

CURRICULUM VITÆ OF GARY H. BERNSTEIN

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Education

Ph.D. Arizona State University, Tempe, AZ. July 1987 (Advisor – David K. Ferry).
M.S.E.E. Purdue University, West Lafayette, IN. May 1981.
B.S.E.E. University of Connecticut, Storrs, CT. May 1979 (Honors Scholar).

Experience

Associate Director of the Center for Nano Science and Technology, University of Notre Dame (5/13-6/17).
Frank M. Freimann Professor of Electrical Engineering (7/10).
Co-Founder, Indiana Integrated Circuits, LLC (7/09). (www.indianaic.com).
Professor, Department of Electrical Engineering, University of Notre Dame (5/98).
Associate Chair, Department of Electrical Engineering, University of Notre Dame (1/99 to 8/06).
Associate Professor, Department of Electrical Engineering, University of Notre Dame (5/93).
Founding Director of the Notre Dame Nanofabrication Facility, Department of Electrical Engineering, University of Notre Dame (8/88 to 8/98).
Assistant Professor, Department of Electrical Engineering, University of Notre Dame (8/88).
Postdoctoral Fellow, Center for Solid State Electronics Research, Arizona State University (8/87 to 5/88).
Research Associate, Arizona State University (11/83 to 8/87).
Research Assistant, Motorola Semiconductor Research and Development Laboratories, Phoenix, AZ (5/83 to 8/83).
Research Assistant, Los Alamos National Laboratory, Los Alamos, NM. Employment included DOE security clearance (Summers 79-80).

Areas of Interest

Nanofabrication using electron beam lithography, nanoantennas, microelectromechanical systems for integrated circuit packaging, nanomagnetics, electrical engineering course development.

Honors and Awards

22. *Fellow of the National Academy of Inventors*, 2020.
21. Recipient of *1st Source Commercialization Award* for Quilt Packaging development, April 2016.
20. *Innovation Excellence Award* from the Indiana Economic Development Center and Forbes Summit Group, Indianapolis, November 2014.
19. Named *Teacher of the Year* by Notre Dame Electrical Engineering students, May 2014.
18. *IBM University Research and Collaboration Faculty Award*, June 2011.
17. *University of Connecticut School of Engineering Academy of Distinguished Engineers* 2010.
16. *Faculty Fellow of the University of Notre Dame John J. Reilly Center for Science Technology and Values*, 2010.
15. 2007 Best Paper of the Year Award in *IEEE Transactions on Advanced Packaging*, for paper entitled "Quilt Packaging: High-Density, High-Speed Interchip Communications" by G. H. Bernstein, Q. Liu, M. Yan, Z. Sun, D. Kopp, W. Porod, G. Snider, and P. Fay.
14. 2006 Best Paper of the Year Award in *Sensors and Transducers Journal*, for paper entitled, "A

Microfabricated Transduction Coil for Inductive Deep Brain Stimulation,” by J. Wu and G. H. Bernstein (http://www.sensorsportal.com/HTML/DIGEST/Best_articles_2006.htm).

13. Fellow of the IEEE, 2006.
12. American Men and Women of Science, Gale Publishing, 2005-06.
11. Named among top 100 Nanotechnology Leading People by D&A Hi-Tech Information, 2002.
10. Who’s Who in Engineering Education (WWEE), 2002.
9. Notre Dame Kaneb Teaching Award (http://www.nd.edu/%7Ekaneb/pages/award_kaneb.html#coe), 2001.
8. Research advisor to Islamshah Amlani, whose dissertation work on Quantum-dot Cellular Automata was awarded the \$50,000 first prize in the 1999 *Merrill Lynch Innovation Grants Competition*, New York, January 2000. A prize of \$5,000 for research was awarded to the advisor. (<http://www.wku.edu/news/releases/february/amlani.html>).
7. *Outstanding Paper Award* for co-authoring paper entitled, “Quantum-dot Cellular Automata,” 12th Intl. *Microprocesses and Nanotechnology Conf.*, Yokohama, Japan, July 1999.
6. Co-recipient of the DARPA Ultra-Electronics *Sustained Excellence by a Performer in Fiscal Year 1998 Award*, 1999.
5. Senior Member of the IEEE, 1995.
4. *White House Presidential Faculty Fellowship*, National Science Foundation, 1992-97. (<http://www.nsf.gov/pubs/stis1991/nsf91103/nsf91103.txt>).
3. *IBM Faculty Development Award* (with S. Bandyopadhyay, C. Lent and W. Porod), 1989.
2. *IBM Faculty Development Award*, 1988.
1. Sigma Xi, Eta Kappa Nu, Tau Beta Pi, Phi Kappa Phi.

Educational Projects and Community Service

36. Mentor for EE Students (2021-2024)
35. Technical advisor and mission supervisor for IrishSat Club, Fall 2020 to Spring 2022.
34. Organized EE Faculty lunches to discuss academic topics of interest, 2019.
33. Organized a session on ND research for ONR Global visitors to the IDEA Center at Innovation Park, April 2019.
32. Organized a workshop with hands-on training on optical microscopy by the Olympus Corporation, April 2019.
31. Presented talks on the importance of entrepreneurship at ND for the Research Administration Training Program (4/2018, 11/2018, 4/2019).
30. Advisor for EE Senior Design project on control of Parkinson’s tremors, Fall 2017-Spring 2018.
29. Presented bi-annual talks on Entrepreneurship at Notre Dame to trainees at the Notre Dame Office of Research Training Program, May 2018 - 2019.
28. Co-Advisor to Sam Agdasi of Ivy Tech Community College, South Bend, for Ph.D. research on systems engineering of a community college curriculum on nanotechnology through Colorado State University, Spring 2017 to 2020.
27. Mentored three groups of Freshmen, totaling 12 students, for ENG 10112 to design and build speaker crossover networks, Spring 2018.
26. Mentored five groups of Freshmen, totaling 25 students, for ENG 10112 to design and build speaker crossover networks, Spring 2017.
25. Faculty co-mentor of undergraduate Power Grid Model project (with K. Sauer), 2013- 2017.
24. Judge for the Siemens Math, Science, and Technology Competition, Notre Dame, November 2016.
23. Faculty mentor for EE undergraduates, 2008-present.
22. Member of Nanotechnology Advisory Board, Ivy Tech Community College, 2010-present.
21. Present demonstrations on sound waves to elementary school students at Northpoint Elementary School, 2010-2017.
20. Faculty supervisor for the 3rd Annual I2D2: Imagination, Innovation, Discovery, and Design Event, September 2012.
19. Faculty Mentor for the *Building Bridges Mentoring Program*, 2012-13.
18. Lecturer for summer Minority Engineering Program, Notre Dame, 2012.

17. Directed scanning electron microscope experiences for undergraduates and local teachers, 2008-present.
16. Developed scanning electron microscope outreach projects, *Notre Dame Extended Research Community* project participant, 2007-09.
15. Faculty advisor for Notre Dame Scrabble Club, 2005-2011.
14. Faculty advisor for Notre Dame Imaging Club, 2010.
13. Presented workshop as part of NSF NEU program entitled, "First-Year Module on Information and Nanotechnologies," August 1-2, 2006 at the University of Notre Dame (with W. Porod).
12. Co-supervised Lynda Smith, teacher for *Research Experience for Teachers* (RET), Notre Dame, Summer, 2006 (with W. Porod).
11. Supervised Angela Lewis, teacher for *Research Experience for Teachers* (RET), Notre Dame, Summer, 2005.
10. Judge for FIRST Lego League Regional Competition, Notre Dame, Winters 2003-06.
9. G. H. Bernstein and N. Longenecker, Siemens summer teacher's project, "SEM for Curiosity-Driven High and Middle School Activities," Summers 2003-04.
8. Created the *National Coalition for Recruiting Electrical and Computer Engineering Students*, Spring, 2002 (<http://ncreces.nd.edu>).
7. Coach for First Lego League team, South Bend Hebrew Day School, 2001-02.
6. Presented workshop as part of NSF Bits-to-Chips program entitled, "From Bits-to-Chips: Curriculum Development in Microelectronics Design and Fabrication, and Emerging Technologies," July 23-27, 2001 at the University of Notre Dame (with J. Brockman, P. Kogge, and G. Snider).
5. Advisor to the student high school *Electrical Engineering Education Outreach* program, 1994- 2000.
4. Member of Indiana Electronics Manufacturers' Association *Mobile Electronics Manufacturing Line* Program, 1997.
3. Director of Junior design course and senior capstone design projects for AlliedSignal, Bayer, Hughes, Tellabs, Army Research Laboratory, General Motors Onstar, and Whirlpool, 1996 to 2001.
2. Member of Board of Directors, Sinai Synagogue, South Bend, IN, 1995-1998.
1. Faculty advisor for student chapter of IEEE, 1991-1997.

Grants and Awards Received – Total Budget Indicated

97. \$85,000 from the IDEA Center, University of Notre Dame, "Short-Wavelength Spin Wave Transducer," co-P.I. (with H. Aquino, J. Chisum, A. Orlov, and W. Porod), 12/8/22 – 12/30/23.
96. U.S. Government (agency and budget are confidential), "Improving the Performance of Nanoantenna-Based Infrared Sensors using Advanced Thermoelectric Materials," key personnel (with G. Szakmany, P.I., E. Kinzel, co-P.I., D. Burghoff, A. Orlov and W. Porod), 1/17/23 – 1/16/24.
95. U.S. Government (agency and budget are confidential), "Uncooled Ultra-Low SWAP Infrared Detector with Angle of Incidence Polarization and Wavelength Selectivity," key personnel (with G. Szakmany, P.I., E. Kinzel, co-P.I., A. Orlov and W. Porod), 1/10/22 – 1/09/23.
94. \$1,463,822 from NASA, "Fast, Multi-spectral, Polarization-Sensitive IR Detectors for Solar Astronomy from 5 to 100 Microns," **P.I.** (with D. Burghoff, E. Kinzel, A. O. Orlov, W. Porod, G. Szakmany), 4/14/20 – 4/13/24.
93. \$297,153 from DARPA, "Let Spin-Wave Physics do the Computing, Phase II" co-P.I. (with W. Porod, A. O. Orlov, and J. Chisum), 08/20 – 04/21.
92. \$290,885 from DARPA, "Let Spin-Wave Physics do the Computing, Phase I" co-P.I. (with W. Porod, A. O. Orlov, and J. Chisum), 11/19 – 08/20.
91. \$8,000 from NSF, "REU: Chip-Scale Millimeter-Wave Spectrum / Signal Analyzer Using Spin-Wave Diffraction and Interference," co-P.I. (with W. Porod and J. Chisum), 6/19 – 9/19.
90. \$690,000 from NSF, "SpecEES: ChipScale Millimeter Wave Spectrum / Signal Analyzer Using SpinWave Diffraction and Interference," co-P.I. (with W. Porod and J. Chisum), 09/17 – 08/20.
89. \$125,000 from SUNY Polytechnic Institute/SRC, "Magnetoelectronic Devices Coupled with Nanomagnet Geometry," co-P.I. (with W. Porod and G. Csaba), 1/1/17.
88. \$10,000 Notre Dame Y2016 Faculty Research Support Program (FRSP) Initiation Grant, "Rapid Thermal Processing of DNA Nanostructures on Silicon for Formation of Self-Aligning p-n Junctions," co-P.I.

- (with M. Lieberman), 1/1/16 – 12/30/16.
87. \$125,000 from SUNY Polytechnic Institute/SRC, "Magnetoelectronic Devices Coupled with Nanomagnet Geometry," co-P.I. (with W. Porod and G. Csaba), 1/1/16.
 86. \$45,000 from Notre Dame's Center for Advanced Diagnostics & Therapeutics (AD&T), "Magnetoelectric Nanoparticles (MENs) for Minimally Invasive Deep Brain Stimulation in a Parkinsonian Mouse," co-PI (with T. Stewart), 6/16.
 85. \$27,000 from Notre Dame's Center for Advanced Diagnostics & Therapeutics (AD&T), "Magnetoelectric Nanoparticles for Cancer Treatments," **P.I.** (with W. Porod, G. Csaba, M. Leevy, S. Stack, S. Khizroev), 11/15-12/16.
 84. \$440,000 from NSF, "MRI: Development of an Apertureless Near-Field Scanning Optical and Magneto-Optical Kerr Effect Microscope for Nano-Science Applications," co-P.I. (with H. Xing, G. Hartland, V. Protasenko, L. Huang), 9/13-8/14.
 83. \$1,600,000 from NSF, "NEB: Physics-Inspired Non-Boolean Computation based on Spatial- Temporal Wave Excitations," co-P.I. (with G. Csaba, W. Porod, S. Hu, and M. Niemier), 9/11-7/15.
 82. \$2,200,986 from MIND 1.5, co-P.I. (with A. Seabaugh, P. Fay, T. Kosel, D. Jena, M. Wistey, G. Xing, M. Niemier, S. Hu), 1/11-12/12.
 81. \$40,000 from IBM, "University Research and Collaboration Faculty Award," June 2011.
 80. \$9,796,469 from DARPA, "Nanomagnet Logic," co-P.I. (with G. Csaba, S. Hu, J. J. Nahas, M. Niemier, A. Orlov, and W. Porod), 10/10-3/15.
 79. \$482,671 from ONR, "Radiation Hard Nanomagnetic Logic with Electronic Input and Output," co-P.I. (with W. Porod, S. Hu and M. Niemier), 9/09-12/10.
 78. \$658,070 from NSF, "MRI: Acquisition: Characterization of and I/O for Magnetic Logic Structures," **P.I.** (with S. Hu, M. Niemier and W. Porod), 9/09-8/10.
 77. \$100,000 from Sandia National Laboratory, "Demonstration of Quilt Packaging," **P.I.** (with M. Niemier and P. Fay), 2/09-1/10.
 76. \$371,938 from NSF, "Catalytic Nanodiode," co-P.I. (with E. Wolf), 1/09 – 12/11.
 75. \$85,000 from ONR, "Nanoantenna CNN-Chip Integration," co-P.I. (with W. Porod and P. Fay), 1/09 – 12/09.
 74. \$597,000 from ONR, "Directed Self-Assembly of Smart Molecules," co-P.I. (with M. Lieberman), 1/09 – 12/10.
 73. \$50,000 from Sandia National Laboratory, "Quilt Packaging," **P.I.** (with M. Niemier and P. Fay), 8/08-7/09.
 72. \$126,000 from Rockwell-Collins, "Quilt Packaging Development," **P.I.** (with P. Fay), 5/08 – 4/09.
 71. \$3,791,312 from SRC, "Midwest Institute for Nanoelectronics Discovery (MIND)," co-P.I. (with A. Seabaugh, P. Fay, S. Hu, D. Jena, T. Kosel, C. Lent, M. Niemier, W. Porod, and H. Xing), 3/08 – 2/11.
 70. \$6,000 from NSF, "REU: Novel Superconnects for Ultrahigh-Performance Hybrid Communications Systems," **P.I.** (with P. Fay), 5/08-8/08.
 69. \$980,153 from DoD, "Blending Processing into Advanced Memory Technologies to Enhance Massive, Memory-Critical Applications," co-P.I. (with P. Kogge, J. Brockman, S. Hu, W. Porod, and M. Niemier), 3/1/08 – 2/28/10.
 68. \$1,000,826 from DoD, "Ultra-Wide-Bandwidth, Contiguous Superconnects for Advanced Computing Systems," **P.I.** (with P. Fay, G. Snider and J. Brockman), 10/07-9/09.
 67. \$25,000 from Rockwell-Collins, "Quilt Packaging for High-Speed Chip-to-Chip Interconnects," **P.I.** (with P. Fay), 07/07-9/07.
 66. \$6,000 from NSF, REU for one student for "Quilt Packaging," **P.I.**, 5/07-8/07.
 65. \$298,248 from NSF, "Novel Superconnects for Ultrahigh-Performance Hybrid Communications Systems," **P.I.** (with P. Fay), 01/07-12/11.
 64. \$300,000 from NSF, "NANO: Applications, Architectures, and Circuit Design for Nano-scale Magnetic Logic Devices," co-P.I. (with M. Niemier, X. S. Hu, and W. Porod), 09/06-09/09.
 63. \$150,000 from the Semiconductor Research Corporation (SRC) Nanoelectronics Research Initiative (NRI), "Nanomagnet QCA," co-P.I. (with W. Porod), 09/06 - 12/09.
 62. \$125,000 from the Missile Defense Agency, "Equipment Grant: Scanning Electron Microscope," co-P.I.

- (with W. Porod), 8/06.
61. \$150,000, STTR phase II from Missile Defense Administration (MDA), “Multispectral Infrared Sensors,” co-P.I. (with W. Porod and P. Fay), 10/05-9/07.
 60. \$450,000 STTR phase II ONR, “Focal Plane array processors with adaptive visual range and nanoantenna sensor,” co-P.I. (with W. Porod and P. Fay), 10/05-9/07.
 59. \$275,822 from NSF, “Quilt Packaging: A New Paradigm for the Integration of Heterogeneous Communications Systems-in-Package,” **P.I.** (with G. Snider and P. Fay), 7/05-6/06.
 58. \$523,800 DURIP from ONR, “Electron Beam Lithography System,” **P.I.**, 10/04-9/05.
 57. \$25,000 from the Intel Corporation, “Electron Beam Lithography System,” **P.I.**, 10/04-9/05.
 56. \$21,000 STTR Phase I from MDA, “Multispectral Infrared Sensors,” co-P.I. (with W. Porod and P. Fay), 7/04-12/04.
 55. \$60,000 STTR Phase I from ONR, “Focal Plane array processors with adaptive visual range and nanoantenna sensor,” co-P.I. (with W. Porod and P. Fay), 7/04-12/04.
 54. \$60,000 from NSF, “SGER: Bridging Nanoelectronics to CMOS,” co-P.I. (with G. Snider and A. Orlov), 3/04-2/05.
 53. \$5,000,000 Multi-University Research Initiative (MURI) from ONR, “Biologically-Inspired CNN Image Processors with Dynamically-Integrated Hyperspectral Nanoscale Sensors,” co-P.I. (with W. Porod, P. Fay, Y. F. Huang, A. I. Csurgay, L. O. Chua, B. Roska, T. Roska, and F. S. Werblin), 6/03-5/08.
 52. \$1,475,233 from ONR, “Mixed Signal Nanoelectronics,” co-P.I. (with A. Seabaugh, P. Fay and O. Collins), 8/02-8/06.
 51. \$87,552 from NSF, “NER: Computing Architectures for Coupled Nanomagnets,” co-P.I. (with W. Porod), 5/02-4/04.
 50. \$55,000 from Bayer Diagnostics, “Microfluidics for Medical Diagnostics,” **P.I.**, 1/02-12/03.
 49. \$57,000 from the Notre Dame General Electric Learning Excellence Program, “A Learning Module for Microelectromechanical Systems,” co-P.I. (with M. Gad-el-Hak and G. Snider), 2/01-1/02.
 48. \$90,000 from the Notre Dame Equipment Renewal and Restoration Program, “Hazardous Gas Handling System,” co-P.I. (with G. L. Snider, P. Fay, D. C. Hall, and A. C. Seabaugh), 1/01-6/01.
 47. \$50,000 from Bayer Diagnostics, “Toward Purchase of Alcatel 601E Bosch Etcher,” **P.I.**, 1/01.
 46. \$194,598 from Intel Corporation, “Metal/Tunnel-Junction Quantum-dot Cellular Automata Cells without Bias Control,” **P.I.** (with G. Snider), 11/00-10/03.
 45. \$206,233 from the Semiconductor Research Corporation, “Background-Charge Insensitive Single-Electron Memories,” co-P.I. (with G. Snider and A. Orlov), 10/00-9/03.
 44. \$1,670,536 from the Indiana 21st Century Research and Technology Fund, “Development of a Microfluidics-Based Blood Monitoring System,” **P.I.** (with J. Brockman, O. Collins, P. Fay, M. Gad-el-Hak, M. Lieberman, A. Seabaugh, and G. Snider), 9/00-8/03.
 43. \$202,413 from NSF, “Acquisition of Electronic Instrumentation for Nanoscience and Education,” co-P.I. (with A. Seabaugh, P. Fay, G. Snider, and D. Hall), 7/00-7/01.
 42. \$6,000 from the NSF CISE Educational Innovation Program, REU for one student for “Bits to Chips,” **P.I.**, 5/00-8/00.
 41. \$55,000 from Bayer Diagnostics, “Microfluidics for Medical Diagnostics,” **P.I.**, 1/00-12/00.
 40. \$1,100,000 from the Keck Foundation, “Nanoelectronics Research,” co-P.I. (with W. Porod and seven others), 1/00-12/03.
 39. \$1,800,000 from ONR/DARPA, “Augmentation to Molecular Electronics Research,” co-P.I. (with W. Porod and seven others), 3/00-5/03.
 38. \$343,000 from the ONR (DURIP), “Fabrication and Measurement of High-Speed, High Temperature Quantum-dot Cellular Automata,” co-P.I. (with A. Orlov, G. L. Snider, A. C. Seabaugh, and P. Fay), 3/00-3/01.
 37. \$5,000, Advisor’s first prize in the Merrill Lynch Innovation Grants Competition, **P.I.**, 1/00.
 36. \$3,000 from General Motors Onstar Division, “Senior Design Projects Course,” co-P.I. (with P. Fay), 9/99-5/00.
 35. \$4,000 from NSF CISE Educational Innovation Program, REU for one student for “Bits to Chips,” **P.I.**,

- 6/98-8/98.
34. \$9,900 from AlliedSignal, "Microelectronics Laboratory," **P.I.**, 3/99-2/00.
 33. \$2,500 from Lockheed-Martin Corp., "Educational Outreach Program," **P.I.**, 1/99-12/99.
 32. \$1,534,492 from ONR/DARPA, "Molecular Electronics Based on Quantum-dot Cellular Automata," co-P.I. (with M. Lieberman, C. S. Lent, G. L. Snider, W. Porod, G. J. Iafrate, T. P. Fehlner, G. V. Hartland, and O. G. Wiest), 1/99-4/01.
 31. \$1,445,075 from ONR, "Sb-Based III-V Quantum Devices and Circuits for Ultra-High Frequency Digital Signal Processing Applications," **P.I.** (with P. Fay), 6/98-12/00.
 30. \$10,000 from NSF CISE Educational Innovation Program, REU for two students for "AC Separation of Particles by Biased Brownian Motion in a 2D Sieve," **P.I.**, 6/98-8/98.
 29. \$521,228 from NSF CISE Educational Innovation Program, "From Bits to Chips: A Multidisciplinary Curriculum for Microelectronics System Design Education," **P.I.** (with G. L. Snider, R. J. Minniti, J. B. Brockman, P. M. Kogge, and B. Walvoord), 7/97-12/01.
 28. \$75,000 from the University of Notre Dame Equipment Restoration and Renewal Program, "Photomask Fabrication System for Microelectronics Materials and Devices," **P.I.** (with R. J. Minniti, G. L. Snider, D. C. Hall, W. B. Berry, P. M. Kogge, B. Walvoord, and J. B. Brockman), 1/97-12/97.
 27. \$1,000 from Whirlpool Corp., "Senior Design Projects Course," **P.I.**, 11/96-5/97.
 26. \$1,500 from Bayer Laboratories, "Senior Design Projects Course," **P.I.**, 11/96-5/97.
 25. \$7,000 from Hughes Research Laboratory, "Development of Resonant Tunnel Diode Based Integrated Circuits Processing Techniques," **P.I.**, 11/96-5/97.
 24. \$180,000 from ARO, "Ultra-Nano Probe System," co-P.I. (with J. L. Merz, G. L. Snider, and D. C. Hall), 9/95-8/98.
 23. \$40,203 from the Mayo Foundation, "Ferroelectric Materials Research," **P.I.**, 8/95-8/96.
 22. \$35,000 from NSF, "Presenting Electrical Engineering Fundamentals to High School Students," **P.I.** (with G. L. Snider), 6/95-5/96.
 21. \$3,490,808 from the ONR/ARPA, "Silicon-Based Nanoelectronics Using Quantum Cellular Automata," co-P.I. (with J. L. Merz, G. L. Snider, W. Porod, C. S. Lent, E. T. Croke, and D. H. Chow), 7/95-7/98.
 20. \$117,686 from NSF, "Reactive Ion Etching for Device Fabrication and Materials Studies," co-P.I. (with G. L. Snider, J. L. Merz, and J. K. Furdyna), 4/95-3/96.
 19. \$20,000 from Los Alamos National Laboratory, "Fabrication of Tunnel Devices with Applications Toward Quantum Cellular Automata," **P.I.**, 1/95-6/95.
 18. \$50,000 from Hughes Research Laboratory, "Fabrication of Resonant Tunneling Diode Based Digital Logic Circuits," **P.I.**, 11/94-10/95.
 17. \$42,858 from Delco Electronics, "VLSI Fabrication Principles - Short Course," **P.I.** (with R. Minniti), 7/94-6/95.
 16. \$388,500 from AFOSR, "Electromigration and Local Field Effects in Mesoscopic Interconnects," **P.I.** (with W. Porod and C. S. Lent), 10/94-9/97.
 15. \$139,998 from ONR, "Coulomb Coupling Between Quantum Dots and Waveguides," (Augmentation Award for Science and Engineering Research Training Program), co-P.I. (with W. Porod and C. S. Lent), 6/94-5/96.
 14. \$90,000 from Mayo Foundation, "RTD-Based Microwave ICs," **P.I.** 6/93-5/94.
 13. \$30,000 from Miles Laboratories, "Microelectromechanical Systems," **P.I.** 4/93-6/94.
 12. \$25,000 from Miles Laboratories, "Design and Fabrication of Silicon ICs," **P.I.** 1/93-6/94.
 11. \$925,000 from ARPA, "Quantum Cellular Automata," co-P.I. (with W. Porod and C. S. Lent), 5/93-4/96.
 10. \$500,000 from NSF, "White House Presidential Faculty Fellow Award," **P.I.** 10/92-9/97.
 9. \$76,760 from NSF, "A Modern Integrated Circuits Teaching Laboratory," co-P.I. (with R. J. Minniti, B. Das, and S. Bandyopadhyay), 7/92-6/93.
 8. \$10,000 from the Jesse H. Jones Research Fund for 1991-92, "Electromigration in Ultra-Narrow Interconnects," **P.I.** 5/92-4/93.
 7. \$15,000 from Miles Laboratories, "Microelectronics Laboratory," **P.I.** 7/91-6/92.
 6. \$301,484 from ONR, "Interconnections in ULSI: Correlation and Crosstalk," **P.I.** (with S. Bandyopadhyay and W. Porod), 1/91-12/92.

5. \$403,000 from AFOSR, "Quantum Transport," co-P.I. (with S. Bandyopadhyay, C. Lent and W. Porod), 1/91-12/93.
4. \$50,000 from IBM, "Integrated Circuits Teaching Laboratory," **P.I.** (with S. Bandyopadhyay), 6/90-5/91.
3. \$15,000 from Miles Laboratories, "Microelectronics Laboratory," **P.I.** 7/90-6/91.
2. \$75,000 from IBM, "Faculty Development Award," co-P.I. (with S. Bandyopadhyay, C. Lent and W. Porod), 9/89-8/91.
1. \$60,000 from IBM, "Faculty Development Award," **P.I.** 9/88-8/90.

New Equipment Donations Received

9. Intel, 5 Dell Core-duo computers, monitors, and software, \$6,000 (2007).
8. AMD, 6 Athlon Processors and motherboards, \$2,000 (2002).
7. Intel, 6 Dell Pentium computers, monitors, and software, \$18,000 (2001).
6. AMD, 10 Athlon Processors and motherboards, \$3,000 (2000).
5. Intel, 5 Dell Pentium computers, monitors, and software, \$15,000 (2000).
4. Hewlett-Packard, oscilloscopes and function generators, \$19,568 (1999).
3. Keithley Instruments, repair services and electrometers, \$15,000 (1997).
2. Metricon, Model PC-2000 Prism Coupler, \$24,000 (1993).
1. Keithley Instruments, Model 82 Capacitance-Voltage System, \$28,170 (1992).

Laboratories Established

Founding director of the Notre Dame Nanofabrication Facility (1988-98). The laboratory allows fabrication of complete nano and CMOS circuits. See <http://www.nd.edu/~ndnf/>

Courses Developed at Notre Dame

14. Introduction to Circuits, for CPEG majors (sophomore level), with W. Porod.
13. Introduction to EE Laboratory, developed textbook and ten laboratory experiences (sophomore level)
12. Imaging for Nanotechnology (graduate level)
11. Vacuum Technology and Scanning Electron Microscopy (graduate level)
10. Introduction to Engineering, developed new six-week module on information technology and nanotechnology (first-year engineering students)
9. Vacuum Technology for Microelectronics (1-credit, graduate level)
8. Scanning Electron Microscopy and Electron Beam Lithography (1-credit, graduate level)
7. Nanolithography Technologies (1-credit, graduate level)
6. Advanced IC Fabrication Techniques (graduate level) (Coordinator, with G. L. Snider, P. Fay, A. C. Seabaugh, D. C. Hall)
5. Frontiers in Microelectronics Systems (senior and graduate level) (Coordinator, with G. L. Snider, P. M. Kogge, and J. B. Brockman)
4. Technology for the 21st Century, coordinator (1-credit Freshman seminar course on engineering careers)
3. Submicron Fabrication Techniques (graduate level)
2. VLSI Fabrication Techniques (graduate level)
1. Integrated Circuits Processing Laboratory (senior and graduate level)

Additional Courses Taught

6. Transistors and Optical Devices (Junior and Senior levels)
5. Introduction to Engineering (First Year level, team taught)
4. Electrical Engineering Design (Junior and Senior levels)
3. Electronics I (Sophomore level)
2. Semiconductor Materials (Junior level)
1. Analog Integrated Circuits (Senior level)

Ph.D. Dissertations Completed

21. "Electrical to Spin-Wave Transducers for Spin-Wave Computing Devices," Hadrian Aquino, Spring, 2022 (co-advised with W. Porod).
20. "Exchange-Biased Magnetic Multilayers for Nanomagnet Logic Applications," Faisal Shah, Fall, 2014.
19. "Investigation of the Mechanical and Thermal Reliability of Quilt Packaging," Quanling Zheng, Fall, 2014 (co-advised with A. Krizan).
18. "Thermomechanical Effects in Quilt Packaging," Mohammad Ashraf Khan, Summer, 2014 (co-advised with A. Krizan).
17. "Vibrating Sample Magnetometry Study of Thin Films for MTJ Devices," Peng Li, Spring, 2014.
16. "Nanomagnet Design for Magnetic QCA," Mohammad Jafar Siddiq, Fall, 2013 (co-advised with M. Niemier).
15. "Wideband Chip-to-Chip Interconnects for High Performance Computing," Wayne Buckhanan, Spring, 2013 (co-advised with M. Niemier).
14. "Design, Fabrication and Modeling of Clocked Nanomagnet Logic Circuit Elements," Mohammad Tanvir Alam, (co-advised with M. Niemier), Summer, 2010.
13. "A Lateral-Drive Method to Address Pull-in Failure in MEMS," Jie Su, Fall, 2007.
12. "Design and Fabrication of a Tunable Fabry-Perot Interferometer/Photodiode Micro-Spectral Image Sensor," Heng Yang, (co-advised with P. Fay) Fall, 2007.
11. "Quilt Packaging: A Novel High Speed Chip-to-Chip Communication Paradigm for Systems-in-Package," Qing Liu, Summer, 2007.
10. "Electric Field Detection by Electrostatic Force Microscopy for Clocking Quantum-dot Cellular Automata Molecules," Minjun Yan, Summer, 2006.
9. "Design and Fabrication of Nanometer Magnet Architectures," Alexandra Imre, (co-advised with W. Porod), Spring, 2005.
8. "Ultra High Resolution Electron Beam Lithography for Molecular Electronics," Wenchuang Hu, Spring, 2004.
7. "Fabrication of Molecular Electronics Arrays," Qingling Hang, Spring, 2004.
6. "Integrated Inductive Coupling Systems for MEMS Powering," Jie Wu, Winter, 2003.
5. "Experimental Study of Electromigration in Nanometer Al and Al-Cu Interconnects," Xun Pang (co-advised with A. Krizan), Summer, 2002.
4. "Experimental Demonstrations of Quantum-dot Cellular Automata: Basic Cell, Binary Wire and Logic Gates," Islamshah Amlani, Spring, 1999.
3. "A Feasibility Study of a Gallium Arsenide Based Quantum-dot Cellular Automata," Greg Bazán, Spring, 1998.
2. "Reliability of Ultra-narrow Metal Interconnects," Richard Frankovic, Fall, 1996.
1. "Experimental Investigation of DC Crosstalk Between Superconducting Interconnects Defined by High Resolution Electron Beam Lithography," Xiaokang Huang, Fall, 1994.

Masters Theses Completed

15. "Clock Line Fabrication and Analysis for Nanomagnet Logic," Katherine Butler, Fall, 2013.
14. "Fabrication and Testing of Microneedles for Neurological Research," Quanling Zheng, Spring, 2010 (co-advised with W. Porod).
13. "Fabrication of a High Diode Check Valve," Heng Yang, Fall, 2002.
12. "Single Electron Transistor Made by Electron Beam Lithography and Three-Angle Evaporation," Minjun Yan, Fall, 2002.
11. "Investigation of Micropumps for Pumping Blood," Jie Su, Fall, 2002.
10. "Improved Treatment Method for Parkinson's Tremors," Sheilendra Dubhashi, Spring, 2002.
9. "Electron Beam Nanolithography of Contamination Resist and OTS SAMs," Qingling Hang, Spring, 2001.
8. "Sub-10-nm Structure Fabrication by Field Emission SEM Nanolithography System," Wenchuang Hu, Spring, 2001.
7. "Development of 3-Micron Poly-Gate CMOS Process at Notre Dame," Jun Qian, Spring, 1999.
6. "A Tunable Analog VLSI Network for Preserving Discontinuities in One-Dimensional Signals," Hazim

- M. Zayed, Fall, 1993 (co-advised with R. L. Stevenson).
5. "A Novel Method for Producing Nanofabricated Quantum Structures in Silicon Inversion Layers," Brad Campbell, Fall, 1993.
 4. "Characteristics of MOS Capacitors Fabricated Using Electron Beam Lithography," Renu Kamath, Summer, 1992.
 3. "Ultra-Short Gate GaAs MESFETs Fabricated by Electron Beam Lithography," Greg Bazán, Spring, 1991.
 2. "Single Electron Tunneling in an Array of Quantum Dots," Steven Koester, Spring, 1991.
 1. "The Design of an Electron Beam Lithography System Based on a Scanning Electron Microscope," John N. Monteiro, Spring, 1990.

Patent Applications and Disclosures

3. Infrared Shack-Hartmann Wavefront Sensor Based on Cavity-Coupled Nanoantennas, filed on February 24, 2022, assigned Application Number 63/268,478.
2. Infrared Shack-Hartmann Wavefront Sensor Based on Cavity-Coupled Nanoantennas, filed on February 24, 2023, assigned International Application Number PCT/US2023/063293.
1. Infrared Shack-Hartmann Wavefront Sensor Based on Cavity-Coupled Nanoantennas, filed on August 16, 2024, assigned Application Number 18/839,353.

Patents

19. H. Aquino, A. Orlov, G. H. Bernstein, J. Chisum, D. Connelly, W. Porod, "Short-Wavelength Spin Wave Transducer." U.S. Patent 12,431,602, September 9, 2025.
18. E. Kinzel, G. Bernstein, W. Porod, A. Orlov, and G. Szakmany, "Infrared Shack-Hartmann Wavefront Sensor Based on Cavity-Coupled Nanoantennas," International patent WO 2023/164668 A3, Aug. 31, 2023.
17. G. Csaba, A. Papp, J. Chisum, W. Porod, and G. H. Bernstein, "Methods and Apparatus for Spin Wave-Based Spectrum Analyzers," U.S. Patent #10,613,129, April 7, 2020.
16. D. C. Hall, S. Howard, A. Hoffman, G. H. Bernstein, and J. M. Kulick, "Inter-Chip Alignment," U.S. Patent #10,410,989, Sept. 10, 2019.
15. D. C. Hall, S. Howard, A. Hoffman, G. H. Bernstein, and J. M. Kulick, "Quilt Packaging System with Mated Metal Interconnect Nodules and Voids," U.S. Patent #10,050,027, Aug. 14, 2018.
14. G. H. Bernstein, P. Fay, W. Porod, Q. Liu, "Systems and Methods for Inter-Chip Communication," U.S. Patent #9,633,976, April 25, 2017.
13. D. C. Hall, S. Howard, A. Hoffman, G. H. Bernstein, and J. M. Kulick, "Quilt Packaging System with Interdigitated Interconnecting Nodules for Inter-Chip Alignment," U.S. Patent #9,620,473, April 11, 2017.
12. A. O. Orlov, G. Szakmany, G. H. Bernstein and W. Porod, "Mono-metallic Thermocouples," U.S. Patent #9,577,173, February 21, 2017.
11. G. H. Bernstein, P. Fay, W. Porod, Q. Liu, "Inter-Chip Communication," U.S. Patent #8,623,700, January 7, 2014.
10. M. Niemier, M. T. Alam, G. H. Bernstein, S. Hu, W. Porod, and E. Varga, "Non-Majority MQCA Magnetic Logic Gates and Arrays Based on Misaligned Magnetic Islands," U.S. Patent #8,058,906, November 15, 2011.
9. G. H. Bernstein, P. Fay, Q. Liu, and W. Porod, "Inter-Chip Communication," U.S. Patent #8,021,965, September 20, 2011.
8. G. H. Bernstein, P. Fay, Q. Liu, and W. Porod, "Inter-Chip Communication," U.S. Patent #7,612,443, November 3, 2009.
7. G. H. Bernstein, P. Fay, Q. Liu, and W. Porod, "Interconnect Packaging Systems," U.S. Patent #7,608,919, October 27, 2009.
6. G. H. Bernstein and R. Frankovic, "Planar-Processing Compatible Metallic Microextrusion Process," U.S. Patent #6,594,894, July 22, 2003.
5. M. A. Kheiri, J. E. Ruggiero, and G. H. Bernstein, "Electronic Lancet Device," U.S. Patent #6,364,889,

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4. A. M. Krizan and G. Bernstein, "The QUADFET- a Novel Field Effect Transistor," U.S. Patent #4,962,410, Oct. 8, 1990.
3. G. Bernstein, W. P. Liu, and D. K. Ferry, "Process of Obtaining Improved Contrast in Electron Beam Lithography," U.S. Patent #4,937,174, June 26, 1990.
2. G. Bernstein, W. P. Liu, and D. K. Ferry, "Developer Solutions for PMMA Electron Resist," U.S. Patent #4,877,716, Oct. 31, 1989.
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188. H. Aquino, A. O. Orlov, E. C. Kinzel, G. H. Bernstein, and G. P. Szakmany, "Comparison of Surface Morphology and Roughness of Silicon Surfaces Etched Using Pulsed and Continuous Flow XeF₂," *J. Vac. Sci. Technol. B* 43 (5): 052208, 2025. <https://doi.org/10.1116/6.0004721>
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185. C. Dong, G. P. Szakmany, H. Aquino, W. Porod, A. O. Orlov, E. C. Kinzel, G. H. Bernstein, and D. Burghoff, "Broadband characterization of the spectral responsivity of thermoelectrically-coupled nanoantennas," *Photonics and Nanostructures - Fundamentals and Applications*, vol. 59, p. 101242, doi: 10.1016/j.photonics.2024.101242 (2024).
184. C. P. Finnan, E. C. Kinzel, G. P. Szakmany, A. O. Orlov, H. R. O. Aquino, W. Porod, G. H. Bernstein, "Performance of Ultrafast, Nanoantenna-Based, Long-Wave Infrared Detectors in Vacuum," *IEEE Sensors Journal* doi: 10.1109/JSEN.2024.3350384 (2024).
183. M. Kiechle, A. Papp, S. Mendisch, V. Ahrens, M. Golibrzuch, G. H. Bernstein, W. Porod, G. Csaba, M. Becherer, "Spin-wave Optics in YIG Realized by Ion-beam Irradiation," *Small*, vol. 19. DOI: 10.1002/sml.202207293 (2023).
182. H. R. O. Aquino, D. Connelly, A. O. Orlov, J. Chisum, G. H. Bernstein, and W. Porod, "Short-Wavelength Spin-Wave Transducer Using the Transmission of Spin-Waves Across Two Magnetic Films," *IEEE Transactions on Magnetics*, vol. 59, no. 7, pp. 1-8, Art no. 4100208. doi: 10.1109/TMAG.2023.3276200 (2023).
181. H. Aquino, D. Connelly, A. Orlov, J. Chisum, G. H. Bernstein and W. Porod, (2021) "Design of a Coplanar-Waveguide-Based Microwave-to-Spin-Wave Transducer," *IEEE Trans.Mag.*, pp. 1-5. doi: 10.1109/TMAG.2021.3084097 (2022).
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179. D. Connelly, G. Csaba, H.R.O. Aquino, G.H. Bernstein, A. Orlov, W. Porod, J. Chisum, "Efficient Electromagnetic Transducers for Spin-Wave Devices," in *Sci Rep.*, vol. 11, 18378, pp. 1-13. doi:10.1038/s41598-021-97627-3 (2021).
178. G. P. Szakmany, A. O. Orlov, E. C. Kinzel, G. H. Bernstein, and W. Porod, "Nanoantenna-Based Ultrafast Thermoelectric Long-Wave Infrared Detectors," *Sci. Rep.*, vol. 10, p. 13429. DOI: <https://doi.org/10.1038/s41598-020-70062-6> (2020).
177. G. Szakmany, A. O. Orlov, G. H. Bernstein and W. Porod, "Fabrication of Suspended Antenna-Coupled Nanothermocouples," *JVST B*, vol. 37, p. 052201, DOI: 10.1038/s41598-019-46072-4 (2019).

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175. M. Gonelli, S. Fin, G. Carlotti, H. Dey, G. Csaba, Gyorgy, W. Porod, G. H. Bernstein, and D. Bisero, "Robustness of majority gates based on nanomagnet logic," *Journal of Magnetism and Magnetic Materials*, Volume: 460, pp. 432-437, AUG 15 2018. DOI: 10.1016/j.jmmm.2018.04.026.
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172. (Chosen as Editor's Pick) G. P. Szakmany, A. O. Orlov, G. H. Bernstein, and W. Porod, "Response Increase of Antenna-Coupled Nanothermocouples by Thermal Insulation," *J. Vac. Sci. Technol., B*, **36**, p. 052203. DOI: 10.1116/1.5044534 (2018).
171. H. Aquino, S. Rouvimov, A. Orlov, W. Porod, and G. H. Bernstein, "Growth of Yttrium Iron Garnet on SiO₂," *J. Vac. Sci. Technol. A*, **36**, 031518 <https://doi.org/10.1116/1.5022483> (2018).
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157. **(Invited)** J. A. Russer, C. Jirauschek, G. P. Szakmany, M. Schmidt, A. O. Orlov, G. H. Bernstein, W. Porod, P. Lugli, and P. Russer, "A Nanostructured Long-Wave Infrared Range Thermocouple Detector," *IEEE Trans. Terahertz Sci. Technol.*, **5**(3), pp. 335-343, <http://dx.doi.org/10.1109/TTHZ.2015.2418581> (2015).
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5. G. H. Bernstein, "The Role of the Laboratory Teaching Assistant," *IEEE Potentials Magazine*, August/September, pp. 36-38 (2002).
4. C. Martino, S. Polchlopek, J. Millar, R. J. Minniti, G. H. Bernstein, and L. Stauffer, "Technical Report: Keithley Model 82 Simultaneous CV Measurement System, Laboratory Experiments," Keithley sales technical literature (1994).
3. D. K. Ferry, G. Bernstein, and W. P. Liu, "Electron Beam Lithography of Ultra-Submicron Devices," in *Physics and Technology of Submicron Structures*, ed. by H. Heinrich, G. Bauer and F. Kuchar, pp. 37-44, Springer-Verlag, Heidelberg (1989).
2. G. Bernstein and D. K. Ferry, "Fabrication of Short GaAs MESFETs by Electron Beam Lithography," in *The Physics and Fabrication of Microstructures and Microdevices*, p. 462, ed. by M. J. Kelly and C. Weisbuch, Springer-Verlag, New York (1986).
1. G. Bernstein, "Ge/Au/Ni Ohmic Contacts to GaAs," internal report, Motorola Semiconductor Research and Development Laboratory, Phoenix, AZ (1983).

Invited Panel Participation

6. "Defense Related Research and Funding," Purdue University, December, 2006.
5. "Opportunities and Challenges for Faculty at a Catholic Research University," University of Notre Dame New Faculty Retreat, New Buffalo, MI, August, 2006.
4. "A Dialogue on Engineering Education: the Role of the First Year," Workshop on First Year Engineering Courses, University of Notre Dame, July, 2006.
3. "What's Beyond the Planar MOSFET?" VLSI Joint Panel of the *2004 Symposium on VLSI Circuits*, Honolulu, HI, June, 2004.
2. Co-chair of the "Issues for Nanotechnology in Transmitting from Nanodevices and Between Nanosystems" *National Nanotechnology Initiative Interagency Grand Challenge Workshop on Nanoelectronics*, Arlington, Virginia, February, 2004.
1. "Integration of Nano Devices on the Silicon Platform" *Silicon Nanoelectronics and Beyond Conf.*,

Portland, Oregon, October, 2003.

Presentations at Technical Meetings

391. (Invited) G. P. Szakmany, J. Yang, E. C. Kinzel, A. O. Orlov, W. Porod, G. H. Bernstein, “A fast, uncooled, multispectral, polarization-sensitive mid- and long-wave IR detection using nanoantennas,” presented at *Electro-optical and Infrared Systems: Technology and Applications XXI, SPIE Sensors+ Imaging*, Madrid, Spain, September 2025.
390. G. P. Szakmany, H. Aquino, E. C. Kinzel, G. H. Bernstein, A. O. Orlov, W. Porod, “Linear and circular polarization sensing in the mid- and longwave infrared regimes,” presented at *Infrared Technology and Applications LI, SPIE Defense and Commercial Sensing*, Orlando, FL, April 2025.
389. G. P. Szakmany, E. C. Kinzel, A. O. Orlov, H. Aquino, J. Yang, S. M. White, W. Porod, G. H. Bernstein, “Multi-Spectral and Polarization-Sensitive Infrared Detection Using Nanoantennas,” presented at 2024 Annual Heliophysics Technology Symposium, NASA GSFC’s Wallops Flight Facility, VA, September 2024.
388. G. P. Szakmany, G. H. Bernstein, H. Aquino, A. O. Orlov, W. Porod, E. C. Kinzel, “Nanoantenna-Based IR Detectors for Defense Applications,” presented at *Advanced Materials, Biomaterials, and Manufacturing Technologies for Security and Defence II, SPIE Sensors+ Imaging*, Edinburgh, UK, September, 2024.
387. E. C. Kinzel, G. P. Szakmany, G. H. Bernstein, A. O. Orlov, W. Porod, “Thermoelectric Coupled Nanoantennas for Infrared Sensing” presented at the *Plasmonics and Nanophotonics Gordon Research Conference 2024*, Newry, Maine, July, 2024.
386. M. Robbins, E. Varga, H. Aquino, G. Bernstein, A. Orlov, W. Porod, and J. Chisum, “Short-Wavelength Spin-Wave Transducer Design and Fabrication,” presented at the *International Conference on Microwave Magnetics ICMM*, Rochester, MI, June, 2024.
385. H. Aquino, G. P. Szakmany, D. Burghoff, C. Dong, E. C. Kinzel, A. O. Orlov, W. Porod, D. Strobel, and S. M. White, G. H. Bernstein, “Cavities Etched by Pulsed and Continuous Flow of XeF₂ for Multispectral Infrared Sensors” presented at *Terahertz, RF, Millimeter, and Submillimeter-Wave Technology and Applications XVII*, SPIE Photonics West, San Francisco, CA, January, 2024.
384. E. Kinzel, C. Finnan, C. Dong, D. Burghoff, S. M. White, H. Aquino, A. O. Orlov, W. Porod, G. H. Bernstein, G. P. Szakmany “Thermal Transport in Thermoelectric Coupled Nanoantennas,” presented at the *ASME Summer Heat Transfer Conference 2023, SHTC2023*, Washington D.C., July, 2023.
383. G. P. Szakmany, H. Aquino, E. C. Kinzel, G. H. Bernstein, A. O. Orlov, W. Porod, “Directional sensing of mid- and long-wave-infrared radiation using nanoantennas,” presented at *Infrared Technology and Applications XLIX*, Orlando, FL, May, 2023.
382. G. P. Szakmany, H. Aquino, G. H. Bernstein, D. Burghoff, C. Dong, E. C. Kinzel, A. O. Orlov, W. Porod, D. Strobel, and S. M. White, “Multi-spectral and polarization-sensitive infrared sensing using nanoantennas,” Presented at *Terahertz, RF, Millimeter, and Submillimeter-Wave Technology and Applications XVI, SPIE OPTO*, pp. 1-4, 2023.
381. G. H. Bernstein, G. P. Szakmany, E. C. Kinzel, H. Aquino, D. Burghoff, C. Dong, C. Finnan, A. O. Orlov, W. Porod, L. Strachan, D. Strobel, M. Tan, S. M. White, and L. Zavistanavicius, “Thermoelectrically Coupled Nanoantennas (TECNAs) for Circularly-Polarized Light and Angle-of-Incidence Detection” presented at the *9th International Conference on Electrical Engineering and Electronics (EEE 2022)*, Prague, Czech Republic, August 2022.
380. G. P. Szakmany, G. H. Bernstein, D. Burghoff, E. C. Kinzel, A. O. Orlov, W. Porod, D. Strobel, S. M. White, “Circularly polarized, long-wave-infrared nanoantennas,” presented at *SPIE OPTO*, 2022, San Francisco, CA, March 2022.
379. G. P. Szakmany, E. C. Kinzel, G. H. Bernstein, D. Burghoff, C. Dong, A. O. Orlov, W. Porod, D. Strobel, S. M. White, “Beam-Steering with Mid- and Long-Wave-Infrared Nanoantennas,” presented at *Infrared Technology and Applications XLVIII, SPIE Defense + Commercial Sensing*, Orlando, FL, April 2022.
378. D. Connelly, H. R. O. Aquino, M. Robbins, G. H. Bernstein, A. Orlov, W. Porod, G. Csaba, J. Chisum, “Modeling and measurement of co-planar waveguide spin-wave transducers,” presented at the

- USNC-URSI National Radio Science Meeting (NRSN)*, Boulder, CO, January 2022.
377. G. P. Szakmany, G. H. Bernstein, E. C. Kinzel, A. O. Orlov, W. Porod, "Thermoelectric Nanoantennas for Mid- and Far-Infrared Detection," presented at *2021 Workshop on Innovative Nanoscale Devices and Systems (WINDS)*, Waikoloa Beach, HI, November 2021.
 376. G. P. Szakmany, E. C. Kinzel, A. O. Orlov, D. Burghoff, G. H. Bernstein, W. Porod, "Finite Element Modeling of Thermoelectrically Coupled Nanoantennas for Mid- to Far-Infrared Detection," presented at the *International Applied Computational Electromagnetics Society Symposium*, (virtual conference), August 2021.
 375. G. P. Szakmany, A. O. Orlov, G. H. Bernstein, W. Porod, E. C. Kinzel, "Design of Infrared Thermoelectric Coupled Nanoantennas," presented at the 2021 IEEE Research and Applications of Photonics in Defense Conference (RAPID), (virtual conference), August 2021.
 374. G. P. Szakmany, G. H. Bernstein, D. Burghoff, D. G. Gonzalez, E. C. Kinzel, A. O. Orlov, W. Porod, D. Strobel, and S. M. White, "Wavelength selective, polarization sensitive, and uncooled infrared detectors for solar infrared imaging," presented at the *Terahertz, RF, Millimeter, and Submillimeter-Wave Technology and Applications XIV, SPIE Photonics West*, (virtual conference), March 2021.
 373. H. R. Aquino, G. H. Bernstein, D. Connelly, J. Chisum, A. Orlov, W. Porod, "Design of a Coplanar-Waveguide-Based Microwave-to-Spin-Wave Transducer," presented at *InterMag 2021* April 2021 (virtual).
 372. **(Invited)** G. H. Bernstein, D. Burghoff, D. G. Gonzalez, E. C. Kinzel, A. O. Orlov, W. Porod, D. Strobel, G. P. Szakmany, and S. M. White, "Thermoelectrically Coupled Nanoantennas for Solar Research," presented at the *6th World Congress on Electrical Engineering and Computer Systems and Sciences*, Prague, Czech Republic (virtual) August 2020.
 371. H. Aquino, D. Connelly, A. Papp, A. Orlov, J. Chisum, G. H. Bernstein and W. Porod, "Using Coplanar Waveguides as Spin-Wave Sources with Improved Bandwidth," poster presented at the *2020 Device Research Conference* (virtual), June 2020.
 370. H. Aquino, D. Connelly, A. Papp, A. Orlov, J. Chisum, G. H. Bernstein and W. Porod, "Towards a Chip-Scale Millimeter-Wave Spectrum/Signal Analyser Using Spin-Wave Diffraction and Interference," poster presented at the *Virtual Silicon Nanoelectronics Workshop*, June 2020.
 369. G. P. Szakmany, A. O. Orlov, E. C. Kinzel, G. H. Bernstein, and W. Porod, "High-Speed Nanoantenna Thermopiles for Long-Wave Infrared Detection," poster presented at the *Virtual Silicon Nanoelectronics Workshop*, June 2020.
 368. **(Invited)** G. P. Szakmany, A. O. Orlov, E. C. Kinzel, G. H. Bernstein, and W. Porod, "Multiphysics Simulations of Parabolic Antenna-Coupled Thermoelectric Converters," presented at the *Physics and Simulation of Optoelectronic Devices XXVIII, SPIE Photonics West*, San Francisco, CA, February 2020.
 367. H. Aquino, D. Connelly, A. Papp, M. Becherer, G. Csaba, J. Chisum, A. Orlov, G. H. Bernstein, and W. Porod, "Towards Spin-Wave-Based Devices: Experiments and Simulations," presented at the *2019 Workshop on Innovative Nanoscale Devices and Systems (WINDS)*, Kohala Coast, HI, December 2019.
 366. G. P. Szakmany, A. O. Orlov, G. H. Bernstein, and W. Porod, "Suspended Antenna-Coupled Nanothermocouple Array for Long-Wave Infrared Detection," presented at the *49th European Solid-State Device Research Conference (ESSDERC)*, Krakow, Poland, September 2019.
 365. D. Connelly, G. Csaba, G. H. Bernstein, A. Orlov, J. Chisum and W. Porod, "Towards a simulation framework for coupled microwave and micromagnetic structures," presented at the *International Workshop on Computational Nanotechnology, IWCN*, Evanston, IL, May 2019.
 364. G. Szakmany, A. O. Orlov, G. H. Bernstein and W. Porod, "Multi-Physics Simulations for the Design of IR and THz Nano-Antennas," presented at the *International Workshop on Computational Nanotechnology, IWCN*, Evanston, IL, May 2019.
 363. J. Kulick, T. Lu, E. Varga, G. H. Bernstein, C. Ortega, C. Kenney, and J. Segal, "Orthogonal Quilt Packaging 3D Integration for High-Energy Particle Detectors," presented at the *IEEE 69th Electronic Components and Technology Conference*, Las Vegas, NV, May 2019.
 362. J. M. Kulick, T. Lu, B. Nichols, T. Knight, G. H. Bernstein, C. Ortega, and A. Kokot, "Enabling Curved

- Hemispherical Arrays with Quilt Packaging Interconnect Technology,” presented at the *SPIE Defense and Commercial Sensing Conference*, Baltimore, MD, April 2019.
361. T. Lu, J. Kulick, C. Ortega, A. Kokot, and G. H. Bernstein, “Quilt-Packaged Piecewise-Curved Assembled Imaging Arrays,” presented at the *Government Circuit Applications and Critical Technology Conference, Artificial Intelligence & Cyber Security: Challenges and Opportunities for the Government, GOMACTech2019*, Albuquerque, NM, March 2019.
 360. J. Kulick, T. Lu, C. Ortega, R. Engelhardt, Y. Shi, G. H. Bernstein and J. Timler, “Enhancing PCB Hardware Security Through Randomized Encoding of Logic on Hybrid Quilt-Packaged IC-PCB System,” presented at the *Government Circuit Applications and Critical Technology Conference, Artificial Intelligence & Cyber Security: Challenges and Opportunities for the Government, GOMACTech2019*, Albuquerque, NM, March 2019.
 359. G. P. Szakmany, A. O. Orlov, G. H. Bernstein, and W. Porod, “Suspended Antenna-Coupled Nanothermocouples for Infrared Detection,” presented at the *2018 Workshop on Innovative Nanoscale Devices and Systems (WINDS)*, Kohala Coast, HI, November 2018.
 358. G. P. Szakmany, A. O. Orlov, G. H. Bernstein, and W. Porod, “Cavity-Backed Antenna-Coupled Nanothermocouples for Infrared Detection,” poster presented at the *IEEE Silicon Nanoelectronics Workshop*, Honolulu, HI, June 2018.
 357. M. S. McConnell, G. P. Szakmany, R. C. Cordova, A. O. Orlov, G. H. Bernstein, W. Porod, and G. L. Snider “Heat Dissipation in Adiabatic Reversible CMOS Circuits Measured by On-Chip Nanothermocouples,” poster presented at the *IEEE Silicon Nanoelectronics Workshop*, Honolulu, HI, June 2018.
 356. Gergo P. Szakmany, Gary H. Bernstein, Alexei O. Orlov, and Wolfgang Porod, “Advanced Electron Beam Microscopy to Inspect Thermally Insulated Antenna-Coupled Nanothermocouples for Infrared Detection,” poster presented at the *5th Annual Midwest Imaging and Microanalysis Workshop*, Notre Dame, IN, May 2018.
 355. A. Papp, W. Porod, G. H. Bernstein, A. I. Csurgay, and G. Csaba, “An affordable, time-domain ferromagnetic resonance setup,” presented at the *5th Italian Conference on Magnetism*, Assisi, Italy, September 2017.
 354. H. R. Aquino, K. Pourang, W. Porod, and G. H. Bernstein, “Integrating Yttrium Iron Garnet with Si substrates,” poster presented at the *62nd Annual Conference on Magnetism and Magnetic Materials (MMM)*, Pittsburgh, Pennsylvania, November 2017.
 353. H. Aquino, A. Papp, G. Csaba, A. O. Orlov, G. H. Bernstein, and W. Porod, “Towards Low-Damping Spin-Wave Media for Magnonics,” presented at the *2017 Workshop on Innovative Nanoscale Devices and Systems (WINDS)*, Kohala Coast, Hawaii, December 2017.
 352. G. H. Bernstein and K. Meyers, “A Modern Introduction to Electrical Engineering Laboratory Experience” presented at the *ASEE Annual Conference and Exposition*, Columbus, OH, June 2017.
 351. G. H. Bernstein and K. Meyers, “A Modern Introduction to Electrical Engineering Laboratory Experience” presented at the *2017 Optics and Photonics Winter School and Workshop*, Tucson, AZ, January 2017.
 350. Gergo P. Szakmany, Alexei O. Orlov, Gary H. Bernstein, Wolfgang Porod, “Antenna-Coupled Single-Metal Nanothermocouples for THz Wave Detection,” presented at the *2016 Workshop on Innovative Nanoscale Devices and Systems (WINDS)*, Kohala Coast, Hawaii, December 2016.
 349. H. Dey, G. Csaba, G. H. Bernstein, A. Orlov, and W. Porod, “Switching Study of Exchange-Coupled Nanomagnets by Vector Coil Vibrating Sample Magnetometry,” presented at the *61st Annual Conf. on Magnetism and Magnetic Materials*, New Orleans, November 2016.
 348. T. Lu, J. Kulick, C. Ortega, G.H. Bernstein, S. Ardisson, R. Engelhardt, “Rapid SoC Prototyping Utilizing Quilt Packaging Technology for Modular Functional IC Partitioning,” presented at the *Trans. 27th Int. Symp. on Rapid System Prototyping*, Pittsburgh, October 2016.
 347. T. Ahmed, J. Lu, J. Kulick, G. Bernstein, A. Hoffman, and S. Howard, “Mid infrared chip-to-chip waveguide coupling using optical quilt packaging” presented at the *Notre Dame/IEEE Symposium on Electronics and Photonics*, Notre Dame, October 2016.

346. X. K. Hu, H. Dey, G. Csaba, G. H. Bernstein, W. Porod, S. Sievers, H. W. Schumacher, "Ferromagnetic Resonance Modes in Interlayer-Exchange-Coupled Films and Nano-Dot Arrays," poster presented at the *Joint European Magnetic Symposia (JEMS)*, Glasgow, United Kingdom, August 2016.
345. G. Szakmany, A. Orlov, G. Bernstein, W. Porod, "Antenna-Coupled Single-Metal Nanothermocouples for THz Wave Detection," poster presented at the *IEEE Silicon Nanoelectronics Workshop*, Honolulu, June 2016.
344. G. Csaba, G. Bernstein, S. Hu, M. Niemier, A. Orlov, and W. Porod, "Nanomagnet Logic," presented at the *Int'l Conf. on Microwave and THz Technologies, Photonics and Wireless Communications*, Yerevan, Armenia, May 2016.
343. A. O. Orlov, G. P. Szakmany, G. H. Bernstein and W. Porod, "Integrated Nanoscale Thermoelectric Converters of Infrared and Terahertz Irradiation," presented at the *Int'l Conf. on Microwave and THz Technologies, Photonics and Wireless Communications*, Yerevan, Armenia, May 2016.
342. **(Invited)** György Csaba, Adam Papp, Gary Bernstein, Sharon Hu, Michael Niemier, Alexei Orlov, Wolfgang Porod, "Computing with Nanomagnets and Magnetic Excitations," *Emerging Technologies*, Montreal, Canada, May 2016.
341. T. Lu, J. Kulick, J. Lannon, G. H. Bernstein and P. Fay, "Heterogeneous Microwave and Millimeter-wave System Integration Using Quilt Packaging," presented at the *Int. Microwave Symp. IMS2016*, San Francisco, May 2016.
340. H. S. Dey, X. Hu, A. Papp, G. Csaba, H.W. Schumacher, A. Orlov, G. H. Bernstein, and W. Porod, "Dynamics of inter-layer exchange-coupled nanomagnets," Poster presented at the *15th Joint MMM-Intermag Conference*, San Diego, California, January 2016.
339. G. P. Szakmany, A. O. Orlov, G. H. Bernstein, and W. Porod, "Antenna-Coupled Single-Metal Thermocouple Array for Energy Harvesting," presented at the *2015 European Solid-State Device Research & Circuits Conference (ESSDERC/ESSCIRC 2015)*, Graz, Austria 2015.
338. H. Dey, G. Csaba, G. H. Bernstein, and W. Porod, "Oscillations in Exchange-Coupled Nanomagnets," presented at the *18th International Workshop on Computational Electronics (IWCE)*, W. Lafayette, IN, September 2015.
337. G. P. Szakmany, A. O. Orlov, G. H. Bernstein, and W. Porod, "Nanothermocouple Characterization Platform: Simulation and Experiment," presented at the *18th International Workshop on Computational Electronics (IWCE)*, W. Lafayette, IN, September 2015.
336. A. Kommini, G.P. Szakman, A. O. Orlov , G. H. Bernstein , W. Porod , and Z. Aksamija, "Size Dependence of the Seebeck Coefficient for Single-Material Thermocouples," presented at the *18th International Workshop on Computational Electronics (IWCE)*, W. Lafayette, IN, September 2015.
335. G. P. Szakmany, A. O. Orlov, G. H. Bernstein, and W. Porod, "Antenna-Coupled Single-Metal Nanoscale Thermocouples: Where is the Hot Spot?," presented at the *Int. Symp. On Adv. Nanodevices and Nanotechnology (ISANN)*, Waikoloa, HI, November 2015
334. **(Invited)** S. Breitkreutz-v. Gamm, I. Eichwald, G. Csaba, G. H. Bernstein, M. Niemier, W. Porod, M. Graziano, D. Schmitt-Landsiedel and M. Becherer, "Towards Nanomagnetic Logic systems: A Programmable Arithmetic Logic Unit for Systolic Array-based Computing," presented at the *IEEE Nanotechnology Materials and Devices Conference (NMDC)*, Anchorage, AK, September 2015.
333. H. Dey, G. Csaba, G. H. Bernstein and W. Porod, "Oscillations in Exchange-Coupled Nanomagnets," presented at the *18th International Workshop on Computational Electronics (IWCE 2015)*, W. Lafayette, IN, September 2015.
332. A. Kommini, Z. Aksamija, G. P. Szakmany, A. O. Orlov, G. H. Bernstein, and W. Porod, "Size Dependence of the Seebeck Coefficient for Single-Material Thermocouples," poster presented at the *18th International Workshop on Computational Electronics (IWCE 2015)*, W. Lafayette, IN, September 2015.
331. **(Invited)** G. P. Szakmany, A. O. Orlov, G. H. Bernstein, and W. Porod, "Recent Development of Antenna-Coupled Thermocouples," presented at the *15th International Conference on Nanotechnology*, Rome, Italy, July 2015.
330. S. Breitkreutz-v. Gamm, G. Ziemys, I. Eichwald, G. Csaba, G. H. Bernstein, W. Porod, D. Schmitt-Landsiedel, and M. Becherer, "Device-Level Compact Modeling of Perpendicular Nanomagnetic Logic

- for Benchmarking Purposes,” poster presented at the *15th IEEE Int. Conf. on Nanotechnology (IEEE-NANO)*, Rome, Italy, August 2015.
329. G. P. Szakmany, A. O. Orlov, G. H. Bernstein, and W. Porod, “Frequency-Dependent Response of Nanoscale Thermocouples Using Temperature Oscillations Produced by Nanoscale Heaters,” poster presented at the *2015 Silicon Nanoelectronics Workshop*, Kyoto, Japan, June 2015.
 328. J. A. Russer, C. Jirasek, G. P. Szakmany, A. O. Orlov, G. H. Bernstein, W. Porod, P. Lugli, and P. Russer, “Antenna-Coupled Terahertz Thermocouples,” presented at the *International Microwave Symposium (IMS2015)*, Phoenix, May 2015.
 327. M. Sizemore, J. M. Kulick, T. Lu, C. Ortega, and G. H. Bernstein, “Current-Handling Capacity of Quilt Packaging Interconnects in Power Systems,” *40th Government Microcircuit Applications & Critical Technology Conference (GomacTech)*, St. Louis, MO, March 2015.
 326. X. K. Hu, H. Dey, N. Liebing, G. Csaba, A. Orlov, G. H. Bernstein, W. Porod and H. W. Schumacher, “Ferromagnetic Resonance Modes of Nanomagnetic Logic Elements,” presented at *Intermag 2015*, Beijing, May 2015.
 325. H. S. Dey, X. Hu, A. Papp, G. Csaba, H. W. Schumacher, A. Orlov, G. H. Bernstein, and W. Porod, “Dynamics of inter-layer exchange-coupled nanomagnets,” presented at the *13th Joint MMM/Intermag Conference*, San Diego, January 2015.
 324. G. P. Szakmany, A. O. Orlov, G. H. Bernstein, and W. Porod, “Single-Metal Nanoscale Thermocouples,” presented at the *2014 Workshop on Innovative Nanoscale Devices and Systems (WINDS)*, Kohala Coast, HI, December 2014.
 323. F. A. Shah, G. Csaba, M. T. Niemier, X. S. Hu, W. Porod, and G. H. Bernstein, “Error Analysis for Ultra Dense Nanomagnet Logic Circuits,” presented at the *59th Annual Conference on Magnetism and Magnetic Materials (MMM) Conf.*, Honolulu, November 2014.
 322. F. A. Shah, G. Csaba, W. Porod and G. H. Bernstein, “Unidirectional Anisotropy for Synchronous Nanomagnet Logic Operation,” presented at the *59th Annual Conference on Magnetism and Magnetic Materials (MMM) Conf.*, Honolulu, November 2014.
 321. G. P. Szakmany, A. O. Orlov, G. H. Bernstein and W. Porod, “Nanoantenna Integrated Infrared Thermoelectric Converter,” presented at the *14th IEEE Int. Conf. on Nanotechnology (IEEE-NANO)*, Toronto, August 2014.
 320. G. P. Szakmany, A. O. Orlov, G. H. Bernstein and W. Porod, “Bi-Metallic and Mono-Metallic Antenna-Coupled Nanoscale Thermocouples for Infrared Detection,” presented at the *72nd Device Research Conference (DRC)*, Santa Barbara, June 2014.
 319. P. Russer, J. A. Russer, C. Jirasek, M. Bareiss, P. Lugli, J. Nossek, M. T. Ivlac, W. Porod, G. P. Szakmany, A. O. Orlov, and G. H. Bernstein, “On-Chip Transmitter and Receiver Front-Ends with Integrated Antennas up into the THz Range,” presented at the *Int. Microwave Symposium (IMS)*, Tampa Bay, Florida, June 2014.
 318. G. P. Szakmany, A. O. Orlov, G. H. Bernstein and W. Porod, “Polarization-Dependent Response of Antenna-Coupled Single-Metal Thermocouples,” poster presented at the *2014 Silicon Nanoelectronics Workshop*, Honolulu, June 2014.
 317. T. Ahmed, A. A. Khan, G. Vigil, J. M. Kulick, G. H. Bernstein, A. J. Hoffman, and S. S. Howard, “Optical Quilt Packaging: A New Chip-to-Chip Optical Coupling and Alignment Process for Modular Sensors,” poster presented at the *Conf. on Lasers and Electro-Optics (CLEO) 2014*, San Jose, CA, June 2014.
 316. F. A. Shah, K. Butler, G. Csaba, W. Porod, and G. H. Bernstein, “IrMn/CoFe/Cu/CoFe-based giant magnetoresistance structure for NML output,” presented at the *56th Electronic Materials Conference (EMC)*, June, Santa Barbara, CA, June 2014.
 315. D. P. Kopp, M. A. A. Khan, Q. Zheng, M. J. Padberg, J. M. Kulick, W. L. Buckhanan, G. H. Bernstein, and P. Fay, “Ultra-wideband Chip-to-Chip Interconnects to 220 GHz for Si-based Millimeter-Wave Systems,” poster presented at the *2014 IEEE Int. Interconnect Technol. Conf. (IITC)*, San Jose, CA, May 2014.
 314. S. Fullerton, D. Schaetzl, P. Li, and G. H. Bernstein, “Magnetic Alignment of Gamma (core)/Alpha (shell) Fe₂O₃ Nanorods in a Solid Polymer Electrolyte,” presented at the *225th Electrochemical*

- Society (ECS) Meeting*, Orlando, FL, May 2014.
313. G. P. Szakmany, A. O. Orlov, G. H. Bernstein, W. Porod, M. Bareiß, P. Lugli, J. A. Russer, C. Jirauschek, P. Russer, M. T. Ivrlac, and J. A. Nossek, "Nano-Antenna Arrays for the Infrared Regime," presented at the *18th Int'l Workshop in Smart Antennas*, Erlangen, Germany, March 2014.
 312. **(Invited)** G. H. Bernstein, "Nanomagnetic Logic – From Concept to Prototype," presented at *TechConnect World: Microtech Electronics and Sensors*, Washington, DC, June 2014.
 311. **(Invited Tutorial)** K. Butler, H. Dey, S. Liu, P. Li, F. Shah, M. Siddiq, E. Varga, G. Csaba, G. H. Bernstein, X. S. Hu, M. T. Niemier, J. Nahas, A. Orlov, and W. Porod, "NanoMagnet Logic," presented at *International Magnetism (Intermag) Conference 2014*, Dresden, Germany, May 2014.
 310. X. K. Hu, N. Liebing, H. W. Schumacher, H. Dey, G. Csaba, G. H. Bernstein, A. Orlov, and W. Porod, "Suppression of Edge Modes in Arrays of Coupled Soft Magnetic Nanodots," poster presented at *International Magnetism (Intermag) Conference 2014*, Dresden, Germany, May 2014.
 309. M. Siddiq, K. Butler, H. Dey, F. Shah, P. Li, E. Varga, G. Csaba, A. Orlov, M. Niemier, W. Porod and G. H. Bernstein "Integration of Nanomagnetic Logic Gate with On-Chip Clock and Multiple-Programmable-Electrical Inputs," presented at *International Magnetism (Intermag) Conference 2014*, Dresden, Germany, May 2014.
 308. H. Dey, G. Csaba, F. Shah, G. H. Bernstein and W. Porod, "Exchange Coupling between Laterally Adjacent Nanomagnets," presented at *International Magnetism (Intermag) Conference 2014*, Dresden, Germany, May 2014.
 307. E. Varga, G. Csaba, G. H. Bernstein, and W. Porod, "Domain-Wall-Assisted Switching of Chains of Coupled Nanomagnets," presented at *International Magnetism (Intermag) Conference 2014*, Dresden, Germany, May 2014.
 306. J. M. Kulick, J. Lu, P. Fay, G. H. Bernstein, J. Gallagher, and J. Lannon, "Heterogeneous Integration of Microwave Systems Using Quilt Packaging, presented at the *39th Annual Government Microcircuit Applications & Critical Technology Conference (GomacTech)*, Charleston, SC, March 2014.
 305. G. P. Szakmany, C. Preiss, A. O. Orlov, G. H. Bernstein, and Wolfgang Porod,, "Investigation of Shape-Engineered Single-Metal Thermocouples for Infrared Detection," presented at the *International Symposium on Advanced Nanodevices and Nanotechnology (ISANN)*, Kauai, Hawaii, December 2013.
 304. **(Invited)** G. Csaba, M. Becherer, G. H. Bernstein, M. Niemier, X. S. Hu, S. Breitzkreutz, I. Eichwald, J. Kiermaier, X. Jux, A. Papp, and W. Porod, "Nanomagnetic Logic Systems: from Magnetic Ordering to Magnetic Computing," presented at the *NanoSaclay Nanoelectronics Workshop*, Paris, France, December 2013.
 303. P. Li, F. Shah, G. Csaba, M. Niemier, X. S. Hu, J. Nahas, W. Porod, and G. H. Bernstein, "Power Reduction in Nanomagnet Logic Using High-Permeability Dielectrics," *SRC TECHCON*, Austin, TX, Sept. 9-10 2013. *Awarded "Best in Session."*
 302. M. A. Imtaar, P. Li, E. Varga, G. Csaba, G. H. Bernstein, G. Scarpa, W. Porod, and P. Lugli, "Nanomagnet Logic Devices Fabrication using Nanoimprint Lithography," presented at the *13th IEEE Conf. on Nanotechnology*, Beijing, August 2013.
 301. P. Li, F. Shah, G. Csaba, M. T. Niemier, X. S. Hu, J. J. Nahas, W. Porod, and G. H. Bernstein, "Application of "snow Jet" Process in Fabrications of Nanomagnet Logic Devices," poster presented at the *58th Annual Conference on Magnetism and Magnetic Materials (MMM) Conference*, Denver, CO, November 2013.
 300. F. Shah, V. K. Sankar, P. Li, G. Csaba, E. Chen, and G. H. Bernstein, "Compensation of Orange-peel Coupling Effect in MTJ Free Layer via Shape Engineering for Nanomagnet Logic Applications," presented at the *58th Annual Conference on Magnetism and Magnetic Materials (MMM) Conference*, Denver, CO, November 2013.
 299. E. Varga, G. Csaba, G. H. Bernstein and W. Porod, "Domain Wall Assisted Ordering of Coupled Nanomagnets," presented at the *58th Annual Conference on Magnetism and Magnetic Materials (MMM) Conference*, Denver, CO, November 2013.

298. D. Schaetzl, P. Li, G. H. Bernstein, A. Seabaugh, and S. Fullerton, "Aligning High-Aspect-Ratio Nanofillers to Improve Conductivity in Solid Polymer Electrolytes for Li-Ion Batteries," presented at the 2013 Electronic Materials Conference, Notre Dame, IN, June 2013.
297. V. K. Sankar, P. Li, S. Liu, F. Shah, H. Dey, G. Csaba, M. Niemier, X. S. Hu, J. Nahas, W. Porod and G. H. Bernstein, "Pseudo-Spin-Valve Giant Magnetoresistance Structures for Electronic Readout in Nanomagnet Logic," presented at the 2013 Electronic Materials Conference, Notre Dame, IN, June 2013.
296. F. A. Shah, G. Csaba, M. T. Niemier, X. S. Hu, W. Porod and G. H. Bernstein, "Sub-10-nm Inter-Magnet Spacing for Improved Defect Tolerance in NML," presented at the 2013 Electronic Materials Conference, Notre Dame, IN, June 2013.
295. P. Li, F. Shah, G. Csaba, M. Niemier, X. S. Hu, J. Nahas, W. Porod and G. H. Bernstein, "Magnetic Properties and Thermal Stability of Nanomagnets/High-Permeability Dielectrics System," presented at the 2013 Electronic Materials Conference, Notre Dame, IN, June 2013.
294. G. P. Szakmany, C. Preiss, A. O. Orlov, G. H. Bernstein, and W. Porod, "Shape-Engineered Antenna-Coupled Thermocouples for Infrared Detection," presented at the IEEE Silicon Nanoelectronics Workshop, Kyoto, Japan, June 2013.
293. T. Ahmed, T. Butler, A. A. Khan, J. M. Kulick, G. H. Bernstein, A. J. Hoffman, and S. S. Howard, "FDTD Modeling of Chip-to-Chip Waveguide Coupling via Optical Quilt Packaging," presented at the SPIE Optics+Photonics Conference, San Diego, August 2013.
292. S. Liu, G. Csaba, X. S. Hu, E. Varga, M. T. Niemier, G. H. Bernstein, and W. Porod, "Minimum-Energy State Guided Physical Design for Nanomagnet Logic," presented at the 50th Design Automation Conference, Austin, TX, June 2013.
291. **(Invited)** G. H. Bernstein, "Toward Practical Nanomagnet Logic Systems," presented at the International Symposium Along the Frontiers of Nanoelectronics: from Nanoimprinting to Nanoenergy, TUM Institute for Advanced Study, Munich, Germany, March 2013.
290. P. Li, G. Csaba, M. Niemier, X. S. Hu, J. Nahas, W. Porod, and G. H. Bernstein, "Vibrating Sample Magnetometry Study of High-Permeability Dielectrics on Nanomagnets," presented at the 2013 International Conference on Frontiers of Characterization and Metrology for Nanoelectronics, Gaithersburg, Md, March 2013.
289. I. Palit, M. Niemier, X. S. Hu, J. Nahas, W. Porod, and G. H. Bernstein. "Systematic design of nanomagnet logic circuits," presented at the Automation and Test in Europe Conference, DATE13, Grenoble, France, March 2013.
288. E. Varga, M. T. Niemier, G. Csaba, G. H. Bernstein, W. Porod, "Experimental Realization of a Nanomagnet Full Adder Using Slanted-Edge Magnets," presented at the 12th Joint MMM/Intermag Conference, Chicago, January 2013.
287. H. Dey, G. Csaba, X. S. Hu, M. Niemier, G. H. Bernstein, and W. Porod, "Switching Behavior of Sharply Pointed Nanomagnets for Logic Applications," presented at the 12th Joint MMM/Intermag Conference, Chicago, January 2013.
286. M. A. Siddiq, G. H. Bernstein, M. T. Niemier, G. Csaba, X. S. Hu, and W. Porod, "Field Estimation of an NML Clock Line Using Switching Statistics of Different Aspect Ratio Nanomagnets," presented at the 12th Joint MMM/Intermag Conference, Chicago, January 2013.
285. M. A. Siddiq, G. H. Bernstein, M. T. Niemier, X. S. Hu, G. Csaba, and W. Porod, "Demonstration of Field-Coupled Input Scheme on Line of Nanomagnets," presented at the 12th Joint MMM/Intermag Conference, Chicago, January 2013.
284. F. A. Shah, G. Csaba, K. Butler, and G. H. Bernstein, "Closely Spaced Nanomagnets by Dual e-beam Exposure for Low-Energy Nanomagnet Logic," presented at the 12th Joint MMM/Intermag Conference, Chicago, January 2013.
283. P. Li, G. Csaba, V. K. Sankar, X. S. Hu, M. Niemier, W. Porod, and G. H. Bernstein, "Reduction of Clocking Power by High Permeability Dielectrics in Nanomagnet Logic Circuits," presented at the 12th Joint MMM/Intermag Conference, Chicago, January 2013.

282. **(Invited)** G. H. Bernstein, P. Li, F. A. Shah, M. A. Siddiq, E. Varga, K. Butler, V. K. Sankar, G. Csaba, X. S. Hu, M. Niemier, J. Nahas, A. Orlov, and W. Porod, "Toward Practical Nanomagnet Logic Systems," presented at the *12th Joint MMM/Intermag Conference*, Chicago, January 2013.
281. G. P. Szakmany, P. M. Krenz, A. O. Orlov, G. H. Bernstein, and W. Porod, "Antenna-Coupled Thermocouples for Infrared Detection," presented at the *2012 Workshop on Innovative Nanoscale Devices and Systems (WINDS)*, Kohala Coast, HI, December 2012.
280. I. Hanninen, W. Buckhanan, M. Niemier and G. H. Bernstein, "Network on Metachip Architectures," presented at the *5th International Workshop on Network on Chip Architectures (NoCArc'12)*, December 2012.
279. Q. Zheng, M. A. Khan, A. M. Krizan and G. H. Bernstein, "Electrical and Mechanical Performance of Quilt Packaging with Solder Paste by Pin Transfer," presented at the *45th International Symposium on Microelectronics (IMAPS 2012)*, San Diego, September 2012.
278. M. A. Khan, J. M. Kulick, A. M. Krizan, and G. H. Bernstein, "Design and Robustness of Quilt Packaging Superconnect," poster presented at the *45th International Symposium on Microelectronics (IMAPS 2012)*, San Diego, September 2012.
277. M. Siddiq, P. Li, G. Csaba, V.K. Sankar, X. Ju, X. S. Hu, M. Niemier, W. Porod, G. H. Bernstein, "Experimental Demonstration of Field-Coupled Input: an Electronic Input Scheme for Nanomagnet Logic (NML)," presented at *TECHCON*, Austin, TX, Sept. 2012.
276. P. Li, G. Csaba, V.K. Sankar, X. Ju, X. S. Hu, M. Niemier, W. Porod, G. H. Bernstein, "Direct Measurement of Magnetic Coupling Between Nanomagnets for Nanomagnet Logic Applications," presented at *TECHCON*, Austin, TX, Sept. 2012.
275. **(Invited)** G. P. Szakmany, P. M. Krenz, A. O. Orlov, G. H. Bernstein and W. Porod, "Antenna-Coupled Thermocouples for Infrared Detection," presented at *IEEE International Conf. on Nanotechnology (IEEE Nano)*, Birmingham, United Kingdom, August 2012.
274. G. P. Szakmany, P. M. Krenz, A. O. Orlov, G. H. Bernstein, and W. Porod, "Device Structure for the Characterization of Nanowire Thermocouples," presented at the *Silicon Nanoelectronic Workshop (SNW)*, Honolulu, HI, June 2012.
273. A. J. Dingler, S. Kurtz, M. Niemier, X. S. Hu, G. Csaba, J. Nahas, W. Porod, G. H. Bernstein, P. Li, V. K. Sankar, "Making Non-Volatile Nanomagnet Logic Non-Volatile," paper number 139-KG51, presented at the *49th Design Automation Conference (DAC)* San Francisco, CA, June 2012.
272. **(Invited)** W. Porod, P. Li, F. Shah, M. Siddiq, E. Varga, G. Csaba, V. Sankar, G. H. Bernstein, X. S. Hu, M. Niemier, J. Nahas, and A. Orlov, "Nanomagnet Logic," presented at the *Device Research Conference*, University Park, PA, June 2012.
271. P. Li, G. Csaba, V. K. Sankar, X. S. Hu, M. Niemier, W. Porod, G. H. Bernstein, "Power Reduction in Nanomagnetic Logic Clocking through High Permeability Dielectrics," poster presented at the *Device Research Conference*, University Park, PA, June 2012.
270. E. Varga, G. Csaba, G. H. Bernstein, W. Porod, "Domain-Wall Assisted Switching of Single-Domain Nanomagnets," presented at *Intermag Conference*, Vancouver, Canada, May 2012.
269. P. Li, G. Csaba, V. K. Sankar, X. Ju, X. S. Hu, M. Niemier, W. Porod, G. H. Bernstein, "Direct Measurement of Magnetic Coupling between Nanomagnets for Nanomagnet Applications," presented at the *International Magnetism (Intermag) Conference*, Vancouver, Canada, May 2012 (Finalist for the best presentation award).
268. P. Li, V. K. Sankar, G. Csaba F. Shah, X. S. Hu, M. Niemier, W. Porod, G. H. Bernstein, "Enhanced Permeability Dielectrics for Power Reduction in NML Circuits," presented at *International Magnetism (Intermag) Conference 2012*, Vancouver, Canada, May 2012.
267. F. Shah, V. K. Sankar, and G. H. Bernstein, "Fabrication of Nanomagnet Logic Elements Using HSQ/Ti/PMMA tri-layer as an Etch Mask," poster presented at *International Magnetism (Intermag) Conference 2012*, Vancouver, Canada, May 2012.
266. **(Keynote)** G. H. Bernstein, "Reinventing Computers with Nanomagnets," presented at the *9th Annual Conference Foundations of Nanoscience*, Snowbird, Utah, April 2012.

265. B. Tiwari, G. Szakmany, P. Krenz, L. Schneider, G. H. Bernstein, P. Fay, A. Orlov, S. Howard, W. Porod, "Antenna-Coupled Nano-Thermocouples as Long-Wave Infrared Sensors," presented at *ISANN Conference*, Kaanapali, Maui, HI, December 2011.
264. E. Varga, G. Csaba, G. H. Bernstein, W. Porod, "Programmable Nanomagnet Logic Devices," presented at *ISANN Conference*, Kaanapali Maui, HI, December 2011.
263. P. Li, G. Csaba, V. K. Sankar, X. S. Hu, M. Niemier, W. Porod, G. H. Bernstein, "Switching Behavior of Lithographically Fabricated Nanomagnets for Logic Applications," presented at the *56th Annual Conference on Magnetism & Magnetic Materials*, Scottsdale, AZ, October 2011.
262. **(Invited)** G. H. Bernstein, "Magnetic Logic and Memory Devices," presented at the *SEMATECH International Symposium on Advanced Gate Stack Technology*, Bolton Landing, NY, October 2011.
261. S. Liu, X. S. Hu, J. J. Nahas, M. Niemier, J. J. Nahas, G. H. Bernstein, W. Porod, "Exploring the Design of Magnetic-Electrical Interface for Nanomagnet Logic," presented at *SRC's TECHCON 2011: Technology and Talent for the 21st Century*, Austin, TX, September 2011.
260. E. Varga, G. Csaba, G. H. Bernstein, and W. Porod, "Implementation of a Nanomagnetic Full Adder Circuit," presented at the *11th International Conference on Nanotechnol. (IEEE NANO)*, Portland, Oregon, August 2011.
259. Q. Zheng, P. Fay and G. H. Bernstein, "An Interlocking 2D Chip-to-Chip Interconnect for Quilt Packaging," presented at the *Radio Frequency Engineering Applications Workshop*, IPFW, Fort Wayne, IN, May 2011.
258. D. Kopp, G. H. Bernstein, and P. Fay, "Length and Geometry Dependence of Quilt Packaging at Microwave Frequencies," presented at the *Radio Frequency Engineering Applications Workshop*, IPFW, Fort Wayne, IN, May 2011.
257. K. Shenai, G. H. Bernstein, H. G. Xing, and J. Wu, "Advanced Chip-Scale Integration of High Efficiency DC/DC Power Converters," *National Aerospace & Electronics Conference (NAECON)*, Fairborn, OH, July 2010.
256. **(Invited)** K. Shenai, G. H. Bernstein, and J. Wu, "Efficient Integrated DC-DC Power Converters – Advanced Technologies and New Challenges," presented at the *IEEE Energy Tech*, Case Western Reserve University, Cleveland, OH, May 2011.
255. **(Invited)** G. H. Bernstein, S. Hu, M. Niemier and W. Porod, "Nanomagnet Logic: A New Paradigm in Non-Volatile Logic," presented at the *Workshop on Materials for Low Power Non-Volatile Memories: Oxides and Beyond*, Argonne National Laboratory, Chicago, February 2011.
254. **(Invited)** G. H. Bernstein, "The Moore's Law Cliff and IC Manufacturing Beyond CMOS," presented at the *Institute for Defense Analyses' ISAT Beyond Moore's Law Cliff Workshop*, Menlo Park, CA, February 2011.
253. E. Varga, G. Csaba, G. H. Bernstein, M. Niemier, S. Hu, and W. Porod, "Nanomagnet Logic," presented at the *2010 Workshop on Innovative Nanoscale Devices and Systems (WINDS)*, Kohala Coast, HI, December 2010.
252. B. Tiwari, G. Szakmany, P. Krenz, G. H. Bernstein, P. Fay, and W. Porod, "Investigation of Different Lead Designs and Their Effect on the Radiation Properties of IR Antennas," presented at the *2010 Workshop on Innovative Nanoscale Devices and Systems (WINDS)*, Kohala Coast, HI, December 2010.
251. G. Szakmany, B. Tiwari, G. H. Bernstein, P. Fay, and W. Porod, "Antenna-Coupled Metal-Oxide-Metal Diodes Fabrication Using Atomic Layer Deposition," presented at the *2010 Workshop on Innovative Nanoscale Devices and Systems (WINDS)*, Kohala Coast, HI, December 2010.
250. E. Varga, M. J. Siddiq, M. T. Niemier, G. H. Bernstein, and W. Porod, "Experimental Investigation of Slanted Supermalloy Nanomagnets and Their Application in Nanomagnet Logic," presented at the *TECHCON 2010: Technology and Talent for the 21st Century*, Austin, TX, September 2010.
249. K. Shenai, G. H. Bernstein, H. G. Xing, J. Wu, "Advanced Chip-Scale Integration of High Efficiency DC/DC Power Converters," presented at the *National Aerospace & Electronics Conference (NAECON)*, Fairborn, OH, July 2010.
248. **(Invited)** L. Liu, T. Wang, A. Biswas, Z. Chai, F. Watanabe, A. S. Biris, M. Lieberman, G. H. Bernstein, H. Xing, P. Fay, "Narrow Spectral Features of Cellulose Nanocomposites Characterized

- by a Frequency Domain THz Spectroscopy,” 18th Annual International Conference on Composites and Nano Engineering (ICCE-18), Anchorage, AK, July 2010.
247. Z. Cai, T. Wang, R. C. Sabo, F. Watanabe, A. Biswas, A. S. Biris, M. Lieberman, G. H. Bernstein, “Cellulose/Magnetic Nanoparticle Nanocomposites, 18th Annual International Conference on Composites and Nano Engineering (ICCE-18), Anchorage, AK, July 2010.
 246. Poster: K. N. Kim, F. Shah, L. Mark, K. Sarveswaran, G. Bernstein, M. Lieberman, “Deposition of DNA oligomer on EBL patterned cationic SAMs on SiO₂/Si [100],” presented at the 9th International Conference on Unconventional Computation (UC10), The University of Tokyo, Tokyo, Japan, June 2010.
 245. **(Invited)** G. H. Bernstein, “Nanomagnetic Logic for Beyond Moore Systems,” presented at University Government Industry Micro/Nano Symposium (UGIM), West Lafayette, IN, June 2010.
 244. M. A. Khan, A. M. Krizan and G. H. Bernstein, “Thermal Modeling of Quilt Packaging Interconnects,” poster presented at the University Government Industry Micro/Nano Symposium (UGIM), Lafayette, IN, June 2010.
 243. W. L. Buckhanan, M. Niemier and G. H. Bernstein, “Bridging the HPC Processor-Memory Gap with Quilt Packaging,” poster presented at the Proc. Micro/Nano Symposium (UGIM), p. 130-132, West Lafayette, IN, June 2010.
 242. M. Alam, G. H. Bernstein, J. Bokor, D. Carlton, X. S. Hu, S. Kurtz, B. Lambson, M. T. Niemier, W. Porod, M. Siddiq, and E. Varga, “Experimental Progress of and Prospects for Nanomagnet Logic (NML),” presented at the Silicon Nanoelectronics Workshop (SNW), Honolulu, June 2010.
 241. M. T. Niemier, W. Porod, X. S. Hu, and G. H. Bernstein, “Demonstration of the Five Tenets Necessary for Digital Systems in Nanomagnet Logic,” presented at the 68th Device Research Conference (DRC), South Bend, IN, June 2010.
 240. E. Varga, M. Siddiq, M. T. Niemier, M. T. Alam, G. H. Bernstein, W. Porod, A. Orlov, and X. S. Hu, “Experimental Demonstration of Non-Majority, Nanomagnet Logic Gates,” poster presented at the 68th Device Research Conference (DRC), Notre Dame, Indiana, June 2010.
 239. E. Varga, M. T. Niemier, G. H. Bernstein, W. Porod, and X. S. Hu, “Programmable Nanomagnet-Logic Majority Gate,” poster presented at the 68th Device Research Conference (DRC), Notre Dame, Indiana, June 2010.
 238. E. Varga, M. T. Niemier, X. S. Hu, A. Orlov, G. H. Bernstein, W. Porod, “Experimental Demonstration of New Nanomagnet Logic Circuits,” poster presented at Toward the Regulation of Nanomaterials Conference, Notre Dame, Indiana 2010.
 237. W. Porod, J. A. Bean, Z. Sun, B. Tiwari, G. Szakmany, G. H. Bernstein, and P. Fay, “Nanostructure Antennas for the LW-IR Regime,” presented at the 2010 IEEE MTT-S International Microwave Symposium (IMS 2010), Anaheim, CA, May 2010.
 236. D. Kopp, M. A. Khan, S. Garvey, K. Anderson, J. Kulick, P. Fay, A. M. Krizan, and G. H. Bernstein, “Quilt Packaging: A Coplanar Chip-to-Chip Interconnect Offering Ultra-Wide Bandwidth,” presented at the CS ManTech Conference, Portland, OR, May 2010.
 235. **(Invited)** S. Kurtz, M. Niemier, X. Sharon Hu, W. Porod, and G. H. Bernstein, “Design Space Exploration for Nanomagnet Logic Systems,” presented at Foundations of Nanoscience (FNANO10), Snowbird, UT, April 2010.
 234. K. Sarveswaran, G. H. Bernstein, M. Lieberman, “Attachment of DNA Origami on Lithographically Patterned Silicon,” poster presented at the Foundations of Nanoscience, Snowbird, Utah, April 2010.
 233. D. Kopp, M. A. Khan, J. Kulick, A. M. Krizan, P. Fay and G. H. Bernstein, “RF and Thermal Testing of Quilt Packaging Systems,” poster presented at the 6th International Conference and Exhibition on Device Packaging, Scottsdale, AZ, March 2010.
 232. K. Sarveswaran, B. Gao, K. Kim, L. Mark, G. H. Bernstein, and M. Lieberman, “EBL-Directed Assembly of DNA Nanostructures and Origami on Silicon,” presented at the Alternative Lithographic Technologies II Conference as part of the SPIE Symposium on SPIE Advanced Lithography, San Jose, CA, February 2010.
 231. R. Saini, J. Randall, W. Dillard, M. Lutz, and G. H. Bernstein, “Manufacturable Meta-Chip that

- Integrates MEMS, IMU, Timing, and Electronics in a Single Low-Cost Package,” presented at the *DARPA Workshop: Deep Integration of Timing and Inertial Measurement Units (TIMUs)*, Park City, UT, February 2010.
230. B. Tiwari, G. H. Bernstein, P. Fay and W. Porod, “Long-Wave Infrared Response of Antenna-Coupled Metal-Oxide-Metal Diodes,” presented at the *International Symposium on Advanced Nanodevices and Nanotechnology*, Kaanapali, Maui, HI, November 2009.
 229. M.T. Alam, M.A., M.T. Niemier, X.S. Hu, W. Porod, and G. H. Bernstein , "Fabrication of On-Chip Clock Structure for Nanomagnet QCA (MQCA)," presented at the *TECHCON 2009: Technology and Talent for the 21st Century (winner of best in session award)*.
 228. W. Porod and G. H. Bernstein, “Nanomagnet-Based Logic Devices,” presented at the *SRC-NRI Annual Review of the Southwest Academy for Nanoelectronics (SWAN)*, Austin, TX, (2009).
 227. A. Dingler, M.J. Siddiq, M.T. Niemier, X.S. Hu, M.T. Alam, G. H. Bernstein, and W. Porod, "Controlling Magnetic Circuits: How Clock Structure Implementation will Impact Logical Correctness and Power," presented at the *24th IEEE International Symposium on Defect and Fault Tolerance in VLSI Systems (DFT 2009)*, Chicago, October 2009.
 226. D. Kopp, C. Liang, J. Kulick, M. Khan, G. H. Bernstein, and P. Fay, “Quilt Packaging of RF Systems with Ultrawide Bandwidths,” presented at the *IMAPS Advanced Technology Workshop on RF and Microwave Packaging*, September 2009, San Diego (**winner of best student paper award**).
 225. (**Invited**) L. Ji, G. Csaba, A. Orlov, G. H. Bernstein and W. Porod, “Domain-Wall Trapping and Control on Submicron Magnetic Wire by Localized Field,” presented at *IEEE NANO*, Genoa, Italy, July 2009.
 224. C. Liang, W. Buckhanan, A. Carter, P. Fay, M. Khan, D. Kopp, J. Kulick, Y. Lee, M. Padberg, R. Savino, G. Snider, and G. H. Bernstein, “Novel Packaging via Solder Joints at Chip Edges,” presented at the *5th Annual International Conference and Exhibition on Device Packaging*, IMAPS 2009, Scottsdale, AZ 2009.
 223. E. Varga, G. H. Bernstein, X. S. Hu, M. T. Niemier, and W. Porod, “Non-volatile and Reprogrammable MQCA-based Majority Gates,” presented at the *Device Research Conference (DRC)*, College Station, PA, June 2009.
 222. J. A. Bean, B. Tiwari, G. Szakmány, G. H. Bernstein, P. Fay, and W. Porod, “Multi-Spectral CMOS Compatible Antenna-Coupled MOM Diode Infrared Detectors,” poster presented at the *2009 Silicon Nanoelectronics Workshop (SNW)*, Conference, Kyoto, June 2009.
 221. B. Tiwari, G. Szakmany, J. A. Bean, G. H. Bernstein, P. Fay, and W. Porod, “Fabrication of Antenna-Coupled Metal-Oxide-Metal Diode Thermal Infrared Detectors Using In-Situ Oxidation,” presented at the *EIPBN Conference*, Marco Island, FL, May 2009.
 220. (**Invited**) M. T. Alam, S. Kurtz, M. T. Niemier, S. X. Hu, G. H. Bernstein, and W. Porod, “Magnetic Logic Based on Field-Coupled Nanomagnets,” presented at the *NSTI Nanotech Conference & Expo*, Houston, May 2009.
 219. C. Liang, R. Savino, J. Kulick, D. Kopp, W. Buckhanan, G. Snider, P. Fay, and G. H. Bernstein, “Solderability Study on Immersion Tin Coated on Cu Nodules for Chip-to-Chip Connection,” presented at the *MRS Spring Meeting*, San Francisco, April 2009.
 218. (**Keynote**) G. H. Bernstein, J. Bonath, J. Brockman, W. Buckhanan, A. Carter, S. Dai, P. Fay, M. Khan, D. Kopp, J. Kulick, A. Krizan, Y. Lee, C. Liang, D. Myers, M. Niemier, M. Padberg, R. Savino, and G. Snider, “Quilt Packaging – a Quasi-Monolithic Way to Merge Technologies and Size Scales,” presented at the *Foundations of Nanoscience (FNANO09)*, Snowbird, UT, April 2009.
 217. (**Invited**) M. Alam, S. Kurtz, M. T. Niemier, S. X. Hu, G. H. Bernstein, and W. Porod, “Nanomagnet Logic Based on Field-Coupled Nanomagnets: Clocking Structures and Power Analysis,” presented at the *Foundations of Nanoscience (FNANO09)*, Snowbird, UT, April 2009.
 216. C. Liang, W. Buckhanan, D. Kopp, M. Khan, R. Savino, J. Kulick, M. Padberg, A. Carter, G. Snider, P. Fay, and G. H. Bernstein, “Novel Packaging via Solder Joints at Chip Edges,” presented at the *5th Annual International Conference and Exhibition on Device Packaging*, IMAPS 2009, Scottsdale, AZ, March 2009.

215. J. A. Bean, B. Tiwari, G. H. Bernstein, P. Fay, W. Porod, "Thermal Infrared Detection Using Dipole Antenna-Coupled Metal-Oxide-Metal Diodes," presented at the *Advanced Heterostructures and Nanotstructures Workshop (AHNW)*, Kohala Coast, HI, December 2008.
214. M. Niemier, A. Dingler, X. Sharon Hu, M. Tanvir Alam, G. H. Bernstein, and W. Porod, "Bridging the Gap between Nanomagnetic Devices and Circuits," presented at the *26th IEEE International Conference on Computer Design*, Lake Tahoe, CA, October 2008.
213. G. L. Snider, A. O. Orlov, V. Joshi, R. A. Joyce, Q. Hua, K. K. Yadavalli, G. H. Bernstein, T. P. Fehlner, and C. S. Lent, "Electronic Quantum-Dot Cellular Automata," presented at the *9th International Conference on Solid-State and Integrated-Circuit Technology (ICSICT)*, October 2008.
212. J. Bean, B. Tiwari, G. P. Szakmany, G. H. Bernstein, P. Fay, and W. Porod, "Long Wave Infrared Detection Using Dipole Antenna-Coupled Metal-Oxide-Metal Diodes, presented at the *International Conference on Infrared, Millimeter and Terahertz Waves (IRMMW-THz)*, Pasadena, CA, September 2008.
211. **(Invited)** M. T. Alam, S. Kurtz, M. T. Niemier, S. X. Hu, G. H. Bernstein, and W. Porod, "Magnetic Logic Based on Field-Coupled Nanomagnets: Clocking Structures and Power Analysis," presented at the *IEEE NANO*, Arlington, TX, August 2008.
210. **(Invited)** P. Fay, G. H. Bernstein, and W. Porod, "Antenna-Coupled Tunnel-Diode nanosensors for Millimeter-Wave Through Infrared Imaging," presented at the *Workshop on Nanoelectronics for RF and Electronics Applications*, Army Research Laboratory (ARL), Adelphi, MD, August 2008.
209. J. Bean, B. Tiwari, G. H. Bernstein, P. Fay, and W. Porod, "Long-Wave Infrared Detection Using Dipole Antenna-Coupled Metal-Oxide-Metal Diodes," presented at the *Silicon Nanoelectronics Workshop (SNW)*, Honolulu, HI, June 2008.
208. J. Bean, B. Tiwari, G. H. Bernstein, P. Fay, and W. Porod, "Thermal Infrared Detection Using Dipole Antenna-Coupled Metal-Oxide-Metal Diodes," presented at the *2008 EIPBN Conference*, Portland, May 2008.
207. L. Ji, A. Orlov, G. H. Bernstein, and W. Porod, "Domain-Wall Trapping by Localized Field on Submicron Permalloy Wire," presented at the *IEEE International Magnetism Conference (INTERMAG)*, Madrid, May 2008.
206. M. Lieberman and G. H. Bernstein, "Lithographically Assisted Assembly and Patterning of DNA Nanostructures on Semiconductor Surfaces," presented at the *ONR DNA Nanofabrication Workshop*, Arlington, VA, April 2008.
205. B. Gao, G. H. Bernstein, and M. Lieberman, "Electron Beam Lithography on Self-assembled Monolayers of Poly(ethylene glycol) for Nanoscale Biomolecule Patterning," poster presented at the *5th Foundations Of Nanoscience: Self-Assembled Architectures And Devices FNANO08*, Snowbird, Utah, April 2008.
204. **(Invited)** A. Imre, L. Ji, A. Orlov, G. Csaba, P. Lugli, G. H. Bernstein, and W. Porod, "Magnetic Logic Based on Field-Coupled Nanomagnets," presented at the *SRC-NRI Western Institute for Nanoelectronics (WIN) Workshop on Ferromagnetic Devices, Circuits, and Applications*, Los Angeles, February 2008.
203. **(Invited)** A. Imre, G. Csaba, L. Ji, A. Orlov, G. H. Bernstein, and W. Porod, "Magnetic Logic Based on Field-Coupled Nanomagnets," presented at the *52nd Magnetism and Magnetic Materials Conference - MMM 2007*, Tampa, FL, November 2007.
202. M. T. Alam, G. H. Bernstein, W. Porod, S. Hu, M. Niemier, M. Putney, and J. DeAngelis, "Power Dissipation for Clocked Magnetic QCA," presented at the *12th International Workshop on Computational Electronics*, Amherst, MA, October 2007.
201. M. T. Alam, G. H. Bernstein, W. Porod, S. Hu, M. Niemier, M. Putney, and J. DeAngelis, "Power Dissipation for Clocked Magnetic QCA," presented at the *International Workshop on Computational Electronics – IWCE*, Amherst, MA, October 2007.
200. **(Invited)** A. Imre, L. Ji, G. Csaba, A. Orlov, G. H. Bernstein, and W. Porod, "Magnetic Logic based on Field-Coupled Nanomagnets," presented at the *International Conference on Electromagnetics in Advanced Applications (ICEAA-07)*, Torino, Italy, September 2007.

199. A. Imre, L. Ji, G. Csaba, A. Orlov, G. H. Bernstein, and W. Porod, (Invited), "Magnetic Logic Based on Field-Coupled Nanomagnets," presented at the *International Conference on Electromagnetics in Advanced Applications (ICEAA-07)*, Torino, Italy, September 2007.
198. G. H. Bernstein, M. Alam, W. Porod, S. Hu, M. Niemier, M. Putney, and J. DeAngelis, "Clocking Scheme for Nanomagnet QCA," presented at the *Seventh IEEE Int. Conf. on Nanotechnology – IEEE-NANO 2007*, Hong Kong, August 2007.
197. M. Niemier, X. S. Hu, M. Alam, G. Bernstein, W. Porod, M. Putney, and J. DeAngelis, "Clocking Structures and Power Analysis for Nanomagnet-Based Logic Devices," presented at the *International Symposium on Low Power Electronics and Design 2007 (ISLPED-2007)*, Portland, Oregon, August 2007.
196. L. Ji, A. Orlov, G. H. Bernstein, W. Porod, "Current-Driven Domain-Wall Motion in a Magnetic Wire with Multiple Constrictions," presented at the *Seventh IEEE International Conference on Nanotechnology – IEEE-NANO 2007*, Hong Kong, August 2007.
195. W. Porod, G. H. Bernstein, P. Fay, Y.-F. Huang, and A. I. Csurgay, "Toward Multispectral Nanoscale Sensor Arrays for CNN-UM," presented at the *Technology Assessment Meeting on Cellular (CNN) Sensing–Computing–Activating Technology*, Budapest, Hungary, July 2007.
194. L. Ji, A. Orlov, G. H. Bernstein, and W. Porod, "Current-driven Domain-Wall Motion in a Magnetic Wire with Multiple Constrictions," presented at the *2007 Silicon Nanoelectronics Workshop (SNW)*, Kyoto, Japan, June 2007.
193. M. T. Alam, M. Niemier, W. Porod, S. Hu, M. Putney, J. DeAngelis, and G. H. Bernstein, "On-Chip Clocking Scheme for Nanomagnet QCA," poster presented at the *65th Device Research Conference (DRC)*, University of Notre Dame, Indiana, June 2007.
192. A. Orlov, A. Imre, L. Ji, G. Csaba, G. H. Bernstein, and W. Porod, "Fabrication and Operation of Magnetic Quantum-Dot Cellular Automata All Magnetic Logic," presented at the *Joint Int. Meeting of the Electrochemical Soc.*, Cancun, Mexico, October 2007.
191. **(Invited)** G. H. Bernstein, "Quilt Packaging: A Novel Interchip Communications Method," keynote address at the *Indiana IMAPS/SMTA Vendor's Day and Mini-Symposium*, Indianapolis, April 2007.
190. **(Plenary Paper)** A. Imre, L. Ji, G. Csaba, A. Orlov, G. H. Bernstein, and W. Porod, "Magnetic Logic Devices Based on Field-Coupled Nanomagnets," presented at the *Nano and Giga Challenges in Electronics and Photonics (NGC0-7)*, Phoenix, Arizona, March 2007.
189. J. Bean, G. H. Bernstein, P. Fay, and W. Porod, "Antenna-Coupled Metal-Oxide-Metal Diodes for Terahertz Detection," presented at the *Advanced Heterostructure Workshop*, Kohala Coast, HI, December 2006.
188. **(Invited)** A. Imre, L. Ji, G. Csaba, A. Orlov, G. H. Bernstein, and W. Porod, "Fabrication of Magnetic Quantum-dot Cellular Automata Systems," presented at the *2006 Joint International Meeting of the Electrochemical Society*, Cancun, Mexico, October 2006.
187. G. H. Bernstein, Q. Liu, M. Yan, A. Tong, J. Kulick, W. Buckhanan, G. Snider, and P. Fay, "Fabrication and Characterization of Quilt Packaging: A Novel Inter-Chip Communication Paradigm for System-in-Package (SiP)" presented at the *International Workshop on 3S(SOP, SiP, SOC) Electronics Technologies*, Atlanta, September 2006.
186. **(Invited)** A. Imre, L. Ji, G. Csaba, V. Metlushko, A. Orlov, G. H. Bernstein, and W. Porod, "Magnetic Quantum-Dot Cellular Automata (MQCA) Fabrication," presented at the *Gordon Research Conference: Nanostructure Fabrication*, Tilton, New Hampshire, July 2006.
185. B. Gao, G. H. Bernstein, P. Clark, and M. Lieberman, "Biomolecule Nanopatterns Defined by Electron Beam Lithography and Molecular Lifting," presented at the *2006 EIPBN Conference*, Baltimore, June 2006.
184. J. Bean, G. H. Bernstein, W. Porod, "Antenna-Coupled Metal-Oxide-Metal Diodes for Terahertz Detection," poster presented at the *2006 EIPBN Conference*, Baltimore, June 2006.
183. J. Bean, B. Rakos, G. H. Bernstein, P. Fay, W. Porod, "Antenna Coupled Metal-Oxide-Metal Diodes for Terahertz Detection," poster presented at the *2006 Silicon Nanoelectronics Workshop (SNW)*, Honolulu, HI, June 2006.
182. G. H. Bernstein, L. McWilliams, K. Meyers, S. Silliman, W. Porod, P. Fay, J. Brockman, A. Lewis,

- M. Buckle, A. Carter, S. Govea, and C. Suhendra, "Information and Nano Technologies in an Introductory Engineering Course," presented at the *ASEE 2006 Illinois-Indiana and North Central, Joint Section Conference*, Ft. Wayne, IN, March 2006.
181. S. Hu, M. Crocker, M. Niemier, M. Yan, and G. H. Bernstein, "PLAs in Quantum-dot Cellular Automata," presented at the *IEEE Computer Society Annual Symposium on VLSI (ISVLSI 2006)*, Karlsruhe, Germany, March 2006.
 180. J. Su, H. Yang, W. Porod, P. Fay, and G. H. Bernstein, "Laterally Driven Electrostatic Actuators with Extended Travel Range," presented at the *SPIE Conf. on MOEMS Display, Imaging, and Miniaturized Microsystems IV*, San Jose, January 2006.
 179. H. Yang, J. Su, W. Porod, P. Fay, and G. H. Bernstein, "Design and Fabrication of a Tunable Fabry-Perot Interferometer/Photodiode (FPI/PD) Spectral Image Sensor for Visible Wavelengths," presented at the *SPIE Conf. on MOEMS Display, Imaging, and Miniaturized Microsystems IV*, San Jose, January 2006.
 178. G. L. Snider, A. Orlov, C. S. Lent, G. H. Bernstein, M. Lieberman, and T. Fehlner, "Implementations of Quantum-dot Cellular Automata," presented at the *Int'l Conf. on Nanosci. and Nanotechnol., ICONN*, Brisbane, Qld, Australia, July 2006.
 177. L. Ji, A. Imre, E. Varga, A. Orlov, G. H. Bernstein, and W. Porod, "Domain Wall Trapping in Magnetic Wires by Nanomagnets," presented at the joint *7th International Conference on New Phenomena in Mesoscopic Structures and the 5th International Conference on Surfaces and Interfaces in Mesoscopic Devices – NPMS-7/SID-5*, Maui, HI, November December 2005.
 176. **(Invited)** A. Imre, L. Ji, G. Csaba, A. Orlov, G. H. Bernstein, and W. Porod, "Magnetic Logic Devices Based on Field-Coupled Nanomagnets," presented at the *International Semiconductor Device Research Symposium (ISDRS-05)*, Bethesda, Maryland, December 2005.
 175. G. H. Bernstein, Q. Liu, Z. Sun, G. Snider, and P. Fay, "Quilt Packaging: A New Paradigm for System-in-Package," presented at the *7th Electronics Packaging Technology Conference (EPTC2005)*, Singapore, December 2005.
 174. J. Bean, J. McRaven, B. Rakos, G. Bernstein, P. Fay, and W. Porod, "Antenna-coupled Metal-oxide-metal Diodes for Terahertz Detection," poster presented at the *Second Joint International Conference on New Phenomena in Mesoscopic Systems and Surfaces and Interfaces of Mesoscopic Devices*, Maui, HI November 2005.
 173. A. Imre, G. Csaba, L. Ji, A. Orlov, G. H. Bernstein, and W. Porod, "Magnetic Logic Gates Based on Field-coupled Nanomagnets," presented at the *50th Magnetism and Magnetic Materials Conference*, San Jose, CA, October 2005.
 172. L. Ji, E. Varga, A. Wolf, A. Imre, G. H. Bernstein, A. Orlov, and W. Porod, "Investigation of Different Wire Geometries for Magnetization Reversal and Domain-wall Trapping in Submicron Permalloy Wires," poster presented at the *50th Magnetism and Magnetic Materials Conference (MMM)*, San Jose, CA, October 2005.
 171. G. Snider, G. H. Bernstein, and J. Brockman, "Work in Progress – Multidisciplinary Experience in System-on-Chip Development," presented at the *Frontiers in Education Conference, Pedagogies and Technologies for the Emerging Global Economy (FIE)*, Indianapolis, Indiana, October 2005.
 170. **(Invited)** G. H. Bernstein, A. Imre, K. Sarveswaran, M. Lieberman and W. Porod, "Fabrication and Demonstration of Quantum-dot Cellular Automata Systems," presented at the *Solid State Devices and Materials 2005 (SSDM2005)*, Kobe, Japan, September 2005.
 169. B. Rakos, H. Yang, J. A. Bean, G. H. Bernstein, P. Fay, A. I. Csurgay, and W. Porod, "Investigation of Antenna-Coupled MOM Diodes for Infrared Sensor Applications," presented at the *14th International Conference on Nonequilibrium Carrier Dynamics in Semiconductors*, Chicago, July 2005.
 168. A. Imre, L. Ji, G. Csaba, A. Orlov, G. H. Bernstein, and W. Porod, "Logic Gates Featuring Field Coupled Nanomagnets," presented at the *2005 Silicon Nanoelectronics Workshop (SNW)*, Kyoto, Japan, June 2005.
 167. W. Porod, A. Imre, G. Csaba, L. Ji, A. Orlov, G. H. Bernstein, and V. Metlushko, "Field-coupled Nanomagnets for Logic Applications," presented at *SPIE Microtechnologies for the New*

- Millennium 2005*, Sevilla, Spain, May 2005.
166. **(Invited)** A. Imre, L. Ji, Gy. Csaba, A. Orlov, G. H. Bernstein, and W. Porod, "Magnetic Logic Devices Based on Field-Coupled Nanomagnets," presented at the *Second IEEE Conference on Nanoscale Devices and System Integration (NDSI'05)*, Houston, TX, April 2005.
 165. J. Wu and G. H. Bernstein, "A MEMS Inductive Deep Brain Stimulator," poster presented at the *Second IEEE Conference on Nanoscale Devices and System Integration (NDSI'05)*, Houston, TX, April 2005.
 164. **(Invited)** P. Esfandiari, G. Bernstein, P. Fay, W. Porod, B. Rakos, A. Zarandy, B. Berland, L. Boloni, G. Boreman, B. Lail, B. Monacelli, and A. Weeks, "Tunable Antenna-Coupled Metal-Oxide (MOM) Uncooled IR Detector," presented at the *SPIE Defense and Security Symposium 2005, Infrared Technology and Applications Conference*, Orlando, Florida, March 2005.
 163. K. Sarveswaran, W. Hu, G. H. Bernstein, S. Arico, M. Niemier, M. Lieberman, "Towards Self-assembling Circuit Boards," poster presented at *Molecular-Scale Electronics VII*, San Diego, CA, January 2005.
 162. A. Imre, G. Csaba, P. Lugli, G. H. Bernstein, V. Metlushko, and W. Porod, "Magnetic Logic Devices," presented at the *Advanced Heterostructure Workshop*, Kohala Coast, HI, December 2004.
 161. **(Invited)** W. Porod and G. H. Bernstein, "Nanotechnology: Overview and Relevance to Biology," presented at the *National Association of Biology Teachers National Convention*, Chicago, IL, November 2004.
 160. **(Invited)** G. H. Bernstein, "Magnetic QCA Systems," presented at the *European Micro and Nano Systems 2004 (EMN04)*, Paris, France, October 2004.
 159. G. H. Bernstein, W. Hu, Q. Hang, K. Sarveswaran, and M. Lieberman, "Electron Beam Lithography and Liftoff of Molecules and DNA Rafts," presented at the *4th IEEE Conference on Nanotechnology (IEEE-NANO)*, Munich, August 2004.
 158. A. Imre, L. Zhou, A. Orlov, G. Csaba, G. H. Bernstein, W. Porod, and V. Metlushko, "Application of Mesoscopic Magnetic Rings for Logic Devices," presented at the *4th IEEE Conference on Nanotechnology (IEEE-NANO)*, Munich, August 2004.
 157. J. Wu, V. Quinn, and G. H. Bernstein, "A Detachable Transformer with Microfabricated Secondary Coil for Powering MEMS Devices," presented at the *Magnetics 2004*, Denver, CO, June 2004.
 156. G. L. Snider, R. K. Kummamuru, H. Qi, S. Sharma, Z. Li, A.O. Orlov, C.S. Lent, G.H. Bernstein, and T.P. Fehlner, "Experimental Demonstrations of Quantum-dot Cellular Automata," presented at the *IEEE Si Nanoelectronics Workshop*, Honolulu, HI, June 2004.
 155. G. H. Bernstein, Q. Hang, W. Hu, K. Sarveswaran, and M. Lieberman, "Electron Beam Lithography for Patterning of Molecular Electronics," poster presented at the *IEEE Si Nanoelectronics Workshop*, Honolulu, HI, June 2004.
 154. A. Imre, G. Csaba, G.H. Bernstein, W. Porod, and V. Metlushko "Shape Engineering of Dipole-Coupled Nanomagnets for Magnetic Logic Devices," poster presented at *IEEE Si Nanoelectronics Workshop*, Honolulu, HI, June 2004.
 153. A. Imre, G. Csaba, L. Zhou, A. Orlov, G. H. Bernstein, W. Porod, and V. Metlushko, "Shape Engineering of Dipole-Coupled Nanomagnets for Magnetic Logic Devices," poster presented at the *62nd Device Research Conference*, Notre Dame, IN, June 2004.
 152. A. Imre, G. Csaba, G. Bernstein, W. Porod, and V. Metlushko, "Shape Engineering of Dipole-Coupled Nanomagnets for Magnetic Logic," poster presented at the *Metallic Multilayers Symposium*, Boulder, CO, June 2004.
 151. V. V. Metlushko, U. Welp, V. Vlasko-Vlasov, G. Crabtree, M. Grimsditch, V. Novosad, N. Zaluzec, J. Bekaert, V. Moshchalkov, Y. Bruynseraede, P. Vavassori, B. Ilic, Xiaobin Zhu, A. Imre, G. Bernstein and W. Porod, "Nanomagnets: from nanodots to nanorings," presented at the *2004 MRS Spring Meeting*, San Francisco, April 2004.
 150. K. Sarveswaran, W. Hu, P. Huber, Gh. H. Bernstein, M. Niemier, and M. Lieberman, "Self-Assembly and Lithographic Patterning of DNA Rafts," presented at *Foundations Of Nanoscience: Self-Assembled Architectures And Devices (FNANO04)*, Snowbird, Utah, April 2004.

149. **(Invited)** V. Metlushko, U. Welp, V. Vlasko-Vlasov, G. Crabtree, M. Grimsditch, V. Novosad, J. Hiller, N. Zaluzec, P. Vavassori, B. Ilic, Xiaobin Zhu, P. Grütter, A. Imre, G. H. Bernstein, W. Porod, J. Bekaert, V. V. Moshchalkov, and Y. Bruynseraede “Magnetic Ring Devices for Memory and Logic Applications,” presented at the *IEEE Nanoscale Devices and System Integration (NDSI) 2004*, Miami, February 2004.
148. **(Invited)** G. H. Bernstein, Q. Hang and W. Hu, “Nanolithography for Molecular Electronics,” presented *IEEE Nanoscale Devices and System Integration (NDSI) 2004*, Miami, February 2004.
147. A. Imre, G. Csaba, G. H. Bernstein, W. Porod, and V. Metlushko, “Investigation of shape dependent switching of coupled nanomagnets,” presented at the *2003 Sixth Int. Conf. on New Phenomena in Mesoscopic Systems NPMS-6/SIMD-4*, Maui, HI, December 2003.
146. L. Zhou, A. Orlov, A. Imre, G. Csaba, G. H. Bernstein, and W. Porod, “Magnetoresistive Measurements on Patterned Nanomagnet Films,” poster presented at the *2003 Sixth Int. Conf. on New Phenomena in Mesoscopic Systems NPMS-6/SIMD-4*, Maui, HI, December 2003.
145. R. K. Kummamuru, G. Toth, J. P. Timler, C. S. Lent, G. H. Bernstein, A. O. Orlov, G. L. Snider, “Power Gain in Clocked Quantum-Dot Cellular Automata Devices,” presented at the *NSTI Nanotechnology Conference and Trade Show – Nanotech*, San Francisco, February 2003.
144. **(Invited)** G. H. Bernstein, “Quantum-dot Cellular Automata by Electric and Magnetic Field Coupling,” presented at the *IEEE 2003 Custom Integrated Circuits Conf.*, San Jose, CA, September 2003.
143. G. Csaba, A. Imre, G. Bernstein, A. Csurgay, and W. Porod, “Circuit Simulations for Single-Domain Field-Coupled Nanomagnets,” presented in the Special Session 'Nanoelectronic Circuits' at the *European Conference on Circuit Theory and Design - ECCTD'03*, Krakow, Poland, September 2003.
142. J. Wu and G. H. Bernstein, “Selective Signal Transmission to Inlaid Microcoils by Inductive Coupling,” presented at the *Transducers, Solid-State Sensors, Actuators and Microsystems, 12th International Conference*, Boston, June 2003.
141. W. Hu, G. H. Bernstein, K. Sarveswaran, and M. Lieberman, “Low Temperature Development of PMMA for Sub-10-nm Electron Beam Lithography,” presented at the *Third IEEE Conf. on Nanotechnology*, San Francisco, CA, August 2003.
140. Y. Wang, W. Hu, M. Lieberman, G. H. Bernstein, and Q. Hang, “Molecular Nanopatterning by Electron Beam Lithography,” presented at the *Third IEEE Conf. on Nanotechnology*, San Francisco, CA, August 2003.
139. S. Baglio, S. Castorina, L. Fortuna, G. H. Bernstein, and W. Porod, “Integrated Optical Nanosystems with an Embedded In-Line Thermo-Optic Modulator,” presented at the *Third IEEE Conf. on Nanotechnology*, San Francisco, CA, August 2003.
138. R. Kummamuru, A. Orlov, C. Lent, G. Bernstein, and G. Snider, “Clocked Quantum-dot Cellular Automata Shift Register,” presented at the *International Workshop on Quantum Devices and Quantum Computing*, Notre Dame, IN, August 2003.
137. U. Welp, V. V. Vlasko-Vlasov, G. Crabtree, M. Grimsditch, V. Novosad, J. Hiller, N. Zaluzec, B. Llic, X. Zhu, P. Grutter, G. Csaba, A. Imre, G. H. Bernstein, W. Porod, J. Bekaert, V. Moshchalkov, Y. Bruynseraede, and V. Metlushko, “High-density Arrays of Magnetic Ring Elements,” presented at the *Third IEEE Conf. on Nanotechnology*, San Francisco, CA, August 2003.
136. A. Imre, G. Csaba, A. Orlov, G. Bernstein, W. Porod, and V. Metlushko, “Investigation of Antiferromagnetic Ordering along Chains of Coupled Nanomagnets,” presented at the *Third IEEE Conf. on Nanotechnology*, San Francisco, CA, August 2003.
135. W. Porod, G. H. Bernstein, P. Fay, and A. Csurgay, “Toward Hyperspectral Nanoscale Sensor Arrays for CNN-UM,” presented at the *CNN Technology Assessment Meeting*, Budapest, Hungary, July 2003.
134. A. Imre, G. Csaba, V. Metlushko, G. H. Bernstein, and W. Porod, “Switching Behavior of Magnetically-Coupled Rings,” poster presented at the *2003 Silicon Nanoelectronics Workshop (SNW)*, Kyoto, Japan, June 2003.
133. G. H. Bernstein, J. B. Brockman, P. M. Kogge, G. L. Snider, and B. E. Walvoord, “From Bits to

- Chips: A Multidisciplinary Curriculum for Microelectronics System Design Education,” presented at the *Microelectronics Systems Education Conference*, Anaheim, CA June 2003.
132. **(Invited)** G. H. Bernstein, “Quantum-dot Cellular Automata: Computing by Polarized Systems,” presented at the *40th Design Automation Conf.*, June 2003.
 131. G. Csaba, A. Imre, G. H. Bernstein, W. Porod, and V. Metlushko, “Application of Magnetic Rings for Field-Coupling Computing,” presented at the *Nanomes 2003*, Tempe, AZ, February 2003.
 130. G. H. Bernstein, R. K. Kummamuru, A. O. Orlov, R. Ramasubramaniam, C. S. Lent, and G. L. Snider, “Experimental Progress in Quantum-dot Cellular Automata,” presented at the *Fourth International Symposium on Nanostructures and Mesoscopic Systems (Nanomes) 2003*, Tempe, AZ, February 2003.
 129. A. O. Orlov, R. Kummamuru, G. H. Bernstein, C. S. Lent, and G. L. Snider, “Quantum-dot Cellular Automata Shift Register,” presented at the *NanoTech 2003*, San Francisco, CA, February 2003.
 128. M. Lieberman, Q. Hang, Y. Wang, G. H. Bernstein, “Sub-50-nm Patterning by Molecular Liftoff,” presented at the *6th Engineering Foundation Conf. on Molecular-Scale Electronics*, Key West, December 2002.
 127. Q. Hang, D. A. Hill, and G. H. Bernstein, “Study of Polymethylmethacrylate Removers for Electron Beam Lithography through Quantitative Surface Roughness Characterization by AFM,” poster presented at the *AVS 49th Intl. Symp.*, Denver, November 2002.
 126. W. Hu, T. Orlov, and G. H. Bernstein, “Study of PMMA EBL Cross-Sections by a Novel Process,” presented at the *AVS 49th Intl. Symp.*, Denver, November 2002.
 125. G. L. Snider, A. O. Orlov, R. K. Kummamuru, R. Ramasubramaniam, I. Amlani, G. H. Bernstein, and C. S. Lent, “Quantum-dot Cellular Automata,” presented at the *Mat. Res. Soc. Fall Meeting*, Boston, November 2001.
 124. Q. Hang, Y. Wang, M. Lieberman, and G. H. Bernstein, “Selective Deposition of Molecules through Polymethylmethacrylate Patterns Defined by Electron Beam Lithography,” poster presented at the *10th Foresight Conf. on Molecular Nanotechnology*, Bethesda, October 2002.
 123. J. Wu and G. H. Bernstein, “An inlaid electroplated copper coil for implanted and MEMS applications,” presented at the *AVS Prairie Chapter 2002 Meeting*, Chicago, October 2002.
 122. G. Csaba, A. Imre, G. H. Bernstein, W. Porod, and V. Metlushko, “Signal Processing with Coupled Ferromagnetic Dots,” presented at the *IEEE-Nano 2002 Conf.*, Washington D.C., August 2002.
 121. G. H. Bernstein, J. B. Brockman, P. M. Kogge, G. L. Snider, and B. M. Walvoord, “From Bits to Chips: A Multidisciplinary Curriculum for Microelectronics System Design Education,” presented at the *ASEE IL/IN Sectional Conf. Engineering Education in a Changing Economy*, W. Lafayette, IN, April 2002.
 120. M. Lieberman, X. Wang, W. Hu, R. Rajagopal, M. Jiang, G. L. Snider and G. H. Bernstein, “Formation, characterization, and sub-50 nm patterning of organosilane monolayers with embedded disulfide bonds,” presented at the *224th Meeting of the American Chemical Society*, Boston, MA, August 2002.
 119. M. Lieberman, S. Chellamma, Y. Wang, Q. Hang, G. H. Bernstein, and C. S. Lent, “Molecules and Supramolecular Arrays for Quantum-dot Cellular Automata, presented at the *224th Meeting of the American Chemical Society*, Boston 2002.
 118. G. Csaba, A. Imre, G. H. Bernstein, W. Porod, and V. Metlushko, “Nanocomputing by Field-Coupled Nanomagnets,” presented at the *2002 IEEE Silicon Nanoelectronics Workshop (SNW)*, Honolulu, HI, June 2002.
 117. A. O. Orlov, R. Kummamuru, R. Ramasubramaniam, C. S. Lent, G. H. Bernstein, and G. L. Snider, “Clocked quantum-dot cellular automata devices,” presented at the *10th International Symposium: Nanostructures: Physics and Technology*, St. Petersburg, Russia, June 2002.
 116. A. O. Orlov, R. Kummamuru, R. Ramasubramaniam, C. S. Lent, G. H. Bernstein, and G. L. Snider, “Clocked Quantum-dot Cellular Automata Shift Register,” presented at the *7th International Conference on Nanometer-scale Science and Technology*, Malmö, Sweden, June 2002.
 115. X. Wang, M. Lieberman, R. Ramasubramaniam, W. Hu, G. H. Bernstein, and G. L. Snider, “Ultra-Thin Resist Based on Self-Assembled Monolayer for Electron-Beam Lithography and AFM

- Anodization,” presented at the *46th Intl. Conf. On Electron, Ion and Photon Beam Technology & Nanofabrication*, Anaheim, May 2002.
114. Q. Hang, Y. Wang, M. Lieberman, and G. H. Bernstein, “Selective Deposition of Molecules through Polymethylmethacrylate Patterns Defined by Electron Beam Lithography,” poster presented at the *46th Intl. Conf. On Electron, Ion and Photon Beam Technology & Nanofabrication*, Anaheim, May 2002.
 113. W. Hu, T. Orlova, and Gary H. Bernstein, “Technique for Preparation of Precise Wafer Cross-Sections and Applications to EBL of PMMA Resist,” poster presented at the *46th Intl. Conf. On Electron, Ion and Photon Beam Technology & Nanofabrication*, Anaheim, May 2002.
 112. G. H. Bernstein, J. B. Brockman, P. M. Kogge, G. L. Snider, and B. M. Walvoord, “From Bits to Chips: A Multidisciplinary Curriculum for Microelectronics System Design Education,” presented at the *ASEE IL/IN Sectional Conf. Engineering Education in a Changing Economy*, Chicago, April 2002.
 111. R. Kummamuru, A. Orlov, R. Rajagopal, C. Lent, G. Bernstein, G. L. Snider, “Operation of a Multi-Stage Shift Register in Quantum-dot Cellular Automata,” presented at the *American Physical Society March Meeting*, Indianapolis, March 2002.
 110. **(Invited)** G. L. Snider, A. O. Orlov, R. K. Kummamuru, R. Ramasubramaniam, I. Amlani, G. H. Bernstein, C. S. Lent, J. L. Merz, and W. Porod, “Quantum-dot Cellular Automata: Introduction and Experimental Overview,” presented at the *IEEE-Nano 2001*, Maui, HI, October 2001.
 109. A. O. Orlov, R. K. Kummamuru, R. Ramasubramaniam, C. S. Lent, G. H. Bernstein, and G. L. Snider, “Clocked Quantum-dot Cellular Automata Devices: Experimental Studies,” presented at the *IEEE-Nano 2001*, Maui, HI, October 2001.
 108. R. K. Kummamuru, A. O. Orlov, G. Toth, J. Timler, R. Rajagopal, C. S. Lent, G. H. Bernstein, and G. L. Snider, “Power Gain in a Quantum-dot Cellular Automata (QCA) Shift Register,” presented at the *IEEE-Nano 2001*, Maui, HI, October 2001.
 107. D. H. Chow, J. N. Schulman, P. Fay, J. Lu, Y. Xu, G. H. Bernstein, A. Gonzalez, P. Mazumder, E. T. Croke, H. L. Dunlap, K. S. Holabird, M. A. Morgan, and S. Weinreb, “Interband Tunneling Diodes for High Performance Electronics and Millimeter Wave Detection,” presented at the *Third Workshop on the Fabrication, Characterization, and Applications of 6.1 Å III-V Semiconductors*, Snowbird, UT 2001.
 106. J. Wu, V. Quinn, and G. H. Bernstein, “A Simple, Wireless Powering Scheme for MEMS Devices,” presented at the *Micromachining and Microfabrication 2001*, San Francisco, CA, October 2001.
 105. J. Pei, X. Li, M. Lieberman, and G. H. Bernstein, “Interdigitated Microelectrodes Yield Better Sensitivity and Response Time for Polymer Composite Sensors,” poster presented at the *Second Annual BioMEMS and Biomedical Nanotechnology World 2001*, Columbus, OH, September 2001.
 104. P. Fay, Y. Xu, G. H. Bernstein, A. Gonzalez, P. Mazumder, D. H. Chow, and J. N. Schulman, “A Flip-Flop Based on Monolithic Integration of InAs/AlSb/GaSb RITDs and InAlAs/InP HEMTs,” presented at the *59th Device Research Conf.*, Notre Dame, IN, June 2001.
 103. R. Kummamuru, A. O. Orlov, J. P. Timler, R. Ramasubramaniam, C. S. Lent, G. H. Bernstein, and G. L. Snider, “A Quantum-dot Cellular Automata Shift Register,” presented at the *59th Device Research Conf.*, Notre Dame, IN, June 2001.
 102. J. Wu, G.H. Bernstein, V. Quinn, “A Versatile Power Supply for MEMS Devices,” presented at the *AVS Prairie Chapter 2001 Spring Meeting*, May 21 2001, Evanston, IL, USA.
 101. A. Orlov, R. Kummamuru, R. Ramasubramaniam, G. Toth, C. Lent, G. H. Bernstein, and G. L. Snider, “Experimental Demonstration of a Latch in Clocked Quantum-dot Cellular Automata,” presented at the *American Physical Society March Meeting*, Seattle, March 2001.
 100. R. Kummamuru, A. Orlov, G. Toth, J. Timler, R. Rajagopal, Craig Lent, G. H. Bernstein, and G. L. Snider, “Power Gain in Clocked QCA Devices,” presented at the *American Physical Society March Meeting*, Seattle, March 2001.
 99. M. Lieberman, C. Lent, G. H. Bernstein, F. Peiris, and G. Snider, “Quantum-dot Cellular Automata at a Molecular Scale,” presented at the *2000 Molecular Electronics Conf.*, Hilo, HI, December 2000.

98. **(Invited)** M. Lieberman, S. Chellamma, B. Varughese, Y. Wang, C. Lent, G. H. Bernstein, G. Snider, and F. Peiris, "Towards Implementation of Molecular QCA," presented at the *2000 United Engineering Foundation Conf. on Molecular Electronics*, Hilo, HI, December 2000.
97. **(Invited)** G. H. Bernstein, I. Amlani, C. Lent, J. L. Merz, A. O. Orlov, G. L. Snider, W. Porod, and G. Toth, "Advanced Measurements in Quantum-dot Cellular Automata Systems," presented at the *42nd Electronic Materials Conf.*, Denver, June 2000.
96. P. Fay, J. Lu, Y. Xu, G. H. Bernstein, D. H. Chow, J. N. Schulman, H. L. Dunlap, and H. J. De Los Santos, "Monolithic Integration of InAlAs/InGaAs/InP HEMTs and InAs/AlSb/GaSb Resonant Interband Tunneling Diodes (RITDs) for High Speed Integrated Circuits," presented at the *58th Annual Device Research Conf.*, Denver, June 2000.
95. A. Orlov, G. Toth, I. Amlani, R. Kummamuru, R. Ramasubramaniam, C. Lent, G. H. Bernstein, and G. Snider, "Experimental Studies of Clocked Quantum-dot Cellular Automata Devices," presented at the *58th Annual Device Research Conf.*, Denver, June 2000.
94. **(Invited)** G. L. Snider, A. O. Orlov, I. Amlani, R. Kummamuru, G. H. Bernstein, C. S. Lent, W. Porod, and J. L. Merz, "Quantum-dot Cellular Automata," presented at the *197th Meeting of the Electrochemical Society*, Toronto, Ontario, Canada, May 2000.
93. **(Invited)** G. H. Bernstein, I. Amlani, C. Lent, J. L. Merz, A. O. Orlov, G. L. Snider, W. Porod, and G. Toth, "Quantum-dot Cellular Automata," plenary talk at the *Hewlett-Packard/Agilent ASIC Designers Workshop*, Monterey, April 2000.
92. I. Amlani, A. Orlov, R. Kummamuru, G. H. Bernstein, C. Lent, G. L. Snider, "Charging Diagram of a Leadless Double-dot," presented at the *American Physical Society March Meeting*, Minneapolis, March 2000.
91. R. Kummamuru, I. Amlani, Alexei Orlov, G. H. Bernstein, C. Lent, G. L. Snider, "Functional Characterization of a Leadless QCA Cell," presented at the *American Physical Society March Meeting*, Minneapolis, March 2000.
90. A. Orlov, I. Amlani, R. Kummamuru, G. Toth, G. H. Bernstein, C. Lent, G. L. Snider, "Experimental Studies of Quasi-Adiabatic Quantum-dot Cellular Automata," presented at the *American Physical Society March Meeting*, Minneapolis, March 2000.
89. **(Invited)** J. B. Brockman, P. Kogge, G. L. Snider, B. Walvoord, and G. H. Bernstein, "A Multi-disciplinary Curriculum in Integrated Microelectronic Systems," presented at the *IEEE Microelectronic Systems Education Conf.*, Arlington, VA, July 1999.
88. P. Fay, G. Bernstein, D. Chow, and P. Mazumder, "InAs/AlSb/GaSb Resonant Interband Tunneling Diodes and Heterostructure Field-Effect Transistors for Ultra-High-Speed Digital Circuit Applications," presented at the *1999 Great Lakes Symp. on VLSI*, Ann Arbor, MI, 1999.
87. G. L. Snider, A. O. Orlov, I. Amlani, G. H. Bernstein, C. S. Lent, J. L. Merz, and W. Porod, "Quantum-dot Cellular Automata," presented at the *Intl. Microprocess and Nanotechnology Conf.*, Yokohama, Japan, July 1999.
86. A. O. Orlov, I. Amlani, C. S. Lent, G. H. Bernstein, and G. L. Snider, "Demonstration of a QCA binary wire," presented at the *American Physical Society March Meeting*, Atlanta, March 1999.
85. I. Amlani, A. O. Orlov, C. S. Lent, G. L. Snider, and G. H. Bernstein, "Experimental Demonstration of a Functional QCA Cell," presented at the *American Physical Society March Meeting*, Atlanta, March 1999.
84. G. L. Snider, A. O. Orlov, I. Amlani, G. H. Bernstein, C. S. Lent, J. L. Merz, and W. Porod, "Quantum-dot Cellular Automata," presented at the *Fourth Intl. Symp. on New Phenomena in Mesoscopic Structures*, Kauai, HI, December 1998.
83. **(Invited)** G. L. Snider, A.O. Orlov, I. Amlani, G.H. Bernstein, C.S. Lent, "Demonstration of a Functional Cell for Quantum-dot Cellular Automata," presented at the *43rd Annual Conf. on Magnetism and Magnetic Materials (MMM98)* Miami, FL, November 1998.
82. **(Invited)** I. Amlani, A. O. Orlov, G. H. Bernstein, G. L. Snider, G. Toth, C. S. Lent, and W. Porod, "Quantum-Dot Cellular Automata," presented at the *Symp. on Giga Scale Integration Technology at the 35th Annual Technical Meeting of the Society for Engineering Science*, Pullman, Washington, September 1998.

81. I. Amlani, A.O. Orlov, G.L. Snider, C.S. Lent, W. Porod, and G.H. Bernstein, "Experimental Observation of Electron Switching in a Quantum-dot Cellular Automata Cell," presented at the *ICSMM-11 (Intl. Conf. on Superlattices, Microstructures, and Microdevices)*, Egypt, July 1998.
80. G. H. Bernstein, I. Amlani, A. O. Orlov, and G. L. Snider, "Demonstration of a Functional Quantum-dot Cellular Automata Cell," presented at the *Silicon Nanoelectronics Workshop (SNW)*, Honolulu, HI, June 1998.
79. A. O. Orlov, I. Amlani, G. L. Snider, G. H. Bernstein, C. S. Lent, J. L. Merz, and W. Porod, "Quantum-dot Cellular Automata – Experimental Demonstration of a Functional Cell," presented at the *Sixth Intl. Symp. on Nanostructures: Physics and Technology*, St. Petersburg, Russia, June 1998.
78. I. Amlani, A. O. Orlov, G. L. Snider, and G. H. Bernstein, "Demonstration of a Functional Quantum-dot Cellular Automata Cell," presented at the *42nd Intl. Conf. on Electron, Ion, and Photon Beam Technology and Nanofabrication*, Chicago, May 1998.
77. I. Derenyi, R. D. Astumian, J. M. Ziebarth, and G. H. Bernstein, "AC Separation of Particles by Biased Brownian Motion in a 2D Sieve," poster presented at the *Beckman Institute Symp. on the Frontiers of Mesoscale Systems and Microfabrication*, University of Illinois at Urbana-Champaign, May 1998.
76. A. O. Orlov, I. Amlani, C. S. Lent, G. H. Bernstein, and G. L. Snider, "Electron Switching Dynamics in Coupled Metal Double-Dots," presented at the *American Physical Society March Meeting*, Los Angeles, CA, March 1998.
75. I. Amlani, A. O. Orlov, C. S. Lent, G. L. Snider, and G. H. Bernstein, "Experimental Demonstration of a Functional QCA Cell," presented at the *American Physical Society March Meeting*, Los Angeles, CA, March 1998.
74. **(Invited)** C. S. Lent, W. Porod, J. L. Merz, G. L. Snider, and G. H. Bernstein, "Nanoelectronics Using Quantum-dot Cellular Automata," presented at the *1998 Government Microcircuit Applications Conference - GOMAC'98*, Arlington, Virginia, March 1998.
73. **(Invited)** G. L. Snider, A. O. Orlov, I. Amlani, G. H. Bernstein, C. S. Lent, J. L. Merz, and W. Porod, "Demonstration of a Functional Cell for Quantum-dot Cellular Automata," presented at the *2nd Intl. Workshop on Surfaces and Interfaces of Mesoscopic Devices*, Kaanapali, HI, December 1997.
72. **(Invited)** C. S. Lent, W. Porod, J. L. Merz, G. L. Snider, and G. H. Bernstein, "Quantum-dot Cellular Automata," presented at the *3rd Intl. Workshop on Quantum Functional Devices*, Gaithersburg, MD, November 1997.
71. G. L. Snider, A. O. Orlov, I. Amlani, G. H. Bernstein, C. S. Lent, J. L. Merz, and W. Porod, "A Functional Cell for Quantum-dot Cellular Automata," presented at the *Intl. Workshop on Nano-Physics and Electronics*, Tokyo, Japan, September 1997.
70. X. Pang and G. H. Bernstein, "Electromigration in Ultranarrow Interconnects," presented at the *Fine Line Task Force Meeting*, Blue Mountain Lake, NY, September 1997.
69. G. L. Snider, A. O. Orlov, I. Amlani, G. H. Bernstein, C. S. Lent, J. L. Merz, and W. Porod, "Demonstration of a Functional Cell for Quantum-dot Cellular Automata," presented at the *DARPA ULTRA Program Review*, Santa Fe, September 1997.
68. **(Invited)** G. L. Snider, A. O. Orlov, I. Amlani, G. H. Bernstein, C. S. Lent, W. Porod, and J. L. Merz, "Experimental Demonstration of Quantum-dot Cellular Automata," presented at the *Adriatico Research Conf. on STM-Based Lithography and Atomic Electronics*, Trieste, Italy, July 1997.
67. A. O. Orlov, I. Amlani, G. H. Bernstein, C. S. Lent, J. L. Merz, W. Porod, and G. L. Snider, "Experimental Demonstration of Quantum-dot Cellular Automata," presented at the *1997 Device Research Conf.*, Fort Collins, CO, June 1997.
66. G. H. Bernstein, I. Amlani, A. O. Orlov, C. S. Lent, and G. L. Snider, "Si-Compatible Quantum-dot Cellular Automata," presented at the *Silicon Nanoelectronics Workshop (SNW)*, Kyoto, Japan, June 1997.
65. I. Amlani, A. O. Orlov, G. L. Snider, and G. H. Bernstein, "Differential Charge Detection for

- Quantum-dot Cellular Automata,” presented at the *41st Intl. Conf. on Electron, Ion, and Photon Beam Technology and Nanofabrication*, Dana Point, CA, May 1997.
64. X. Pang, R. Frankovic, and G. H. Bernstein, “Lifetime Study of Sub-Tenth-Micrometer Al-Alloy Interconnects,” poster presented at the *Materials Reliability in Microelectronics VII*, Materials Research Society, San Francisco, CA, March 1997.
 63. I. Amlani, A. O. Orlov, G. L. Snider, and G. H. Bernstein, “Control and Characterization of Single Electron Charging in a Double Dot System,” presented at the *American Physical Society March Meeting*, Kansas City, MO, March 1997.
 62. G. H. Bernstein, J. L. Merz, G. L. Snider, W. Porod, and C. S. Lent, “Silicon Nanoelectronics,” presented at the *ARPA ULTRA Program Review*, Estes Park, CO, October 1996.
 61. R. Frankovic and G. H. Bernstein, “Pulsed Current Testing of Al Interconnects,” *Fine Line Task Force Meeting*, Blue Mountain Lake, NY, September 1996.
 60. R. Frankovic and G. H. Bernstein, “In-Situ Observations of Electromigration-Induced Void Dynamics,” presented at the *MRS Fall Meeting*, Boston, November 1996.
 59. R. Frankovic and G. H. Bernstein, “Electromigration Drift and Threshold in Cu Thin-Film Interconnects,” presented at the *Fine Line Task Force Meeting*, Blue Mountain Lake, NY, September 1996.
 58. A. O. Orlov, X. Zuo, G. Bazan, G. H. Bernstein, C. S. Lent, J. L. Merz, W. Porod, and G. L. Snider, “SiGe Quantum-dot Cellular Automata,” presented at the *Silicon Nanoelectronics Workshop (SNW)*, Honolulu, June 1996.
 57. G. H. Bernstein, G. Bazan, M. Chen, C. S. Lent, J. L. Merz, A. O. Orlov, W. Porod, G. L. Snider, and P. D. Tougaw, “Quantum-dot Cellular Automata: Theory and Experiment,” presented at the *Third Intl. Symp. on Nanostructures and Mesoscopic Sys.*, Santa Fe, NM, May 1996.
 56. G. Bazan, A. O. Orlov, G. L. Snider, and G. H. Bernstein, “Charge Detector Realization for AlGaAs/GaAs Quantum-dot Cellular Automata,” poster presented at the *40th Int. Conf. on Electron, Ion, and Photon Beam Technology and Nanofabrication*, Atlanta, GA, May 1996.
 55. G. H. Bernstein, “Scanning Electron Microscopy, Electron Beam Lithography, and X-Ray Lithography,” tutorial, *American Physical Society March Meeting*, St. Louis, March 1996.
 54. R. Frankovic and G. H. Bernstein, “In-Situ Observations of Pre-Patterned Void Interactions Under Electromigration-Induced Stress,” presented at the *Materials Reliability in Microelectronics VI*, Materials Research Society, San Francisco, CA, March 1996.
 53. R. Frankovic and G. H. Bernstein, “Duty Cycle and Frequency Effects of Pulsed-dc Currents on Electromigration-Induced Stress in Al Interconnects,” presented at the *Materials Reliability in Microelectronics VI*, Materials Research Society, San Francisco, CA, March 1996.
 52. R. Frankovic and G. H. Bernstein, “In-Situ Observations of Electromigration-Induced Void Dynamics,” presented at the *Fall Meeting of the Materials Research Society*, Boston, MA, December 1995.
 51. J. L. Merz, G. H. Bernstein, C. S. Lent, G. L. Snider, and W. Porod, “Silicon Nanoelectronics,” presented at the *ARPA ULTRA Program Review*, Denver, CO, October 1995.
 50. R. Frankovic and G. H. Bernstein, “Grain Structure And Electromigration Testing Of Deep Sub-Micrometer Cu Interconnects,” presented at the *MRS Symposium on Materials Reliability in Microelectronics V*, San Francisco, March 1995.
 49. G. H. Bernstein, B. Gilbert, W. Williamson, and D. Chow, “RTD Applications in Ultra-High-Speed Digital Logic Gates,” presented at the *ARPA ULTRA Program Review*, Denver CO, October 1995.
 48. G. H. Bernstein, “Quantum Cellular Automata,” presented at the *Fine Line Task Force Meeting*, Blue Mountain Lake, NY, September 1995.
 47. R. Frankovic and G. H. Bernstein, “Sub-Half-Micron Cu Interconnects,” presented at the *Fine Line Task Force Meeting*, Blue Mountain Lake, NY, September 1995.
 46. R. Frankovic and G. H. Bernstein, “Grain Structure And Electromigration Testing Of Deep Sub-Micrometer Cu Interconnects,” poster presented at the *Materials Research Society Symp. on Materials Reliability V*, San Francisco, April 1995.
 45. R. E. Bartolo, N. Giordano, X. Huang, And G. H. Bernstein, “Studies of Aharonov-Bohm Oscillations

- in the Mesoscopic Photovoltaic Effect,” presented at the *March Meeting of the American Physical Society*, San Jose, CA, March 1995.
44. B. Campbell, G. H. Bernstein, X. Huang, and G. Bazan, “A Novel Method for Producing Nanostructures in Silicon Inversion Layers,” presented at the *Third Intl. Conf. on Nanometer-Scale Science and Technology*, Denver, CO, October 1994.
 43. W. Porod, C. S. Lent, and G. H. Bernstein, “Quantum Cellular Automata,” presented at the *ARPA ULTRA Program Review*, Boulder, CO, October 1994.
 42. B. Campbell, G. H. Bernstein, X. Huang, and G. Bazan, “A Novel Method for Producing Nanostructures in Silicon Inversion Layers,” presented at the *American Physical Society March Meeting*, Pittsburgh, PA, March 1994.
 41. R. E. Bartolo, X. Huang, N. Giordano, and G. H. Bernstein, “Observation of Aharonov-Bohm Oscillations in the Mesoscopic Photovoltaic Effect,” presented at the *American Physical Society March Meeting*, Pittsburgh, PA, March 1994.
 40. R. Frankovic and G. H. Bernstein, “Electromigration Testing of Ultra-Narrow Al Interconnects,” presented at the *March American Physical Society March Meeting*, Pittsburgh, PA, March 1994.
 39. R. R. Schultz, H. M. Zayed, R. L. Stevenson, R. J. Minniti, and G. H. Bernstein, “ASIC Design for Robust Signal and Image Processing,” presented at the *Great Lakes Symp. on VLSI*, Notre Dame, IN, November 1994.
 38. G. Bazan and G. H. Bernstein, “Nanolithography over Very Large Scan Fields,” poster presented at the *Great Lakes Symp. on VLSI*, Notre Dame, IN, November 1993.
 37. X. Huang, G. Bazan, and G. H. Bernstein, “Proximity Effects in Ultradense Patterns Exposed by Electron Beam Lithography,” poster presented at the *Great Lakes Symp. on VLSI*, Notre Dame, IN, November 1993.
 36. W. Porod, C. S. Lent, and G. H. Bernstein, “Quantum Cellular Automata,” presented at the *ARPA ULTRA Program Review*, Santa Fe, October 1993.
 35. (Invited) C. S. Lent, P. D. Tougaw, W. Porod, and G. H. Bernstein, “Quantum Cellular Automata,” presented at the *Midwest Solid State Theory Symp.*, Detroit, MI, October 1993.
 34. G. H. Bernstein, X. Huang, G. Bazán, D. A. Hill, C. S. Lent, and W. Porod, “New Technique for Computation and Challenges for Electron Beam Lithography,” poster presented at the *37th Int. Conf. on Electron, Ion, and Photon Beam Technology and Nanofabrication*, San Diego, CA, June 1993.
 33. C. S. Lent, P. D. Tougaw, W. Porod, and G. H. Bernstein, “Quantum Cellular Automata,” presented at the *Int. Workshop on Quantum Structures*, Santa Barbara, CA, March 1993.
 32. C. S. Lent, P. D. Tougaw, W. Porod, and G. H. Bernstein, “Quantum Cellular Automata,” presented at the *Int. Symp. on New Phenomena in Mesoscopic Structures*, HI, December 1992.
 31. G. H. Bernstein, D. A. Hill, X. Huang, and G. Bazán, “Failure Mechanisms of Very Narrow PMMA Walls,” presented at the *39th National Symp. of the American Vacuum Society* Chicago, IL, November 1992.
 30. G. Bazán and G. H. Bernstein, “Electron Beam Lithography Over Large Scan Fields,” presented at the *39th National Symp. of the American Vacuum Society*, Chicago, IL, November 1992.
 29. R. Frankovic and G. H. Bernstein, “Observation of Current-Induced Failures of Ultra-Narrow Metal Interconnects,” poster presented at the *39th National Symp. of the American Vacuum Society*, Chicago, IL, November 1992.
 28. R. E. Bartolo, N. Giordano, X. Huang, and G. H. Bernstein, “Giant Oscillations in Mesoscopic Photovoltaic Effect,” poster presented at the *40th Midwest Solid State Conf.*, Urbana-Champaign, IL, October 1992. (Judged Second-Best Poster at Conference.)
 27. G. H. Bernstein and X. Huang, “Fabrication of Interconnect Structures for Quantum Based Architectures,” presented at the *American Physical Society March Meeting*, Indianapolis, IN, March 1992.
 26. S. Subramaniam, S. Bandyopadhyay, B. Das, and G. H. Bernstein, “Anomalous Magnetoresistance due to Possible Correlations Between Impurity Scattering Events in a Two-Dimensional Electron Gas,” presented at the *American Physical Society March Meeting*, Indianapolis, IN, March 1992.
 25. W. Porod, H. K. Harbury, and G. H. Bernstein, “A Study of Cellular Automata Architectures for

- Integrated Quantum Device Arrays Using the Helmholtz Equations as a Computational Model,” presented at the *American Physical Society March Meeting*, Indianapolis, Indiana, March 1992.
24. X. Huang, S. Subramaniam, G. H. Bernstein, and S. Bandyopadhyay, “Low Temperature Magnetotransport in Ultranarrow/Ultrashort Au Wires,” presented at the *American Physical Society March Meeting*, Indianapolis, IN, March 1992.
 23. B. Das, S. Subramaniam, G. H. Bernstein, S. Bandyopadhyay, and M. R. Melloch, “Study of Leakage Currents in Backgated GaAs/AlGaAs Heterostructure Devices Fabricated Using Electron Beam Lithography,” presented at the *American Physical Society March Meeting*, Indianapolis, IN, March 1992.
 22. P. D. Tougaw, C. S. Lent, W. Porod, and G. H. Bernstein, “Cellular Automata Rules Derived from Quantum Dot Coupling,” presented at the *American Physical Society March Meeting*, Indianapolis, IN, March 1992.
 21. W. Porod, H. K. Harbury, and G. H. Bernstein, “A Study of Cellular Automata Architectures for Integrated Quantum Device Arrays Using the Helmholtz Equations as a Computational Model,” presented at the *American Physical Society March Meeting*, Indianapolis, IN, March 1992.
 20. G. H. Bernstein and D. A. Hill, “On the Attainment of Optimum Development Parameters for PMMA Resist,” poster presented at the *Int. Symp. on Nanostructures and Mesoscopic Systems*, Santa Fe, NM, May 1991.
 19. N. M. Jisrawi, S. J. Koester, Q. Lu, M. J. Honkanen, W. Porod, G. H. Bernstein, and S. T. Ruggiero, “Microwave Studies of Single Electron Charging Effects,” presented at the *American Physical Society March Meeting*, Cincinnati, OH, March 1991.
 18. G. H. Bernstein and A. M. Krivan, “A Novel Electron Diffraction Transistor,” presented at the *SPIE Symp. on Adv. in Semic. and Superconductors: Physics Toward Device Applications*, San Diego, CA, March 1990.
 17. G. H. Bernstein and A. M. Krivan, “Electron-Diffraction Transistors,” presented at the *Twelfth Biennial Conf. on Advanced Concepts in High Speed Semiconductor Dev. and Circ.*, Ithaca, NY, August 1989.
 16. S. Krause, J. Mohr, G. Bernstein, D. K. Ferry and D. C. Joy, “A New Method for Measuring the Thickness of Thin Film Insulators,” presented at the *14th Mtg. of the Microbeam Analysis Soc.*, Asheville, NC, August 1989.
 15. R. Puechner, J. Ma, R. Mezzener, W. P. Liu, A. M. Krivan, G. N. Maracas, G. Bernstein, D. K. Ferry, P. Chu, H. H. Wieder, and P. Newman, “Magnetoeconductance in Lateral Surface Superlattices,” presented at the *Fourth Int. Conf. on Modulated Semiconductor Structures*, Ann Arbor, MI, July 1989.
 14. S. Bandyopadhyay, G. H. Bernstein, and W. Porod, “Quantum Devices Based on Phase-Coherent Lateral Transport,” poster presented at the *Int. Symp. on Nanostructure Physics and Fabrication*, College Station, TX, March 1989.
 13. A. M. Krivan and G. H. Bernstein, “The QUADFET - A Novel Quantum Device,” presented at the *AFOSS Workshop on Quantum Devices*, Atlanta, GA, October 1988.
 12. M. N. Kozicki, Y. N. Khawaja, J. L. Edwards, B. Qurashi, G. Bernstein, and A. E. Owen, “Alternative Materials and Processes for Integrated Optics,” presented at the *Fall meeting of the Electrochemical Society*, Chicago, IL, October 1988.
 11. D. K. Ferry, G. Bernstein, R. Puechner, J. Ma, A. M. Krivan, R. Mezzener, W. P. Liu, G. N. Maracas, and R. Chamberlin, “Magnetoeconductance in Lateral Surface Superlattices,” presented at the *Int. Conf. on the Applications of High Magnetic Fields in Semiconductors*, Wurzburg, Germany, August 1988.
 10. A. M. Krivan, G. H. Bernstein, B. S. Haukness, and D. K. Ferry, “Analysis of Electron Diffraction in a Novel Field-Effect Transistor,” *4th Int. Conf. on Superlattices, Microstructures and Microdevices*, Trieste, Italy, August 1988.
 9. G. Bernstein, W. P. Liu, Y. N. Khawaja, M. N. Kozicki, D. K. Ferry, and L. Blum, “High Resolution Electron Beam Lithography with Negative Organic and Inorganic Resists,” presented at the meeting of the *Society of Photo-Optical Instrumentation Engineers*, Fort Lauderdale, FL, May 1988.
 8. D. K. Ferry, G. Bernstein, and W. P. Liu, “Electron Beam Lithography of Ultra-Submicron Devices,” Fifth Intl. Winter School on New Developments in Solid State Physics, presented at the *Physics and*

- Technology of Submicron Structures*, Mauterndorf, Austria, February 1988.
7. **(Invited)** G. Bernstein, N. C. Kluksdahl, and D. K. Ferry, “BlochFETs and Other Tunneling Heterostructure Devices,” presented at the *Conf. on Adv. Heterostructure Transistors*, Keauhou-Kona, HI, 1988.
 6. R. Puechner, A. M. Kriman, G. Bernstein, J. Ma, W. P. Liu, D. K. Ferry, and G. N. Maracas, “Conductance Oscillations in Lateral Surface Superlattices,” presented at the *Inst. of Phys. Conf. Ser. No. 96: Chapt. 9, Intl. Symp. on GaAs and Related Compounds*, pp. 581-586, IOP Publishing Ltd., Bristol, England (1988).
 5. G. Bernstein and D. K. Ferry, “Negative Differential Conductivity in Lateral Surface Superlattices,” poster presented at the *14th Annual Conf. on the Physics and Chemistry of Semiconductor Interfaces*, Salt Lake City, UT, January 1987.
 4. G. Bernstein and D. K. Ferry, “Fabrication of Ultra-Short Gate MESFETs and Nanostructures by Electron Beam Lithography,” presented at the *Second Int. Conf. on Superlattices, Microstructures and Microdevices*, Goteborg, Sweden, August 1986.
 3. G. Bernstein and D. K. Ferry, “Fabrication of Short-Gate GaAs MESFETs by Electron Beam Lithography,” poster presented at the *Les Houches Winter School*, Les Houches, France, April 1986.
 2. G. H. Bernstein and D. K. Ferry, “E-Beam Lithography - Materials Processing and Characterization,” presented at the *22nd Annual Workshop on Compound Semiconductor Microwave Materials and Devices*, San Francisco, CA, February 1986.
 1. G. Bernstein and D. K. Ferry, “Electron Beam Lithographic Fabrication of Ultra-Submicron Gate GaAs MESFETs,” presented at the *Workshop on Ultrasmall and Quantum-Structured Devices*, Tempe, AZ, December 1985.

Other Invited Talks and Seminars

63. G. H. Bernstein, “Figures and Figure Captions,” presented at the Notre Dame Graduate School Writing Series, July 2015.
62. G. H. Bernstein, “Quilt Packaging,” presented at the Forbes Reinventing America Innovation Summit, Indianapolis, November 2014.
61. A. O. Orlov, G. P. Szakmany, C. Preiss, G. H. Bernstein, and W. Porod, “Nano -Thermoelectric Devices for Polarization Sensitive Infrared Detection,” presented at the Nanosciences Foundation, Grenoble, France, September 2013.
60. G. H. Bernstein, “Nanomagnet Logic,” presented at the “Tour of the Notre Dame Center for Nano Science & Technology,” Notre Dame, IN, September 2011.
59. D. Kopp, W. Buckhanan, M. A. Khan, J. Kulick, C. Liang, M. Padberg, R. Savino, P. Fay, and G. H. Bernstein, “Quilt Packaging of RF Systems with Ultrawide Bandwidths,” presented at the Indiana RF Alliance Workshop, W. Lafayette, IN, April 2010.
58. G. H. Bernstein, “Quilt Packaging – An Ultrahigh Performance Interchip Interconnect,” presented at Air Force Research Laboratory, Albuquerque, NM, February 2010.
57. G. H. Bernstein, J. B. Brockman, P. Fay, and G. Snider, “Ultrawide-Bandwidth Contiguous Superconnects for Advanced Computing Systems,” poster presented at the DoD Advanced Computing Systems Workshop, Annapolis, MD, September 2009.
56. G. H. Bernstein, “Computing with Nanomagnets,” presented at Army Research Laboratory, Adelphi, MD, June 2009.
55. G. H. Bernstein, “RF Research at Notre Dame,” presented at the Indiana RF Alliance Workshop, Indianapolis, May 2008.
54. G. H. Bernstein and P. Fay, “Quilt Packaging,” Sandia National Laboratory, August 2007.
53. G. H. Bernstein, Q. Liu, J. Kulick, W. Buckhanan, A. Tong, G. Snider, and P. Fay, “Interchip Interconnects and Transistorless Computing,” University of Tennessee at Knoxville, Knoxville, TN, March 2007.
52. G. H. Bernstein, Q. Liu, J. Kulick, W. Buckhanan, A. Tong, G. Snider, and P. Fay, “Interchip Interconnects and Transistorless Computing,” University of Alabama in Huntsville, February 2007.
51. G. H. Bernstein, Q. Liu, J. Kulick, W. Buckhanan, A. Tong, G. Snider, and P. Fay “Interchip

- Interconnects and Transistorless Computing,” University of Texas at Dallas, Dallas, TX, January 2007.
50. G. H. Bernstein, Q. Liu, Z. Sun, A. Tong, G. Snider, and P. Fay, “Quilt Packaging: A New Paradigm in Interchip Communications,” Raytheon Corporation, Santa Barbara, CA, February 2006.
 49. G. H. Bernstein, “Quantum-dot Cellular Automata: Computing by Field Polarization,” Old Dominion University, March 2005.
 48. G. H. Bernstein, P. Fay and Q. Liu, “Quilt Packaging: A New Paradigm in Heterogeneous Integration,” Cray, Inc., Chippewa Falls, WI, December 2004.
 47. G. H. Bernstein and J. Wu, “Inductively Coupled Deep Brain Stimulator,” IBM Industry Solutions Lab, Hawthorne, NY, October 2004.
 46. G. H. Bernstein, “Nanotechnology: How Far Can We See?,” keynote address to the 56th Annual Indiana Academy of Science Talent Search, Kokomo, Indiana, October 2003.
 45. G. H. Bernstein, “Quantum-dot Cellular Automata: Toward Molecular Electronics,” Oak Ridge National Laboratory, Oak Ridge, Tennessee, July 2003.
 44. G. H. Bernstein, “Applications of Electron Beam Lithography to Nanoelectronics Research,” Rose Hulman Institute of Technology, March 2003.
 43. G. H. Bernstein, “Applications of MEMS Technology,” Rose Hulman Institute of Technology, February 2002.
 42. G. H. Bernstein, “Applications of Electron Beam Lithography to Nanoelectronics Research,” Duke University, October 2001.
 41. G. H. Bernstein, “Electronics: Past, Present, and Future,” Forever Learning Seniors Group, South Bend, IN, October 2001.
 40. G. H. Bernstein, “Electron Beam Lithography and Applications to Nanofabrication,” Illinois Institute of Technology, Chicago, October 2001.
 39. G. H. Bernstein, “Applications of Electron Beam Lithography to Nanoelectronics Research,” University of California San Diego, March 2001.
 38. G. H. Bernstein, I. Amlani, C. Lent, J. L. Merz, A. O. Orlov, G. L. Snider, W. Porod, and G. Toth “Digital Logic and Switching in a Quantum-dot Cellular Automata Cell,” University of Connecticut, Storrs, November 2000.
 37. G. H. Bernstein, I. Amlani, C. Lent, J. L. Merz, A. O. Orlov, G. L. Snider, W. Porod, and G. Toth, “Quantum-dot Cellular Automata,” Intel Corp., Chandler, AZ, August 2000.
 36. G. H. Bernstein, I. Amlani, C. Lent, J. L. Merz, A. O. Orlov, G. L. Snider, W. Porod, and G. Toth, “Quantum-dot Cellular Automata,” Motorola, Tempe, AZ, August 2000.
 35. G. H. Bernstein, I. Amlani, C. Lent, J. L. Merz, A. O. Orlov, G. L. Snider, W. Porod, and G. Toth, “Quantum-dot Cellular Automata,” Intel Corp., Hillsboro, OR, May 2000.
 34. “University/Industry Relations: My Perspective,” presented to the Advisory Council of the Graduate School, University of Notre Dame, September 1999.
 33. “Experimental Demonstration of Operational QCA Cell,” University of Wisconsin, Madison, March 1998.
 32. “Demonstration of QCA Cell Operation,” Graduate Seminar Series, Department of Chemistry, University of Notre Dame, Notre Dame, IN, February 1998.
 31. “Design and Fabrication of RTD-Base Logic Gates Operating at 12-GHz,” University of Wisconsin, Madison, April 1996.
 30. “Design and Fabrication of RTD-Base Logic Gates Operating at 12-GHz,” State University of New York, Buffalo, April 1996.
 29. “Electromigration Testing Of Deep Sub-Micrometer Interconnects,” R. Frankovic and G. H. Bernstein, Rome AFB, Rome, NY, September 1995.
 28. “Aspects of Electron Beam Lithography for Nanostructure Fabrication,” Rice University, Houston, TX, May 1995.
 27. “Aspects of Electron Beam Lithography for Nanostructure Fabrication,” Purdue University, West Lafayette, IN, December 1994.
 26. “Aspects of Electron Beam Lithography for Nanostructure Fabrication,” Raytheon, Inc., Andover, MA, September 1994.

25. "Microelectronics at the University of Notre Dame," Meeting of the Indiana Electronics Manufacturers Association, South Bend, IN, September 1994.
24. "Resonant Tunneling Diode Based Logic Circuits," Motorola, Inc., Tempe, AZ, June 1994.
23. "Nanofabrication," local chapter of the American Chemical Society, South Bend, IN, April 1994.
22. "Nanostructure Fabrication by Electron Beam Lithography," Wayne State University, Detroit, MI, December 1992.
21. "Nanostructure Fabrication by Electron Beam Lithography," State University of New York, Buffalo, NY, September 1992.
20. "Microelectronics Education at Notre Dame," sectional meeting of the Intl. Society of Hybrid Microelectronics, South Bend, IN, March 1992.
19. "Nanostructure Fabrication," Miles Laboratories, Elkhart, IN, August 1991.
18. "Electron Beam Lithography," IBM, Burlington, VT, March 1991.
17. "Nanostructure Electronics at Notre Dame," U. S. Army Electronics Technology and Devices Laboratory, Fort Monmouth, NJ, September 1989.
16. "Electron Beam Lithographic Fabrication of Nanometer Structures," Texas Instruments, Dallas, TX, February 1988.
15. "Electron Beam Lithography," Purdue University, West Lafayette, IN, March 1987.
14. "Electron Beam Lithographic Fabrication of Ultra-Submicron Gate GaAs MESFETs and Quantum Devices," Hewlett-Packard Microwave Technology Division, Santa Rosa, CA, April 1986.
13. "Electron Beam Lithographic Fabrication of Ultra-Submicron Gate GaAs MESFETs and Quantum Devices," Army Electronics Technology and Devices Laboratory, Fort Monmouth, NJ, April 1986.
12. "Electron Beam Lithographic Fabrication of Ultra-Submicron Gate GaAs MESFETs and Quantum Devices," IBM T. J. Watson Research Laboratory, Yorktown Heights, NY, April 1986.
11. "Electron Beam Lithographic Fabrication of Ultra-Submicron Gate GaAs MESFETs and Quantum Devices," IBM, Endicott, NY, April 1986.
10. "Electron Beam Lithographic Fabrication of Ultra-Submicron Gate GaAs MESFETs and Quantum Devices," IBM, East Fishkill, NY, April 1986.
9. "Electron Beam Lithographic Fabrication of Ultra-Submicron Gate GaAs MESFETs and Quantum Devices," Motorola Semiconductor Research and Development Laboratory, Phoenix, AZ, April 1986.
8. "Electron Beam Lithographic Fabrication of Ultra-Submicron Gate GaAs MESFETs and Quantum Devices," MIT Lincoln Laboratory, Lexington, MA, April 1986.
7. "Electron Beam Lithographic Fabrication of Ultra-Submicron Gate GaAs MESFETs and Quantum Devices," Lawrence Livermore Laboratory, Livermore, CA, March 1986.
6. "Electron Beam Lithographic Fabrication of Ultra-Submicron Gate GaAs MESFETs and Quantum Devices," Hewlett-Packard, Fort Collins, CO, March 1986.
5. "Electron Beam Lithographic Fabrication of Ultra-Submicron Gate GaAs MESFETs and Quantum Devices," General Electric Electronics Laboratory, Syracuse, NY, January 1986.
4. "Electron Beam Lithographic Fabrication of Ultra-Submicron Gate GaAs MESFETs and Quantum Devices," Jet Propulsion Laboratory, Pasadena, CA, January 1986.
3. "Electron Beam Lithographic Fabrication of Ultra-Submicron Gate GaAs MESFETs and Quantum Devices," Naval Research Laboratory, Washington, D.C., January 1986.
2. "Electron Beam Lithography of Ultra-Submicron Gate GaAs FETs at ASU," Arizona State University, Tempe, AZ, December 1985.
1. "Ge/Au/Ni Ohmic Contacts to GaAs," Motorola Semiconductor Research and Development Laboratory, Phoenix, AZ, July 1983.