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EDUCATION:

- **Ph.D. ECE:** Auburn University: Auburn, AL, 2006
Areas of concentration: Electronics and Controls
Dissertation topic: A Technique for the Measurement of Relative Velocity Between Parallel Plate Electrodes in Micromachined Structures
- **MS in EE:** Auburn University, 1991
- **BEE:** Auburn University, 1988
- **Additional Education:**
Heat Transfer in Electronic Packaging Short Course, 2004
Chip Scale Packaging Technology Short Course, 2001
Flip Chip Technology Short Course, 2000
Xilinx Programmable Logic Training Course, 1995

PROFESSIONAL EXPERIENCE:

- 2016 – pres. **McWane Endowed Professor, Dept. of Electrical and Computer Engineering, Auburn University.**
Teaches undergraduate Senior Design and graduate courses in sensors, electronics, photovoltaics and MEMS. Conducts research in electronics, sensors and MEMS. Recent projects include: environmental sensors and instrumentation, chaos electronics for communications and signal processing, and MEMS.
- 2011 – 2016. **Associate Professor, Dept. of Electrical and Computer Engineering, Auburn University.**
Taught undergraduate Senior Design and graduate courses in sensors, MEMS and photovoltaics. Conducted research in electronics, MEMS and sensors. Projects included: environmental sensors, MEMS sensors, power supply development using wide bandgap semiconductor devices, and chaos electronics for communications and signal processing.
- 2007 – 2011. **Assistant Professor, Dept. of Electrical and Computer Engineering, Auburn University.**
Taught graduate and undergraduate courses in electronics, MEMS and sensors. Conducted research in MEMS, sensors, electronics and advanced packaging. Projects included: advanced MEMS gyroscope development, instrumentation, electronic systems for/in harsh environments, multi-chip module development, ultra-thin electronics and Si/SiC/GaN power device testing, ASIC development, vibration/acoustic isolation.
- 2006 – 2007 **Assistant Research Professor, Dept. of Electrical and Computer Engineering, Auburn University.**
Conducted microsystems research and manages microsystems research. Developed and tested MEMS devices, packaging and systems, including support electronics and software. Develops manufacturing processes for MEMS devices and packaging. Designed custom

instrumentation (analog, digital, mixed-signal, microcontroller, PC interfacing and software). Projects included: advanced controllers for MEMS actuators; the characterization and mitigation of the deleterious effects of high power acoustic noise on MEMS gyroscopes; and the development of novel interface electronics for electrostatic MEMS devices.

- 1999 – 2006 **Research Associate IV, Center for Advanced Vehicle Electronics at Auburn University**
Conducted microsystems research and manages microsystems research activities and personnel at the Center. Developed and tested MEMS devices, packaging and systems, including support electronics and software. Developed manufacturing processes for MEMS devices and packaging. Designed custom instrumentation. Projects included: a novel technique for measuring the relative velocity between micromachined structures; MEMS actuators; MEMS mechanical low-pass filters for vibration isolation; microfluidic devices for thermal management; hermetic packaging for nano-devices; silicon MEMS devices; advanced packaging for COTS MEMS devices; and micromachining process development for non-silicon materials, including for biomedical applications.
- 1997 - 1999 **RF CMOS Designer, SY Technology, Inc.,** Huntsville, AL
Designed electronics and MEMS devices for various DOD and commercial projects. Also managed several DOD projects. Projects included: 3D helical micromachined antenna structures for submillimeter sensing, process development for a 325 element MEMS mirror for adaptive optics, low-stress packaging for large MEMS devices, multiple-output power supply design for various MEMS actuators, design of electronics for interfacing to MEMS devices, hardware and software interfacing of custom electronics to PC's, design of a CMOS imaging array test chip, design of a precision programmable dual current source, design of two PCI based DSP boards for video applications, and design of a multi-processor Hartmann wavefront sensor DSP board.
- 1992-1997 **Electronics Designer, Dynetics, Inc.,** Huntsville, AL
Designed electronics for various DOD and commercial projects. Projects included: a video identification and processing system, a VME baseband radar signal pre-processor for a 2-D optical correlator, high-speed A/D and D/A boards, PLL frequency synthesizer design, DSP boards, a hand-held orientation input device for industrial robots, audio scramblers and descramblers, custom test equipment, and interfacing hardware to PC's.
- 1991-1992 **Systems Analyst, Dynetics, Inc.,** Fort Walton Beach, FL
Performed hardware-in-the-loop testing and analysis of the radar receiver for the AMRAAM missile program at Eglin AFB. Testing included pre-flight, post-flight and ECM/ECCM.
- 1989-1991 **Research Assistant, Center for the Commercial Development of Space at Auburn University**
Performed research in micromachined sensors and associated electronics for the US Space Station project. Designed, simulated, prototyped, and tested a full-custom CMOS integrated circuit for interfacing with capacitive transducers.

JOURNAL PUBLICATIONS: PUBLISHED

- B.K. Rhea, E. Perkins, and R.N. Dean, "High frequency realization of non-autonomous nonlinear transistor circuit," AIP Advances, vol. 9, 2019, 8pp.
- X. Wang, C. Li, D. Song, and R. Dean, "A nonlinear circuit analysis technique for time-variant inductor systems," MDPI Sensors, vol. 19, is. 10, 2019, 13pp.
- R.N. Dean, C.D. Craven II Jr., E.A. Guertal and K.A. Varnavas, "A PCB sensor for status monitoring of stored food stocks," IEEE Sensors Letters, vol. 3, no. 4, April 2019, 4pp.

- S. Qi, X. Wang, C. Li and R.N. Dean, "Robust high bandwidth oscillation-free digital feedforward compensator for micromachined actuators," IET Micro & Nano Letters, vol. 13, is. 12, 2018, pp. 1703-1707.
- R.N. Dean and R.E. Dean, "An electronic packaging approach to improving an environmental sensor and sensing technique," J. Microelectronics and Electronic Packaging, vol. 15, 2018, pp. 41-47.
- F.T. Werner, B.K. Rhea, R.C. Harrison and R.N. Dean, "Electronic implementation of a practical matched filter for a chaos-based communication system," Chaos, Solitons & Fractals, vol. 104, 2017, pp. 461-467.
- F.T. Werner and R.N. Dean, "Characterizing a PCB electrical conductivity sensor using electromagnetic simulation and a genetic algorithm," IET Science, Measurement and Technology, vol. 11, Is. 6, 2017, pp. 761-765.
- R.N. Dean and F.T. Werner, "A PCB environmental sensor for use in monitoring drought conditions in estuaries," J. of Microelectronics and Electronic Packaging, vol. 13, 2016, pp. 182-187.
- C. Li, H. Yang, R.N. Dean and G.T. Flowers, "An active vibration isolator based on micromachined electrostatic actuators," IET Micro & Nano Letters, Vol, 11, Is. 11, 2016, pp. 715-718.
- C. Li, R.N. Dean, J. Hung and G. T. Flowers, "Feedback posicast control for micromachined electrostatic actuators," IET Micro & Nano Letters, Vol. 11, No. 11, 2016, pp. 722-726.
- C. Li, H. Yang, L.L Jenkins, R.N. Dean, G.T. Flowers, J.Y. Hung "Enhanced performance control of an electromagnetic solenoid system using a digital controller" IEEE Trans. On Control System and Technology, Vol. 24, No. 5, Sept. 2016, pp. 1805-1811.
- R. Ashtari, M. Baginski and R. Dean, "A 2.45 GHz frequency-selective rectenna for wireless energy harvesting," Microwave and Optical Technology Letters, Vol. 58, No. 10, Oct. 2016, pp. 2508-2512.
- C. Li, R.N. Dean and G.T. Flowers, "The self-sensing estimator of micromachined electrostatic actuators and parameters' optimization," IET Electronic Letters, Vol. 11, Is. 9, 2016, pp. 528-531.
- J.P. Bailey, A.N. Beal, R.N. Dean and M.C. Hamilton, "A digital matched filter for reverse time chaos," Chaos, vol. 26, July, 2016 8pp.
- C. Li, R.N. Dean and G.T. Flowers, "Analysis and dynamic simulation of the synthetic voltage division controller for extending the stable parallel plate actuator stable range of motion," J. of Microsystems Technologies, March 2016, 6pp.
- Y. Meng and R.N. Dean, "A technique for improving the linear operating range for a relative phase delay capacitive sensor interface circuit," IEEE Trans. on Instrumentation and Measurement, Vol. 65, No. 3, March 2016, pp. 624-630.
- C. Li, R.N. Dean and G.T. Flowers, "Nonlinear circuit analysis technique for microelectromechanical systems with a time-variant capacitor and an AC power source," IET Micro & Nano Letters, Vol. 10, Is. 11, Nov. 2015, pp. 637-640.
- A.N. Beal, J. Tatarchuck, C.B. Stevens, T.A. Baginski, M.C. Hamilton and R.N. Dean; "Design considerations & characterization of micromachined, high current density capacitors for Si interposers," J. of Microelectronics and Electronic Packaging, Vol. 12, No. 3, 2015, pp. 1551-4897.
- J.P. Bailey, A.N. Beal, R.N. Dean, M.C. Hamilton and J.K. Tugnait, "High-frequency reverse-time chaos generation using digital chaotic maps," IET Electronic Letters, Vol. 50, No. 23, Nov. 6, 2014, pp. 1683-1685.

- R.N. Dean, M.C. Hamilton and M.E. Baginski, "Capacitive fringing field moisture sensors implemented in flexible printed circuit board technology," *J. of Microelectronics and Electronic Packaging*, Vol. 11, No. 3, 2014, pp. 122-127.
- C. Li, R.N. Dean, G.T. Flowers and J.Y. Hung, "Nonlinear feedback control to enhance stable performance of micromachined electrostatic parallel plate actuators," *Int. J. of Automation and Power Engineering*, Vol. 3, Is. 1, Jan. 2014, pp. 49-52.
- R.N. Dean and C.G. Wilson, "Nonlinear circuit analysis for time-variant microelectromechanical system capacitor systems," *IET Micro & Nano Letters*, Vol. 8, Is. 9, Sept. 2013, pp. 515-518.
- M. Black, S. Henning, C.G. Wilson, S. Hale, R.N. Dean, R.W. Johnson, R. Altstatt, M. Blair and A.-M. Dorsett, "Gamma ray testing of commercially available SiC power jFET transistors," *J. of Radiation Effects, Research and Engineering (JRERE)*, Vol. 31, No. 1, July 2013, pp. 29-35.
- R.N. Dean and A.K. Rane, "A digital frequency-locked loop system for capacitance measurement," *IEEE Trans. on Instrumentation and Measurement*, Vol. 62, No. 4, April 2013, pp. 777-784.
- W.N. Yunker, C.B. Stevens, G.T. Flowers and R.N. Dean, "Sound attenuation using microelectromechanical systems fabricated acoustic metamaterials," *J. of Applied Physics*, Vol. 113, 2013, (6pp).
- R.N. Dean, D.K. Harris, A.Y. Palkar and G.D. Wonacott, "Liquid metal-filled micro heat pipes for thermal management of solid-state devices," *IEEE Trans. on Industrial Electronics*, Vol. 59, No. 12, Dec. 2012, pp. 4888-4894.
- R.N. Dean, A.K. Rane, M.E. Baginski, J. Richard, Z. Hartzog and D.J. Elton, "A capacitive fringing field sensor design for moisture measurement based on printed circuit board technology," *IEEE Trans. on Instrumentation and Measurement*, Vol. 61, No. 4, April 2012, pp. 1105-1112.
- T.A. Baginski, R.N. Dean and E.J. Wild, "Micromachined planar triggered spark gap switch," *IEEE Trans. on Components, Packaging and Manufacturing Technology*, Vol. 1, No. 9, Sept. 2011, pp. 1480-1485.
- R.N. Dean, A. Anderson, S.J. Reeves, G. Flowers and A.S. Hodel, "Electrical noise in MEMS capacitive elements resulting from environmental mechanical vibrations in harsh environments," *IEEE Trans. on Industrial Electronics*, Vol. 58, No. 7, July 2011, pp. 2697-2705.
- R.N. Dean, S. Castro, G.T. Flowers, G. Roth, A. Ahmed, A.S. Hodel, B.E. Grantham, D. Bittle and J. Brunsch, "A characterization of the performance of MEMS gyroscopes in acoustically harsh environments," *IEEE Trans. on Industrial Electronics*, Vol. 58, No. 7, July 2011, pp. 2591-2596.
- R.N. Dean, S. Surgnier, J. Pack, N. Sanders, P. Reiner, C.W. Long, R. Fenner and W.P. Fenner, "Porous ceramic packaging for a MEMS humidity sensor requiring environmental access," *IEEE Trans. on Electronics Packaging Manufacturing*, Vol. 1, No. 3, March 2011, pp. 428-435.
- S.J. Kim, R. Dean, R.L. Jackson and G.T. Flowers, "An investigation of the damping effects of various gas environments on a vibratory MEMS devices," *Tribology International*, Vol. 44, 2011, pp. 125-133.
- M.J. Bozack, E.R. Crandall, C.L. Rodekohr, R.N. Dean, G.T. Flowers and J.C. Suhling, "High lateral resolution auger electron spectroscopic (AES) measurements for Sn whiskers on brass," *IEEE Trans. on Electronics Packaging Manufacturing*, Vol. 33, No. 3, July 2010, pp. 198-204.

- D.K. Harris, A. Palkar, G. Wonacott, R. Dean and F. Simionescu, “An experimental investigation in the performance of water-filled silicon micro-heat pipe arrays,” *ASME J. of Electronic Packaging*, Vol. 132, Is. 2, June 2010, pp. 021005-1 – 021005-8.
- S.J. Kim, R. Dean, G. Flowers and C. Chen, “Active vibration control and isolation for micromachined devices,” *ASME J. of Mechanical Design*, Vol. 131, Sept. 2009, pp. 091002-1 – 091002-6.
- R.N. Dean and A. Luque, “Applications of microelectromechanical systems in industrial processes and services,” *IEEE Trans. on Industrial Electronics*, Vol. 56, No. 4, April 2009, pp. 913-925.
- Y.-C. Chen, Y. Tzeng, A.-J. Cheng, R. Dean and M. Park, “Inkjet printing of nanodiamond suspensions in ethylene glycol for CVD growth of patterned diamond structures and practical applications,” *J. Diamond and Related Materials*, Vol. 18, Is. 2-3, Feb.-March 2009, pp. 146-150.
- M. Black, H. Boyett, N. Sanders, J. Weller, R. Dean, R.W. Johnson and M. Kranz, “Packaging MEMS die on E-glass substrates,” *J. Microelectronics and Electronic Packaging*, Vol. 5, No. 3, 2008, pp. 122-125.
- R. Dean, J. Weller, M. Bozack, C. Rodekoher, B. Farrell, L. Jauniskis, J. Ting, D. Edell and J. Hetke, "Realization of ultra fine pitch traces on LCP substrates," *IEEE Trans. on Components and Packaging Technologies*, Vol. 31, No. 2, June 2008, pp. 315-321.
- J.E. Rogers, R. Ramadoss, P.M. Ozmun, and R.N. Dean, "A microelectromechanical accelerometer fabricated using printed circuit processing techniques" *Journal of Micromechanics and Microengineering*, Vol. 18, 2008 (7pp).
- R. Dean, G. Flowers, R. Horvath, N. Sanders, S. Hodel, J. Hung and T. Roppel, “Characterization and experimental verification of the nonlinear distortion in a technique for measuring relative velocity between micromachined structures in normal translational motion,” *IEEE Sensors Journal*, Vol. 7, No. 4, April 2007, pp. 496-501.
- R. Dean, J. Weller, M. Bozack, B. Farrell, L. Jauniskis, J. Ting, D. Edell, and J. Hetke, "Micromachined LCP connectors for packaging MEMS devices in biological environments," *J. Microelectronics and Electronic Packaging*, Vol. 4, No. 1, 2007, pp. 17-22.
- R. Dean, G. Flowers, N. Sanders, R. Horvath, M. Kranz and M. Whitley, “Micromachined vibration isolation filters to enhance packaging for mechanically harsh environments,” *J. Microelectronics and Electronic Packaging*, Vol. 2, No. 4, 2005, pp. 223-231.
- R. Dean, P. Nordine and C. Christodoulou, “3-D helical THz antennas,” *Microwave and Optical Technology Letters*, January 20, 2000, pp. 106-111.

JOURNAL PUBLICATIONS: SUBMITTED

- C. Li, X. Wang, R. Hou, R. Dean, L. Zhou, Y. Dong and D. Song, “A hybrid nonlinear control approach for actuators possessing a square-law characteristic,” *MDPI J. of Electronics*, accepted 7/31/19, 14pp.
- B.K. Rhea, R.C. Harrison, F.T. Werner, E. Perkins, and R.N. Dean, “An exact solvable chaotic oscillator circuit based on a transistor Colpitts oscillator,” *Chaos*, submitted 7/22/19, 8pp.
- B. Bottenfield, A. bond, M.S. Kranz, R.N. Dean, and M.L. Adams, “Variations in Micromachined Isolator Geometries for Sensor Performance in Harsh Environments,” *IEEE T. on Comp., Pack. & Man.*, submitted 7/9/19, 9pp.
- F. Zhang, E. Perkins, S. Wang, G.T. Flowers, and R.N. Dean, “Compact acoustic metalens with sinusoidal sub-channels for directional far-field sound beams,” *Applied Physics Express*, accepted 7/7/19, 7pp.

- R.C. Harrison, B.K. Rhea, A.R. Oldag, R.N. Dean, J.E. Perkins, “A true random number generator based on a high frequency chaotic jerk circuit,” IEEE T. Circuits & Systems II: Express Briefs, submitted 7/2/19, 5pp.
- M. Yuan, R.N. Dean, M.L Adams, “Improving the Phase Delay Capacitive Interface Circuit Technique using MOSFET Switches,” Meas. Sci. Technol., submitted 5/2/19, 17pp.
- J.D. Craven II, A.N. Ramsey, and R.N. Dean, “A technique for detecting moisture absorption in printed circuit boards,” J. Microelectronics and Electronic Packaging, submitted 12/31/18, 6pp.
- F. Zhang, G.T. Flowers, E. Perkins, R.N. Dean, J. Suhling and J. Roberts, “Compact labyrinth element acoustic metamaterials for broadband low-frequency attenuation,” ASME J. of Vibration and Acoustics, submitted 1/10/19, 11pp.

PUBLISHED BOOK CHAPTERS:

- T.A. Baginski, E.C. Ewing, T. Roppel, R.N. Dean, “Salt and Sunlight,” Auburn Speaks: On Water, Auburn University, 2013, pp. 79-85.
- R. Ramadoss, R. Dean and X. Xiong, “MEMS Testing,” Chapter 13 in L. T. Wang, C. Stroud, and N. Touba (Eds.), System on Chip Test Architectures: Nanometer Design for Testability, Elsevier, Burlington, MA, First Edition, 2008, pp. 591-652.

PATENTS:

- “A Micromachined Device Utilizing Electrostatic Comb Drives to Filter Mechanical Vibrations;” Robert Neal Dean, Jr. and George Timothy Flowers; U.S. patent number: 7,355,318, issued April 8, 2008.
- “Three Dimensional Micromachined Electromagnetic Device and Associated Methods;” Rodney L. Clark and Robert N. Dean, Jr.; U.S. patent number: 6,271,802; issued August 7, 2001.

CONFERENCES WITH PUBLISHED PROCEEDINGS:

- C.B. Stevens, R.N. Dean, E. Perkins, C. Li, A.N. Beal, and G.T. Flowers, “A nonlinear MEMS resonator for generating AC voltages without electronics,” Proc. of IEEE SoutheastCon 2019, Huntsville, AL, April 11-14, 2019, 7pp.
- R.C. Harrison, B.K. Rhea, A.N. Ramsey, R.N. Dean, and J.E. Perkins, “A true random number generator based on a chaotic jerk system,” Proc. of IEEE SoutheastCon 2019, Huntsville, AL, April 11-14, 2019, 5pp.
- B.K. Rhea, R.C. Harrison, D.A. Whitney, F.T. Werner, A.W. Muscha, and R.N. Dean, “Hardware implementation of chaos control using a proportional feedback controller,” Proc. of the International Conference on Applications in Nonlinear Dynamics, Maui, HI, Aug. 5-9, 2018, 11pp.
- R.N. Dean, “A frequency swept low-cost capacitive fringing field PCB sensor,” Proc. of the IMAPS 50th International Symposium on Microelectronics, Raleigh, NC, Oct. 9-12, 2017, pp. 157-162.
- A.N. Beal and R.N. Dean, “Using SPICE to model nonlinearities resulting from heterogeneous integration of complex systems,” Proc. of the IMAPS 50th International Symposium on Microelectronics, Raleigh, NC, Oct. 9-12, 2017, pp. 274-279.
- M. Kranz, M. Whitley, C. Rudd, J.D. Craven II, S.D. Clark, R.N. Dean and G.T. Flowers, “Environmentally isolating packaging for MEMS Sensors,” Proc. of the IMAPS 50th International Symposium on Microelectronics, Raleigh, NC, Oct. 9-12, 2017, 286-291.
- R.N. Dean, F.T. Werner and M.J. Bozack, “A comparison of immersion gold and tin surface finishes on sensing electrodes for PCB environmental saltwater concentration sensors,”

- Proc. of the IMAPS 49th International Symposium on Microelectronics, Pasadena, CA, Oct. 10-13, 2016, 6pp.
- R.N. Dean, N.B. Loden, C.J. Hartley and J.D. Craven II, “An integrated sensor for detecting moisture ingress in printed circuit board assemblies,” Proc. of the IMAPS 49th International Symposium on Microelectronics, Pasadena, CA, Oct. 10-13, 2016, 4pp.
 - F. Zhang, G.T. Flowers, R.N. Dean, J. Suhling and J. Gao, “A study on axial vibration-induced fretting corrosion in electrical connector pair,” Proc. of the 2016 IEEE Holm Conf. on Electrical Contacts, Clearwater Beach, FL, Oct. 9-12, 2016, pp. 146-151.
 - R.C. Harrison, B.K. Rhea, F. T. Werner and R.N. Dean, “A 4 MHz chaotic oscillator based on a jerk system,” Proc. of the 4th International Conference on Applications in Nonlinear Dynamics, Denver, CO, Aug 28 – Sep. 1, 2016, pp 41-51.
 - A.N. Beal, J.N. Blakely, N.J. Corron and R.N. Dean, “High frequency oscillators for chaotic radar,” Proc. of the SPIE Conf. on Radar Sensor Technology XX, SPIE Vol. 9892, Baltimore, MD, April 17, 2016, 11pp.
 - B.K. Rhea, L.L. Jenkins, F.T. Werner, W.E. Abell, and R.N. Dean, “Two-year reliability validation of GaN power semiconductors in low voltage power electronics applications,” Proc. of the 2015 IEEE Workshop on Wide Bandgap Power Devices and Applications,” Blacksburg, VA, Nov. 2-4, 2015, 4pp.
 - P. Soobramaney, G. Flowers and R. Dean, “Mitigation of the effects of high levels of high-frequency noise on MEMS gyroscopes using microfibrinous cloth,” Proc. of ASME 2015 IDETC/CIE Conference, Boston, MA, Aug. 2-5, 2015, 7pp.
 - L.L. Jenkins, J.M. Aggas, B.K. Rhea, W.E. Abell, C.G. Wilson and R.N. Dean, “Design and implementation of planar inductors for low voltage GaN-based power converters,” Proc. of the 2015 IEEE Applied Power Electronics Conference, Charlotte, NC, Mar. 15-19, 2015, 7pp.
 - L.L. Jenkins, B.K. Rhea, W. Abell, F.T. Werner, G.C. Wilson, R.N. Dean and D.K. Harris, “125 W multiphase GaN/Si hybrid point of load converter for improved high load efficiency,” Proc. of the 2014 IEEE Workshop on Wide Bandgap Power Devices and Applications,” Knoxville, TN, Oct 13-15, 2014, 6pp.
 - B.K. Rhea, L.L. Jenkins, W. Abell, F.T. Werner, G.C. Wilson, R.N. Dean and D.K. Harris, “A 12 to 1 V five phase interleaving GaN POL converter for high current low voltage applications,” Proc. of the 2014 IEEE Workshop on Wide Bandgap Power Devices and Applications,” Knoxville, TN, Oct 13-15, 2014, 4pp.
 - L.L. Jenkins, B.K. Rhea, J.M. Aggas, W. Abell, F.T. Werner, G.C. Wilson and R.N. Dean, “12,000 hour reliability validation of GaN power semiconductors in low voltage power electronics applications,” Proc. of the 2014 IEEE Conference on Reliability Science for Advanced Materials and Devices, Golden, CO, Sept. 7-9, 2014, 4pp.
 - L.L. Jenkins, B.K. Rhea, W.E. Abell, G.C. Wilson and R.N. Dean, “1000 hour GaN and SiC power semiconductor reliability study,” Proc. of the 2014 IEEE Conference on Reliability Science for Advanced Materials and Devices, Golden, CO, Sept. 7-9, 2014, 5pp.
 - L.L. Jenkins, C.G. Wilson, J.D. Moses, J.M. Aggas, W. Abell and R.N. Dean, “Performance comparison of multiphase GaN vs. GaN/Si hybrid 12/1 V POL converters,” Proc. of the GOMACHTech-14 Conference, Charleston, SC, March 31 - April 3, 2014, pp. 665-668.
 - J. Moses, L.L. Jenkins, S. Henning, J. Tennant, C.G. Wilson and R.N. Dean, “Reliability testing of power semiconductors over 1000 hours,” Proc. of the GOMACHTech-14 Conference, Charleston, SC, March 31 - April 3, 2014, pp. 661-664.
 - L.L. Jenkins, C.G. Wilson, J.D. Moses, J.M. Aggas, B.K. Rhea and R.N. Dean, “Optimization of a 96% efficient 12-1 V gallium nitride based point of load converter,”

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- Y. Cui, F. Xu, W. Zhang, B. Guo, L.M. Tolbert, F. Wang, B.J. Blalock, L.L. Jenkins, C.G. Wilson, J.M. Aggas, B.K. Rhea, J.D. Moses and R.N. Dean, “High efficiency data center power supply using wide band gap power devices,” Proc. of the 2014 IEEE Applied Power Electronics Conference, Fort Worth, TX, Mar. 16-20, 2014, pp. 3437-3442.
 - L.L. Jenkins, C.G. Wilson, J.D. Moses, J.M. Aggas and R.N. Dean, “A reliable and cost-effective assembly process for quick prototyping with GaN FETs and other flip-chip packages,” Proc. of the IEEE Workshop on Wide Bandgap Power Devices and Applications, Columbus, OH, Oct. 27-29, 2013, 4pp.
 - J.M. Aggas, L.L. Jenkins, C.G. Wilson, J.D. Moses, W.E. Abell, B.K. Rhea and R.N. Dean, “A cross batch characterization of GaN HEMT devices for power electronics applications,” Proc. of the IEEE Workshop on Wide Bandgap Power Devices and Applications, Columbus, OH, Oct. 27-29, 2013, 4pp.
 - W.E. Abell, J.M. Aggas, L.L. Jenkins, C.G. Wilson and R.N. Dean, “The change in on-resistance in GaN HEMTs operating in a buck configuration,” Proc. of the IEEE Workshop on Wide Bandgap Power Devices and Applications, Columbus, OH, Oct. 27-29, 2013, 4pp.
 - L.L. Jenkins, C.G. Wilson, J.D. Moses, J.M. Aggas, B.K. Rhea and R.N. Dean, “The impact of parallel GaN HEMTs on efficiency of a 12-to-1 V buck converter,” Proc. of the IEEE Workshop on Wide Bandgap Power Devices and Applications, Columbus, OH, Oct. 27-29, 2013, 4pp.
 - J.D. Moses; L.L. Jenkins, J.M. Aggas, W.E. Abell, S. Henning, J. Tennant, C.G. Wilson, and R.N. Dean, “GaN HEMT reliability at 125 °C for 1000 hours,” Proc. of the IEEE Workshop on Wide Bandgap Power Devices and Applications, Columbus, OH, Oct. 27-29, 2013, 4pp.
 - B.K. Rhea, C.G. Wilson, L.L. Jenkins and R.N. Dean, “The impact of inductor selection on a 12-1 V GaN POL converter with over 94% peak efficiency and higher load optimization,” Proc. of the IEEE Workshop on Wide Bandgap Power Devices and Applications, Columbus, OH, Oct. 27-29, 2013, 4pp.
 - C.G. Wilson, L.L. Jenkins and R.N. Dean, “Hard switching speed improvements in GaN-based synchronous buck converters,” Proc. of the IEEE Workshop on Wide Bandgap Power Devices and Applications, Columbus, OH, Oct. 27-29, 2013, 4pp.
 - R.N. Dean, C.B. Stevens and J.J. Tatarchuk, “A current-controlled PCB integrated MEMS tilt mirror, Proceedings of the IMAPS 46th International Symposium on Microelectronics, Orlando, FL, Sept. 30 – Oct 3, 2013, pp. 700-704.
 - Z. Weimin, L. Yu, C. Yutian, F. Wang, L.M. Tolbert, B.J. Blalock, S. Henning, J. Moses and R. Dean, “Impact of planar transformer winding capacitance on Si-based and GaN-based LLC resonant converter,” Proc. of the 2013 IEEE Applied Power Electronics Conference, Long Beach, CA, Mar. 17-21, 2013, 1668-1674.
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 - A.N. Beal, J.P. Bailey, S.A. Hale, R.N. Dean, M. Hamilton, J.K. Tugnait, D.W. Hahs and N.J. Corron, “Design and simulation of a high frequency exact solvable chaotic oscillator,” Proc. of the 2012 Military Communications Conference, Orlando, FL, Oct. 29- Nov. 1, 2012, (6pp).

- C.G. Wilson, J.Y. Hung and R.N. Dean, “A sliding mode controller for two-phase synchronous buck converters,” Proc. of the 2012 Annual Conference of the IEEE Industrial Electronics Society, Montreal, Canada, Oct. 25-28, 2012, (6pp).
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- R. Dean, G. Flowers, K. MacAllister, N. Sanders, and M. Kranz, "Micromachined Packaging Structures for Isolating Sensitive Devices from High Frequency Mechanical Vibrations," IMAPS Workshop on Packaging of MEMS and Related Micro-Nano-Bio Integrated Systems, Long Beach, CA, Nov. 18-19, 2004.
- R. Dean, J. Weller, M. Bozack, K. MacAllister, N. Sanders, B. Farrell, L. Jauniskis, J. Ting, D. Edell and J. Hetke, "Surface Micromachining of Thin Films on LCP Substrates for Biomedical Applications," IMAPS Workshop on Packaging of MEMS and Related Micro-Nano-Bio Integrated Systems, Long Beach, CA, Nov. 18-19, 2004.
- B. Farrell, P. Jaynes, W. Johnson and R. Dean, "The Liquid Crystal Polymer Packaging Solution," IMAPS 2003, The 36th International Symposium on Microelectronics, Boston, MA, Nov. 16-20, 2003.
- B. Farrell P. Jaynes, W. Johnson and R. Dean, "The Liquid Crystal Polymer Packaging Solution," MICRO SYSTEM Technologies 2003, Munich, Germany, Oct. 6-8, 2003.

- R. Dean, T. Baginski, M. Bozack, C. Ellis, G. Flowers, R. W. Johnson, N. Schutz, Y. Tzeng, and S. Wentworth, "Microsystems Research at Auburn University," Workshop on Nano and Microsystems Technology and Metrology, Huntsville, AL, Dec 4-5, 2002.
- C. Ellis, R. Dean, L. Almeida and I. Anderson, "Quad Electrostatic Inchworm Drive Optical Actuator," Workshop on Nano and Microsystems Technology and Metrology, Huntsville, AL, Dec 4-5, 2002.
- R. Dean, N. Schutz and L. Thomas, "Microsystems and Packaging Applications," Liquid Crystal Polymer Material Processing & Applications Symposium, Huntsville, AL, Oct 29, 2002.
- R. Dean, N. Schutz, L. Thomas and S. Tully, "MEMS Devices in Printed Circuit Board Technology," IMAPS Advanced Technology Workshop on Packaging of MEMS & Related Micro Integrated Nano Systems, Denver, CO, Sept 6-8, 2002.
- B. Farrell, P. Jaynes, D. Kubiak, and R. Dean, "Microfabrication Techniques for Liquid Crystal Polymer Substrates," IMAPS Advanced Technology Workshop on Packaging of MEMS & Related Micro Integrated Nano Systems, Denver, CO, Sept 6-8, 2002.
- R. Dean, H. Garrison, C. Ellis, G. Robertson and N. Schutz, "Micro Machining of LCP for MEMS Applications," LCP Materials Symposium, sponsored by PMTEC and AMCOM, Huntsville, AL, January 17, 2002.
- M. Kranz, R. Legowik, W. Bowers, R. Dean, H. Garrison and N. Shultz, "Micro-Packaging of COTS MEMS for Remote Monitoring Systems," 3rd Advanced Technology Workshop on Packaging of MEMS and Related Micro Integrated Nano Systems, IMAPS, Scotts Valley, CA, Nov. 8-10, 2001.
- R. Dean, C. Ellis, G. Robertson, L. Thomas, N. Schutz, S. Tully and H. Garrison, "MEMS Vacuum Tooling for Handling Micro-Optics," 3rd Advanced Technology Workshop on Packaging of MEMS and Related Micro Integrated Nano Systems, IMAPS, Scotts Valley, CA, Nov. 8-10, 2001.
- R. Dean, A. Matras, L. Thomas, H. Garrison, N. Schutz, K. MacAllister and S. Tully, "A Laminate Based MEMS Accelerometer," 3rd Advanced Technology Workshop on Packaging of MEMS and Related Micro Integrated Nano Systems, IMAPS, Scotts Valley, CA, Nov. 8-10, 2001.
- R. Dean, C. Ellis and H. Garrison, "A Novel Method for Handling MEMS Die," Workshop on Microsystems Technology and Applications, Huntsville, AL, July 2001.
- D. Strembicke, A. Werkheiser, R. Dean, R. W. Johnson, "A Novel Flip-Chip Packaging Method for 3-Axis MEMS Accelerometers," IMAPS Advanced Technology Workshop, Packaging and Integration of MEMS & Related Microsystems, Orlando, FL, Nov. 10-12, 2000.
- M. Kranz, B. Bowers, R. Dean, R. Legowik, "Advanced Manufacturing Techniques for Integration of COTS MEMS into Missile Health Monitoring Systems," poster presentation, The Knowledge Foundation, Inc. COTS MEMS Conference, Berkeley, CA, Aug. 3-4, 2000.
- S. Pan, H. Garrison, R. W. Johnson, M. Palmer, R. Dean, R. Thompson, and J. Evans, "Conductive Adhesives for Under-the-Hood Automotive Applications," Fifth International High Temperature Electronics Conference, Albuquerque, NM, June 2000.

PROFESSIONAL ACTIVITIES

- Technical Co-Chair for the Engineered Micro Systems & Devices Track of the 2019 IMAPS Device Packaging Conference, Fountain Hills, AZ, March 4-7, 2019.
- Technical Co-Chair for the Engineered Micro Systems & Devices Track of the 2018 IMAPS Device Packaging Conference, Fountain Hills, AZ, March 5-8, 2018.
- Director for IMAPS Student Chapter Growth, IMAPS, 2015-2019.

- Session Co-Chair, IMAPS 2017, Raleigh, NC, Oct. 10-12, 2017.
- Technical Chair, IMAPS Advanced Technical Workshop on Additive Manufacturing, Huntsville, AL, Sept. 13-14, 2017.
- Technical Co-Chair for the Engineered Micro Systems & Devices Track of the 2017 IMAPS Device Packaging Conference, Fountain Hills, AZ, March 6-9, 2017.
- Technical Co-Chair for the SiP & Engineered Micro Systems/Devices Track of the 2016 IMAPS Device Packaging Conference, Fountain Hills, AZ, March 15-17, 2016.
- Technical Co-Chair for the Engineered Micro Systems & Devices Track of the 2015 IMAPS Device Packaging Conference, Fountain Hills, AZ, March 16-19, 2015.
- Technical Program Chair for the 2014 IEEE Conference on Reliability Science for Advanced Materials and Devices, Golden, CO, Sept. 7-9, 2014.
- Technical Co-Chair for the Micro Systems & Devices Track of the 2014 IMAPS Device Packaging Conference, Fountain Hills, AZ, March 10-13, 2014.
- Member of the Organizing Committee for the MEMS & Microsystems Track of the 2013 IMAPS Device Packaging Conference, Fountain Hills, AZ, March 11-14, 2013.
- Technical Co-Chair for the MEMS & Microsystems Track of the 2012 IMAPS Device Packaging Conference, Scottsdale/Fountain Hills, AZ, March 5-8, 2012.
- Robert Dean (invited speaker), "Introduction to MEMS Technology," a 90 minute short course, 2011 Elements of Mechanical Engineering Conference, Auburn University, AL, Nov. 21, 2011.
- Steering committee member for the "Emerging and Enabling Technology Conference," Huntsville, AL, July 26-28, 2011.
- Guest Editor, IEEE Transactions on Industrial Electronics: Special Section on Electronic Devices and Systems in Harsh Environments, Vol. 58, No. 7, July 2011.
- Technical Co-Chair for the MEMS & Associated Microsystems Track of the 2011 IMAPS Device Packaging Conference, Fountain Hills, AZ, March 8-10, 2011.
- Technical Co-Chair for the MEMS & Associated Microsystems Track of the 2010 IMAPS Device Packaging Conference, Fountain Hills, AZ, March 8-11, 2010.
- Steering committee member for the "Emerging and Enabling Technology Conference," Huntsville, AL, August 24-27, 2009.
- Guest Editor, IEEE Transactions on Industrial Electronics: Special Section on Advances in Microelectromechanical Systems, Vol. 56, No. 4, April 2009.
- Technical Co-Chair for the MEMS & Associated Microsystems Track of the 2009 IMAPS Device Packaging Conference, Fountain Hills, AZ, March 10-12, 2009.
- Steering committee member for the "Tennessee Valley Emerging Technology Conference," Huntsville, AL, March 26-28, 2008.
- Technical Co-Chair for the MEMS & Associated Microsystems Track of the 2008 IMAPS Device Packaging Conference, Scottsdale, AZ, March 17-20, 2008.
- Session chair for "Session TP2: MEMS – Assembly and Packaging Technical Workshop" at the IMAPS International Conference and Exhibition on Device Packaging, Scottsdale, AZ, March 20-23, 2006.
- Member of the Technical Advisory Committee for the "IMAPS 6th Topical Technology Workshop on Packaging of MEMS and Related Micro-Nano-Bio Integrated Systems," Long Beach, CA, November 18 - 19, 2004.
- Session chair for "Session III - Special Session: "PCB and Polymer for MEMS and Microsystems Packaging," at the IMAPS Advanced Technology Workshop on Packaging of MEMS & Related Micro Integrated Nano Systems, Denver, CO, September 6-8, 2002.

- Robert Dean (invited speaker), “An Introduction to MEMS,” a three-hour short course, 2005 Elements of Mechanical Engineering Conference, Auburn University, AL, Oct. 7, 2005.
- Robert Dean (invited speaker), “An Introduction to MEMS,” a three-hour short course, Center for Advanced Vehicle Electronics semiannual meeting, Auburn University, AL, April 17, 2002.

UNIVERSITY ACTIVITIES

- Courses Taught: ELEC 2210 (Digital Electronics), ELEC 4000 (Senior Design Projects), ELEC 5760/6760 (Solid State Sensors), ELEC 5820/6820 (MEMS Technology), ELEC 7830 (Photovoltaics), ELEC 7950 (Electrical Engineering Seminar), ELEC 7970 (Advanced Sensors), and ELEC 7970 (Linear, Nonlinear and Chaotic Oscillators)
- Served on graduate committees for students in Electrical and Computer Engineering, Chemical Engineering, Industrial and Systems Engineering, Materials Engineering and Mechanical Engineering
- 2011 ECE Dept. representative to the College of Engineering Research Working Group
- Served on the faculty search committee for an open faculty position in the Microelectronics Stem in the ECE Dept. in 2014
- Served on the Mark Nelms Administrative Review Committee in 2014
- Served as the ECE Dept. representative for the College of Engineering Colloquium, 2014 - 2018
- Led a mentoring group in 2014 and 2015 for tenure track faculty at Auburn University and for PhD students who want to become tenure track professors

PROFESSIONAL MEMBERSHIPS

- ASME
- IEEE – Senior Member
- IMAPS – Fellow
- SPIE – Senior Member

HONORS AND AWARDS

- Awarded the 2014 Fellow of the Society Award for IMAPS (the International Microelectronics, Assembly and Packaging Society), Oct. 14, 2014
- Recognized by the IEEE Instrumentation and Measurement Society as one of the Transactions “Outstanding Reviewers for 2011”
- Courtesy Joint Appointment with the Auburn University Department of Mechanical Engineering, Nov. 2009
- National Academy of Inventors
- Best Paper of Session; R. Dean, R. W. Johnson, H. Garrison, N. Schutz, M. Kranz, B. Bowers, B. Payne and R. Legowik, “Strategies for Successfully Integrating MEMS Die onto Laminate,” IMAPS 2002, Proceedings 2002, Denver, CO, Sept. 4-6, 2002, pp. 109-114.
- Best Paper of Session; R. Dean, G. Flowers, S. Hodel, K. MacAllister, R. Horvath, A. Matras, G. Robertson, and R. Glover, “Vibration Isolation of MEMS Sensors for Aerospace Applications,” Proceedings of the IMAPS International Conference and Exhibition on Advanced Packaging and Systems, Reno, NV, March 10-13, 2002, pp. 166-170.
- Phi Kappa Phi, National Honor Society
- Alpha Theta Chi, Collegiate Honor Society
- Tau Beta Pi, Engineering Honor Society
- Eta Kappa Nu, Electrical Engineering Honor Society

GRADUATE STUDENTS (GRADUATED)

- Abby Anderson (PhD, 2009), co-advised by Dr. Scotte Hodel
- Nesha Hyatt Burch (MEE, 2009)
- Seong Jin Kim (MS, 2009)
- Simon Castro (MS, 2009)
- Aditi Rane (MS, 2010)
- Colin Stevens (MS, 2010; PhD, 2013)
- Ryan McPherson (PhD, 2010)
- Emir Adanur (MS, 2011)
- Jonathan Richard (MS, 2011)
- Meagan Black (MS, 2011)
- Nick Yunker (MS in ME, 2012), co-advised by Dr. George Flowers
- Chris Wilson (PhD, 2012), co-advised by Dr. John Hung
- Tian “Floyd” Huang (MS, 2013)
- Udarius Blair (MS, 2014)
- Jeff Aggas (MS, 2014)
- Justin Moses (MS, 2014)
- Stephan Henning (MS, 2014)
- Benjamin Rhea (MS, 2014)
- Luke Jenkins (MEE, 2015; PhD, 2015)
- Charles Ellis (PhD, 2015), co-advised by Dr. Bogdan Wilamowski
- Yixuan Wu (MS, 2015)
- Christopher James (MS, 2015)
- Yuan “Edward” Meng (MS, 2015)
- William Abell (MS, 2015)
- Aubrey Beal (MS 2012, PhD, 2015)
- John Tatarchuk (PhD, 2015)
- Li Chong (PhD in ME, 2016), co-advised by Dr. George Flowers
- Frank Werner (MS, 2016)
- Markus Kreitzer (MS, 2018)
- Jeff Craven (MS, 2019)
- Aaron Whitney (MS, 2019)

GRADUATE STUDENTS (CURRENT)

- Benjamin Rhea (PhD), co-advised by Dr. Edmon Perkins
- Remington Harrison (PhD)
- Markus Kreitzer (PhD)
- Casey Fendley (MS)

ADVISED POST-DOCTORAL SCHOLARS

- Dr. Chris Wilson (2012-2013)