NITIN P. PADTURE

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EDUCATION

- **Ph.D.**, Materials Science and Engineering, Lehigh University, Bethlehem, PA, 1991
- **M.S.**, Ceramic Engineering, Alfred University, Alfred, NY, 1987
- **B.Tech.**, Metallurgical Engineering, Indian Institute of Technology, Bombay, 1985

APPOINTMENTS

- **Brown University**, Providence, RI
  - **Otis E. Randall University Professor**, July 2017 - present
  - **Professor**, Materials Science, School of Engineering, January 2012 - present
  - **Director (Founding)**, Initiative for Sustainable Energy, January 2023 - present
  - **Director**, Institute for Molecular & Nanoscale Innovation, January 2014 - June 2021
  - **Visiting Professor**, Department of Physics, Indian Institute of Science, Research, and Education, Pune, India, September - December 2018 (sabbatical leave)
  - **Director**, Center for Advanced Materials Research, July 2012 - June 2014
- **The Ohio State University**, Columbus, OH
  - **College of Engineering Distinguished Professor**, Department of Materials Science & Engineering, January 2009 - December 2011
  - **Director (Founding)**, Center for Emergent Materials, a National Science Foundation (NSF) funded Materials Research Science & Engineering Center (MRSEC), September 2008 - September 2011
  - **Professor**, Department of Materials Science & Engineering, January 2005 - December 2011
  - **Professor (Courtesy Appointment)**, Department of Physics, September 2008 - September 2011
- **University of Connecticut**, Storrs, CT
  - **Professor**, Department of Metallurgy & Materials Engineering, August 2003 - January 2005
  - **Interim Department Head**, Department of Metallurgy & Materials Engineering, June 2003 - June 2004
  - **Visiting Associate Professor**, Materials Department, University of California, Santa Barbara, CA, January - July 2001 (sabbatical leave)
  - **Associate Professor**, Department of Metallurgy & Materials Engineering, August 1998 - August 2003
  - **Assistant Professor**, Department of Metallurgy & Materials Engineering, January 1995 - August 1998
- **National Institute of Standards and Technology (NIST)**, Gaithersburg, MD
  - **Postdoctoral Fellow**, Materials & Engineering Laboratory, August 1991 - December 1994 (Supervisor: Dr. Brian R. Lawn)

MAJOR AWARDS AND DISTINCTIONS

- **Fellow, Materials Research Society**, “for sustained and distinguished contributions to materials research in the areas of advanced composites, high-temperature coatings, and emerging photovoltaics, and outstanding leadership and service to the broader materials community,” 2023
- **Presidential Faculty Award**, “in recognition of a Brown University faculty member who is conducting especially important and innovative scholarship,” Brown University, 2021
- **Otis E. Randall University Professor Endowed Chair**, Brown University, 2017
- **Distinguished Alumnus Award,** “for excellent contributions in materials research and education,” Indian Institute of Technology, Bombay, 2017
- **Distinguished Service Award**, “for outstanding contributions towards the progress of the Institute,” Indian Institute of Technology, Bombay, 2012
- **College of Engineering Distinguished Professorship**, The Ohio State University, 2009
- **Fellow, American Association for the Advancement of Science**, “for outstanding contributions to the field of advanced ceramics and nanomaterials, particularly for understanding of processing and mechanical behavior of ceramic composites/coatings,” 2008
- **Richard M. Fulrath Award**, “for technical contributions relating to processing and characterization of advanced ceramics,” American Ceramic Society, 2007
- **Fellow, American Ceramic Society**, “for notable contributions to ceramic sciences,” 2005
- **Robert L. Coble Award for Young Scholars**, “for outstanding contributions to the understanding and education of the mechanical behavior of ceramics and composites,” American Ceramic Society, 1998
- **Outstanding Junior Faculty Award**, “for outstanding scholarly achievements and sustained professional growth,” School of Engineering, University of Connecticut, 1998
- **Olin Junior Faculty Development Award**, Olin Corporation, 1998
- **ONR Young Investigator Award Grant**, “for exceptional promise for doing creative research and teaching,” Office of Naval Research, 1996
- **Roland B. Snow Award**, “for best of show poster,” American Ceramic Society, 1990
- **Notable Lectures**:
  - -Keynote Lecture, 23rd International Conference on Solid State Ionics (SSI-23), Boston, MA 2022
  - -Presidential Faculty Award Public Lecture, Brown University, 2021 (YouTube recording)
  - -Keynote Lecture, 22nd International Conference on Solid State Ionics (SSI-22), Pyeongchang, S. Korea, 2019
  - -Opening Plenary Lecture, 8th International Coatings Symposium, Tsukuba, Japan, 2018
  - -Keynote Lecture, 46th IUPAC World Chemistry Congress, São Paulo, Brazil, 2017
  - -Opening Plenary Lecture, ThinFilms 2016 Conference, Singapore, 2016
  - -Institute Colloquium, Indian Institute of Technology, Bombay, India, 2016
  - -Inaugural Lecture, Provost’s Lecture Series, Brown University, 2016
  - -Invited Speaker, National Science Foundation Workshops on Fundamental Research Needs in Ceramics, Arlington, VA, 2016
  - -Plenary Lecture, 9th International Conference on High-Performance Ceramics, Guilin, China, 2015
  - -Keynote Lecture, 14th International European Ceramic Society Conference, Toledo,

Spain, 2015
-Opening Plenary Lecture, 54th Annual Congress of the Spanish Ceramic Society, Badajoz, Spain, 2014
-Keynote Lecture, 5th International Congress on Ceramics, Beijing, China, August 2014
-Opening Plenary Lecture, IVth Portuguese-Spanish Congress on Ceramics and Glasses, Aveiro, Portugal, 2011
-Keynote Lecture, European Congress on Advanced Materials and Processes EUROMAT Glasgow, United Kingdom, 2009
-Keynote Lecture, Richard M. Fulrath Award Symposium, MS&T '07 Conference, Detroit, MI, 2007
-Invited Speaker, Gordon Research Conferences, 2001, 2016, and 2018
-Invited Speaker, National Science Foundation Workshops on Fundamental Research Needs in Ceramics, Arlington, VA, 1997

CURRENT RESEARCH INTERESTS

Research interests are in the broad areas of renewable energy and energy efficiency. Specific current topics include the science and engineering of:

- halide perovskite solar cells and modules: synthesis/processing, characterization, properties, device-fabrication, stability, durability, and mechanical reliability;
- high-temperature advanced structural ceramics, composites, and coatings for high-efficiency, fuel-flexible gas-turbine engines for electricity generation and aircraft propulsion.

CURRENT TEACHING INTERESTS

- Introductory Materials Science and Engineering
- Science and Engineering of Composite Materials
- Mechanical Behavior of Materials

PUBLICATIONS*

- 260 refereed-journal papers published, ~5 manuscripts in-preparation or submitted
- 11 conference proceedings and preprints
- 9 patents awarded (8 *United States* and 1 *European*), and 3 patents pending
- 4 invited book chapters

CITATIONS AND IMPACT§

- 98 Google Scholar *h*-Index (98 publications with at least 98 citations each)
- >37,000 Google Scholar citations in total
- ~110 average citations/publication
- 96 publications with 100+ citations each
- Most number of citations for a publication: 5,220

PRESENTATIONS*

- 272 invited/keynote/plenary talks (98 international)
- 200+ contributed talks and posters at professional conferences

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* Please see Supplementary Information section for details.
§ Google Scholar profile

RESEARCH FUNDING RECORD (1995 - present)

- PI or co-PI on Total External Grants: >$42 million
- Total N.P. Padture Share of External Grants: ~$16 million
- Current External Research Grants:
  - N.P. Padture (PI), Y. Qi (co-PI); "Fundamental Studies of the Mechanical Behavior of Charged Interfaces;" Department of Energy (Basic Energy Sciences); $1,230,000; 36 months.
  - N.P. Padture (PI), J.J. Berry (co-PI), K. Zhu (co-PI); "Innovative Interfacial Engineering for Simultaneous Enhancement in Efficiency, Stability, and Reliability in Perovskite Solar Devices;" Department of Energy (Solar Energy Technology Office); $1,500,000; 42 months.
  - N.P. Padture (PI); "Emergent Opto-Mechanical and Electro-Mechanical Coupled Behavior of Halide Perovskites;" National Science Foundation (Division of Materials Research); $480,000; 48 months.
  - N.P. Padture (PI); "Synergistic Effects in the Environmental Degradation of Ceramic Coatings in Gas-Turbine Engines and its Mitigation;" Office of Naval Research; $480,000; 36 months.
  - B.W. Sheldon (PI), N.P. Padture (co-PI), J. Luo (co-PI), H. Gao (co-PI); "Toughening Mechanisms in Ceramic Nanocomposites;" Department of Energy (Basic Energy Sciences); $840,000; 36 months.

MAJOR PROFESSIONAL ACTIVITIES AND SERVICE

- **Member:**
  - American Ceramic Society (since 1985); Fellow (since 2005)
  - American Association for Advancement of Science (since 2002); Fellow (since 2008)
  - Materials Research Society (since 1989); Fellow (since 2023)
- **Editor:** *Acta Materialia* (Impact Factor: 9.209; ~150 manuscripts/year), 2017 - present
- **Editor:** *Scripta Materialia* (Impact Factor: 6.302; ~150 manuscripts/year), 2012 - present
- **Editorial Advisory Board Member:** *EcoMat* (Impact Factor: 12.213), 2019 - present
- **Editorial Advisory Board Member:** *ACS Energy Letters* (Impact Factor: 23.991), 2021 - present
- **Editor:** *Acta Materialia Book Series*, 2021 - 2024
- **Principal Editor:** *Journal of Materials Research*, 2002 - 2012
- **Associate Editor:** *Journal of the American Ceramic Society*, 1998 - 2012
- **Guest Co-Editor:** *Materials Research Society Bulletin*, December 2024 theme issue on "Halide Perovskite Solar Photovoltaics" with J.J. Berry and E. Ungar (in progress)
- **Guest Co-Editor:** *Physical Chemistry Chemical Physics*, October 2016 theme issue on "Hybrid Perovskite Materials and Solar Cells" with S.I. Seok and A. Walsh
- **Guest Co-Editor:** *Materials Research Society Bulletin*, October 2012 theme issue on "Thermal Barrier Coatings" with D.R. Clarke and M. Oechsner
- **Co-Editor:** "Coatings 2005," Proceedings of MS&T Meeting, Pittsburgh, PA, 2005
- **Co-Editor:** "Thermal Barrier Coatings," Symp. Proc. MRS Fall Meeting, Boston, MA, 2000
- **Member:** Publications Committee, the American Ceramic Society, 2014 - 2019

- ***Ad Hoc* Reviewer for 60+ Journals**

- **Organizer:** "Subra Suresh Symposium at the Frontiers of Technology and Society: Sustainable Energy 2024, Brown University, Providence, RI, 2024
- **Lead Co-Organizer**: "Workshop on Sustainable Energy," Brown University, Providence, RI, 2023
- **Co-Organizer:** "Workshop on Ceramic Materials in Extreme Environments: New Processing Tools and Data-Driven Approaches (virtual)," MRS/ACerS, 2023
- **Lead Co-Organizer:** "nanoGe Fall Meeting (Virtual)," Fundacío Scito, 2021
- **Organizer:** "International Materials Symposium," Brown University, Providence, RI, 2018
- **Lead Co-Organizer:** "International Workshop on Mechanics-Based Design of Advanced Materials," Perth, Australia, 2008
- **Lead Co-Organizer:** "Coatings 2005" Symposium, MS&T Meeting, Pittsburgh, PA, 2005
- **Lead Co-Organizer:** "Thermal Barrier Coatings" Symposium, MRS Fall Meeting, Boston, MA, 2000
- **Co-Organizer:** "Materials Genome Initiative," Brown University, Providence, RI, 2012
- **Co-Organizer:** "Solution Process Technology of Inorganic Films, Nanostructures and Functional Materials" Symposium, ICMAT, Singapore, 2011
- **Co-Organizer:** "International Workshop on Novel Magnetic Materials," Dresden, Germany, 2010
- **Co-Organizer:** "Advanced Ceramic Coatings: Processing, Properties, and Applications" Symposium, PACRIM 8, Vancouver, Canada, 2009
- **Organizer:** "Nano Ceramics," ACerS Annual Meeting, Indianapolis, IN, 1996
- **Organizer:** "*In Situ* Toughened Materials," ACerS Fall Meeting, New Orleans, LA, 1995
- **Program Co-Chair:** Basic Science Division, ACerS Annual Meeting, Indianapolis, IN, 2001
- **Program Co-Chair:** Basic Science Division, ACerS Fall Meeting, San Francisco, CA, 2000
- **Member:** International Advisory Committee, Thermal Barrier Coatings VI, Engineering Conferences International, Irsee, Germany, 2022
- **Member:** International Advisory Board, International Conferences Materials and Technologies (CIMTEC 2020), Montecatini Terme, Italy, 2020
- **Member:** Scientific Advisory Committee, 12th International Summit on Organic and Hybrid Solar Cell Stability (ISOS-12), Karlsruhe, Germany, 2019
- **Member**: Program Committee, Solid State Ionics-22, PyeongChang, S. Korea, 2019
- **Member:** International Advisory Board, International Conferences Materials and Technologies (CIMTEC 2018), Salsomaggiore Terme, Italy, 2018
- **Member:** International Advisory Committee, Thermal Barrier Coatings V, Engineering Conferences International, Irsee, Germany, 2018
- **Member:** International Advisory Committee, E-MRS Fall Meeting, Warsaw, Poland, 2012
- **Member:** International Advisory Committee, Thermal Barrier Coatings III, Engineering Conferences International, Irsee, Germany, 2011
- **Member:** International Advisory Board, International Conferences Materials and Technologies (CIMTEC 2010), Montecatini Terme, Italy, 2010

- **Member:** International Scientific Advisory Committee, 3rd International Congress on Ceramics (ICC3), Osaka, Japan, 2010
- **Member:** International Advisory Committee, Thermal Barrier Coatings II, Engineering Conferences International, Irsee, Germany, 2007
- **Member:** International Advisory Board, International Symposium on Advanced Ceramics and Technology for Sustainable Energy Applications, Kenting, Taiwan, 2007
- **Member:** International Advisory Board, EnCera04 Conference, Osaka, Japan, 2004
- **Member:** Executive Committee, Basic Science Division, American Ceramic Society, 1998 - 2002
- **Discussion Leader:** Gordon Research Conferences, Solid State Studies in Ceramics, 2010, 2024
- **Session Chair:** Chaired ~60 technical sessions at various professional conferences
- **Reviewer for Proposals:** Air Force Office of Scientific Research, Australian Research Council, Austrian Science Fund, Volkswagen Foundation, Civilian Research and Development Foundation, Department of Energy, National Institutes of Health, National Science Foundation
- **Review Panel/Site-Visit Member:** Department of Energy, National Science Foundation, Austrian Science Fund
- **Commissioner:** Atomic Energy Commission, State of Rhode Island, 2015 - 2020
- **Member:** External Advisory Board, Carnegie Mellon University NSF Materials Research Science & Engineering Center (MRSEC), 2009 - 2014

Service at Brown University

- **Founding Director:** Initiative for Sustainable Energy (ISE), 2023 - present
- **Chair:** School of Engineering Faculty Search Committee, 2023 - present
- **Director:** Institute for Molecular and Nanoscale Innovation (IMNI), 2014 - 2021
- **Director:** Center for Advanced Materials Research, 2012 - 2014
- **Director:** NanoTools Core Research Facility, 2014 - 2021
- **Chair:** ISE Executive Committee, 2023 - present
- **Chair:** Physical Sciences Core Research Infrastructure Committee, 2017 - 2021
- **Chair:** Engineering New Building Laboratory Strategy & Design Committee, 2014 - 2017
- **Chair:** IMNI Executive Committee, 2014 - 2021
- **Member:** Climate Leadership Group, 2024- present
- **Member:** Innovation & Design Hub Committee, School of Engineering, 2024 - present
- **Member:** Office of Research Integrity Committee, 2020 - 2023
- **Member:** School of Engineering Executive Committee, 2012 - 2013; 2023 - present
- **Member:** University Core Research Infrastructure Executive Committee, 2017 - 2021
- **Member:** Engineering New Building Relocation Committee, 2015 - 2018
- **Member:** Provost’s Committee on Chairs & Directors Communications, 2016 - 2017
- **Member:** School of Engineering Faculty Search Committee, 2012

- **Member:** School of Engineering Associate Dean Search Committee, 2012
- **Member:** School of Engineering Graduate Committee, 2012
- **Advisor:** School of Engineering Honors Program, 2022 – 2023

Service at The Ohio State University

- **Founding Director:** NSF-Funded Materials Research Science & Engineering Center (MRSEC; $17 million), 2008 - 11
- **Chair:** MRSEC Executive Committee, 2008 - 11
- **Chair:** Departmental Faculty Search Committee, 2006 - 07
- **Member:** Executive Committee, OSU Materials Week Conferences, 2008 - 11
- **Member:** Departmental Laboratory and Facilities Committee, 2005 - 06
- **Member:** Departmental Outreach Team, 2006 - 08
- **Member:** Departmental Graduate Studies Committee, 2006 - 11
- **Member:** Departmental Long-Range Planning Team, 2005 - 11
- **Member:** Departmental Chair's Advisory Council, 2008 - 11
- **Member:** College of Engineering Research Planning Committee, 2005 - 11

Service at University of Connecticut

- **Interim Department Head:** Department of Materials Science & Engineering, 2003 - 2004
- **Chair:** Departmental Alumni Relations and Awards Committee, 2003 - 04
- **Chair:** Departmental Undergraduate Program Committee, 2001 - 02
- **Chair:** Departmental Faculty Search Committees, 1999 - 2000; 2002 - 03
- **Chair:** Departmental Graduate Program Committee, 1998 - 2000; 2001 - 03
- **Chair:** Departmental Colloquium Committee, 1995 - 96
- **Member:** School of Engineering Academic Council, 2003 - 04
- **Member:** Institute of Materials Science Faculty Advisory Committee, 2003 - 04
- **Member:** Departmental Promotion, Tenure & Reappointment Committee, 2004 - 05
- **Member:** Departmental Faculty Search Committees, 1998 - 99, 2001
- **Member:** School of Engineering Graduate Committee, 1998 - 2001
- **Member:** School of Engineering Department-Head Evaluation Committee, 2001
- **Member:** School of Engineering Department-Head Search Committee, 1998
  Faculty Advisor: Materials Research Society Student Chapter at the University of Connecticut (1995 - 2004)

Supplementary Information

LIST OF RESEARCH ADVISEES

Current Advisees

Ph.D.

- Ms. Meaghan Doyle

- Ms. Madhuja Layek
- Mr. Christopher Louzon
- Ms. Waad Magram
- Mr. Anush Ranka

B.S. (Research)

- Ms. Alicia Chandler
- Ms. Madison Dodd

Post-Doctoral Scholars

- Dr. (Ms.) Cristina López-Pernía

Staff

- Dr. (Mr.) Hector F. Garces

Past Advisees

M.S. (Thesis)

- Dr. (Mr.) David C. Pender, M.S. 1997; Employer: Viridian Glass, Macquaire Links, Australia
- Mr. Hui Ye, M.S. 1997; Employer: Ingageapp, Beijing, China
- Mr. Robert P. Jensen, M.S. 1998; Employer: Taniobis GmbH, Needham, MA
- Dr. (Ms.) Huiwen Xu, M.S. 1999; Employer: Applied Materials, Santa Clara, CA
- Dr. (Ms.) Swarnima Deshpande, M.S. 1999; Employer: unknown
- Mr. Shixiao Zhou, M.S. 1999; Employer: unknown
- Mr. Scott C. Thompson, M.S. 2001; Employer: CoorsTek, Golden, CO
- Ms. Anjali Pandit, M.S. 2002; Employer: University of Nottingham, UK
- Mr. Pavitra Bansal, M.S. 2002; Employer: Engr. Analysis Services, Nottingham, UK
- Ms. Xiaotong Wang, M.S. 2004; Employer: Intel, Chandler, AZ
- Mr. Jason Tresback, M.S. 2005 and M.S. 2008; Employer: Harvard Univ., Cambridge, MA
- Ms. Rebecca Cochran, M.S. 2006; Employer: Owens-Corning, Granville, OH
- Dr. (Mr.) Andrew Gledhill, M.S. 2006; Employer: Diamond Innovations, Worthington, OH
- Dr. (Ms.) Tengfei Jiang, M.S. 2009; Employer: University of Central Florida, Orlando, FL (Assistant Professor)
- Ms. Caitlin Toohey, M.S. 2011; Employer: Portland Public Schools, Portland, OR
- Dr. (Ms.) Yu Liu, Sc.M. 2016; Employer: The Climate Corporation, San Francisco, CA (Technical Staff)
- Mr. Connor Watts, Sc.M. 2019; Employer: U.S. Naval Reactors HQ, Washington DC
- Mr. Ruibang Yi, Sc.M. 2023; Employer: Georgia Institute of Technology (Ph.D. Student)

Ph.D.

- Dr. (Ms.) Juthamas 'June' Jitcharoen, Ph.D. 1999
  Thesis Title: "Contact-Damage Resistance in Alumina Based Ceramics with Elastic-Modulus-Graded Surfaces"
  Employer: Ubon Ratchathani University, Thailand (Professor and Vice President)
- Dr. (Mr.) David C. Pender, Ph.D. 1999

Thesis Title: “Ceramics with Graded Surfaces for Contact Damage Resistance”
Employer: Viridian Glass, Macquaire Links, Australia (General Manager)

- Dr. (Mr.) Kevin W. Schlichting, Ph.D. 2000
  Thesis Title: “Failure Modes in Plasma-Sprayed Thermal Barrier Coatings”
  Employer: Pratt & Whitney, East Hartford, CT (Associate Director)
- Dr. (Ms.) Jie Wu, Ph.D. 2004
  Thesis Title: “Novel Low-Thermal Conductivity Ceramics for Thermal Barrier Coatings”
  Employer: Kennametal, Pittsburgh, PA (Senior Technical Staff)
- Dr. (Mr.) Xuezheng Wei, Ph.D. 2004
  Thesis Title: “Hydrothermal Synthesis of Barium Strontium Titanate (BST) Powders, and Continuous and Patterned Thin Films”
  Employer: Schlumberger, Huston, TX (Senior Technical Staff)
- Dr. (Mr.) Amol D. Jadhav, Ph.D. 2007
  Thesis Title: “Processing, Characterization, and Properties of Thermal Barrier Coatings”
  Employer: AMD, Santa Clara, CA (Principal Member of Technical Staff)
- Dr. (Ms.) Aysegul Aygun, Ph.D. 2008
  Thesis Title: “Novel Thermal Barrier Coatings (TBCs) that are Resistant to High-Temperature Attack by CaO-MgO-Al_2O_3-SiO_2 (CMAS) Glassy Deposits”
  Employer: EAG Laboratories, San Jose, CA (Senior Technical Staff)
- Dr. (Mr.) Edward D. Herderick, Ph.D. 2009 IGERT Fellow
  Thesis Title: “Synthesis, Characterization, and Property-Measurements of Novel Metal-Oxide-Metal Heterojunction Nanowires with Ferroelectric Functionality”
  Employer: NSL Analytical Services Inc., Cleveland, OH (Vice President)
- Dr. (Ms.) Julie R. Drexler, Ph.D. 2011
  Thesis Title: “Thermal Barrier Coatings Resistant to Glassy Deposits”
  Employer: Boeing, Everett, WA (Technical Staff)
- Dr. (Mr.) Andrew D. Gledhill, Ph.D. 2011
  Thesis Title: “Thermal Barrier Coatings Chemo-Mechanically Resistant to Molten Ashes”
  Employer: Diamond Innovations, Worthington, OH (Technical Staff)
- Dr. (Mr.) Yuanyuan ‘Alvin’ Zhou, Ph.D. 2016
  Thesis Title: “Solution Crystallization, Microstructural Characterization, and Photovoltaic Performance of Trihalide Perovskites” **[Outstanding Thesis Award]**
  Employer: Hong Kong University of Science and Technology, Hong Kong (Associate Professor)
- Dr. (Ms.) Amanda R. Krause, Ph.D. 2016 GAANN Fellow
  Thesis Title: “Degradation and Mitigation Mechanisms of Molten Silicate Deposits in Thermal and Environmental Barrier Coatings” **[Outstanding Teaching Assistant Award]**
  Employer: Carnegie Mellon University, Pittsburgh, PA (Assistant Professor)
- Dr. (Mr.) Lin Zhang, Ph.D. 2017
  Thesis Title: “Processing, Mechanical Properties, and Oxidation Behavior of Ultra-High Temperature Ceramic Composites”
  Employer: St. Gobain, China (Technical Staff)
- Dr. (Ms.) Laura R. Turcer, Ph.D. 2020 Hibbitt Fellow
  Thesis Title: “Next-Generation Thermal/Environmental Barrier Coatings for Ceramic-Matrix Composites” **[Outstanding Teaching Assistant Award]**

Employer: Saint-Gobain Ceramics, Northborough, MA (Technical Staff)

- Dr. (Mr.) Srinivas K. Yadavalli, Ph.D. 2021
  Thesis Title: "Grain-Boundary Studies and Mechanical Behavior of Halide Perovskites for Solar Cells"
  Employer: Indian Institute of Technology, Kanpur, India (Assistant Professor)
- Dr. (Mr.) Qizhong Wang, Ph.D. 2021
  Thesis Title: "Processing and Mechanical Behavior of Nanocomposites of Ceramics and Carbon-Nanostructures"
  Employer: QuantumScape, San Jose, CA (Technical Staff)
- Dr. (Mr.) Min Chen, Ph.D. 2021
  Thesis Title: "The Exploration of Lead-Free Halide Perovskite Materials for Solar Cells" **[Outstanding Thesis Award]**
  Employer: PeroNova LLC, Los Angeles, CA (Co-Founder and CTO)
- Dr. (Mr.) Zhenghong 'John' Dai, Ph.D. 2022
  Thesis Title: "Mechanical Behavior of Metal Halide Perovskites for Solar Cell Reliability" **[Outstanding Thesis Award; Findley Award for Best Paper]**
  Employer: Lam Research, Portland, OR (Technical Staff)

<u>Post-Doctoral Researchers</u>

- Dr. (Mr.) Vijay V. Pujar, 1996-98; Employer: UTC Aerospace Systems, San Diego, CA (Technical Fellow)
- Dr. (Ms.) Tania (Bhatia) Kashyap, 1999-2002; Employer: Pratt & Whitney, East Hartford, CT (Senior Director)
- Dr. (Mr.) Fang Wu, 2002-03; Employer: Chengdu University, China (Research Associate)
- Dr. (Mr.) Jing-Jong Shyue, 2005-06; Employer: Academia Sinica and National Taiwan University, Taiwan (Professor)
- Dr. (Ms.) Rosalía Poyato, 2004-06 Fulbright Ramon y Cajal Scholar; Employer: CSIC Institute for Materials Science and University of Seville, Spain (Senior Staff)
- Dr. (Mr.) Sung Sic Hwang, 2005-06 Korean Government Scholar; Employer: SKC Solmics, S. Korea (Director of R&D)
- Dr. (Mr.) Alexander L. Vasiliev, 2004-07; Employer: Kurchatov Institute, Russia (Division Head)
- Dr. (Mr.) Michael D. Rauscher, 2008; Employer: Cornerstone Research Group, Dayton, OH (Technical Staff)
- Dr. (Ms.) Dongsheng Li, 2007-09; Employer: Pacific Northwest National Laboratory, Richland, WA (Senior Staff)
- Dr. (Mr.) Chun-hu Chen, 2010-12; Employer: National Sun Yat-sen University, Taiwan (Professor)
- Dr. (Mr.) Kongara M. Reddy, 2008-12; Employer: Boise State University, Boise, ID (Research Associate)
- Dr. (Ms.) Bilge S. Senturk, 2012-14; Employer: unknown
- Dr. (Ms.) Wenwen Wu, 2013-14; Employer: Shaanxi Normal University, China (Professor)
- Dr. (Mr.) Onkar Game, 2015-17; Employer: Indian Institute of Technology, Indore (Assistant Professor)

- Dr. (Ms.) Cristina Ramírez, 2015-17; Employer: Institute of Ceramics and Glass, Spain (Staff Scientist)
- Dr. (Mr.) Yi Zhang, 2017-18; Employer: Ecole Polytechnique Federal Lausanne, Switzerland (Postdoctoral Researcher)
- Dr. (Mr.) Hamidreza Khassaf, 2017-19; Employer: ASML, Wilton, CT (Senior Engineer)
- Dr. (Ms.) Anh Tran, 2018-19; Employer: Cognosos, Atlanta, GA (Research Engineer)
- Dr. (Mr.) Jue Gong, 2018-19; Employer: University of Electronic and Science and Technology, China (Associate Professor)
- Dr. (Ms.) Hadas Sternlicht, 2018-21 Hibbitt Postdoctoral Fellow; Employer: Lawrence Berkeley National Laboratory, Berkeley, CA (Postdoctoral Researcher)
- Dr. (Mr.) Christos E. Athanasiou, 2018-22; Employer: Georgia Institute of Technology, Atlanta, GA (Assistant Professor)
- Dr. (Mr.) In Seok Yang, 2021-23; Employer: Samsung Electronics, Seoul, S. Korea (Senior Technical Staff)
- Dr. (Mr.) Zhenghong 'John' Dai, 2022-24; Employer: Lam Research, Portland, OR (Technical Staff)

Assistant Professor (Research)

- Dr. (Mr.) Yuanyuan 'Alvin' Zhou, Ph.D. 2016-20; Employer: Hong Kong University of Science and Technology, Hong Kong (Associate Professor)

Visiting International Scientists/Faculty/Students

- Prof. (Mr.) Angel L. Ortiz, 1999-2000, from Universidad de Extremadura, Spain
- Prof. (Mr.) Oscar Borrero, 2003-04; from Universidad de Extremadura, Spain
- Dr. (Mr.) Alexander Vasiliev, 2014-15, from Kruchatov Institute, Russia
- Mr. Xing Li (Ph.D. Student), 2014-15, from Beijing Institute of Technology, China
- Dr. (Ms.) Yingxia Zong (Ph.D. Student), 2016-18, from Qingdao University, China
- Dr. (Mr.) Tanghao Liu (Ph.D. Student), 2016-17, from Peking University, China
- Prof. Dan (Ms.) Liu, 2017-18, from Tianjin Polytechnic University, China
- Dr. (Mr.) Qingshun Dong (Ph.D. student), 2018-19; from Tsinghua University, China
- Dr. (Mr.) Mingyu Hu (Ph.D. Student), 2018-20, from Kunming University of Science & Technology, China
- Dr. (Ms.) Arundhati Sengupta (Postdoctoral Researcher), 2019-20; from Indian Institute for Science, Education & Research, India

LIST OF PUBLICATIONS

Refereed Journal Papers (¶ papers with 100+ citations each on Google Scholar)

1. N.P. Padture and L.D. Pye, "Crystallization Kinetics of a Glass in the Y_2O_3-Fe_2O_3-B_2O_3 System using Differential Thermal Analysis," *Journal of Materials Science Letters*, **10**, 269-71 (1991).
DOI: 10.1007/BF00735654

2. N.P. Padture and L.D. Pye, "Glass Formation and Structure of Glasses in the Y_2O_3-Fe_2O_3-B_2O_3 System," *Glastechnische Berichte*, **64**, 128-36 (1991). Link

3. N.P. Padture and H.M. Chan, "Influence of Grain Size and Degree of Crystallization of Intergranular Glassy Phase on the Mechanical Behaviour of a Debased Alumina," *Journal of Materials Science*, **29**, 2711-15 (1991).
DOI: 10.1007/BF02387741
4. S.J. Bennison, N.P. Padture, J.L. Runyan, and B.R. Lawn, "Flaw-Insensitive Ceramics," *Philosophical Magazine Letters,* **64**, 191-95 (1991).
DOI: 10.1080/09500839108214542
5. N.P. Padture and H.M. Chan, "On the Constrained Crystallization of Synthetic Anorthite ($CaO.Al_2O_3.2SiO_2$)," *Journal of Materials Research,* **7**, 170-77 (1992).
DOI: 10.1017/S0884291400096837
6. N.P. Padture and H.M. Chan, "Improved Flaw Tolerance in Alumina Containing 1 vol% Anorthite *via* Crystallization of the Intergranular Glass," *Journal of the American Ceramic Society*, **75**, 1870-75 (1992).
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LIST OF INVITED TALKS PRESENTED[#]

1. "Crack-Resistance and Strength Properties of Some Alumina-Based Ceramics," National Institute of Standards and Technology, Gaithersburg, MD, September 1991.
2. "Toughening of Structural Ceramics," Ohio University, Athens, OH, May 1992.
3. "Flaw Tolerance and Toughness-Curves in Two-Phase Ceramics," Ames Laboratory, Iowa State University, Ames, IA, February 1993.
4. "Flaw Tolerance and Toughness-Curves in Two-Phase Ceramics," Johns Hopkins University, Baltimore, MD, March 1993.
5. "Toughness-Curves in Two-Phase Ceramic Composites: Model and Experiment," Annual Meeting of the American Ceramic Society, Cincinnati, OH, April 1993.
6. "Microstructural Tailoring of Structural Ceramics: Toughness and Contact Damage," General Electric Corporate R&D Laboratory, Schenectady, NY, September 1993.
7. "Microstructural Tailoring of Structural Ceramics: Toughness and Contact Damage," Michigan Technological University, Houghton, MI, October 1993.
8. "Contact Fatigue in Polycrystalline Ceramics," DuPont Central Research and Development, Wilmington, DE, March 1994.
9. "Microstructural Design of Structural Ceramics: Toughness and Contact Damage," University of Connecticut, Storrs, CT, August 1994.
10. "Microstructural Design of Structural Ceramics: Toughness and Contact Damage," Northwestern University, Evanston, IL, October 1994.
11. "*In Situ*-Toughened Silicon Carbide," Fall Meeting of the American Ceramic Society, Los Angeles, CA, October 1994.
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13. "Microstructural Effects in the Machining of Ceramics," Supergrind '95, Industrial Diamond Association of America, Storrs, CT, November 1995.
14. "Novel Contact-Damage Resistant Ceramics," Air Force Office of Scientific Research Review Meeting, Hueston Woods, OH, May 1996.
† **15.** "*In Situ*-Toughened Silicon Carbide: Microstructural Tailoring and Mechanical Behavior," International Conference on Advances in Metallurgy, Bangalore, India, July 1997.
16. "Microstructural Tailoring of Ceramics for Mechanical and Thermal Properties," Meeting of the CT Chapter of the Metals/Materials/Minerals Society, Cromwell, CT, March 1997.
17. "Novel Concepts in Contact-Damage-Resistant Ceramics and Thermal-Barrier Ceramics," National Institute of Standards and Technology, Gaithersburg, MD, March 1997.
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Science Foundation Workshop on Fundamental Research Needs in Ceramics, Arlington, VA, June 1997.

21. "*In Situ* Processing and Mechanical Behavior of Novel Ceramics," Office of Naval Research Review Meeting, Woods Hole, MA, June 1997.

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23. "Tailoring of Ceramic Micro-and Macro-Structures for Mechanical Properties," Purdue University, West Lafayette, IN, November 1997.

24. "Novel Concepts in Contact-Damage-Resistant Ceramics and Thermal-Barrier Ceramics," New England Chapter of the American Ceramic Society, Auburn, MA, December 1997.

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26. "Microstructural Tailoring of Ceramics for Mechanical and Thermal Properties," State University of New York, Stony Brook, NY, April 1998.

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† **32.** "Microstructural Tailoring of Ceramics for Mechanical Properties," VIth National Conference on the Mechanical Properties of Materials, Badajoz, Spain, June 1998.

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36. "Tailoring of Micro- and Macro-Structure of Ceramics for Mechanical Properties," Army Research Laboratory, Aberdeen Proving Grounds, MD, October 1999.

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46. “Novel Concepts in Thermal Barrier Coatings,” Gordon Conference on Solid State Studies in Ceramics, Meriden, NH, August 2001.
47. “Fundamental Studies in Novel Contact-Damage-Resistant Ceramics,” Air Force Office of Scientific Research Review Meeting, Snowbird, UT, August 2001.
48. “Advanced Thermal Barrier Coatings for Industrial Gas-Turbine Engines,” Advanced Gas Turbine Systems Research Materials Workshop, Greenville, SC, October 2001.
† **49.** “Novel Concepts in Thermal Barrier Coatings for Gas-Turbine Engines,” Indian Institute of Technology, Bombay, India, January 2002.
50. “Chemical Solution Precursor Routes to Nanoceramics,” Office of Naval Research and Defense Advanced Research Projects Agency Workshop, Arlington, VA, March 2002.
51. “Contact-Damage-Resistant Si-Based Ceramics,” Annual Meeting of the American Ceramic Society, St. Louis, MO, May 2002.
52. “Processing and Mechanical Properties of Nanoceramics,” Defense University Research Initiative on Nanotechnology Review Meeting, Cambridge, MA, April 2002.
53. “Towards Durable Thermal Barrier Coatings with Novel Microstructures Deposited Using Solution-Precursor Plasma Spray”, Office of Naval Research Review Meeting, Woods Hole, MA, May 2002.
54. “Novel Concepts in Contact-Damage- and Wear-Resistant Ceramics,” Air Force Office of Scientific Research Review Meeting, Bar Harbor, ME, August 2002.
† **55.** “Graded Ceramics,” Functionally Graded Materials 2002, Beijing, China, October 2002.
† **56.** “Next Generation Ceramic Thermal Barrier Coatings,” Kyoto Institute of Technology, Kyoto, Japan, October 2002.
† **57.** “Novel Concepts in Ceramic Thermal Barrier Coatings,” National Institute of Advanced Industrial Science and Technology, Synergy Ceramics, Nagoya, Japan, October 2002.
† **58.** “Novel Concepts in Contact-Damage Resistant Ceramics,” National Institute for Materials Science, Tsukuba, Japan, October 2002.
† **59.** “Next Generation Ceramic Thermal Barrier Coatings,” Instituto de Ceramica y Vidrio, Madrid, Spain, March 2003.
† **60.** “Next Generation Ceramic Thermal Barrier Coatings,” Universidad de Sevilla, Seville, Spain, March 2003.
† **61.** “Next Generation Ceramic Thermal Barrier Coatings,” Universidad de Extremadura, Badajoz, Spain, March 2003.
† **62.** “Highly Durable Solution-Precursor Plasma-Sprayed TBCs,” Engineering Foundation Conference on Thermal/Environmental Barrier Coatings, Irsee, Germany, August 2003.
63. “Next Generation Ceramic Thermal Barrier Coatings,” National Institute of Standards and Technology, Gaithersburg, MD, September 2003.
64. “Advanced Thermal Barrier Coatings,” South Carolina Institute of Energy Studies at Clemson University, Clemson, SC, October 2003.
† **65.** “Advanced Ceramic Coatings,” International Ceramic Congress, Chennai, India, January 2004.
66. “Next Generation Ceramic Thermal Barrier Coatings,” Ohio State University, Columbus, OH, January 2004.

† **67.** "Contact-Damage-Resistant Ceramics," IXth National Congress on the Mechanical Properties of Materials, Huelva, Spain, June 2004.

68. "Nano- and Micro-Scale Tailoring of Structural and Functional Ceramics," Ohio State University, Columbus, OH, July 2004.

69. "Ultra-Thick Thermal Barrier Coatings," South Carolina Institute of Energy Studies at
† Clemson University, Clemson, SC, September 2004.

70. "Novel Thermal Barrier Coatings," Engineering Ceramics Conference, Osaka, Japan, November 2004.

† **71.** "Advances in Nanomaterials," Ubonratchathani University, Ubonratchathani, Thailand, November 2004.

72. "Thermal Properties of Ceramics," Diamond Innovations, Columbus, OH, March 2005.

† **73.** "Novel 1-D and 2-D Functional Nanostructures," International Conference on Materials for Advanced Technologies (ICMAT), Singapore, July 2005.

74. "Research Opportunities in Ultra-High Temperature Materials," Air Force Office of Scientific Research Workshop on Ultra-High Temperature Materials, Washington DC, September 2005.

75. "Superior Ultra-Thick Thermal Barrier Coatings," South Carolina Institute of Energy Studies at Clemson University, Clemson, SC, October 2005.

† **76.** "Novel 1-D, 2-D, and 3-D Multi-Functional Nanomaterials," National Chemical Laboratory, Pune, India, December 2005.

77. "Thermal Barrier Coatings," General Electric Aviation, Evendale, OH, March 2006.

78. "Materials Challenges and Opportunities in Nanotechnology," Central Ohio Chapter of the American Ceramic Society, Columbus, OH, April 2006.

79. "Novel 1-D and 2-D Nanostructures of Functional Oxides," Physics Department, The Ohio State University, Columbus, OH, May 2006.

80. "Novel Thermal Barrier Coatings for Resistance Against CMAS Degradation," Office of Naval Research Review Meeting, Falmouth, MA, May 2006.

† **81.** "Next Generation Thermal Barrier Coatings," International Workshop on Mechanical Properties of Advanced Materials, Fuenteheridos, Spain, June 2006.

82. "Novel 1-D, 2-D, and 3-D Nanomaterials and Nanoceramics for Functional and Structural Applications," Engineering Foundation Conference on Novel & Emerging Ceramics & Composites, Kona, Hawaii, June 2006.

83. "Novel 1-D and 2-D Nanostructures of Functional Oxides," Material Science & Technology Conference, Cincinnati, OH, October 2006.

84. "Superior Ultra-Thick Thermal Barrier Coatings," South Carolina Institute of Energy Studies at Clemson University, Clemson, SC, October 2006.

† **85.** "Novel Concepts in 0-D, 1-2, 2-D, and 3-D Nanomaterials for Functional and Structural Applications," University Vienna, Vienna, Austria, October 2006.

† **86.** "Novel Concepts in 0-D, 1-2, 2-D, and 3-D Nanomaterials for Functional and Structural Applications," Hungarian Academy of Sciences, Budapest, Hungary, November 2006.

† **87.** "Novel 1-D, 2-D, and 3-D Nanomaterials and Nanoceramics for Functional and Structural Applications," 3rd International Symposium on Advanced Ceramics, Singapore, December 2006.

† **88.** "Novel 1-D, 2-D, and 3-D Nanomaterials and Nanoceramics for Functional and Structural Applications," Institute of Materials Research and Engineering, Singapore, December 2006.

† **89.** "Novel 1-D, 2-D, and 3-D Nanomaterials and Nanoceramics for Functional and Structural Applications," National Chemical Laboratory, Pune, India, December 2006.

90. "Engineered Top-Coats for Advanced Thermal Barrier Coatings," International Conference on Advanced Ceramics and Composites, Daytona Beach, FL, January 2007.

91. "Next Generation Thermal Barrier Coatings," Annual Meeting of the Metals/Materials/Minerals Society (TMS), Orlando, FL, February 2007.

92. "Novel Thermal Barrier Coatings for Resistance Against CMAS Degradation," Office of Naval Research Review Meeting, Golden CO, May 2007.

93. "Novel Concepts in Ceramic Coatings and Composites," Wright Patterson Air Force Base, Dayton, OH, June 2007.

† **94.** "Nanowires, Nanotubes, Thin Films, and Nanocomposites for Functional and Structural Applications," National Chemical Laboratory, Pune, India, August 2007.

† **95.** "Engineered Top-Coats for Advanced Thermal Barrier Coatings," Engineering Conferences International Workshop on Thermal Barrier Coatings, Irsee, Germany, August 2007.

96. "Novel Processing of Advanced Thermal Barrier Coatings," Materials Science & Technology (MS&T) Conference, Detroit, MI, September 2007.

97. "Novel Concepts in 1-D, 2-D, and 3-D Functional and Structural Nanoceramics: Nanowires, Nanotubes, Thin Films, and Nanocomposites," Richard M. Fulrath Award Symposium, Materials Science & Technology (MS&T) Conference, Detroit, MI, September 2007. **{Keynote Lecture}**

98. "Synthesis, Characterization, Device Fabrication, and Properties of Novel Functional-Oxide Nanowires," Materials Science & Technology (MS&T) Conference, Detroit, MI, September 2007.

99. "Novel Concepts in Advanced Structural Ceramics: Thermal Barrier Coatings and Contact-Damage-Resistant Nanocomposites," Pennsylvania State University, State College, PA, October 2007.

† **100.** "Novel Concepts in Advanced Structural Ceramics: Thermal Barrier Coatings and Contact-Damage-Resistant Nanocomposites," Ceramic Society of Japan Annual Meeting, Nagaoka, Japan, March 2008.

† **101.** "Novel Concepts in 1-D, 2-D, and 3-D Functional and Structural Nanoceramics: Nanowires, Nanotubes, Thin Films, and Nanocomposites," National Institute of Materials Science, Tsukuba, Japan, March 2008.

102. Novel Concepts in Nanomaterials for Functional and Structural Applications: Nanowires, Nantotubes and Nanocomposites," Ohio Nano Summit, Mason, OH, April 2008.

103. "Materials Engineering of Nanowires, Nanotubes, and Nanocomposites," Tulane University, New Orleans, May 2008.

104. "Novel Thermal Barrier Coatings," ONR Review Meeting, Woods Hole, MA, May 2008.

† **105.** "Ceramic/Carbon Nanotubes Composites — A Case of Multifunctional Composites with Truly Engineered Grain Boundaries," International Workshop on Mechanics-Based Design of Advanced Materials, Composites and Coatings, Perth, Australia, July 2008.

106. "Center for Emergent Materials, An NSF-Funded Materials Research Science and Engineering Center at the Ohio State University," Ohio State University Materials Week, Columbus, OH, September 2008.

107. "Structural and Functional Nanocomposites with Hierarchical Structures in 1-D, 2-D, and 3-D," Materials Science & Technology Conference, Pittsburgh, PA, October 2008.

108. "Center for Emergent Materials, A NSF-Funded Materials Research Science and Engineering Center at the Ohio State University," National Science Foundation Materials Research Science and Engineering Centers Directors' Meeting, Arlington, VA, October 2008.

109. "Towards Rational Tailoring of Functional and Structural Nanomaterials: Nanowires (1-D), Graphene (2-D), and Nanocomposites (3-D)," Northwestern University, Evanston, IL, November 2008.

110. "Towards Rational Tailoring of Functional and Structural Nanomaterials: Nanowires (1-D), Graphene (2-D), and Nanocomposites (3-D)," University of Michigan, Ann Arbor, MI, January 2009.

111. "Novel Concepts in Structural Ceramics: Thermal Barrier Coatings and Contact-Damage-Resistant Ceramic Nanocomposites," Case Western Reserve University, Cleveland, OH, February 2009.

† **112.** "Towards Rational Tailoring of Functional and Structural Nanomaterials: Nanowires (1-D), Graphene (2-D), and Nanocomposites (3-D)," Universidad de Sevilla, Seville, Spain, March 2009.

† **113.** "Fracture and Microstructure Design of Ceramics and Composites," Universidad de Sevilla, Seville, Spain, March 2009.

† **114.** "Towards Rational Tailoring of Functional and Structural Nanomaterials: Nanowires (1-D), Graphene (2-D), and Nanocomposites (3-D)," Universidad de Extremadura, Badajoz, Spain March 2009.

115. "Novel Thermal Barrier Coatings," Office of Naval Research Review Meeting, Woods Hole, MA, May 2009.

116. "Nanostructured Ceramics and Composites," Engineering Conferences International Workshop on Nanomaterials, Colorado Springs, CO, June 2009.

† **117.** "Towards Rational Tailoring of Functional and Structural Nanomaterials: Nanowires (1-D), Graphene (2-D), and Nanocomposites (3-D)," International Conference on Materials for Advanced Technologies (ICMAT), Singapore, June 2009.

† **118.** "Towards Rational Tailoring of Functional and Structural Nanomaterials: Nanowires (1-D), Graphene (2-D), and Nanocomposites (3-D)," International Workshop on Nanotechnology and Advanced Functional Materials, National Chemical Laboratory, Pune, India, July 2009.

† **119.** "Novel Concepts in Ceramic Thermal Barrier Coatings," EUROMAT'09, Glasgow, United Kingdom, September 2009.

† **120.** "A Perspective on Structural Nanoceramics and Nanocomposites," EUROMAT'09, Glasgow, United Kingdom, September 2009. **{Keynote Lecture}**

121. "Degradation of Thermal Barrier Coatings from Deposits and Its Mitigation," Department of Energy Workshop, Orlando, FL, October 2009.

122. "Extreme Materials Engineering: From Jet-Engine Turbines to Graphene Devices," Physics Colloquium, The Ohio State University, Columbus, OH, January 2010.

† **123.** "Towards Rational Tailoring of Functional and Structural Nanomaterials: Nanowires (1-D), Graphene (2-D), and Nanocomposites (3-D)," Instituto de Ciencia de Materiales de Madrid, Spain, March 2010.

† **124.** "Novel Concepts in Advanced Structural Ceramics: Thermal Barrier Coatings and Multifunctional Nanocomposites," Instituto de Ceramica y Vidrio, Madrid, Spain, March 2010.

125. "Novel Thermal Barrier Coatings," International Conference on Metallurgical Coatings and Thin Films, San Diego, CA, April 2010.

126. "Novel Thermal Barrier Coatings and Environmental Barrier Coatings," Office of Naval Research Review Meeting, Woods Hole, MA, May 2010.

† **127.** "Interdisciplinary Materials Research at the Ohio State University," International Workshop on Novel Magnetic Materials, Dresden, Germany, August 2010.

128. "A Perspective on Mechanical Properties of Nanoceramics and Nanocomposites," Materials Science & Technology (MS&T) Conference, Houston, TX, October 2010.

129. "Degradation of Thermal Barrier Coatings from Deposits and Its Mitigation," Department of

Energy Workshop, State College, PA, October 2010.

† **130.** "Extreme Materials Engineering: From Jet-Engine Turbines to Graphene Devices," National Chemical Laboratory, Pune, India, December 2010.

131. "Extreme Materials Engineering: From Jet-Engine Turbine Coatings to Carbon Nanotube Composites to Graphene Devices," Brown University, RI, February 2011.

132. "Carbon-Based Materials for Spintronics," National Science Foundation Materials Research Science and Engineering Centers Directors' Meeting, Humacao, Puerto Rico, March 2011.

133. "Extreme Materials Engineering: From Jet-Engine Turbine Coatings to Carbon Nanotubes Composites to Graphene Devices," University of California, Riverside, CA, May 2011.

134. "Novel Thermal Barrier Coatings and Environmental Barrier Coatings," Office of Naval Research Review Meeting, Charleston, SC, May 2011.

† **135.** "Extreme Materials Engineering: From Jet-Engine Turbines to Graphene Devices," Indian Institute of Technology, Bombay, India, July 2011.

† **136.** "Engineered Thermal Barrier Coatings for Extreme Environments," Engineering International Conference on Thermal Barrier Coatings, Irsee, Germany, August 2011.

137. "Materials Engineering at the Frontiers of Energy Efficiency: From Spintronics to Gas-Turbine Engines," Indian Institute of Technology Faculty Alumni Network Symposium on Materials in Energy, Boston, MA, October 2011.

138. "Thermal Barrier Coatings for Resistance Against Attack by Molten Silicate Deposits from CMAS Sand, Volcanic Ash, or Coal Fly Ash Ingested by Gas-Turbine Engines," Materials Science and Technology (MS&T) Conference, Columbus, OH, October 2011.

139. "Rational Tailoring of 1-D (Nanowires), 2-D (Graphene) and 3-D (Ceramic/Carbon Nanotubes Composites) Functional and Structural Nanomaterials," Materials Science and Technology (MS&T) Conference, Columbus, OH, October 2011.

140. "Structural Nanoceramics and Nanocomposites: Challenges and Opportunities," Materials Science and Technology (MS&T) Conference, Columbus, OH, October 2011.

141. "Degradation of Thermal Barrier Coatings from Deposits and Its Mitigation," Department of Energy Workshop, Columbus, OH, October 2011.

† **142.** "Renaissance of Advanced Structural Ceramics: Challenges and Opportunities," VIth Portuguese-Spanish Congress on Ceramics & Glasses, Aveiro, Portugal, November 2011. **{Opening Plenary Lecture}**

143. "Extreme Materials Engineering: From Jet-Engine Turbine Coatings to Carbon Nanotubes Composites to Graphene Devices," Boston University, Boston, MA, February 2012.

144. "Advances in Some Structural Ceramics: Thermal Barrier Coatings and Ceramic/Carbon Nanotubes Composites," Harvard University, Cambridge, MA, May 2012.

145. "Novel Thermal Barrier Coatings and Environmental Barrier Coatings," Office of Naval Research Review Meeting, Charleston, SC, May 2012.

† **146.** "Perspective on Nanoceramics, Ceramic Nanocomposites and Carbon Nanomaterials," NANO2012, Rhodes, Greece, August 2012.

† **147.** "Perspective on Nanoceramics, Ceramic Nanocomposites and Carbon Nanomaterials," European Materials Research Society Fall Meeting, Warsaw, Poland, September 2012.

148. "Extreme Materials Engineering: From Jet-Engine Turbine Coatings to Carbon Nanotubes Composites to Graphene Devices," University of Connecticut, Storrs, CT, October 2012.

149. "Novel Thermal Barrier Coatings and Environmental Barrier Coatings," Office of Naval Research Review Meeting, Bozeman, MT, May 2013.

150. "Thermal Barrier Coatings for Protection Against Extreme Conditions in High-Efficiency Gas-Turbine Engines," New England Section of the American Ceramic Society, Marlborough, MA, May 2013.

151. "Some Advances in Ceramic Coatings and Nanocomposites," United Technologies Research Center, East Hartford, CT, May 2013.

152. "Advanced Thermal Barrier Coatings for Next Generation Syngas-Fueled Gas-Turbine Engines," Department of Energy Workshop, Pittsburgh, PA, June 2013.

† **153.** "Thermal Barrier Coatings for Protection Against Extreme Conditions in High-Efficiency Gas-Turbine Engines," International Conference on Materials for Advanced Technologies, Singapore, July 2013.

† **154.** "Some Advances in Structural Ceramics: Thermal Barrier Coatings and Novel Nanocomposites," National Institute for Materials Science, Tsukuba, Japan, July 2013.

155. "Attack of Thermal Barrier Coatings in Gas-Turbine Engines by Molten Silicate Deposits (Sand, Ash) and its Mitigation," International Conference on Advanced Ceramics and Composites, Daytona Beach, FL, January 2014.

156. "Novel Thermal Barrier Coatings and Environmental Barrier Coatings," Office of Naval Research Review Meeting, Charlottesville, VA, May 2014.

157. "Advanced Thermal Barrier Coatings for Next Generation Syngas-Fueled Gas-Turbine Engines," Department of Energy Workshop, Pittsburgh, PA, May 2014.

† **158.** "Attack of Thermal Barrier Coatings by Molten Silicate Deposits (Sand, Ash) and its Mitigation," Engineering Conferences International on Thermal Barrier Coatings, Irsee, Germany, June 2014.

† **159.** "Engineered Thermal Barrier Coatings for Extreme Environments," Max Planck Institute, Düsseldorf, Germany, June 2014.

† **160.** "Some Advances in Ceramic Coatings and Nanocomposites," 5th International Congress on Ceramics, Beijing, China, August 2014. **{Keynote Lecture}**

† **161.** "Thermal Barrier Coatings for More Efficient Gas-Turbine Engines in Aircraft and Power Generation," Qingdao Institute of Bioenergy & Bioprocess Technology, Chinese Academy of Sciences, Qingdao, China, August 2014.

† **162.** "Some Advances in Ceramic Coatings and Nanocomposites," Spanish Ceramics & Glass Society Congress, Badajoz, Spain, November 2014. **{Opening Plenary Lecture}**

† **163.** "Advanced Ceramics for More Efficient Gas-Turbine Engines," International Workshop on Structural Materials, Coorg, India, February 2015.

164. "Recent Advances in Perovskite Solar Cells," National Chemical Laboratory, Pune, India, March 2015.

165. "Advanced Thermal Barrier Coatings for Next Generation Syngas-Fueled Gas-Turbine Engines," Department of Energy Workshop, Pittsburgh, PA, April 2015.

166. "Thermal and Environmental Barrier Coatings for High-Efficiency Gas-Turbine Engines in Aircraft and Power Plants: Environmental Degradation and Its Mitigation," New England - Tsinghua University Workshop on Gas Turbine Engines, Cambridge, MA, May 2015.

167. "Novel Thermal Barrier Coatings and Environmental Barrier Coatings," Office of Naval Research Review Meeting, Charlottesville, VA, May 2015.

† **168.** "Advanced Ceramics for More Efficient Gas-Turbine Engines," 14th International Conference of the European Ceramic Society, Toledo, Spain, June 2015. **{Keynote Lecture}**

† **169.** "Advanced Ceramics for More Efficient Gas-Turbine Engines," 9th International Conference on High-Performance Ceramics, Guilin, China, November 2015. **{Plenary Lecture}**

† **170.** "Low-Cost, Efficient Perovskite Solar Cells," Weihua Solar Company, Xiamen, China, November 2015.

† **171.** "Low-Cost, Efficient Perovskite Solar Cells," Trina Solar Energy Company, Changzhou, China, November 2015.

† **172.** "The Role of Materials in Energy Applications: From Gas-Turbine Engines to Perovskite

Solar Cells," Shanghai Jiao Tong University, Shanghai, China, November 2015.

173. "*Surya Namaskar* (Sun Salutation): Harnessing Solar Energy Efficiently, Cheaply, and Safely," Provost's Lecture Series, Brown University, Providence, RI, February 2016. **{Inaugural Lecture}**

† **174.** "Perovskite Solar Cells: The Promise of Cheap, Efficient, Clean Energy," Indo-US Workshop on Advanced Materials, Coorg, India, February 2016.

† **175.** "Perovskite Solar Cells: The Promise of Cheap, Efficient, Clean Energy," Indian Institute of Science, Education, and Research, Pune, India, February 2016.

176. "Hostile-Environment Degradation and its Mitigation in Ceramic Coatings for Gas-Turbine Engines," Office of Naval Research, Arlington, VA, March 2016.

† **177.** "Molten Silicates (Sand, Fly Ash, Volcanic Ash) Attack of Gas-Turbine Engine Hot-Section Ceramic Coatings and it Mitigation," Helmholtz Symposium on Materials and Coatings for High Temperatures, Cambridge, U.K., April 2016.

178. "The Unprecedented Promise of Organic-Inorganic Hybrid Perovskite Thin-Film Solar Cells: Materials-Science Challenges and Opportunities," Workshop on Microstructural Evolution in Organic-Inorganic Hybrid Perovskite Thin Films, Brown University, Providence, RI, May 2016.

179. "Hostile-Environment Degradation and its Mitigation in Ceramic Coatings for Gas-Turbine Engines," ONR Review Meeting, Charlottesville, VA, June 2016.

† **180.** "The Unprecedented Promise of Perovskite Solar Cells for Cheap and Efficient Clean Energy," University of Seville, Seville, Spain, June 2016.

† **181.** "The Unprecedented Promise of Perovskite Solar Cells for Cheap and Efficient Clean Energy," Institute for Ceramics and Glass, Madrid, Spain, June 2016.

† **182.** "Advanced Ceramic Coatings for More Efficient Gas-Turbine Engines: Aircraft Propulsion and Electricity-Generation," Thin Films 2016, Singapore, July 2016. **{Plenary Lecture}**

† **183.** "Harnessing the Power of the Sun: The Unprecedented Promise of Perovskite Solar Cells for Cheap and Efficient Clean Energy," Indian Institute of Technology, Bombay, India, July 2016. **{Institute Colloquium}**

184. "The Unprecedented Promise of Perovskite Solar Cells for Cheap and Efficient Clean Energy," Gordon Research Conference on Solid State Studies in Ceramics, South Hadley, MA, August 2016.

185. "Microstructures of Hybrid Perovskites for Solar Cells: Their Evolution from Solutions and Characterization," University of Nebraska, Lincoln, NE, August 2016.

186. "Harnessing Solar Energy Efficiently, Cheaply, and Safely," Rhode Island College, Providence, RI, September 2016.

187. "New Paradigms in Advanced Ceramic Coatings and Composites," NSF Workshop on Emerging Opportunities in Ceramics and Glass Science," Arlington, VA, September 2016

188. "The Unprecedented Promise of Perovskite Solar Cells for Cheap, Efficient, Clean Energy," Washington University, St. Louis, MO, September 2016.

189. "The Unprecedented Promise of Perovskite Solar Cells for Cheap, Efficient, Clean Energy," University of Central Florida, Orlando, FL, January 2017. **{Distinguished Lecture}**

190. "The Unprecedented Promise of Perovskite Solar Cells for Cheap, Efficient, Clean Energy," University of Massachusetts, Dartmouth, MA, February 2017.

191. "Ceramic Coatings for More Efficient Gas-Turbine Engines," TMS Annual Meeting, San Diego, CA, February 2017.

192. "Hostile-Environment Degradation and its Mitigation in Ceramic Coatings for Gas-Turbine Engines," Office of Naval Research, Arlington, VA, March 2017.

193. "Scalable Processing of High-Quality Perovskite Thin Films for High-Efficiency Solar

Cells," MRS Spring Meeting, Phoenix, AZ, April 2017.

194. "The Unprecedented Promise of Perovskite Solar Cells for Cheap, Efficient, Clean Energy," Stony Brook University, Stony Brook, NY, April 2017.

195. "Advanced Ceramic Coatings for More Efficient Gas-Turbine Engines for Aircraft Propulsion and Electricity Generation," Army Research Laboratory, Aberdeen Proving Grounds, MD, May 2017.

196. "Grain Boundary Engineering in Hybrid Organic-Inorganic Perovskites," ONR Review Meeting, Baltimore, MD, May 2017.

197. "Hostile-Environment Degradation and its Mitigation in Ceramic Coatings for Gas-Turbine Engines," ONR Review Meeting, Williamsburg, VA, June 2017.

† **198.** "The Unprecedented Promise of Perovskite Solar Cells for Cheap, Efficient, Clean Energy," 46th IUPAC World Chemistry Congress, São Paulo, Brazil, July 2017. **{Keynote Lecture}**

199. "Tailoring of Microstructures and Grain-Boundary Networks in Hybrid-Perovskite Thin Films for Efficient, Stable Solar Cells," 254th American Chemical Society Meeting & Exposition, Washington D.C., August 2017.

† **200.** "The Renaissance of Advanced Structural Ceramics: Novel Coatings and Composites," International Symposium on Advanced Ceramic Materials, Badajoz, Spain, October 2017.

† **201.** "Tailoring of Microstructures, Grain-Boundary Networks in Hybrid-Perovskite Thin Films for Efficient, Stable Solar Cells," Universitat Jaume I, Castellón, Spain, October 2017.

† **202.** "Advanced Ceramic Coatings for More Efficient Gas-Turbine Engines for Aircraft Propulsion and Electricity Generation," German Space Center (DLR), Cologne, Germany, January 2018.

† **203.** "Synthesis/Processing, and Microstructural Tailoring of Halide Perovskite Thin Films for Large-Area, Efficient, and Stable Solar Cells," University of Cologne, Cologne, Germany, January 2018.

† **204.** "Synthesis/Processing, and Microstructural Tailoring of Halide Perovskite Thin Films for Large-Area, Efficient, and Stable Solar Cells," Helmholtz Zentrum (Lise-Meitner), Berlin, Germany, January 2018.

205. "Synthesis/Processing, and Microstructural Tailoring of Pb-Based and Pb-Free Halide Perovskite Thin Films for Large-Area, Efficient, and Stable Solar Cells," Brookhaven National Laboratory, Center for Functional Nanomaterials, Upton, NY, March 2018.

206. "Advanced Ceramic Coatings for More Efficient Gas-Turbine Engines," 3M Company Research Center, Minneapolis, MN, May 2018.

207. "Hostile-Environment Degradation and its Mitigation in Ceramic Coatings for Gas-Turbine Engines," ONR Review Meeting, Williamsburg, VA, June 2018.

208. "Advanced Ceramic Coatings for More Efficient Gas-Turbine Engines," Eastern NY ASM Symposium, GE Central R&D, Niskayuna, NY, June 2018.

† **209.** "Towards Multifunctional Thermal-Barrier and Environmental-Barrier Coatings," Engineering Conferences International on Thermal Barrier Coatings V, Irsee, Germany, June 2018.

210. "The Unprecedented Promise of the New Perovskite Solar Cells," International Materials Symposium, Brown University, Providence, RI, July 2018.

† **211.** "Synthesis/Processing, and Microstructural Tailoring of Halide Perovskite Thin Films for Large-Area, Efficient, and Stable Solar Cells," 22nd International Conference on Photochemical Conversion & Storage of Solar Energy, Hefei, China, July 2018.

† **212.** "The Unprecedented Promise of Perovskite Solar Cells for Cheap, Efficient, Clean Energy," Tianjin Polytechnic University, Tianjin, China, August 2018.

213. "Ceramics Science of Perovskite Solar Cells," Gordon Research Seminar on Solid State

Studies in Ceramics, South Hadley, MA, August 2018.

214. "Ceramic Thermal-Barrier and Environmental-Barrier Coatings for Extreme Environments," Gordon Research Conference on Solid State Studies in Ceramics, South Hadley, MA, August 2018.

215. "Synthesis/Processing, and Microstructural Tailoring of Pb-Based and Pb-Free Halide Perovskite Thin Films for Large-Area, Efficient, and Stable Solar Cells," SPIE Conference on Organic, Hybrid, and Perovskite Photovoltaics XIX (OP213), San Diego, CA, August 2018.

216. "Grain-Boundary Engineering in Hybrid Organic-Inorganic Perovskites," ONR Review Meeting, Atlanta, GA, September 2018.

† **217.** "The Unprecedented Promise of Perovskite Solar Cells for Cheap, Efficient, Clean Energy for a Sustainable Future," Indian Institute for Science, Education, and Research, Pune, India, October 2018.

218. "Microstructural Tailoring of Pb-Based and Pb-Free Halide Perovskite Thin Films for Large-Area, Efficient and Stable Solar Cells," MRS Fall Meeting, Boston, MA, November 2018.

† **219.** "Multifunctional Ceramic Coatings for Hostile Environments," 8th International Coatings Symposium, Tsukuba, Japan, December 2018. **{Opening Plenary Lecture}**

† **220.** "Multifunctional Ceramic Coatings for Hostile Environments," AIST, Tsukuba, Japan, December 2018.

221. "The Unprecedented Promise of Perovskite Solar Cells for Cheap, Efficient, Clean Energy for a Sustainable Future," International Conference on Advanced Ceramics and Composites, Daytona Beach, FL, January 2019.

222. "The Materials Science of Halide-Perovskites Solar Cells," California Institute of Technology, Pasadena, CA, February 2019.

223. "Grain-Boundary Engineering in Hybrid Organic-Inorganic Perovskites," ONR Review Meeting, Golden, CO, April 2019.

† **224.** "Nano-/Micro-structural Tailoring of Multi-dimensional Halide Perovskites for Scalable, Efficient, and Stable Solar Cells," HOPV19, Rome, Italy, May 2019.

225. "Chemo-Thermo-Mechanical Degradation of Ceramic Coatings for Gas-Turbine Engines and its Mitigation," ONR Review Meeting, Williamsburg, VA, May 2019.

226. "The Unprecedented Promise of Perovskite Solar Cells for Cheap, Efficient, Clean Energy," New England Energy Forum, Worcester, MA, June 2019. **{Keynote Lecture}**

† **227.** "Microstructural and Ion-Diffusion Effects in Halide Perovskites for Solar Cells," 22nd Solid-State Ionics-22, Pyeongchang, S. Korea, June 2019. **{Keynote Lecture}**

† **228.** "Advanced Ceramic Coatings and Nanocomposites," SLC Solmics, Seoul, S. Korea, June 2019.

† **229.** "Nano-/Micro-structural Tailoring of Pb-based and Pb-free Multi-dimensional Halide Perovskites for Scalable, Efficient, and Stable Solar Cells," International Conference on Materials for Advanced Technologies, Singapore, June 2019.

† **230.** "Advanced Ceramic Coatings for More Efficient Gas-Turbine Engines for Aircraft Propulsion and Electricity Generation," Institute for High Performance Computing, Singapore, June 2019.

† **231.** "Towards Multifunctional Thermal-Barrier and Environmental-Barrier Coatings," ASM Suspension Spray + EBCs Symposium, Boucherville, QC, Canada, September 2019.

232. "Advanced Ceramic Coatings for Hostile Environments within Efficient Gas-Turbine Engines for Aircraft Propulsion and Electricity Generation," Rensselaer Polytechnic Institute, Troy, NY, September 2019.

† **233.** "The Materials Science of Halide Perovskites and Solar Cells," Indian Institute for Science,

Education, and Research, Pune, India, October 2019.

† **234.** "The Materials Science of Halide Perovskites and Solar Cells," NanoGe Fall Meeting, Berlin, Germany, November 2019.

235. "The Fascinating Materials Science of Halide Perovskites and Solar Cells," Stony Brook University, August 2020. (Webinar)

236. "The Materials Science of Halide Perovskites and Solar Cells," NanoGe Fall Meeting, October 2020. (Virtual)

237. "Microstructures of Halide Perovskites," MRS Spring/Fall Meeting, November 2020. (Virtual)

238. "Chemo-Thermo-Mechanical Degradation of Ceramic Coatings for Gas-Turbine Engines and its Mitigation," ONR Review Meeting, December 2020. (Webinar)

239. "The Promise of Innovations in Solar Photovoltaics," Brown University, April 2021. **{Presidential Faculty Award Public Lecture}** (Webinar) YouTube Recording

240. "The Materials Science of Halide Perovskites and Solar Cells," ACS Spring Meeting, April 2021. (Virtual)

241. "Grain Boundary and Interfacial Phenomena in Halide Perovskites and Solar Cells," ONR Review Meeting, June 2021. (Webinar)

242. "The Materials Science of Halide Perovskites and Solar Cells," SPIE Organic, Hybrid, and Perovskite Photovoltaics XXII (OHPV), San Diego, CA, August 2021. **{Keynote Lecture}**

243. "The Materials Science of Halide Perovskites and Solar Cells," Georgia Institute of Technology, October 2021. (Webinar)

244. "The Materials Science of Halide Perovskites and Solar Cells," University of Rhode Island, N. Kingston, RI, October 2021.

245. "Chemo-Thermo-Mechanical Degradation of Ceramic Coatings for Gas-Turbine Engines and its Mitigation," ONR Review Meeting, November 2021. (Webinar)

246. "The Degradation of High-Temperature Ceramic Coatings for Gas-Turbine Engines and its Mitigation," Tokyo University of Technology, November 2021. (Webinar)

247. "Addressing the Stability and Reliability Challenges in Perovskite Solar Cells *via* Microstructural and Interfacial Tailoring," MRS Fall Meeting, Boston, MA, December 2021.

248. "Addressing the Stability and Reliability Challenges in Perovskite Solar Cells *via* Microstructural and Interfacial Tailoring," International Conference on Advanced Materials and Mechanical Characterization, December 2021. (Webinar)

249. "Grain Boundary and Interfacial Phenomena in Halide Perovskites and Solar Cells," ONR Review Meeting, May 2022. (Webinar)

250. "Addressing the Stability and Reliability Challenges in Perovskite Solar Cells *via* Microstructural and Interfacial Tailoring," 23rd Solid-State Ionics-23, Boston, MA, July 2022. **{Keynote Lecture}**

251. "The Promise of Halide Perovskite Solar Photovoltaics," Boston University, Boston, MA, September 2022.

† **252.** "Addressing the Stability and Reliability Challenges in Perovskite Solar Cells *via* Interfacial Tailoring," Sungkyun International Solar Forum SISF 2022, Seoul, S. Korea, November 2022.

253. "Addressing the Stability and Reliability Challenges in Perovskite Solar Cells *via* Microstructural and Interfacial Tailoring," MRS Fall Meeting, Boston, MA, November 2022.

254. "Addressing the Stability and Reliability Challenges in Perovskite Solar Cells *via* Microstructural and Interfacial Tailoring," CubicPV LLC, December 2022. (Webinar)

255. "Addressing the Stability and Reliability Challenges in Perovskite Photovoltaics *via*

Microstructural and Interfacial Tailoring," National Renewable Energy Laboratory, Golden, CO, April 2023.

256. "Grain Boundary and Interfacial Phenomena in Halide Perovskites and Solar Cells," ONR Review Meeting, Chapel Hill, NC, May 2023.

257. "Addressing the Stability and Reliability Challenges in Perovskite Solar Cells *via* Microstructural and Interfacial Tailoring," S&T Digital International Conference on Advances in Photovoltaic Materials and Devices, June 2023. (Webinar)

† **258.** "Addressing the Stability and Reliability Challenges in Perovskite Solar Cells *via* Microstructural and Interfacial Tailoring," Indian Institute for Science, Education and Research, Pune, India, June 2023.

259. "The Promise of Innovations in Solar Photovoltaics," Yale University, New Haven, CT, September 2023.

260. "The Promise of Innovations in Solar Photovoltaics," University of Arizona, Tucson, AZ, September 2023.

261. "Addressing the Stability and Reliability Challenges in Perovskite Solar Cells *via* Microstructural and Interfacial Tailoring," Materials Science and Technology (MS&T) Conference, Columbus, OH, October 2023.

262. "The Unprecedented Promise of Perovskite Photovoltaics," The Ohio State University, Columbus, OH, October 2023. **{IMR Distinguished Lecture}**

263. "The Unprecedented Promise of Perovskite Photovoltaics," University of Illinois, Chicago, IL, October 2023. **{Engineering Distinguished Seminar}**

264. "Challenges and Opportunities in the Mechanical Reliability of Perovskite Solar Photovoltaics," Sustainable Energy Workshop, Brown University, Providence, RI, October 2023.

† **265.** "The Promise of Perovskite Solar Photovoltaics," Indian Institute of Technology, Mumbai, India, November 2023

266. "Making High-Efficiency Halide-Perovskite Solar Photovoltaics More Durable: Challenges and Opportunities," MRS Fall Meeting, Boston, MA, November 2023.

† **267.** "Making High-Efficiency Halide-Perovskite Solar Photovoltaics More Durable: Challenges and Opportunities," nanoGe Materials for Sustainable Development Conference (MATSUS2024), Barcelona, Spain, March 2024.

268. "Making High-Efficiency Halide-Perovskite Solar Photovoltaics More Durable: Challenges and Opportunities," nanoGe International Conference on Perovskite Thin Film Photovoltaics and Perovskite Photonics and Optoelectronics (NIPHO 2024), Cagliari, Italy, June 2024.

269. "The Promise of Perovskite Solar Photovoltaics," Texas A&M University, College Station, TX, August 2024.

† **270.** "Addressing the Stability and Reliability Challenges in Perovskite Solar Cells *via* Microstructural and Interfacial Tailoring," University of Potsdam, Potsdam, Germany, September 2024.

† **271.** "Connecting Mechanical Properties, Reliability, and Stability of Perovskite Solar Photovoltaics," International Summit on Organic and Hybrid Photovoltaics Stability (ISOS-15), Berlin, Germany, September 2024.

272. "Making High-Efficiency Halide-Perovskite Solar Photovoltaics More Durable: Challenges and Opportunities," MRS Spring Meeting, Seattle, WA, April 2025. (To be presented)