PROFESSIONAL PROFILE

HOMER ALAN MANTOOTH
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EDUCATION

Ph.D. Sept. 1990. Georgia Institute of Technology, Atlanta, Georgia. Developed novel higher level modeling procedure for analog integrated circuits amenable to automation in software. Gained broad knowledge of the design and analysis of analog integrated circuits. Ph.D. minor in mathematics. Thesis title: *A Higher Level Modeling Approach for Analog Integrated Circuits*

M.S.E.E. Dec. 1986. University of Arkansas, Fayetteville, Arkansas. Performed intensive research on switched-capacitor filters involving design, fabrication, testing, and evaluation. Thesis title: *Practical Considerations for Switched-Capacitor Filter Design and Fabrication*

B.S.E.E. May 1985. University of Arkansas, Fayetteville, Arkansas. Extensive engineering curriculum with special experience and emphasis in integrated circuit fabrication and computer simulation. GPA = 4.00 (A = 4.00) *1st Ranked Senior Scholar*

EXPERIENCE

2015-*Present – Deputy Director, NSF Engineering Research Center on Power Optimization of Electro-Thermal Systems (POETS)*. A four-university center focusing on high power density electronics for mobile applications ranging from kWs to MWs. Participants include Illinois (lead), Stanford and Howard.

2015-*Present – Executive Director, Cybersecurity Center for Secure, Evolvable Energy Delivery Systems (SEEDS)*. A five-university + one company center focusing on cybersecurity for the electric power grid. Participants include CMU, Lehigh, Florida International, UALR and AECC. Funded by U.S. Department of Energy and U.S. Department of Homeland Security.

2015-*Present – 21st Century Research Leadership Chair*. Given in recognition for the substantial research being performed in analog & mixed-signal IC design, modeling, power electronics, and electronic design automation tool research.

2014-*Present – Arkansas Research Alliance Fellow*, University of Arkansas. Named the inaugural professor from the UA to this position aimed at developing research programs with a focus on economic development.

2014-*Present – Director*, 3E Institute on Energy, Economy and Environment, University of Arkansas. A university-wide, cross-disciplinary research institute focusing on the nexus between energy, the environment and economy in Arkansas. Involves all seven colleges on the UA campus.

2011-*Present – Distinguished Professor*, University of Arkansas, Fayetteville, Arkansas.

2011-*Present – Co-Founder & Board Member*, Ozark Integrated Circuits, Fayetteville, AR. This company is a fabless integrated circuit design company being led by a former student of mine based upon research being performed by the mixed-signal group at the UA. The focus is on integrated circuits for extreme environments and integrated power electronic modules for high efficiency, high reliability applications.

2009-*Present – Executive Director*, National Science Foundation Industry/University Cooperative Research Center on GRid-connected Advanced Power Electronic Systems (GRAPES). A three-site center (UA, U. Wisconsin-Milwaukee and U. South Carolina) focused on modernization of the electric power grid through power electronic systems. Part of the NCREPT research umbrella at the UA.

2005-*Present – Executive Director*, National Center for Reliable Electric Power Transmission (NCREPT). A vertically-integrated center focused on grid-connected power electronics, power electronics for transportation (electric aircraft, automobiles, trains, and ships) and down-hole applications (geothermal, energy exploration). This is the umbrella center for many activities ranging from materials and packaging, modeling and simulation, controls, IC design, power electronics design, power systems, and prototype development and evaluation.

2013-2015 – *Director*, National Science Foundation GREEN Research Center for Nanoplasmonic Solar Cells. An NSF EPSCoR center under the NCREPT umbrella of research involving 10 faculty from the UA and UA-Little Rock with outreach programs at UA-Ft. Smith, Philander Smith, and UA-Pine Bluff focused on solar cell materials research.

2010-2015 – *Director*, National Science Foundation Vertically-Integrated Center on Transformative Energy Research (VICTER). An NSF EPSCoR center under the NCREPT umbrella of research involving 20 faculty from the UA, Arkansas State University, UA-Little Rock, and UA-Pine Bluff focused on solar electric power systems including PV materials, devices, packaging, panel technology, and solar inverters.

2006-2015 – *21st Century Endowed Chair in Mixed-Signal IC Design and Computer-Aided Design*. Given in recognition for the substantial research

being performed in analog & mixed-signal IC design, modeling and CAD tool research.

2004-2013 – *Member*, *Board of Directors*, Arkansas Power Electronics International, Inc., Fayetteville, AR. A company incubated from UA technology and many of my former students. Sold to Cree in 2015.

2003-2012 – *Co-Founder and Chief Scientist*, Lynguent, Inc., Portland, Oregon. This company was started from UA modeling tool technology transferred to Lynguent under a licensed copyright agreement.

2002-2011 – *Professor*, University of Arkansas, Fayetteville, Arkansas.

1998-2002 – *Associate Professor*, University of Arkansas, Fayetteville, Arkansas. Taught circuits and electronics courses in undergraduate curriculum. Developed courses in analog CAD offered at both the upper-level undergraduate and graduate levels. Developed research program in mixed-signal and mixed technology circuits and systems design and test. This included model development and modeling tools.

1998 – *Principal Engineer*, Analogy, Beaverton, Oregon. Responsible for evaluating and advising executive management on projects and technology relating to all aspects of Analogy's business including model development, software applications, strategic direction, technical vision and critical market success factors. Led new product that resulted from NIST-funded research program.

1995-1998 – *Principal Investigator, Simulation Productivity R & D,* Analogy, Beaverton, Oregon. Technical leadership role of a modeling and simulation tools research program funded by an award from the Advanced Technology Program of NIST ($2 million over 3 years). Responsibilities include software architecture design, software module design, software implementation, documentation, coordination and direction of a group of 10 technical people, and decision-making authority on all technical matters.

1994–1996 – *Affiliate Assistant Professor*, University of Washington, Electrical and Computer Engineering Department, Seattle, WA. This position is analogous to the adjunct position in the Electrical Engineering Department at the UA. Duties included advising students in research projects relating to power semiconductor device modeling and serving as an industrial mentor and external advisor. Two students were advised throughout their Ph.D. programs (Irwan Budihardjo and Cliff Ma).

1994-1995 – *Corporate Staff Engineer*, Analogy, Beaverton, Oregon. Technical leadership position considered to be company-wide technical resource as opposed to group level. Roles and responsibilities involve design, implementation and support of modeling and simulation software at an architectural level.

1993-1994 – *Project Leader of Model Development*, Analogy, Beaverton, Oregon. In addition to continued development and support of semiconductor device models offered with the Saber simulator, responsibilities included technical leadership role for all model development within Analogy worldwide (USA, United Kingdom) including models for motors, mechanical, hydraulics, magnetics, mixed signal chips, etc.

1990-1993 – *Senior Modeling Engineer*, Analogy, Beaverton, Oregon. Developed generalized physics-based models for semiconductor devices including MOSFET, power MOSFET, power diode, and IGBT. Also, developed behavioral models for classes of analog circuits including voltage comparator. Substantial economic impact, assessed by US Dept. of Commerce, on the design community worldwide

1989 – *Component Modeling Engineer*, Analogy, Beaverton, Oregon. Worked on the development of generic behavioral models for operational amplifiers and voltage comparators. Full-time summer employment.

1985 – *Member of Technical Staff*, Texas Instruments, Dallas, Texas. Developed SPICE macromodel for a CMOS op amp for utilization in switched- capacitor filter simulation. Extensive study of switched-capacitor filters. Full-time summer employment.

1984 – *Summer Development Student*, Texas Instruments, Dallas, Texas. Performed integrated circuit process modeling on early SRAM technologies using SUPREM II, SUPRA, and GEMINI. Performed measurements and processed wafers in the Dallas MOS I front end. Full-time summer employment.

Summary of Economic Impact of Technical Contributions and Leadership Roles

Impact Activity (as of 1/1/21)		**Ongoing Annual Impact ($)**	**Total Impact to Date ($)**
Technical Activities	Commercial Models (Synopsys)	160,000,000	1,614,000,000
	Open Source Models (UA)	2,000,000	24,000,000
	Commercial Modeling Tools (Synopsys & Lynguent)	-	3,628,000,000
	Research Programs (incl. NCREPT, GRAPES, POETS, SEEDS, MSCAD Lab)	10,000,000	150,484,349
Entrepreneurial Activities	Arkansas Power Electronics International, Inc.	-	186,000,000
	Ozark Integrated Circuits	0	15,400,000
	Lynguent, Inc.	-	18,800,000

Outreach Activities	SolarSplash (2006-2010)	-	300,000
	Fayetteville Public Library (2009)	2693	126,930
	Enterprise Center (2010)	2693	124,237
Totals		172,005,386	5,637,235,516

FIELDS OF SPECIALIZATION

Design and design automation of analog, mixed-signal, and power electronic circuits and systems. This involves:

- semiconductor device design and modeling (e.g., power and low-voltage semiconductor device modeling),
- analog and mixed-signal IC design,
- power electronics,
- analog and mixed-signal CAD tool development,
- power electronics packaging, and
- cybersecurity for power electronics.

TEACHING INTERESTS

Microelectronics, circuit design, CAD methods for analog and mixed-signal integrated circuits, model-based engineering methods, and semiconductor devices and modeling.

Summary of Undergraduate and Graduate Students Advised as of 1/1/21

Category	Number
Undergraduate Honor's Theses as Major Advisor	17
Undergraduate Research Experiences as Primary Advisor	106
Master's Degrees Awarded as Major Advisor (Thesis option)	82
Master's Degrees Awarded as Major Advisor (Non-Thesis option)	9
Doctoral Degrees Awarded as Major Advisor	25
Post-doctoral Advisees	8
Total	**247**

HONORS & AWARDS

International

Fellow of IEEE (citation: "*for contributions to power electronic device modeling*") – 2009
R&D 100 Award for World's First Silicon Carbide Power Module Operational to 250 °C (rating = 1200 V, 150+ A) – 2009
R&D 100 Award for Silicon Carbide Electric Vehicle Battery Charger – 2014
R&D 100 Award for High Power Density Electric Vehicle Motor Drive – 2016
IEEE Circuits and Systems Society Distinguished Lecturer – 2003-04
IEEE Power Electronics Society President-Elect – 2016
IEEE Power Electronics Society President – 2017-18
IEEE Power Electronics Society Modeling and Control Technical Achievement Award – 2019.
IEEE Power Electronics Society Immediate Past-President – 2019-20
IEEE Power Electronics Society Sr. Past-President – 2021-22
1st Prize Best Paper Award in IEEE Transactions on Power Electronics – 2019

State/Regional

2001 Fred M. Carter Award (highest score on the PE exam in Arkansas)
2015- Present Arkansas Research Alliance Fellow
Tech Titan of 2021 – *Arkansas Money & Politics Magazine*

University/Industrial

Distinguished Member of Technical Staff, Analogy, Inc., – 1996
Georgia Tech Council of Outstanding Engineering Alumni – Inducted 2002
Arkansas Academy of Electrical Engineering – Inducted 2006
UA Outstanding Mentor – 2006, 2007, 2008
UA Gold Medal Mentor Award – 2007
UA John A. White Award for Outstanding Faculty-Student Collaborations – 2008-09
Arkansas Alumni Association Distinguished Research Award (University-wide Outstanding Researcher) – 2010-11
SEC Faculty Achievement Award from the University of Arkansas – 2014-15

College

UA Academic Advising Council College of Engineering Outstanding Undergraduate Advisor – 2007
John L. Imhoff Award for Outstanding Researcher in the College of Engineering – 2010-11, 2015-16
Dean's Awards of Excellence - Most Engaging Research Faculty Award – 2014-15
Dean's Awards of Excellence - Senior Faculty Award – 2015-16
College of Engineering Outstanding Public Service Award – 2018-19

Departmental

Eta Kappa Nu Electrical Engineering Faculty of the Year – 1999-00, 2003-04
Arkansas Academy of Electrical Engineering Outstanding Faculty Award – 2000, 2001, 2003, 2005
William D. and Margaret A. Brown Faculty Excellence Award – 2008-09, 2018-19
Outstanding Teacher Award in Electrical Engineering – 2000-01, 2006-07, 2012-13
Outstanding Service to Students Award in Electrical Engineering – 2004-05, 2018-19
Outstanding Researcher Award in Electrical Engineering – 2001-02, 2002-03, 2003-04, 2009-10, 2011-12, 2013-14, 2017-18

PUBLICATIONS & FUNDING SUMMARY

Summary of Scholarly Activity (as of 3/1/21)

Publication Category Summary	Number
Books	3
Book Chapters	4
Professional Journals	131
Patents (6 issued)	6
Refereed National or International Conference Proceedings	312
Other Proceedings	29
Professional Tutorials at International Conferences	12
Invited Talks	85
Press Releases & Quotes in Press	20
Total Publications & Media	**602**

Summary of Research and Educational Grants, Contracts and Donations

Funding Source	Summary of Funds as of January 2021
National Science Foundation	$ 61,076,875
U. S. Department of Energy	$ 30,711,248
University of Arkansas (Equipment, Test Facility, 3E Institute, Endowed Chair, Walton Graduate Fellowships)	$ 14,211,898
Industry	$ 13,846,143
Army Research Laboratory	$ 8,131,952
National Institute of Standards and Technology	$ 4,524,885
ARPA-E	$ 4,327,068
Equipment Donations	$ 3,600,000
Software Donations	$ 3,346,000
DARPA	$ 2,001,047
NASA	$ 1,892,312
Office of Naval Research	$ 912,240
Department of Defense	$ 743,528
Semiconductor Research Corporation	$ 491,250
Arkansas Economic Development Commission	$ 236,329
Arkansas Research Alliance Fellow	$ 225,000
Department of Education	$ 164,957
Arkansas Science & Technology Authority	$ 41,617
TOTALS	**$ 150,484,349**

PUBLICATION LIST

Books

[1] P. R. Wilson, H. A. Mantooth, *Model Based Engineering of Complex Electronic Systems*, Elsevier Publishers, London, England, 511 pgs., March 2013.

[2] J. D. Cressler, H. A. Mantooth, *Extreme Environment Electronics*, CRC Press, Boca Raton, FL, 1009 pgs., November 2012.

[3] H. A. Mantooth and M. Fiegenbaum, *Modeling with an Analog Hardware Description Language*, Kluwer Academic Publishers, Norwell, MA, 1995.

Book Chapters

[1] J. Roychowdhury and H. A. Mantooth, "EDA for IC Implementation, Circuit Design, and Process Technology - Analog Simulation: Circuit Level (Including Radio Frequency Methods and Noise) and Behavioral Level," in *Electronic Design Automation for Integrated Circuits Handbook*, vol. II, ch. 14, CRC Press, 2006.

[2] H. A. Mantooth and E. Christen, "Modeling and simulation of electrical and thermal interaction," in *Modeling in Analog Design*, volume 2 in the series on *Current Issues in Electronic Modeling,* Ch. 4, Kluwer Academic Publishers, 1995.

[3] J. R. Carlson, H. A. Mantooth, "Simulation of a floppy disk drive head position controller," Analog Circuit Design," in *Mixed A/D Circuit Design, Sensor Interface Circuits, and Communication Circuits*, Kluwer Academic Publishers, Dordrecht, The Netherlands, pp. 53-68, 1994.

[4] S. S. Ang, H. A. Mantooth, "Reliability of Power Electronics Packaging," in *Reliability of Power Electronic Converter Systems*, Institution of Engineering and Technology, London, England, 20 pgs., 2015.

Refereed Journal Publications

[1] R. Alizadeh, H. A. Mantooth, "A Review of Architectural Design and System Compatibility of Power Modules and Their Impacts on Power Electronics Systems," *IEEE Trans. on Power Electronics*, *accepted*, March 2021, DOI: 10.1109/TPEL.2021.3068760.

[2] A. U. Rashid, M. M. Hossain, A. I. Emon, H. A. Mantooth, "Datasheet-driven Compact Model of Silicon Carbide Power MOSFET Including Third Quadrant Behavior," *IEEE Trans. on Power Electronics*, *accepted*, Feb. 2021, DOI: 10.1109/TPEL.2021.3062737.

[3] S. Roy, K. Faruque A. Abbasi, H. A. Mantooth, "High-Temperature LTCC Assembly and Design of SiC BJT-Based Negative Charge Pump," *International Journal of Electronics Letters*, 14 pgs., *accepted*, Jan. 2021.

[4] S. Roy, A. Abbasi, K. Faruque, R. Murphree, A. U. Rashid, M. M. Hossain, A. May, T. Erlbacher, J. Fraley, H. A. Mantooth, "A Silicon Carbide BCD Process for 500°C Operation," *IEEE Transactions on Electron Devices*, 9 pgs., *in submission*, Jan. 2021.

[5] B. W. Nelson, A. N. Lemmon, S. J. Jimenez, H. A. Mantooth, B. T. DeBoi, C. D. New, M. M. Hossain, "Computational Efficiency Analysis of SiC MOSFET Models in SPICE: Dynamic Behavior," *IEEE Open Journal of Power Electronics,* vol. 2, pp. 106-123, Feb. 2021, DOI: 10.1109/OJPEL.2021.3056075.

[6] R. M. Kotecha, M. M. Hossain, A. U. Rashid, Y. Zhang, H. A. Mantooth, "Compact Modeling of High-Voltage Gallium Nitride Power Semiconductor Devices for Advanced Power Electronics Design," *IEEE Open J. of Power Electronics*, vol. 2, pp. 75-87, Jan. 2021, DOI: 10.1109/OJPEL.2021.3055531.

[7] Y. Wei, Q. Luo and A. Mantooth, "Simple and Effective Adaptive Deadtime Strategies for LLC Resonant Converter: Analysis, Design, and Implementation," *IEEE Journal of Emerging and Selected Topics in Power Electronics*, *early access*, Jan. 2021, DOI: 10.1109/JESTPE.2021.3058234.

[8] Y. Wei, Q. Luo and A. Mantooth, "Hybrid Control Strategy for LLC Converter with Reduced Switching Frequency Range and Circulating Current for Hold-up Time Operation", *IEEE Transactions on Power Electronics*, *accepted*, 7 pgs, Jan. 2021, DOI: 10.1109/TPEL.2021.3054850

[9] S. K. Mazumder, A. Kulkarni, S. Sahoo, F. Blaabjerg, A. Mantooth, J. Balda, Y. Zhao, J. Ramos-Ruiz, P. Enjeti, P. R. Kumar, L. Xie, J. Enslin, B. Ozpineci, A. Annaswamy, H. Ginn, F. Qiu, J. Liu, B. Smida, C. Ogilvie, J. Ospina, C. Konstantinou, M. Stanovich, K. Schoder, M. Steurer*,* T. Vu, L. He, and E. Pilo de la Fuente, "A review of current research trends, in power-electronic innovations in cyber-physical systems," *IEEE J. Emerging & Selected Topics in Power Electronics*, *accepted*, Jan. 2021, DOI: 10.1109/JESTPE.2021.3051876.

[10] Y. Wei, Q. Luo, H. A. Mantooth, "An LLC and LCL-T Resonant Tanks Based Topology for Battery Charger Application," *CPSS Trans. on Power Electronics & Applications*, *accepted*, pp. 1-13, Jan. 2021.

[11] D. Mou, Q. Luo, J. Li, Y. Wei, Z. Wang, and H. A. Mantooth, "Hybrid Duty Modulation for Dual Active Bridge Converter to Minimize RMS Current and Extend Soft-Switching Range Using Frequency Domain Analysis," *IEEE Transactions on Power Electronics*, vol. 36, no. 4, pp. 4738-4751, Apr. 2021.

[12] Y. Wei, Q. Luo, Z. Wang, A. Mantooth, "A Complete Step by Step Optimal Design for LLC Resonant Converter," *IEEE Transactions on Power Electronics*, vol. 36, no. 4, pp. 3674-3691, Apr. 2021.

[13] F. Li, Q. Li, J. Zhang, J. Kou, J. Ye, W. Song, H. A. Mantooth, "Detection and Diagnosis of Data Integrity Attacks in Solar Farms Based on Multi-layer Long Short-Term Memory Network," *IEEE Transactions on Power Electronics*, vol. 36, no. 3, pp. 2495-2498, Mar. 2021.

[14] Z. Wang, Y. Wu, M. H. Mahmud, Z. Yuan, Y. Zhao, H. A. Mantooth, "Busbar design and optimization for voltage overshoot mitigation of a silicon carbide high-power three-phase T-type inverter," *IEEE Trans. On Power Electronics,* vol. 36, no. 1, pp. 204-214*,* Jan. 2021, DOI: 10.1109/TPEL.2020.2998465.

[15] I. A. Razi, Q. Le, T. M. Evans, S. Mukherjee, H. A. Mantooth, Y. R. Peng, "PowerSynth Design Automation Flow for Hierarchical and Heterogeneous 2.5D Multi-Chip Power Modules," *IEEE Transactions on Power Electronics, accepted*, Dec. 2020, DOI: 10.1109/TPEL.2021.3049776.
[16] Y. Wei, Q. Luo, H. A. Mantooth, "A Novel LLC Converter with Topology Morphing Control for Wide Input Voltage Range Application," *IEEE J. Emerging & Selected Topics in Power Electronics*, *accepted*, Dec. 2020, DOI: 10.1109/JESTPE.2020.3044207.
[17] Y. Wei, Q. Luo, H. A. Mantooth, "Synchronous Rectification for LLC Resonant Converter: An Overview," *IEEE Trans. on Power Electronics*, vol. 36, no. 6, pp. 7264-7280, Jun. 2021, DOI: 10.1109/TPEL.2020.3040603.
[18] B. W. Nelson, A. N. Lemmon, B. T. DeBoi, M. M. Hossain, H. A. Mantooth, C. D. New, J. C. Helton, "Computational Efficiency Analysis of SiC MOSFET Models in SPICE: Static Behavior," *IEEE Open Journal of Power Electronics,* vol. 1, pp. 499-512, Dec. 2020.
[19] Y. Wei, Q. Luo, Z. Wang, and H. A. Mantooth, "Transformer Secondary Voltage Based Resonant Frequency Tracking for LLC Converter," *IEEE Transactions on Circuits and Systems II: Express Briefs*, vol. 68, no. 4, pp. 1243-1247, Apr. 2021.
[20] Y. Wei, Q. Luo and A. Mantooth, "An LLC Converter with Multiple Operation Modes for Wide Voltage Gain Range Application," *IEEE Transactions on Industrial Electronics*, DOI: 10.1109/TIE.2020.3029474, Oct. 2020.
[21] M. Montazeri, D. Huitink, A. Wallace, H. Peng, S. Seal, H. A. Mantooth, F. Luo, "Vertically Stacked, Flip-Chip Wide Bandgap MOSFET Co-Optimized for Reliability and Switching Performance," *IEEE J. Emerging & Selected Topics in Power Electronics*, *accepted*, Oct. 2020, DOI: 10.1109/JESTPE.2020.3032886.
[22] G. S. Lee, S. S. Bang, H. A. Mantooth, Y.-J. Shin, "Condition Monitoring of 154 kV HTS Cable Systems via Temporal Sliding LSTM Networks," *IEEE Access*, vol. 8, pp. 144352-144361, Aug. 2020.
[23] Y. Wei, Q. Luo, X. Du, N. Altin, J. M. Alonso, A. Mantooth, "Analysis and Design of the LLC Resonant Converter with Variable Inductor Control based on Time-Domain Analysis," *IEEE Trans. on Industrial Electronics*, vol. 67, no. 7, pp. 5432-5443, July 2020.
[24] Y. Wei, Q. Luo, and H. A. Mantooth, "Comprehensive comparisons between frequency-domain analysis and time-domain analysis for LLC resonant converter," *IET Power Electronics*, Volume 13, Issue 9, 24 July 2020, p. 1735 – 1745.
[25] Y. Wei, Q. Luo, Z. Wang, and H. A. Mantooth, "Wide voltage gain range application for full-bridge LLC resonant converter with narrow switching frequency range," *IET Power Electronics*, Volume 13, Issue 15, 25 November 2020, p. 3283 – 3293.
[26] Y. Wei, Q. Luo, J. Chen, and H. A. Mantooth, "Analysis and design of LLC resonant converter with variable magnetising inductance control," *IET Power Electronics*, Volume 13, Issue 16, 16 December 2020, p. 3528 – 3536.
[27] S. Zhao, X. Zhao, Y. Wei, Y. Zhao, H. A. Mantooth, "A Review on Switching Slew Rate Control for Silicon Carbide Devices using Active Gate Drivers," *IEEE. J. of Emerging and Selected Topics in Power Electronics*, 18 pgs., July 2020, DOI: 10.1109/JESTPE.2020.3008344.
[28] K. Hermanns, M. Vasic, P. R. Wilson, H. A. Mantooth, "The Better Design: How IEEE Power Electronics Society is Paving the Way for Power Electronics Design Automation," *Bodo's Power Systems*, pp. 38-40, July 2020.
[29] H. Mhiesan, Y. Wei, Y. Siwakoti, H. A. Mantooth, "A Fault-Tolerant Hybrid Cascaded H-Bridge Multilevel Inverter," *IEEE Trans. On Power Electronics,* vol. 35, no. 12, pp. 12702-12715, Dec. 2020.
[30] S. Seal, A. K. Wallace, A. Dearien, C. Farnell, H. A. Mantooth, "A Wire Bondless SiC Switching Cell with a Vertically Integrated Gate Driver, *IEEE Trans. on Power Electronics*, vol. 35, no. 9, pp. 9690-9699, Sept. 2020.
[31] A. Sabbar, S. Madhusoodhanan, S. Al-Kabi, B. Dong, J. Wang, S. Atcitty, R. Kaplar, D. Ding, H. A. Mantooth, S.-Q. Yu, and Z. Chen, "Systematic Investigation of Spontaneous Emission Quantum

Efficiency Drop up to 800K for Future Power Electronics Applications," *IEEE J. Emerging and Selected Topics in Power Electronics,* vol. 8, no. 1, pp. 845-853, March 2020.
[32] A. Sabbar, S. Madhusoodhanan, B. Dong, J. Wang, H. A. Mantooth, S-Q. Yu, Z. Chen, "High-Temperature Spontaneous Emission Quantum Efficiency Analysis of Different InGaN MQWs for Future Power Electronics Applications, *IEEE. J. of Emerging and Selected Topics in Power Electronics*, vol. 8, no. 1, pp. 845-853, May 2020, DOI: 10.1109/JESTPE.2020.2995120.
[33] Y. Wu, M. Mahmud, Y. Zhao, H. A. Mantooth, "Uncertainty and disturbance estimator based robust tracking control of dual-active-bridge converters," *IEEE Trans. On Transportation Electrification,* vol. 6, no. 4, pp. 1791-1800*,* Dec. 2020.
[34] H. A. Mantooth, "Editorial: A New Day in Publishing for Power Electronics," *IEEE Open Journal of Power Electronics*, vol. 1, no. 1, pg. 1, DOI: 10.1109/OJPEL.2020.2966904, Feb. 2020.
[35] Y. Wei, Q. Luo, H. A. Mantooth, "Overview of Modulation Strategies for LLC Resonant Converter," *IEEE Trans. On Power Electronics*, *vol. 35, no. 10, pp. 10423-10443,* Oct. 2020.
[36] Y. Wei, Q. Luo, J. M. Alonso, H. A. Mantooth, "A Magnetically Controlled Single-stage AC/DC Converter," *IEEE Trans. On Power Electronics*, vol. 35, no. 9, pp. 8872-8877, Sept. 2020.
[37] T. Kim, J. Ochoa, T. Faika, A. Mantooth, J. Di, Q. Li, and Y. Lee," An Overview of Cyber-Physical Security of Battery Management Systems and Adoption of Blockchain Technology," *IEEE J. on Emerging and Selected Topics in Power Electronics, (Early access)*, Jan. 2020, DOI: 10.1109/JESTPE.2020.2968490.
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Non-refereed Conference Proceedings

[1] M. Leonard, M. Francis, T. Vrotsos, H. A. Mantooth, “Semi-Automated Switching Regulator Modeling,” TechCon 2014, Austin, TX, 2014.

[2] R. Mao, M. H. Leonard, A. M. Francis, H. A. Mantooth, “Semi-automatic generation of PWM switch averaged models for switching regulators,” 4 pgs., SRC TECHCON 2013, Sept. 2013.

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Other Publications

[1] H. A. Mantooth, C.-M. Zetterling, A. Rasu, “Venus Calling: Silicon Carbide Radio Circuits Can Take the Heat Needed to Phone Home from our Hellish Sister Planet,” *IEEE Spectrum*, pp. 26-30, May 2021.

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[8] H. A. Mantooth, “Powering a Sustainable Future [President’s Message],” *IEEE Power Electronics Magazine*, vol. 4, no. 4, pp. 10-85, Dec. 2017.

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[17] H. A. Mantooth, "Smart grid: Definition, road map and breadth of this grand challenge," Connected Planet, http://connectedplanetonline.com/home/commentary/smart-grid-road-map-0105/, Jan. 5, 2010.
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[26] H. A. Mantooth, P. E. Allen, "Higher level modeling of analog integrated circuits," *TECHCON '90 Poster Session*, San Jose, California, Oct. 16-18, 1990.
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[28] H. A. Mantooth, P. E. Allen, "Behavioral modeling of nonlinear analog circuits and systems," *TECHCON '88 Poster Session*, Dallas, Texas, Oct. 12-14, 1988.
[29] H. A. Mantooth, "A summary of mixed analog-digital simulation," *SRC Technical Report*, Order no. T87109, 25 pp., Oct. 1987.
[30] H. A. Mantooth, "Integrated circuit process modeling using SUPREM II, SUPRA, and GEMINI," *IEEE Student Paper Contest*, February 1985.

Invited Talks

[1] H. A. Mantooth, "A Next Frontier in Power Electronics Design: Cyber-Hard by Design," University of Houston Cullen College of Engineering ECE Seminar Series, March 1, 2021.
[2] C. Farnell, H. A. Mantooth, "Cybersecurity for DER Systems," IEEE West Virginia/Washington Chapter Webinar, Feb. 15, 2021.
[3] H. A. Mantooth, "Reliability Challenges in High Density Power Electronics Design," *2021 IEEE Texas Power and Energy Conference*, panel session, virtual conference, Feb. 4, 2021.
[4] H. A. Mantooth, "Rapid Prototyping for SiC Electronics," *IEEE WiPDA-Asia*, **Keynote Address**, Kyoto, Japan, September 23-25, 2020 (remotely delivered due to COVID-19 Pandemic).

[5] H. A. Mantooth, "Emerging Trends in Power Electronics," Distinguished Colloquium Series, University of Texas, Austin, TX, Dec. 4, 2019.
[6] H. A. Mantooth, "Design Automation for Power Electronics," Invited Talk, International Conference on Computer-Aided Design (ICCAD), Nov. 4, 2019.
[7] H. A. Mantooth, "Teaching the Value of Simulation Software in Power Electronics," *IEEE Energy Conversion Congress & Exhibition (ECCE)*, Special Session, Oct. 2019.
[8] H. A. Mantooth, "Silicon Carbide Power Integrated Circuits," *IEEE WiPDA-Asia*, **Keynote Address**, Taipei, Taiwan, May 24, 2019.
[9] H. A. Mantooth, "Cybersecurity for Power Electronics," *IEEE CyberPELS Workshop* Opening Address, Knoxville, TN, April 29, 2019.
[10] H. A. Mantooth, "Heterogeneous Integration for Silicon Carbide Power Electronics," University of Bath, Bath, England, March 29, 2019.
[11] H. A. Mantooth, "Heterogeneous Integration for Silicon Carbide Power Electronics," *ECPE SiC and GaN User Forum*, Erding, Germany, March 27, 2019.
[12] H. A. Mantooth, "Packaging Considerations in a High Power Density Inverter," *APEC Industry Session*, Anaheim, California, March 20, 2019.
[13] H. A. Mantooth, C. Farnell, "Cybersecurity for Sustainable Energy Systems," *RESERVE Ph.D. Course*, RWTH Aachen, Germany, Mar. 11-13, 2019.
[14] H. A. Mantooth, "Emerging Trends in Silicon Carbide Power Electronics," *Invited Talk*, University of Nebraska, Lincoln, Feb. 7, 2019.
[15] H. A. Mantooth, "Power Module Layout Synthesis,"*PELS Chapter Talk at TU Darmstadt*, Darmstadt, Germany, Nov. 27, 2018.
[16] H. A. Mantooth, "Design Automation in Power Electronics,"*Proc. Of PEAC*, **Keynote Talk**, Shenzhen, China, Nov. 5, 2018.
[17] H. A. Mantooth, "Emerging Trends in Silicon Carbide Power Electronics,"*Proc. of ACEPT*, **Keynote Talk**, Singapore, Oct. 31, 2018.
[18] H. A. Mantooth, C. Farnell, S. J. Moquin, "Cybersecurity for Sustainable Energy Systems," *IEEE Energy Conversion Congress and Exposition (ECCE)*, Special Session on Power Electronics for Sustainable Energy Systems and Energy Sustainability, Sept. 26, 2018.
[19] H. A. Mantooth, "Emerging Trends in Wide Bandgap Power Electronics," *60 Years of Modern Power Electronics FGLA/ISEA-PGS Colloquium*, Aachen, Germany, Sept. 14, 2018.
[20] H. A. Mantooth, "Emerging Trends in Silicon Carbide Power Electronics," *IEEE Control and Modeling of Power Electronics (COMPEL 2018)*, **Keynote Talk**, University of Padova, Padova, Italy, June 26, 2018.
[21] H. A. Mantooth, "Emerging Trends in Silicon Carbide Power Electronics," *International Conference on Electrical Engineering (ICEE 2018)*, **Keynote Talk**, Korea University, Seoul, Korea, June 25, 2018.
[22] H. A. Mantooth, "Power Electronic Systems in Electrical Distribution," GRAPES Korea meeting, Korea University, Seoul, Korea, June 22, 2018.
[23] H. A. Mantooth, "Emerging Trends in Silicon Carbide Power Electronics," *IEEE WiPDA-Asia*, **Keynote Address**, Xi'An, China, May 18, 2018.
[24] H. A. Mantooth, "Emerging Trends in Silicon Carbide Power Electronics," IEEE PELS Workshop, University of Los Andes, Bogota, Colombia, April 16, 2018.
[25] H. A. Mantooth, "Emerging Trends in Silicon Carbide Power Electronics," Invited Talk to PELS Chapter, Universidad Tecnológica de Pereira, Pereira, Colombia, April 14, 2018.
[26] H. A. Mantooth, "Emerging Trends in Silicon Carbide Power Electronics," **Distinguished Colloquium Series**, University of Maryland, College Park, MD, April 6, 2018.
[27] H. A. Mantooth, "Wide Bandgap Power Electronics: A Growing Reliance on Design Automation," Invited Talk, Mentor Grapics Tech Talk, Fremont, CA, Jan. 31, 2018.
[28] H. A. Mantooth, "Emerging Trends in Silicon Carbide Power Electronics," **Keynote Talk**, Southern Power Electronics Conference, Chile, Dec. 5, 2017.

[29] H. A. Mantooth, "Wide Bandgap Power Electronics: A Growing Reliance on Design Automation," Plenary Talk, China Power Supply Society 2017 Annual Meeting, Shanghai, China, Nov. 4, 2017.
[30] H. A. Mantooth, "Cybersecurity in the Energy Sector," Energy Council University Advisory Board Seminar, Arkansas Capitol, Little Rock, AR, Sept. 16, 2017.
[31] H. A. Mantooth, "High Performance Silicon Carbide Power Packaging – Past Trends, Present Practices, and Future Directions," Keynote Address at *InterPACK – Packaging and Integration of Electronic and Photonic Microsystems*, San Francisco, CA, Aug. 30, 2017.
[32] H. A. Mantooth, "Engaging the Future – Reaching the YP and WIE Audience Through Design Challenges," IGNITE Presentation, IEEE Sections Congress, Syndey, Australia, August 13, 2017.
[33] H. A. Mantooth, "Partnering with Technical Organizations," Panel discussion, IEEE Sections Congress, Syndey, Australia, August 13, 2017.
[34] H. A. Mantooth, "Integrated Power Electronics at the University of Arkansas," ETH Zurich, Zurich, Switzerland, July 11, 2017.
[35] H. A. Mantooth, "Integrated Power Electronics at the University of Arkansas," KTH Stockholm, Stockholm, Sweden, July 10, 2017.
[36] H. A. Mantooth, "Emerging Trends in Silicon Carbide Power Electronics," **Keynote Talk**, EPSRC Centre for Power Electronics, Loughborough, England, July 4, 2017.
[37] H. A. Mantooth, "Cybersecurity and Power Electronics," 9th IEEE Future of Electronic Power Processing and Conversion (FEPPCON), Kruger Park, South Africa, June 15, 2017.
[38] H. A. Mantooth, "Emerging Trends in Silicon Carbide Power Electronics," **Keynote Talk**, ECCE Asia, Kaohsiung, Taiwan, June 5, 2017.
[39] H. A. Mantooth, "Wide Bandgap Analog and Mixed-signal IC Design for Advanced Power Electronics," *231st ECS Meeting (May 28 - June 1, 2017),* invited speaker, New Orleans, LA, May 29, 2017.
[40] H. A. Mantooth, "Serving Humanity Through a Dynamic Profession – The IEEE Power Electronics Society," Plenary Talk, IWIPP, April 5, 2017.
[41] H. A. Mantooth, "Serving Humanity Through a Dynamic Profession – The IEEE Power Electronics Society," IEEE Student Chapter – University of Arkansas, Feb. 29, 2017.
[42] H. A. Mantooth, "Wide Bandgap Analog and Mixed-signal IC Design for Advanced Power Electronics," *20th Workshop on Synthesis and System Integration of Mixed Information Technologies*, invited speaker, Kyoto, Japan, Oct. 25, 2016.
[43] H. A. Mantooth, "Wide Bandgap Analog and Mixed-signal IC Design for Advanced Power Electronics," *International Symposium on Power Electronics*, invited speaker, Kyoto, Japan, Oct. 26, 2016.
[44] H. A. Mantooth, "High Density Power Electronics for Transportation Applications," *Japan Science and Technology Super Cluster International Forum on Power Electronics for Advanced Wide Bandgap Semiconductors*, Invited speaker, Kyoto, Japan, Dec. 4, 2015.
[45] H. A. Mantooth, "Advancing Power Electronics Through Integration of Heterogeneous Technologies," *International Symposium on Power Semiconductor Devices* (ISPSD), Short Course Presentation, Hong Kong, China, May 10, 2015.
[46] H. A. Mantooth, "Reliability of SiC integrate circuits for power electronic applications," *International Workshop on WBG Power Electronics*, Taiwan, April 10, 2015.
[47] H. A. Mantooth, "Model-based Design Tools for Extending COTS Components to Extreme Environments," IEEE New Technology Industry Seminar, The Boeing Company, Aug. 14, 2014.
[48] H. A. Mantooth, "Advancing Power Electronics Through Integration of Heterogeneous Technologies," *International Silicon Carbide Power Electronics Applications Workshop* (ISiCPEAW), Keynote Presentation, Stockholm, Sweden, May 26, 2014.
[49] H. A. Mantooth, "Promoting Residential DC Utilization Through the Smart Power Router," *IEEE Workshop on Local DC Microgrids*, Invited Presentation, Charleston, SC, March 31, 2014.
[50] H. A. Mantooth, "Grid-Connected Advanced Power Electronic Systems (GRAPES)," Presentation to Korean Electric Power Company (KEPCO), Seoul, South Korea, February 18, 2014.

[51] H. A. Mantooth, "Grid-Connected Advanced Power Electronic Systems (GRAPES)," Presentation to Yonsei University, Seoul, South Korea, February 18, 2014.
[52] H. A. Mantooth, "Behavioral Modeling of Switching Converters," presentation, eSeminar, Dallas, TX, July 26, 2013.
[53] H. A. Mantooth, "Energy Delivery in the Smart Grid Era," Inaugural SEC Symposium, Invited Talk, Atlanta, GA, Feb. 12, 2013.
[54] H. A. Mantooth, "VICTER: Vertically-Integrated Center for Transformative Energy Research," Tennessee Solar Solutions Conference, Memphis, TN, April 11, 2012.
[55] H. A. Mantooth, "GRAPES NSF Showcase," National Science Foundation, Washington, D.C., May 15-16, 2012.
[56] H. A. Mantooth, "GRAPES: NSF Center on Grid-connected Advanced Power Electronic Systems," 60th Engineering Workshop for Arkansas Electric Cooperatives, Little Rock, AR, Dec. 6, 2012.
[57] H. A. Mantooth, "Prospects of Future Smart Grid Technology and High-Power SiC Modules," **Keynote Address** at *International Symposium on SiC Power Electronics 2011*, Nagoya, Japan, 65 slides, Dec. 7, 2011.
[58] H. A. Mantooth, "Evolution to Revolution: The Emerging Smart Grid in America," *22nd National NSF EPSCoR Conference,* Coeur d'Alene, Idaho, 45 slides, Oct. 27, 2011.
[59] H. A. Mantooth, "Advances in SiC Power Modules," *Wide Bandgap Workshop*, Hsinchu, Taiwan, 36 slides, April 29, 2011.
[60] H. A. Mantooth, "Advances in SiC Power Modules," *ARPAe & EERE Joint Workshop on Power Electronics in Photovoltaic Systems*, Washington, D.C., 19 slides, Feb. 8, 2011.
[61] H. A. Mantooth, "Overview of Solar Electric Energy Research in Arkansas," Arkansas Public Service Commission, Oct. 27, 2010.
[62] H. A. Mantooth, "Impact of Electric Vehicles on the Electric Power Grid," Arkansas Public Service Commission, Oct. 27, 2010.
[63] H. A. Mantooth, "Perspectives on Smart Grid from Generation to the Meter and Into the Home," IEEE GOLD Webinar, 35 slides, June 24, 2010.
[64] H. A. Mantooth, "Electric Power Research at the University of Arkansas," Arkansas Municipal Power Association, June 2, 2010.
[65] H. A. Mantooth, "Electric Power Research at the University of Arkansas," Arkansas Alternative Energy Commission, May 27, 2010.
[66] H. A. Mantooth, "Circuit Designers are Republicans and Modelers are Democrats: Where's the Middle Ground?" IEEE Behavioral Modeling and Simulation Workshop (BMAS), Keynote Address, Sept. 2008.
[67] A. S. Kashyap, M. Mudholkar, H. A. Mantooth, M. Mojarradi, T. Vo, "Characterization of LDMOS Devices in the Deep Cryogenic Regime," 6th International Planetary Probe Workshop, 23 slides, Atlanta, GA, June 2008.
[68] H. A. Mantooth, "Returning to the Moon and Mars…Using 21st Century Technology," UA Space and Planetary Sciences Public Lecture Series, 37 slides, March 2008.
[69] H. A. Mantooth, "Returning to the Moon and Mars…Using 21st Century Technology," Medtronic Forum, 47 slides, March 2009.
[70] H. A. Mantooth, "Emerging Applications of SiC and Circuit Design Issues," *International Workshop on SiC Power Devices and Circuits*, 30 slides, Kyoto, Japan, Oct. 25, 2006.
[71] H. A. Mantooth, "An Integrated Environment for Model Creation and Characterization," *VTB User's Conference*, University of South Carolina, 14 slides, Oct. 2006.
[72] H. A. Mantooth, "Modeling tools & techniques for the 21st century," *Cadence Distinguished Speaker Series*, 55 slides, San Jose, CA, Jan. 12, 2006.
[73] H. A. Mantooth, "Modeling tools & techniques for the 21st century," *IEEE Circuits and Systems Society Distinguished Lecture*, 51 slides, Kuala Lumpur, Malaysia, Sept. 2005.

[74] H. A. Mantooth, "Bridging the gaps between circuit designers, compact model developers, and device physicists," *IEEE Compact Modeling of RF/Microwave Applications (CMRF 2005)*, 27 slides, Santa Barbara, CA, Oct. 2005.
[75] C. Vemulapally, H. A. Mantooth, "Model generation and parameter extraction tools for the VTB environment," *VTB User's Conference*, 25 slides, Columbia, SC, Sept. 2005.
[76] A. S. Kashyap, B. Ozpineci, H. A. Mantooth, "Silicon Carbide Device and System Modeling with MAST and SABER," Synopsys User's Group (SNUG '05), 25 slides, Detroit, MI, Sept. 2005.
[77] O. Abbasi, H. Gunupudi, H. A. Mantooth, "Certify: A Tool for Model Characterization and Validation," Synopsys Users Group (SNUG) Saber Conference, 22 slides, Detroit, Michigan, Sept. 2005.
[78] H. A. Mantooth, "Analog behavioral modeling: fantasy, fad, or foundation for the future," Panel at *IEEE Custom Integrated Circuits Conference*, 5 slides, pp. 620-621, San Jose, CA, Sept. 2005.
[79] H. A. Mantooth, "Design and verification: Can the analog mixed-signal (AMS) standard bridge the chasm?," Panel at Accellera Breakfast at *Design Automation Conference*, 6 slides, Anaheim, CA, June 2005.
[80] H. A. Mantooth, "Modeling and simulation of radiation effects in mixed-signal circuits," Presentation to *Conf. Advanced Microelectronics and Photonics for Satellites (AMAPS 2003)*, Genesis Technology Incubator, Fayetteville, AR, June 24-26, 2003.
[81] H. A. Mantooth, F. Barlow, S. Mulvenon, S. S. Ang, "Mixed-signal/telecommunications curriculum development and Internet2 delivery," *ASEE 2002 - NSF Showcase Presentation*, Montreal, Quebec, Canada, June 2002.
[82] Rap Session Panelist - Computer Simulation of Power Electronics, *PESC '94*, Taipei, Taiwan, June 20-25, 1994.
[83] H. A. Mantooth, "Component models for simulating power electronic circuits and systems," Presentation to Seattle IEEE PELS, Feb. 1994.
[84] Rap Session Panelist - Trends in Analog Design, *AACD '93*, KU Leuven, Leuven, Belgium, April 6-8, 1993.
[85] H. A. Mantooth, J. R. Yeargan, "Switched-capacitor filter research at the University of Arkansas," Presentation to Dallas/FW IEEE Circuits Syst. Society, March 1986.

Tutorial courses

[1] H. A. Mantooth, "Power Electronics Integration: Packaging and Silicon Carbide Integrated Circuit Design," Asia Ph.D. School, 2020.
[2] H. A. Mantooth, "Power Electronics Integration: Packaging and Silicon Carbide Integrated Circuit Design," Asia Ph.D. School, 2019.
[3] H. A. Mantooth, "Power Electronics Integration: Packaging and Silicon Carbide Integrated Circuit Design," Japan Ph.D. School, 2019.
[4] H. A. Mantooth, S. S. Ang, F. Luo, "Applications of Wide Bandgap Semiconductors," ACEPT tutorial, Singapore, Oct. 30, 2018.
[5] H. A. Mantooth, "Silicon Carbide Converter Integration," *European Conference on Silicon Carbide and Related Materials (ECSCRM)*, Birmingham, England, Sept. 2, 2018.
[6] E. Shelton, B. Zahnstecher, H. A. Mantooth, G. Haynes, "WBG Devices, Circuits and Applications," *Tutorial course at IEEE APEC 2018*, San Antonio, TX, March 4, 2018.
[7] H. A. Mantooth, "Modeling and simulation of mixed-signal circuits and systems," *IEEE Circuits and Systems Society Distinguished Lecture*, 84 slide tutorial, Kuala Lumpur, Malaysia, Sept. 2005.
[8] H. A. Mantooth, P. O. Lauritzen, "Compact models for power semiconductor devices and power ICs for circuit simulation," *Tutorial course at IEEE APEC 2000*, New Orleans, LA, February 7, 2000.
[9] J. A. Barby, C.-J. R. Shi, H. A. Mantooth, P. Subramaniam, "AHDL modeling for analog and mixed-signal top-down design," *Tutorial course at ASIC '95*, Austin, TX, Sept. 21, 1995.

[10] J. A. Barby, C.-J. R. Shi, H. A. Mantooth, P. Subramaniam, "AHDL modeling for analog and mixed-signal top-down design," *Tutorial course at IEEE DAC '95*, San Francisco, CA, June 16, 1995.
[11] A. R. Hefner, H. A. Mantooth, "Component models for simulating power electronic circuits and systems," *Tutorial course at Industry Appl. Soc. meeting*, Denver, Colorado, October 1994.
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Patents

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Professional

[1] Organizer for Special Session entitled: "Analog behavioral modeling," *IEEE Proc. of 32nd Midwest Symposium on Circuits Syst*., vol. 2, pp. 977- 1000, Aug. 1989.
[2] Session chairman:
- PESC '94: Modeling of Power Semiconductor Devices, *IEEE Proc. of PESC '94*, Taipei, Taiwan, June 20-25, 1994.
- DAC '99: Interconnect Modeling, *IEEE Proc. of Design Automation Conference*, New Orleans, LA, June 20-25, 1999.
- DAC '02: Advances in Analog Modeling, *IEEE Proc. of Design Automation Conference*, New Orleans, LA, June 10-14, 2002.
- DAC '03: Analog Modeling, *IEEE Proc. of Design Automation Conference*, Anaheim, CA, June 6-10, 2003.
- ITC '99: Analog Methods, *IEEE Proc. of International Test Conference '99*, Atlantic City, NJ, September 28-30, 1999.
[3] Reviewer for numerous IEEE conferences and journals including: Design Automation Conference, Bipolar Circuits and Technology Meeting, International Symposium on Circuits and Systems, International Journal on Analog Integrated Circuits and Signal Processing, Journal of Solid-State Circuits, Transactions on Circuits and Systems, Transactions on Electron Devices, Power Electronics Specialists Conference, Transactions on Power Electronics, and Journal of Emerging and Selected Topics in Power Electronics.
[4] Semiconductor Research Corporation Industrial Mentor, University of Florida, 1993-1995.
[5] Technical Program Committee member for Bipolar/BiCMOS Circuits and Technology Meeting (BCTM) 1995-96.
[6] Technical Program Committee member for Power Electronics Specialists Conference (PESC) 1997, 1999, 2000.
[7] Technical Program Committee member for Design Automation Conference (DAC) 1997-2000.

[8] Co-Chairman of DAC/ISSCC Student Design Contest 2002-2006.
[9] Technical Program Committee - IEEE/VUIF International Workshop on Behavioral Modeling and Simulation (1997-2005).
[10] Technical Program Chair - IEEE/VUIF International Workshop on Behavioral Modeling and Simulation (1999, 2000).
[11] General Program Chair - IEEE/VUIF International Workshop on Behavioral Modeling and Simulation (2001).
[12] General Program Past Chair - IEEE/VUIF International Workshop on Behavioral Modeling and Simulation (2002).
[13] Treasurer - IEEE International Workshop on Behavioral Modeling and Simulation (2002, 2003).
[14] Treasurer - IEEE CANDE, Design Automation Technical Committee for Circuits and Systems Society, (2003).
[15] Secretary - IEEE CANDE, Design Automation Technical Committee for Circuits and Systems Society, (2004).
[16] Chairman - IEEE CANDE, Design Automation Technical Committee for Circuits and Systems Society, (2005).
[17] Past Chairman - IEEE CANDE, Design Automation Technical Committee for Circuits and Systems Society, (2006).
[18] Chairman – IEEE Working Group on Standard VHDL Packages for Multiple Energy Domain Systems (P1076.1.1) (2001-2006)
[19] IEEE Power Electronics Society Advisory Committee – (2004-2014)
[20] IEEE Power Electronics Society Director of Standards & Standards Liaison for Society (2004-2012)
[21] Vice-President of Operations for IEEE Power Electronics Society (2013-2016)
[22] President-Elect, IEEE Power Electronics Society (2016)
[23] President, IEEE Power Electronics Society (2017-18)
[24] Associate Editor, IEEE Journal of Emerging and Selected Topics in Power Electronics (JESTPE) (2017-present)
[25] Guest Editor, Special Section on Cybersecurity in Power Electronics, IEEE Journal of Emerging and Selected Topics in Power Electronics (JESTPE) – organized in 2018; published in 2019
[26] General Chair, Workshop in Design Automation for Power Electronics (DAPE), Portland, OR, Sept. 22, 2018.
[27] General Chair, 4th Workshop on Power Devices and Applications (WiPDA), Fayetteville, AR, Nov. 7-9, 2016.
[28] General Chair, Workshop on Power Devices and Applications (WiPDA) – Asia, Xi'An, China, May 17-19, 2018.
[29] General Chair, Power Electronics and Applications Conference (PEAC), Shenzhen, China, Nov. 4-7, 2018.
[30] Organizing Co-Chair, IEEE Energy Conversion Congress and Exposition – Asia (ECCE-Asia), Busan, S. Korea, May 26-30, 2019.
[31] General Chair, Workshop in Design Automation for Power Electronics (DAPE), Genova, Italy, Sept. 6, 2019.
[32] Steering Committee Chair, IEEE PELS Workshop on Cyber-Physical Security (CyberPELS), Knoxville, TN, April 29-May 1, 2019.
[33] Steering Committee Chair, IEEE PELS Workshop on Cyber-Physical Security (CyberPELS), Miami, FL, 2020.
[34] Past-President, IEEE Power Electronics Society (2019-20)
[35] IEEE CAS Representative to Design Automation Conference Executive Committee (2005-2007)
[36] IEEE CAS/CANDE Representative to Council on Electronic Design Automation Board of Governors (2006-2009)
[37] Chairman – DAC Sponsor Coordinating Committee (SCC) (2005-06)

[38] Technical Program Committee - IEEE International Forum on Design Languages (2002-06).
[39] Member of Constitution and Bylaws Committee for IEEE Circuits and Systems Society (2006)
[40] Guest Editor, *IEEE Transactions on Computer-Aided Design*, Special Issue on Behavioral Modeling and Simulation (Feb. 2003).
[41] Guest Editor, *IET Proc. of Computer and Digital Techniques*, Special Issue on Advances in Electronics System Simulation (Sept. 2007).
[42] Board of Governors - High-Level Electronic System Design Conference (HESDC) 1997.
[43] *Affiliate Assistant Professor*, Department of Electrical Engineering, University of Washington, 1994-1996.
[44] Chairman, Local Arrangements - PELS Computers in Power Electronics Workshop, Portland, Oregon, August 1996.
[45] University Committees: Committee on Committees (2001-04), Faculty Athletic Committee (2001-04) (Chairman 2003-04; Men's head basketball coach search committee-2002; Women's head golf coach search committee-2002; Women's head basketball coach search committee-2003); Vice-Provost for Research Search Committee (2009)
[46] College Committees: Dean's Search Committee (2002-03); Dean's Strategic Planning Committee (2003-04), Co-Chair; HiDEC Steering Committee; College Awards Committee (2011-present)
[47] Department Committees: Mixed-signal/Telecommunications Area Committee (Co-Chair), Energy Processing Systems/Control Committee, Recruitment Committee, Tenure and Promotion Committee
[48] Advisory: Faculty advisor for Tau Beta Pi (2001), Solar Electric Boat Team (2000), Young Americans for Liberty (2011) (all ongoing)
[49] UA Research Integrity Officer as Chair of UA Research Council, (2008-2009)
[50] Registered Professional Engineer, Arkansas, 2001.
[51] Board of Directors, Arkansas Power Electronics International, Fayetteville, AR (2004-2013)
[52] Co-Founder, Lynguent, Inc., Portland, OR (2003-2012)
[53] Co-Founder & Board of Directors, Ozark Integrated Circuits, Fayetteville, AR (2011-2019)
[54] Co-Founder & Board Chairman, Bastazo, Inc., Fayetteville, AR (2020-present)
[55] Editor-in-Chief, IEEE Open Journal of Power Electronics (2019-Present)