²; A. Asandei¹; N. Lubbers³; S. Nakhmanson¹

1. University of Connecticut, Materials Science and Engineering, USA
2. University of Nebraska, Lincoln, USA
3. Los Alamos National Lab, USA

(EMA-SP034-2020) Heterojunction properties of MPS/PANI doped with erbium

R. P. Toledo*¹; A. F. Oliveira¹; D. R. Huanca¹

1. Federal University of Itajubá, Institute of Physics & Chemistry, Brazil

(EMA-SP036-2020) Ferroelectric Domain Switching in BFO/CFO Vertically Aligned Nanocomposites as a Function of Epitaxial Interface Proximity and Magnetic Poling

L. Ortiz*¹; M. Martin¹; J. Song¹; A. Chen¹; B. Huey¹

1. University of Connecticut, Materials Science and Engineering, USA
2. Los Alamos National Lab, USA

Thursday, January 23, 2020

Plenary Session II

Room: Orange A

Session Chair: Wolfgang Rheinheimer, Purdue University

8:30 AM

Introduction

8:40 AM

(EMA-PLEN-002-2020) Defect Disorder and Dynamics in Functional Oxides

E. C. Dickey*¹

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

9:30 AM

Break**S1: Characterization of Structure–Property Relationships in Functional Ceramics****Probing Defects and Disorder in Functional Ceramics**

Room: Citrus B

Session Chair: James LeBeau

10:00 AM

(EMA-S1-013-2020) Structural insights into the depolarization processes in sodium bismuth titanate based piezoelectrics (Invited)

G. Adhikary¹; A. Mishra¹; D. K. Khatua¹; R. Ranjan*¹

1. Indian Institute of Science, Materials Engineering, India

10:30 AM

(EMA-S1-014-2020) Study of local structure of Dion-Jacobson phases with hybrid improper ferroelectricity

J. Kong¹; S. Nayak¹; A. Pramanick*¹

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

10:45 AM

(EMA-S1-015-2020) Unusual Trends in the Enhanced Ce³⁺ Surface Concentration in Ceria-Zirconia Catalyst Materials (Invited)

W. Yuan¹; Q. Ma²; I. Takeuchi³; M. Bedzyk¹; S. M. Haile*¹

1. Northwestern University, Materials Science and Engineering, USA
2. Northwestern University, Synchrotron Research Center, USA
3. University of Maryland, USA

11:15 AM

(EMA-S1-016-2020) X-ray Absorption Spectroscopy Studies of the Oxide-ion Conduction Mechanism in Sodium bismuth titanate (Na_{0.5}Bi_{0.5}TiO₃) based perovskites

M. Lucero*¹; C. M. Culbertson²; R. McQuade²; A. Paterson³; M. Dolgos²; D. Cann¹; Z. Feng¹

1. Oregon State University, School of Chemical, Biological and Environmental Engineering, USA
2. Oregon State University, Department of Chemistry, USA
3. University of Calgary, Chemistry, Canada
4. Oregon State Univ, School of Mechanical, Industrial, and Manufacturing Engineering, USA

S2: Advanced Electronic Materials: Processing Structures, Properties, and Applications**Lead-free and Relaxor Ferroelectrics**

Room: Orange B

Session Chair: Ke Wang, Tsinghua University

10:00 AM

(EMA-S2-017-2020) Effect of AC electric field poling on relaxor-PT crystals (Invited)

F. Li*¹

1. Xi'an Jiaotong University, China

10:30 AM

(EMA-S2-018-2020) Ceramics fractal nature influence on BaTiO₃ - nano scale and dielectric properties towards coated morphology processing

V. Mitic*¹; G. Lazovic²; C. Lu³; V. Paunovic⁴; I. Radovic⁵; S. Veljkovic⁶; B. Vlahovic⁶

1. Serbian Academy of Sciences / Faculty of Electronic Engineering University Nis, Institute of Technical Sciences, Serbia
2. University of Belgrade, Faculty of Mechanical Engineering, Serbia
3. Industrial Technology Research Institute, Taiwan
4. University of Nis, Faculty of Electronic Engineering, Serbia
5. University of Belgrade, Vinca Institute of Nuclear, Serbia
6. North Carolina Central University, USA

10:45 AM

(EMA-S2-019-2020) Inhomogeneous Poling-induced Phase Transitions in Potassium Sodium Niobate-based Piezoelectric ActuatorsS. Funni*¹; J. Zhao¹; E. C. Dickey¹; J. L. Jones¹

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

11:00 AM

(EMA-S2-020-2020) Dynamics of an interferroelectric phase transition in (011) PIN-PMN-PT crystals (Invited)M. L. Staruch*¹; E. A. Patterson¹; P. Finkel¹; D. Damjanovic²; M. Cain³

1. US Naval Research Laboratory, USA
2. Swiss Federal Institute of Technology in Lausanne - EPFL, Ceramics Laboratory, Switzerland
3. Electrosiences Ltd., United Kingdom

Synthesis of Electronic Materials and the Role of Defects

Room: Orange B

Session Chair: Margo Staruch, US Naval Research Laboratory

2:00 PM

(EMA-S2-021-2020) Chemical Heterogeneity in (K, Na)NbO₃-based Piezoceramics: Good or Evil? (Invited)K. Wang*¹; H. Thong¹; M. Zhang¹; J. Li¹

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

2:30 PM

(EMA-S2-022-2020) Exploration and Synthesis of Novel PZT - based Ternary: BiInO₃ - Pb(Zr,Ti)O₃J. Nikkel*¹; R. McQuade²; M. Dolgos²; D. Cann³

1. Oregon State University, Chemistry, USA
2. University of Calgary, Chemistry, Canada
3. Oregon State Univ, School of Mechanical, Industrial, and Manufacturing Engineering, USA

2:45 PM

(EMA-S2-023-2020) One pot synthesis of dielectric BaTiO₃ based nanocubes with heteroepitaxial interfaces by hydrothermal methodK. Mimura*¹; Z. Liu¹; H. Itasaka¹; K. Kato¹

1. National Institute of Advanced Industrial Science and Technology (AIST), Japan

3:00 PM

(EMA-S2-024-2020) Properties of ZnO/Reduced Graphene oxide Quasi Core-Shell NanoparticlesA. Nemati*¹; S. P. Haghshenas¹; A. Simchi¹; C. Kim²

1. Sharif University of Technology, Department of Materials Science & Engineering, Islamic Republic of Iran
2. University of Texas at Arlington, Department of Materials Science & Engineering, USA

3:15 PM

Break

3:45 PM

(EMA-S2-025-2020) Detecting chemical and structural inhomogeneity in ferroelectric, relaxor and dielectric materials via impedance spectroscopy (Invited)T. Frömling*¹; Y. Liu¹; S. Steiner¹; A. Hoang¹; M. Gehringer¹; L. Kodumudi Venkatamaran¹; B. Xu¹

1. Technische Universität Darmstadt, Materials Science, Germany

4:15 PM

(EMA-S2-026-2020) Tunable Giant Electromechanical Properties in Defective Co-doped Ceria SystemsA. Kabir*¹; V. Esposito²

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

4:30 PM

(EMA-S2-027-2020) Intracermic metallic dopant migration leads to formation of lossy crystalline patina in AlN:Mo composites: Mechanisms and insightsR. Grudt*¹; S. C. Hayden¹; B. W. Hoff²; M. Hilario²; F. Dynys²; A. E. Baros²; M. Ostraat¹

1. Aramco Services Company, Aramco Research Center – Boston, USA
2. Air Force Research Lab, USA
3. NASA Glenn Research Center, USA

Highlighted title = Young Professional presentation

*Denotes Presenter

4:45 PM

(EMA-S2-028-2020) Creating Novel Materials through [Ga, Ta] Dipolar-pair Substitution in BaTiO₃ PerovskiteK. Ning*¹; H. Shulman¹; S. Tidrow¹

1. Alfred University, Inamori School of Engineering, USA

S3: Frontiers in Ferroic Oxides: Synthesis, Structure, Properties, and Applications**Ferroelectric Architectures and Devices**

Room: Magnolia A

Session Chair: Jiamian Hu, University of Wisconsin-Madison

10:00 AM

(EMA-S3-015-2020) Ultrafast structural dynamics of ferroelectric domains and vortices driven by optical and terahertz fields (Invited)H. Wen*¹

1. Argonne National Laboratory, X-ray Science Division, USA

10:30 AM

(EMA-S3-016-2020) Ferroelectric Bloch skyrmion phases induced by structural crystallographic symmetry breakingJ. Hlinka*¹; K. C. Erb¹

1. Academy of Sciences of the Czech Republic, Institute of Physics, Czechia

10:45 AM

(EMA-S3-017-2020) Microstructure effects on voltage driven ferroelastic domain evolution in polycrystalline Pb(Zr_{0.4}Ti_{0.6})O₃ thin filmK. Yazawa*¹; H. Uchida²; J. Blendell³

1. Purdue University, School of Materials Engineering, USA
2. Sophia University, Japan
3. Purdue University, USA

11:00 AM

(EMA-S3-018-2020) Visualizing Strain-Free Domain Walls in FerroelectricsS. Mantri*¹; J. Daniels¹

1. UNSW Sydney, Materials Science and Engineering, Australia

11:15 AM

(EMA-S3-019-2020) Ferroelectrics for Brain-Inspired Computing (Invited)Z. Wang¹; A. Khan*¹

1. Georgia Institute of Technology, USA

S4: Complex Oxide Thin Film Materials Discovery: From Synthesis to Strain/Interface Engineered Emergent Properties**Engineered Interface Phenomena I**

Room: Orange A

Session Chair: Aiping Chen, Los Alamos National Lab

10:00 AM

(EMA-S4-019-2020) Exploiting interfaces, spin-orbit coupling, and symmetry for novel topological quantum phenomena in oxide heterostructures (Pioneer in Synthesis) (Invited)H. Lee*¹

1. Oak Ridge National Lab, USA

10:30 AM**(EMA-S4-020-2020) Interfacial control of chiral magnetic interactions and Hall effect in iridate-manganite superlattices**E. Skoropata^{*1}; J. Nichols¹; J. Ok¹; R. Chopdekar²; E. Choi³; A. Rastogi¹; C. Sohn¹; X. Gao¹; T. Farmer¹; R. Desautels¹; Y. Choi²; D. Haskel²; J. Freeland²; S. Okamoto¹; M. Brahlek¹; H. Lee³

1. Oak Ridge National Laboratory, USA
2. Argonne National Lab, USA
3. Oak Ridge National Lab, USA
4. National High Magnetic Field Laboratory, USA
5. Advanced Light Source, USA

10:45 AM**(EMA-S4-021-2020) Mapping phase stability of the metallic delafossite PdCrO₂ using pulsed laser deposition**J. Ok^{*1}; H. Lee¹

1. Oak Ridge National Lab, USA

11:00 AM**(EMA-S4-022-2020) Polarization induced strain vs. charge mediated magnetoelectric coupling across the PZT/LSMO interfaces**B. Paudel^{*1}; I. Vasiliev¹; M. Hammouri²; D. Karpov³; A. Chen⁴; V. Lauter⁵; E. Fohtung⁶

1. New Mexico State University, Physics, USA
2. California State University, Los Angeles, USA
3. Paul Scherrer Institute, Switzerland
4. Los Alamos National Lab, USA
5. Oak Ridge National Lab, USA
6. Rensselaer Polytechnic Institute, USA

11:15 AM**(EMA-S4-023-2020) Chemistry and Strain Mediated Magnetism in Ultra-thin LSMO-LSCO Heterostructures**A. N. Penn^{*1}; S. Koohfar²; D. P. Kumah²; J. M. LeBeau³

1. North Carolina State University, Materials Science and Engineering, USA
2. North Carolina State University, Physics, USA
3. Massachusetts Institute of Technology, Materials Science and Engineering, USA

11:30 AM**(EMA-S4-024-2020) Ferromagnetism in Strained Epitaxial LaCoO₃**S. Yoon^{*1}; X. Gao¹; J. Ok¹; Z. Liao¹; M. Han²; P. Ganesh³; W. Choi³; H. Lee¹

1. Oak Ridge National Laboratory, Materials Science and Technology Division, USA
2. Brookhaven National Laboratory, Condensed Matter Physics and Materials Science Department, USA
3. Oak Ridge National Laboratory, Center for Nanophase Materials Sciences, USA
4. Sungkyunkwan University, Physics, Republic of Korea

11:45 AM**(EMA-S4-025-2020) Electronic structure and defect interactions at LaMnO₃/SrTiO₃ polar/non-polar heterojunctions (Invited)**T. Kaspar^{*1}; P. Sushko²; M. Bowden³; D. Keavney⁴; M. Sassi⁵; S. R. Spurgeon⁶; S. Chambers⁶

1. Pacific Northwest National Lab, Physical and Computational Sciences Directorate, USA
2. Pacific Northwest National Lab, Physical Sciences Division, USA
3. Pacific Northwest National Lab, EMSL, USA
4. Argonne National Lab, Advanced Photon Source, USA
5. Pacific Northwest National Laboratory, Energy and Environment Directorate, USA
6. Pacific Northwest National Laboratory, Physical Sciences Division, USA

Engineered Interface Phenomena II

Room: Orange A

Session Chair: George Kotsonis, The Pennsylvania State University

2:00 PM**(EMA-S4-026-2020) Band-gap engineering, charge transfer and built-in electric fields across semiconductor-crystalline oxide interfaces (Invited)**J. Ngai^{*1}

1. University of Texas-Arlington, Physics, USA

2:30 PM**(EMA-S4-027-2020) Confinement-driven magnetism in SrTiO₃ quantum well heterostructures**R. F. Need^{*1}; P. Marshall²; B. Isaac²; B. Kirby³; J. Borchers³; A. Suter⁴; S. Stemmer²; S. D. Wilson²

1. University of Florida, Materials Science & Engineering, USA
2. University of California, Santa Barbara, Materials, USA
3. National Institute of Standards and Technology, USA
4. Paul Scherrer Institut, Switzerland

2:45 PM**(EMA-S4-028-2020) Structural analysis of the polar – nonpolar LaInO₃/BaSnO₃ perovskite oxides interface**M. Zupancic^{*1}; T. Markurt¹; W. Aggoune²; K. Char³; Y. Kim³; Y. Kim³; C. Draxl²; M. Albrecht¹

1. Leibniz-Institut für Kristallzüchtung, Materials Science (Electron Microscopy), Germany
2. Institute of Physics, Humboldt University of Berlin, Germany
3. Institute of Applied Physics, Seoul National University, Dept. of Physics and Astronomy, Republic of Korea

3:00 PM**(EMA-S4-029-2020) Oxide Heterostructures Integrated with Si(100) (Invited)**S. Singamaneni^{*1}

1. The University of Texas at El Paso, USA

3:30 PM**Break****Machine Learning Driven Synthesis**

Room: Orange A

Session Chairs: Elizabeth Paisley, Sandia National Laboratories; Kevin Ferri, North Carolina State University

4:00 PM**(EMA-S4-030-2020) Combinatorial Experimentation and Machine Learning for Materials Discovery (Pioneer in Synthesis) (Invited)**I. Takeuchi^{*1}

1. University of Maryland, USA

4:30 PM**(EMA-S4-031-2020) Fabrication and characterization of epitaxial Li-oxide thin films and devices for neuromorphic computing**H. Yu^{*1}; J. Pearson¹; Y. Gong¹; Y. Ren¹; I. Takeuchi²

1. University of Maryland, College Park, Department of Materials Science and Engineering, USA
2. University of Maryland, USA

4:45 PM**(EMA-S4-032-2020) A Data-Driven Approach to Guiding Synthesis of Oxides (Invited)**P. Balachandran^{*1}

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

S6: Complex Oxide and Chalcogenide Semiconductors: Research and Applications**Design and Discovery of Complex-Structured Semiconductors**

Room: Magnolia A

Session Chairs: Rafael Jaramillo, Massachusetts Institute of Technology; Jian Shi, Rensselaer Polytechnic Institute

2:00 PM**(EMA-S6-001-2020) Combinatorial Approach to Chalcogenide Thin Films (Invited)**I. Takeuchi^{*1}

1. University of Maryland, USA

2:30 PM**(EMA-S6-002-2020) Understanding the Surface of Epitaxial SrTiO₃ Films Grown by Hybrid MBE**S. Thapa^{*1}; S. R. Provence¹; M. Brahlek²; L. Jason²; W. Jin¹; R. B. Comes³

1. Auburn University, Dept. of Physics, USA
2. Oak Ridge National Lab, USA
3. Auburn University, Dept. of Physics, USA

2:45 PM

(EMA-S6-003-2020) Structural and Electronic Characterization of Epitaxial $\text{Co}_x\text{Mn}_{3-x}\text{O}_4$ Spinel FilmsM. Blanchet^{*1}; A. C. Bredar¹; W. Bowers¹; S. Chikara²; T. Kaspar³; S. Heald²; B. Farnum¹; R. B. Comes⁴

1. Auburn University, Dept. of Chemistry, USA
2. Florida State University, National High Magnetic Field Laboratory, USA
3. Pacific Northwest National Lab, Physical and Computational Sciences Directorate, USA
4. Auburn University, Dept. of Physics, USA

3:00 PM

(EMA-S6-004-2020) Optical properties, dielectric screening, and heterojunction design for oxides and chalcogenides (Invited)A. Schleife^{*1}

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

3:30 PM

Break

4:00 PM

(EMA-S6-005-2020) Computational discovery of ambipolarly doped ultra-wide-band-gap oxide and high-entropy chalcogenide semiconductors (Invited)E. Kioupakis^{*1}

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

4:30 PM

(EMA-S6-006-2020) Modulation Doping in Alkaline-Earth Stannates (Invited)B. Jalan^{*1}

1. University of Minnesota, USA

5:00 PM

(EMA-S6-007-2020) Opportunities in epitaxial mixed-anion oxyfluoride perovskites (Invited)S. May^{*1}

1. Drexel University, Materials Science and Engineering, USA

S7: Superconducting and Magnetic Materials: From Basic Science to Applications**Superconducting and Magnetic Materials I**

Room: Cypress B

Session Chair: Xingjiang Zhou, National Lab for Superconductivity

2:00 PM

(EMA-S7-001-2020) New materials research and functional development of perovskite-related osmium oxide (Invited)K. Yamaura^{*1}

1. National Institute for Materials Science, Japan

2:30 PM

(EMA-S7-002-2020) Quantum effects of a layered perovskite with triangular-lattice (Invited)J. Ma^{*1}; H. Zhou²; y. Kamiya¹

1. Shanghai Jiao Tong University, China
2. University of Tennessee, USA

3:00 PM

(EMA-S7-003-2020) Intrinsic 2D Topological Materials: Spin-orbit Spillage, Properties, and Calculation ReliabilityK. Choudhary^{*1}

1. National Institute of Standards and Technology, MML, USA

3:15 PM

(EMA-S7-004-2020) Machine Learning of the Functional Form of the Superconducting Critical TemperatureS. R. Xie¹; G. R. Stewart²; J. J. Hamlin¹; P. J. Hirschfeld²; R. G. Hennig^{*1}

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

3:30 PM

Break

Superconducting and Magnetic Materials II

Room: Cypress B

Session Chair: Kazunari Yamaura, National Institute for Materials Science

4:00 PM

(EMA-S7-005-2020) Non-Fermi Liquid Behaviors, Nodal Superconducting Gap and Insulating Parent Phase in Iron-Based Superconductors (Invited)X. Zhou^{*1}

1. Institute of Physics, National Lab for Superconductivity, China

4:30 PM

(EMA-S7-006-2020) Using atomic forces to understand and manipulate unconventional superconductors (Invited)P. Maksymovych^{*1}

1. Oak Ridge National Laboratory, USA

5:00 PM

(EMA-S7-007-2020) Miscibility gap and intrinsic anti-ferromagnetic Griffith phase in $\text{Sr}(\text{Fe}_{1-x}\text{Mn}_x)_2\text{As}_2$ phase diagram with multi-critical pointsG. Wang^{*1}; L. Chen¹; C. Cao¹; H. Chen¹; J. Ma²; J. Hu¹; X. Chen¹

1. Institute of Physics, Chinese Academy of Sciences, China
2. Shanghai Jiao Tong University, China

5:15 PM

(EMA-S7-008-2020) Thermodynamic Stability and Kinetics of Nb_3Ge , Nb_3Al , and Nb_3Ga A15 PhasesA. C. Hire^{*1}; B. Rijal¹; H. Bayard¹; C. Orozco¹; L. Zhu¹; R. Porter²; Z. Sun²; M. Liepe²; M. Manuel¹; R. G. Hennig¹

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

5:30 PM

(EMA-S7-009-2020) Methodological DFT Study of Spin-Crossover in Mn(taa)E. C. Fonseca^{*1}; D. Rodriguez²; S. Trickey²; R. G. Hennig¹

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

S8: Structure-Property Relationships in Relaxor Ceramics**Perovskite/Non-perovskite Relaxors II**

Room: Cypress B

Session Chair: Igor Levin, NIST

10:00 AM

(EMA-S8-014-2020) Enhanced Electromechanical Properties in Grain-Oriented Relaxor-PbTiO₃ based Piezoceramics Prepared by Templated Grain Growth (Invited)Y. Chang^{*1}; J. Wu¹; Y. Sun¹; S. Zhang²; B. Yang¹

1. Harbin Institute of Technology, China
2. Nanjing University, China

10:30 AM

(EMA-S8-015-2020) Enhancing the electromechanical response of relaxor films through aerosol deposition of metal electrodes (Invited)N. Khansur¹; U. Eckstein¹; H. Uršič²; K. G. Webber^{*1}

1. Friedrich-Alexander-Universität Erlangen-Nürnberg, Materials Science and Engineering, Germany
2. Jozef Stefan Institute, Electronic Ceramics Department, Slovenia

Highlighted title = Young Professional presentation

*Denotes Presenter

Novel Relaxors

Room: Cypress B

Session Chairs: Igor Levin, NIST; Mael Guennou, University of Luxembourg

11:00 AM**(EMA-S8-016-2020) High Energy Density Capacitors (Invited)**I. M. Reaney*¹

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

11:30 AM**(EMA-S8-017-2020) Electric field induced strain in Sr(Hf_{0.5}Zr_{0.5})O₃-modified Bi_{0.5}(Na_{0.8}K_{0.2})_{0.5}TiO₃ piezoelectric ceramics**S. K. Gupta*¹; R. McQuade¹; B. Gibbons¹; P. Mardilovich²; D. Cann¹

1. Oregon State University, Material Science, School of Mechanical, Industrial, and Manufacturing Engineering, USA
2. Xaar plc, United Kingdom

Advanced Characterization of Relaxors

Room: Cypress B

Session Chairs: Igor Levin, NIST; Mael Guennou, University of Luxembourg

11:45 AM**(EMA-S8-018-2020) Large electromechanical response in non-MPB relaxor ferroelectrics**R. Ranjan*¹; U. Shankar¹; R. Pandey¹; B. Narayan¹

1. Indian Institute of Science, Materials Engineering, India

12:00 PM**(EMA-S8-019-2020) Multiscale characterization of lead-based relaxor ferroelectrics (Invited)**M. Otonicar*¹; A. Bradesko¹; M. J. Cabral³; L. Riemer⁴; H. Uršič¹; A. Bencan¹; G. Drazic²; J. L. Jones²; D. Damjanovic²; B. Malic¹; T. Rojac¹

1. Jozef Stefan Institute, Electronic Ceramics Department, Slovenia
2. National Institute of Chemistry, Slovenia
3. North Carolina State University, Dept. of Materials Science & Engineering, USA
4. Swiss Federal Institute of Technology in Lausanne - EPFL, Ceramics Laboratory, Switzerland

S9: Ion Conducting Ceramics**Ion Conducting Ceramics for Solid-State Battery**

Room: Citrus A

Session Chairs: Hua Zhou, Argonne National Lab; Yingge Du, PNNL

2:00 PM**(EMA-S9-001-2020) Li dendrite suppression in solid state electrolytes (Invited)**C. Wang*¹

1. University of Maryland, Chemical Engineering, USA

2:30 PM**(EMA-S9-002-2020) Structure, Chemistry, and Charge Transfer Resistance of the Interface between Garnet Solid Electrolyte and Oxide Cathodes (Invited)**B. Yildiz*¹

1. Massachusetts Institute of Technology, USA

3:00 PM**(EMA-S9-003-2020) Synthetic Designs for Improved NaSICON Sodium Ion Conductors**E. Spoecker*¹; A. Peretti¹; E. Coker¹; M. Rodriguez²; M. Gross¹; J. A. Bock¹; R. Hill²; Y. Cheng²

1. Sandia National Laboratories, USA
2. University of Kentucky, USA

3:15 PM**(EMA-S9-004-2020) Interfacial Engineering of Ceramic Separators in Sodium Batteries**M. Gross*¹; A. Peretti¹; S. Percival¹; L. Small¹; E. Spoecker¹

1. Sandia National Laboratories, USA

3:30 PM**Break****4:00 PM****(EMA-S9-013-2020) Fast Charging Ceramic Anodes for Aqueous Sodium-Ion Batteries (Invited)**Z. Feng*¹

1. Oregon State University, School of Chemical, Biological, and Environmental Engineering, USA

4:30 PM**(EMA-S9-006-2020) Microstructural evolution and fracture strength of sintered Li₄Ti₅O₁₂-Ni anode composites**W. Huddleston*¹; F. Dynys²; A. Sehirlioglu³

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

4:45 PM**(EMA-S9-007-2020) Controlled Processing-Structure-Properties of Two-Dimensional Oxides**K. Pachuta*¹; E. Pentzer²; M. Berger³; A. Sehirlioglu⁴

1. Case Western Reserve University, Materials Science and Engineering, USA
2. Texas A&M University, Materials Science and Engineering, USA
3. MINES ParisTech, Mécanique et Matériaux, France
4. Case Western Reserve University, USA

5:00 PM**(EMA-S9-008-2020) Improving the Lithium-Ion Battery Performance through Surface Coating**M. Lucero*¹; T. Holston²; Z. Feng²

1. Oregon State University, Chemical Engineering, USA
2. Oregon State University, School of Chemical, Biological, and Environmental Engineering, USA

S10: Point Defects and Transport in Ceramics**Defect Mediated Properties (Conductivity, Grain Growth, Creep, Magnetism, Ferroelectric Imprint, Dielectric Degradation)**

Room: Citrus A

Session Chair: Douglas Irving, North Carolina State University

10:00 AM**(EMA-S10-016-2020) Affecting point defects in SrTiO₃ by illumination and preparation (Invited)**J. Fleig*¹

1. TU Wien, Chemistry, Austria

10:30 AM**(EMA-S10-017-2020) Engineering defect formation in functional oxide thin films and heterostructures (Invited)**R. Dittmann*¹

1. Forschungszentrum Juelich, PGI-7, Germany

11:00 AM**(EMA-S10-018-2020) Defect Chemistry of Na_{0.5}Bi_{0.5}TiO₃-based ceramics: Changing ferroelectric properties and inducing high ionic conductivity (Invited)**S. Steiner¹; L. Koch¹; A. Hoang¹; M. Gehringer¹; K. Albe¹; T. Frömling*¹

1. Technische Universität Darmstadt, Materials Science, Germany

11:30 AM**(EMA-S10-019-2020) Reversibility of Electromagnetic properties in La_{0.8}Sr_{0.2}MnO₃ Thin Films from High Temperature Processing**D. Lau*¹; J. Wuenschell¹; J. Devkota¹; P. Ohodnicki¹

1. National Energy Technology Laboratory, USA

11:45 AM**(EMA-S10-020-2020) Defect Kinetics in (Bi_{0.5}Na_{0.5})TiO₃-based piezoceramics**Z. Fan*¹

1. Pennsylvania State University, USA

12:00 PM

(EMA-S10-021-2020) Engineering defects for electro-active applications (Invited)P. Janolin^{*1}; Z. Li¹; J. Yu¹

1. CentraleSupélec-CNRS, Physics, France

S12: Electronic Materials Applications in 5G Telecommunications**5G Measurement Science**

Room: Cypress C

Session Chair: Geoff Brenneka, Colorado School of Mines

10:00 AM

(EMA-S12-017-2020) VNA replacements to be used in measurements of material properties performed in the mm-wave and sub-THz bands (Invited)P. Kopyt^{*1}; B. Salski²

1. Warsaw University of Technology, Inst. of Radioelectronics and Multimedia Technology, Poland
2. Warsaw University of Technology, Poland

10:30 AM

(EMA-S12-018-2020) Broadband dielectric characterization of polymers and ceramics (Invited)M. Lanagan^{*1}; M. Sarkarat²; T. Bonnett¹; S. Shetty²; B. Foley²; S. Perini²

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

11:00 AM

(EMA-S12-019-2020) Hexaferrite Thin Film Growth on Sapphire and Semiconductor Substrates for mm-wave ApplicationsP. Kulik^{*1}; C. Yu¹; A. Sokolov¹; G. Winter¹; V. Harris¹

1. Northeastern University, ECE, USA

11:15 AM

(EMA-S12-020-2020) Characterization of dielectric materials for 5G telecommunications with a Fabry-Perot open resonator (Invited)B. Salski^{*1}; T. Karpisz¹; P. Kopyt¹; J. Krupka²

1. Warsaw University of Technology, Institute of Radioelectronics and Multimedia Technology, Poland
2. Warsaw University of Technology, Institute of Microelectronics and Optoelectronics, Poland

11:45 AM

(EMA-S12-021-2020) Free-Space Material Measurements at 20-40 GHz: RF Spot Probes vs. a Lens-Based Focused Beam SystemJ. W. Schultz^{*1}; J. G. Maloney²; A. A. Patel¹

1. Compass Technology Group, USA
2. Maloney-Solutions, USA

12:00 PM

(EMA-S12-022-2020) Resonant Cavity Measurement for use in a Free Space System for the Characterization of Low Loss Materials (Invited)C. Kintner¹; C. Garcia¹; A. Updegrave^{*1}

1. Ball Aerospace, USA

12:15 PM

(EMA-S12-023-2020) Microwave-frequency material dielectric properties measurements at elevated temperature (Invited)C. Ellison^{*1}; R. Tempke²; M. Spencer¹; C. Wildfire¹; T. Musho²; D. Shekhawat³

1. National Energy Technology Laboratory / Leidos Research Support Team, USA
2. National Energy Technology Laboratory / Oak Ridge Institute for Science and Education, USA
3. National Energy Technology Laboratory, USA

Industry Panel and Tutorials

Room: Cypress C

Session Chair: Geoff Brenneka, Colorado School of Mines

2:00 PM

Industry Panel

2:30 PM

(EMA-S12-024-2020) DC to THz Electromagnetic Properties Characterization (Invited)S. Phommakesone^{*1}

1. Keysight Technologies, USA

3:00 PM

(EMA-S12-025-2020) Tutorial: How to measure permittivity on-waferN. Orloff^{*1}

1. NIST, Communications Technology Laboratory, USA

3:15 PM

(EMA-S12-026-2020) Nanoscale Materials Characterization for Microwave and mm-Wave Applications (Invited)T. M. Wallis^{*1}; S. Berweger¹; P. Kabos¹

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

3:30 PM

(EMA-S12-027-2020) Exploring synergies between electronic material measurements and modeling (Invited)M. Celuch^{*1}; M. Olszewska-Placha¹; J. Rudnicki¹

1. QWED Sp. z o.o., Poland

S13: Thermal Transport in Functional Materials and Devices**Thermal Transport**

Room: Cypress C

Session Chair: Brian Foley, Georgia Institute of Technology

4:00 PM

(EMA-S13-001-2020) Experimental and Computational Advances in Thermal Boundary Conductance and Nanoscale Thermal Transport across Solid Interfaces (Invited)A. Giri^{*1}; P. E. Hopkins²

1. University of Virginia, USA
2. University of Virginia, Mechanical and Aerospace Engineering, USA

4:30 PM

(EMA-S13-002-2020) Elimination of Extreme Boundary Scattering via Polymer Thermal Bridging in Silica Nanoparticle PackingsB. F. Donovan^{*1}; R. Warzoha¹; R. Venkatesh²; D. Lee²

1. United States Naval Academy, USA
2. University of Pennsylvania, USA

4:45 PM

(EMA-S13-003-2020) Atomistic approach to interfacial heat transport phenomenonS. Hosseini^{*1}; S. Nimmala²; E. Lenz²; A. Greaney¹

1. University of California, Riverside, Mechanical Engineering, USA
2. Lam Research, USA

5:00 PM

(EMA-S13-004-2020) Electron and Phonon Thermal Conductance in Ultra-thin (< 40 nm) Ge₂Sb₂Te₅ Layers in Phase Change Memory DevicesK. Aryana^{*1}; J. Nag²; M. Grobis²; J. Read²; J. Gaskins³; D. Olson¹; E. Hoglund¹; J. Howe¹; P. E. Hopkins³

1. University of Virginia, USA
2. Western Digital, USA
3. University of Virginia, Mechanical and Aerospace Engineering, USA

Highlighted title = Young Professional presentation

*Denotes Presenter

S14: Agile Design of Electronic Materials: Aligned Computational and Experimental Approaches and Materials Informatics

High-throughput Approaches/Data Analytics I

Room: Magnolia B/C

Session Chair: Sergey Levchenko, Skolkovo Institute of Science and Technology

10:00 AM

(EMA-S14-016-2020) Knowledge-Based Approaches in Catalysis and Energy Modelling (Invited)

K. Reuter*¹

1. Technical University of Munich, Germany

10:30 AM

(EMA-S14-017-2020) Modeling Surface Oxide Growth from First-Principles, Thermodynamics, and Machine Learning (Invited)

T. Qiu¹; R. Wexler¹; A. M. Rappe*¹

1. University of Pennsylvania, Chemistry, USA

11:00 AM

(EMA-S14-018-2020) Open Science Platform for Materials Informatics: AiiDA and Materials Cloud (Invited)

F. F. Ramirez*¹

1. EPFL, STI, Switzerland

11:30 AM

(EMA-S14-019-2020) Machine Learning Based Predictions of 4f and 5d Electron Binding Energies in Lanthanide-doped Compounds for Novel Scintillator Discovery (Invited)

G. Pilania*¹; A. Talapatra¹; C. Stanek¹; B. P. Uberuaga¹

1. Los Alamos National Laboratory, Materials Science and Technology Division, USA

12:00 PM

(EMA-S14-020-2020) Machine Learning for Chemical Properties and Materials (Invited)

S. Tretiak*¹

1. Los Alamos National Lab, Theoretical Division, USA

High-throughput Approaches/Data Analytics II

Room: Magnolia B/C

Session Chair: Payam Kaghazchi, Forschungszentrum Jülich GmbH

2:00 PM

(EMA-S14-021-2020) Subgroup Discovery Data Analytics Approach to Catalyst Design

S. Levchenko*¹

1. Skolkovo Institute of Science and Technology, Russian Federation

2:15 PM

(EMA-S14-022-2020) A Machine Learning Study of Magnetism in Actinides

A. Ghosh*¹; F. Ronning²; S. Nakhmanson¹; J. Zhu²

1. University of Connecticut, Materials Science and Engineering, USA
2. Los Alamos National Laboratory, USA

2:30 PM

(EMA-S14-023-2020) Machine learning of octahedral tilting in oxide perovskites

S. R. Xie*¹; P. L. Kotlarz¹; J. C. Nino¹; R. G. Hennig¹

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

2:45 PM

(EMA-S14-024-2020) High-Throughput Screening for Identification of Photocathode Materials

J. T. Paul*¹; A. Galdi²; S. Karkare³; H. Padmore⁴; I. Bazarov²; R. G. Hennig¹

1. University of Florida, Materials Science and Engineering, USA
2. Cornell University, Cornell Laboratory for Accelerator Based Sciences and Education, USA
3. Arizona State University, Physics, USA
4. Lawrence Berkeley National Laboratory, USA

3:00 PM

(EMA-S14-025-2020) K-Means Clustering Analysis of Reflection High Energy Electron Diffraction Data on Epitaxially Grown Oxide Thin Films

S. R. Provence*¹; S. Thapa¹; M. Blanchet¹; T. Truttmann²; B. Jalan²; R. B. Comes¹

1. Auburn University, Dept. of Physics, USA
2. University of Minnesota, USA

3:15 PM

Break

Multiscale modeling

Room: Magnolia B/C

Session Chair: Payam Kaghazchi, Forschungszentrum Jülich GmbH

4:00 PM

(EMA-S14-026-2020) Prediction of oxygen reduction kinetics at fuel cell cathodes: First principles calculations (Invited)

E. A. Kotomin*¹; R. Merkle¹; Y. Mastrikov²; J. Maier¹

1. Max Planck Institute for Solid State Research, Germany
2. University of Latvia, Institute of Solid State Physics, Latvia

4:30 PM

(EMA-S14-027-2020) Manufacturing of Lithium Ion Batteries from a Multiscale Modeling Perspective (Invited)

A. A. Franco*¹

1. Universite de Picardie Jules Verne, LRCS, France

5:00 PM

(EMA-S14-028-2020) Shape-Selective Growth of Nanoscale Materials: Insights From Multi-Scale Theory and Simulation (Invited)

K. Fichthorn*¹

1. Pennsylvania State University, Chemical Engineering, USA

S16: Molecular, Inorganic, and Hybrid Ferroelectrics for Optoelectronic and Electronic Applications

Metal-organic Halide Perovskites

Room: Citrus B

Session Chair: Lauren Garten, U.S. Naval Research Lab

2:00 PM

(EMA-S16-001-2020) Theory and modeling of correlated ionic and electronic motions in hybrid organic-inorganic perovskites (Invited)

A. Kakekhani¹; A. M. Rappe*¹

1. University of Pennsylvania, Chemistry, USA

2:30 PM

(EMA-S16-002-2020) Electronic structure of the Ruddlesden-Popper analogs of methylammonium lead iodide

B. Phan*¹; S. R. Xie¹; P. Li²; S. R. Phillpot¹; R. G. Hennig¹

1. University of Florida, Materials Science and Engineering, USA
2. Wuhan University of Science and Technology, China

2:45 PM

(EMA-S16-003-2020) Tomographic Nano-Photovoltaic Properties of Halide PerovskitesJ. Song^{*1}; W. Linthicum¹; Y. Zhou²; B. Huey¹

1. University of Connecticut, Materials Science and Engineering, USA
2. Brown University, School of Engineering, USA

3:00 PM

(EMA-S16-004-2020) Ferroelectric poling of methylammonium lead iodide thin-filmsH. Röhm¹; T. Leonhard¹; M. J. Hoffmann¹; A. Colsmann^{*1}

1. Karlsruhe Institute of Technology, Material Research Center for Energy Systems, Germany

3:15 PM

Break

Beyond Metal-organic Halide Perovskites

Room: Citrus B

Session Chair: Alexander Colsmann, Karlsruhe Institute of Technology

3:45 PM

(EMA-S16-005-2020) Ferroelectric Inorganic Perovskite Oxides for Photovoltaic Applications (Invited)T. Fix^{*1}

1. CNRS and University of Strasbourg, ICube, France

4:15 PM

(EMA-S16-006-2020) All-oxide heterostructures based on solution-processed ferroelectric photoabsorbers for PV (Invited)P. Machado¹; I. Caño¹; M. Scigaj¹; M. Coll^{*1}

1. ICAMAB-CSIC, Superconducting Materials and Large Scale Nanostructures, Spain

4:45 PM

(EMA-S16-007-2020) Tunable quadruple-well ferroelectric van-der-Waals crystals (Invited)S. M. Neumayer¹; J. A. Brehm¹; L. Tao³; A. O'Hara³; M. Susner²; M. McGuire¹; P. Ganesh¹; S. T. Pantelides²; P. Maksymovych¹; N. Balke Wisinger^{*1}

1. Oak Ridge National Lab, USA
2. Air Force Research Lab, USA
3. Vanderbilt University, Dept. of Physics and Astronomy, USA

5:15 PM

(EMA-S16-008-2020) Accelerated Discovery of Efficient Solar Cell Materials Using Quantum and Machine-Learning MethodsK. Choudhary^{*1}

1. National Institute of Standards and Technology, MML, USA

Friday, January 24, 2020**S4: Complex Oxide Thin Film Materials Discovery: From Synthesis to Strain/Interface Engineered Emergent Properties****Novel Synthesis Techniques**

Room: Orange A

Session Chair: Christina Rost, University of Virginia

9:30 AM

(EMA-S4-033-2020) Exploring the Interplay Between Structure, Charge, and Spin in Entropy-Stabilized Oxides (Invited)J. Heron^{*1}

1. University of Michigan, USA

10:00 AM

(EMA-S4-034-2020) Tunability of native defect density through local configuration-controlled disorder in entropy-stabilized oxidesS. Chae^{*1}; Z. Wang²; L. Williams¹; S. Novakov⁴; S. Sung¹; P. B. Meisenheimer¹; R. Hovden¹; D. Schlom²; E. Kioupakis¹; J. Heron⁴

1. University of Michigan, Materials Science and Engineering, USA
2. Cornell University, USA
3. Cornell University, Department of Materials Science and Engineering, USA
4. University of Michigan, USA

10:15 AM

(EMA-S4-035-2020) Growth and Dielectric Characterization of Epitaxial Entropy-Stabilized Oxide Thin FilmsG. N. Kotsonis^{*1}; J. Maria¹

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

10:30 AM

(EMA-S4-036-2020) Atomic Layer Deposition: From molecular chemistry to nano-coatings of functional complex oxidesP. Yu¹; C. Bohr²; S. Beer²; S. Mathur²; A. Devi³; M. Coll^{*1}

1. ICAMAB-CSIC, Superconducting Materials and Large Scale Nanostructures, Spain
2. University of Cologne, Institute of Inorganic Chemistry, Germany
3. Ruhr-University Bochum, Inorganic Chemistry, Germany

10:45 AM

(EMA-S4-037-2020) Asynchronously Patterned Pulsed Sputtering (APPS) of Complex Materials from Elemental TargetsT. M. Borman^{*1}; M. D. Hossain¹; J. Hayden¹; J. Maria¹

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

11:00 AM

(EMA-S4-038-2020) Reactively-sputtered GaN using Hi-Power Impulse Magnetron SputteringJ. Nordlander^{*1}; K. Ferri¹; J. Maria¹; Z. Sitar²; R. Collazo²

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

S5: Mesoscale Phenomena in Ferroic Nanostructures: Beyond the Thin-Film Paradigm**Modeling, Simulation and Processing**

Room: Cypress C

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

8:30 AM

(EMA-S5-001-2020) Mesoscale Modeling of Light Transmission Modulation in Ceramics (Invited)L. Kuna^{*1}; J. Mangeri²; J. Wollmershauser²; E. Gorzkowski³; S. Nakhmanson⁴

1. University of Connecticut, Physics, USA
2. Institute of Physics, Czech Academy of Sciences, Dielectrics, USA
3. U.S. Naval Research Laboratory, USA
4. University of Connecticut, Materials Science and Engineering, USA

9:00 AM

(EMA-S5-002-2020) Investigation of Electrostatic Interactions in Ferroelectric-Dielectric Composites at MesoscaleK. Co¹; L. Kuna²; J. Mangeri³; P. Alpay¹; S. Nakhmanson^{*1}

1. University of Connecticut, Materials Science and Engineering, USA
2. University of Connecticut, Physics, USA
3. Institute of Physics, Czech Academy of Sciences, Dielectrics, Czechia

9:15 AM

(EMA-S5-003-2020) Domain wall variant-engineered dielectric meta-materials (Invited)J. E. Spanier^{*1}

1. Drexel University, Materials Science & Engineering, USA

10:00 AM

Break

Highlighted title = Young Professional presentation

*Denotes Presenter

10:30 AM**(EMA-S5-005-2020) Ferroelectric Domain Configurations and Switching Processes for Multiferroic BFO-based Epitaxial Thin Films (Invited)**J. Song¹; Y. Huang²; J. Steffes¹; R. Ramesh²; B. Huey^{*1}

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

11:00 AM**(EMA-S5-006-2020) Phase transformation in amorphous complex oxide films and routes towards epitaxial integration of BiFeO₃ on Si**A. Plokhikh^{*1}; I. Karateev²; M. Falmbigl¹; A. Vasiliev³; J. Lapano²; R. Engel-Herbert²; J. E. Spanier¹

1. Drexel University, Materials Science & Engineering, USA
2. The Pennsylvania State University, Materials Science and Engineering, USA
3. Kurchatov Institute, Russian Federation

11:15 AM**(EMA-S5-007-2020) Integration of Si(001) with Functional Oxides using Graphene-Oxide Interface Layer (Invited)**M. Spreitzer^{*1}; Z. Jovanovic¹; U. Gabor¹; D. Suvorov¹

1. Jozef Stefan Institute, Advanced Materials, Slovenia

11:45 AM**(EMA-S5-008-2020) Atomic-scale control of the domain structure, strain and chemistry in BaTiO₃ without the use of contact electrodes (Invited)**M. Barzilay¹; H. Elangoval¹; T. Qiu²; A. M. Rappe²; Y. Ivry^{*1}

1. Technion - Israel Institute of Technology, Department of Materials Science and Engineering / Solid State Institute, Israel
2. University of Pennsylvania, Department of Chemistry, USA

12:15 PM**(EMA-S5-009-2020) Aerosol Deposition and Characterization of Nano-structured Ergodic Relaxor Thick Films (Invited)**E. A. Patterson^{*1}; S. D. Johnson¹; E. Gorzkowski¹; S. E. Veras¹

1. US Naval Research Lab, USA

S6: Complex Oxide and Chalcogenide Semiconductors: Research and Applications**Low Dimensional Systems**

Room: Magnolia A

Session Chairs: Ryan Comes, Auburn University; Jayakanth Ravichandran, Columbia University

8:30 AM**(EMA-S6-008-2020) Synthesis and properties of chalcogenide heterostructures with designed nanoarchitecture (Invited)**S. Bauers^{*1}; D. Roberts¹; A. Zakutayev¹

1. National Renewable Energy Laboratory, USA

9:00 AM**(EMA-S6-009-2020) Topological insulator heterostructures: From axions to spintronics (Invited)**N. Samarth^{*1}

1. Pennsylvania State University, USA

9:30 AM**(EMA-S6-010-2020) Understanding Thermal Expansion in Layered Chalcogenides (Invited)**J. Rondinelli^{*1}

1. Northwestern University, USA

10:00 AM**Break****10:30 AM****(EMA-S6-011-2020) II-VI chalcogenide colloidal quantum dots for infrared applications (Invited)**P. Guyot-Sionnest^{*1}

1. University of Chicago, James Franck Institute, USA

11:00 AM**(EMA-S6-012-2020) Order and disorder in nanosized oxides and chalcogenides (Invited)**V. Wood^{*1}

1. ETH Zurich, Switzerland

11:30 AM**(EMA-S6-013-2020) Pyroelectricity in semiconducting complex oxide**J. Shi^{*1}

1. Rensselaer Polytechnic Institute, USA

11:45 AM**(EMA-S6-014-2020) A Semiconducting Quasi-2D Bismuth Oxide Perovskite**Z. Chen^{*1}; Y. Sun²; J. Shi¹

1. Rensselaer Polytechnic Institute, Materials science and engineering, USA
2. Shanghai Institute of Ceramics, China

12:00 PM**(EMA-S6-015-2020) Free-Standing 2D Oxide Nanomaterials with Exotic Physical Properties (Invited)**X. Wang^{*1}

1. University of Wisconsin-Madison, Materials Science and Engineering, USA

Advanced Characterization of Physical and Chemical Properties

Room: Magnolia A

Session Chairs: Andriy Zakutayev, National Renewable Energy Laboratory; Sage Bauers, National Renewable Energy Laboratory

2:00 PM**(EMA-S6-016-2020) Replica bands in FeSe monolayer on SrTiO₃ superconductors (Invited)**K. Zou^{*1}

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

2:30 PM**(EMA-S6-017-2020) Controlling light-matter interactions in chalcogenide-based topological semimetals: Novel physics to devices (Invited)**R. Agarwal^{*1}

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

3:00 PM**(EMA-S6-018-2020) Atomic Scale Elemental Analysis of Complex Oxide Thin Films and Heterostructures (Invited)**J. Ravichandran^{*1}

1. University of Southern California, Chemical Engineering and Materials Science, USA

3:30 PM**(EMA-S6-019-2020) A new family of anisotropic zinc-based semiconductors in a shallow energy landscape (Invited)**A. Bhutani¹; X. Zhang¹; P. Behera¹; R. Thiruvengadam¹; S. Murray¹; A. Schleife¹; D. Shoemaker^{*1}

1. University of Illinois, USA

S7: Superconducting and Magnetic Materials: From Basic Science to Applications

2D Correlated Materials I

Room: Cypress B

Session Chair: Michael Osofsky, Naval Research Laboratory

8:00 AM

(EMA-S7-010-2020) The magnetism of double perovskites containing 5d transition metal ions (Invited)

P. Woodward*¹

1. Ohio State University, Chemistry and Biochemistry, USA

8:30 AM

(EMA-S7-011-2020) Theory of the Quantum Spin Hall Effect in 2D Metals (Invited)

A. Zhao¹; Q. Gu²; R. Klemm*¹

1. University of Central Florida, Dept. of Physics, USA
2. University of Science and Technology Beijing, Department of Physics, China

9:00 AM

(EMA-S7-012-2020) Stanene: A possible topological superconductor (Invited)

J. Jia*¹

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

9:30 AM

(EMA-S7-013-2020) Interplay of Superconductivity, charge density wave and magnetism in layered 2D materials (Invited)

S. Li*¹; H. Wu¹; S. Michael²; K. Taddei³; C. Dela Cruz²; T. J. Haugan⁴; B. Lv¹

1. University of Texas, Dallas, Dept. of Physics, USA
2. U.S. Air Force Research Laboratory, USA
3. Oak Ridge National Laboratory, USA
4. U.S. Air Force Research Laboratory, AFRL/RQQM, USA

10:00 AM

Break

2D Correlated Materials II

Room: Cypress B

Session Chair: Jinfeng Jia, Shanghai Jiao Tong University

10:30 AM

(EMA-S7-014-2020) Superconductivity and Magnetic Ordering In 2D Materials and Heterostructures (Invited)

C. Lau*¹

1. The Ohio State University, Dept. of Physics, USA

11:00 AM

(EMA-S7-015-2020) Effect of interface on the physical properties of superconductor nanocomposites and magnetic/insulator/magnetic heterostructures (Invited)

J. Wu*¹

1. University of Kansas, USA

11:30 AM

(EMA-S7-016-2020) Transport spin polarization of Pt/ferromagnetic insulator bilayers (Invited)

M. Osofsky*¹; J. Prestigiacomo¹; P. Li²; Y. Suzuki²

1. Naval Research Laboratory, USA
2. Stanford University, Department of Applied Physics, USA

12:00 PM

(EMA-S7-017-2020) Ultrafast excitation of coherent magnons in 2D antiferromagnets (Invited)

X. Zhang*¹

1. University of Florida, Physics, USA

Tailoring Properties of Superconducting and Magnetic Materials

Room: Cypress B

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

2:00 PM

(EMA-S7-018-2020) Giant enhancement of critical current density at high field in superconducting (Li,Fe)OHFeSe films by Mn doping (Invited)

D. Li¹; J. Yuan¹; L. Yu¹; F. Zhou¹; K. Jin¹; X. Dong*¹; Z. Zhao¹

1. Institute of Physics, CAS, China

2:30 PM

(EMA-S7-019-2020) State-of-the-art Nb₃Sn Films by electro-chemical Deposition (Invited)

E. Barzi*¹

1. Fermi National Accelerator Lab, USA

3:00 PM

(EMA-S7-020-2020) Nano-size Magnetic Additions Contribution to YBa₂Cu₃O_{7-x} Flux Pinning

M. Sebastian*¹; N. Pierce²; I. Maartense³; G. Kozłowski²; T. J. Haugan³

1. UDRI, USA
2. Wright State University, Physics, USA
3. U.S. Air Force Research Laboratory, AFRL/RQQM, USA
4. Hohman Plating, USA

3:15 PM

(EMA-S7-021-2020) Raman Spectroscopy, Photocatalytic Degradation, and Stabilization of Atomically Thin Chromium Tri-iodide

D. L. Shcherbakov*¹; P. Stepanov¹; D. Weber¹; Y. Wang¹; J. Hu²; Y. Zhu²; K. Watanabe³; T. Taniguchi³; Z. Mao³; W. Windl⁴; J. Goldberger⁴; M. Bockrath¹; C. Lau⁵

1. The Ohio State University, USA
2. Pennsylvania State University, USA
3. National Institute for Materials Science, Japan
4. The Ohio State University, Dept. of Materials Science and Engineering, USA
5. The Ohio State University, Dept. of Physics, USA

Application of Superconducting Materials

Room: Cypress B

Session Chair: Emanuela Barzi, Fermi National Accelerator Lab

3:30 PM

(EMA-S7-022-2020) Update on Aircraft Electric Propulsion, and Impact of Superconducting and Cryogenic Technology (Invited)

T. J. Haugan*¹

1. U.S. Air Force Research Laboratory, AFRL/RQQM, USA

4:00 PM

(EMA-S7-023-2020) Material Selection, Structures, and Processing for the Safe Operation of Very High Magnetic Field Superconducting Accelerator Magnets (Invited)

C. J. Kovacs*¹; M. D. Sumption¹; E. Barzi¹; E. W. Collings¹; M. Majoros¹; A. Zlobin²; D. Turriani²

1. The Ohio State University, Materials Science and Engineering, USA
2. Fermi National Accelerator Laboratory, APS-TD, USA

4:30 PM

(EMA-S7-024-2020) Temperature dependence of specific heat capacity, thermal conductivity, and electrical resistivity of Fe-Co alloys (Invited)

G. Kozłowski*¹; M. Susner²; M. Farfel³; J. Horwath²; Z. Turgut²

1. Wright State University, Physics, USA
2. AFRL, Wright-Patterson AFB, USA
3. Materials Science and Engineering, Carnegie Mellon University, USA

Highlighted title = Young Professional presentation

*Denotes Presenter

S9: Ion Conducting Ceramics**Fundamental Processes and Characterizations in Ion Conducting Ceramics for Energy Storage**

Room: Citrus A

Session Chair: Jiamian Hu, University of Wisconsin-Madison

8:30 AM**(EMA-S9-009-2020) Study the Formation of Solid/Solid Interface using Synchrotron Probes (Invited)**Z. Chen*¹

1. Argonne National Lab, USA

9:00 AM**(EMA-S9-010-2020) Tuning oxygen diffusion kinetics and pathways in oxygen vacancy ordered heterostructures (Invited)**Y. Du*¹

1. Pacific Northwest National Laboratory, USA

9:30 AM**(EMA-S9-011-2020) Magnesium Diffusion in Fe₃O₄ films Grown on MgO (001)**L. Wangoh*¹; Z. Yang¹; L. Wang²; T. Kaspar³; S. Heald⁴; H. Zhou⁴; Z. Zhang⁴; V. Murugesan¹; Y. Du²

1. Pacific Northwest National Laboratory, EMSL, USA
2. Pacific Northwest National Laboratory, USA
3. Pacific Northwest National Laboratory, Physical and Computational Sciences Directorate, USA
4. Argonne National Laboratory, USA

9:45 AM**(EMA-S9-012-2020) Alkali ion transport in layered MnO₂ and its 2-D mesostructured analogs: Operando study of ion intercalation**S. T. Mixture*¹; M. Flint¹; P. C. Metz¹; A. Ladonis¹

1. Alfred University, MSE, USA

10:00 AM

Break

10:30 AM**(EMA-S9-005-2020) Phase-Field Modeling of Mesoscopic Ion Conduction in Solid Electrolytes (Invited)**J. Hu*¹

1. University of Wisconsin-Madison, Materials Science and Engineering, USA

Emerging Ion Conducting Ceramics: Oxide and Halide

Room: Citrus A

Session Chair: Zhenxing Feng, Oregon State University

11:00 AM**(EMA-S9-014-2020) Defect-driven Metal Oxide Electrodes for Metal Ion Batteries (Invited)**H. Xiong*¹

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

11:30 AM**(EMA-S9-015-2020) Soft Processing of Halide Perovskite Thin Films (Invited)**Y. Zhou*¹

1. Brown University, School of Engineering, USA

S11: New Directions in Sintering and Microstructure Control for Electronic Applications**New Directions in Sintering and Microstructure Control**

Room: Magnolia B/C

Session Chairs: John Blendell, Purdue University; Wolfgang Rheinheimer, Purdue University; Lauren Hughes, Lawrence Berkeley National Laboratory

8:30 AM**(EMA-S11-001-2020) In situ grain growth measurements reveal that grain boundary motion is anisotropic (Invited)**G. Rohrer*¹

1. Carnegie Mellon University, USA

9:00 AM**(EMA-S11-002-2020) Isolating Thermodynamic and Kinetic Contributions to Sintering of Zirconia using Model 2-Particle Experiments Incorporating Load Control (Invited)**S. J. Dillon*¹

1. University of Illinois Urbana-Champaign, USA

9:30 AM**(EMA-S11-003-2020) Solute-Drag versus Solute-Acceleration in Controlling Grain Growth of Alumina (Invited)**R. Moshe¹; R. Marder¹; P. Ghosh¹; L. Rudnik¹; W. D. Kaplan*¹

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

10:00 AM

Break

10:30 AM**(EMA-S11-004-2020) Flash Sintering and Electric Field Effects on Microstructural Evolution in ZnO Based Model Systems (Invited)**J. Nie¹; C. Hu¹; J. Luo*¹

1. University of California, San Diego, USA

11:00 AM**(EMA-S11-005-2020) Current rate controlled flash sintering of Gadolinium doped ceria for tailoring the microstructure (Invited)**T. Prasad Mishra¹; R. Ingraci Neto²; R. Raj²; O. Guillon¹; M. Bram*¹

1. Forschungszentrum Juelich, IEK-1, Germany
2. University of Colorado, Dept. of Mechanical Engineering, USA

11:15 AM**(EMA-S11-006-2020) Origin of high interfacial resistances in solid-state batteries**P. Xu¹; W. Rheinheimer*¹; S. Shuvo¹; L. Stanciu¹

1. Purdue University, School of Materials Engineering, USA

11:30 AM**(EMA-S11-007-2020) Cold sintering of YBa₂Cu₃O_{7-δ}**J. Cockburn²; R. Boston*¹

1. University of Sheffield, Materials Science and Engineering, United Kingdom
2. Knowles (UK), Hethel Engineering Centre, Chapman Way, Hethel, United Kingdom

11:45 AM**(EMA-S11-008-2020) Cold Sintering Process for CeO₂**T. Zaengle*¹; A. Ndayishimiye²; S. Bang²; S. Berbanoa²; K. Tsujii²; S. T. Mixture¹; C. Randall²

1. Alfred University, Dept. of Materials Science and Engineering, USA
2. Pennsylvania State University, Dept. of Materials Science and Engineering, USA

12:00 PM**(EMA-S11-009-2020) Microstructural Evolution of Cold Sintered Electroceramic Thick Films**R. A. Dorey*¹; E. Jakubczyk¹; U. Abubacar¹

1. University of Surrey, Mechanical Engineering Sciences, United Kingdom

12:15 PM

(EMA-S11-010-2020) $\text{LaCr}_{1-x}\text{Fe}_x\text{O}_3$ ($0 \leq x \leq 0.8$): A novel NTC ceramic for wide range of temperature sensingY. Wu¹; F. Guan^{*1}; X. Cheng²

1. Alfred University, Kazuo Inamori School of Engineering, New York State College of Ceramics, USA
2. University of Jinan, Shandong Provincial Key Lab. of Preparation and Measurement of Building Materials, China

S15: Functional Materials for Biological Applications**Synthesis, Functionalization, and Characterization of Biomaterials**

Room: Citrus B

Session Chairs: Julia Glaum, Norwegian University of Science and Technology; Jennifer Andrew, University of Florida

8:30 AM

(EMA-S15-001-2020) Biocompatibility of piezo-particulate composites for tissue regeneration (Invited)V. Jarkov¹; H. Khanbareh^{*1}

1. University of Bath, Mechanical Engineering, United Kingdom

9:00 AM

(EMA-S15-002-2020) Piezoelectric materials for autonomous, electric implantsJ. Glaum^{*1}; K. K. Poon¹; M. Zhuk¹; M. Rotan¹; M. Einarsrud¹

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

9:15 AM

(EMA-S15-003-2020) Tellurite-based glass, ceramics and optical waveguide developments for acoustic sensing in biological applicationsJ. Wang^{*1}

1. NSYSU, Taiwan

9:30 AM

(EMA-S15-004-2020) Piezoelectric Biomaterials and Biocompatible Ferroelectrics (Invited)B. Rodriguez^{*1}

1. University College Dublin, School of Physics, Ireland

10:00 AM

Break

10:30 AM

(EMA-S15-005-2020) Functionally-Designed Ceria Nanostructures for Cell Therapies and Drug Delivery (Invited)P. Koshy^{*1}; S. Mofarah¹; R. Mehmood¹; J. L. Yang²; C. C. Sorrell¹

1. UNSW, School of Materials Science and Engineering, Australia
2. UNSW Sydney, Lowy Cancer Centre, Australia

11:00 AM

(EMA-S15-006-2020) Materials for Phosphorus Recovery and SustainabilityJ. L. Jones^{*1}; Y. Zhi²; D. Call²; D. Knappe²

1. North Carolina State University, Dept. of Materials Science & Engineering, USA
2. North Carolina State University, Civil, Construction, and Environmental Engineering, USA

11:15 AM

(EMA-S15-007-2020) Magnetoelectric Nanomaterials and their Potential for Biomedical ApplicationsJ. Andrew^{*1}

1. University of Florida, USA

11:30 AM

(EMA-S15-008-2020) A Global perspective of Nanocerium surface Chemistry: Steps towards predictive Nano-engineering (Invited)S. Seal^{*1}; D. Sayle²; M. Molinari³

1. University of Central Florida, Mat. Sci. Eng, College of Medicine, USA
2. University of Kent, United Kingdom
3. University of Huddersfield, United Kingdom

Therapeutic, Diagnostic, and Biosensing Applications

Room: Citrus B

Session Chairs: Julia Glaum, Norwegian University of Science and Technology; Hamideh Khanbareh, University of Bath

2:00 PM

(EMA-S15-009-2020) Piezoelectric Biomaterials for Tissue Regeneration (Invited)T. L. Arinze^{*1}

1. New Jersey Institute of Technology, USA

2:30 PM

(EMA-S15-010-2020) Graphene Nanocomposite based Nano Materials Case Study: As an Electrochemical BiosensorA. Nemat¹; N. Ahmadi²; M. Bagherzadeh⁴; E. Nemat^{*3}

1. Sharif University of Technology, Department of Materials Science & Engineering, Islamic Republic of Iran
2. Science and Research Branch, Islamic Azad University, Department of Materials Engineering, Islamic Republic of Iran
3. Ecole de Technologie Supérieure, Mechanical Engineering, Canada
4. NSTRI, Material Research School, Islamic Republic of Iran

2:45 PM

(EMA-S15-011-2020) Biodegradable Piezoelectric Polymers for Medical Applications (Invited)T. D. Nguyen^{*1}

1. University of Connecticut, USA

Failure: The Greatest Teacher

Room: Orange B

Session Chair: Geoff Brennecke, Colorado School of Mines

5:00 PM

(EMA-FAIL-001-2020) Bulldozing through nanoscale mistakes (er... DISCOVERIES!) (Invited)B. Huey^{*1}

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

5:30 PM

(EMA-FAIL-002-2020) Sintering - Science, Art or Luck? (Invited)J. Blendell^{*1}

1. Purdue University, USA

ANTI HARASSMENT POLICY

Statement of Policy:

The American Ceramic Society (ACerS) is committed to ensuring that all ACerS activities are free from discrimination, harassment, and/or retaliation of any form. ACerS seeks to foster an environment promoting the free expression and exchange of scientific ideas. ACerS is committed to ensuring equality of treatment and opportunity and freedom from harassment for all members and participants regardless of race, gender, nationality, religious beliefs, gender identity, color, age, marital status, sexual orientation, disabilities, ancestry, personal appearance, or any other basis not relevant to scientific merit. Violators of this policy will be subject to discipline by the Society.

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Harassment includes, but is not limited to, offensive verbal comments related to gender, gender identity and expression, sexual orientation, disability, physical appearance, body size, race, national origin, religion, age, marital status, military status, or any other status protected by law; deliberate intimidation; stalking; following; harassing photography or recording; sustained disruption of talks or other events; and inappropriate physical contact. Attendees asked to stop any harassing behavior are expected to comply immediately.

Definition of Sexual Harassment:

Sexual harassment does not refer to occasional compliments or other generally acceptable social behavior. Sexual harassment refers to verbal, physical, and visual conduct of a sexual nature that is unwelcome and offensive to the recipient. By way of example, sexual harassment may include such conduct as sexual flirtations, advances, or propositions; verbal comments or physical actions of a sexual nature; sexually degrading words used to describe an individual; an unwelcome display of sexually suggestive objects or pictures; sexually explicit jokes; and offensive, unwanted physical contact such as patting, pinching, grabbing, groping, or constant brushing against another's body. Attendees asked to stop any sexually harassing behavior are expected to comply immediately.

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This policy applies to all attendees of ACerS meetings, events, and activities, including members, non-members, partnering organizations, volunteers, students, guests, staff, contractors, exhibitors, and all other participants related to ACerS events and activities.

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If you are being harassed, notice that someone else is being harassed, or have any other concerns, please contact an ACerS staff member immediately. ACerS staff can be identified by the official staff badge, their name and title. All complaints will be treated seriously and will be investigated promptly.

Names(s) and Contact Information Onsite to Report an Incident:

1. ACerS Executive Director, **Mark Mecklenborg**, ph 614-794-5829 / email: ExecDirector@ceramics.org
2. ACerS President, **Tatsuki Ohji** / email: ACerSPresident@ceramics.org

Disciplinary Action:

All reports of harassment will be directed immediately to the ACerS leadership team who may consult with and engage other ACerS staff, leaders and legal counsel as appropriate. Conference security and/or local law enforcement may be involved, as appropriate based on the specific circumstances. In response to a report of harassment, the ACerS leadership team or ACerS staff will take appropriate action. Such actions range from a verbal warning to ejection from the event without a refund. Repeat offenders may be subject to further disciplinary action, such as being banned from participating in future ACerS conferences or events and/or permanently expelled from ACerS membership.

The full policy can be viewed at: <https://ceramics.org/wp-content/uploads/2018/12/Anti-Harassment-Policy.pdf>



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11 Na 22.98976928 Sodium	12 Mg 24.305 Magnesium											13 Al 26.9815385 Aluminum	14 Si 28.0855 Silicon	15 P 30.973762 Phosphorus	16 S 32.06 Sulfur	17 Cl 35.453 Chlorine	18 Ar 39.948 Argon																												
19 K 39.0983 Potassium	20 Ca 40.078 Calcium	21 Sc 44.955912 Scandium	22 Ti 47.867 Titanium	23 V 50.9415 Vanadium	24 Cr 51.9961 Chromium	25 Mn 54.938045 Manganese	26 Fe 55.845 Iron	27 Co 58.933195 Cobalt	28 Ni 58.6934 Nickel	29 Cu 63.546 Copper	30 Zn 65.38 Zinc	31 Ga 69.723 Gallium	32 Ge 72.64 Germanium	33 As 74.9216 Arsenic	34 Se 78.96 Selenium	35 Br 79.904 Bromine	36 Kr 83.798 Krypton																												
37 Rb 85.4678 Rubidium	38 Sr 87.62 Strontium	39 Y 88.90585 Yttrium	40 Zr 91.224 Zirconium	41 Nb 92.90638 Niobium	42 Mo 95.96 Molybdenum	43 Tc (98.0) Technetium	44 Ru 101.07 Ruthenium	45 Rh 102.9055 Rhodium	46 Pd 106.42 Palladium	47 Ag 107.8682 Silver	48 Cd 112.411 Cadmium	49 In 114.818 Indium	50 Sn 118.71 Tin	51 Sb 121.76 Antimony	52 Te 127.6 Tellurium	53 I 126.90447 Iodine	54 Xe 131.293 Xenon																												
55 Cs 132.9054 Cesium	56 Ba 137.327 Barium	57 La 138.90547 Lanthanum	72 Hf 178.48 Hafnium	73 Ta 180.948 Tantalum	74 W 183.84 Tungsten	75 Re 186.207 Rhenium	76 Os 190.23 Osmium	77 Ir 192.217 Iridium	78 Pt 195.084 Platinum	79 Au 196.966569 Gold	80 Hg 200.59 Mercury	81 Tl 204.3833 Thallium	82 Pb 207.2 Lead	83 Bi 208.9804 Bismuth	84 Po (209) Polonium	85 At (210) Astatine	86 Rn (222) Radon																												
87 Fr (223) Francium	88 Ra (226) Radium	89 Ac (227) Actinium	104 Rf (261) Rutherfordium	105 Db (262) Dubnium	106 Sg (263) Seaborgium	107 Bh (264) Bohrium	108 Hs (265) Hassium	109 Mt (266) Meitnerium	110 Ds (271) Darmstadtium	111 Rg (272) Roentgenium	112 Cn (285) Copernicium	113 Nh (284) Nihonium	114 Fl (289) Flerovium	115 Mc (288) Moscovium	116 Lv (293) Livermorium	117 Ts (294) Tennessine	118 Og (294) Oganesson																												
<table border="1"> <tr> <td>58 Ce 140.116 Cerium</td> <td>59 Pr 140.90765 Praseodymium</td> <td>60 Nd 144.242 Neodymium</td> <td>61 Pm (145) Promethium</td> <td>62 Sm 150.36 Samarium</td> <td>63 Eu 151.964 Europium</td> <td>64 Gd 157.25 Gadolinium</td> <td>65 Tb 158.92535 Terbium</td> <td>66 Dy 162.5 Dysprosium</td> <td>67 Ho 164.93032 Holmium</td> <td>68 Er 167.259 Erbium</td> <td>69 Tm 168.93421 Thulium</td> <td>70 Yb 173.054 Ytterbium</td> <td>71 Lu 174.9668 Lutetium</td> </tr> <tr> <td>90 Th 232.03806 Thorium</td> <td>91 Pa 231.03688 Protactinium</td> <td>92 U 238.02891 Uranium</td> <td>93 Np (237) Neptunium</td> <td>94 Pu (244) Plutonium</td> <td>95 Am (243) Americium</td> <td>96 Cm (247) Curium</td> <td>97 Bk (247) Berkelium</td> <td>98 Cf (251) Californium</td> <td>99 Es (252) Einsteinium</td> <td>100 Fm (257) Fermium</td> <td>101 Md (258) Mendelevium</td> <td>102 No (259) Nobelium</td> <td>103 Lr (262) Lawrencium</td> </tr> </table>																		58 Ce 140.116 Cerium	59 Pr 140.90765 Praseodymium	60 Nd 144.242 Neodymium	61 Pm (145) Promethium	62 Sm 150.36 Samarium	63 Eu 151.964 Europium	64 Gd 157.25 Gadolinium	65 Tb 158.92535 Terbium	66 Dy 162.5 Dysprosium	67 Ho 164.93032 Holmium	68 Er 167.259 Erbium	69 Tm 168.93421 Thulium	70 Yb 173.054 Ytterbium	71 Lu 174.9668 Lutetium	90 Th 232.03806 Thorium	91 Pa 231.03688 Protactinium	92 U 238.02891 Uranium	93 Np (237) Neptunium	94 Pu (244) Plutonium	95 Am (243) Americium	96 Cm (247) Curium	97 Bk (247) Berkelium	98 Cf (251) Californium	99 Es (252) Einsteinium	100 Fm (257) Fermium	101 Md (258) Mendelevium	102 No (259) Nobelium	103 Lr (262) Lawrencium
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