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# S. Pamir Alpay

Board of Trustees Distinguished Professor  
Interim Vice President for Research, Innovation & Entrepreneurship  
UConn | UConn Health  
Professor of Materials Science & Engineering  
General Electric Professor in Advanced Manufacturing

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## CAREER SUMMARY

### EDUCATION

Ph.D. Materials Science and Engineering, University of Maryland, College Park, 1999  
M.S. Metallurgical and Materials Engineering, Middle East Technical University (METU), Ankara, Turkey, 1993  
B.S. Metallurgical Engineering, METU, Ankara, Turkey, 1990

### LEADERSHIP POSITIONS UNIVERSITY OF CONNECTICUT

- Interim Vice President for Research, Innovation & Entrepreneurship, UConn | UConn Health, 2022 - present
- Associate Dean for Research and Industrial Partnerships, UConn School of Engineering, 2019-2022
- Executive Director, UConn Technology Park, 2017-2022
- Department Head, Materials Science and Engineering, (MSE), UConn, 2013-2017
- Director, Collins Aerospace Center of Excellence for Advanced Materials, 2015-2022
- Program Director – MSE, Dept. of Chemical, Materials, & Biomolecular Engr. (CMBE), UConn, 2011-2013

### ACADEMIC APPOINTMENTS UNIVERSITY OF CONNECTICUT

- Board of Trustees Distinguished Professor, 2020-present
- General Electric Professor in Advanced Manufacturing (\$1.5M endowment), 2017-present
- Joint appointment, Graduate Faculty, Dept. of Chemical & Biomolecular Engr., UConn, 2019-present
- Professor, MSE, UConn, early promotion, 2010-present
- Visiting Professor, Dept. of Applied Physics, Yale University, 2009
- Joint appointment, Graduate Faculty, Dept. of Physics, UConn, 2008-present
- United Technologies Corporation Associate Professor in Engineering Innovation, 2008-2010
- Associate Professor (with tenure), MSE, UConn, 2007-2010
- Assistant Professor, MSE, UConn, 2001-2007

### HONORS & AWARDS

#### NATIONAL AND INTERNATIONAL

- Fellow of ASM International (FASM) – elected in 2020
- Fellow of the American Ceramic Society (FACerS) – elected in 2018
- Fellow of the American Physical Society (FAPS) – elected in 2013
- Member of the Connecticut Academy of Sciences and Engineering – elected in 2012
- National Science Foundation Faculty Early Career Development (CAREER) Award, 2001
- NATO A-1 Doctoral Scholarship, 1994

#### UNIVERSITY OF CONNECTICUT

- Board of Trustees Distinguished Professor, 2020
- AAUP Excellence in Career Research & Creativity Award, 2018
- School of Engineering Outstanding Faculty Advisor Award, 2013
- Materials Science and Engineering Department Teacher of the Year, 2013
- Outstanding Junior Faculty Award, School of Engineering, 2004

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## SCHOLARSHIP

### RESEARCH INTERESTS

- Materials theory, computational materials science, and multiscale materials modeling
- Functional ceramics, ferroelectrics, multiferroics
- Metallurgy, aluminum alloys, metal 3D printing applications
- Surface chemistry, oxidation, catalysis

### FUNDING

- ~\$30M total funding as PI/co-PI
- ~ \$5M in industry funding as PI/co-PI
- PI/Co-PI on 5 active and 26 completed research grants

### SCHOLARLY OUTPUT

- 1 book and 5 invited book chapters
- >200 refereed journal articles
- 20 refereed conference proceedings
- 100+ invited presentations
- 100+ contributed conference presentations
- >9500 citations (Google Scholar), h-index: 54, i10-index: 151

### PROFESSIONAL OUTPUT

- Co-organizer of 16 major national and international conferences, symposia, workshops
- Editorial Board Member, Materials Research Letters (since May 2012)
- Editor, Journal of Materials Science (2011-2018)
- Reviewer for 25 major international journals
- Reviewer/panelist for 9 national and international agencies

### TEACHING AND ADVISING

- I have graduated 19 Ph.D., 7 M.S. (thesis), and 7 M.S. (course based) students; supported 6 post-doctoral fellows.
- 11 of my graduate students received prestigious university, national, and international awards.
- Strong record of advising first generation, women, and underrepresented minority MS/PhD students
- Currently advising 6 Ph.D. students and 4 research scientists/post-doctoral fellows.
- Advised over 50 undergraduate students in MSE and in the Honor's program and served as faculty advisor on >10 senior design projects.

### COMMUNITY OUTREACH AND INSTITUTIONAL ENGAGEMENT

- As interim Vice President for Research, Innovation & Entrepreneurship (VPRIE), serve as the primary ambassador for UConn's research and entrepreneurship enterprise
- As the Tech Park Executive Director, established industry & academic collaborations, hosted symposia & workshops, and initiated visits by government entities, industrial companies, and trade organizations
- Hosted over 200 visits across regional, national, and international scientific and professional communities
- Facilitated several industry and government partnerships

### UNIVERSITY SERVICE

- Co-chair of the University's 2023 Strategic Planning Committee
- Significant involvement in key university committees including executive searches, university senate, research advisories, strategic initiatives, and critical financial, administrative, and operational committees.
- Served on UConn's committee for collective bargaining negotiations with the Graduate Employee Union.

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- Members, President's Advisory Council on Corporate Engagement (completed 2021)
  - Member, UConn's Venture and Incubation Advisory Board
  - Co-Chair, President's Research Advisory Council
  - Member, Capital Program and Space Review Committee
  - Member, President's Senior Cabinet,
  - Chair, CT Sea Grant Senior Advisory Board
  - Member, Eversource Energy Center Executive Committee

## **LEADERSHIP EXPERIENCE AND ACHIEVEMENTS**

The following sections summarize my experience and achievements at leadership roles at UConn.

### **INTERIM VICE PRESIDENT FOR RESEARCH, INNOVATION & ENTREPRENEURSHIP**

Feb. 2022 – present

As Interim Vice President for Research, Innovation and Entrepreneurship, I oversee UConn's \$312.6 million research enterprise spanning the main campus in Storrs, UConn Health, the Law School, and campuses at Avery Point, Hartford, Stamford, and Waterbury. UConn is a national research leader in energy, genomics, health behavior, cybersecurity, manufacturing, materials science, and neuroscience. A Carnegie Foundation R1 Research University, UConn is the preeminent public research university in the Northeast. UConn's expansive research enterprise yields discoveries and innovations that contribute significantly to the economy, environmental sustainability, public health, and quality of life.

The Office of the Vice President for Research (OVPR) advances short- and long-term initiatives to strengthen UConn's research capabilities in support of societal impact and innovation. The OVPR's dynamic approach funds faculty investigator projects and interdisciplinary collaborations across UConn's 14 schools and colleges, develops partnerships with leaders of state and national industry, and assists entrepreneurs launch University-driven start-ups. As VPRIE, I am responsible for core service areas that include:

- Research Support & Development
- Core Research Facilities
- Grant Proposal Support
- Award Management
- Research Compliance and Integrity
- Technology Commercialization
- Technology Incubation Program
- Animal Care Services
- Research Security

### **Key Achievements**

- Led a comprehensive team consisting of Yale University and their technology incubation programs, the cities of Stamford, Hartford, New Haven, and Waterbury, the CT Department of Economic and Community Development, CT Next, Advance CT, CT Innovations, CT Workforce Council, the Connecticut State College and University System, the Connecticut Business and Industry Association, and many small and large companies in response to National Science Foundation's new premier program Regional Innovation Engines. The effort entitled Quantum-CT was awarded a planning grant that starts in June 2023.
- Formed a new unit within OVPR that focuses on strategic initiatives and research analytics towards data-driven decision making.

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- Reorganized OVPR to establish a Research Security unit dealing with export control (ITAR/EAR compliance), secure research infrastructure, conflict of interest, and new federal regulations imposed through the Inflation Reduction Act, CHIPS and Science Act, and multiple new Department of Energy initiatives on clean energy and sustainability.
  - Provided a multi-pronged approach to stabilize the Institutional Review Board (IRB) at Storrs and developed a set of comprehensive long-term solutions to address the needs of a growing health, life, and social sciences research base.
  - In collaboration with Global Affairs and the Center for Clean Energy Engineering, initiated a Global Hydrogen Alliance with leading universities around the world towards research and development of precompetitive programs in hydrogen technologies.
  - Orchestrated an agreement with the National Renewable Energy Laboratory to establish a research partnership and a research facility within the Innovation Partnership Building at the UConn Tech Park.
  - Entered UConn into a partnership with the Northeast Hydrogen Hub, a consortium of states and research leaders dedicated to building the region's clean energy Infrastructure and laying the groundwork for potentially billions of dollars in national funding.
  - Provided the necessary support towards the successful launch of the Future Climate Venture Studio. Lead by our technology commercialization group, UConn works with R/GA Ventures (a venture studio operator and early-stage investor) and CT Next to identify and support startups focusing on climate change, decarbonization, alternative energy, social impact, and more: <https://www.futureclimateventurestudio.com/>
  - Established new seed funding opportunities for researchers across all disciplines, including:
    - Justice, Equity, Diversity, and Inclusion (JEDI) Research Initiative, which supports innovative research, scholarship, and creative work across disciplines,
    - The Clinical Research and Innovation Seed Program (CRISP), designed to provide funding opportunities for UConn and UConn Health faculty serving in clinical roles and to support faculty doing human subjects research and working with clinical populations, and
    - The New England University Collaboration on Renewable and Sustainable Energy, designed to catalyze collaboration among regional university researchers to address needs related to renewable and sustainable energy.
  - Promoted UConn by welcoming to campus and consulting with national leaders, including National Science Foundation Director Dr. Sethuraman Panchanathan and U.S. Secretary of Energy Jennifer M. Granholm. Showcased UConn's commitment to advancing national priorities in clean energy, advanced manufacturing, innovation and entrepreneurship, and other priority areas, advertised UConn investments in state-of-the-art infrastructure and faculty, and highlighted research excellence in our faculty.
  - Advised the President Maric and the UConn Board of Trustees on research priorities, growth of the research enterprise, and national impact of research and innovation initiatives.

## **EXECUTIVE DIRECTOR OF UCONN TECH PARK AND ASSOCIATE DEAN OF ENGINEERING**

Executive Director, UConn Tech Park, 2017 – 2022

Associate Dean, School of Engineering, 2019 – 2022

### **Leadership of UConn Tech Park**

The Innovation Partnership Building (IPB) at UConn Tech Park is a 113,700 square foot high tech applied research facility built with ~\$175M funding from the State of Connecticut. It provides state-of-the-art research space that allows expansion of industry partnerships and fosters R&D and economic growth in Connecticut. The IPB houses extensive high-tech instrumentation valued at over \$45M. The building opened in September 2018.

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As Executive Director of the IPB / UConn Tech Park, I led efforts to establish new industry partnerships that take advantage of our facility's unique resources and the expertise and capabilities of UConn's faculty in pursuit of novel, innovative solutions to industrial problems. Through extensive outreach efforts, I promoted access to the IPB's cutting-edge instrumentation, faculty, and graduate and undergraduate students to foster and enable industry partnerships. I worked closely with the directors of the 14 Tech Park affiliated research centers and Institutes and with the deans of the related schools and colleges to grow Tech Park industry collaborations. To date, industry partners and Department of Defense have invested in >\$210M for applied research at the IPB.

In 2017-2018, I ensured the successful launch and opening of the IPB. Construction was completed in two phases, with the Additive Manufacturing Center (AMC) and 2<sup>nd</sup> floor offices opening in Oct 2017 and the Advanced Characterization Lab (ACL) and the remaining sections of the building opening in April 2018.

### **Key Achievements, 2017-2018**

- Developed a 5-year strategic plan, including a sustainable funding model, launched in February 2018.
- Directed major marketing and communications efforts, including social media, web site, print media (more at <https://techpark.uconn.edu/>)
- Oversaw completion of building construction and certification, represented the University in discussions with University Planning, Design and Construction (UPDC) and architects (Aug 2017 – Dec 2018), achieved full certification for occupancy Apr 2018
- Assessed cost recovery options, recharge activities, fee for service rates and maintenance programs for all Tech Park instrumentation. Implemented the business model in April 2018.
- Acquired funding for and hired 6 new personnel: Business Development Manager, Finance Manager, Building Manager, Safety Officer, and two Senior Scientists for the Advanced Characterization Labs.
- Procured equipment including X-ray instrumentation for the Advanced Characterization Labs (Aug – Oct 2017) and multiple manufacturing tools for the Proof-of-Concept Center (Dec 2017 – Jun 2019)
- Established a UConn-wide SBIR/STTR office at Tech Park (Jan 2018)
- Organized and hosted key events, including: Inaugural R&D Innovation Partnerships: Driving Connecticut's Future (symposium), Oct. 2017; 2<sup>nd</sup> R&D Innovation Partnerships: Driving Connecticut's Future (symposium), Sep. 2018; 3 SBIR/STTR Workshops with Dept. of Navy (ONR, DoN), DoD, DoE, NSF (March 2018 – October 2018); Official building opening with a ribbon-cutting ceremony, September 20, 2018

### **Development and Expansion of the IPB, September 2018-February 2022**

Following the building's opening, focus turned toward support and ongoing evaluation of all activities to ensure optimal building resource utilization.

- Oversaw establishment of five new centers at the IPB
  - Air Force Research Labs – Project Daedalus: Research in Advanced Manufacturing, 2018
  - UConn DENSolutions Center for IN-siTU/Operando Electron Microscopy (InToEM), 2018
  - Center for Science of Heterogeneous Additive Printing of 3D Materials (SHAP3D), 2018
  - National Institute for Undersea Vehicle Technology (NIUVT), 2018
  - Center for Materials Processing Data (CMPD), 2019
- Formed a Tech Park Advisory Board consisting of leaders from business, engineering, and manufacturing, government, policy makers, and academia, Apr. 2019
- New offices and wet lab for Fraunhofer USA Center for Energy Innovation CEI, now CT Center for Applied Separation Technologies (CCAST), June 2019
- Eversource Center expansion: research testbed for simulating and modeling the electric grid, Dec. 2019
- New seminar/workshop flex space and offices, Jan. 2020

- New equipment installations including metal and polymeric testbed 3D printers, robotics, metrology and manufacturing tools for rapid prototyping (March-July 2019)

## Tech Park Research Centers/Institutes

I partnered closely with the directors of the 14 Tech Park affiliated research centers/institutes and with the deans of the related schools and colleges to maintain and expand Tech Park industry collaborations. During this period, there was a significant increase in research funding from ~\$20M/year to ~\$50/year, culminating in \$210M total funding since the inception of Tech Park in 2017.

- Center for Materials Processing Data (CMPD): Est. 2019
- Center for Science of Heterogeneous Additive Printing of 3D Materials (SHAP3D): Est. 2018, \$23.5M
- Collins Aerospace Center for Advanced Materials: Est. 2016, renewed 2022, \$4.2M
- Connecticut Advanced Computing Center (CACC): \$19.2M, including Comcast, Synchrony, CHEST
  - Comcast Center of Excellence for Security Innovation (CSI): Est. 2014, \$7.5M
  - Center for Hardware and Embedded Systems Security and Trust (CHEST): Est. 2012, \$8.5M
  - Synchrony Center of Excellence in Cybersecurity: Est. 2016, \$3.2M
- Connecticut Center for Applied Separations Technology (CCAST): Est. 2020, \$12.2M
- Enterprise Solution Center (ESC): \$5.7M
  - Connecticut Manufacturing Simulation Center (CMSC): Est. 2016, \$3.4M
  - Quiet Corner Innovation Cluster (QCIC): Est. 2016, \$1.5M
  - Proof of Concept Center (POCC): Est. 2016, \$500K
  - Connecticut Manufacturing Resource Center (CMRC): Est. 2020, \$300K
- Eversource Energy Center: Est. 2015, \$17.5M
- Fraunhofer Center for Energy Innovation: Est. 2013, \$7.2M (expired 2020)
- GE Advanced Technology Initiative: Est. 2012, \$7.5M (expired 2019)
- IN-siTU/Operando Electron Microscopy (InToEM): Est. 2019, \$250K industrial with \$250K UConn.
- National Institute for Undersea Vehicle Technology (NIUVT): Est. 2018, \$24.2M
- Pratt & Whitney Additive Manufacturing Center (PW AMC): Est. 2013, \$7.5M
- Project Daedalus – Air Force Advanced Manufacturing Initiative: Est. 2018, \$18.1M
- Reverse Engineering Fabrication Inspection & Non-Destructive Evaluation (REFINE): Est. 2017, \$9M
- Thermo Fisher Scientific Center for Advanced Microscopy and Materials Analysis (CAMMA): Est. 2014, \$25M
- Pratt and Whitney Institute for Advanced Systems Engineering (IASE), formerly UTC IASE: Est. 2013, \$10M

## DEPARTMENT HEAD AND PROGRAM DIRECTOR, MATERIALS SCIENCE AND ENGINEERING (MSE)

Department Head, MSE (2013-2017), Program Director, MSE (2011-2013)

- Oversaw the MSE Program within the Chemical, Materials, and Biomolecular Engineering (CMBE) Department from 2011-2013. Duties included course and teaching assistant assignments, promotion/tenure activities, recommendation for merit raises for faculty and staff, and accreditation related activities.
- Initiated and led the de-merger from CMBE in 2012. MSE became a separate Department in Jan. 2013.
- Oversaw a >50% increase in the MSE undergraduate population from ~100 (~13% female) in 2011 to ~160 in 2017 (~25% female) with the active involvement of undergraduate student chapters and faculty and newly designed promotional videos and e-mails.

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- Faculty recruitment/staffing: established a Pratt & Whitney Assistant Professorship at UConn MSE; recruited 5 additional faculty members and secured 3 additional lines for MSE; identified staff resources and recruited 3 new staff members.
  - Established an active Industrial Advisory Board for the Department. Grew the Board from 5 to 9 members from 2012 to 2017 (currently 11 members). The Board meets on campus twice a year to receive updates from the Department Head, faculty, and students. The Board actively advocates for the Department and provides an annual report to the Dean of Engineering.
  - Prepared, proposed, and implemented new merit and promotion, tenure, & reappointment procedures for the new Department. Prepared, proposed, and implemented a new workload policy
  - Initiated and oversaw the revision of all MSE concentrations and minors. Initiated 3 online graduate courses for MSE MEng.
  - Raised over \$300,000 and oversaw the renovation of MSE undergraduate teaching labs (with Mr. Adam Wentworth)
  - Oversaw the renovation of MSE web site and development of new promotional material for MSE (booklets, newsletters, postcards), with Ms. Heike Brueckner.
  - Led the Department through a successful accreditation ABET evaluation in 2013.
  - Strengthened ties with local industry in coordination with faculty members in MSE, leading to several directly funded research projects for the Department, including a Center of Excellence with Collins Aerospace.
  - Other Industry funded efforts: GE – Industrial Solutions, with Mark Aindow, \$450K/year, 2012-2016; Pratt and Whitney, with Rainer Hebert (PI), ~\$175K/year, 2014-2016; Rogers Corp., with Steven L. Suib (PI), \$80K/year, 2013-2014; Pfizer, Serge Nakhmanson (PI), \$100K/year; Stanadyne, Serge Nakhmanson (PI), \$50K/year; IMCorp, Serge Nakhmanson (PI), \$50K/year

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# **SERVICE AT THE UNIVERSITY OF CONNECTICUT**

## **SERVICE TO THE UNIVERSITY**

- Search committee co-chair: Dean of School of Engineering, 04/2023 -
- Search committee member: UConn Foundation President and Chief Executive Officer, 04/2023 -
- Co-chair, UConn's Strategic Planning Steering Committee, 01/2023 – 06/2023
- President's Advisory Council – Corporate and Industry Engagement, 08/2020 – 05/2021
- Provost's Executive Steering Committee for UConn's next Strategic Plan, 03/2021 – 06/2022
- UConn Phased Re-opening Committee, 03/2020 – 08/2020
- Member, Research Deans Council, Office of the Vice President for Research, 09/2019 – 02/2022
- Search committee member: Provost and Executive Vice President for Academic Affairs, 09/2019 – 04/2020
- Search committee member: College of Liberal Arts and Sciences Dean, 04/2018 – 01/2019
- Search committee member: OVPR Senior Grant Development Specialist, 04/2020 – 10/2020
- Member of the University committee for collective bargaining negotiations with UConn's Graduate Employee Union, 08/2014 – 05/2015. Served as one of five UConn academic representatives in this year long process which concluded with an agreement approved by CT State legislators in July 2015
- Elected Member of the University Senate, 01/2018 – 05/2021

## **SERVICE TO THE SCHOOL OF ENGINEERING**

- Undergraduate and Professional Education Manufacturing Initiative; lead the initiation of a manufacturing-based curriculum for engineering undergraduates (major/minor/concentration), certificate and MENG program development, 2020 – 2022
- Member, SoE Strategic Planning Committee, 2020 – 2022
- Search committee member: Grants and Contracts Development Officer, 01/2021 – 05/2021
- Chair of the Biomedical Eng. Department Head review/selection committee, 3/2017 – 6/2017
- Chair of the Electrical and Computer Eng. Department Head review/selection committee, 3/2014 – 5/2014
- Member, SoE Promotion, Tenure, and Reappointment Committee, 2010-2011
- Member, CMBE Promotion, Tenure, and Reappointment Committee, 2011-2013, 2017-2019
- Member, SoE Accreditation Board for Engr. & Tech. (ABET) Steering Committee, Spring 2012 – 2013
- SoE Honors Committee, Fall 2003-Spring 2013
- Member, SoE International Research Development Task Force, Spring 2008-2011
- Member, SoE Graduate Education and Diversity Committee, 2009-2013
- Member, Committee on Development of the Biomolecular Engineering Program of CMBE, Spring 2006
- Member: School of Engineering (SoE) Undergraduate Courses and Curriculum Committee, 2002-2007
- SoE Computing Advisory, Fall 2001- Spring 2003

## **SERVICE TO THE MATERIALS SCIENCE & ENGINEERING DEPARTMENT AND INSTITUTE OF MATERIALS SCIENCE**

- MSE Graduate Team (issues regarding the graduate program) 1/2001-9/2002
- MSE Departmental Web Pages (re-design/update departmental web pages), Fall 2001-Spring 2004
- MSE Seminar Series Organization, Fall 2001-Spring 2002
- MSE Undergraduate Team (issues regarding the undergraduate program), from Spring 2001-Fall 2003
- Re-design and promote MSE Minor program, from Fall 2002-Fall 2003
- MSE Honors Advisor, 2002-2010, MSE Minor Program Advisor, 2002-2007
- MSE Graduate Program Admissions, 2003-2008
- MSE faculty search committee member, 2/2004-8/2004
- Institute of Materials Science (IMS) & MSE faculty search committee member, 1/2003-10/2003
- Chair, IMS/MSE faculty search (computational materials science) committee, 1/2004-8/2004
- MSE Graduate Program Courses and Curriculum Committee, 2007-2013



- CMBE-MSE Program faculty search committee member, 5/2007-8/2008
- Director, MSE Graduate Program, 2008-2011
- Chair, MSE Graduate Program Qualifying Examination Committee, 2010-2011
- MSE ABET Team Leader (with H. Brody), Spring 2012 – Fall 2017
- Institute of Materials Science (IMS) & MSE faculty search committee member, 10/2017 – 6/2018
- Member, IMS Advisory Board, Fall 2011- Spring 2018
- IMS faculty search committee member, 8/2012 – 3/2013
- Member, IMS search committee, Director Affiliates Program, 1/2016 – 5/2016; Associate Director Affiliates Program, 4/2016 – 5/2016, Building Manager, 4/2016 – 6/2016; Finance Director, 4/2016 – 6/2016
- IMS/Physics faculty search (condensed matter physics) committee member, 1/2007-6/2008

## PROFESSIONAL SERVICE

- 100+ invited lectures/seminars
- 100+ contributed presentations
- Member of several professional societies including:
  - American Association for the Advancement of Science (AAAS)
  - American Physical Society (APS)
  - Materials Research Society (MRS)
  - American Ceramic Society (ACerS)
  - ASM International
- Frequent reviewer for: Acta Materialia, Advanced Materials, Advanced Functional Materials, Applied Physics Letters, Applied Surface Science, Ferroelectrics, Journal of the American Ceramic Society, Journal of Applied Physics, Journal of the Electrochemical Society, Journal of Materials Research, Journal of Materials Science, Journal of Physics and Chemistry of Solids, Integrated Ferroelectrics, Materials Chemistry and Physics, Materials Research Bulletin, Nano Letters, Nature Communications, Physica B, Physica Status Solidi, Physical Review B, Physical Review Letters, Physics Letters A, Scientific Reports, Solid State Communications, Thin Solid Films

## EDITORIAL

- Editorial Board Member, Materials Research Letters (since May 2012)
- Editor, Journal of Materials Science (2011-2018)
- Guest Editor, Integrated Ferroelectrics, Proceedings of XIX International Materials Research Congress, Symposium on Ferroelectricity and Piezoelectricity: Materials, Devices, and Applications (2010)
- Guest Editor, Integrated Ferroelectrics, Proceedings of XVIII International Materials Research Congress, Symposium on Ferroelectricity and Piezoelectricity: Materials, Devices, and Applications (2009)
- Guest Editor, Journal of Materials Science, Special Issue on Recent Developments in Ferroelectric Nanostructures and Multilayers, Volume 44 (19), 2009
- Co-principal Editor, Journal of Electroceramics, Smart Materials 2007, Volume 24 (1) (2010)
- Co-principal Editor, Journal of Materials Research, Focus Issue on Multiferroic Materials, Volume 22 (8) (2007)
- Guest Editor, Integrated Ferroelectrics, Proceedings of XV International Materials Research Congress, Symposium on Ferroelectricity and Piezoelectricity (2006)
- Guest Editor, Integrated Ferroelectrics, Proceedings of XIII International Materials Research Congress, Symposium on Ferroelectricity and Piezoelectricity (2004)

## SERVICE TO GOVERNMENT AGENCIES, FOUNDATIONS, PROFESSIONAL SOCIETIES

- Board Member, CT Technology Council, (May 2022 – )
- Member, Governor's Workforce Council (June 2021 – June 2022)
- Member, Connecticut General Assembly's Connecticut Manufacturing Caucus (May 2021 – Feb. 2022)

- Invited panelist and speaker – annual meeting of the Connecticut General Assembly’s Manufacturing Caucus, virtual (Jan. 2021)
- Invited panelist and speaker – Connecticut Sustainability Conference, The Connecticut Business & Industry Association (CBIA) and Pratt & Whitney, East Hartford, CT (Oct. 2018)
- Invited panelist – Innovation Center Panel, “What is the Most Productive Role for SBIR in Innovation Centers?” 2018 Department of the Navy SBIR/STTR Primes Summit, Arlington, VA (Apr. 2018)
- Invited panelist – “Innovative Technology Partnerships New Stakeholders, New Practices,” 2018 Sea-Air-Space Expo (SAS) and the Department of the Navy Annual Forum for SBIR/STTR Transition (FST), National Harbor, MD (Apr. 2018)
- Invited speaker and panelist for ASM Emerging Technologies Awareness Committee on Advanced Manufacturing, lead discussion on collaborative industrial partnerships
- Panelist for Council on Competitiveness, Energy and Manufacturing Competitiveness Partnership (EMCP) – Advanced Materials sector study. This invite-only panel brought together 30-40 experts in the advanced materials space for a closed-door conversation on production and scaling of advanced materials to accelerate a transition from discovery to manufacturing in the U.S. The findings fed into a roadmap and action plan for the President-elect that ensures America captures the competitiveness opportunity at the nexus of energy and manufacturing, Washington DC (Apr. 2016)
- Department of Energy - Recovery Act Small Business Innovation Research (SBIR) and Small Business Technology Transfer (STTR) Program on “Advanced Building Air Conditioning and Refrigeration, Thermal Load Shifts and Cool Roofs,” Panelist/Reviewer (Oct. 2009)
- National Science Foundation Materials Research Science and Engineering Centers (MRSEC), reviewer, panelist, site visits (2012-2017); National Science Foundation Materials World Network Panelist (MWN), Division of Materials Research (DMR), Electronic Materials, Arlington VA (Jan. 2005); National Science Foundation Research Experiences for Undergraduates (REU) Sites Panelist, Division of Materials Research (DMR), Arlington VA (Nov. 2004)
- National Science Foundation CAREER Panelist, DMR-Electronic Materials, Arlington, VA (Oct. 2002)

## **INTERNATIONAL CONFERENCES, SYMPOSIA AND WORKSHOPS**

Co-organizer of 16 major conferences, symposia, workshops:

- The American Ceramic Society – Conference on Electronic and Advanced Materials Applications (EAM 2018), Symposium on Energy Applications of Electronic and Ferroic Ceramics: Synthesis, Characterization, and Theory (Jan. 2018)
- The American Ceramic Society – Electronic Materials and Applications (EMA 2016), Symposium on Multiferroic Materials and Multilayer Ferroic Heterostructures: Properties and Applications (Jan. 2016)
- XXIV International Materials Research Congress, Symposium on Multiferroic Material Systems and Multilayer Ferroic Heterostructures: Experiment, Theory, Properties, and Applications, Cancun, Mexico (Aug. 2015)
- Frontiers in Additive Manufacturing Engineering (FAME 2015), UConn, Storrs, CT (June 2015)
- XXIII International Materials Research Congress, Symposium on Interfaces, Structure, and Domains in Ferroic and Multiferroic Material Systems, Cancun, Mexico (Aug. 2014)
- The American Ceramic Society – Electronic Materials and Applications (EMA 2014), Symposium on Multiferroic Materials and Multilayer Ferroic Heterostructures: Properties and Applications (Jan. 2014)
- 4<sup>th</sup> International Conference from Nanoparticles and Nanomaterials to Nanodevices and Nanosystems (IC4N), Symposium on Complex Oxides: Current State and Future Challenges (Jun. 2013)
- The American Ceramic Society – Electronic Materials and Applications (EMA 2013), Symposium on Multiferroic Materials and Multilayer Ferroic Heterostructures: Properties and Applications (Jan. 2013)
- Workshop on Complex Oxide and Multiferroic Thin Film Materials Science, Technologies, and Applications, Tucson, AZ (Jan. 2011)
- Materials Science & Technology 2010, Symposium on Multifunctional Oxides, Houston, TX (Oct. 2010)

- XIX International Materials Research Congress, Symposium on Ferroelectricity and Piezoelectric Materials, Devices, and Applications, Cancun, Mexico (Aug. 2010)
- International Symposium on Integrated Functionalities (ISIF 2010), Symposium on Ferroelectric Materials: Theory & Experiments, San Juan, PR (June 2010)
- XVIII International Materials Research Congress, Symposium on Ferroelectricity and Piezoelectricity: Materials, Devices, and Applications, Cancun, Mexico (Aug. 2009)
- XVI International Materials Research Congress, Symposium on Ferroelectricity and Piezoelectricity, Cancun, Mexico (Oct. 2007)
- 107<sup>th</sup> Annual Meeting & Exposition of The American Ceramic Society, Symposium on Nanostructures, Nanophenomena, and Interfaces in Ferroic Materials and Thin Films, Baltimore, MD (Apr. 2005)
- Multi-Ferroics and Graded Ferroelectrics, 16<sup>th</sup> International Symposium on Integrated Ferroelectrics, Gyeongju, Republic of Korea (Apr. 2004)

## COMMITTEE WORK AND ADVISORY BOARDS

- Member of the Scientific Advisory Committee of 20<sup>th</sup> International Metallurgy and Materials Congress (IMMC'2020), Nov. 2020, Istanbul, Turkey
- Board of Visitors (advisory board) – Materials Science and Engineering Dept., University of Maryland
- Elected Member of the Executive Committee of the University Materials Council (US/Canada/Australia MSE Department Heads), 5/2017 – 5/2019
- Member (invitation only) of the Emerging Technologies Awareness Committee of ASM International (2016-2019). The Committee advises and alerts the Board of Trustees, New Products and Services Committee, Technical Programming Committee, and ASM membership of emerging technologies, as well as global trends and developments in materials, commerce, government, societal perceptions, and education that may have significant impact on the ASM membership or society operations
- International Scientific Committee, 17<sup>th</sup> International Metallurgy and Materials Congress – IMMC 2014, Sept. 2014
- External advisory board member, Department of Materials Science and Engineering, University of Maryland, College Park, MD (2010-2011, 2017-)
- International advisory board member, International Workshop on Piezoelectric Materials and Applications in Actuators (IWPMA-2010), Antalya, Turkey (Oct. 2010)
- International advisory board member, 2<sup>nd</sup> International Workshop on Smart Materials & Structures, Kiel, Germany (Aug. 2007)
- International advisory board member, International Meeting on Clusters and Nanostructured Materials (CNM2006) Uzhgorod, Ukraine (Oct. 2006)

# TEACHING

## COURSES TAUGHT

- Structure, Properties, & Processing of Materials I (sophomore) – UConn
- Structure, Properties, & Processing of Materials II (sophomore) – UConn
- Phase Transformations in Solids (core course, graduate) – UConn
- Electronic Properties of Materials (core course, graduate, undergraduate) – UConn
- Materials Engineering in Society (freshman) – UConn
- Science and Technology of Thin Films (undergraduate special topics) – UConn
- Principles of Materials Engineering (graduate) – UConn
- Thermodynamics of Materials (undergraduate, graduate) – UMCP (as a TA)
- Theory of Smart Materials (graduate) – UMCP (as co-instructor)
- Ferroelectric Phenomena in Crystals and Films (graduate) – UMCP (as co-instructor)
- Materials Testing Laboratory (senior) – METU (instructor)

## TEACHING ASSIGNMENTS & STUDENT EVALUATIONS

Semester	Year	Course Number	Course Title	Enroll.	Student Evaluation Instr./Dept./Univ.
Fall	2017	2001	Stru. Prop. & Proc. Mater. I	35	5.0/3.5/4.1
Fall	2016	2001	Stru. Prop. & Proc. Mater. I	39	4.0/3.6/4.0
Spring	2016	6401	Grad. Seminar in MSE	55	N/A
Fall	2015	5320	Principles of Mater. Engr.	24	5.0/4.3/4.0
Fall	2015	6401	Grad. Seminar in MSE	55	N/A
Spring	2015	6401	Grad. Seminar in MSE	56	N/A
Fall	2014	5320	Principles of Mater. Engr.	25	5.0/4.1/4.0
Fall	2014	6401	Grad. Seminar in MSE	59	N/A
Spring	2014	6401	Grad. Seminar in MSE	59	N/A
Fall	2013	6401	Grad. Seminar in MSE	59	N/A
Spring	2013	–	No teaching assignments	–	–
Fall	2012	4001	Elect. & Mag. Prop. of Mater.	42	9.0/8.3/8.8
Spring	2012	4902	Materials Capstone Project II		N/A
Fall	2011	4001	Elect. & Mag. Prop. of Mater.	39	8.6/8.5/8.8
Spring	2010	5305	Phase Trans. in Solids	22	9.0/8.4/7.9
Fall	2010	4001	Elect. & Mag. Prop. of Mater.	30	9.4/8.9/8.9
Spring	2010	5305	Phase Trans. in Solids *	8	9.3/9.2/9.0
Fall	2009	4001	Elect. & Mag. Prop. of Mater.	16	9.8/9.0/8.9
Spring	2009	–	Sabbatical Leave	–	–
Fall	2008	4001	Elect. & Mag. Prop. of Mater.	21	9.4/8.2/8.7
Spring	2008	305	Phase Trans. in Solids	20	9.0/8.7/8.9
Spring	2008	317	Elect. & Mag. Prop. of Mater. *	13	8.3/8.7/8.9

Fall	2007	267/317	Elect. & Mag. Prop. of Mater.	35	8.5/8.6/8.7
Spring	2007	244	Stru. Prop. & Proc. Mater. II	55	9.0/8.7/8.7
Spring	2007	305	Phase Trans. in Solids	15	8.9/8.7/8.7
Fall	2006	267/317	Elect. & Mag. Prop. of Mater.	23	9.3/8.5/8.7
Spring	2006	201	Mater. Sci. & Eng. I	43	9.3/9.0/8.7
Spring	2006	305	Phase Trans. in Solids	5	9.2/9.0/8.7
Fall	2005	267/317	Elect. & Mag. Prop. of Mater.	17	8.7/8.6/8.8
Spring	2005	305	Phase Trans. in Solids	21	9.1/8.4/8.8
Spring	2005	305	Phase Trans. in Solids *	9	7.9/8.4/8.8
Fall	2004	267/317	Elect. & Mag. Prop. of Mater.	12	8.8/8.9/8.6
Spring	2004	244	Stru. Prop. & Proc. Mater. II †	17	8.6/8.9/8.6
Fall	2003	243	Stru. Prop. & Proc. Mater. I	15	8.8/8.7/8.5
Fall	2003	267/317	Elect. & Mag. Prop. of Mater.	28	8.3/8.3/8.8
Spring	2003	305	Phase Trans. in Solids	11	8.7/8.4/8.8
Fall	2002	243	Stru. Prop. & Proc. Mater. I	13	9.3/8.6/8.6
Spring	2002	305	Phase Trans. in Solids	12	8.7/9.1/8.9
Fall	2001	243	Stru. Prop. & Proc. Mater. I	4	9.8/8.1/8.5
Spring	2001	201	Mater. Sci. & Eng. I	22	9.4/7.6/8.6

All classes were taught by Alpay (solo) except † (Alpay and Padture). MSE 267/317 was a joint undergraduate (MSE 267) and a graduate (MSE 317) course

\* Master's of Engineering (MENG) courses offered on-site at Pratt & Whitney, East Hartford, CT.

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## ADVISING

Graduated 19 Ph.D., 7 M.S. (thesis), and 7 M.S./M.Eng (course based) students. Supported 5 post-doctoral fellows. Currently advising 6 Ph.D. students and 4 research / post-doctoral scientists.

### Undergraduate Advising

- Undergraduate advisor for >50 students in MSE and in the Honor's program
- Senior design faculty advisor on >10 projects

### Graduate Student Advising

- Ms. Sharon Uwanyuze, **current Ph.D. student** (expected May 2023)
- Ms. Cassidy Atkinson, **current Ph.D. student** (expected May 2024)
  - ORAU Journeyman Fellowship, U.S. Army Research Laboratory (2021- )
- Mr. Thomas Reid, M.S. Dec. 2018, "A Systematic Theoretical Study of Topological Insulator Bi<sub>2</sub>Se<sub>3</sub>" **current Ph.D. student** (expected May 2023)
- Mr. Serzat Safaltin, **current Ph.D. student** (expected Dec 2024)
- Mr. Taradutt Pattnaik, **current Ph.D. student** (expected May 2025)
- Mr. Devesh Kele, **current Ph.D. student** (expected May 2025)
- **Dr. Uchenna Anene**, Ph.D. Feb. 2022, "Computational Studies of the Interfacial and Surface Chemistry of Materials Using First-Principles Calculations," currently Chemical Mechanical Planarization Development Engineer, Intel Corp., Hillsboro, OR.
  - UConn Doctoral Student Travel Fellowship, 2021
  - Extreme Science and Engineering Discovery Environment (XSEDE) Startup Allocation, Co-Principal Investigator, 2020-2021
  - NSF LSAMP Bridge to the Doctorate Fellow, 2019-2021
  - UConn School of Engineering John Lof Leadership Academy Scholar, 2019-2021
  - UConn Innovation Zone Makerspace Fellowship, 2019-2022
  - National Organization for the Professional Advancement of Black Chemists and Chemical Engineers (NOBCCChE) Advancing Science Conference Grant, 2019
  - Women in Data Science & Symposium on Machine Learning in Sci. and Engr. Travel Grant, 2019
- **Dr. Kevin Co**, Ph.D. Dec. 2021, "Multi-scale Modeling of Ferroelectric Perovskite Thin-Films and Nanostructures," currently post-doctoral research scientist, CentraleSupélec, Université Paris-Saclay, France
- **Dr. Dennis Trujillo**, Ph.D. Apr. 2021, "Machine Learning as Applied to Solving Complex Problems in Materials Science," currently post-doctoral research scientist at Argonne National Laboratory
- **Dr. Erik Nykwest**, Ph.D. Apr. 2019, "Coercing Magnetism into Diamagnetic Ceramics: A case study in Alumina." Physics teacher, Windham High School, CT, currently research scientist at Oak Ridge National Laboratory
- **Ms. Alexandra Merkouriou**, M.S. Dec. 2018, "Thermophysical Properties and Characterization of Diamond Silicon Carbide," Development Engineer, M Cubed Technologies; Project Manager Air Force Research Laboratory – Research in Advanced Manufacturing, UConn, Storrs, CT
  - Outstanding Women Scholars Award (2013)
  - Material Advantage Chapter of Excellence Award (2014)
  - GE Early Career Award (2015)

- **Dr. Tulsi Patel**, Ph.D. Nov. 2018 (co-advisor with R. J. Hebert), "Hybrid Additive Manufacturing of Ferroelectric Oxides and Aerospace Alloys." Currently NRC Research Associate at the Air Force Research Laboratory, Dayton, OH
  - DoED FIPSE-ATLANTIS fellowship (September 2012 – August 2013)
  - NSF GK-12 fellowship (September 2014 – May 2016)
  - NSF EAPSI fellowship in Korea (May 2016 – August 2016)
  - Invited Participant for AAAS Catalyzing Advocacy in Science and Engineering (CASE) Workshop (March 2018)
  - Best Oral Paper Award at 27th Annual Symposium of Connecticut Microelectronics and Optoelectronics Consortium
- **Dr. Yomery Espinal**, Ph.D. Aug. 2018, "Design and Synthesis of Functional Nanocomposites for Electronic Applications." Currently Science and Engineering Technical Assistant – Defense Advanced Research Projects Agency (DARPA)
  - ORAU Journeyman Fellowship, U.S. Army Research Laboratory, Adelphi, MD (2016-2018)
  - Multicultural Scholars Fellowship, UConn, Storrs, CT (2013-2018)
  - NSF LSAMP-Bridge to the Doctorate Fellow, UConn, Storrs, CT (2013-2015)
- **Dr. M. Tumerkan Kesim**, Ph.D. Aug. 2017, "Dielectric and Electrothermal Properties of Ferroelectric Multilayers and Superlattice Heterostructures." General Electric Graduate Fellow for Innovation (2013-2017); Currently R&D Chief, Entekno Materials & Post-Doctoral Researcher, Anadolu University, Turkey.
- **Ms. Diana Giulietti**, M.S. (course based) Aug. 2017. Materials Engineer – Advanced Manufacturing Technologies, UTC Aerospace Systems
- **Dr. Hamidreza Khassaf**, Ph.D. Apr. 2017, "Combined Caloric Properties of Ferroelectrics." Post-doctoral Research Fellow, Brown University; currently senior design engineer, ASML, CT.
- **Dr. Fu-Chang Sun**, Ph.D. Jan. 2017, "Modeling of Structural, Elastic, and Polar Properties of Organic and Inorganic Ferroelectrics." Currently Senior Consultant – Data Sciences, Travelers, Hartford, CT.
- **Ms. Anamica Saha**, MS (course based) Jan. 2017.
- **Ms. Erica A. Rozzero (Pehmoeller)**, MS (course based) May 2016. Metallurgist, Electric Boat, Groton, CT.
- **Mr. Shawn Fonseca**, M.S. July 2013, "Electrocaloric Cooling Efficiency of Perovskite Ferroelectric Thin Films." Design Engineer, GE Energy – Industry Solutions, Plainville, CT.
- **Ms. Caitlyn M. Thorpe**, M.Eng. May 2015. Materials Characterization, United Technologies Research Center, East Hartford, CT
- **Mr. Si-Won Kim**, M.S. (course based) May 2013.
- **Ms. Tulsi Patel**, M.S. July 2013, "Structural Properties of Titanium Dioxide Films for Dye-Sensitized Solar Cell Applications"
- **Dr. Jialan (Flora) Zhang**, Ph.D. July 2013, "Electrothermal Properties of Perovskite Ferroelectric Films." Post-doctoral research associate, University of Illinois Urbana-Champaign (2013-2014, with Lane W. Martin), Post-doctoral research associate, Rutgers, The State University of New Jersey, with Karin M. Rabe (2015-2016), Associate Editor – Journal of Visualized Experiments (JoVE); Patent Agent with Choate, Hall & Stewart LLP, MA; currently Science Advisor at Goodwin Procter LLP
  - Twice recipient of the Research Fellowship Award for Foreign Citizens of the Scientific and Technological Research Foundation of Turkey (June-September 2011 and June-September 2012)

- Best Oral Paper Award at the 22<sup>nd</sup> Connecticut Microelectronics and Optoelectronics Consortium, Mar. 2013
- **Ms. Julie A. Wittenzellner**, MS (course based) May 2013. Engineer, United Technologies Research Center, East Hartford, CT.
- **Dr. Liang Dong**, Ph.D. May 2013, "First Principles Study of Band Offsets and Band Bending of  $\text{In}_x\text{Ga}_{1-x}\text{N}/\text{GaN}$  and  $\text{Zn}_{1-x}\text{Be}_x\text{O}/\text{ZnO}$  Heterostructures and Quantum Wells." Post-doctoral research associate, UConn (2013-2014), with Avinash M. Dongare; Post-doctoral research associate, University of Pennsylvania (2014-2017), with Vivek B. Shenoy; currently Program Manager, Blavatnik Awards for Young Scientists New York Academy of Sciences
- **Dr. Claire V. Weiss**, Ph.D. Aug. 2011, "Optimization of the Solution and Processing Parameters for  $\text{SrTiO}_3$  Thin Films for Electronic Devices." Scientist, Army Research Laboratory, Aberdeen Proving Ground, MD (2011-2014); currently Materials Engineer, Collins Aerospace (2015-).
  - Gold Medal at the Army Research Laboratory Summer Student Research Symposium for "Novel Thin Film Materials for Tunable Device Applications," Aberdeen Proving Ground, MD (August 2008)
  - Science, Mathematics, and Research for Transformation Program (SMART) Doctoral Scholarship
  - Naval Postgraduate School (NPS) and The American Society for Engineering Education (ASEE), Fellowship (August 2009-2011)
  - The Connecticut Technology Council, 2010 Women of Innovation-Collegian Innovation and Leadership Award, Jan. 2010.
- **Dr. Yong Liu**, Ph.D. July 2011, "Ni-Ru Alloys for Electrical Contact Applications." R&D Yield Enhancement Engineer, Micron Corp., Boise, ID, currently Failure Analysis Engineer, Samsung Electronics: Austin Semiconductor (Austin, Texas)
  - China Scholarship Council Chinese Government Award for "Outstanding Self-Financed Students Abroad."
- **Mr. T. Kazienko**, M.S. (course based) December 2010. Supplier Quality Engineer at Emerson Process Management, CO.
- **Dr. M. Baris Okatan**, Ph.D. December 2010, "Interlayer Coupling in Ferroelectric Multilayers: Domain Structures and Effect of Space Charges." Postdoctoral Research Associate, School of Materials Science and Engineering, University of New South Wales, Australia, Research Scientist at Oak Ridge National Laboratories, TN; Research Scientist at Sabanci University, Turkey; currently Asst. Prof. at Izmir Institute of Technology, Turkey
- **Dr. Bamidele S. Allimi**, Ph.D. July 2008, "Metal-Insulator Transitions in Epitaxial  $\text{V}_2\text{O}_3$  Films." Senior Production Engr., Intel Corp., Hillsboro, OR, currently Development Engineer, Global Foundries Corp., East Fishkill, NY.
- **Dr. Gürsel Akçay**, Ph.D. May 2008, "Strain Engineering of Epitaxial Ferroelectric Thin Films on Anisotropic Substrates." Sr. Production Engr., Intel Corp., Hillsboro, OR, then at Olympus NDT, Waltham, MA, currently Sr. Product Development Engineer at Smiths Medical, CT.
  - Outstanding Graduate Student Award, MSE Program, UConn (2008).
- **Dr. Shan Zhong**, Ph.D. September 2007, "Ferroelectric Multilayers and Heterostructures for High Performance Tunable Microwave Devices Applications." Currently Senior Fellow – Packaging Engr, Intel Corp., Phoenix, AZ
  - Outstanding Graduate Student Award, MSE, UConn (2006)
- **Mr. Gürsel Akçay**, M.S. January 2006, "Dynamic Pyroelectric Enhancement of Homogeneous Ferroelectrics."



- **Mr. Shan Zhong**, M.S. June 2005, "Phase Transformation Characteristics and Dielectric Response of Multilayer Ferroelectrics"
- **Dr. I. Burc Misirlioglu**, Ph.D. December 2005, "Stress Relaxation, Phase Transformations, and Dislocations in Ferroelectric Heterostructures." Asst. Prof. and then Assoc. Prof. at Sabanci University, Istanbul, Turkey.
  - Alexander von Humboldt Post-Doctoral Research Fellowship (Max Planck Institut, Germany)
  - Outstanding Graduate Student Award, MSE, UConn (2005)
  - ASM Hartford Chapter Student Speaking Contest First Prize (2005)
  - School of Engineering Outstanding Doctoral Student Award, UConn (2007)
- **Mr. Anuj Sharma**, M.S. April 2004, "Effect of Internal Stresses on Pyroelectric Response of Ferroelectric Thin Films." Manager for Strategic Accounts in IT Services Business, NIIT Technologies, Amsterdam, Netherlands
- **Dr. Zhigang Ban**, Ph.D. August 2003, "Thermodynamic Modeling of Ferroelectric Epitaxial Films and Polarization-Graded Ferroelectrics." Argonne National Laboratories, KennaMetal Inc., currently Development Engineer at First Solar Inc., Perrysburg, OH
  - School of Engineering Outstanding Ph.D. Thesis Award, UConn (2004)
  - Outstanding Graduate Student Award, Department of Materials Science and Engineering, UConn (2003)
- **Associate advisor** for >50 graduate students in the UConn Materials Science and Engineering, Materials Science, Physics, and Chemistry Programs
- **External examiner** for over 10 Ph.D. dissertations

## RESEARCH FUNDING

- Quantum Connecticut (Quantum-CT) Regional Innovation Engine, National Science Foundation [PI, with 4 co-PIs, 06/01/2023 – 05/31/2025, \$1,000,000]
- Multiscale Modeling and Characterization of Metamaterials, Functional Ceramics and Photonics, Air Force Research Laboratory [PI with 8 co-PIs, 09/21/2021 – 09/20/2024, \$4,682,322]
- Data Flow Between Experiment and Modeling for Materials Assessment and Processing, DOD/Army/Army Research Laboratory Collaborative Agreement [co-PI with L. Frame, 07/01/21 – 06/30/2026, \$2,125,000]
- Ink Jet Printing of Metal Oxides as Sensors and Protective Coatings, DOD/Navy/Office of Naval Research [co-PI with S. L. Suib, 08/23/2021 – 08/22/2022, \$200,000]
- Materials and Processes for Smart, Agile Air Force Technologies, Air Force Research Laboratory [PI with 15 co-PIs, 08/28/2020 – 08/27/2023, \$7,953,698]
- Data Mining Approaches for the Discovery of Novel Electrostrictive Materials, Interdisciplinary Multi-Investigator Materials Program, Institute of Materials Science, University of Connecticut [PI, 08/28/2020 – 05/31/2021, \$20,000 (no overhead)]
- Simulation-Based Uncertainty Quantification of Manufacturing Technologies, Air Force Research Laboratory [PI with 6 co-PIs, 08/23/2018 – 08/22/2022, no cost-extension 05/31/2023, \$5,386,572]
- Additive Integration of Functional Ceramics for Structural Health Monitoring, DOD/Navy/Office of Naval Research [PI with two co-PIs, 01/01/20 – 12/31/20, \$100,000]

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- Medical Devices for Real-time Radiation Dosimetry at Sub-millimeter Spatial Resolution, subcontract from eBeam Film, Inc, via NSF-SBIR [PI, 09/01/2017 – 06/01/2018, \$75,000]
  - Collins Aerospace – Center for Advanced Materials, Collins Aerospace [PI (25%) and Director, co-PIs R. J. Hebert, M. Aindow, S. L. Suib, \$2,171,117 (\$1,000,000 base funding), 02/01/2016 – 01/31/2021]
  - Computational Resources for Materials Genomics and Advanced Manufacturing Modeling, UConn NextGen CT Academic Plan [PI (50%), with R. J. Hebert, J. Hancock, 6/7/2016 – 6/6/2017, \$100,000]
  - Computational and Experimental Studies of Laser-Powder Interactions for Additive Manufacturing, Pratt and Whitney [co-PI (50%), PI: R. Hebert, 08/23/2014 – 12/31/2018, \$400,000 (base) with \$180,000 UConn matching]
  - Mesoporous Ferromagnetic Materials for Antenna Applications, Rogers Corp. [co-PI (50%), PI: S. L. Suib, 02/15/2014 – 02/14/2015, \$84,159]
  - Metals and Alloys for Electrical Circuit Breaker Contacts, GE Industrial Solutions [PI (50%), co-PI M. Aindow, 01/01/2013 – 01/01/2017, \$820,800]
  - MOCVD of High-Performance Complex Oxide Films for Switchable Film Bulk Acoustic Resonators, subcontract from SMI Inc., NJ via Department of Defense, Army Research Office STTR, Phase II [PI, 02/01/2013 – 01/31/2015, \$120,000]
  - Multi-Scale Materials Informatics for Rational Perovskite-based Oxide Design, UConn IMS and SoE [PI (25%), co-PIs M. Jain, R. Ramprasad, and G. A. Rossetti, Jr., 06/15/2012 – 05/30/2013, \$100,000]
  - Non-Linear Optical Crystals (NLOCs) Consisting of Polarized Multi-Layers and Compositionally Graded Heterostructures, United Technologies Corporation [PI, 05/01/2011 – 12/31/2012, \$30,000]
  - MOCVD of High-Performance Complex Oxide Films for Switchable Film Bulk Acoustic Resonators, subcontract from SMI Inc., NJ via DoD/Army STTR, Phase I [PI, 09/06/2011 – 03/05/2012, \$5,000]
  - Development of Electrocaloric Materials Models, United Technologies Corporation [co-PI (50%), PI G. A. Rossetti, Jr., 06/15/2011 – 05/22/2012, \$45,423]
  - Binary Iron-Based Alloys for Electrical Contact Applications, University of Connecticut Center for Science and Technology Commercialization [co-PI (50%), PI M. Aindow, 05/01/2011 – 03/01/2012, \$49,275]
  - Thermodynamic Methodology and Electrocaloric Materials Assessment, United Technologies Corporation [co-PI (50%), PI G. A. Rossetti, Jr., 12/1/2010 – 12/31/2010, \$10,000]
  - Three Dimensional Composite Nanostructures for Lean NO<sub>x</sub> Emission Control, Department of Energy [co-PI (20%), PI P.-X Gao and R. Ramprasad, 10/1/2009 – 09/30/2012, \$1,248,242]
  - Interlayer Interfaces in Multilayer and Graded Ferroelectrics: Modeling and Deposition of Multilayer and Graded Barium Strontium Titanate Films, subcontract from Frequency-Agile, Functionally Graded Ka-band Filters, SMI Inc., NJ [PI, Department of Defense, Army STTR, Phase II, 08/27/2008 – 08/27/2010, \$225,000]

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- Modeling of Nonlinear Nanodielectrics, General Electric [co-PI (33%), PI S. Boggs and R. Ramprasad, 08/18/2008 – 12/31/2008, \$100,000]
  - Theoretical Analysis and MOSD of BST Multilayers, subcontract from Frequency-Agile, Functionally Graded Ka-band Filters, SMI Inc., NJ [PI, Department of Defense, Army STTR, Phase I, 07/2/2007 – 01/01/2008, \$30,000]
  - Self-Healing, High-Reliability Electrical Contacts for Military Applications, U.S. Army Research Office [PI (50%), co-PI M. Aindow, 06/01/2007 – 06/01/2011, \$398,375]
  - Highly Tunable, Temperature Insensitive Ferroelectric Films for Joint Tactical Radio System Manpack and Handheld Radios, U.S. Army Research Office [PI, 09/15/2005 – 05/31/2009, \$295,940, \$30,000 extension 03/31/10]
  - Preliminary Theoretical Assessment of Conductive Oxide Phase Diagrams, Delphi Corporation [PI, 09/15/2006 – 12/31/2006, \$10,000]
  - A Proposal to Establish Functional Materials Synthesis Undergraduate Laboratory in the Department of Materials Science and Engineering, School of Engineering, University of Connecticut [PI (50%), PI B. D. Huey, 12/13/2005 – 01/31/2006, \$29,698]
  - Dislocations in Thin Films of Ferroic Oxides, American Chemical Society, The Petroleum Research Fund [PI, 07/01/2005 – 05/30/2008, \$80,000, no indirect costs]
  - CAREER: Ferroelectric Multilayers, Superlattices, and Compositionally Graded Films, National Science Foundation [PI, 12/15/2001 – 11/30/2006, \$517,164, no cost extension 05/31/2007]
  - Computational Analysis of Strontium Bismuth Tantalate, Delphi Automotive Systems [PI, 06/01/04 – 12/31/2004, \$10,000, fee for service]
  - Applications of Biomechanically Compatible Pseudoelastic Beta Titanium Alloys in Orthopedic Devices, Connecticut Innovations and Memry Co. [co-PI (50%), PI M. Blackburn and M. Aindow, 08/01/2002 – 07/31/2004, \$397,448]
  - Reversible Current Delimiters, General Electric Power Systems (PI (50%), with co-PI H. Marcus, 02/25/2002 – 05/01/2003, \$132,000]
  - Modeling of Dielectric and Piezoelectric Behavior of Constrained Multilayer Ferroelectrics, University of Connecticut Research Foundation [PI, 01/01/2002 – 12/31/2002, no-cost extension 5/01/2003, \$22,476]
  - Acquisition of a Ferroelectric/Dielectric Testing Station with a Hot/Cold Stage, University of Connecticut Research Foundation [PI, equipment, 01/01/2002 – 12/31/2002, \$55,488]

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## PUBLICATIONS

Published over 200 papers in various journals, one book, 5 invited book chapters, and over 20 papers in refereed conference proceedings; >9500 total citations, h-index: 54, source: Google Scholar

### BOOK

- J.V. Mantese and S. P. Alpay, "Graded Ferroelectrics, Transpacitors, and Transponents," Multifunctional Thin Film Materials Series, 158 pages, 85 illus., Hardcover, ISBN: 0-387-23311-3, Springer (New York, 2005)

### BOOK CHAPTERS (IN REVERSE CHRONOLOGICAL ORDER)

1. J. Zhang, S. P. Alpay, and G. A. Rossetti, Jr., in *Electrocaloric Materials: A New Generation of Coolers, "Constitutive Modeling of Electrothermal Properties in Polar Dielectric Materials and Thin Films,"* edited by T. Correia and Q. Zhang, pp. 17-45 Springer (New York – USA), 2013
2. M. W. Cole and S. P. Alpay, in *Ferroelectrics - Material Aspects, "Performance Enhanced Complex Oxide Thin Films for Temperature Stable Tunable Device Applications: A Materials Design and Process Science Prospective,"* edited by M. Lallart, pp. 149-178, InTech - Open Access Publisher (Rijeka – Croatia), 2011
3. G. Akcay, S. P. Alpay, and V. Nagarajan, in *Ferroelectric Films at Microwave Frequencies, "Dislocations in Ferroelectric Thin Films,"* edited by T. J. Jackson, P. M. Suherman, and P. Bao, pp. 95-121, Research Signpost (Kerala – India), 2010
4. D. Jena, S. P. Alpay, and J. V. Mantese, in *Polarization Effects in Semiconductors: From Ab Initio Theory to Device Applications, "Functionally Graded Polar Heterostructures: New Materials for Multifunctional Devices,"* edited by D. Jena and C. Wood, pp. 307-368, Springer (New York – USA), 2007
5. S. P. Alpay in *Handbook of Thin Film Materials, Vol.: 3, Ferroelectric and Dielectric Thin Films, "Twinning in Ferroelectric Thin Films: Theory and Structural Analysis,"* edited by H. S. Nalwa, pp. 517-543, Academic Press (San Diego – USA), 2002

### REFEREED JOURNAL PUBLICATIONS (IN REVERSE CHRONOLOGICAL ORDER)

1. A. Gurung, J. M. Mangeri, A. M. Hagerstrom, N. D. Orloff, S. P. Alpay, and S. Nakhmanson, "Modeling Structure-Properties Relations in Compositionally Disordered Relaxor Dielectrics at Nanoscale," *Acta Mater.*, submitted Mar. 26, 2023
2. B. Yavas, C. J. Hung, M. Li, R. J. Hebert, S. P. Alpay, and M. Aindow, "Laser Glazing of a Quasicrystal-reinforced Al-Cu-Fe-Cr Alloy: Implications for Use in Additive Manufacturing," *Scripta Mater.* 222, 115249 (2023), <https://doi.org/10.1016/j.scriptamat.2022.115249>
3. B. Yavas, C. J. Hung, S. K. Nayak, M. Aindow, and S. P. Alpay, "Quasicrystal stability in complex aluminum alloys: insights from first principles models on structural motifs in crystalline approximants," *Scripta Mater.* 222, 115046 (2023), <https://doi.org/10.1016/j.scriptamat.2022.115046>

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4. D. P. Trujillo, A. Gurung, J. Yu, S. K. Nayak, S. P. Alpay, and P-E Janolin, "Data-driven Methods for Discovery of Next-generation Electrostrictive Materials," *npj Comp. Mater.* 8, 251 (2022), <https://doi.org/10.1038/s41524-022-00941-1>
  5. M. V. Pagliaro, C. Wen, B. Sa, B. Liu, M. Bellini, F. Bartoli, S. Sahoo, R. K. Singh, S. P. Alpay, H. A. Miller, and Dario R. Dekel, "Improving Alkaline Hydrogen Oxidation Activity of Palladium through Interactions with Transition-Metal Oxides," *ACS Catal.* 12, 10894–10904 (2022), <https://pubs.acs.org/doi/10.1021/acscatal.2c02417>
  6. S. Bamonte, S. Shubhashish, H. Khanna, S. Shuster, S. J. B. Rubio, S. L. Suib, S. P. Alpay, and S. Sahoo, "Magnetically Doped Molybdenum Disulfide Layers for Enhanced Carbon Dioxide Capture," *ACS Appl. Mater. Interfaces* 14, 27799–27813 (2022), <https://doi.org/10.1021/acscami.2c01820>
  7. J. Kong, S. K. Nayak, J. Liu, S. P. Alpay, and A. Pramanick, "Local atomic structure distortions in the Dion-Jacobson ferroelectric CsBiNb<sub>2</sub>O<sub>7</sub>," *Phys. Rev. B* 106, 024103 (2022), <https://link.aps.org/doi/10.1103/PhysRevB.106.024103>
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  201. S. P. Alpay, R. Ramesh, and A. L. Roytburd, "Effect of Uniaxial Stresses on the Polydomain Structure of Epitaxial Ferroelectric Thin Films," *Ferroelectrics* 221, 245-250 (1999).
  202. S. P. Alpay, A. S. Prakash, S. Aggarwal, P. Shuk, M. Greenblatt, R. Ramesh, and A. L. Roytburd, "Polydomain Formation in Epitaxial  $\text{PbTiO}_3$  Films on (001)  $\text{MgO}$ ," *Scripta Mater.* 39, 1435-1441 (1998).
  203. S. P. Alpay and A. L. Roytburd, "Thermodynamics of Polydomain Heterostructures. III. Domain Stability Map," *J. Appl. Phys.* 83, 4714-4723 (1998).
  204. S. P. Alpay and A. L. Roytburd, "Domain Structures of Epitaxial Perovskite Ferroelectric Films: Part II. Applications," *Tr. J. of Phys.* 22, 997-1004 (1998).
  205. S. P. Alpay and A. L. Roytburd, "Domain Structures of Epitaxial Perovskite Ferroelectric Films: Part I. Theory," *Tr. J. of Phys.* 22, 497-503 (1998).
  206. R. Gürbüz and S. P. Alpay, "Effect of Coarse Second Phase Particles on Fatigue Crack Propagation of an Al-Zn-Mg-Cu Alloy," *Scripta Metall.* 30, 1373-1376 (1994).
  207. S. P. Alpay and R. Gürbüz, "Effect of Aging on the Fatigue Crack Growth Kinetics of an Al-Zn-Mg-Cu Alloy in Two Directions," *Scripta Metall.* 30, 423-427 (1994).

## REFEREED CONFERENCE PROCEEDINGS (IN REVERSE CHRONOLOGICAL ORDER)

1. K. Zhou, S. A. Boggs, S. P. Alpay, "Finite Element Modeling of Effective Dielectric Response and Dielectric Tunability in Ferroelectric Composite Materials," in 2008 IEEE Conference on Electrical Insulation and Dielectric Phenomena, pp. 522-525 (2008).
2. M. W. Cole, S. P. Alpay, L. Fuentes Cobas, K. Mossi, Guest Editorial, Proceedings of XIII International Materials Research Congress, Symposium on Ferroelectricity and Piezoelectricity, *Integrated Ferroelectrics* 71, vii (2005).
3. S. P. Alpay, Z.-G. Ban, I. B. Misirlioglu, and A. Sharma, "Effect of Internal Stresses on the Phase Transformation Characteristics and Physical Properties of Epitaxial Ferroelectric Films," in Proceedings

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of the 204<sup>th</sup> Electrochemical Society Meeting, Symposium on Epitaxial Growth of Functional Oxides, Vol. PV 2003-29, pp. 147-160 (2005).

4. T. Zhou, M. Aindow, S. P. Alpay, M. J. Blackburn, and M. H. Wu, "Phase Transformations and Mechanical Response in a Ti/Mo-Based Pseudo-Elastic Alloy," in *Ti-2003 Science and Technology*, Ed. G. Lutjering and J. Albrecht, Vol. III, pp.1535-1542 (2004).
5. I. B. Misirlioglu, A. L. Vasiliev, M. Aindow, R. Ramesh, and S. P. Alpay, "A Transmission Electron Microscopy Study of Dislocation Substructures in PLD-grown Epitaxial Films of (Ba,Sr)TiO<sub>3</sub> on (001) LaAlO<sub>3</sub>," in *Ferroelectric Thin Films XII*, edited by A. Kingon, S. Hoffmann-Eifert, H. Funakubo, V. Joshi, and I. P. Koutsaroff, *Mater. Res. Soc. Symp. Proc.* **784**, pp. 49-54 (2004).
6. A. Sharma, Z. -G. Ban, and S. P. Alpay, "Pyroelectric Properties of Ferroelectric Thin Films: Effect of Internal Stresses," in *Ferroelectric Thin Films XII*, edited by A. Kingon, S. Hoffmann-Eifert, H. Funakubo, V. Joshi, and I. P. Koutsaroff, *Mater. Res. Soc. Symp. Proc.* **784**, pp. 529-534 (2004).
7. Z. -G. Ban, S. P. Alpay, and J. V. Mantese, "Thermodynamic Analysis of the Hysteresis Offset in Polarization Graded Ferroelectric Materials," in *Ferroelectric Thin Films XI*, edited by S. Aggarwal, S. Hoffmann, M. Shimizu, D. Y. Kaufman, and S. R. Gilbert, (*Mater. Res. Soc. Symp. Proc.* **748**, Warrendale, PA, 2003), pp. U3.10.1.
8. S. P. Alpay and Z. -G. Ban, "Tuning the Tunability in Epitaxial Barium Strontium Titanate Film via Internal Stresses," in *Ferroelectric Thin Films XI*, edited by S. Aggarwal, S. Hoffmann, M. Shimizu, D. Y. Kaufman, and S. R. Gilbert, (*Mater. Res. Soc. Symp. Proc.* **748**, Warrendale, PA, 2003), pp. U16.3.1.
9. J.V. Mantese, N. W. Schubring, A. L. Micheli, M. P. Thompson, R. Naik, G. W. Auner, I. B. Misirlioglu, Z.-G. Ban, and S. P. Alpay, "Hysteresis Offset in Stress Induced Polarization-Graded Ferroelectrics," in *Ferroelectric Thin Films XI*, edited by S. Aggarwal, S. Hoffmann, M. Shimizu, D. Y. Kaufman, and S. R. Gilbert, (*Mater. Res. Soc. Symp. Proc.* **748**, Warrendale, PA, 2003), pp. U12.20.1.
10. Z.-G. Ban and S.P. Alpay, "Lattice Misfit as a Design Parameter for Engineering Dielectric Response and Tunability in Epitaxial Barium Strontium Titanate Films," in *Morphotropic Phase Boundary Perovskites, High Strain Piezoelectrics, and Dielectric Ceramics*, edited by R. Guo, K. M. Nair, W. K. Wong-Ng, A. Bhalla, D. Viehland, D. Suvorov, C. Wu, and S. -I. Hirano, (The American Ceramic Society, Westerville, OH, 2003), pp. 333.
11. Z. -G. Ban and S. P. Alpay, "Misfit Strain Driven Phase Transformations in Epitaxial Barium Strontium Titanate Films," in *Perovskite Materials*, edited by K. Poepelmeier, A. Navrotsky, and R. Wentzcovitch (*Mater. Res. Soc. Symp. Proc.* **718**, Warrendale, PA, 2002), pp. D10.28.
12. S. P. Alpay, A. L. Roytburd, L. A. Bendersky, V. Nagarajan, and R. Ramesh, "Cellular Domain Architecture of Stress-free Epitaxial Ferroelectric Thin Films," in *Ferroelectric Thin Films IX*, edited by Paul McIntyre, S. Gilbert, Y. Miyasaka, R. Schwartz, and D. Wouters (*Mater. Res. Soc. Symp. Proc.* **596**, Warrendale, PA, 1999), pp. CC 8.8.
13. S. P. Alpay, V. Nagarajan, R. Ramesh, and A. L. Roytburd, "Internal Stress Induced Increase in Saturation Polarization in Ultra-Thin Ferroelectric Films," *Proceedings of the 10<sup>th</sup> International Materials Science and Metallurgy Congress*, pp. 1633 (2000).

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14. S. P. Alpay and A. L. Roytburd, "Thermodynamic Theory of Single-domain Epitaxial Thin Film Ferroelectrics," Invited Talk- Proceedings of the 10<sup>th</sup> International Materials Science and Metallurgy Congress, pp. 1317 (2000).
  15. S. P. Alpay, "Tilting of Domains in Epitaxial Ferroelectric Thin Films with a Perovskite Structure," Proceedings of the 10<sup>th</sup> International Materials Science and Metallurgy Congress, pp. 2023 (2000).
  16. V. Nagarajan, S. P. Alpay, C. S. Ganpule, B. Nagaraj, S. Aggarwal, A. L. Roytburd, E. D. Williams, and R. Ramesh, "Epitaxial PMN-PT Relaxor Thin Films: Dependence of Dielectric and Piezoelectric Properties on Film Thickness," in *Ferroelectric Thin Films VIII*, edited by R. Schwartz, P. McIntyre, Y. Miyasaka, S. Summerfelt and D. Wouters (Mater. Res. Soc. Symp. Proc. **596**, Warrendale, PA, 2000), pp. 505-510.
  17. S. P. Alpay, V. Nagarajan, S. Aggarwal, R. Ramesh, A. L. Roytburd, L. A. Bendersky, and M. D. Vaudin, "The Stress State of Epitaxial Lead Zirconate Titanate Thin Films with and without  $\text{LaSr}_{0.5}\text{Co}_{0.5}\text{O}_3$  Electrodes," in *Ferroelectric Thin Films VII*, edited by R.E. Jones et al. (Mater. Res. Soc. Symp. Proc. **541**, Warrendale, PA, 1999), pp. 357.
  18. S. P. Alpay, A. S. Prakash, S. Aggarwal, P. Shuk, M. Greenblatt, R. Ramesh, and A. L. Roytburd, "Polydomain Structure of Epitaxial  $\text{PbTiO}_3$  Films on  $\text{MgO}$ ," in *Ferroelectric Thin Films VI*, edited by R.E. Treece, R.E. Jones, C.M. Foster et al. (Mater. Res. Soc. Symp. Proc., **493**, Warrendale, PA, 1998), pp. 111.
  19. S. P. Alpay and A. L. Roytburd, "Equilibrium Domain Structures of Epitaxial Perovskite Ferroelectric Films," in *Epitaxial Oxide Thin Films III*, edited by C.M. Foster, J.S. Speck, D.G. Schlom et al. (Mater. Res. Soc. Symp. Proc., **474**, Pittsburgh, PA, 1997), pp. 407.
  20. S. P. Alpay and R. Gürbüz "Aging of 7050 Aluminum Alloy and Its Effect on Fatigue Behavior," EUROMAT 94 Conference Proceedings Volume 3, (Balatonszeplak, Hungary, 1994), pp. 710-714.

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## INVITED TALKS, PRESENTATIONS, LECTURES †

1. First Principles Modeling as Applied to Fundamental Problems in Metallurgy, Department of Materials Science and Engineering, University of Texas – Arlington, virtual (Mar. 2021)
2. Atomistic Modeling of Inoculant Effects in Al-356 alloy for Casting, with T. Reid, C. Atkinson, and S. Sahoo, Air Force Research Laboratory, Materials and Manufacturing Directorate, virtual (Mar 2021)
3. The Iron Man Approach: Accelerating Materials Development Using Atomistic Models, Board of Trustees Distinguished Professorship Lecture, Provost's Lecture Series, University of Connecticut, virtual (Feb. 2021)
4. Structure-Property Relationships in Layered Perovskites, with K. Co, J. Kong, S. K. Nayak, and A. Pramanick, Symposium on Advanced Electronic Materials: Processing Structures, Properties, and Applications, Electronic Materials and Applications, virtual (Jan. 2021)
5. Electrocatalytic Activity of Pd-CeO<sub>2</sub> Catalysts for Anion Exchange Membrane Fuel Cells, with S. Sahoo, H. Miller, and D. R. Dekel, Symposium on Materials Science for Efficient Water Splitting, MRS Fall Meeting, Boston, MA (Dec. 2019)
6. Accelerating Alloy Design and Development using First Principles Calculations, with S. Sahoo and S. K. Nayak, Fritz Haber Institute of the Max Planck Society, Berlin, Germany (Jul. 2019)
7. Modeling of Electrocaloric Materials for Waste Heat Recovery, Centre de Nanosciences et de Nanotechnologies (C2N), Université Paris Sud, Orsay, France (Jul. 2019)
8. Fundamental problems in metallurgy via ab initio models: point defects, surface chemistry, and initial stages of precipitation, with S. Sahoo and S. K. Nayak, Université Paris-Saclay, CentraleSupélec, Gif-sur-Yvette, France (Jun. 2019)
9. University-Industry Collaborations at the University of Connecticut's Tech Park, Université Paris-Saclay, CentraleSupélec, Gif-sur-Yvette, France (Jun. 2019)
10. Materials Design using Atomistic and Mesoscale Models, Materials and Manufacturing Science Division, Army Research Laboratory, Aberdeen Proving Ground, MD (Mar. 2019)
11. Computational Materials Design: Electrocaloric Materials for Waste Heat Recovery, Worcester Polytechnic Institute, Worcester, MA (Jan. 2019)
12. Accelerating Materials Development using Atomistic and Mesoscale Models, Air Force Research Laboratory, Materials and Manufacturing Directorate (RX), Dayton, OH (Jan 2019)
13. Atomistic Modeling as Applied to Fundamental Problems in Metallurgy: Point Defects, Surface Chemistry, and Initial Stages of Precipitation, with S. K. Nayak and S. Sahoo, Integrated Materials Design Center Annual Meeting, Worcester Polytechnic Institute, Worcester, MA (Dec. 2018)

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† In reverse chronological order, presenting author underlined if not SPA

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14. Multi-scale Modeling of Caloric Properties of Ferroelectrics, with T. Patel and H. Khassaf, XXIII Czech-Polish Seminar, Joint Meeting of the Czech and Polish Academies of Sciences, Structural and Ferroelectric Phase Transformations, Kouty, Czech Republic (May 2018) - keynote
  15. Mesoscale Simulations of Ferroic Functionalities with Finite Elements: MOOSE, Ferret and other animals, with J. Mangeri, K. C. Pitike, L. Kuna, D. Zhu, O. G. Heinonen and S. Nakhmanson, XXIII Czech-Polish Seminar, Joint Meeting of the Czech and Polish Academies of Sciences, Structural and Ferroelectric Phase Transformations, Kouty, Czech Republic (May 2018)
  16. UConn's Innovation Partnership Building and Tech Park, What is the Most Productive Role for SBIR in Innovation Centers?, 2018 Department of the Navy SBIR/STTR Primes Summit, Arlington, VA (Apr. 2018)
  17. UConn's Innovation Partnership Building and Tech Park, 2018 Sea-Air-Space Expo (SAS) and the Department of the Navy Annual Forum for SBIR/STTR Transition (FST), National Harbor, MD (Apr. 2018)
  18. A Path to Hybrid Additive Manufacturing of Ferroelectric Oxides and Aerospace Alloys, with T. Patel and R. J. Hebert, Session on Materials & Characterization, Connecticut Microelectronics & Optoelectronics Consortium (CMOC) 27<sup>th</sup> Symposium, Orange, CT (April 2018) – Best Oral Presentation Award for Ms. Tulsi Patel.
  19. Hybrid Additive Manufacturing: Ferroelectric Oxides and Aerospace Alloys, with T. Patel and R. J. Hebert, Materials and Manufacturing Directorate at Air Force Research Laboratory, Wright-Patterson Air Force Base, OH (March 2018).
  20. Flexocaloric Response of Epitaxial Ferroelectric Films, with T. Patel, H. Khassaf, and R. J. Hebert, Symposium on Energy Applications of Electronic and Ferroic Ceramics: Synthesis, Characterization, and Theory, 2018 Conference on Electronic and Advanced Materials (EAM 2018), Orlando, FL (Jan. 2018).
  21. Mesoscopic Modeling of Electrocaloric, Elastocaloric and Flexocaloric Properties of Ferroelectrics, with T. Patel and H. Khassaf, Symposium on Mesoscale Phenomena in Ceramic Materials, 2018 Conference on Electronic and Advanced Materials (EAM 2018), Orlando, FL (Jan. 2018).
  22. Phonon Dynamics and Phase Transformations in Bismuth Titanate, with S. Nayak and K. Co, 14<sup>th</sup> International Meeting on Ferroelectricity (IMF – 2017), San Antonio, TX (Sept. 2017).
  23. Understanding the True Electrothermal Response of Ferroelectric Thin Films, with B. Hanrahan, C. Neville, Y. Espinal, and A. Smith, 14<sup>th</sup> International Meeting on Ferroelectricity (IMF – 2017), San Antonio, TX (Sept. 2017).
  24. "Ferroelectrics for Caloric Applications: Materials Development using Multi-Scale Modeling," Institute of Physics, Czech Academy of Sciences, Prague, Czech Republic (July 2017).
  25. "Accelerating Materials Development using Multi-Scale Modeling," Naval Research Laboratory, Washington, DC (May 2017).
  26. "Linking Pyroelectric Energy Conversion Theory to Practice," with B. Hanrahan, Y. Espinal, A. Smith, H. Khassaf, R. Polcawich, 2017 Joint IEEE International Symposium on the Applications of Ferroelectrics, Atlanta, GA (May 2017).

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27. "Intrinsic Size Effects and Topological Phase Transformations in Ferroelectric Nanoinclusions Embedded in a Dielectric Matrix," with J. Mangeri, Y. Espinal, A. Jokisaari, S. Nakhmanson, O. Heinonen, Electronic Materials and Applications 2017, Symposium on Mesoscale Phenomena in Ceramic Materials, Nano- and Microstructures, Orlando, FL (Jan. 2017).
  28. "Materials by Design: Electrocaloric Materials for Waste Heat Recovery," Institute for Materials Sciences distinguished Lecture, Los Alamos National Laboratory, Los Alamos, NM (Jan. 2017).
  29. "Point Defects and Interfaces in Titanium: A First-principles Analysis," with S. Sahoo, S. Nayak, C. Hung, W. J. Brindley, and R. J. Hebert, Symposium on Science-Enabled Advances in Materials and Manufacturing Technologies, MRS Fall Meeting, Boston, MA (Nov. 2016).
  30. "Accelerating Materials Development using Multi-Scale Modeling," Department of Applied Physics Lecture, Yale University, New Haven, CT (Nov. 2016).
  31. "Collaborative Program to Accelerate Materials Deployment for Additive Manufacturing via Multi-Scale Modeling," Materials Science & Technology 2016, Advanced Manufacturing – ASM Emerging Technologies Awareness Committee, Salt Lake City, UT (Oct. 2016).
  32. "Accelerating Materials Deployment and Manufacturing via Multi-Scale Modeling and Genomics," 2016 International Forum Korea on Advances in Mechanical Eng. (IFAME), keynote – materials, Daejeon, Republic of Korea (Aug. 2016).
  33. "Pyroelectric Energy Conversion: Materials by Design," Army Research Laboratories, Adelphi, MD (Mar. 2016).
  34. "Tailoring Ferroelectricity for Energy Efficient Field Effect Transistors," with I. B. Misirlioglu, Electronic Materials and Applications 2016, Symposium on Multiferroic Materials and Multilayer Ferroic Heterostructures: Properties and Applications, Orlando, FL (Jan. 2016).
  35. "Pyroelectric and Electrocaloric Properties of Ferroelectric Ceramics: A Mesoscopic Modeling Perspective," with H. Khassaf, Electronic Materials and Applications 2016, Symposium on Computational Design of Electronic Materials, Orlando, FL (Jan. 2016).
  36. "Polycrystalline Superlattice-Like PZT Thin Film," with S. Brewer, H. Khassaf, and N. Bassiri-Gharb, Electronic Materials and Applications 2016, Symposium on Multiferroic Materials and Multilayer Ferroic Heterostructures: Properties and Applications, Orlando, FL (Jan. 2016).
  37. "Solid State Electrothermal Energy Interconversion Using Ferroelectric Thin Films," Department of Materials Science and Engineering Seminar, Texas A&M, College Station, TX (Oct. 2015).
  38. "Electrocaloric and Pyroelectric Materials for Waste Heat Recovery – A Modeling Perspective," with M. T. Kesim, Materials Science & Technology 2015, Symposium on Multifunctional Oxides, Columbus, OH (Oct. 2015).
  39. "Advances in Additive Manufacturing & Materials: UConn Perspective," with R. J. Hebert, A. Ma, S. L. Suib, and M. Y. Choi, Korea Institute of Machinery & Materials, Daejeon, Republic of Korea (Sept. 2015).



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40. "Mesoscopic Modeling of Electrothermal Properties of Ferroelectrics for Solid State Electrothermal Energy Interconversion," Department of Materials Science and Engineering Seminar, Rensselaer Polytechnic Institute, Troy, NY (Sept. 2015).
  41. "Electrocaloric and Pyroelectric Materials for Waste Heat Recovery - a Modeling Perspective," Workshop on Advancing Caloric Materials for Efficient Cooling, College Park, MD (Apr. 2015).
  42. "Next Generation Electrocaloric and Pyroelectric Materials for Solid-State Electrothermal Energy Interconversion," Department of Materials Science and Engineering Seminar, Georgia Institute of Technology, Atlanta, GA (Apr. 2015).
  43. "Next Generation Electrocaloric and Pyroelectric Materials for Solid State Electrothermal Interconversion," American Physical Society March Meeting 2015, presentation and press conference, San Antonio, TX (Mar. 2015).
  44. "Electrothermal Properties of Ferroelectric Multilayers," with [M. T. Kesim](#), J. Zhang, and L. W. Martin, Electronic Materials and Applications 2015, Symposium on Multiferroic Materials and Multilayer Ferroic Heterostructures: Properties and Applications, Orlando, FL (Jan. 2015).
  45. "Enhanced Electrocaloric and Pyroelectric Response from Ferroelectric Multilayers," with M. T. Kesim, J. Zhang, and L. W. Martin, Symposium on Multifunctional Oxides, Materials Science & Technology 2014, Pittsburgh, PA (Oct. 2014).
  46. "Tailoring the Dielectric Properties of Ferroelectric-Dielectric Multilayers," with [M. T. Kesim](#), J. Zhang, M. W. Cole, Symposium on Interfaces, Structure, and Domains in Ferroic and Multiferroic Material Systems, XXIII International Materials Research Congress, Cancun, Mexico (Aug. 2014).
  47. "Dielectric and Pyroelectric Properties of PZT with Buffer Layers", with M. T. Kesim, [Y. Espinal](#), S. Trolier-McKinstry, J. V. Mantese, Symposium on Interfaces, Structure, and Domains in Ferroic and Multiferroic Material Systems, XXIII International Materials Research Congress, Cancun, Mexico (Aug. 2014).
  48. "Composition and Microstructure Effects on Voltage Induced Piezoelectricity for  $Ba_xSr_{(1-x)}TiO_3$  Thin Films," with [N. M. Sbrockey](#), T. Kalkur, E. Nowe, H. Khassaf, G. S. Tompa, XXIII International Materials Research Congress, Symposium on Interfaces, Structure, and Domains in Ferroic and Multiferroic Material Systems, Cancun, Mexico (Aug. 2014).
  49. "Strain Engineering of Piezoelectric Properties of Strontium Titanate and Barium Strontium Titanate," with [F. Sun](#), N. Khakpash, H. Khassaf, N. M. Sbrockey, G. S. Tompa, T. S. Kalkur, XXIII International Materials Research Congress, Symposium on Interfaces, Structure, and Domains in Ferroic and Multiferroic Material Systems, Cancun, Mexico (Aug. 2014).
  50. "Composition and Microstructure Effects on Voltage Induced Piezoelectricity for Oxide Thin Films," with [N. M. Sbrockey](#), T. Kalkur, E. Nowe, H. Khassaf, G. S. Tompa, 56th Electronic Materials Conference (EMC 2014), Symposium on Synthesis, Structural and Electronic Characterization of Complex Oxides, Santa Barbara, CA (Jun. 2014).
  51. "Phase Transitions, Electrical Domain Stability and Dielectric Characteristics of Ferroelectric-Paraelectric Superlattices," with [I. B. Misirlioglu](#), A. P. Levanyuk, M. T. Kesim, Electroceramics XIV 2014, Bucharest, Romania (Jun. 2014).

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52. "Engineering Materials through Integrated Multiscale Modeling," Department of Physics Colloquium, Southern Connecticut State University, New Haven, CT (Apr. 2014).
  53. "Modeling Electrothermal Properties of Polarizable Dielectric Materials," Electronic Materials and Applications 2014, Symposium on Computational Design of Electronic Materials, Orlando, FL (Jan. 2014).
  54. "Voltage Tunable Microwave Resonators Fabricated with MOCVD deposited  $Ba_xSr_{1-x}TiO_3$  Films," with N. M. Sbrockey, T. Kalkur, E. Nowe, H. Khassaf, G. S. Tompa, Electronic Materials and Applications 2014, Symposium on Multiferroic Materials and Multilayer Ferroic Heterostructures: Properties and Applications, Orlando, FL (Jan. 2014).
  55. "Electrothermal Behavior of Ferroelectric Thin Films," Department of Materials Science and Engineering Seminar, The University of Texas at Arlington, Arlington, TX (Jan. 2014).
  56. "Thermodynamic Modeling of Electrothermal Behavior of Ferroelectric Thin Films," Department of Electrical and Computer Engineering Seminar, Northeastern University, Boston, MA (Dec. 2013).
  57. "Electrocaloric and Pyroelectric Properties of Ferroelectric Thin Films," Department of Physics Colloquium, University of South Florida, Tampa, FL (Nov. 2013).
  58. "Pyroelectric Properties of Polycrystalline  $Pb(Zr_xTi_{1-x})O_3$  Thin Films," with M. T. Kesim, J. V. Mantese, R. W. Whatmore, and S. Trolier-McKinstry, Materials Science & Technology 2013, Symposium on Multifunctional Oxides, Montreal, Canada (Oct. 2013).
  59. "Influence of Electrical and Mechanical Boundary Conditions on the Electrocaloric Properties of Ferroelectric Thin Films," with G. A. Rossetti Jr., 2013 IEEE Ultrasonics, Ferroelectrics, and Frequency Control Society Joint Conference, Prague, Czech Republic (July 2013).
  60. "MOCVD of Compositionally Graded BST Films with Highly Temperature Stable Dielectric Properties," with N. M. Sbrockey, G. S. Tompa, T. S. Kalkur, and M. W. Cole, 55th Electronic Materials Conference (EMC), South Bend, IN (June 2013).
  61. "Materials Genome Initiatives at the University of Connecticut," with A. M. Dongare, E. E. Dormidontova, S. M. Nakhmanson, R. Ramprasad, and G. A. Rossetti, Jr., Materials Research Society (MRS) Spring Meeting, Symposium on Materials Education – Toward a Lab-to-Classroom Initiative, San Francisco, CA (Apr. 2013).
  62. "Electrothermal Properties of Ferroelectric Thin Films for On-chip Cooling and Sensing Applications," with J. Zhang, J. V. Mantese, and G. A. Rossetti, Jr., 22<sup>nd</sup> Connecticut Symposium on Microelectronics & Optoelectronics, New Haven, CT (Mar. 2013) – Best Oral Paper Award for Ms. Jialan Zhang.
  63. "Computational Navigation Through the  $ABO_3$  Chemical Space," with R. Ramprasad, G. Pilania, V. Sharma, and G. A. Rossetti, Jr., Electronic Materials and Applications 2013, Symposium on Multiferroic Materials and Multilayer Ferroic Heterostructures: Properties and Applications, Orlando, FL (Jan. 2013).

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64. "Voltage Tunable Acoustic Resonance in Perovskite Thin Films," with N. M. Sbrockey, G. S. Tompa, T. S. Kalkur, M. W. Cole, and J. Zhang, *Electronic Materials and Applications 2013, Symposium on Multiferroic Materials and Multilayer Ferroic Heterostructures: Properties and Applications*, Orlando, FL (Jan. 2013).
  65. "Thermal Stresses in Ferroelectric Films and Their Effect on the Dielectric, Pyroelectric, and Electrocaloric Properties," with J. Zhang and G. A. Rossetti, Jr., *Materials Science & Technology 2012, Symposium on Multifunctional Oxides*, Pittsburgh, PA (Oct. 2012).
  66. "Electrical Domain Morphologies in Compositionally Graded Ferroelectric Films," with M. B. Okatan, A. L. Roytburd, and V. Nagarajan, *International Symposium on the Dynamics of Domain Walls 2012*, Hamburg, Germany (June 2012).
  67. "Effective Second-Order Nonlinear Susceptibility in AlGa<sub>N</sub>/Ga<sub>N</sub> Heterostructures," with L. Dong, School of Engineering, Virginia Commonwealth University, Richmond, VA (May 2012).
  68. "Engineered Heterogeneity in Multilayered and Multicomponent Functional Oxide Systems," with G. A. Rossetti, *Workshop on Complex Oxide and Multiferroic Thin Film Materials Science, Technologies, and Applications*, Tucson, AZ (Jan. 2012).
  69. "Base Metal Alloys with Self-Healing Native Conductive Oxides," with M. Aindow, Connecticut Innovations, Rocky Hill, CT (Dec. 2011).
  70. "Pseudoelasticity and Twinning in Ti-Mo-Based Alloys," with M. Aindow and L. C. Zhang, *Frontiers of Electron Microscopy in Materials Science Conference*, Rohnert Park, CA (Sept. 2011).
  71. "Base Metal Alloys with Self-Healing Native Conductive Oxides: a New Paradigm for Electrical Contacts," with M. Aindow, B. S. Senturk, Y. Liu, and J. V. Mantese, *Institute of Materials Science Associates Program Meeting*, Storrs, CT (May 2011).
  72. "Compositionally Layered Ferroelectric Films Applied to Passive Electronically Steered Arrays for Communications on the Move Applications," with M. W. Cole, *IEEE Microwave Theory & Techniques Society (MTT-S) International Microwave Symposium for 2011 (IMS2011)*, Baltimore, MD (June 2011).
  73. "Electrothermal Properties of Ferroelectric Thin Films," with G. A. Rossetti, Jr., J. Zhang, and A. A. Heitmann, *Electronic Materials and Applications 2011, Symposium on Symposium on Energy Harvesting and Sensors for Structural Health Monitoring*, Orlando, FL (Jan. 2011).
  74. "Pyroelectric and Electrocaloric Properties of Ferroelectric Thin Films," with J. Zhang, M. B. Okatan, I. B. Misirlioglu, A. A. Heitmann, J. V. Mantese, M. W. Cole, and G. A. Rossetti, Jr., *XIX International Materials Research Congress, Symposium on Ferroelectric and Piezoelectric Materials, Devices, and Applications*, Cancun, Mexico (Aug. 2010).
  75. "MOCVD Growth and Characterization of Compositionally Graded Ba<sub>x</sub>Sr<sub>1-x</sub>TiO<sub>3</sub> Thin Films," with N. M. Sbrockey, M. W. Cole, T. S. Kalkur, J. E. Spanier, and G. S. Tompa, *XIX International Materials Research Congress, Symposium on Ferroelectric and Piezoelectric Materials, Devices, and Applications*, Cancun, Mexico (Aug. 2010).
  76. "Chemical Solution Deposition of Highly Oriented Strontium Titanate Thin Films with Improved Dielectric Response," with C. V. Weiss and M. W. Cole, *XIX International Materials Research Congress*,

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Symposium on Ferroelectric and Piezoelectric Materials, Devices, and Applications, Cancun, Mexico (Aug. 2010).

77. "Electrothermal Properties of Perovskite Ferroelectric Films," with J. Zhang, G. Akcay, A. A. Heitmann, J. V. Mantese, and G. A. Rossetti, Jr., International Symposium on Integrated Functionalities (ISIF 2010), Symposium on Materials for Electrocaloric Coolers, San Juan, PR (June 2010).
78. "Asymmetric Displacement of Hysteresis Loops and Smearing of the Transition Point due to Space Charges in Ferroelectric Thin Films," with I. B. Misirlioglu and M. B. Okatan, International Symposium on Integrated Functionalities (ISIF 2010), Symposium on Ferroelectric Materials: Theory & Experiments, San Juan, PR (June 2010).
79. "Domain Engineering in Compositionally Graded Ferroelectric Films for Enhanced Dielectric Response and Tunability," with M. B. Okatan, A. L. Roytburd, and J. V. Mantese, Materials Science & Technology 2009, Symposium on Domain Microstructures and Mechanisms for Advanced Properties in Phase Transforming Materials, Pittsburgh, PA (Oct. 2009).
80. "Optimization of Deposition Parameters for Complex Oxide Thin Films," with C. V. Weiss and M. W. Cole, Materials Science & Technology 2009, Symposium on Ferroelectrics and Multiferroics, Pittsburgh, PA (Oct. 2009).
81. "Interlayer Interactions and Electrical Domain Structures in Compositionally Graded Ferroelectrics," with M. B. Okatan, R. Ramprasad, and G. A. Rossetti, Jr., Army Research Office Workshop on Atomistic Interfaces 2009, Storrs, CT (Aug. 2009).
82. "Wedge Domains in Compositionally Graded Ferroelectrics: Dielectric Response and Tunability," with M. B. Okatan, A. L. Roytburd, and J. V. Mantese, XVIII International Materials Research Congress, Symposium on Ferroelectricity and Piezoelectricity, Cancun, Mexico (Aug. 2009).
83. "Dielectric Permittivity and Tunability of Ferroelectric Multilayers and Composites," School of Engineering and Applied Sciences, Harvard University, Cambridge, MA (Feb. 2009).
84. "Dielectric Tunability of Graded Barium Strontium Titanate Multilayers: Effect of Thermal Strains," with M. B. Okatan and M. W. Cole, XVII International Materials Research Congress, Symposium on Ferroelectricity and Piezoelectricity, Cancun, Mexico (Aug. 2008).
85. "Theoretical Modeling of Functional Materials and Thin Film Deposition," with G. A. Rossetti, Jr., United Technologies Research Center, East Hartford, CT (Mar. 2008).
86. "The Effect of Mechanical Boundary Conditions on the Electrocaloric Response of Ferroelectric Thin Films," with G. Akcay, G. A. Rossetti, Jr., and J. F. Scott, 17th International Symposium on Applications of Ferroelectrics (ISAF 08), Santa Fe, NM (Feb. 2008).
87. "Modeling of Graded and Multilayer Ferroelectrics: Dielectric and Piezoelectric Response," 17th International Symposium on Applications of Ferroelectrics (ISAF 08), Santa Fe, NM (Feb. 2008).
88. "An Enabling Material Design To Promote Highly Tunable, Low Loss, Performance Consistent BST Thin Films For Tunable Device Applications," with M. W. Cole, E. Ngo, S. Hirsch, and S. Zhong, 17th International Symposium on Applications of Ferroelectrics (ISAF 08), Santa Fe, NM (Feb. 2008).

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89. "Enhanced Dielectric Tunability and Temperature Stability in Compositionally Stratified  $Ba_xSr_{1-x}TiO_3$  Thin Films," with M. W. Cole, E. Ngo, S. Hirsch, and S. Zhong, 7<sup>th</sup> Pacific Rim Conference on Ceramic and Glass Technology, Symposium on Emerging Advances in Electronic, Optical, Magnetic, and Elastic Ferroics, Shanghai, China (Nov. 2007).
  90. "The Intrinsic Electrocaloric Response of Ferroelectric Thin Films," with G. Akcay, J. V. Mantese, G. A. Rossetti, Jr., and J. F. Scott, XVI International Materials Research Congress, Symposium on Ferroelectricity and Piezoelectricity, Cancun, Mexico (Oct. 2007).
  91. "Piezoelectric Properties of Compositionally Graded and Multilayer Ferroelectrics," with S. Zhong, R. Nath, B. D. Huey, J. V. Mantese, and M. W. Cole, XVI International Materials Research Congress, Symposium on Ferroelectricity and Piezoelectricity, Cancun, Mexico (Oct. 2007).
  92. "Novel Thin Film Material Design to Enable Enhanced Performance Microwave Frequency Tunable Devices: Experiment and Theory," with M. W. Cole, E. Ngo, S. Hirsch, S. Zhong, and L. A. Coryell, XVI International Materials Research Congress, Symposium on Ferroelectricity and Piezoelectricity, Cancun, Mexico (Oct. 2007).
  93. "Dielectric Permittivity and Tunability of Graded/Multilayer Ferroelectrics," Structured Materials, Inc., Piscataway, NJ (Sept. 2007).
  94. "Temperature Insensitive Low Loss High Tunability Perovskite Oxide Thin Films for Tunable Device Applications," with M.W. Cole, S. Zhong, E. Ngo, S. Hirsh, W. Nothwang, J. D. Demaree, and G. Martin, Materials Science & Technology 2007 Conference and Exhibition, Symposium on Electronic and Magnetic Properties: Ferroelectrics and Multiferroics, Detroit, MI (Sept. 2007).
  95. "Enhanced Dielectric Tunability in Ferroelectric Films with Anisotropic Epitaxy," with G. Akcay and I. B. Misirlioglu, XV International Materials Research Congress, Symposium on Ferroelectricity and Piezoelectricity, Cancun, Mexico (Aug. 2006).
  96. "Temperature Stable BST Multilayered Thin Films for Tunable Device Communications Applications," with M. W. Cole, E. Ngo, S. Hirsch, and G. Martin, XV International Materials Research Congress, Symposium on Ferroelectricity and Piezoelectricity, Cancun, Mexico (Aug. 2006).
  97. "Internal Stresses and Electrostatic Interactions in Ferroelectric Multilayer Heterostructures," 40<sup>th</sup> Year Distinguished Lecture Series, Department of Metallurgical and Materials Engineering, Middle East Technical University, Ankara, Turkey (Jul. 2006).
  98. "Internal Stresses, Defects, and Electrostatic Coupling in Ferroelectric Thin Films and Multilayer Heterostructures," Department of Materials Science and Engineering, Drexel University, Philadelphia, PA (May 2006).
  99. "Ultra-thin Epitaxial Ferroelectric Heterostructures," with V. Nagarajan, I.B. Misirlioglu, et al., MRS Fall Meeting, Symposium on Ferroelectric Thin Films XIII, Boston, MA (Nov. 2005).
  100. "Dielectric Anomaly and Compositional Symmetry Breaking in Ferroelectric Bilayers," XIV International Materials Research Congress, Symposium on Ferroelectricity and Piezoelectricity, Cancun, Mexico (Aug. 2005).

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101. "Microstructural Features of Epitaxial Ferroelectric Films," XIV International Materials Research Congress, Symposium on Ferroelectricity and Piezoelectricity, Cancun, Mexico (Aug. 2005).
  102. "Graded Ferroelectric Films for Enhanced Tunable Devices and IR Detectors," U.S. Army Workshop on Advanced Active Thin Film Materials for the Next Generation of Meso-Micro Scale Army Applications, Destin, FL (May 2005).
  103. "Engineering Enhanced Physical Properties via Internal Stresses and Polarization Gradients in Ferroelectric Thin Films," Distinguished Lecture Series, Department of Materials Science and Engineering, University of Maryland, College Park, MD (Apr. 2005).
  104. "Internal Stresses and their Effect on the Phase Transformation Characteristics and Physical Properties of Ferroelectric Films," 107<sup>th</sup> Annual Meeting & Exposition of The American Ceramic Society, Symposium on Nanostructures, Nanophenomena, and Interfaces in Ferroic Materials and Thin Films, Baltimore, MD (Apr. 2005).
  105. "Dielectric and Pyroelectric Response of Polarization Graded Ferroelectric Materials," XIII International Materials Research Congress, Symposium on Ferroelectricity and Piezoelectricity, Cancun, Mexico (Aug. 2004).
  106. "Strong Degradation of Physical Properties and Formation of a Dead Layer in Ferroelectric Films due to Interfacial Dislocations, XIII International Materials Research Congress, Symposium on Ferroelectricity and Piezoelectricity, Cancun, Mexico (Aug. 2004).
  107. "Polydomain Formation in Ferroelectric Films and Thermodynamic Modeling of Polarization-Graded Ferroelectrics," 133<sup>rd</sup> TMS Annual Meeting & Exhibition, Roytburd Symposium on Polydomain Structures: Domains in Ferroelectrics and Magnetics, Charlotte, NC (Mar. 2004).
  108. "Effect of Internal Stresses and Polarization Grading on the Physical Properties of Ferroelectric Thin Films," Army Research Laboratories, Aberdeen, MD (Nov. 2003).
  109. "Effect of Internal Stresses on the Phase Transformation Characteristics and Physical Properties of Epitaxial Ferroelectric Films," 204<sup>th</sup> Electrochemical Society Meeting, Symposium on Epitaxial Growth of Functional Oxides, Orlando, FL (Oct. 2003).
  110. "Dependence of the Dielectric and Pyroelectric Response of Ferroelectric Films on Internal Stresses," XII International Materials Research Congress, Symposium on Ferro-Piezoelectricity, Cancun, Mexico (Aug. 2003).
  111. "Polarization-Graded Ferroelectric Systems and Thin Films," 8<sup>th</sup> Conference and Exhibition of the European Ceramic Society, Symposium on Electro-ceramics, Istanbul, Turkey (Jul. 2003).
  112. "Microstructure and Properties of Epitaxial Ferroelectric Films," Condensed Matter Physics Seminar, Department of Physics, University of Connecticut, Storrs, CT (Nov. 2002).
  113. "Twinning in Ferroelectric Materials," Department of Materials Science and Engineering, University of Pittsburgh, Pittsburgh, PA (Oct. 2002).

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114. "Twinning in Ferroelectric Thin Films: Structure and Properties," Metallurgy and Materials Engineering Seminar, University of Connecticut, Storrs, CT (Feb. 2001).
  115. "Polydomain Architecture in Epitaxial Ferroelectric Films," Workshop on Texture in Electronic Materials, NIST, Gaithersburg, MD (Oct. 2000).
  116. "Thermodynamic Theory of Single-domain Epitaxial Thin Film Ferroelectrics," 10<sup>th</sup> International Materials Science and Metallurgy Congress, Istanbul, Turkey (Jun. 2000).
  117. "Thermodynamic Theory of Polydomain Microstructures in Constrained Films Exhibiting a Structural Phase Transformation," Institute of Materials Science Seminar Series, University of Connecticut, Storrs, CT (May 2000).
  118. "Polydomain Structures of Epitaxial Ferroelectric Films," National Institute of Standards and Technology, Materials Science and Engineering Laboratory, Ceramics Division Seminars, Gaithersburg, MD (Oct. 1996).

## OTHER PROFESSIONAL TALKS AND PRESENTATIONS †

1. Mechanical Control of Topological Properties: A First Principles Analysis of  $\text{Bi}_2\text{Se}_3$ ,  $\text{Bi}_2\text{Te}_3$ , and  $\text{As}_2\text{Te}_3$ , T. K. Reid, A. Balatsky, and S. Nayak, Electronic Materials and Applications 2020, Session on Agile Design of Electronic Materials: Aligned Computational and Experimental Approaches and Materials Informatics, Orlando, FL (Jan. 2020)
2. "Investigation of Electrostatic Interactions in Ferroelectric-Dielectric Composites at Mesoscale," with K. Co, L. Kuna, J. Mangeri, and S. M. Nakhmanson, Electronic Materials and Applications 2020, Session on Mesoscale Phenomena in Ferroic Nanostructures, Orlando, FL (Jan. 2020)
3. "Multifunctional Interphase for Oxide/Oxide Ceramic Matrix Composites," T. Patel, E. Bokye, P. Mogilevsky, R. Wheeler, N. Bassiri-Gharb, S. P. Alpay, M. Cinibulk, M. Dickerson, Materials Research Society Fall Meeting, Boston, MA (Dec. 2019)
4. "Adsorption Properties of Functionalized STAM-17-OEt Metal–Organic Framework with Density Functional Theory," with U. A. Anene, National Organization for the Professional Advancement of Black Chemists and Chemical Engineers National Conference, St. Louis, MO (Nov. 2019)
5. "Hybrid Additive Manufacturing of Ferroelectric Oxides and Aerospace Alloys," with T. Patel and R. J. Hebert, Materials Science & Technology (MS&T) 2019, Portland, OR (Sept. 2019)
6. "Polarization Rotation in  $\text{Bi}_4\text{Ti}_3\text{O}_{12}$  by Selective Sublattice Doping," with K. Co, D. Maurya, S. Priya, and S. K. Nayak, Artificial Intelligence for Materials Science (AIMS) 2019, National Institute of Standards and Technology, Gaithersburg, MD (Aug. 2019)
7. "Ligand Functionalization for Enhanced Selective Gas Adsorption of Hydrostable STAM-17-OEt MOF," with U. A. Anene and G. D. Degaga, Machine Learning in Science and Engineering Conference, Georgia Institute of Technology, Atlanta, Georgia, (Jun 2019)

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† in reverse chronological order, presenting author underlined if not SPA

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8. "A Path to Hybrid Additive Manufacturing of Ferroelectric Oxides and Aerospace Alloys," with T. Patel and R. J. Hebert, XXIII Czech-Polish Seminar, Joint Meeting of the Czech and Polish Academies of Sciences, Structural and Ferroelectric Phase Transformations, Kouty, Czech Republic (May 2018)
  9. "Polarization Tuning of  $\text{Bi}_4\text{Ti}_3\text{O}_{12}$  through Epitaxial Strains and Isovalent Doping," with K. Co and S. Nayak, Poster Presentation, XXIII Czech-Polish Seminar, Joint Meeting of the Czech and Polish Academies of Sciences, Structural and Ferroelectric Phase Transformations, Kouty, Czech Republic (May 2018)
  10. "Catalytic Properties of  $\text{BiFeO}_3$  for Oxygen Reduction Reactions," with D. Trujillo, A. Ghosh, S. Sahoo, P. V. Balachandran, and T. Lookman, American Physical Society March Meeting, Session on Multiferroic Oxides, Los Angeles, CA (Mar. 2018)
  11. "Tuning Functionalities in  $\text{Bi}_{1-x}\text{M}_x\text{FeO}_3$  (M=La,Sr) bulk systems and  $\text{BiFeO}_3/\text{La}_{1-x}\text{Sr}_x\text{MnO}_3$  Heterostructure: A First-Principles Based Study," with A. Ghosh, H. Choi, D. Trujillo, S. Nakhmanson, and J-X. Zhu, American Physical Society March Meeting, Session on Multiferroic Oxide Heterostructures, Los Angeles, CA (Mar. 2018)
  12. "Dielectric Properties of Ferroelectric Materials on Aerospace Alloys," with T. Patel and R. J. Hebert, 2018 Conference on Electronic and Advanced Materials (EAM -2018), Poster Session, Orlando, FL (January 2018)
  13. "Inorganic Ferroelectric/Dielectric Nanocomposite Thin Films," with Y. Espinal and B. Hanrahan, 14<sup>th</sup> International Meeting on Ferroelectricity (IMF – 2017), San Antonio, TX (Sept. 2017)
  14. "Ferret: An Open-source Code for Simulating Materials Thermodynamics at Mesoscale," with J. Mangeri, K. C. Pitike, L. Kuna, A. Jokisaari, S. P. Alpay, O. Heinonen, and S. Nakhmanson, Electronic Materials and Applications 2017, Symposium on Mesoscale Phenomena in Ceramic Materials, Nano- and Microstructures, Orlando, FL (2017)
  15. "Flexoelectric and Flexocaloric Effects, Misfit Dislocations, and Strain Gradients: Electrothermal Properties of Ultrathin Ferroelectric Films," with H. Khassaf and T. Patel, Electronic Materials and Applications 2017, Symposium on Advanced Processing for Electronic and Electrochemical Systems: Crystals, Films and Devices, Orlando, FL (2017)
  16. "Modeling of Soft Phonon Mode Dynamics and Phase Transitions in Aurivillius Type Ferroelectrics," with S. K. Nayak, F. Sun, D. Maurya, D. George, A. Pramanick, M. Kang, H. Song, A. Charkhesht, G. Khodaparast, N. Q. Vinh, and S. Priya, Electronic Materials and Applications 2017, Symposium on Computational Design of Electronic Materials, Orlando, FL (2017).
  17. "Design of Multilayer Ferroelectrics for Pyroelectric Energy Conversion," with Y. Espinal, R. G. Polcawich, B. Hanrahan, Electronic Materials and Applications 2017, Symposium on Advanced Electronic Materials: Processing, Structures, Properties, and Applications, Orlando, FL (2017).
  18. "Manipulation of Carrier Density near Ferroelectric/Semiconductor Interfaces," with M. T. Kesim, I. B. Misirliloglu, and C. Sen, APS March Meeting 2016, Session B30: Ferroelectric Walls, Hetero-structures and Superlattices, Baltimore, MD (March 2016).



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19. "Temperature dependent structural, elastic, and polar properties of ferroelectric polyvinylidene fluoride (PVDF) and trifluoroethylene (TrFE) copolymers," poster, with [F.-C. Sun](#), A. M. Dongare, A. D. Asandei, and S. M. Nakhmanson, APS March Meeting 2016, Session M1: Poster Session II, Baltimore, MD (March 2016).
  20. "Electronic structure studies on competing phases of Aurivillius  $\text{Bi}_4\text{Ti}_3\text{O}_{12}$  using first-principles calculations," with [F.-C. Sun](#), S. K. Nayak, D. Maurya, S. Priya, APS March Meeting 2016, Session S30: Theory of Ferric Systems, Baltimore, MD (March 2016).
  21. "Intrinsic Electrocaloric Behavior of Perovskite Oxides," with H. Khassaf and Z. Kutnjak, Electronic Materials and Applications 2016, Symposium on Functional Materials: Synthesis Science, Properties, and Integration, Orlando, FL (Jan. 2016).
  22. "Metallo-Organic Solution Deposition of Ferroelectric Films onto Additively Manufactured Inconel 718" with [T. Patel](#), H. Khassaf, N. Bassiri-Gharb, and R. J. Hebert, Electronic Materials and Applications 2016, Symposium on Multiferroic Materials and Multilayer Ferroic Heterostructures: Properties and Applications, Orlando, FL (Jan. 2016).
  23. "Electrocaloric Effects in Layered Oxides with Easy Polarization Rotation" with [J. Mangeri](#), K. Pitike, S. M. Nakhmanson, Electronic Materials and Applications 2016, Symposium on Computational Design of Electronic Materials, Orlando, FL (Jan. 2016).
  24. "Are Ferroelectric Multilayers Capacitors in Series?" with F. C. Sun, M. T. Kesim, [Y. Espinal](#), Electronic Materials and Applications 2016, Symposium on Multiferroic Materials and Multilayer Ferroic Heterostructures: Properties and Applications, Orlando, FL (Jan. 2016).
  25. "Misfit Strain Phase Diagrams and Piezoelectric Properties of (001) PMN-PT Epitaxial Thin Films," with [N. Khakpash](#), H. Khassaf, and G. A. Rossetti, Jr., Electronic Materials and Applications 2016, Symposium on Functional Materials: Synthesis Science, Properties, and Integration, Orlando, FL (Jan. 2016).
  26. "Optimization of Piezoelectric Properties of Perovskite Oxides through Strain Engineering," with H. Khassaf and F. Sun, Symposium on Advances in Dielectric Materials and Electronic Devices, Materials Science & Technology 2014, Pittsburgh, PA (Oct. 2014).
  27. "Electrocaloric Properties of Epitaxial Strontium Titanate Films," with [J. Zhang](#), I. B. Misirlioglu, and G. A. Rossetti, Jr., American Physical Society March Meeting 2013, Symposium on Coupling Phenomena in Oxides and Optical and Electronic Properties, Baltimore, MD (Mar. 2013).
  28. "Theoretical Analysis of the Band Offsets and Band Bending in (0001)  $\text{In}_x\text{Ga}_{1-x}\text{N}/\text{GaN}$  Heterostructures and Quantum Wells," with [L. Dong](#), American Physical Society March Meeting 2013, Symposium on Solid State Lighting and Other Semiconductors, Baltimore, MD (Mar. 2013).
  29. "Electrocaloric Properties of Epitaxial Strontium Titanate Films," with [J. Zhang](#), I. B. Misirlioglu, and G. A. Rossetti, Jr., poster, 22<sup>nd</sup> Connecticut Symposium on Microelectronics & Optoelectronics, New Haven, CT (Mar. 2013).
  30. "Voltage Tunable Electro-Acoustic Resonance in MOCVD Deposited  $\text{Ba}_x\text{Sr}_{1-x}\text{TiO}_3$  Thin Films," with [N. M. Sbrockey](#), T. S. Kalkur, J. Zhang and G. S. Tompa, poster, Symposium on Oxide Nanoelectronics and Multifunctional Dielectrics, MRS Fall Meeting, Boston, MA (Nov. 2012).

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31. "Theoretical Analysis of Valence and Conduction Band Offsets of  $Zn_{1-x}Be_xO/ZnO$  Quantum Well Heterostructures," with L. Dong, Materials Science & Technology 2012, Symposium on Semiconductor Heterostructures: Theory, Growth, Characterization, and Device Applications, Pittsburgh, PA (Oct. 2012).
  32. "Effect of Thermal Stresses on the Dielectric and Electrocaloric Properties of Ferroelectric Thin Films" with J. Zhang, C. V. Weiss, M. Spies, L. S. Abdallah, S. Zollner, M. W. Cole and S. P. Alpay, 21<sup>st</sup> Connecticut Symposium on Microelectronics & Optoelectronics, Storrs, CT (Apr. 2012).
  33. "Dielectric and Optical Properties of  $SrTiO_3$  Films Deposited from Metallo-organic Solution," with M. Spies, L. S. Abdallah, S. Zollner, C. V. Weiss, J. Zhang, and M. W. Cole, American Physical Society March Meeting 2012, Symposium on Dielectric, Ferroelectric, and Piezoelectric Oxides: Elastic and Optical Properties, Boston, MA (Feb. 2012).
  34. "Thermal Stresses in Ferroelectric Thin Films and their Role on the Dielectric, Pyroelectric, and Electrocaloric Properties," with J. Zhang, American Physical Society March Meeting 2012, Symposium on Dielectric, Ferroelectric, and Piezoelectric Oxides: Elastic and Optical Properties, Boston, MA (March 2012).
  35. "A First Principles Analysis of the Crystal Structure, Band Gap Energy, Polarization, and Piezoelectric Properties of  $ZnO-BeO$  Solid Solutions," with L. Dong, American Physical Society March Meeting 2012, Symposium on Electricity-to-Light Conversion: Solid State Lighting, Boston, MA (Feb. 2012).
  36. "Effect of Equi-Biaxial In-Plane Strains on GaN Thin Films and InGaN/GaN Superlattices," with L. Dong, Materials Science & Technology 2011, Symposium on Semiconductor Heterostructures: Theory, Growth, Characterization and Device Applications, Columbus, OH (Oct. 2011).
  37. "Influence of Thermal Stresses on the Dielectric Properties of Strontium Titanate Thin Films," with J. Zhang, C. V. Weiss and M. W. Cole, Materials Science & Technology 2011, Symposium on Advances in Dielectric Materials and Electronic Devices, Columbus, OH (Oct. 2011).
  38. "Effect of Mechanical Boundary Conditions and Thermal Stresses on the Electrocaloric and Pyroelectric Properties of Ferroelectric Films", with J. Zhang and G. A. Rossetti, Jr., poster, Spring 2011 Joint Meeting of the New England Sections of the American Physical Society & American Association of Physics Teachers, Lowell, MA (April 2011).
  39. "Band Gap Tuning and Structural Transformation in GaN through Equi-biaxial In-plane Strains and Alloying with InN," with L. Dong, Annual American Physical Society March Meeting 2011, Symposium on Electricity-to-Light Conversion: Solid State Lighting, Dallas, TX (Mar. 2011).
  40. "Electrocaloric and Pyroelectric Properties of Ferroelectric Films," with J. Zhang and G. A. Rossetti, Jr., Annual American Physical Society March Meeting 2011, Symposium on Dielectric, Ferroelectric, and Piezoelectric Oxides: Piezoelectrics, Oxides on Semiconductors, and Applications, Dallas, TX (March 2011).
  41. "Base Metal Alloys with Self-Healing Native Conductive Oxides for Electrical Contact Materials," with B. S. Senturk, Y. Liu, J. V. Mantese, and M. Aindow, 20<sup>th</sup> Connecticut Symposium on Microelectronics & Optoelectronics, New Haven, CT (March 2011).

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42. "Electrocaloric and Pyroelectric Properties of Perovskite Ferroelectric Films," with J. Zhang and G. A. Rossetti, Jr., 20<sup>th</sup> Connecticut Symposium on Microelectronics & Optoelectronics, New Haven, CT (March 2011).
  43. "The Effects of Solution Molarity and Heat Treatment on the Microstructure and Dielectric Response of Strontium Titanate Thin Films," with C. V. Weiss and M. W. Cole, poster, 20<sup>th</sup> Connecticut Symposium on Microelectronics & Optoelectronics, New Haven, CT (March 2011).
  44. "Microstructure and Native Oxide Scale Characteristics of a Cu-9at.%La alloy," with B. S. Senturk, Y. Liu, J. V. Mantese, and M. Aindow, The Minerals, Metals and Materials Society Annual Meeting & Exhibition 2011, Symposium on Pb-Free Solders and Other Materials for Emerging Interconnect and Packaging Technologies, San Diego, CA (Feb. 2011).
  45. "Aging Behavior and Wear Property of Ni-Ru Alloys for Electrical Contact Applications," with Y. Liu, B.S. Senturk, J.V. Mantese, and M. Aindow, Materials Science and Technology 2010 Conference and Exhibition, Symposium on Tribological Contacts: Recent Issues and Practical Solutions, Houston, TX (Oct. 2010).
  46. "Metal-Insulator Transition in Epitaxial Cr doped V<sub>2</sub>O<sub>3</sub> Thin Films by Pulsed Laser Deposition," with Y. Liu, poster, Materials Science and Technology 2010 Conference and Exhibition, Symposium on Multifunctional Oxides, Houston, TX (Oct. 2010).
  47. "Giant Electromechanical Response from Ferroelectric Bilayers with Polydomain Structures due to Interlayer and Interdomain Coupling," with R. Mahjoub and V. Nagarajan, XIX International Materials Research Congress, Symposium on Ferroelectric and Piezoelectric Materials, Devices, and Applications, Cancun, Mexico (Aug. 2010).
  48. "Growth and Dielectric Properties of Compositionally Graded BST Films Deposited By MOCVD," with N. M. Sbrockey, G. S. Tompa, M. W. Cole, T. S. Kalkur and J. E. Spanier, poster, 15<sup>th</sup> International Conference on Metal Organic Vapor Phase Epitaxy (ICMOVPE 2010), Lake Tahoe, NV (May 2010).
  49. "Prediction of Giant Electromechanical Response in PZT Bilayers," with R. Mahjoub and V. Nagarajan, Symposium on Structure-Function Relations at Perovskite Surfaces and Interfaces, MRS Spring Meeting, San Francisco, CA (Apr. 2010).
  50. "Misfit-strain Film-thickness Phase Diagrams and Related Electromechanical Properties of Ultra-thin Perovskite Films," with Q. Y. Qiu and V. Nagarajan, MRS Spring Meeting, Symposium on Structure-Function Relations at Perovskite Surfaces and Interfaces, San Francisco, CA (Apr. 2010).
  51. "Synchrotron X-ray Study of Thin Film Sm-Doped BiFeO<sub>3</sub> at an MPB," with S. B. Emery, C.-J. Cheng, D. Kan, V. Nagarajan, I. Takeuchi, and B. O. Wells, Annual American Physical Society March Meeting 2010, Symposium on Dielectric, Ferroelectric, and Piezoelectric Oxides - Thin Film Multiferroics, Portland, OR (Mar. 2010).
  52. "Thickness-dependent Properties of Barium Strontium Titanate Thin Films for Tunable Devices," with C. V. Weiss and M. B. Okatan, poster presentation, 18<sup>th</sup> Connecticut Symposium on Microelectronics and Optoelectronics, New Haven, CT (Mar. 2009).

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53. "Finite Element Modeling of Effective Dielectric Response and Dielectric Tunability in Ferroelectric Composite Materials," with K. Zhou and S. A. Boggs, 2008 Annual Report Conference on Electrical Insulation Dielectric Phenomena, Quebec City, Canada (Oct. 2008).
  54. "Stress Relaxation by Cation Ordering in Epitaxial Lead Zirconate Titanate Films," with L. C. Zhang, A.L. Vasiliev, I. B. Misirlioglu, M. Aindow, and R. Ramesh, poster presentation, Microscopy & Microanalysis 2008 Meeting, Albuquerque, NM (Aug. 2008).
  55. "Positionally Tunable Functional Materials: A New Pathway to Develop Materials for Sensors and Actuators," with G. A. Rossetti, Jr., Department of Homeland Security Site Visit, University of Connecticut, Storrs, CT (May 2008).
  56. "Barium Strontium Titanate Thin Films for Application in Microwave Tunable Devices," with C. V. Weiss, 17<sup>th</sup> Connecticut Symposium on Microelectronics and Optoelectronics, Storrs, CT (Apr. 2008).
  57. "Tunable Dielectrics and Pyroelectric Materials: Modeling and Thin Film Deposition at IMS-UConn," Picatinny Arsenal ARDEC Visit, University of Connecticut, Storrs, CT (Feb. 2008).
  58. "Modeling of Pyroelectric Materials and Thin Film Deposition at SoE-UConn," UCONN – TYCO Exchange Meeting, University of Connecticut, Storrs, CT (Jan. 2008).
  59. "Theoretical Modeling of Functional Materials and Thin Film Deposition at IMS-UConn," with G. A. Rossetti, Jr., UConn – UTRC Exchange on Electrocaloric Cooling Technology, University of Connecticut, Storrs, CT (Jan. 2008).
  60. "Epitaxial V<sub>2</sub>O<sub>3</sub> Thin Films on a-Plane (110) and c-Plane (001) Al<sub>2</sub>O<sub>3</sub> via Pulsed Laser Deposition Technique," with B. Allimi, Materials Science & Technology 2007 Conference and Exhibition, Symposium on Processing and Product Manufacturing: Innovative Processing and Synthesis of Ceramics, Glasses and Composites, Detroit, MI (Sept. 2007).
  61. "Dielectric Permittivity and Tunability of Ferroelectric Bilayers and Multilayer Heterostructures," with S. Zhong, G. Akcay, I. B. Misirlioglu, A. L. Roytburd, J. V. Mantese, and M. W. Cole, Annual American Physical Society March Meeting 2007, Denver, CO (Mar. 2007).
  62. "Internal Magnetostatic Potentials of Magnetization-Graded Hexagonal Ferrites," with C. Sudakar, J.V. Mantese, A. L. Micheli, R. Naik, G. Srinivasan, and G. Lawes, Annual American Physical Society March Meeting 2007, Denver, CO (Mar. 2007).
  63. "Enhanced Dielectric and Pyroelectric Response from Epitaxial Ferroelectric Films on Anisotropic Substrates," with G. Akcay and I. B. Misirlioglu, MRS Fall Meeting, Boston, MA (Nov. 2006).
  64. "High Nonlinear Dielectric Properties of Ferroelectric Bilayers and Multilayer Heterostructures," poster presentation, with S. Zhong, A. L. Roytburd, and J. V. Mantese, MRS Fall Meeting, Boston, MA (Nov. 2006).
  65. "Huge Permittivities and Tunabilities of Ferroelectric Bilayers and Multilayer Heterostructures," with S. Zhong, A. L. Roytburd, and J. V. Mantese, 15<sup>th</sup> Connecticut Symposium on Microelectronics and Optoelectronics, Storrs, CT (Apr. 2006).

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66. "Pyroelectric Response of Homogeneous Ferroelectrics in Thermal Transient State," with G. Akcay, S. Zhong, and J. V. Mantese, poster presentation, 15<sup>th</sup> Connecticut Symposium on Microelectronics and Optoelectronics, Storrs, CT (Apr. 2006).
  67. "Interlayer Coupling and Dielectric Anomaly in Ferroelectric Bilayers and Multilayer Heterostructures," with S. Zhong, J.V. Mantese, and A. L. Roytburd, Annual American Physical Society March Meeting 2006, Baltimore, MD (Mar. 2006).
  68. "Static Field Anisotropies in Composition-Graded Ferroics," with J.V. Mantese, A. L. Micheli, N. Schubring, G. Srinivasan, and R.W. Hayes, Annual American Physical Society March Meeting 2006, Baltimore, MD (Mar. 2006).
  69. "AFM Studies of the Surface Relief Associated with Various Deformation Mechanisms in Metastable Beta Ti-Mo-based Alloys," with L. Zhang, M. Aindow and M. Wu, MRS Fall Meeting, Boston, MA (Nov. 2005).
  70. "Interfacial Structures for Martensitic Phases in Metastable Beta Ti-Mo-based Alloys," with L. Zhang, M. Aindow and M. Wu, MRS Fall Meeting, Boston, MA (Nov. 2005).
  71. "Compositional Symmetry Breaking in Ferroelectric Bilayers," with S. Zhong, and J. V. Mantese, poster presentation, MRS Fall Meeting, Boston, MA (Nov. 2005).
  72. "Phase Transformations, Deformation Mechanisms, and Pseudoelasticity in Ti-Mo-based Alloys," with L. Zhang, T. Zhou, M. Aindow, M. Blackburn, and M. Wu, The Minerals, Metals & Materials Society Solid-Solid Phase Transformations in Inorganic Materials 2005, Phoenix, AR (Jun. 2005).
  73. "The Influence of Interfaces on Ferroelectric Properties," with B. Huey, R. Premnath, R. E. Garcia, and J. Blendell, 107<sup>th</sup> Annual Meeting & Exposition of The American Ceramic Society, Symposium on Nanoindentation and Scanning Probe Microscopy, Baltimore, MD (Apr. 2005).
  74. "Strain Phase Diagram of SrTiO<sub>3</sub> Thin Films," with E. He, B. O. Wells, and S. M. Shapiro, Annual American Physical Society March Meeting 2005, Los Angeles, CA (Mar. 2005).
  75. "Interlayer Coupling and Stability of Single Domain State in a Ferroelectric Bilayer," with Z.-G. Ban, J. V. Mantese, and A. L. Roytburd, MRS Fall Meeting, Boston, MA (Nov. 2004).
  76. "Dielectric Response of Epitaxial Compositionally Graded Ferroelectric Thin Films," with S. Zhong, and J. V. Mantese, poster presentation, MRS Fall Meeting, Boston, MA (Nov. 2004).
  77. "Strong Degradation of Physical Properties and Formation of a Dead Layer in Ferroelectric Films due to Interfacial Misfit Dislocations," with I. B. Misirlioglu, A. L. Vasiliev, M. Aindow, V. Nagarajan, and R. Ramesh, poster presentation, MRS Fall Meeting, Boston, MA (Nov. 2004).
  78. "Nonlinear Pyroelectric Response in Epitaxial Ferroelectric Thin Films," with A. Sharma and Z. -G. Ban, 13<sup>th</sup> Connecticut Symposium on Microelectronics and Optoelectronics, Storrs, CT (Apr. 2004).
  79. "Role of Dislocations on the Physical Properties of Ferroelectric Thin Films," with I. B. Misirlioglu, A. L. Vasiliev, and M. Aindow, 13<sup>th</sup> Connecticut Symposium on Microelectronics and Optoelectronics, Storrs, CT (Apr. 2004).

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80. "Dielectric and Pyroelectric Response of Polarization Graded Ferroelectric Materials," with Z. -G. Ban and J. V. Mantese, 16<sup>th</sup> International Symposium on Integrated Ferroelectrics ISIF-2004, Symposium on Multi-Ferroics and Graded Ferroelectrics Gyeongju, Republic of Korea (Apr. 2004).
  81. "Structural Changes during Phase Transitions in Perovskite Thin Films," with F. He, B. O. Wells, S. M. Shapiro, A. Clark, and X. X. Xi, Annual American Physical Society March Meeting 2004, Montreal, Canada (Mar. 2004).
  82. "Optimization of Pyroelectric Properties of Ferroelectric Thin Films via Internal Stresses," with A. Sharma and Z. -G. Ban, MRS Fall Meeting, Boston, MA (Dec. 2003).
  83. "A Transmission Electron Microscopy Study of Dislocation Substructures in PLD-grown Epitaxial Films of (Ba,Sr)TiO<sub>3</sub> on (001) LaAlO<sub>3</sub>," with I. B. Misirlioglu, A. L. Vasiliev, M. Aindow, and R. Ramesh, MRS Fall Meeting, Boston, MA (Dec. 2003).
  84. "Dislocation Structures in Epitaxial Barium Strontium Titanate Thin Films," with I.B. Misirlioglu, A. L. Vasiliev, N.J. Magdefrau, M. Aindow, and R. Ramesh, 105<sup>th</sup> Annual Meeting & Exposition of the American Ceramic Society, Nashville, TN (Apr. 2003).
  85. "Electrical Properties of Cr-Doped V<sub>2</sub>O<sub>3</sub> Under Uniaxial Stresses," with M. Cirakoglu, J. E. Crocker, E. K. Jordan, and H.L. Marcus, 105<sup>th</sup> Annual Meeting & Exposition of the American Ceramic Society, Nashville, TN (Apr. 2003).
  86. "Dielectric and Pyroelectric Response of Polarization-Graded Ferroelectrics," with Z. -G. Ban and J. V. Mantese, 105<sup>th</sup> Annual Meeting & Exposition of The American Ceramic Society, Nashville, TN (Apr. 2003).
  87. "Asymmetrical Hysteresis in Polarization Graded Ferroelectrics," with Z. -G. Ban, 12<sup>th</sup> Connecticut Symposium on Microelectronics and Optoelectronics, Storrs, CT (Apr. 2003).
  88. "Origin of the Hysteresis Offsets from Polarization Graded Ferroelectrics," with Z. -G. Ban and J. V. Mantese, 15<sup>th</sup> International Symposium on Integrated Ferroelectrics ISIF-2003, Colorado Springs, CO (Mar. 2003).
  89. "Anomalous Phase Transition in Strained SrTiO<sub>3</sub> Thin Films," with F. He, B.O. Wells, S. M. Shapiro, M. v. Zimmermann, A. Clark, and X. X. Xi, Annual American Physical Society March Meeting 2003, Austin, TX (Mar. 2003).
  90. "Electromechanical Properties of Constrained Ferroelectric Films," with A.L. Roytburd, V. Nagarajan, and R. Ramesh, MRS Fall Meeting, Boston, MA (Dec. 2002).
  91. "Thermodynamic Analysis of the Hysteresis Offset in Polarization Graded Ferroelectric Materials," with J. V. Mantese and Z.-G. Ban, poster presentation, MRS Fall Meeting, Boston, MA (Dec. 2002).
  92. "Tuning the Tunability in Epitaxial Barium Strontium Titanate Film via Internal Stresses," with Z.-G. Ban, MRS Fall Meeting, Boston, MA (Dec. 2002).

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93. "Hysteresis Offset in Stress Induced Polarization-Graded Ferroelectrics," with J. V. Mantese, N. W. Schubring, A. L. Micheli, M. P. Thompson, R. Naik, G. W. Auner, I. B. Misirlioglu, and Z.-G. Ban, poster presentation, MRS Fall Meeting, Boston, MA (Dec. 2002).
  94. "Lattice Misfit as a Design Parameter for Enhanced Dielectric Response and Tunability in Epitaxial Barium Strontium Titanate Films," with Z. -G. Ban, 104<sup>th</sup> Annual Meeting & Exposition of the American Ceramic Society, St. Louis, MO (May 2002).
  95. "Optimization of Dielectric Response and Tunability of Barium Strontium Titanate Film via Epitaxial Stresses," with Z. -G. Ban, poster presentation, Materials Academic Advisory Board Meeting, Storrs, CT (Apr. 2002).
  96. "Misfit Strain Driven Phase Transformations in Epitaxial Barium Strontium Titanate Films," with Z. -G. Ban, poster presentation, MRS Spring Meeting, San Francisco, CA (Apr. 2002).
  97. "Design Parameters for Optimization of Dielectric Response and Tunability of Barium Strontium Titanate Film," with Z. -G. Ban, Annual Meeting of the ASM Hartford Chapter, Hartford, CT (Mar. 2002).
  98. "Optimization of Dielectric Response and Tunability in Epitaxial Barium Strontium Titanate Films by Adjusting Misfit Strain," with Z. -G. Ban, 11<sup>th</sup> Connecticut Symposium on Microelectronics and Optoelectronics, New Haven, CT (Mar. 2002).
  99. "Internal Stress Dependence of Dielectric and Piezoelectric Properties of Ferroelectric/Dielectric Thin Films," poster presentation, 10<sup>th</sup> Connecticut Symposium on Microelectronics and Optoelectronics, Storrs, CT (Apr. 2001).
  100. "Growth and Control of Domain Structure of Epitaxial  $\text{PbZr}_{0.2}\text{Ti}_{0.8}\text{O}_3$  films Grown on Vicinal (001)  $\text{SrTiO}_3$ ," with V. Nagarajan, C. Ganpule, A.L. Roytburd and R. Ramesh, poster presentation, 2001 Workshop on Fundamental Physics of Ferroelectrics, Williamsburg, VA (Feb. 2001).
  101. "Role of Substrate in the Dielectric and Piezoelectric Behavior of Epitaxial Lead Magnesium Niobate-Lead Titanate Relaxor Thin Films," with V. Nagarajan, C.S. Ganpule, B. Nagaraj, S. Aggarwal, A. L. Roytburd, E. D. Williams and R. Ramesh, poster presentation, MRS Fall Meeting, Boston, MA (Dec. 2000).
  102. "Thermodynamics of Constrained Ferroelectric Films," with A.L. Roytburd, C.S. Ganpule, V. Nagarajan, E.D. Williams, A. Stanishevsky, J. Melngailis, and R. Ramesh, poster presentation, MRS Fall Meeting, Boston, MA (Dec. 2000).
  103. "Scaling of Properties in Ferroelectric Thin Films," with C.S. Ganpule, A. Stanishevsky, V. Nagarajan, S.P. Alpay, S. Aggarwal, J. Melngailis, E.D. Williams, R. Ramesh, P. De Wolf, S. Tiedke, V. Joshi, and C. Paz de Araujo, poster presentation, MRS Fall Meeting, Boston, MA (Dec. 2000).
  104. "Growth and Control of Domain Structure of Epitaxial  $\text{PbZr}_{0.2}\text{Ti}_{0.8}\text{O}_3$  Films Grown on Vicinal (001)  $\text{SrTiO}_3$ ," with V. Nagarajan, C.S. Ganpule, A.L. Roytburd, R. Ramesh, and D.G. Schlom, MRS Fall Meeting, Boston, MA (Dec. 2000).

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105. "The Effect of Internal Stress and Defects on the Dielectric Properties of (Ba,Sr)TiO<sub>3</sub> Thin Films for Tunable Microwave Applications," with H. Li, T. Tran, C.L. Canedy, L. Salamanca-Riba, R. Ramesh, F. Van Keuls, R.R. Romanofsky, and F.A. Miranda, MRS Fall Meeting, Boston, MA (Dec. 2000).
  106. "Cellular Domain Architecture of Stress-free Epitaxial Ferroelectric Thin Films," MRS Fall Meeting, Boston, MA (Dec. 2000).
  107. "Tilting of Domains in Epitaxial Ferroelectric Thin Films with a Perovskite Structure," 10<sup>th</sup> International Materials Science and Metallurgy Congress, Istanbul, Turkey (June 2000).
  108. "Internal Stress Induced Increase in Saturation Polarization in Ultra-Thin Ferroelectric Films," 10<sup>th</sup> International Materials Science and Metallurgy Congress, Istanbul, Turkey (June 2000).
  109. "Effect of Substrate Induced Constraint on the Dielectric and Electro-mechanical Behavior of Epitaxial Lead Magnesium Niobate (90%) - Lead Titanate (10%) Thin Films, with V. Nagarajan, B. Nagaraj, C.S. Ganpule, S. Aggarwal, A.L. Roytburd, and R. Ramesh, 12<sup>th</sup> International Symposium on Integrated Ferroelectrics, Aachen, Germany (Mar. 2000).
  110. "Epitaxial PMN-PT Relaxor Thin Films: Dependence of Dielectric and Piezoelectric Properties on Film Thickness," poster presentation, MRS Fall Meeting, Boston, MA (Dec. 1999).
  111. "Thermodynamical Theory and Experimental Verification of Polydomain Structures in Epitaxial Ferroelectric Thin Films and Multilayer Heterostructures," Ph.D. thesis presentation, College Park, MD (Jan. 1999).
  112. "The Stress State of Epitaxial Lead Zirconate Titanate Thin Films with and without LaSr<sub>0.5</sub>Co<sub>0.5</sub>O<sub>3</sub> Electrodes," poster presentation, MRS Fall Meeting, Boston, MA (Dec. 1998).
  113. "Polydomain Formation in Constrained Ferroelectric Thin Films," poster presentation, best poster award, Fifth International Symposium on Ferroic Domains and Mesoscopic Structures (ISFD-5), State College, PA (Apr. 1998).
  114. "Polydomain Structure of Epitaxial PbTiO<sub>3</sub> Films on MgO," poster presentation, best poster award, MRS Fall Meeting, Boston, MA (Dec. 1997).
  115. "Polydomain Structure of Epitaxial PbTiO<sub>3</sub> Films on MgO and SrTiO<sub>3</sub> substrates," poster presentation, with A. S. Prakash, S. Aggarwal, R. Ramesh, A. L. Roytburd, P. Shuk, and M. Greenblatt, University of Maryland Materials Research Science and Engineering Center Industrial Review and Workshop, College Park, MD (Sept. 1997).
  116. "Equilibrium Domain Structures of Epitaxial Perovskite Ferroelectric Films," poster presentation, MRS Spring Meeting, San Francisco, CA (Apr. 1997).
  117. "Effect of Aging on the Microstructure and Fatigue Crack Growth Kinetics of Al-Zn-Mg-Cu Alloys," MS thesis presentation, Ankara, Turkey (Jul. 1993).