

## Curriculum Vitae

Stephen B. Bayne, Ph.D.  
Department of Electrical and Computer Engineering  
Texas Tech University (TTU)  
Lubbock, Texas,  
240 626 3667

## Research Interests

Power Electronics, Power Semiconductor Devices, Micro Grid, Grid Integration, Renewable Energy (Wind and Solar)

## ACADEMIC LEADERSHIP

**Vice President for National Security**, Texas Tech University | *September 2025 – Present*

**Vice Chancellor for Innovation and Collaboration**, Texas Tech System | *August 2024 – September 2025*

**Executive Director**: Institute for Critical Infrastructure Security | *August 2024 – Present*

**Chair**, TTU, Department of Electrical Engineering | *August 2023 – August 2024*

**Interim Dean**, Edward E. Whitacre Jr. College of Engineering | *August 2022 – August 2023*

**Chair**, TTU, Department of Electrical Engineering | *September 2021 – August 2022*

**Faculty Fellow/Associate VP in the VP of Research Office** | *January 2021 – September 2021*

**Associate Chair for Graduate Studies**, TTU, Department of Electrical Engineering | *February 2015 – September 2021*

**Director of Grid Integration, National Wind Institute (NWI), TTU** | *March 2019 – August 2024*

**Co-director for the National Wind Institute (NWI), Transition Team Member (Acting)** | *January 2018 – August 2018*

## Academic Appointments

**Professor** of Electrical and Computer Engineering at TTU | *September 2015 – Present*

**Endowed Chair**: John R. Bradford Chair in Engineering | *September 2021 – Present*

**Professorship**, President's Excellence in Research Professorship | *September 2018 – September 2023*

**Associate Professor**, TTU, Department of Electrical and Computer Engineering | *January 09-September 2015*

**Adjunct Assistant Professor**, Morgan State University | *September 02 – January 09*

**Adjunct Assistant Professor**, Howard University | *September 02 – December 02*  
**Research Associate**, Texas Tech University | *December 97 – March 98*  
**Research Assistant**, Texas Tech University | *January 93 – December 97*

### **Federal Research Leadership**

**Branch Chief, Directed Energy Branch, (DB4 – GS 15)** Army Research Lab | *May 04 – January 09*  
**Team Leader, Power Switches Team**, Army Research Lab | *September 03 – May 04*

### **Federal Research Appointments**

**Electronics Engineer**, Army Research Lab | *July 00 – September 03*  
**Electronics Engineer**, Naval Research Lab | *March 98 – July 00*

### **Military Appointment**

**United States Air Force (Sergeant)** | *February 86 - February 90*

## **EDUCATION**

**Doctor of Philosophy**, Electrical Engineering | *December 1997*  
**Dissertation Title: “Performance and Analysis of Renewable Energy Sources”**  
Department of Electrical Engineering  
Texas Tech University  
Lubbock, TX 79415

**Master of Science**, Electrical Engineering | *December 1994*  
**Thesis Title: “High Power Semiconductor Switching and Reliability”**  
Department of Electrical Engineering  
Texas Tech University  
Lubbock, TX 79415

**Bachelor of Science**, Electrical Engineering | *May 1993*  
Department of Electrical Engineering  
Texas Tech University  
Lubbock, TX 79415

**Associate in Applied Science**, Electric Power Systems | *June 1989*  
Community College of the AIR FORCE

### **Practice of Engineering Licensure**

**Professional Engineer**, State of Texas, License No. 143523

## **University Program Accreditation Certification**

[1] Program evaluator for the ABET to evaluate and accredit Engineering and Engineering Technology Programs, 2005 -2010

## **ACADEMIC LEADERSHIP AT TEXAS TECH UNIVERSITY**

### **Vice President for National Security, Texas Tech University | *September 2025 – Present***

- Leading the effort to integrate Reese National Security Complex (previously Reese Air Force Base) into Texas Tech University
- Leading the effort to update the University to TS Clearance
- Recruited and onboarded personnel for the newly established Office for National Security.
- Organized the Texas Working Energy Group (TWEG) workshop in partnership with federal agencies.
- Led the strategic development of the EMP Test Facility at the TTU Reese National Security Complex.
- Briefed the University President on national security activities, programs, and emerging issues.
- Delivered presentations and activity updates to the TTU Board of Regents, Texas state officials, and federal partners.
- Built and maintained partnerships with private industry, federal and state agencies, and academic institutions to advance national security research and program development.
- Coordinated engagement efforts with public, private, and academic partners to expand collaboration opportunities across the national security portfolio.
- Led multiple committees focused on advancing research, development, and strategic growth of the Reese National Security Complex (RNSC) ecosystem.
- Chaired cross-functional committees that supported strategic planning, research alignment, and capability development for the RNSC.
- Supervising the Director of the TTU Global Laboratory for Energy Asset Management and Manufacturing (GLEAMM) Center

### **Vice Chancellor for Innovation and Collaboration, Texas Tech University System | *August 2024 – Present***

- Secured collaborative federal funding for three schools within the system
- Worked with the Chancellor to develop an internal funding program for the System
- Established relationships and visited the five schools within the TTU system
- Developed workshops for the TTU system for researchers in selected areas

- Updated and gave presentations to the Chancellor on efforts in innovation and collaboration
- Met with the leaders of the five schools in the TTU system to lay out the vision for collaboration
- Organized and executed the first “Bridging the Gap on Innovation across the Texas Tech System” workshop

**Executive Director:** Critical Infrastructure Security Institute | *August 2024 – Present*

- Led the Texas Energy Working Group – Strategic Multi-Sector Engagement, September 2025
  - Lead Organizer & Facilitator | [Dallas, TX] | [September 2025]
    - Contributed to the launch of a strategic collaboration among energy industry leaders, government agencies, and higher education institutions to address regional energy challenges and critical infrastructure resilience in Texas.
    - Facilitated introductions and discussion frameworks that supported alignment across sectors, emphasizing long-term workforce development and public-private cooperation.
    - Led end-to-end event logistics, including coordination with high-level stakeholders, agenda development, venue operations, and communications strategy — ensuring a seamless, outcomes-focused convening.
    - Supported actionable outcomes tied to state and national energy security priorities, positioning the initiative for continued cross-sector engagement
- Led the effort to establish a Telecommunications research program at TTU
- Led the effort to secure \$304M in state funding for National Security Research
- Developed the Institute's structure
- Hired new faculty and staff for the Institute
- Develop a marketing plan for the Institute
- Led the efforts to establish a website
- Led significant proposals related to the Institute
- Led the efforts to develop Cyber labs for the institute
- Gave high-level presentations and tours to leaders from the State and Federal government
- Gave Testimony to the Texas House committee on Higher Education on the transfer of the Reese Technology Center to Texas Tech University
- Established a Critical Infrastructure seminar series

**Chair of Electrical and Computer Engineering** | *September 2021 – August 2024*

- Led the tenure and promotion process within the department
- Supervised ten staff members
- Supervised 35 tenured/tenure-track faculty and instructors in the department
- Conducted annual review for faculty and staff
- Hired new faculty and instructors in the department
- Led and conducted faculty meeting
- Worked with the development team to attract over \$1M in donor funds to renovate an undergraduate teaching laboratory
- Established an Associate Chair position for Assessment and Recruiting
- Established an open-door policy for faculty, staff, and students
- Developed new ABET subcommittees and led the effort for the 2023 ABET visit
- Represented the department to the upper administration
- Led the effort in recruiting students to the department
- Developed a marketing plan for the department and updated the website
- Developed a social media presence for the department (Twitter and LinkedIn)
- Develop and deploy a department newsletter
- Increased external funding within the department
- Actively work to increase diversity within the department
- Work to develop an MS in Computer Engineering
- Increased the ranking of the department from 89 to 78

**Interim Dean Edward E. Whitacre Jr. College of Engineering** | *August 2022 – August 2023*

- Increased average funding per faculty by 33%
- Increased student enrollment by 8% in one year
- Managed a \$50M budget for the college
- Managed seven departments with 4,800 undergraduate, 1,442 graduate students, and 257 faculty and staff
- Hired four interim department Chairs
- Hired 23 staff members
- Hired 18 faculty members
- Negotiated the space and move for the new NSF CASFER ERC
- Hired an interim Associate Dean for Undergraduate Studies
- Hired an Associate Dean of Research and Graduate Programs
- Hired an Assistant Dean of Strategic Initiatives
- Worked with the Development team to raise over \$8.8M in donations
- Worked with Chairs to post several faculty positions
- Established a safety culture within the College and developed paid safety awards
- Established a senior director position for marketing
- Established relationships with the Health Science Center and the VP for research
- Developed a Process for evaluating faculty flight risk and awarded raises to several faculty
- Managed the ABET preparation review for the Fall 2023 review

- Met with LGBTQIA+ students to hear needs and suggestions to make the WCOE more inclusive and supportive of the population
- Met with the Director of the LGBTQIA+ office for ideas and to make support known
- Met with leaders (presidents/officers) of Engineering organizations for introduction and to show support and direction of the college

**Associate Chair for Graduate Studies** | *February 2015 – September 2021*

- Authored the review report of Electrical Engineering's graduate program review (2021)
- Led the graduate committee
- Developed graduate student handbook
- Responsible for the recruitment of graduate students
- Managed the admission process for selecting graduate students
- Authored the review report of Electrical Engineering's graduate program review (2017)
- Managed the graduate scholarship budget
- Conducted the grad student orientation seminar each semester
- Developed an annual survey to collect data for the graduate program
- Assisted in the SACS graduate program review

**FEDERAL RESEARCH LEADERSHIP**

**Branch Chief, Directed Energy Branch** | *May 2004 – January 2009*

*Army Research Lab*

Adelphi, MD 20783-1197

- Served as Branch Chief for the Directed Energy Branch
- Developed research goals and set guidelines for research activities
- Created long-range research strategies for the Branch
- Performed workflow and cost-benefit analysis
- Conducted complex studies in High Power Microwave Design for Army applications
- Reviewed and recommended changes in program objectives, operations, and use of resources
- Managed and coordinated the High-Power Microwave, HEMP, and Alternative Energy teams
- Established policies and procedures for Branch Personnel
- Guided the pulse power team on switching and evaluation of Si and SiC switches for pulsed power applications
- Obtained funding for research from various entities
- Performed employees' annual review evaluations
- Represented the Branch at various official functions

- Managed the Branch budget and approved all purchases within the branch
- Conducted reviews of the team's performance
- Recruited, interviewed, and hired new personnel within the branch
- Served as chair for the Power and Energy Strategic Technology Initiative – Led a team that developed long-term planning for the power and energy research area

**Team Leader, Power Switches Team** | *September 2003 – May 2004*

*Army Research Lab*

Adelphi, MD 20783-1197

- Technical supervisor for four engineers and three part-time students
- Led the development of SiC models for Pspice
- Established test procedures for the evaluation of SiC devices
- Liaison with the Branch Chief to develop standards for team members
- Assisted in evaluations of team members
- Managed Army programs such as SBIR and STOs
- Assisted in the development of new STOs for FCS work with TARDEC to develop the requirements for the STOs
- Managed several contracts for Power SiC devices
- Evaluated SiC devices for the DARPA wide band gap program
- Member of the selection committee for DARPA's RIPE and Wide band gap program
- Evaluated SiC devices for the DARPA wide band gap program
- Evaluated SiC devices for pulse power applications

**FEDERAL RESEARCH**

**Electronic Engineer** | *July 2000 – September 2003*

*Army Research Lab*

Adelphi, MD 20783-1197

- Established and built up a Power Electronics Lab at the Army Research Lab
- Evaluated SiC Power devices for high-power and high-temperature power electronics applications
- Characterized Wide Band Gap devices for Power Electronic applications
- Designed Gate drive circuits to drive SiC Power Devices
- Designed systems for high-temperature testing of Wide Band Gap devices
- Simulated Power Electronic systems using Pspice and Saber
- Designed, built, and tested a three-phase all SiC inverter circuit to drive a three-hp motor
- Recruited and interviewed engineers for the SiC power electronic lab
- Technical Supervisor for junior engineers
- Recruited, Supervised, and assigned projects to intern students

## **Electronic Engineer** | *March 1998 – July 2000*

*Naval Research Lab*

Washington, DC 20375

- Designed Power Electronic systems for space power
- Evaluated designs of Power electronic space power system
- Wrote test procedures for space application power systems
- Presented the Critical design review for the Spacecraft power system
- Designed circuit board layout for space application power systems
- Tested space power systems
- Electrical Lead design Engineer on projects
- Supervised and coordinated the work of contractors
- Worked in a team to integrate power systems into spacecraft

## **MEMBERSHIP IN PROFESSIONAL SOCIETIES**

- Senior Member of IEEE
- IEEE Industrial Applications Society
- IEEE Nuclear and Plasma Science Society
- IEEE Power Electronics Society
- Passed Chair of Baltimore IEEE Power Electronics Chapter (Started the chapter)

## **HONORS AND AWARDS**

- Big 12 TTU Honoree of the Year 2026
- Bernie E. Rushing, Jr. Faculty Distinguished Research Award, STEM Disciplines, Texas Tech University | 2021
- National Society of Black Engineers Region V Fall Regional Conference Vanguard Award, Most Outstanding Advisor | 2019
- Army Research Laboratory, Sensors and Electron Devices Directorate, 2019 SEDD Director's Award for the development of Silicon Carbide technology | *October 2019*
- Recognized Faculty Member, the Honors Convocation, College of Engineering | 2018, 2025
- IEEE NPSS Distinguished Lecturer | 2017- Present
- Recognized Faculty Member, the Honors Convocation, College of Engineering | 2016
- Edward E. Whitacre Jr. College of Engineering SafeRaider Award | 2016
- Recognized Faculty Member, the Honors Convocation, College of Engineering | 2014
- IEEE Texas Tech University Student Branch Teacher of the Year 2013-2014
- TTU Teaching Academy, Inducted | *May 2013*
- Recognized Faculty Member, the Honors Convocation, College of Engineering | 2013
- TTU Student Organization Outstanding Organization Advisor Award (National Society of Black Engineers) | 2012
- TTU Lockheed Martin Excellence in Engineering Teaching award | 2012
- Army Greatest Invention Award | 2007

- Army Research and Development Award | 2006
- Army Research Lab Achievement Award for Human Resources Development | 2002
- Army Research Lab Achievement Award for Engineering | 2002
- Army Research and Development Award | 2002
- Nominated for Black Engineer of the year by the U.S. Army | 2001

### **Commercialization**

[1] Taught the I-CORP regional class | *March 2017, September 2017, and February 2018*

### **Patent**

[2] Shelby Lacouture, and Stephen Bayne, “Wide Injection Range Open Circuit Voltage Decay System,” Patent Number 11,143,694, 2021/10/12

[1] Shelby Lacouture, Argenis Bilbao, and Stephen Bayne, “Magnetic Field Vector Imaging Arrays,” Patent Number 10393827, 2019/8/27

### **PUBLICATIONS**

#### **Book**

[2] S. Bayne, B. Pushpakaran, Editors, “Power Semiconductor Technology in Pulsed Power Applications, Springer, 2025

[1] B. Pushpakaran, S. Bayne, “Modeling and Electrothermal Simulation of SiC Power Devices: Using Silvaco ATLAS,” World Scientific, 2018

#### **Book Chapter**

[2] Smart Cyber-Physical Power Systems: Fundamental Concepts, Challenges and Solutions, Volume 1, Chapter “Power Distribution Systems Self-Healing,” Chapter 13, February 2025, Konrad Schmitt, Manohar Chamana, Meisam Mahdavi, Stephen Bayne, Luciane Neves

[1] “Silicon Carbide Technology and Power Electronics Applications,” Advances in Silicon Carbide Processing and Applications, C. Wesley Tipton IV and Stephen B. Bayne, 2004

#### **Peer-Reviewed Journal Publications** (Students denoted by \*)

[94] P. Eisenkraemer, L. Souto, L Bastias, B. Alao, O. Adeyanju, B. Mitra, M. Chamana, S. Bayne, “A Systematic Review on Coordinated Restoration Strategies for Power Distribution Grids, IEEE Access, 2026/2/24

- [93] L. Souto, P. Eisenkraemer, R. Shrestha, M. Chamana, O. Adeyanju, S. Bayne, "Moving Target Defense in Software-Defined Networks—A Systematic Review," *IEEE Access*, 2026/2/26
- [92] R. Shrestha\*, M. Chamana, O. Adeyanju, M. Mohammadpourfard\*, S. Bayne, "Detection and Localization of the FDI Attacks in the Presence of DoS Attacks in Smart Grid," *MDPI Smart Cities* Vol 8, Issue, PP 144, Sep 2025
- [91] R. Shrestha\*, M. Chamana, M. Mohammadpourfard\*, L. Souto\*, S. Bayne, "Fault Detection Isolation and Localization (FDIL) Scheme: A Robust ML Framework With Novel Architecture for Fault Localization," *IEEE Access*, Vol 13, PP 172371-172383, Oct 2025
- [90] B. Alao\*, O. Adeyanju, M. Chamana, S. Bayne, A. Bilbao, "Photovoltaic Farm Power Generation Forecast Using Photovoltaic Battery Model with Machine Learning Capabilities Solar," Volume 5, Issue 2, 6 May 2025
- [89] B. Alao\*, O. Adeyanju, M. Chamana, S. Bayne, A. Bilbao, "Optimized Universal Droop Control Framework for Enhancing Stability and Resilience in Renewable-Dense Power Grids," *Electronics*, 25 May 2025
- [88] M. Mahdavi, M. Chamana, K. Schmitt\*, S. Bayne, A. Awafo, F. Jurado, E. Marfo, "A Flexible Distribution Network Topology Determination in Presence of Scattered Energy Sources Using Coherence Between Load Type and Components," *IEEE Transactions on Industry Applications*, 23 August 2024
- [87] M. Mahdavi, K. Schmitt\*, A. Awafo, M Chamana, S. Bayne, "An Effective Robust Strategy for Reconfiguring Distribution Systems Considering Load and DG Uncertainties and Demand Variability," *IEEE Transactions on industry applications*, July 2024
- [86] M. Mahdavi, A. Awafo, F. Jurado, E. Maro, M. Chamana, K. Schmitt\*, S. Bayne, "Efficiently Including Time and Voltage Variability of Loads in Optimization of Distribution Systems Topology," *IEEE Transactions on Industry Applications*, May 2024
- [85] M. Mahdavi, K. Schmitt\*, M. Chamana, F. Jurado, S. Bayne, E. Marfo, A. Awafo, "A Mixed-Integer Programming Model for Reconfiguration of Active Distribution Systems Considering Voltage Dependency and Type of Loads and Renewable Sources," *IEEE Transactions on Industry Applications*, 1 April 2024
- [84] M. Mahdavi, A. Awafo, K. Schmitt\*. M. Chamana, F. Juarado, S. Bayne, "An Effective Formulation for Minimizing Distribution Network Costs Through Distributed Generation Allocation in Systems With Variable Loads," 27 March 2024

- [83] K. Schmitt\*, M. Chamana, M. Mahdavi, S. Bayne, L Canha\*, “Power Distribution Systems Optimal Outage Restoration with Miscoordination Detection,” IEEE Transactions on Industry Applications, 22 March 2024
- [82] L. Ward. A\*. Subburaj, A. Demir\*, M. Chamana, S. Bayne, “Analysis of Grid-Forming Inverter Controls for Grid-Connected and Islanded Microgrid Integration,” Sustainability Volume 16, Issue 5, 5 March 2024
- [81] D Graves\*, A Bilbao S Bayne, “Machine Learning Based Foreign Object Detection in Wireless Power Transfer Systems,” e-Prime-Advances in Electrical Engineering, Electronics and Energy, Elsevier, Volume 7, March 2024
- [80] M Mahdavi, K Schmitt\*, M Chamana, S Bayne, “Distribution Systems Reconfiguration Considering Dependency of Loads on Grid Voltage and Temperature,” IEEE Transactions on Power Delivery, 7 December 2023
- [79] M Mahdavi, K. Schmitt\*, M Chamana S. Bayne, F. Jurado, “ Distribution Systems Reconfiguration Considering Load Types: An Efficient Model,” IEEE Transactions on Industry Applications, 12 Dec 2023
- [78] M Murshed\*, M Chamana, K Schmitt\*, S Pol, O Adeyanju, S Bayne, “Sizing PV and BESS for Grid-Connected Microgrid Resilience: A Data-Driven Hybrid Optimization Approach, Energies, Vol 16. Issue 21, Oct 2023
- [77] M Chamana, R Bhatta, K Schmitt\*, R Shrestha\*, S Bayne, “An Integrated Testbed for Power System Cyber-Physical Operations Training,” Applied Sciences 13 (16), 9451, Aug 2023
- [76] M Murshed\*, M Chamana, KEK Schmitt\*, R Bhatta\*, O Adeyanju, S Bayne, “Design and Performance Analysis of a Grid-Connected Distributed Wind Turbine,” Energies 16 (15), 5778, Aug 2023
- [75] A Balal\*, YP Jafarabadi\*, A Demir\*, M Igene, M Giesselmann, S Bayne, “Forecasting Solar Power Generation Utilizing Machine Learning Models in Lubbock,” Emerging Science Journal 7 (4), 1052-1062, July 2023
- [74] M. Mahdavi, K. Schmitt\*, M. Chamana, S. Bayne, “Evaluation of Voltage Fluctuations Effect on Reconfiguration of Distribution Systems,” IEEE System Journal, Page 1-12, June 2023
- [73] K. Schmitt\*, R. Bhatta\*, M. Chamana, M. Murshed\*, I. Osman, S. Bayne, L. Cahha\*, “ A review of Active Customer Participation in Smart Grids,” Journal of Modern Power Systems and Clean Energy, November 2022

- [72] J. Rodriguez\*, S. Bayne, “Modeling a Permanent-Magnet Generator Set Under Nonlinear Load,” *International Journal of Engineering Research and Technology*, Vol 11 Issue 6, 22 June 2022
- [71] M. Chamana, K. Schmitt\*, R. Bhatta\*, S. Liyanage, I. Osman, M. Murshed\*, S. Bayne, “Buildings Participation in Resilience Enhancement of Community Microgrids: Synergy Between Microgrid and Building Management Systems,” *IEEE Access*, Vol 10, Pages 100922-100938, 19 September 2022
- [70] J. Rodriguez\*, T. Tsoi, D. Graves\*, S. Bayne, “Evaluation of GaN HEMTs in H<sup>3</sup>TRB Reliability Testing,” *Electronics*, Vol 11, Issue 10. May 2022
- [69] C. Negri\*, S. Saeed DaneshavarDehnavi, K. Schmitt\*, A. Nezhad, P. Nardelli, S. Bayne, M. Giesselmann, “Centralized Control Topology for PV Farms Shading Detection and GMPP Searching Restarting Condition,” *IEEE Access*, Vol 10, Pages 28991-29008, 10 March 2022,
- [68] S. Dehnavi, C. Negri\*, S. Bayne, M. Giesselmann, “Dynamic Voltage Restorer (DVR) with Novel Robust Control Strategy,” *Elsevier ISA Vol 121* Pages 316-326, Feb 2022
- [67] J. Cooper, D. Morisette, M. Sampath, C. Stellman\* S. Bayne, M. Westphal, C. Anderson, J. Ransom,” *Demonstration of Constant-Gate-Charge Scaling to Increase the Robustness of Silicon Carbide Power MOSFETs*,” *IEEE Transactions on Electron Devices*, Vol 68, Issue 9, September 2021
- [66] K. Schmitt\*, C. Negri\*, S. Dehnavi, S. Bayne, M. Giesselmann, “Short Circuit and Arc Flash Study on a Microgrid Facility,” *Asian Basic and Applied Research Journal*, Vol 3(2), Pages 14-23, 2021
- [65] S. Dehnavi, C. Negri\*, M. Giesselmann, S. Bayne, B. Wollenberg, “Can 100% Renewable Power System be Successfully Built,” *Elsevier Renewable Energy*, Vol 177, Pages 715-722, November 2021
- [64] S. Hanmady\*, S. Bayne “Doping-less SiC PIN Diode: Design and Investigation,” *IEEE Access*, June 2021
- [63] M. Kim\*, J. Forbes\*, E. Hirsch\*, J. Schrock\*, S. Lacouture\*, A. Bilbao, S. Bayne, “Evaluation of Long-Term Reliability and Overcurrent Capabilities of 15-kV SiC MOSFETs and 20-kV SiC IGBTs During Narrow Current Pulsed Conditions,” *IEEE Transactions on Plasma Science*, October 2020
- [62] S. Hahmady\*, S. Bayne, “Reverse Recovery of 50 V Silicon Charge Plasma PIN Diode,” *IEEE Access*, Vol 8, Pages 170588 – 170594, Sep 2020

- [61] Pushpakaran, B.N\*., Subburaj, A.S. & Bayne, S.B. Commercial GaN-Based Power Electronic Systems: A Review. *Journal of Elec Materi* (2020).  
<https://doi.org/10.1007/s11664-020-08397-z>
- [60] R. Castillo\*, S. Bayne, S. Pol, C. Westergaard, “Wind turbine wake position detection and rotor speed-based wake steering validation in a wind tunnel wake simulator,” *Wind Engineering*, Vol, 44, Issue 5, pages 483-493 October 2020
- [59] S. Ramabhotla\*, S. Bayne, “Cost and Availability Optimization of Wind Energy and Distributed Energy Resources of a Microgrid,” *Wind Engineering*, Vol 43, Issus 6, pages 559-572, January 2019
- [58] J. Russo, M. Litz, W. Ray\*, S. Bayne, G. Rosen, H. Cho, J. Yu, D. Bigio, C. Thomas, T. Alam, “Demonstration of a Tritiated Nitroxide Nuclear Battery,” *Applied Radiation and Isotopes*, Vol 144, Pages 93-103, Feb 2019
- [57] N. Shamim\*, A. Subburaj, S. Bayne, “Renewable Energy Based Grid Connected Battery Projects Around the World-An Overview,” *Journal of Energy and Power*, Vol 13, Pages 1-23, 2019
- [56] \*M. Kelly, B. Pushpakaran, \*A. Bilbao, \*J. Schrock S. Bayne, “Single-pulse avalanche mode operation of 10-kV/10-A SiC MOSFET,” *Elsevier Micro Electronics Reliability*, Vol 81, pages, 174 180, Feb 2018
- [55] N. Shamim\*, S. Noureen\*, A. Bilbao, A. Subburaj, S. Bayne, “A Comparative Study of Vector Control and Model Predictive Control Technique for Grid Connected Battery System,” ,” *International Journal of Research and Engineering*, Vol 5, No 1, Pages 287-295, Feb 2018
- [54] S. Noureen\*, N. Shamim\*, V. Roy\*, S. Bayne, “Real-Time Digital Simulators: A Comprehensive Study on System Overview, Application, and Importance,” *International Journal of Research and Engineering*, Vol 4 No 11, Pages 266 -277, Dec 2017
- [53] Z. Fan, N. Islam, S. Bayne, “Towards kilohertz electrochemical capacitors for filtering and pulse energy harvesting,” *Nano Energy Elsevier*, Volume 39, Pages306-320, 1 September 2017 2017
- [52] S. Lacouture\*, J. Schrock\*, E. Hirsch\*, S. Bayne, H. O’ Brien, A. Ogunniyi, “An open circuit voltage decay system for performing injection dependent lifetime spectroscopy,” *Review of Science Instruments*, Volume 88, Issue, 9, 9/2017
- [51] A. Ogunniyi, J. Schrock, M. Hinojosa, H. O’ Brien, A. Lesit, S. Bayne, S. Ryu, “Simulation Study of Switching-Dependent Device Parameters of High Voltage 4H-SiC GTOs,” *Material Science Forum*, Volume 897, Pages 575 -578, 2017

- [50] J. Schrock\*, E. Hirsch\*, S. Lacouture\*, M. Kelley\*, A. Bilbao\*, W. Ray\*, S. Bayne, M. Giesselmann, H. O'Brien, A. Ogunniyi, "Failure Modes of 15 kV SiC SGTO Thyristors during Repetitive Extreme Pulsed Overcurrent Conditions," IEEE Transactions on Power Electronics, Volume 31, Issue 12, Pages 8058-8062, 01 July 2016
- [49] \*Sundari Ramabhotla, Ph.D., Dr. Stephen Bayne, \*Tyler J. Flack, Dr. Michael Giesselmann, "Reliability Optimization in the Islanded Mode of Microgrid," Journal of Energy and Power Engineering, vol. 11, no 2, pp. 103-114, February 2017
- [48] \*A. Islam, \*S. Nimmagadda, \*A. Subburaj, S. Bayne, "A Review of Frequency Response Solution for Type - 3 Wind Turbines Using Energy Storage Device," International Journal of Renewable Energy Research (IJRER), Volume 6, Issue 4, December 2016
- [47] B. Pushpakaran\*, S. Bayne, A. Ogunniyi, "Electrothermal Simulation-Based Comparison 4H-SiC p-i-n, Schottky, and JBS Diodes Under High Current Density Pulsed Operation," IEEE Transactions on Plasma Science, Volume 45, Issue 1, pages 68-75, 20 December 2016
- [46] T. Flack\*. C. Hettler, S. Bayne, "Characterization of an n-Type 4-kV GTO for Pulsed Applications," IEEE Transactions on Plasma Science, Volume 44 Issue 10, Pages 1947-1955, 2016
- [45] \*A. Subburaj, \*S. Nimmagadda, I. \*Atiqul, S. Bayne, "Determination of Sub Synchronous Control Interaction between Wind Turbines and Series Compensated Transmission Lines," International Journal of Renewable Energy Research, Vol 6, Issue 3, Pages 987-994, 2016/9/6
- [44] M. Kelley\*, B. Bejoy\*, S. Bayne, "Single Pulse Avalanche Mode Robustness of Commercial 1200 V/80 mΩ SiC MOSFETs," IEEE Transactions on Power Electronics, Volume 32, issue 8, Aug 2017
- [43] V. Veliadis, B. Steiner, \*K. Lawson, S. B. Bayne, D. Urciuoli, and H. C. Ha, "Suitability of N-ON recessed implanted gate vertical-channel SiC JFETs for optically triggered 1200 V solid-state-circuit-breakers," IEEE Journal of Emerging and Selected Topics in Power Electronics, Vol. 4, issue 3, pp. 874-879, 2016.
- [42] \*M. Hinojosa, A. Ogunniyi, S. Bayne, E. Van Brunt, SH Ryu, Electro-thermal TCAD model for 22 kV silicon carbide IGBTs, Material Science Forum, Vol, 858, p949-953, 29 February 2016
- [41] T. Flack\*, B. Pushpakaran\*, S. Bayne, "GaN Technology for Power Electronics Applications: A review," Journal of Electronic Materials, Volume 45, Issue 6, pages 2673-2682, 1 June 2016

- [40] S. Lacouture\*, S. Bayne, “ A 500 A device characterizer utilizing a pulsed-linear amplifier,” Review of Scientific Instruments, Vol 87, Issues 2, 1 February 2016
- [39] James A. Schrock\*, Bejoy N. Pushpakaran\*, Argenis Bilbao\*, William Ray II\*, Emily Hirsch\*, Mitchell Kelley\*, Shad Holt, Stephen Bayne, “Failure Analysis of 1200-V / 150-A SiC MOSFET under Repetitive Pulsed Overcurrent Conditions,” IEEE Transactions on Power Electronics, Vol 31 Issue 3, Pages 1816-1821, March 2016
- [38] Bejoy N Pushpakaran\*, Anitha S. Subburaj\*, Stephen B. Bayne, John Mookken, “Impact of silicon carbide semiconductor technology in Photovoltaic Energy System,” Renewable and Sustainable Energy Reviews, Vol 55, March 2016, Pages 971-989
- [37] \*Bejoy N Pushpakaran, Stephen B Bayne, Aderinto A Ogunniyi, “Physics-based simulation of 4H-SiC DMOSFET structure under inductive switching,” Journal of Computational Electronics, Volume 15, Issus 1, 2016/3/1, Pages 191-199
- [36] Anitha Subburaj\*, Dr. Stephen B Bayne, Dr. Michael Giesselmann, "Analysis of Equivalent Circuit of the Utility Scale Battery for Wind Integration," IEEE Transactions on Industry Applications, Vol 52, Issue 1, Pages 25-33, January 2016.
- [35] Sandeep Nimmagadda\*, Atiqul Islam\*, Stephen B. Bayne, Javier Sanchez, Lourdes Garcia Caballero, “Improvements in the modeling of wind turbines in power system studies,” Journal of Renewable and Sustainable Energy, Vol 7, Issue 4, Aug 2015, Pages 219-234
- [34] Rajnish Kumar\*, Michael G. Giesselmann, Stephen Bayne, Miao He, “Generalized Method For Formulation Of Optimal Pmu Placement Problem,” International Journal of Power and Energy Systems, Vol 35, Issues 1, 2015
- [33] Argenis V. Bilbao\*, James A. Schrock\*, William B. Ray II\*, Mitchell D. Kelley\*, Shad L. Holt, Michael G. Giesselmann, Stephen B. Bayne, “Development and testing of an active high voltage saturation probe for characterization of ultra-high voltage silicon carbide semiconductor devices.”, Review of Scientific Instruments, Vol 86 Issue 8, May 2015
- [32] Xuan Pan, Guofeng Ren, Md Nadim Ferdous Hoque, Stephen Bayne, Kai Zhu, Zhaoyang Fan, “Fast Supercapacitors Based on Graphene-Bridged V<sub>2</sub>O<sub>3</sub>/VO<sub>x</sub> Core-Shell Nanostructure Electrodes with a Power Density of 1 MW kg, Advanced Material Interfaces,”, Vol 1, Issue 9, 1 December 2014
- [31] A.S. Subburaj\*, B.N Pushpakaran\*, S.B. Bayne, “Overview of grid-connected renewable energy based battery projects in USA,” Renewable and Sustainable Energy Review, Vol 45, PP 219-234, 31 May 2015
- [30] Schrock, J.A\*.; Ray II, W.B\*.; Lawson, K\*.; Bilbao, A\*.; Bayne, S.B.; Holt, S.L.; Cheng, L.; Palmour, J.W.; Scozzie, C., "High-Mobility Stable 1200-V, 150-A 4H-SiC DMOSFET

Long-Term Reliability Analysis Under High Current Density Transient Conditions," IEEE Transactions on Power Electronics, vol.30, no.6, pp.2891,2895, June 2015

- [29] Sandhya Kota, Stephen B. Bayne, Sandeep Nimmagadda\*, "Offshore wind energy: A comparative analysis of the UK, USA, and India," Renewable and Sustainable Energy Reviews," Volume 41, January 2015, Pages 685-694
- [28] Sandeep Nimmagadda\*, Atiqul Islam\*, Stephen B. Bayne, R.P. Walker, Lourdes Garcia Caballero, Albert Fisas Camanes, "A study of recent changes in Southwest Power Pool and Electric Reliability Council of Texas and its impact on the U.S. wind industry," Renewable and Sustainable Energy Reviews, Volume 36, August 2014, Pages 350-361.
- [27] Sandeep Nimmagadda\*, Mark A. Harral, and Stephen B. Bayne, "Quantitative Analysis of Wind Financial Transmission Rights using Proforma Model", International Journal of Power and Energy Systems, Vol. 34, No. 1, July 2014.
- [26] S. Bayne, S. Lacouture\*, K. Lawson\*, M. Giesselmann, C. Scozzie, H. O'Brien, A. Ogunniyi, "Evaluation of Experimental Si and SiC SGTO Thyristors for Wide Pulse High Action Applications," Review of Scientific Instruments, Vol 85, pp 075107, June 2014.
- [25] K. Lawson\*, S. Bayne, S. Lacouture\*, L. Cheng, H. O'Brien, A. Ogunniyi, C. Scozzie, "Safe Operating Area and Long-Term Reliability of 9 kV Silicon Carbide PNP Super Gate Turn-Off Thyristors," IEEE Electron Device Letters, Vol 35, PP 862-864, June 2014.
- [24] B. Pushpakaran\*, M. Hinojosa\*, S. Bayne, V. Veliadis, D. Urciuoli, N. El-Hinnawy, P. Borodulin, S. Gupta, C. Scozzie, "Evaluation of SiC JFET Performance During Repetitive Pulsed Switching Into an Unclamped Inductive Load," *Plasma Science, IEEE Transactions on*, vol.PP, no.99, pp.1,1, 2014.
- [23] G. Ren, X. Pan, S. Bayne, Z. Fan, "Kilohertz ultrafast electrochemical supercapacitors based on perpendicularly-oriented graphene grown inside of nickel foam," Journal of Carbon, 2014.
- [22] A. Islam\*, S. Nimmagadda\*, S. Bayne, and L. Caballero, "Power Quality Analysis of a Wind Turbine Using Optimal Iteration Process," International Journal of Renewable Energy Research (IJRER), Vol 3, No. 3 (2013).
- [21] Lacouture, Shelby\*, Lawson, Kevin\*, Bayne, Stephen, Giesselmann, Michael, Scozzie, Charles J., O'Brien, Heather; Ogunniyi, Aderinto A., "Automated modular high energy evaluation system for experimental thyristor devices," *Review of Scientific Instruments*, vol.84, no.10, pp.105108,105108-7, Oct 2013.
- [20] B. Steiner\*, S.B. Bayne, V. Veliadis, H.C. Ha, d. Urciuoli, N. El-Hinnawy, P. Borodulin, and C. Scozzie, "Reliable Operation of SiC Junction-Field-Effect-Transistor Subjected to

Over 2 Million 600 V Hard Switch Stressing Events”, Material Science Forum Vols. 740-742 (2013), pp 921-924.

- [19] Pushpakaran, B.N.\*; Hinojosa, M\*.; Bayne, S.B.; Veliadis, V.; Urciuoli, D.; El-Hinnawy, N.; Borodulin, P.; Gupta, S.; Scozzie, C., "High Temperature Unclamped Inductive Switching Mode Evaluation of SiC JFET," *Electron Device Letters, IEEE* , vol.34, no.4, pp.526,528, April 2013 doi: 10.1109/LED.2013.2247020.
- [18] V. Veliadis, B. Steiner\*, K. Lawson\*, S.B. Bayne, D. Urciuoli, H.C. Ha, N. El-Hinnawy, S. Gupta, P. Borodulin, R.S. Howell and C. Scozzie, “ Reliable Operation of SiC JFET Subjected to over 2 Million 1200 V/114 A Hard Switched Events at 150 C”, *IEEE Electron Devices Letters* Volume 34, Number 3, pp 384-386, March 2013.
- [17] S. Bayne and B. Pushpakaran\*, “Silicon Carbide Technology Overview,” *Journal of Electrical Engineering and Electronics Technology*, November 2012, 1:1.
- [16] K. Lawson\*, G. Alvarez\*, S. B. Bayne, V. Veliadis, H. C. Ha, D. Urciuoli, and C. Scozzie, “Reliable Operation of 1200-V SiC Vertical Junction-Field-Effect-Transistor Subjected to 16,000-Pulse Hard Switching Stressing,” *Materials Science Forum*, 717-720, pp. 1021-1024, 2012.
- [15] M. Hinojosa\*, S. Bayne, V. Veliadis, and D. Urciuoli, “Avalanche Breakdown Energy in Silicon Carbide Junction Field Effect Transistors,” *Materials Science Forum*, Vols. 717-720, pp. 1025-1028, 2012.
- [14] S. Lacouture\*, K. Lawson\*, S. Bayne, M. Giesselmann, H. O’Brien and C. Scozzie, “Evaluation of High Power Experimental SiC SGTO Devices for Pulsed Power Applications,” *Materials Science Forum*, 717-720, pp. 1183-1186, 2012.
- [13] Lawson, K\*.; Alvarez, G\*.; Bayne, S. B.; Veliadis, V.; Ha, H. C.; Urciuoli, D.; El-Hinnawy, N.; Borodulin, P.; Scozzie, C., “Hard-Switch Stressing of Vertical-channel implanted-Gate SiC JFETs" *IEEE Electron Device letters* Volume 33, Issue 1, pages 86-88, 28 November 2011.
- [12] K. Lawson\* and S. Bayne\*, “Transient Performance of SiC MOSFTEs as a function of 5 Temperature”, *IEEE Transactions on Dielectrics and Electrical Insulation*, vol 18, issue 4, pp 1124-1129, Aug 2011.
- [11] T. E. Salem, S. B. Bayne, and D. Porschet, “An Experimental Approach for Thermal Characterization of Water-Cooled Heat Sinks Using Fourier Analysis Techniques,” *Journal of Electronic Packaging* Volume 129, Issue 4, pp. 512-517, December 2007.
- [10] H. O'Brien, W. Shaheen, and S.B. Bayne, "Evaluation of 4 mm x 4 mm Silicon Carbide Thyristors," *IEEE Trans. on Dielectrics and Electrical Insulation.*, vol. 14, no. 4, pp. 986-993, Aug. 2007.

- [9] H. O'Brien, W. Shaheen, R.L. Thomas, Jr., T. Crowley, S.B. Bayne, and C.J. Scozzie, "Evaluation of Advanced Si and SiC Switching Components for Army Pulsed Power Applications," *IEEE Trans. Magn.*, vol. 43, no. 1, pp. 259-264, Jan. 2007.
- [8] B. Geil, S. Bayne, D. Ibitayo, M. Koebke, "Thermal and Electrical Evaluation of SiC GTOs for Pulsed Power Applications," *IEEE Transactions on Plasma Science*, August 2005.
- [7] Sumi Krishnaswami, Anant K. Agarwal, Craig Capell, Jim Richmond, Sei Hyung Ryu, John W. Palmour, S. Balachandran, T. Paul Chow, Stephen Bayne, Bruce Geil, Kenneth A. Jones, Charles J. Scozzie, "1000 V, 30 A SiC Bipolar Junction Transistors and Integrated Darlingtons Pairs" *Materials Science Forum*, 483-485, 901, May 2005.
- [6] S. Krishnaswami, A. Agarwal, S. H. Ryu, C. Capell, J. Richmond, J. Palmour S. Balachandran, P. T. Chow, S. Bayne, B. Geil K. Jones C. Scozzie, 1000-V, 30-A 4H-SiC BJTs With High Current Gain, *IEEE Electron Device Letters* :Volume: 26, Issue: 99, 2005.
- [5] Y. Gao, H. Moghbelie, M Ehsani, G. Frazier, J. Kajs, and S. Bayne, "Investigation of High-Energy and High-Power Hybrid Energy Storage Systems for Military Vehicle Application," *SAE Transactions*, 2003, vol 112, pp 1843 – 1850.
- [4] S. B. Bayne, C. W. Tipton, T. Griffin, C. J. Scozzie, A. K. Agarwal, and J. Richmond, "Inductive Switching of 4H-SiC Gate Turn-Off Thyristors," *IEEE Electron Device Letters* June 2002.
- [3] C. W. Tipton, S. B. Bayne, T. E. Griffin, C. J. Scozzie, B. Geil, A. K. Agarwal, and J. Richmond, "Half-Bridge Inverter Using 4H-SiC Gate Turn-Off Thyristors," April 2002 *IEEE Electron Device Letters*.
- [2] P. B. Shah, B. R. Geil, M. E. Ervin, T.E. Griffin, S. Bayne, K. A. Jones, and T. R. Oldham, "Advance Operational Techniques and pn-pn-pn structures for High-power SiC GTO thyristors," *Power Electronics, IEEE Transactions on*, Volume: 17 Issue: 6, Nov 2002.
- [1] Bayne, S. B., Portnoy, W. M., Hefner. MOS-Gated Thyristors (MCTs) for repetitive High Power Switching," *IEEE Transactions on Power Electronics, Transactions*," vol. 16, January 2001.

**Peer-Reviewed Conference Publications** (Students denoted by \*)

- [177] Bharath Kumar Dasari, Rajendra Shrestha, Yared Brhane Tadese, Manohar Chamana, Mostafa Mohammadpour, Olatunji Adeyanju, Stephen Bayne, "Privacy-Preserving Anomaly Detection Using Vertical Federated Learning in Smart Grids," 2025 IEEE International Communications Energy Conference (INTELEC), 2025/10/12

- [176] Yared Brhane Tadese, Rajendra Shrestha, Bharath Kumar Dasari, Manohar Chamana, Olatunji Adeyanju, Stephen Bayne, "Ensemble-Based Fault Detection Using Single-Phase and Positive-Sequence Phasors of the IEEE 14-Bus System in a Digital Twin," 2025 IEEE International Communications Energy Conference (INTELEC), 2025/10/12
- [175] Yared Brhane Tadese, Andrés Castillo-Lermanda, Manohar Chamana, Olatunji Adeyanju, Stephen Bayne, Argenis Bilbao, "Observer-Based Cyber-Resilient Control Scheme for a Grid-Connected Single-phase Photovoltaic System," 2025 57th North American Power Symposium (NAPS), IEEE 10/2025
- [174] Bharath Kumar Dasari\*, Rajendra Shrestha\*, Yared Brhane Tadese\*, Larissa Souto\*, Manohar Chamana, Mostafa Mohammadpour\*, Olatunji Adeyanju, Stephen Bayne, "Analysis of Machine Learning Models for Anomaly Detection Using PMU data," 2025 IEEE Texas Power and Energy Conference (TPEC), 2025/2/10
- [173] Adedolapo Shodimu\*, Stephen B Bayne, "Easy Bike Solar PV System Charging Station Design and Simulation," 2025 IEEE Texas Power and Energy Conference (TPEC), 2025/2/10
- [172] Yared Brhane Tadese\*, Rajendra Shrestha\*, Bharath Kumar Dasari\*, Mostafa Mohammadpour\*, Larissa Souto\*, Manohar Chamana, Olatunji Adeyanju, Stephen Bayne, "Hybrid CNN-LSTM Detection of Cyber-Attacks on MPPT Controllers in PV Systems," 2025 IEEE Texas Power and Energy Conference (TPEC), 2025/2/10.
- [171] Larissa S Del Rio\*, Pedro Eisenkraemer\*, Rajendra Shrestha\*, Manohar Chamana, Stephen Bayne, Argenis Bilbao, Sanka Liyanage, Joshua MacFie, "Development and Implementation of an Electric Vehicle Emulator for Enhanced Microgrid Management Studies," 2025 IEEE Texas Power and Energy Conference (TPEC), 2025/2/10
- [170] R Shrestha\*, LS Del Rio\*, M Mohammadpour\*, M Chamana, S Bayne, "Unsupervised Fault Detection in Transmission Lines: Development and Evaluation on a CPS Testbed," 2025 IEEE Texas Power and Energy Conference (TPEC), 2025/2/10
- [169] Rajendra Shrestha\*, Larissa Souto\*, Pedro Eisenkraemer\*, Rabindra Bhatta\*, Konrad Schmitt\*, Manohar Chamana, Stephen Bayne, Argenis Bilbao, "Optimal Phasor Measurement Unit Placement Using Machine Learning Technique," IEEE 2024 16th Seminar on Power Electronics and Control (SEPOC), 2024/10/20
- [168] Agboola B Alao\*, Olatunji M Adeyanju\*, Manohar Chamana, Stephen Bayne, Argenis Bilbao, "Investigating the Effects of Improved Structural Design on Energy Yield in a Real Solar Farm," IEEE 2024 56th North American Power Symposium (NAPS), 2024/10/13

- [167] M. Chamana, M. Murshed\*, R. Bhatta\*, K. Schmitt\*, L. Souto\*, R. Shrestha\*, M. Mahdavi, O. Adeyanju, S. Bayne, "Hierarchical Operation of Community Microgrids with Clustered Load Participation for Economic Benefits," IEEE PES Transmission and Distribution Conference and Exposition, 6-9 May 2024
- [166] O.M Adeynju, M. Chamana, S. Bayne, L. Canha, K\*. Schmitt, M. Chamana\*, " Operation Model for Utility-Microgrid Interaction," IEEE PES Transmission and Distribution Conference and Exposition, 6-9 May 2024
- [165] M. Mahdavi, K. Schmitt\*, M. Chamana, F. Jurado, E. Marfo, A. Awaaf, S. Bayne, "Network Reconfiguration in the Presence of Distributed Generators and Voltage-Dependent Loads," IEEE Industry Applications Society Annual Meeting (IAS), October 2023
- [164] M. Mahdavi, K. Schmitt, M\*. Chamana, F. Jurado, E. Marfo, A. Awaaf, S. Bayne, "Flexible Feeder Reconfiguration Based on Correlation of Load Components and Consumption Type," IEEE Industry Applications Society Annual Meeting (IAS), October 2023
- [163] M. Mahdavi, K. Schmitt\*, M. Chamana, F. Jurado, E. Marfo, A. Awaaf, S. Bayne, "Comparing PV and Wind Turbine Electricity Generation With Electric Energy Obtained from Chicken Manure-Based Biogas Units," IEEE Industry Applications Society Annual Meeting (IAS), October 2023
- [162] M. Mahdavi, K. Schmitt\*, M. Chamana, F. Jurado, E. Marfo, A. Awaaf, S. Bayne, "Distribution Feeders Reconfiguration Considering Dependency of Time-Varying Loads on Grid Voltage," IEEE Industry Applications Society Annual Meeting (IAS), October 2023
- [161] M. Mahdavi, P. Gopi, K. Schmitt\*, M. Chamana, F. Jurado, E. Marfo, A. Awaaf, S. Bayne, "Determining Relationship Between Load Type and Its Components in Distribution System Reconfiguration," IEEE Industry Applications Society Annual Meeting (IAS), October 2023
- [160] M. Mahdavi, K. Schmitt\*, M. Chamana, F. Jurado, E. Marfo, A. Awaaf, S. Bayne, "Impact of Ambient Temperature Increase on Distribution Network Load and Configuration," IEEE Industry Applications Society Annual Meeting (IAS), October 2023
- [159] M. Mahdavi, K. Schmitt\*, S. Bayne, M. Chamana, F. Jurado, E. Marfo, A. Awaaf, "Distribution Systems Reconfiguration Considering Load Type: An Efficient Model," IEEE Industry Applications Society Annual Meeting (IAS), October 2023
- [158] K. Schmitt\*, R. Bhatta\*, R. Shrestha\*, M. Campana, M. Mahdavi, O. Adeyanju, S. Bayne, L. Canha\*, "Investigating Protection Challenges on Distribution Systems Self-

Healing,” 2023 IEEE Power & Energy Society General Meeting (PESGM), Pages 1-5, 16 July 2023

- [157] D Graves\*, A Bilbao, S Bayne, E Schrock, S Miller, J. Phillips, “Modeling of a SiC Drift Step Recovery Diode Stack in Silvaco Atlas,” 2023 IEEE Pulsed Power Conference (PPC), Pages 1-5, 25 June 2023
- [156] M. Mahdavi, K. Schmitt\*, S. Bayne, M. Chamana, “Reconfiguration of Power Distribution Systems in the Presence of Voltage-Dependent Loads,” 2023 IEEE IAS Global Conference on Renewable Energy and Hydrogen Technologies (GlobConHT), Page 1-6, March 2023
- [155] M. Mahdavi, K. Schmitt\*, S. Bayne, M. Chamana, “Robust System Reconfiguration in the Presence of Uncertain Loads and Renewable Generation,” 2023 IEEE IAS Global Conference on Renewable Energy and Hydrogen Technologies (GlobConHT), Page 1-6, March 2023
- [154] M. Mahdavi, K. Schmitt\*, S. Bayne, M. Chamana, “An Efficient Model for Optimal Allocation of Renewable Energy Sources in Distribution Networks with Variable Loads,” 2023 IEEE IAS Global Conference on Renewable Energy and Hydrogen Technologies (GlobConHT), Page 1-6, March 2023
- [153] M. Mahdavi, F. Jurado, K. Schmitt\*, S. Bayne, M. Chamana, “Role of Consumption Pattern in Optimal Allocation of Distributed Generators in Electric Power and Energy Systems,” 2023 IEEE IAS Global Conference on Renewable Energy and Hydrogen Technologies (GlobConHT), Page 1-6, March 2023
- [152] M. Mahdavi, F. Jurado, K. Schmitt\*, S. Bayne, M. Chamana, “Wheat Agricultural Residences for Bioenergy Generation in Morocco,” 2023 IEEE IAS Global Conference on Renewable Energy and Hydrogen Technologies (GlobConHT), Page 1-6, March 2023
- [151] R. Bhatta\*, R. Shrestha\*, C. Negri, K\*. Schmitt, M\*. Musraf, M. Chamana, O. Illham, S. Bayne, Feasibility of a Real-world Test Microgrid Facility to Provide Economic and Resiliency Benefits in Extreme Weather Conditions,” 2022 IEEE Power & Energy Society Innovative Smart Grid Technologies Conference (ISGT), Pages 1-5, 24 May 2022
- [150] A. Demi\*r, L. Gutierrez, S. Bayne A. Bilbao, “Temperature Prediction in Microgrids Using LSTMs: A Case Study,” 2022 IEEE 46th Annual Computers, Software, and Applications Conference (COMPSAC), Pages 1237-1242, 27 June 2022
- [149] AV Bilbao, SB Bayne, “Maximum Power Point Tracking of Inductive Resonant Wireless Power Transfer Systems Using a Buck Converter on the Receiving Side to Mitigate the Effects of Coil Misalignment,” IEEE Pulsed Power Conference, Virtual, 12/2021

- [148] T Tsoi\*, B Westmoreland\*, S Bayne, S Jadv, "Reliability of SiC MPS Diodes Under Non-Repetitive Forward Surge Current," IEEE Pulsed Power Conference, Virtual, 12/2021
- [147] DZ Graves\* S Bayne, H O'Brien, A Ogunniyi, "SiC GTOs Thyristor for Long Term Reliability on Pulsed Power Application Test," IEEE Pulsed Power Conference, Virtual, 12/2021
- [145] H O'Brien, A Ogunniyi, SH Ryu, T Tsoi\*, SB Bayne, "High-Voltage Silicon Carbide Thyristors on N-Doped Epi for Pulsed Power, " IEEE Pulsed Power Conference, Virtual, 12/2021
- [144] JA Rodriguez\*, F Salcedo\*, SB Bayne, "Investigating the Effects of Non-Linear Loads on Generator Sets," IEEE Pulsed Power Conference, Virtual, 12/2021
- [143] B Westmoreland\*, AV Bilbao, SB Bayne, "Semiconductor Power Module Current Balancing Using Reinforcement Machine Learning," IEEE Pulsed Power Conference, Virtual, 12/2021
- [142] M. Chamana, K. Schmitt\*, R. Bhatta\*, I. Osman, S. Liyanage, M. Murshed\*, S. Bayne, J. Macfie, "Hierarchical Operation of Flexible Building Microgrids for Distributed Critical Loads Resiliency," IEEE 2021 Resilience Week (RWS), PP 1-9, 2021/10/18
- [141] K. Schmitt\*, I. Osman, R. Bhatta\*, M. Murshed\*, M. Chamana, S. Bayne, "A Dynamic Load Control Strategy for an Efficient Building Demand Response," 2021 IEEE Energy Conversion Congress and Exposition (ECCE), PP 819-826, 2021/10/10
- [140] S. Daneshvardehnavi, C. A. Negri\*, K. E. K. Schmitt\*, S. Bayne, and M. Giesselmann, "A Case Study For Connecting Bidirectional PEV Station for Reactive Power Support to the GLEAMM Prototype Microgrid," 2021 IEEE Green Technologies Conference (GreenTech), 2021, pp. 19-25,
- [139] V. Roy\*, S. Noureen\*, S. Atique\*, S. Bayne, M. Giesselmann, "Intrusion Detection from Synchrophasor Data propagation using Cyber Physical Platform," 2021 IEEE Conference on Technologies for Sustainability (SusTech), PP, 1-5, 2021
- [138] L. Arce\*, M. Chamana, I. Osman, B. Ren, Q. Zhong, S. Bayne, "Large-Scale Adoption of Self-Synchronized Universal Droop Controller-Based Inverters to Enable Ancillary Services for Different Modes of Distribution System Operations," 2020 5<sup>th</sup> IEEE Workshop on the Electronic Grid (eGRID)
- [137] S. Atique\*, S. Noureen\*, V. Roy\*, S. Bayne, J. Macfie, "Time series forecasting of total daily solar energy generation: A comparative analysis between ARIMA and machine

learning techniques,” 2020 IEEE Green Technologies Conference (GreenTech), 175-180, Oklahoma City, OK, April 1-3 2020

- [136] S. Ramabhotla\*, S. Bayne, “A Review of Reliability of Microgrid,” 2020 IEEE/IAS 56<sup>th</sup> Industrial and Commercial Power Systems Technical Conference (I&CPS), Virtual conference, May 2020
- [135] V. Roy\*, S. Noureen\*, T. Atique\*, S. Bayne, M. Giesselmann, A. Subburaj, M. Harral, “Design, Development, and Experimental Setup of a PMU Network for Monitoring and Anomaly Detection,” 2019 SoutheastCon, Huntsville, AL, USA April 11-14, 2019
- [134] J. Rodriguez\*, M. Kim\*, S. Bayne, H. O’Brien, A. Oggunniyi, “Performance Comparison of Commercial GaN HEMT under Repetitive Overcurrent Operations,” 2019 IEEE Pulsed Power and Plasma Science Conference, Orlando, FL, June 22-23, 2019
- [133] J. Forbes\*, F. Salcedo\*, C. Tchoupe-Nono\*, S. Bayne, “Analysis of Commercial off-the-Shelf 1200 V Silicon Carbide MOSFETs Under Short Circuit Conditions,” 2019 IEEE Pulsed Power and Plasma Science Conference, Orlando, FL, June 22-23, 2019
- [132] M. Kim\*, T. Tsoi\*, J. Forbes\*, A. Bilbao, S. Lacouture, S. Bayne, H. O’Brien, A. Oggunniyi, S. Ryu, “Analysis of a New 15-kV SiC n-GTO under Pulsed Power Applications,” 2019 IEEE Pulsed Power and Plasma Science Conference, Orlando, FL, June 22-23, 2019
- [131] F. Salcedo\*, J. Forbes\*, S. Bayne R. Singh, “Investigation into the Reliability of Commercial 1.2-kV SiC MPS Diodes under Surge Current and Avalanche Events,” 2019 IEEE Pulsed Power and Plasma Science Conference, Orlando, FL, June 22-23, 2019
- [130] A. Bilbao, S. Bayne, “Compact Rapid Capacitor Charger for Mobile Marx Generator Applications,” 2019 IEEE Pulsed Power and Plasma Science Conference, Orlando, FL, June 22-23, 2019
- [129] Y. Challapuram\*, G. Quintero\*, S. Bayne, A. Subburaj, M. Harral, “Electrical Equivalent Model of Vanadium Redox Flow Battery,” Lafayette, LA, 3-6 April 2019
- [128] M. Chamana, S. Bayne A. Swift, “Course Development on Synchronphasor Applications at the Undergraduate and Graduate Levels,” 2019 International Conference on Smart Grid Synchronized Measurements and Analytics (SGSMA), College Station, 21-23 May 2019
- [127] S. Dinkhah, C. Negri\*, M. He, S. Bayne, “V2G for Reliable Microgrid Operations: Voltage/Frequency Regulation with Virtual Inertia Emulation,” IEEE Transportation Electrification Conference and Expo (ITEC), Detroit, MI, 19-21 June 2019

- [126] S. Noureen\*, S. Atique, V. Roy, S. Bayne, "Analysis and Applications of Seasonal AIMA model in Energy Demand Forecasting: A case study of Small Agricultural Load," 2019 IEEE 62nd International Midwest Symposium on Circuits and Systems (MWSCAS), Dallas, TX, 4-7 Aug 2019
- [125] S. Noureen\*, S. Bayne, E. Shaffer, D. Porschet, M. Berman, "Anomaly Detection in Cyber-Physical Systems Using Logistic Regression Analysis," IEEE Texas Power and Energy Conference (TPEC), College Station, TX, 7-8 Feb 2019
- [124] S. Atique\*, S. Noureen\*, V. Roy, V. Subburaj, S. Bayne, J. Macfie, "Forecasting of Total Daily Solar Energy Generation using ARIMA; A Case Study," IEEE 9<sup>th</sup> Annual Computing and Communication Workshop and Conference (CCWC), Las Vegas, NV 7-9 January 2019
- [123] M. Kim\*, J. Rodriguez\*, W. Ray\*, S. Bayne, H. O'Brien, A. Ogunniyi, "Analysis of Commercial GaN HEMTs in Overcurrent Operation," IEEE International Power Modulator and High Voltage Conference (IPMHVC), 3-7 June 2018, Jackson Lake Lodge, WY
- [122] M. Kumar, S. Hahmady\*, R. Gale, S. Bayne, "Charge Plasma High Voltage PIN Diode Investigation," IEEE International Power Modulator and High Voltage Conference (IPMHVC), 3-7 June 2018, Jackson Lake Lodge, WY
- [121] J. Forbes\*, F. Salcedo\*, C. Nono\*, R. Gale, S. Bayne, "Surge Current Analysis of Commercial off-the-shelf 1200 V Silicon Carbide JBS Diodes and MOSFET Body Diodes," IEEE International Power Modulator and High Voltage Conference (IPMHVC), 3-7 June 2018, Jackson Lake Lodge, WY
- [120] M. Giesselmann, S. Bayne, N. Shamin\*, M. Kelley\*, D. Reale, F. Cingoz, "Modeling of Inverters for Fuel Cells for Grid-Tied and Islanding Mode with Smooth Transitions," 2018 IEEE International Power Modulator and High Voltage Conference (IPMHVC), 3-7 June 2018, Jackson Lake Lodge, WY
- [119] V. Roy, S. Noureen\*, S. Bayne, A. Bilbao, M. Giesselmann, "A Renewable Solution Approach for Central Irrigation System," IEEE Rural Electric Power Conference (REPC), 6-9 May 2018, Memphis, TN
- [118] N. Shamim\*, G. Munoz\*, D. Reale, M. Harral, S. Bayne, "Fuel Cell Power System Integration with Grid using Finite Set Model Predictive Control Technique," IEEE International Telecommunications Energy Conference (INTELEC), Turin, Italy, 7-11 October 2018
- [117] \*G. Nunoz, \*Y. Challapuram, A. Bilbao, S. Bayne, A. Subburaj, "Micro-grid System Modeling Efforts using PQ-Control for Single-phase and Three-phase inverters," IEEE

International Telecommunications Energy Conference (INTELEC), Turin, Italy, 7-11 October 2018

- [116] V. Roy, S. Noureen\*, S. Bayne, A. Bilbao, M. Giesselmann, “Event Detection From PMU Generated Big Data using R Programming, IEEE Conference on Technologies for sustainability (SusTech), Long Beach, CA, 11-13 Nov 2018
- [115] N. Shamim\*, A. Bilbao, D. Real, S. Bayne, “Analysis of Grid Connected Fuel Cell Power System Integrated with Supercapacitor,” IEEE Green Technologies Conference, Austin, TX, 4-6 April 2018
- [114] M. Kim\*, K. Pop\*p, C. Tchoupe-Non\*o, W. Ray\*, A. Bilbao, J. Schrock, S. Bayne, “Analysis on repetitive pulsed overcurrent operation of GaN power transistors,” 2017 IEEE 21st International Conference on Pulsed Power (PPC), Brighton, UK, 18-22 June 2017
- [113] M. Kim\*, J. Forbes\*, A. Bilbao, J. Schrock, S. Bayne, “Reconfigurable High Voltage Load for Pulsed Power Applications,” 2017 IEEE 21st International Conference on Pulsed Power (PPC), Brighton, UK, 18-22 June 2017
- [112] B. Pushpakaran\*, S. Bayne, A. Ogunniyi, “Silvaco-based evaluation of 10 kV 4H-SiC MOSFET as a solid-state switch in narrow-pulse application,” 2017 IEEE 21st International Conference on Pulsed Power (PPC), Brighton, UK, 18-22 June 2017
- [111] S. Lacouture\*, J. Schrock\*, E. Hirsch\*, S. Bayne, H. O’Brien, A. Ogunniyi, “Wide injection range OCVD system for lifetime spectroscopy techniques,” 2017 IEEE 21st International Conference on Pulsed Power (PPC), Brighton, UK, 18-22 June 2017
- [110] E. Hirsch\*, J. Schrock\*, S.B. Bayne. H. O’Brien, A. Ogunniyi, “Narrow pulse evaluation of 15 kV SiC MOSFETs and IGBTs,” 2017 IEEE 21st International Conference on Pulsed Power (PPC), Brighton, UK, 18-22 June 2017
- [109] B. Pushpakaran\*, S. Bayne, A. Ogunniyi, “Silvaco-Based Electrothermal Simulation of 10 kV 4H-SiC PIN Diode Under Pulsed Condition,” 2017 IEEE 21st International Conference on Pulsed Power (PPC), Brighton, UK, 18-22 June 2017
- [108] T. Flack\*, J. Parson, K. Bittner, B. Driver, N. Zamereoski, S. Bayne, C. Hettler, “Evaluation of high-frequency solid state switches for pulsed power applications using a 12 kW variable voltage testbed,” 2017 IEEE 21st International Conference on Pulsed Power (PPC), Brighton, UK, 18-22 June 2017
- [107] S. Noureen\*, V. Roy, S. Bayne, “An overall study of a real-time simulator and application of RT-LAB using MATLAB simpowersystems,” Green Energy and Smart Systems Conference (IGESSC), 2017 IEEE, Long Beach, CA, 6-7 November 2017

- [106] S. Noureen\*, V. Roy, S. Bayne, "Phasor measurement unit integration: A review on optimal PMU placement methods in power system," Humanitarian Technology Conference (R10-HTC), 2017 IEEE Region 10, Dhaka, Bangladesh, 21-23 December 2017
- [105] \*A. Subburaj, \*A. Arra, S. Bayne, "Stability Analysis of AC and DC Micro grids using OPAL-Real time digital simulator," IEEE Green Technologies Conference, Denver, CO, March 2017
- [104] \*N. Shamim, \*A. Subburaj, S. Bayne, "Model Predictive Control Analysis for Battery Energy Storage System," IEEE Green Technologies Conference, Denver, CO, March 2017
- [103] A. Bilbio\*, J. Schrock\*, M. Kelly\*, E. Hirsch\*, W. Ray\*, S. Bayne, M. Giesselmann, "Continuous switching of ultra-high voltage silicon carbide MOSFETs, Power Modulator and High Voltage IEEE International Conference (IPMHVC) July 2016, San Francisco, CA
- [102] A. Bilbao\*, M. Giesselmann, S. Bayne, "Charge transfer-based sensorless voltage feedback in HV capacitor chargers," Power Modulator and High Voltage IEEE International Conference (IPMHVC) July 2016, San Francisco, CA
- [101] J. Schrock\*, E. Hirsch\*, A. Bilbao\*, S. Lacouture\*, W. Ray\*, S. Bayne, M. Giesselmann, A. Ogunniyi, H. O'Brien, "Simulation and design trade-off analysis of 15 kV SiC SGTO thyristor during extreme pulsed overcurrent conditions," Power Modulator and High Voltage IEEE International Conference (IPMHVC) July 2016, San Francisco, CA
- [100] E. Hirsch\*, J. Schrock\*, S. Lacouture\*, A. Bilbao\*, S. Bayne, M. Giesselmann, H. O'Brien, A. Ogunniyi, "Evaluation of long-term reliability and safe operating area of 15 kV SiC PiN diodes during ultra-high current pulsed conditions," Power Modulator and High Voltage IEEE International Conference (IPMHVC) July 2016, San Francisco, CA
- [99] B. Pushpakaran\*, S. Bayne, A. Ogunniyi, "Silvaco based electro-thermal analysis of 4H-SiC TIV-JFET structure under extremely high current density resistive switching," Power Modulator and High Voltage IEEE International Conference (IPMHVC) July 2016, San Francisco, CA
- [98] A. Ogunniyi, H. O'Brien, M. Hinojosa, \*J. Schrock, \*S. Lacouture, \*E. Hirsh, S. Bayne, S. Ryu, "Pulsed power evaluation and simulation of high voltage 4H-SiC P-Type SGTOS," Lester Eastman Conference (LEC), Pages 55-58, August 2016, Bethlehem, PA
- [97] \*W. Ray, \*M. Kim, \*A. Bilbao, \*J. Schrock, S. Bayne, "Analysis on repetitive pulsed overcurrent operation of GaN power transistors," IEEE 4<sup>th</sup> workshop on Wide Bandgap Power Devices and Applications (WiPDA), Pages 353-356, 7-9 November 2016, Fayetteville Arkansas

- [96] \*S. Ramabhotla, S. Bayne, M. Giesselmann, "Reliability Optimization Using Fault Tree Analysis in the Grid Connected Mode of Micro Grid," 2016 IEEE Green Technologies Conference, 6-8 April 2016, Kansas City, MO
- [95] \*S. Ramabhotla, S. Bayne, M. Giesselmann, "Operation and Maintenance Cost Optimization in the Grid Connected Mode of Microgrid," 2016 IEEE Green Technologies Conference, 6-8 April 2016, Kansas City, MO
- [94] \*A. Subburaja, \*N. Shamim, M. Giesselmann, " Battery Connected DFIG Wind System Analysis for Strong/Weak Grid Scenarios," 2016 IEEE Green Technologies Conference, 6-8 April 2016, Kansas City, MO
- [93] \*A. Mishra, S. Bayne, C. Li, "Zero voltage switching multi resonance converter using 0.6 micro technology," 2015 Annual IEEE India Conference, 17-20 Dec 2015
- [92] V. Veliadis, \*B. Steiner, \*K. Lawson. S. Bayne, D. Uriuoli, H. Ha, "Suitability of N-ON recessed implanted gate vertical-channel SiC JFETs for optically triggered 1200 V solid-state-circuit-breakers," 2015 IEEE 3rd Workshop on Wide Bandgap Power Devices and Applications (WiPDA), November 2015, Blackburg, VA
- [91] W. Ray\*, A. Subburaj\*, J. Schrock\*, S. Bayne, "Economic analysis of battery energy storage system," Industry Application Society Annual Meeting, October 2015, Addison TX
- [90] \*A. Subburaj, S. Bayne, "Battery and wind system in weak/strong grid analysis," Industry Application Society Annual Meeting, October 2015, Addison TX
- [89] \*Bejoy N Pushpakaran\*, Stephen B Bayne, Aderinto A Ogunniyi, "Physics-based electro-thermal transient simulation of 4H-SiC JBS diode using Silvaco ATLAS, 2015 IEEE Pulsed Power Conference, May 2015, Austin, TX.
- [88] S Lacouture\*, J.A Schrock\*, W.B Ray\*, E.A Hirsch\*, S Bayne, M Giesselmann, H O'Brien, A Ogunniyi, C Scozzie, "Extraction of Safe Operating Area and long term reliability of experimental Silicon Carbide Super Gate Turn Off Thyristors," 2015 IEEE Pulsed Power Conference, May 2015, Austin, TX.
- [87] William B Ray\*, James A Schrock\*, Argenis V Bilbao\*, Mitchell Kelley\*, Shelby Lacouture\*, Emily Hirsch\*, Stephen B Bayne, "Analysis of GaN power MOSFET exposure to pulsed overcurrents," 2015 IEEE Pulsed Power Conference, May 2015, Austin, TX.
- [86] Bejoy N Pushpakaran\*, Stephen B Bayne, Gangyao Wang, John Mookken, "Fast and accurate electro-thermal behavioral model of a commercial SiC 1200V, 80 mΩ power MOSFET," 2015 IEEE Pulsed Power Conference, May 2015, Austin, TX.

- [85] Mitchell D Kelley\*, Argenis V Bilbao\*, William B Ray\*, James A Schrock\*, Stephen B Bayne, "Evaluation and comparison of 1200-V/285-A silicon carbide half-bridge MOSFET modules," 2015 IEEE Pulsed Power Conference, May 2015, Austin, TX.
- [84] Aderinto A Ogunniyi, Heather K O'Brien, Miguel Hinojosa, Lin Cheng, Charles J Scozzie, Bejoy N Pushpakaran\*, Shelby Lacouture\*, Stephen B Bayne, "Analysis of carrier lifetime effects on HV SiC PiN diodes at elevated pulsed switching conditions," 2015 IEEE Pulsed Power Conference, May 2015, Austin, TX.
- [83] Tyler Flack\*, Cameron Hettler, Stephen Bayne, "DI/DT evaluation of a Si N-type GTO designed for pulsed power applications," 2015 IEEE Pulsed Power Conference, May 2015, Austin, TX.
- [82] Argenis V Bilbao\*, James A Schrock\*, William B Ray\*, Mitchell D Kelley\*, Stephen B Bayne, "Analysis of advanced 20 kV/20 a silicon carbide power insulated gate bipolar transistor in resistive and inductive switching tests," 2015 IEEE Pulsed Power Conference, May 2015, Austin, TX.
- [81] JA Schrock\*, WB Ray\*, AV Bilbao\*, MD Kelley\*, EA Hirsch\*, SL Holt, SB Bayne, "Development of secondary breakdown circuit for DV/DT analysis of SiC devices," 2015 IEEE Pulsed Power Conference, May 2015, Austin, TX.
- [80] M. He, S. Minnagadda\*, S. Bayne, M. Giesselmann, "Subsynchronous oscillation detection using phasor measurements and synchrosqueezing transform," Power and Energy Society General Meeting, 2015 IEEE, Pages 1-5, July 2015, Denver, CO
- [79] Tyler Flack\*, Gail Alleyne-Bayne, William Ray\*, James Schrock\*, Stephen Bayne and Marcelo Schmidt "First-year electrical engineering student development in high-temperature curriculum," 2015 FYEE, Roanoke/Blacksburg VA, August 2015
- [78] A. S Subburaj\*, W. B. Ray\*, S. B. Bayne, "Comparison study of the controllers for grid-connected battery system," 2014 IEEE DC Utility Power Conference and Exhibition (NewNEB), October 2014, Ronkonkoma, NY
- [77] Anitha Sarah Subburaj\*, Stephen B Bayne, "Analysis of dual polarization battery model for grid applications," 2014 IEEE 36th International Telecommunications Energy Conference (INTELEC), Vancouver BC, September 2014
- [76] Bejoy N Pushpakaran\*, Stephen B Bayne, Aderinto A Ogunniyi, "Thermal analysis of 4H-SiC DMOSFET structure under resistive switching," 2014 IEEE International Power Modulator and High Voltage Conference (IPMHVC), Santa Fe, NM, June 2014

- [75] William B Ray\*, James A Schrock\*, Kevin Lawson\*, Stephen B Bayne, "Modular Marx generator for dV/dt testing of power semiconductor devices," 2014 IEEE International Power Modulator and High Voltage Conference (IPMHVC), Santa Fe, NM, June 2014
- [74] Miguel Hinojosa\*, Aderinto Ogunniyi, Heather O'Brien, Stephen B Bayne, Charles Scozzie, "Evaluation of high-voltage, high-power 4H-SiC insulated-gate bipolar transistors," 2014 IEEE International Power Modulator and High Voltage Conference (IPMHVC), Santa Fe, NM, June 2014
- [73] Heather K O'Brien, William Shaheen, Aderinto Ogunniyi, Charles Scozzie, Lin Cheng, Miguel Hinojosa\*, Kevin Lawson\*, Shelby Lacouture\*, Stephen Bayne, "Large chip area SiC PiN diodes demonstrated for thyristor protection in a pulsed system," 2014 IEEE International Power Modulator and High Voltage Conference (IPMHVC), Santa Fe, NM, June 2014
- [72] Sundari Ramabhotla\*, Dr. Stephen Bayne, Dr. Michael Giesselmann, "Economic Dispatch Optimization of Microgrid in Islanded Mode", in IEEE/IESC-International Energy and Sustainability Conference 2014, October 24, 2014.
- [71] K. Lawson\*, J. Schrock\*, W. Ray II\*, S. Bayne, L. Cheng, J. Palmour, S. Allen, C. Scozzie, "Ruggedness Evaluation of 56mm<sup>2</sup>, 180- A SiC DMOSFETs as a Function of Pulse Repetition Rate for High Power Applications", International Symposium on Power Semiconductor Devices and ICs, Waikoloa, HI, June 15-19, 2014
- [70] Anitha Subburaj\*, Dr. Stephen B Bayne, Dr. Michael Giesselmann, Mark A Harral, "Analysis of Equivalent Circuit of The Battery Connected to The Grid," In IEEE/IAS 50th Industrial & Commercial Power Systems Technical Conference I&CPS), May 23, 2014.
- [69] Sandeep Nimmagadda\*, Mark A. Harral, and Stephen B. Bayne, "Challenges of Obtaining Financial Transmission Rights for Wind Projects," Proceedings of the IASTED International Conference pp 111- 118, Power and Energy (PE 2013), November, 2013
- [68] Anitha Subburaj\*, Preethi Kondur\*, Dr. Stephen Bayne, Dr. Michael Giesselmann, Mark A Harral, "Analysis and Review of Grid Connected Battery in Wind Applications," In Sixth Annual 2014 IEEE Green Tech Conference, Corpus Christi, April 3, 2014
- [67] W. Ray\*, J. Schrock\*, K. Lawson\*, S. Bayne, "Modular Marx Generator for DV/DT Testing of Power Semiconductor Devices," IEEE International Power Modulator and High Voltage Conference, June 1-5, 2014, Santa Fe NM
- [66] B. Pushpakaran\*, S. Bayne, A. Ogunniyi, "Thermal Analysis of 4H-SiC DMOSFET Structure under Resistive Switching," IEEE International Power Modulator and High Voltage Conference, June 1-5, 2014, Santa Fe NM

- [65] H. O'Brien, W. Shaheen, A. Ogunniyi, C. Scozzie, L. Chen, M. Hinojosa\*, K. Lawson\*, S. Lacouture\*, S. Bayne, "Large Chip Area SiC Diodes Demonstrated for Thyristor Protection," IEEE International Power Modulator and High Voltage Conference, June 1-5, 2014, Santa Fe NM
- [64] T. Rosson\*, S. Bayne, R. Gale, "Multiple Cell AC/DC Smart Battery System," 35<sup>th</sup> International Telecommunications Energy Conference, Hamburg, Germany, 13-17 October 2013
- [63] Pushpakaran, B\*. N.; Bayne, S.B.; Ogunniyi, A.A., "Electro-Thermal Transient Simulation of Silicon Carbide Power Mosfet," Pulse Power and Plasma Science (PPPS), 2013 IEEE International, June 2013, San Francisco, CA
- [62] Bilbao, A\*. ; Ray II, W\*. ; Schrock, J8.; Lawson, K\*. ; Bayne, S.; Cheng, L.; Agarwal, A.; Scozzie, C., "Pulsed Power Switching of 4H-SiC Vertical D-MOSFET and Device Characterization," Pulsed Power and Plasma Sciences Conference (PPPS), 2013 IEEE International, June 2013, San Francisco, CA
- [61] Lacouture, S\*. ; Lawson, K\*. ; Bayne, S.; Giesselmann, M.; O'Brien, H.; Ogunniyi, A.; Scozzie, C., "Design of an Advanced Modular Automated Evaluation System for Experimental High Power SGTOS," Pulsed Power and Plasma Sciences Conference (PPPS), 2013 IEEE International, June 2013, San Francisco, CA
- [60] L. Cheng, A. Agarwal, M. Schupbach, D. Gajewski, w. Ray. J\*. Schrock, A\*. Bilbao, S\*. Bayne, A. Lelis, C. Scozzie, "High Performance, Large-Area, 1600V/150 A 4H-SiC DMOSFET for Robust High-Power and High-Temperature Applications", ISPSD 2013, Ishikawa Ongakudo, Kanazawa, Japan, May 26-30
- [59] Patil, K\*., Bayne, S., Maxwell, T., " *Modeling and Development of E85 Fueled Two-Mode Hybrid Electric Vehicle*", SAE Technical Paper, 2013-01-0547, 2013
- [58] A. Bilbao\* and S. Bayne, "PSpice Modeling of Silicon Carbide MOSFTs and Device Parameter Extraction," Power Modulator and High Voltage Conference (IPMHVC), 2012 IEEE International, June 2012
- [57] Lawson, K\*., Lacouture, S\*., Bayne, S.B., Giesselmann, M., Vollmer, T., O'Brien, H., Scozzie, C., and Ogunniyi, A., "Design of an Automated Test Bed for Experimental Si and SiC SGTO Devices," Power Modulator and High Voltage Conference (IPMHVC), 2012 IEEE International, June 2012
- [56] B. Steiner\*, S. B. Bayne, V. Veliadis, H. C. Ha, D. Urciuoli, and C. Scozzie, "Reliable Operation of SiC Junction-Field-Effect-Transistor Subjected to Over 2 Million 600-V

Hard Switch Stressing Events,” European Conference on SiC and Related Materials, abstract Th-11-5, Russia, 2012.

- [55] S. Pappu\* and S. Bayne, "Evaluation of Hub Concept for Wind Turbines," Power and Energy Conference, Illinois, Champaign, Illinois, February. 2012.
- [54] S. Pappu\*, A. Rahnama\*, M. Tovar\*, S. Bayne, B. Little, S. Friend and M. Borhani, "Power Quality Analysis of a Sensitive Load using a Phasor Measurement Unit," IEEE Green Technology Conference, Tulsa, Oklahoma, April 19-20, 2012.
- [53] S. Pappu\*, S. Nimmagadda\* and S. Bayne, "Analysis and Comparison between two wind farms consisting of 500kW midsize turbines and 1.5MW turbines", Power Electronics and Machines for Wind Applications, Denver, Colorado, July 2012.
- [52] K. Lawson\*, G. Alvarez\*, S. Bayne, V. Veliadis, H. Ha, D. Urciuoli, and C. Scozzie,” Reliable Operation of 1200-V SiC Vertical Junction-Field-effect-Transistor Subjected to 16,000 Pulse Hard Switching Stress”, 2011 International Conference on Silicon Carbide and Related Materials, September 11-16, Cleveland, OH
- [51] M. Hinojosa\*, S. Bayne, V. Veliadis and D. Urciuoli, “Avalanche Breakdown Energy in Silicon Carbide Junction Field Effect Transistors,” 2011 International Conference on Silicon Carbide and Related Materials, September 11-16, Cleveland, OH
- [50] S. Lacouture\*, K. Lawson\*, S. Bayne, M. Giesselmann, H. O’Brien, and C. Scozzie, “Evaluation of High Power Experimental SiC SGTO Devices for Pulse Power,” 2011 International Conference on Silicon Carbide and Related Materials, September 11-16, Cleveland, OH
- [49] S. Lacouture\*, K. J. Lawson\*, S. B. Bayne, M. Giesselmann, H. O'Brien, C. J. Scozzie, “Evaluation of Experimental Silicon SGTO Devices for Pulsed Power Applications,” 18<sup>th</sup> International Pulse Power Conference, Chicago, Illinois, 19-23, June 2011
- [48] K. J. Lawson\*, S. B. Bayne, “Analysis of Silicon Carbide Super Junction Transistor during Pulsed Operation,” 18<sup>th</sup> International Pulse Power Conference, Chicago, Illinois, 19-23, June 2011
- [47] K. J. Lawson\*, G. Alvarez\*, S. B. Bayne, V. Veliadis, and D. Urciuoli, “Analysis of Silicon Carbide JFET Devices during Pulsed Operation,” 18<sup>th</sup> International Pulse Power Conference, Chicago, Illinois, 19-23, June 2011
- [46] D. Reddy\*, N. Beniwal\* and S. Bayne, “New ASIC Architecture Development for Energy Harvesting,” 33<sup>rd</sup> International Telecommunications Energy Conference, Amsterdam Netherlands, 9-13 October 2011

- [45] S. Lacouture\*, K. J. Lawson\*, S. B. Bayne, M. Giesselmann, H. O'Brien, and C. J. Scozzie, "Unique High Energy Test Bed for Experimental Thyristors Devices," 18<sup>th</sup> International Pulse Power Conference, Chicago, Illinois, 19-23, June 2011
- [44] M. Chamana\*, S.B. Bayne, "Modeling and Control of Directly Connected and Inverter Interfaced Sources in a Microgrid," 43rd North American Power Symposium, 4 – 6 August 2011, Boston, Massachusetts
- [43] M. Chamana\*, S.B. Bayne, "Modeling and Control of a Battery Management System (BMS) in a Microgrid," 33rd International Telecommunications Energy Conference, 9–13 October 2011, Amsterdam, The Netherlands
- [42] I. Durukan, S. Ekwaro-Osire, and S.B. Bayne, "Flywheel Energy Storage Systems for Wind Turbine Grid Frequency Stability - A Review," Proceedings of the 2011 ASME International Mechanical Engineering Congress & Exposition, Denver, Colorado, Nov 11–17, 2011.
- [41] T. Schricker\*, S. Bayne, M. Giesselmann, H. O'Brien and C. Scozzie, "High Action Comparison of Silicon and Silicon Carbide Super Gate Turn-off Thyristors," Thirteenth Annual Directed Energy symposium, Bethesda MD, 15-19 November 2010
- [40] K. Patil\*, T. Maxwell, S. Bayne and R. Gale 2010 "Vehicle Development Process for EcoCAR: The Next Challenge Competition," IEEE Vehicle Power and Propulsion Conference (VPPC 2010), Lille, France.
- [39] K. Patil\*, T. Maxwell, S. Bayne and R. Gale 2010 "Hardware-in-the-loop Testing of GM Two-Mode Hybrid Electric Vehicle" IEEE Control and Modeling for Power Electronics (COMPEL 2010), Boulder, USA
- [38] K. Lawson\* and S. Bayne, "Transience Analysis of SiC MOSFET Switches," IEEE Power Modulator and High Voltage Conference, Atlanta, GA, May 23-27, 2010
- [37] S. Henriquez, M. Litz, S. Bayne, and D. Katsis, "Nonlinear Modeling of Ferroelectric Dielectrics Transmission Line," Pulse Power Conference 2009, Washington, D.C., June 28- July 2, 2009
- [36] R. Thomas, D. Porshet, M. Berry, and S. Bayne, "Versatile Power Modulation System for High Power Microwave Sources for High-Temperature Environments," GOMAC Tech 09, Orlando, FL March 16-19, 2009
- [35] A. Ogunniyi, M. Morgenstern, R. Green, H. O'Brien, S. Bayne, G. Koebke, and C. White, "Transient Evaluation of 4H-SiC DMOSFET for Power Electronics", GOMAC Tech 09, Orlando, FL March 16-19 2009

- [34] H. O'Brien, C. J. Scozzie and S. B. Bayne, "Overview of Pulse Power Research at the Army Research Lab," GOMAC Tech 08, 17-20 March 2008, Las Vegas, Nevada
- [33] T. Crowley, W. Shaheen, S. Bayne, and R. Jow, "Testing of High Energy Density Capacitors," IEEE Pulse Power Conference, 17-22 June 2007, Albuquerque, NM
- [32] H. O'Brien, W. Shaheen, S.B. Bayne, and A.K. Agarwal, "Pulse Evaluation of High Voltage SiC Diodes," IEEE Pulse Power Conference, 17-22 June 2007, Albuquerque, NM
- [31] H. O'Brien, W. Shaheen, T. Crowley, and S.B. Bayne, "Evaluation of the Safe Operating Area of a 2.0 CM<sup>2</sup>, 4 kV Si SGTO" IEEE Pulse Power Conference, 17-22 June 2007, Albuquerque, NM
- [30] S. B. Bayne and M. Litz, "Power and Energy Requirements for the Army," GOMAC TECH 0719 -20 March 2007, Lake Buena Vista, FL
- [29] B. R. Geil, S. B. Bayne, H. O'Brien, "High-Temperature Packaging and Pulse Testing of Parallel SiC Thyristors," 2006 SAE Power Systems Conference, 6-9 November 2006, New Orleans, LA.
- [28] Bayne, Tatum, Berry, Conrad, Tipton, Porschett, Wood, Salem, "Radio Frequency Directed Energy Against Improvised Explosive Devices (IED) RAID," 8<sup>th</sup> Annual DEPS Symposium, 14-18 Nov 2005, HI
- [27] S. Bayne, J. Tatum, A. Kehs, "US Army High Power Microwave Technology Program," ARL, HPM 2006 Conference, ARL-Adelphi, MD, April 4, 2006
- [26] H. O'Brien, W. Shaheen, T. Crowley, S. B. Bayne, "Evaluation of a 10 kV, 400 kA Si SGTO at High dI/dt," IEEE Power Modulator Conference 14-18 May 2006, Washington, D.C.
- [25] H. O'Brien, W. Shaheen, S. B. Bayne, "Evaluation of a 4 mm x 4 mm SiC GTO at Temperatures up to 150° and Varying Pulse Width," IEEE Power Modulator Conference 14-18 May 2006, Washington, D.C.
- [24] T. Crowley, H. O'Brien, W. Shaheen, S. Bayne, "Evaluation of 10 kV, 80 kA Si SGTO Switching Components for Army Pulsed Power Applications," IEEE Power Modulator Conference 14-18 May 2006, Washington, D.C.
- [23] H. O'Brien, W. Shaheen, R. L. Thomas, Jr., T. Crowley, S. B. Bayne, and C. J. Scozzie, "Evaluation of Advanced Si and SiC Switching Components for Army Pulsed Power Applications," 13th Electromagnetic Launch Symposium, 22-25 May 2006, Potsdam, Brandenburg.

- [22] A. K. Agarwal, S. Krishnaswam, J. Richmond, C. Capell, S. Ryu, J. Palmour, S. Balachandran, P. Chow, S. Bayne, B. Geil, C. Scozzie, K. Jones, "Evolution of 1600 V, 20 A, SiC Bipolar Junction Transistors," The 17<sup>th</sup> International Symposium on Power Semiconductor Devices and ICs, 2005
- [21] T. E. Salem, D. Porschet, S. B. Bayne, Y. Chen, "Thermal Performance of Water-Cooled Heat Sinks," Twentieth Annual Applied Power Electronics Conference and Exposition, 6-10 March 2005, Austin Texas
- [20] T. E. Salem, S. B. Bayne, and D. Porschet, "Thermal Performance of Water-Cooled Heat Sinks: A Comparison of Two Different Designs," Semiconductor Thermal Measurement, Modeling, and Management Symposium, 2005 IEEE Twenty-First Annual, March 2005
- [19] D. Katsis, B. Geil, T. Griffin, G. Koebke, S. Kaplan, G. Ovrebo, S. Bayne, "Silicon Carbide Power Semiconductor Module Development for a High-Temperature 10kW AC Drive," IAS 2004
- [18] H. O'Brien, W. Shaheen, and S. B. Bayne, "Pulse Power Switching of A 4 MM x 4 mm SiC Thyristor", Pulse Power conference 2005
- [17] R. L. Thomas, Jr., H. O'Brien, W. Shaheen, and S. B. Bayne, "Evaluation of a 7kV 80kA SGTO Module", Pulse Power conference 2005
- [16] R. Edwards, M. Giesselmann, E. Shaffer, S. Bayne, and S. Kaplan, "Forward and Reverse Recovery Spice Model of a JBS Silicon Carbide Diode," 26<sup>th</sup> Power Modulator Symposium and 2004 High Voltage Workshop, 23-26 May 2004, San Francisco, CA
- [15] Agarwa, A.K., Sei-Hyung Ryu, Richmond, J., Capell, C., Palmour, J.W., Balachandran, S., Chow, T.P., Geil, B., Bayne, S., Scozzie, C., and Jones, K.A., "Recent progress in SiC bipolar junction transistors Power Semiconductor Devices and ICs," 2004. Proceedings ISPSD '04. The 16th International Symposium, 24-27 May 2004
- [14] R. Thomas, M. Morgenstern, and S. Bayne, "Silvaco Modeling of 10 kV SiC P-I-N Diodes," 26<sup>th</sup> Power Modulator Symposium and 2004 High Voltage Workshop, 23-26 May 2004, San Francisco, CA
- [13] B. Geil, S. Bayne, and D. Ibitayo, "Thermal Evaluation of SiC GTOs for Pulse Power Applications," 26<sup>th</sup> Power Modulator Symposium and 2004 High Voltage Workshop, 23-26 May 2004, San Francisco, CA
- [12] J. D. Thomas, S. Kaplan, and S. B. Bayne, "Evaluation of 4H-SiC BJTS," 26<sup>th</sup> Power Modulator Symposium and 2004 High Voltage Workshop, 23-26 May 2004, San Francisco, CA

- [11] S. Bayne and D. Ibitayo, "Evaluation Of SiC GTOs for Pulse Power Switching," 14<sup>th</sup> IEEE International Pulsed Power Conference, June 2003, Dallas, TX.
- [10] S. Kaplan, T. Griffin, and S. Bayne, "Silicon vs. Silicon Device Characterization," 14<sup>th</sup> IEEE International Pulsed Power Conference, June 2003, Dallas, TX.
- [9] C. W. Tipton, S. B. Bayne, T. E. Griffin, C. J. Scozzie, and B. Geil, "High-Temperatuer, 400 W, DC-to-AC Inverter Using Silicon Carbide Gate Turn-Off Thyristor and P-I-N diodes", ARL Technical Report October 2003.
- [8] A. Agarwal, S. Ryu, J. Richmond, S. Balachandran, T. Chow, Y. Tang, S. Bayne, K. Jones, C. Scozzie, P. Shaw, and W. Tipton, "Design and Performance of 600V, 15A JBS Rectifiers, and Switches," CTA Conference, Army research Lab 29 April – 01 May 2003, College Park MD.
- [7] S. Bayne, C. W. Tipton, C.J Scozzie and T. E. Griffin, "High-Temperature Switching and Evaluation of 4H-SiC Gate Turn-off Thyristors and Diodes under Inductive Loads," IECEC, 2002, Washington DC
- [6] S. B. Bayne, C. W. Tipton, C. J. Scozzie, T. Griffin, A. K. Agarwal, and J. Richmond, "High-Temperature Inductive Switching of SiC GTO and Diode," Power Modulator Conference and High Voltage Workshop June 30 – July 3 2002, Hollywood California
- [5] P. B. Shah, B. R. Geil, M. E. Ervin, T.E. Griffin, S. Bayne, K. A. Jones and T. R. Oldham, "Advance Operational Techniques and pn-pn-pn structures for High-power SiC GTO thyristors," 2001 Applied Power Electronic Conference
- [4] Bayne, S. B., Portnoy, W. M., and Rohwein, G. J. "The Use of Thyristors for Repetitive Narrow Pulse, High Power Switching," International Power Modulator Symposium, 26 June – 29 June 2000. Norfolk VA.
- [3] S.B. Bayne and M. G. Giesselmann, "Effect of Blade Passing on a Wind Turbine Output, 35<sup>Th</sup> Intersociety Energy Conversion Engineering Conference and Exhibit," 24 July – 28 July 2000. Las Vegas, Nevada.
- [2] Bayne, S. B., "Wind Farm Analysis for Power Grid Connection," Joint Fall Meeting of the Texas Section of APS and AAPT and SPS Zone 13, October 26-28, 1995. Lubbock TX.
- [1] Bayne, S. B., Portnoy, W. M., Rohwein, G. J., and Hudgins, J. L. "Mos-Gated Thyristor (MCT) for High Power Switching," Twenty-first International Power Modulator Symposium, June 27-30, 1994, Costa Mesa, California

### **Short Course**

- [6] S. Bayne, "High Voltage Power Semiconductor Devices Reliability and Accelerated Testing," Power America short course, 13 November 2018, Raleigh, NC

- [5] S. Bayne, "Overview of Power Semiconductor Devices," TTU High Power Short Course, September 24-26, 2018, Texas Tech University, Lubbock, TX
- [4] S. Bayne, "Overview of Power Semiconductor Devices," 2018 IEEE International Power Modulator and High Voltage Conference, June 2018, Jackson Hole, WY
- [3] S. Bayne, "Solid State Switching," TTU Pulsed Power Short Course January 2015, Lubbock, TX
- [2] S. Bayne, "Overview of Power Semiconductor Devices," 2014 IEEE International Power Modulator and High Voltage Conference, June 2014, Santa Fe, NM
- [1] S. Bayne, "Solid State Switching," TTU Pulsed Power Short Course, January, 2010, Lubbock, TX

### **Invited Presentations**

- [23] S. Bayne, "Semiconductor Opening Device Characterizations, Package Comparisons, and TCAD Modeling for Pulsed Power Systems," 28 March 2025, University of North Texas
- [22] S. Bayne, "Electrical Distribution Systems Resiliency Planning and Operations," 11 May 2024, West Texas A&M University
- [21] S. Bayne, "Internet of Networked Microgrids Solutions for Scalable Agile Microgrids," University of Arkansas, 13 November 2023
- [20] S. Bayne "Internet of Networked Microgrids Solutions for Scalable Agile Microgrids," UDC Brazil, 8 February 2023,
- [19] S. Bayne "SiC Power Semiconductor Device Reliability and Accelerated Testing," Houghton College, 30<sup>th</sup> November 2021
- [18] S. Bayne, "SiC Power Semiconductor Device Reliability and Accelerated Testing," the University of North Texas, 29<sup>th</sup> October 2021
- [17] S. Bayne "SiC Power Semiconductor Device Reliability and Accelerated Testing," NPSS/PELS Jt. Chapter, IEEE Student Branch College of Engineering Karunagappally, India, 28th April 2020
- [16] S. Bayne, "SiC Power Semiconductor Device Reliability and Accelerated Testing," University of Houston, 23 March 2020
- [15] S. Bayne, "SiC Power Semiconductor Device Reliability and Accelerated Testing," the University of Texas at Arlington, 3 May 2019

- [14] S. Bayne, "SiC Power Semiconductor Device Reliability and Accelerated Testing," Texas Tech University, Department of Industrial, Manufacturing and System Engineering, April 2019
- [13] S. Bayne, "SiC Power Semiconductor Device Reliability and Accelerated Testing," University of New Mexico, Albuquerque, NM, 22 March 2019
- [12] S. Bayne, Avalanche, Narrow Pulsed and Continuous Evaluation of SiC Power Devices, University of Colorado, Colorado Springs, 14 September 2018
- [11] S. Bayne, Continuous Switching Reliability of Ultra-high Voltage SiC MOSFETs and IGBTs," Texas Panhandle Section, Amarillo, TX, March 2018
- [10] S. Bayne, " Reliability Analysis of Wide-Bandgap Semiconductors, " IEEE APEC conference, San Antonio, TX, 4-8 March 2018
- [9] S. Bayne, " Silicon Carbide (SiC) Power Devices for Defense Application," West Texas A&M University, 20 September 2017
- [8] S. Bayne, "Continuous Switching Reliability of Ultra-High Voltage SiC MOSFETS and IGBTs," Clemson University, South Carolina, 17 November 2016
- [7] S. Bayne, "Modeling and Analysis of Grid Connected Battery with Renewable Sources," Centro Universitario (UDC), Brazil, 28 September 2016
- [6] S. Bayne, "Silicon Carbide (SiC) Power Devices for Defense Applications," Directed Energy and Next Generation Munitions Conference, Fairfax, VA, June 22, 2016
- [5] S. Bayne, "Silicon Carbide Power Devices in Renewable Energy," Polytechnical University of Puerto Rico, October 2015
- [4] S. Bayne, "Overview of Silicon Carbide Power Devices," 6<sup>th</sup> Annual IEEE Green Technologies Conference, Corpus Christi, TX, April 3-4 2014
- [3] S. Bayne, "Transient Switching Analysis of Silicon Carbide Devices," University of Texas Arlington, 21 February 2014
- [2] S. Bayne, "Pulsed Evaluation of SiC Power Devices," University of Missouri National Security Seminar Series, 15 April 2013
- [1] S. Bayne, "Pulsed Evaluation of SiC Power Devices," University of Nebraska-Lincoln, April 8<sup>th</sup> 2013

## **GRANTS**

**State funding August 2025: \$304,000,000 secured for advanced state and National security initiative**

**Table 1: Funding Received**

<b>Date</b>	<b>Agency</b>	<b>Title of Proposal</b>	<b>Total</b>	<b>Credited</b>
*06/2025	DOD Army Research Lab	Advanced Semiconductor Power Devices	\$5,250,000	\$1,575,000
10/2025	National Science Foundation	REU Site: Wide/Ultrawide Bandgap Semiconductor Technologies and Applications (WUBSTA)	\$439,230	\$43,923
08/2025	National Science Foundation	REPACSS: Empowering Scientific Discovery through Renewable Energy Powered Advanced Computing Systems and Services	\$5,250,000	\$525,000
08/2025	National Science Foundation	S-STEM: Developing the Semiconductor Industry Workforce	\$2,000,000	\$60,000
06/2025	Purdue University/DOD	SCALE: Scalable Asymmetric Lifecycle Engagement	\$50,000	\$10,000
08/2025	Purdue University/DOD	SCALE: Scalable Asymmetric Lifecycle Engagement	\$150,000	\$24,000
06/2025	National Science Foundation	REPACSS: Empowering Scientific Discovery through Renewable Energy Powered Advanced Computing Systems and Services	\$999,990	\$99,999
*04/2025	DOD Army Research Lab	Instrumentation Acquisition for Advanced	\$6,000,000	\$1,800,000

<b>Date</b>	<b>Agency</b>	<b>Title of Proposal</b>	<b>Total</b>	<b>Credited</b>
		Semiconductor Power Devices Research		
02/2025	OD Army Research Office	Investigating Cyberattack Detection Using Deep-learning Techniques in the Industrial Internet of Things Solutions for Manufacturing	\$23,925	\$4,785
12/2024	GE Vernova Advanced Research Center  United States Department of Energy	Solar and Wind Grid Services and Reliability Demonstration	\$127,066	\$19,060.80
*11/2024	MSI STEM Research & Development Consortium  DOD Army Research Office	Investigating Cyberattack Detection Using Deep-learning Techniques in the Industrial Internet of Things Solutions for Manufacturing	\$167,499	\$33,499.80
*11/2024	DOE	A Clean Energy and Rural Electric Industry-focused University Cyber-Physical Security Center	\$2,500,000	\$625,000.00
11/2024	Sandia National Lab	Semiconductor Opening Switches for Solid-State Pulsed Power	\$211,224	\$105,612
*09/2024	DOD Army Research Lab	Workforce Development for Research in Advanced Materials and Cognitive Radar Technology	\$6,400,000	\$1,280,000

<b>Date</b>	<b>Agency</b>	<b>Title of Proposal</b>	<b>Total</b>	<b>Credited</b>
*0820/24	DOD Army Research Lab	Research and Workforce Development in the area of Cybersecurity	\$2,500,000	\$625,000
07/2024	National Science Foundation	REPACSS: Empowering Scientific Discovery through Renewable Energy Powered Advanced Computing Systems and Services	\$999,990	\$99,999
07/2024	National Science Foundation	REPACSS: Empowering Scientific Discovery through Renewable Energy Powered Advanced Computing Systems and Services	\$5,000,000	\$500,000
05/2024	DOD- Purdue University	SCALE: Scalable Asymmetric Lifecycle Engagement	\$486,250	\$97,250
*05/2024	National Institute of Standards and Technology	West Texas Cyber Workforce Development Consortium (WTCWDC)	\$199,345	\$39,869
03/2023	DOD - Office of Naval Research	Student Travel Support Proposal for the 2023 IEEE Pulsed Power Conference (PPC)	\$15,000	\$7,500
*09/2023	DOE ARO/Rochester Institute of Technology	The REAP Program (2023): Safe and Intelligent Wireless Power Transfer System	\$2,000	\$2,000
09/2023	DOE-UTSA	Intelligent Visual Analytics for Energy Aware Security of Advanced Manufacturing	\$53,325	\$4,266

<b>Date</b>	<b>Agency</b>	<b>Title of Proposal</b>	<b>Total</b>	<b>Credited</b>
*03/2022	DOD-SERDP	Internet of Networked Microgrids Solutions for Scable Agile Microgrids	\$500,000	\$250,000
*08/2022	DOD-SERDP	Internet of Networked Microgrids Solutions for Scable Agile Microgrids	\$60,572	\$30,286
11/2022	Sandia Lab	Semiconductor Opening Switches for Solid-State Pulsed Power	\$80,000	\$40,000
11/2022	Texas Workforce Commission	Critical Infrastructure Security Training Programs for Industry Professionals and University Students	\$350,000	\$87,500
*2/2022	DOE ARO/Rochester Institute of Technology	The Reap Program	\$2,000	\$1,000
10/2021	Texas Workforce Commission	Cyber-physical Security Training for the Energy and Water Industry	\$395,956	\$87,489
*01/2021	APEX Clean Energy	Advanced controls for energy systems using SEL RTAC	\$42,356	\$42,356
11/2021	Teradyne Inc	Development of a Solid State Relay	\$69,040	\$27,616
01/2021	DOE ARO/Rochester Institute of Technology	The Reap Program	\$2,000	\$1,000
*09/2021	DOD/General Technical Services	Design of Non-Linear Transmission Lines for Vertical Lift Applications	\$101,023	\$60,614

<b>Date</b>	<b>Agency</b>	<b>Title of Proposal</b>	<b>Total</b>	<b>Credited</b>
*05/2021	DOD Army	Enhancing Infrastructure for cyber-physical systems security training and research at Texas Tech University Facilities	\$593,472	\$296,736
*05/2021	DOD-SERDP	NWI Internet of Networked Microgrids Solution for Scalable Agile Microgrids	\$283,042	\$141,521
*05/2021	X-FAB Texas	Reliability Analysis of Silicon Carbide (SiC) Power Semiconductor Devices	\$69,000	\$69,000
04/2020	DOE/Syndem LLC	Autonomous Grid-forming Inverters Enabled by Current-limiting, Self-synchronized, Universal Droop Control	\$202,229	\$80,891.60
*08/2020	DOD-SERDP	Internet of Networked Microgrids Solution for Scalable Agile Microgrids	\$527,506	\$263,753
*8/2020	DOE ARO/Rochester Institute of Technology	The Reap Program	\$3,000	\$3,000
*02/2020	General Technical Services, LLC/DOD Army	High Power Microwaves and Directed Energy for Vertical Lift Applications	\$99,054.37	\$99,054.37
*06/2019	General Technical Services/ Army CERDEC	Power Electronics Converter Design for Army Applications	\$140,220	\$140,220

<b>Date</b>	<b>Agency</b>	<b>Title of Proposal</b>	<b>Total</b>	<b>Credited</b>
*09/2019	X-Fab Texas Inc	Design and Evaluation of Wide Bandgap Power Devices	\$65,000	\$39,000
*09/2019	North Carolina State University	Texas Tech and X-FAB Education Partnership	\$50,000	\$50,000
*08/2019	NCSU/DOE	Proposal to Establish an Independent Testing Facility to Perform Reliability Analysis of WBG Semiconductor Devices	\$66,347	\$53,077.6
*07/2019	DOD ARO/Academy of Applied System	The REAP program	\$3,000	\$1,500
10/2019	Texas Workforce Commission	Cyber-physical Security Training for the Energy and Water Industry	\$482,415	\$96,483
*03/2019	DOE/NCSU/Power America	Proposal to Establish an Independent Testing Facility to Perform Reliability Analysis of WBG Semiconductor Devices	\$133,706	\$106,965
09/2019	NSF/IIT	Planning Grant: Engineering Research Center for Communication-network-free Autonomous Renewable Electrical Systems (CARE)	\$23,937	\$11,968.50
*07/2019	ARL	Design and Testing of High Energy Systems with a Focus on Wide Bandgap Power Devices	\$150,000	\$150,000

<b>Date</b>	<b>Agency</b>	<b>Title of Proposal</b>	<b>Total</b>	<b>Credited</b>
*04/2019	ARL	Design and Testing of High Energy Systems with a Focus on Wide Bandgap Power D I: Design and Testing of High Energy Systems with a Focus on Wide Bandgap Power Devices	\$122,421	\$122,421
02/2019	NSF	Educating Engineering Undergraduates to be Industry Innovators and Manager	\$1,000,000	\$30,000
*03/2018	ARL	Semiconductor Evaluation of High Action Applications	\$100,000	\$80,000
5/2018	Pantex/ Consolidated Nuclear Security, LLC	Pantex Wind Farm Usage Optimization	\$166,684	\$55,006
*10/2018	ARL	I: Design and Testing of High Energy Systems with a Focus on Wide Bandgap Power Device	\$150,000	\$150,000
*11/2018	General Technical Services, LLC	Analysis of Generator System Performance under High Nonlinear Load	\$350,082	\$350,082
*8/2018	Teradyne Inc	Development of a high voltage and high current tester	\$62,134	\$31,067

<b>Date</b>	<b>Agency</b>	<b>Title of Proposal</b>	<b>Total</b>	<b>Credited</b>
*7/2018	ARL	I: Design and Testing of High Energy Systems with a Focus on Wide Bandgap Power Device	\$33,000	\$33,000
*5/2018	Teradyne Inc	Semiconductor Evaluation for High Action Application	\$46,000	\$15,640
*5/2018	Academy of Applied Science	The REAP program	\$1000	\$500
*04/2017	ARL	Semiconductor Evaluation of High Action Applications	\$172,000	\$136,008
*07/2017	Academy of Applied Science/ARL	REAP program	\$2,000	\$2,000
*07/2017	DoE/North Carolina State University	Reliability Analysis of Wide Band Gap Power Devices	\$199,246	\$59,774
01/2017	GNIRE	Support Advanced Research	\$125,496	\$41,414
01/2017	TX Emerging Technology Fund	Micro grid development	\$13,000,000	\$1,430,000
04/2017	PANTEX	Pantex wind farm usage optimization based on Utility market pricing and reliability study of electrical distribution system	\$90,000	\$29,700
06/2016	DOOSAN	Load Interface for Fuel Cells with Enhanced Dynamic Response Through Integrated Storage	\$150,000	\$75,479

<b>Date</b>	<b>Agency</b>	<b>Title of Proposal</b>	<b>Total</b>	<b>Credited</b>
*05/2016	Academy of Applied Science	The REAP program	\$6,500	\$6,500
*02/2016-02/2017	Army Research Lab	Semiconductor Evaluation for High Action Applications	\$400,000	\$320,000
*03/2016-12/2017	Army Research Lab	Semiconductor Evaluation for High Action Application	\$400,000	\$320,000
*02/2015-02/2016	Army Research Lab	Semiconductor Evaluation for High Action Applications	\$400,000	\$299,000
*07/2014-06/2014	Office of Naval Research	Thermal Imaging of High Power Semiconductor Switches for Defense Applications	\$124,495.00	\$124,495.00
*04/2014-12/2014	U.S. Army Research Office/AAS	Research and Engineering Apprenticeship Program	\$6000	\$6000
*08/2012-12/2014	CCET	Technology Solution for Wind Integration	\$300,000.00	\$150,472.00
*07/2014-02/2015	CREE/ARL	Evaluation of High Voltage SiC IGBTs	\$100,000.00	\$100,000.00
*03/2010-08/2011	AFOSR/HEM	Advanced Nonlinear Transmission Lines as High Power Microwave Sources	\$48,000.00	\$48,000.00
*11/2012-04/2014	Athena Energy Corp	Diamond Schottky Barrier Based Alpha Voltaic Energy Sources	\$50,000.00	\$25,000.00
*12/2012-09/2014	U.S. Army Research Lab/CREE	Evaluation of High Voltage SiC IGBTs	\$150,000.00	\$150,000.00

<b>Date</b>	<b>Agency</b>	<b>Title of Proposal</b>	<b>Total</b>	<b>Credited</b>
*02/2012-12/2012	U.S. Army Research Office/AAS	Research and Engineering Apprenticeship Program	\$10,400.00	\$10,400.00
*03/2010-03/2012	US Army Research Office	Semiconductor Evaluation for EM Gun Applications	\$950,408.00	\$475,204.00
*11/2010-05/2012	ARO/CREE	Silicon-carbide Power Devices Characterization	\$24,000.00	\$24,664
*09/2010-02/2011	Air Force Office of Scientific Research	Support for 4th US-Japan Pulsed Power and Symposium on Pulsed Power and Plasma Applications	\$19,908.00	\$19,908.00
*04/2014-12/2015	DOD/ Academy of Applied Science	The REAP Program	\$9,500.00	\$9,500.00
*01/2013-02/2014	Alstom Power	Grid Integration Phase 2	\$136,089.00	\$136,089.00
*03/2014-03/2015	Alstom Power	Grid Integration Phase 3	\$118,370.00	\$118,370.00
*06/2013-06/2015	DOE	Collaborative Industry-Academic Synchrophasor Engineering Program	\$199,950.00	\$67,983.00
*01/2012-01/2013	Alstom Power	Grid Integration	\$136,762.00	\$68,381.00
*01/2011-02/2012	Alstom Power	Market Watch	\$81,508.00	\$27,713.00
*03/2014-08/2014	Google Inc.	Evaluation of SiC Modules	\$51,574.00	\$51,574.00
09/2009-08/2010	DOE	Great Plains Wind Power Test Facility	\$1,902,950.00	\$38,059.00
10/2010-09/2013	NSF	MRI-Development of Real Time Simulator for Smart Grid Systems Integrated	\$415,000.00	\$41,500.00

<b>Date</b>	<b>Agency</b>	<b>Title of Proposal</b>	<b>Total</b>	<b>Credited</b>
		with Distributed Renewable Energy Sources		
10/2010-09/2011	DOE	Midsize Wind Turbine Designed and Manufactured in the USA	\$849,995.00	\$169,999.00
*07/2010-07/2015	NIRE	Prototype Testing R&D Project	\$3,918,863.00	\$3,918,863.00
09/2010-09/2013	DOE	Great Plains Wind Power Test Facility	\$1,902,950	\$38,059.00
06/2011-05/2015	NSF	Scholarships in Semiconductor Device Engineering	\$599,970.00	\$59,997.00
<b>Grand Total</b>			<b>\$72,009,414</b>	<b>\$19,281,6152</b>

**Dr. Bayne is the Lead PI \***

### **Internal Funding**

[2] GLEAMM Spark fund \$50K, Modeling of Micro grids in OPAL-RT, 2017

[1] GLEAMM Spark fund \$100k, TTU-DOSAN fuel cell modeling, 2016

### **Scholarship**

[1] S. Bayne Apex Energy, Energy Scholarship, \$5,000. Year 2012

[2] PMU, Group NIRE, \$1,500. Year 2015

### **TEACHING EFFECTIVENESS**

#### **Graduate Education**

##### *Graduate Faculty Membership*

[2] Morgan State University

[1] Texas Tech University

##### *Postdocs Supervise*

- [6] Dr. David Graves, May 2025 - Present
- [5] Dr. Olatunji Adeyanju, January 2022 – Present
- [4] Dr. Ilham Osman, January 2020 – October 2021
- [3] Dr. Shelby Lacouture, November 2016-June 2017
- [2] Dr. Sundari Ramabhotla, December 2016-December 2017
- [1] Dr. A. Subburaj, December 2014 – December 2015

#### *Doctoral Students Supervised*

- [2] Ph.D, (Technical Chair) Morgan State University, Aderinto Ogunniyi, “Evaluation and Reliability Analysis of SiC Bipolar Devices under Pulsed Conditions”, 19 Oct 2011
- [1] Ph.D., (Technical Chair) Morgan State University, Ron Green, “SiC DMOSFET Characterization and Evaluation for Power Electronics Applications,” 2010

#### *Doctoral Students Graduated*

- [32] Rajendra Shrestha, “Anomaly Detection and Prevention in Smart Grid Transmission System Using Machine Learning,” December 2025
- [31] Agboola Benjamin Alao, “Hybridized Multi-Layer Microgrid Formation & Optimization Technique Using Supervised Learning (ANFIS) for Resiliency Enhancement in T&D Power System,” December 2025
- [30] Ayda Demir, “ Advanced Machine Learning Frameworks for Renewable Energy Forecasting and Storage System Optimization,” August 2025
- [29] Ivan Aponte, “ Pulsed Power and Beam Diagnostics to Enhance Accelerator Capabilities,” May 2025
- [28] David Graves, “Design Simulation and Optimization of a High Voltage SiC Semiconductor Opening Switch Diode,” May 2025
- [27] Micah Lapointe, “An Evaluation of the Class E PA for Directed Energy Applications,” December 2024
- [26] Mahtab Murshed, “ Renewable Energy Integration for Power Outage Mitigation: A Data-Driven Approach in Advancing Microgrid Resilience Strategies,” May 2024
- [25] Rabindra Bhatta, “ An assessment of deep cyber-physical situational awareness of power system using real-time testbed,” December 2023
- [24] Konrad Erich Kork Schmitt, “Distribution Systems Optimal Power Outage Restoration Enhancement through the Application of State Estimation and Protection Coordination Analysis,” December 2023

- [23] Tsz Tsoi, "Reliability of 4H-SiC Devices Passivation Layer in High Humidity Environment for Power Electronics Application," Aug 2023
- [22] Laura Ward "Large-scale adoption of grid-forming inverter controls to enable ancillary services modeling and evaluation for microgrids," May 2023
- [21] Jose Rodriguez, "Modeling of Non-Linear Transmission Line Topologies as High-Power Microwave Sources," December 2022
- [20] Sara Hamady, "High Voltage Doping-less Semiconductor Devices," May 2022
- [19] Cesar Negri, "Advanced Energy Studies to Improve the Integration of Renewable Energy and Electric Vehicles," May 2022
- [18] Vishwajit Roy, "Experimental setup of PMU Network and Application of Artificial Neural Network for PMU Generated Data Analysis," August 2021
- [17] Jerry Tsay, "Power Converter Design and High Power-Microwaves for Future Vertical Lift Applications," December 2020
- [16] Taufique Atique, "Predictive Analysis in Power Grid: A System-Wide Applications of Artificial Intelligence," August 2020
- [15] Mitchell Kelley, "Design and Simulation of a Fuel Cell Power Plant with Dynamic Multi-Unit Load Sharing in Grid-Connected and Grid Isolated Mode of Operation," October 2019
- [14] Boker Agili "Design and Modeling: Intelligent Solid-State Current Limiter to Prevent Sympathetic Tripping Problem on Power and Energy Applications," August 2019
- [13] Ricardo Castillo "Dynamic Wind Turbine Wake Trajectory Control: Strategies and Real-Time Validation," August 2019
- [12] Subrina Noureen "Observability, Anomaly Detection and Energy Demand Forecasting for Smart Grid Analysis," August 2019
- [11] Nimat Shamim, " Analysis and Implementation of Model Predictive Control Technique for Converter control in Grid integration with Battery Energy Storage System and Fuel Cell Power Systems, " August 2018
- [10] James Schrock, "Development of Pulsed Power Systems for the Evaluation of Advanced High Power Silicon Carbide Devices," May 2017
- [9] Shelby Lacouture, "Advanced Characterization of SiC Power Devices Before and After Electrothermal Stress," 7 November 2016
- [8] A. Bilbao, "Continuous Switching Reliability of Ultra-High Voltage SiC MOSFETS and IGBT," August 2016
- [7] Bejoy Pushpakaran, "Electro-Thermal Performance Analysis of SiC Devices Under High Energy Pulsed Condition," December 2015

- [6] Sundari Ramabhotla, “Energy Management in Microgrids,” Aug 2015
- [5] Atiqul Islam, “Wind Power Stability Enhancement by Providing Optimized Power Quality Analysis, Short Circuit Ratio Estimation and Energy Storage Based Frequency Response, May 2015.
- [4] A. Subburaj, “Modeling and Analysis of Battery and Renewable Connected to the Grid, Aug 2011 –December 2014
- [3] M. Hinojosa, “Modeling and Evaluation of High Power, High Voltage 4H-SiC IGBTs,” 2009 – August 2014
- [2] K. Lawson, “SOA Development and Long Term Reliability Testing of SiC SGTOs, Fall 2009 – August 2014
- [1] S. Nimmagadda, “Advanced Solutions to Grid Interconnection Issues Due to Large Scale Grid Integration of Wind Energy,” January 2010 – August 2014

*Doctoral Committees Member*

- [25] Rita Jakelyn Abad Lima, “A Quantitative Study of the Benefits of High-order Harmonic Radar for Enhanced Target Detection, December 2024
- [24] Michale Brown, “Development of Digitally Reconfigurable Radar for Short-Range Sensing,” December 2023
- [23] Victoria O’Brien, “Cyber Security of Grid-Scale Battery Energy Storage Systems using Battery Modeling and Statistical Methods,” December 2023
- [22] Afshin Balal, “Sustainable Solar-Powered EV Charging System Design Using Machine Learning, DC Fast Charging and an Intelligent DMPPT Optimization Technique,” Dec 2023
- [21] Bengie Lemuel Ortiz-Del Vale “Non-Invasive Physiological Monitoring: Smartphone photoplethysmography-Based Biometric Authentication Techniques,” May 2023
- [20] Md Mahmudul Hasan “Deep Learning for Smart Grid Applications” December 2022
- [19] Prateek Nallabolu, “Continuous-Wave Radars: Applications, Security and Target Emulator,” June 2022
- [18] Daniel Rodriguez, “Low-Cost Far-field and Near-field Radio Frequency Sensors for Human Sensing and Liquid Characterization,” May 2022
- [17] Jill Mayeda, “Broadband High Efficient Linear Millimeter-Wave Medium-Power Amplifier Design,” May 2022

- [16] Saeed DaneshvarDehnavi, “Developing Three robust control strategies for Dynamic Voltage Restorer (DVR) for supporting Renewable Energy Resources integration,” October 2021
- [15] Ashish Mishra, “Third-Order Nonlinear Radar Design and Its Applications,” October 2020
- [14] Nazifah Islam, “Ultra High-density Electrochemical Capacitors, June 2018
- [13] Sajjad Abedi, “Data-Driven Approaches for Risk-Aware Energy and Reserve Co-Optimization with Significant Wind Resources,” July 2017
- [12] Scott Clark, “Design of Universal Insulation Systems for Low Voltage and High Voltage Rotating Electrical Apparatus,” 17 October 2016
- [11] Ph.D. Wind Science, Venkatesh Singarao” “Improving Grid Frequency Response Using Wind Generation Resources.” 16th November 2015 Wind Science
- [10] EE, Weibo Hu, “Low-Voltage Multi-Level Pulsed Width Modulation Power Inverters,” 2014
- [9] EE, Ganapathy Sivakumar, “MEMS - Design, Testing, and Characterization,” 2010
- [8] EE, Dallas Webster, “Built-in Self-Test Methodology for Replacing Conventional Radio Frequency Tests in a Wireless Local Area Network System,” 2010
- [7] EE, Ryand Karhi, “A Multi-Stage Distributed Energy Plasma Arc Railgun,” September 2010
- [6] EE, Jerry Lopez, “Silicon-Based Monolithic RF Power Amplifiers and Coupled Voltage-Controlled-Oscillators Arrays for Modern Commercial and Military Applications,” 27 May 2011
- [5] EE, Travis Vollmer, “Evolution of Current Mode Control Approaches for Implementation in Rapid Capacitor Charger Technology,” 29 June 2012 Committee member
- [4] EE, Yan Li, “Highly Efficient and Linear SiGe BiCMOS Power Amplifiers Using Envelope-Tracking for Mobile Broadband Wireless Communications,” 14 June 2012.
- [3] EE, Li Lu, “Low supply Voltage Temper Sensors for On-Chip Thermal Management,” 21 march 2013
- [2] ME, Kunal Patil, “Mathematical Modeling, HIL Testing and In-Vehicle Validation of E85 Fueled Two-Mode Hybrid Electric Vehicle,” 26 March 2013, Committee member

[1] ME, Fisseha M. Alemayehu, “Probabilistic Multibody Dynamic Analysis of Gear systems for Wind Turbines,” 31 May 2013

*Master’s Students Graduated*

[38] Chase Whitworth, “Characterization and Package Comparison of Silicon Semiconductor Opening Switch Diodes for Pulsed Power Systems,” May 2025

[37] Aashley Beard, “Advanced Grid Operations: The Real-Time Simulation of Power Systems Faults to Innovate Protection Methodology,” August 2023

[36] Chirstian Ammon, “Evaluation and Robustness of Wide Bandgap Semiconductor Devices,” May 2022

[35] Braydon Westmoreland “Novel Control Methods for Intelligent Power Semiconductor Modules,” May 2021

[34] Cheryl Stellman “Robustness Evaluation of SiC MOSFETs,” May 2021

[33] Priyanka, Lohran, “Rounding Technique Analysis for Power-Area & Energy Efficient Approximate Multiplier Design,” August 2020

[32] Fernando Salcedo, “Analysis of the Nonlinear Loads have on Lifetime of Generator Sets,” August 2020

[31] Rabindra Bhatta, “VOLTTRON Based Implementation in Controlling the Battery Energy Storage System of Microgrids,” May 2020.

[30] Wayne Cox, “Design and Implementation of a Rayleigh Pulse Forming Network for Automated Control,” October 2019

[29] Cedrick Tchoupe Nono, “ Analysis of the Impact of Nonlinear Loads Harmonics on Synchronous Generator Lifetime,” October 2019

[28] Kasun Chandarathna, “Historical Phasor Measurement Unit (PMU) Data Analysis by Using Machine Learning Techniques for Anomaly Detection in Power Systems, August 2019

[27] Rashan Shrestha, “Cascaded H bridge based solid state transformer for Medium Voltage and Low voltage interface, Simulation and Analysis” May 2019

[26] Yaswanth Challapuram, “ Modeling and Integration of Vanadim Redox Flow Battery with the Grid,” May 2019

[25] Gina Quintero, “Analysis of Protection Coordination in Substations of SPEC’s Distribution System and Renewable Energy Sources Integration Impact,” May 2019

- [24] Travis Huffmaster, "Development of a Low-Cost Phasor Measurement Unit," May 2018
- [23] Emily Hirsh, "Evaluation of the Long Term Reliability and Failure Modes for Silicon Carbide High Power Semiconductor Devices," May 2017
- [22] Brett Peikert, "Design and Modeling Advanced Control of Microgrids," August 2016
- [21] Ashish Mishra, "Zero Voltage Switching Resonant Converter Using 0.6 um Technology," May 2016
- [20] Mitch Kelley, "Evaluation of Advanced Silicon Carbide (SiC) Half-Bridge Power Modules, December 2014
- [19] MSEE, Bailey Ulferts, "Analysis of DC/DC Boost Converters Design Methods with Filter Application," December 2015
- [18] MSEE, Arra Ankith, "Modeling and Stability Analysis of AC and DC Microgrids," December 2015
- [17] MSEE Tyler Flack, "Characterization of an n-type 4 kV GTO for power applications," 15 May 2015
- [16] MSEE James Schrock, "Development of Pulse Power Systems for the Evaluation of Advanced High Power Silicon Carbide Devices," 15 May 2015
- [15] MSEE, Brina Saldivar, "Analysis and Control of a Mixing System for Well Stimulation," March 2014
- [14] MSEE, Manisha Potay, "Design of RF Energy Harvesting System and Testing of the Piezoelectric Energy Harvesting System Chip," March 2014
- [13] MSEE Thomas Rosson, "Multiple Cell AC/DC Smart Battery Design," May 2013
- [12] MSEE Santosh Pappu, "Design and Analysis of Wind Energy Systems in Power Applications," 26 June 2012 Chair
- [11] MSEE Purvi Patni, "Integrated Power Systems," Dec 2012
- [10] MSEE, Toluwalope Owodunni, "Design and Analysis of an ASIC for Energy Harvesting Applications," Dec 2012
- [9] MSEE Brian Steiner, "Pulsed Evaluation of Silicon Carbide Power Switches," May 2012
- [8] MSEE Bejoy Puspakaran, "Transient Analysis of Silicon Carbide Power MOSFETs," May 2012

- [7] MSEE Rupinder Kaur Pannu, "Characterization of Fuel Gauge for Portable Applications," 9 March 2011
- [6] MSEE Kevin Lawson, "Pulsed Evaluation of Silicon Carbide Majority Carrier Devices," 13 June 2011
- [5] MSEE Manohar Chamana, "Modeling and Control of Directly Connected and Inverter Interfaced Sources in a Microgrid," 23 June 2011
- [4] MSEE Divya Reddy, "New Architecture Design for Energy Harvesting," 16 June 2011
- [3] MSEE Andrew Vaselaar "Experimentation and Modeling of Pulse Sharpening and Gyromagnetic Precession within a Nonlinear Transmission Line," 13 June 2011
- [2] MSEE Sidhanthi, Swathi, "Advanced Design and Simulation of Hybrid Electric Vehicle" (December 2010).
- [1] MSEE Schricker, Travis, "Modeling and Simulation of Si and SiC GTO under Pulsed Conditions" (December 2010).

*Master's Committees Served or Serving On*

- [35] MSEE, "Design of Some Key Components Towards Realization a Broadband Millimeter-Wave 5G Front-end Module IC in 22 nm Fully Depleted Silicon-on-Insulation CMOS," Aug 2024
- [34] MSEE, Gokul Somasundaram, "A Feasibility Study of Digital Predistortion (DPD) on the Linearization of Millimeter-Wave Power Amplifiers, June 2023
- [33] MSEE, Yves Tchatchoua, "Software Defined Radio Based Non-Contact Vital Signs (NCVS) Sensor System," October 2019
- [32] MSEE, Ashish Pant, "DFIG Modeling and Control," October 2019
- [31] MSEE, Arun Raghu, "High-Frequency Supercapacitor Based Pulse Generators for Implantable Medical Devices," 20 March 2018
- [30] MSEE, Ashish Patankar, "Wearable System for Obstacle Detection and Human Assistance Using Ultrasonic Sensor Array," 29 March 2016
- [29] MSEE, Ashish Joshi, "Standard Cell Design and Optimization with CDM for Deeply Scaled FinFET Devices," 29 March 2016
- [28] MSEE, Kikhil Patil, "Complimentary Based Logic Design for Arithmetic Design," 29 March 2016

- [27] MS EE Joanna Gatlin, "Industry Semiconductor Test Solutions for Academic Laboratory Programs," Feb 2015
- [26] MSEE, Nadine Estermann, "Via Reliability and Process Marginality Device," 16 October 2014
- [25] MSEE, Juan Rodriguez, "Gamma Radiation Detection Testing," 26 March 2014, Committee member
- [24] MSEE Longfei Wang, "Design of Integrated Voltage-Mode controlled DC-DC Buck Converter," 27 March 2013, Committee member
- [23] MSEE, Alan Aragon, "ATE to Automated Bench Test Correlation," 19 March 2013,
- [22] MSEE Babar Aziz Chaudhary, Date 3 March 2009 Topic: Managing Arc Flash hazard in Power Distribution Systems
- [21] MSEE Travis Vollmer, 25 June 09, "Advancements in Design of A compact Rapid Capacitor Charger
- [20] MSME Allan Falls, 25 June 09, Design and Validation of an Alternative Fuel Two-Mode Hybrid
- [19] MSEE Xiaojing Ren 22 October 2009 MSEE, Reliability Qualification of Quad Flat No-lead Package Devices
- [18] MSEE, Prakash Arujun Design of a controllable electronic load circuit enabling multisite testing for buck power converters, MSEE 12 March 2010
- [17] MSME Carl Robert Gabriel, Two-Mode Hybrid CAN Development and Implementation into Vehicle with Digital Display. March 25, 2010
- [16] MSEE Vasantkumar Trambadiya, Parametric Measurement of Highly Integrated Power Management Circuit, May 2010
- [15] MSEE Ashwin Vijayasia, Haptic controlled A-Y-Z MEMS gripper System, 30 June 2010
- [14] MSEE Surya Kolluru, MEMS Atomic Force Microscope (AFM) 2010
- [13] MSEE Sharanya Kasinathan Test development of Fully Integrated Buck Converter 30 June 2010
- [12] MSEE Shruti Eravelli, Analog Monitoring and Control Characterization" 2/15/2011
- [11] MSEE Jillesha Thawani, "Removal of Kelvin Contactor with Soft Compensation," 23 June 2011

- [10] MSEE Shachi Paithanka, "Direct Attached cable Assembly specification Analysis from 8 ports- Parameter 24 June 2011
- [9] MSEE David Reale, "Performance of a Mobile solid State GPS Linked Pulsed Ring down Array," 29 June 11
- [8] MSEE, Muruganandhan Subramaniam, "Circuit Sensitivity of a Processor," 5 October 2011
- [7] MSEE, Spandana Kocherlakota, "Understanding the Design of Output Filters of Internally Compensated Power Converters and The Effect of a Feedforward capacitor," 19 October 2011
- [6] MSEE, Swamynathan Ganesh, "Design and Implementation of Cost Effective Solution for Testing of Light Emitting Diode Driver," 20 Oct 2011
- [5] MSEE Committee member, Shreyas Rao, "Developing an Optimal General Purpose Interface Board for an Automated Test Equipment," 29 Feb 2012
- [4] MSEE Committee member Nivetha Shivan, "Qualification of The Assembly Process of Flip-Chip BGA Packages for the Next Generation Synchronous Quad Data Rate SRAM Devices to Ensure Reliability," March 2012
- [3] MSEE Committee member Seyed-Mahdi Ghamkhari, "Management and Profit Maximization of Green Data Centers," May 4, 2012
- [2] MSEE Committee member, Md Ashfaqur-Rahman, "False Data Injection Attacks with Incomplete Information," May 7, 2012
- [1] MSEE, Leslie Arroyo, "Development and Validation of a Laboratory Automation Solution for Bench Characterization," 28 July 2012 Committee member

*Graduate Dean Representative at Doctoral Dissertation Defenses*

- [9] Ph.D. Zohren Safari "Fast Search-Enabled Clustering Operation for Dynamically Databases of High Dimensional Big Data," June 2022
- [8] Ph.D. Minhazur Rahman, "Effect of extra-cellular polysaccharides, collagen, and biofilm dispersal enzymes on the visco-elasticity of Pseudomonas aeruginosa biofilm," May 2021
- [7] Ph.D. Ozhan Gecgel, "Condition Monitoring of Gearbox Components Using Deep Learning with Simulated Vibration Data," October 2019
- [6] Ph.D. Tassia Pereira, Wind Science and Engineering, "Using Multiple Non-Doppler LIDARs for Wind Turbine Wake Detection Under Different Inflow and Operating Conditions," 20 June 2018

- [5] Ph.D. Dale Moon, “Real Time Economic Model for Behind the Meter Wind Generation Installation in Government Facility,” Systems Engineering Management, 21 October 2016.
- [4] Ph.D., Wind Science and Engineering, Anant Jain, “Model-Scale Testing and Economics of Floating Offshore Wind Turbines,” 13 October 2014, Graduate School Representative
- [3] Ph.D. Wind Science and Engineering, Neha Marathe, “Investigation of Power Performance and Wakes of Wind Turbines Under Yawed Flow,” 22 August 2014
- [2] Ph.D. Industrial Engineering Ernee Kozyreff Filho, “Valid Inequalities and Computational Results for SOS1-, SOS2-, and Cardinality Constrained Linear Programs”, 5 May 2014,
- [1] Ph.D., Bradley Nemanich, “Design a Sequence Compiler for Multi-Core Processors,” 2009

*Post Docs Supervised*

- [3] Dr. Shelby Lacouture, “Evaluation of SiC Devices for Pulsed Applications,” Jan-June 2017
- [2] Dr. Sundari Ramabhotla, “Optimization of Energy flow in a Micro Grid,” Jan – Dec 2016
- [1] Dr. Anitha Subburaj, “Modeling of Li-Ion Battery for grid application,” Jan – Dec 2015

*Courses Taught (Graduate)*

- [4] ECE 5316 Power Electronics (Spring 2009, Spring 2010, Spring 2011, Spring 2012, Fall 2013)
- [3] ECE 5354 Power Semiconductor Devices (Fall 2009 Special Topics, Spring 2011, Spring 2013, Spring 2016)
- [2] ECE 5320 DC-DC Converter Design and Test (Spring 2010 Special Topics, Fall 2010, Fall 2011, Fall 2012, Spring 2014, Fall 2015, Spring 2016)
- [1] ECE 5332 012 Design, Simulate and Testing of Electronics Systems (Spring 2011)

*New Course Developed and Introduced into Curriculum*

- [2] ECE 5354 Power Semiconductor Devices
- [1] ECE 5320 DC-DC Converter Design and Test

*Distance Education*

- [2] ECE 5316 Power Electronics
- [1] ECE 5354 Power Semiconductor Devices

*Courses Taught (Undergraduate)*

- [6] ECE 4316 Power Electronics (Spring 2009, Spring 2010, Spring 2011, Spring 2012, Fall 2013, 2016, Fall 2018)
- [5] ECE 4354 Power Semiconductor Devices (Fall 2009 Special Topics, Spring 2011, Spring 2013, Fall 2016)
- [4] ECE 2372 Modern Digital Design (Fall 2011, Fall 2012)
- [3] ECE 3332 Project Laboratory II (Spring 2012, Fall 2013, Fall 2015, Fall 2016, Spring 2018)
- [2] ECE3334 Computer Engineering Project Laboratory II (Spring 2012, Fall 2013, Fall 2015, Fall 2016)
- [1] IS 1100 Raider Ready: Freshman Seminar (Fall 2012)

#### *Distance Education*

- [2] ECE 4316 Power Electronics
- [1] ECE 4354 Power Semiconductor Devices

### **PROFESSIONAL SERVICE ACTIVITIES**

#### **Service to the Department of Electrical Engineering**

- [13] Served on the department safety committee 2018 – 2024.
- [12] Served on the search committee for a professor in the area of Pulsed Power and Power Electronics 2018
- [11] Served on the committee for the third-year review for an Assistant Professor 2016
- [10] Served as the Chair of the Search Committee for the Research Assistant Professor in Power and Energy, 2016
- [9] Served on the committee for two open positions in Pulsed Power, 2014
- [8] Faculty advisor for the Texas Energy Innovation Challenge Competition, The TTU team placed second and was awarded a scholarship of \$7,000.00, 2013
- [7] Served as the Chair of the Search Committee for the Junior Faculty in Power and Energy, 2013
- [6] Served on the ECE Communication and Controls Subcommittee 2010
- [5] Presentation to the IBA, “Renewable/Sustainable Energy,” 9 October 2009
- [4] Chair ABET Subcommittee on Electronics, 2009

- [3] Arrange and Invite a Division Chief and a Branch Chief from Advanced Energy Armaments Division to visit Pulsed Power and the ECE department. The trip led to funding for the Pulsed Power Lab, 2009
- [2] Faculty advisor for the EcoCar project, 2009
- [1] Presentation to the ECE Graduate seminar, "Alternative Energy Research," 2009

### **Service to the College of Engineering**

- [10] Served on the College Tenure and Promotion Committee 2019-2021
- [9] Peer observer for the College of Engineering 2014, 2015, 2016
- [8] Served on the College of Engineering Butler Teaching Award committee
- [7] Faculty Advisor for the National Society of Black Engineers 2010 – Present
- [6] Served on the Student Grade Appeal Panel, 2013
- [5] Served on the Student Grade Appeal Panel, 2011
- [4] Served on the search committee to hire a new Associate Dean for Research, 2011
- [3] Presentation to the College of Engineering Houston Alumni, Meeting, "Advanced Energy Research," 2011
- [2] Conducted peer review on two faculty members in Engineering
- [1] Mentor international students from Brazil

### **Service to the University**

- [40] Served on the hiring committee for the Vice President of Research 2025 - present
- [39] Served on the TTU Prototype committee 2025
- [38] TTU MLK Youth Empowerment Summit January 2025
- [37] Served on the TTU Prototype committee 2024
- [36] Served on the President's Innovative Startup Award, Aug 2024
- [35] Visited Angelo State University to discuss collaborations in workforce development and research, Dec 2023
- [34] Served on the Panel for Prototype funding, October 2023
- [33] Military and Veterans Programs Graduation Stole and Recognition Ceremony Guest Speaker May 2023

- [32] Served on the Panel for Mental Health discussion for African American Students February 2023
- [31] Served on the President's Innovative Startup Award, January 2022
- [30] Served on the Innovation Hub Prototyping Grant Committee October 2021
- [29] Served on the search committee for the Assistant Professor in Arts and Science wind program 2021
- [28] Served on the search committee for the Provost 2021
- [27] Peer reviewer for the Blavatnik limited submission August 2021
- [26] Chair of the search committee for the GLEAMM Director 2021
- [25] Served on the Presidents' Excellence in Commercialization Award 2021
- [24] Served on the Advance URM Council February 2021
- [23] Served on the Presidents' Innovation Award Committee January 2021
- [22] Served on the Innovation Hub Prototyping Grant Committee June 2020
- [21] Peer reviewer for the Blavatnik limited submission August 2020
- [20] Served on the President's Excellence in Commercialization Award selection committee, March 2020
- [19] Reviewer for the internal NSF MRI pre-proposals, October 2019
- [18] Served on the Innovation Hub Prototyping Grant Committee June 2019
- [17] Reviewer for the Research Professorship Application, January 2019
- [16] Served on the Committee for the VP of Research Leadership Discussion. September 2018
- [15] Served on the Advisory Committee for the Texas Prototyping Grant Program September 2018
- [14] Reviewer for the Hurri proposals July, 2018
- [13] Reviewer for the Doctoral Dissertation Completion Fellowship Nomination - 2018
- [12] Served as a board member on the Spark fund project, 2016, 2017, 2018
- [11] Served at a reviewer for the inviDoctoral Dissertation Completion Fellowship, 2016
- [10] Served on the Scholarship review committee for the following scholarships: Multicultural Faculty and Staff Associate Endowed Scholarship, Bidal Aguero Endowed Scholarship and Institutional Diversity Scholarship, 2015

- [9] Served as a reviewer for the TTU Undergraduate research, 2015
- [8] Investigator Financial Disclosure Committee September 2015, 16
- [7] Reviewer for the Pre-proposal for the CPRIT HIRIT grant. Reviewer for the University limited submission competition in for the state of Texas Cancer Prevention Research Institute of Texas CPRIT. This was for High-Impact/High-Risk (HIHR) research. TTU 2014
- [6] Served on the Faculty Senate, 2010-2015
- [5] Mentor for Undergraduate Research, Faculty Mentor 2010
- [4] Served as a reviewer for the Graduate School Scholarship program, 2013
- [3] Served on the Faculty Senate subcommittee for Digital Measures
- [2] June 2013: Reviewer for the 2013 Summer Faculty nomination recruitment fellowship for graduate students at TTU
- [1] Council for TTU Presidential Search Committee, Committee Member

### **Service to the System**

- [1] Served on the hiring committee for the Chief Information Officer 2024

### **Service to the Profession of Engineering**

#### *Conference organization*

- [2] General Chair for the 2023 IEEE Pulsed Power Conference
- [1] Treasurer for the 2021 IEEE Pulsed Power Conference and Symposium on Fusion Engineering

#### *Editorial Boards*

- [4] Guest Editor for IEEE Transactions on Plasma Science 2019- Present
- [3] Senior Guest Editor for IEEE Transactions on Plasma Science 2016-2018
- [2] Editor for Journal of Electrical and Electronics Engineering 2013 – Present
- [1] Guest Editor for IEEE Transactions on Plasma Science 2015 – 2016

#### *External Evaluator for Tenure and/or promotion*

- [9] University of North Texas 2024
- [8] University of Houston 2022

- [7] Universiti Tunku Abdul Rahman (UTAR), Malaysia, 2021
- [6] University of Arkansas 2020
- [5] North Carolina State University NCSU 2020
- [4] SUNY Polytechnic Institute December 2019
- [3] Oklahoma State University September 2019
- [2] University of Texas, Arlington 2015
- [1] University of Michigan – Dearborn 2014

*Journal Reviews*

- [19] Reviewer for Naval Engineers Journal, 2021
- [18] Reviewer for IEEE Transactions on Power Electronics, 2021
- [17] IEEE Transactions on Industrial Electronics, Journal Article, 2019
- [16] Elsevier, Journal of Electrical Power and Energy Systems, 2018
- [15] IEEE Transactions on Power Electronics, Reviewer, Journal Article, 2016
- [14] IEEE Transactions on Plasma Science, Reviewer, Journal Article, 2016, 2017, 2018, 2019, 2020
- [13] IEEE Transactions on Dielectrics and Electrical Insulation 2015
- [12] Reviewer for the journal Energies 2014
- [11] Review for IAS Journal, 2014
- [10] IEEE Transactions on Plasma Science, Reviewer, Journal Article, 2013, 2014, 2017
- [9] IEEE Transactions on Plasma Science, Reviewer, Journal Article, 2012
- [8] Reviewer: IEEE Electron Devices Letters, July 2012
- [7] Reviewer for Journal on Energies special issue: 25 April 2012
- [6] Reviewer for IEEE Transactions on Electron Devices, Junction Transistors. April 2012
- [5] IEEE Transactions on Plasma Science, Reviewer, Journal Article, 2011
- [4] IEEE Transactions on Dielectrics and Electrical Insulator, Reviewer, 2010
- [3] IEEE Transactions on Plasma Science, Reviewer, Journal Article, 2010.
- [2] Reviewer for the Journal on “Solid-State Electronics,” 2004

[1] Reviewer for IEEE Transactions on Plasma Science, 2004

#### *Conference Paper Reviews*

[14] INTELEC conference, 2016

[13] IEEE Power Modulator Conference, 2016

[14] Review IEEE International Power Modulator and High Voltage Conference, 2012

[13] Review, ECCE conference, 2010

[12] Reviewer for the IEEE Green Tech Conference 2009, 2016

[11] Reviewer committee for the APEC conference, 2006

[10] Reviewer committee for the PESC conference, 2006

[9] Reviewed for the IECEC Conference, 2006

[8] Session chair for SiC devices applications at the APEC Conference, 2006

[7] Reviewer committee for the Applied Power Electronics Conference (APEC), 2005

[6] Reviewer Committee for Power Electronic Specialists Conference, 2002

[5] Reviewer Committee for Applied Power Electronics Conference, 2002

[4] Reviewer Committee for Applied Power Electronics Conference, 2001

[3] Reviewer Committee for Applied Power Electronics Conference, 2000

[2] Reviewer Committee for Power Electronic Specialists, 2000

[1] Reviewer Committee for Power Electronic Specialists, 1999

#### *Grant Review Panels*

[35] Reviewer for DOE Office of Energy, Energy Storage Peer review, August 2024

[34] Army Future Command (AFC) Congressional Forum Panel 27 June 2024

[33] National Academies of Science Engineering and Medicine Board of Army Research and Development Army S&T Roundtable 11 May 2023 – 2024

[32] 2022-23 Research Competitiveness Subprogram (RCS) Engineering A Panel Review for the Louisiana Board of Regents Support Fund 2023

- [31] Served on the NSF 2022 Graduate Research Fellowships Program (GRFP) review panel 2023
- [30] Reviewer for the Swiss National Science Foundation in the area of wide bandgap power devices for power electronics applications 2022
- [29] Served on the NSF 2022 Graduate Research Fellowships Program (GRFP) review panel 2022
- [28] Reviewer for DOE Office of Energy, Energy Storage Peer review, September 2021
- [27] Reviewer for NASA LuSTR Virtual Panel 2020
- [26] Reviewer for DOE Office of Energy, Energy Storage Peer review, September 2020
- [25] Reviewer for DOE department of Basic Energy Science (BES) Energy Frontier Research Center (EFRC), May 2020
- [24] Reviewer for the Air Force Research Lab Summer Faculty Fellowship Program, FY2020
- [23] Reviewer for DOD NDSEG. Served on the Panel FY2020
- [22] Reviewer for DOE Office of Energy, Energy Storage Peer review, September 2019
- [21] Reviewer ARPA-E Electronic and Optical Devices Systems Review Panel, August 13<sup>th</sup>, 2018
- [20] Foundation for Polish Science, 2016
- [19] CRDF Global Reviewer, 2016
- [18] Served on the Air Force Summer Faculty Fellowship Program (SFFP) review Panel, 2015
- [17] Served on the NSF 2015 Graduate Research Fellowships Program (GRFP) review panel 2015
- [16] Served on DOE FY 15 Research Opportunities in Accelerator Stewardship Comparative Review Panel
- [15] Reviewer for Phase 2 DOE proposal, Solid State Thyatron Replacement, 2015
- [14] Reviewer for the office of High Energy Physics, DOE Office of Science, 2015
- [13] Served on the NSF Graduate Research Fellowship panel as a reviewer for Electrical and Computer Engineering, January 2014
- [12] DOE Review for 11 proposals. Topic” Vehicle Technologies Programs Wide Funding Opportunity, 2011
- [11] Reviewer for the Department of Energy Office of Science Phase 1 SBIR in the area of Thyatron Replacement

- [10] Served on the NSF Machines and Power Electronics Panel as a reviewer April 2014
- [9] Review proposal for DOE SBIR program. "Topic Laser Pumped Silicon Thyristor Switch," 2011
- [8] Review SBIR for DOE titled Fast 20 kV Modulator Switch, 2010
- [7] Review DOE Phase II SBIR: SiC Switches, 2010
- [6] Reviewer: DOE Hydrogen Program & Vehicle Technologies 2010 Annual Merit Review & Peer Evaluation, 2010
- [5] Served on a Panel Review for the Army High Power Laser Program 2009
- [4] Reviewer Served on the Evaluation panel for the DOD Science Mathematics and Research Transformation (SMART) Program, 2012
- [3] Army Research Office Reviewer for the 2004 Power Modulator Symposium and High Voltage Workshop, 2004
- [2] Member of the Technical Review Panel for the OSD SBIR, 2003
- [1] Member of the Technical Review Panel for the DARPA Wide, 2001

### *Conferences*

- [17] Session Chair for the IEEE Pulsed Power Conference Plenary 4 session December 2021
- [16] Treasurer for the IEEE Pulsed Power Conference and Symposium on Fusion Engineering (PPC SOFE 2021)
- [15] Session chair for the IEEE International Power Modulator and High Voltage Conference, June 2018
- [14] Awards committee chair for the Pulsed Power Conference 2015
- [13] Session chair for the Pulsed Power Conference 2015
- [12] Technical area chair for the Pulsed Power Conference 2015
- [11] Session organizer for the Pulse power conference June 2013: Topic Compact Pulsed Power
- [10] Session Chair Pulse Power Conference June 2013: Opening Switches
- [9] Organizer for the 2012 39th IEEE International Conference on Plasma Science, Generator session 8-12 July 2012
- [8] Technical Program Committee for the 2012 IEEE International Power Modulator and High Voltage Conference, San Diego, CA, June 3-7, 2012

- [7] Session organizer for 38th International Conference of Plasma Science, Organize the switches session, 2011
- [6] Session chair for 18th IEEE International Pulse Power Conference, Session Microwaves II: Microwaves and RF sources, Antennae and systems, 2011
- [5] Session Chair Packing and Modules of SiC Devices, 2011 International Conference on Silicon Carbide and Related Materials, September 11-16, Cleveland, OH
- [4] Chair for Solar, Wind, and other Alternatives session at the IEEE Green Tech Conference, April 2009
- [3] Section organizer for the Semiconductor devices session of the Pulse Power Conference, 2003
- [2] Review Committee for Power Electronic Specialists, 2001
- [1] Chairman for the Magnetic Component section of the Power, Electronic Specialists Conference, 1999

#### *Conference Organization*

- [5] General Chair for the 2023 IEEE International Pulsed Power Conference
- [4] Treasurer for the 2021 IEEE International Pulsed Power Conference and Symposium on Fusion Engineering 2022
- [3] Technical Area Coordinator for the 2019 Pulsed Power Conference
- [2] Technical area chair for the 2015 Pulsed Power Conference
- [1] General Chair for the Fourth Japan/US Symposium on Pulsed Power and Plasma Applications, Oahu, HI, 2010

#### *Outreach and Diversity*

- [13] Served as a reviewer for Caprock Home Health services Gala Latina 2022
- [12] Served as mentor for Talkington School for Young Women Leaders high school female student 2019
- [11] Served as mentor for Talkington School for Young Women Leaders high school female student 2017
- [10] Served as an ecybermission virtual judge for the Army science fair for students from 6th to 9th grade, 2015, 2016
- [9] Brought the National GEM Program to Texas Tech, 2012 – Present

- [8] Brought the Research and Engineering Apprenticeship Program (REAP) to Texas Tech, 2012 – Present
- [7] Director for the REAP program, 2012 – present
- [6] Judge for the Junior Science and Humanities Symposium, sponsored by the Air force, Navy and Army
- [5] Served on the IEEE Admission and Advancement Committee Senior member review panel, 2007
- [4] Served as a mentor in the Science and Technology Program senior project at Oxon Hill High School, 2006
- [3] Served as the closing ceremony speaker at ARL Gains in the Education of Mathematics and Science (GEMS) program, 2006
- [2] Science fair judge for the Science fair INTEC IS EF 2004-2008
- [1] Program evaluator for the ABET to evaluate and accredit Engineering and Engineering Technology Programs 2005 -2010

*Other Service*

- [21] Served on the STEM CORE STEMinar speaker series, “Energy & Innovation Research Panel,” November 2025
- [20] Served as the moderator at the Texas Semiconductor Panel October 2025
- [19] Served on the Texas Cybersecurity Outreach Program Panel, “ How Electric Utilities can Collaborate with Colleges and Universities,” September 2025
- [18] Served on the US Army War College Homeland Defense Symposium Panel, “Homeland Integration – Fusion Centers as an Element of Defense,” February 2025
- [17] Book proposal reviewer for IOP ebooks, “Designing Power Electronics Systems for Renewable Energy Systems,” November 2023
- [16] Served on the panel for the Army Research Lab Mid-Term Tech Forecasting Virtual Workshop, “Extreme Electronics: Projected Scientific Breakthroughs in 2027-2032, 2023
- [15] Served on the City of Lubbock Civic Park Advisory Committee 2021
- [14] Served on the External Advisory Board for Norfolk State University NSF-CREST Center: Center for Nano- and Bioinspired Materials and Devices and the NSF-RISE: Enhancement of Research Infrastructure for the Development of Nanoelectromechanical Systems Devices and Material 23-24 July 2015

- [13] Served on the Research Alliances: Industry and University Working together on a panel. Give an invited talk, 2014
- [12] Chair for the IEEE Region 5 Audit Committee, 2014
- [11] Participate in the TI University Program Curriculum Open Forum Dallas, Texas, 4th March 2014
- [10] Served on the Panel, “Technologies for Wind Integration in ERCOT” 6th Annual IEEE Green Technologies Conference, Corpus Christi, TX, April 3-4, 2014
- [9] Served as a judge for the National GEM Consortium 2013 Technical Presentation Competition
- [8] Served on the University of Missouri Columbia Electric Magnetic Launch Advisory board 2011-2013
- [7] Presentation to IAB on Renewable/Sustainable Energy
- [6] IEEE NPSS Pulsed Power Science and Technology Committee (2010 - 2015).
- [5] Served on the IEEE Region 5 Audit Committee 2011 - 2014
- [4] Served on the Heartland Alliance for Regional Transmission committee, 2013
- [3] Served as Chair of the IEEE South plains section 2012-2013 and 2015
- [2] Serve as Vice Chair of the IEEE South plains section 2011-2012
- [1] Founding president of the Baltimore Section IEEE Power Electronics Society, 2002

## **PRESENTATIONS**

- [27] TTU SWE, SHPE, and NSBE Corporate Mixer, Keynote speaker, September 2023
- [26] Semiconductor research at TTU, Texas Governor’s Semiconductor Centers Tasks Force, July 2023
- [25] Workforce Development, How to hire, How do you train new people, Generational differences, Importance of Strategic partnerships and internships, XFab Global ProMPT 6 June 2023, Lubbock, TX
- [24] Internet of Networked Microgrids Solutions for Scalable Agile Microgrids, 2022 SERDP.ESTCP.OE-INNOVATION Enhancing DOD Mission Capabilities, December 2022, Arlington, VA
- [23] Overview of TTU Research, National Security Innovation Council (NSIC) 27 July 2021

- [22] Avalanche and Narrow Pulsed Evaluation of SiC Power Devices, 2018 Southeast Symposium on Contemporary Engineering Topics and First Annual UAH Engineering Forum, Huntsville, Alabama, August 3, 2018
- [21] Continuous Switching Reliability of Ultra-High Voltage SiC MOSFETs and IGBTs,” Texas Tech University IEEE student branch, Lubbock, TX, June 2018
- [20] Overview of SiC Research at TTU, 20<sup>th</sup> Annual Directed Energy Science and Technology Symposium, 26 February – 2 March 2018, Oxnard, California
- [19] Reliability Analysis of Wide Bandgap Power Devices, Power America Wide Bandgap Summer Workshop August 2017
- [18] Presentation on Renewable Energy Sources, for Panel for the Mandel Washington Fellows, July 2017
- [17] Overview of Opal-RT simulation capability, Red teaming the microgrid SMART center workshop, Lubbock, TX, July 2017
- [16] Narrow pulse evaluation of 15 kV SiC MOSFETs and IGBTs, 2017 IEEE Pulsed Power Conference, June 2017, Brighton, UK
- [15] Silvaco-based electro-thermal simulation of 10 kV 4H-SiC P-i-N diode under pulses condition, 2017 IEEE Pulsed Power Conference, June 2017, Brighton, UK
- [14] Presentation to Estacado High School, Opportunity with the REAP program at TTU 2015
- [13] 2014 Presentation, ”Grid integration of Renewable Energy Sources,” Energy Resource Management Consortium Conference, Stephen Bayne, 27 October 2014
- [12] 2014 Presentation, “Grid integration of Renewable Energy Sources,” Energy Resource Management Consortium Conference, Stephen Bayne, 27 October 2014
- [11] Presentation to Estacado High School Junior SHPE, 27 February 2013, “Transition from High School to College and the GEM Program”
- [10] Bayne, S., ARL, Adelphi MD, “Reliability analysis of SiC Devices,” January 2013
- [9] Presentation, “Multiple Cell AC/DC Smart Battery Design,” 13-17 October 2013, Hamburg, Germany
- [8] Presentation, “Pulsed Evaluation of SiC Power Devices,” Air Force –TTU Directed Energy Collaborative Workshop, 24 June 2013 Albuquerque, New Mexico
- [7] Presentation, “Pulsed Evaluation of SiC Power Devices,” University of Nebraska-Lincoln, April 8<sup>th</sup>, 2013

- [6] Presentation, “Pulsed Evaluation of SiC Power Device,” Computer Science Department, Texas Tech University, 23 April 2013
- [5] Presentation to Sandia Lab personnel, Micro-Grid Research, 3 July 2012
- [4] Presentation: “Wind Energy and Micro Grid Research,” Wind Farm Underperformance and Partnership NWRC, Texas Tech University, March 28-30, 2012
- [3] Presentation, “GEM Program” to the National Society of Hispanics Engineers at Texas Tech University, 2012
- [2] Presentation, “Advanced Energy Research” WCOE Houston Alumni Meeting 18 November 2011
- [1] Presentation, “Modeling and Control of a Battery Management System (BMS) in a Microgrid,” 33rd International Telecommunications Energy Conference, 9–13 October 2011, Amsterdam, The Netherlands