

## **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, Grid Integration, Renewable Energy (Wind and Solar)

## **Academic Leadership**

**Associate Chair for Graduate Studies**, TTU, Department of Electrical Engineering (February 2015 - Present)

**Director of Grid Integration National Wind Institute (NWI)**  
(March 2019 – Present)

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

## **Academic Appointments**

**Professor**, Electrical and Computer Engineering at TTU (September 2015 – Present)

**Professorship**, President's Excellence in Research Professorship (September 2018 – Present)

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

**Adjunct Assistance Professor**, Morgan State University, (Sep 02 – Jan 09)

**Adjunct Assistance Professor**, Howard University, (Sep 02 – Dec 02)

**Research Associate**, TTU, (Dec 97 – Mar 98)

**Research Assistant**, TTU, (Jan 93 – Dec 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)**, (Feb 86 - Feb 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

### **University Program Accreditation Certification**

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

### **Academic Leadership, Associate Chair for Graduate Studies**

- [9] Lead the graduate committee
- [8] Developed graduate students handbook
- [7] Responsible for recruitment of graduate students
- [6] Managed the admission process for selecting graduate students
- [5] Authored the review report of Electrical Engineering’s graduate program review (2017)
- [4] Managed the graduate scholarship budget
- [3] Conducted the grad student orientation seminar each semester
- [2] Developed an annual survey to collect data for the graduate program
- [1] 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

- [16] Served as Branch Chief for the Directed Energy Branch
- [15] Created long-range research strategies for the Branch
- [14] Developed research goals and set guidelines for research activities
- [13] Performed work-flow and cost-benefit analysis
- [12] Conducted complex studies in High Power Microwave Design for Army applications
- [11] Reviewed and recommended changes in program objectives, operations and use of resources
- [10] Managed and coordinated the High Power Microwave, HEMP and Alternative energy teams
- [9] Established policies and procedures for Branch Personnel
- [8] Guided the pulse power team on switching and evaluation of Si and SiC switches for pulse power applications
- [7] Obtained funding for research from various entities
- [6] Performed employees' annual review evaluations
- [5] Represented the Branch at various official functions
- [4] Managed the Branch budget and approved all purchases within the branch
- [3] Conducted reviews of the team's performance
- [2] Recruited, interviewed and hired new personnel within the branch
- [1] 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

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

## **Federal Research**

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

*Army Research Lab*

Adelphi, MD 20783-1197

- [10] Established and built-up a Power Electronics Lab at the Army Research Lab
- [9] Evaluated SiC Power devices for high power and high temperature power electronics applications
- [8] Characterized Wide Band Gap devices for Power Electronic applications
- [7] Designed Gate drive circuits to drive SiC Power Devices
- [6] Designed systems for high temperature testing of Wide Band Gap devices
- [5] Simulated Power Electronic systems using Pspice and Saber
- [4] Designed, build and tested a three phase all SiC inverter circuit to drive a 3 hp motor
- [3] Recruited and interviewed engineers for the SiC power electronic lab
- [2] Technical Supervisor for junior engineers
- [1] Recruited and Supervised and assigned projects to intern students

**Electronic Engineer, March 1998 – July 2000**

*Naval Research Lab*

Washington, DC 20375

- [9] Designed Power Electronic system for space power
- [8] Evaluated designs of Power electronic space power system
- [7] Wrote test procedures for space application power systems
- [6] Presented Critical design review for Spacecraft power system
- [5] Designed circuit board layout for space application power systems
- [4] Tested space power systems
- [3] Electrical Lead design Engineer on projects
- [2] Supervised and coordinated work of contractors
- [1] Worked in a team to integrate power systems into spacecraft

## **Membership in Professional Societies**

- [5] Senior member of IEEE
- [4] IEEE Industrial Applications Society
- [3] IEEE Nuclear and Plasma Science Society
- [2] IEEE Power Electronics Society
- [1] Passed Chair of Baltimore IEEE Power Electronics Chapter (Started the chapter)

## **Honors and Awards**

- [16] Recognized Faculty Member, the Honors Convocation, College of Engineering 2018
- [15] IEEE NPSS Distinguished Lecturer (2017- Present)
- [14] Recognized Faculty Member, the Honors Convocation, College of Engineering 2016

- [13] Edward E. Whitacre Jr. College of Engineering SafeRaider Award, 2016
- [12] Recognized Faculty Member, the Honors Convocation, College of Engineering 2014
- [11] IEEE Texas Tech University Student Branch Teacher of the Year 2013-2014
- [10] TTU Teaching Academy, Inducted May 2013
- [9] Recognized Faculty Member, the Honors Convocation, College of Engineering 2013
- [8] TTU Student Organization Outstanding Organization Advisor Award (National Society of Black Engineers), 2012
- [7] TTU Lockheed Martin Excellence in Engineering Teaching award, 2012
- [6] Army Greatest Invention Award, 2007
- [5] Army Research and Development Award, 2006
- [4] Army Research Lab Achievement Award for Human Resources Development, 2002
- [3] Army Research Lab Achievement Award for Engineering, 2002
- [2] Army Research and Development Award, 2002
- [1] 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, February 2018

### **PUBLICATIONS**

#### **Book**

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

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

- [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, April 2019
- [59] S. Ramabhotla\*, S. Bayne, "Cost and Availability Optimization of Wind Energy and Distributed Energy Resources of a Microgrid," Wind Engineering, 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, Pages 306-320, 1 September 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 m $\Omega$  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 V2O3/VOx 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 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.
- Started at TTU*[12] K. Lawson\* and S. Bayne\*, "Transient Performance of SiC MOSFETs 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 Thyrisors," *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 Darlington 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 \*)

- [121] S. Noureen\*, S. Bayne, E. Shaffer, D. Porschet, M. Berman, “ Anomaly Detection in Cyber-Physical System Using Logistic Regression Analysis,” IEEE Texas Power and Energy Conference (TPEC), College Station, TX, 7-8 Feb 2019
- [120] 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
- [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 May2018, 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 Programing, 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\*, 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
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### **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**

- [15] S. Bayne, "SiC Power Semiconductor Device Reliability and Accelerated Testing," 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

#### **Book Chapter**

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

#### **GRANTS**

**Table 1: Funding Received**

| <b>Date</b> | <b>Agency</b>                                 | <b>Title of Proposal</b>                                                                                           | <b>Total</b> | <b>Credited</b> |
|-------------|-----------------------------------------------|--------------------------------------------------------------------------------------------------------------------|--------------|-----------------|
| 06/2019     | General Technical Services/<br>Army<br>CERDEC | Power Electronics Converter Design for Army Applications                                                           | \$140,220    | \$140,220       |
| 03/2019     | DOE/NCSU/<br>Power America                    | Proposal to Establish an Independent Testing Facility to Perform Reliability Analysis of WBG Semiconductor Devices | \$133,706    | \$106,965       |
| 07/2019     | ARL                                           | Design and Testing of High Energy Systems with a                                                                   | \$150,000    | \$150,000       |



| <b>Date</b> | <b>Agency</b>                                       | <b>Title of Proposal</b>                                                                                                                                               | <b>Total</b> | <b>Credited</b> |
|-------------|-----------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|-----------------|
|             |                                                     | Focus on Wide Bandgap Power Devices                                                                                                                                    |              |                 |
| 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        |
|             |                                                     |                                                                                                                                                                        |              |                 |
| 865/2018    | Pantex/<br>Consolidated<br>Nuclear<br>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<br>Technical<br>Services,<br>LLC            | Analysis of Generator System Performance under High Nonlinear Load                                                                                                     | \$350,082    | \$350,082       |

| <b>Date</b> | <b>Agency</b>                       | <b>Title of Proposal</b>                                                                                                    | <b>Total</b> | <b>Credited</b> |
|-------------|-------------------------------------|-----------------------------------------------------------------------------------------------------------------------------|--------------|-----------------|
| 8/2018      | Teradyne Inc                        | Development of a high voltage and high current tester                                                                       | \$62,134     | \$31,067        |
| 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                                                                                 | \$150,000    | \$75,479        |

| <b>Date</b>      | <b>Agency</b>                 | <b>Title of Proposal</b>                                                      | <b>Total</b> | <b>Credited</b> |
|------------------|-------------------------------|-------------------------------------------------------------------------------|--------------|-----------------|
|                  |                               | Dynamic Response Through Integrated Storage                                   |              |                 |
| *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     |

| <b>Date</b>      | <b>Agency</b>                           | <b>Title of Proposal</b>                                                                    | <b>Total</b> | <b>Credited</b> |
|------------------|-----------------------------------------|---------------------------------------------------------------------------------------------|--------------|-----------------|
| 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    |
| *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     |

| <b>Date</b>        | <b>Agency</b> | <b>Title of Proposal</b>                                                                                           | <b>Total</b>        | <b>Credited</b>    |
|--------------------|---------------|--------------------------------------------------------------------------------------------------------------------|---------------------|--------------------|
| *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 with Distributed Renewable Energy Sources | \$415,000.00        | \$41,500.00        |
| 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>\$29,607,182</b> | <b>\$9,936,006</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 Supervised*

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

### *Doctoral Students Graduated*

- [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*

- [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] PhD 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*

- [25] Yaswanth Challapuram, “ Modeling and Interration of Vanadim Redox Flow Battery with the Grid,” May 2019
- [24] Gina Quintero, “Analysis of Protection Coordination in Substations of SPEC’s Distribution System and Renewable Energy Sources Integration Impact,” May 2019
- [23] Travis Huffmaster, “Development of a Low Cost Phasor Measurement Unit,” May 2018
- [22] Emily Hirsh, “Evaluation of the Long Term Reliability and Failure Modes for Silicon Carbide High Power Semiconductor Devices,” May 2017
- [21] Brett Peikert, “Design and Modeling Advanced Control of Microgrids,” August 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*

- [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 port s- 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 Feed forward 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*

- [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 Department of Electrical Engineering**

- [12] Served on the search committee for professor in the area of Pulsed Power and Power Electronics, 2018
- [11] Served on the committee for the third year review for an Assistance Professor, 2016
- [10] Served as the Chair of the Search committee for the Research Assistance 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 Invited 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**

- [9] Peer observer for 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**

[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 as a reviewer for the Doctoral 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 Profession of Engineering**

#### *Editorial Boards*

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

*External Evaluator for Tenure*

- [1] University of Texas, Arlington 2015
- [2] University of Michigan – Dearborn 2014

*Journal Reviews*

- [16] Elsevier, Journal of Electrical Power and Energy Systems
- [15] IEEE Transactions on Power Electronics, Reviewer, Journal Article, 2016
- [14] IEEE Transactions on Plasma Science, Reviewer, Journal Article, 2016, 2017, 2018
- [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, 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] Review committee for the APEC conference, 2006
- [10] Review 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] Review committee for the Applied Power Electronic Conference (APEC), 2005
- [6] Review Committee for Power Electronic Specialists Conference, 2002
- [5] Review Committee for Applied Power Electronic Conference, 2002
- [4] Review Committee for Applied Power Electronic Conference, 2001
- [3] Review Committee for Applied Power Electronic Conference, 2000
- [2] Review Committee for Power Electronic Specialists, 2000
- [1] Review Committee for Power Electronic Specialists, 1999

#### *Grant Review Panels*

- [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*

- [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*

- [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*

- [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*

- [13] 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 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**

- [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, WCoE Houston Alumni Meeting 18 November 2011, “Advanced Energy Research”
- [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