Mark M. Budnik

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May 21st, 1968

Professional Experience:

Valparaiso University, Assistant Professor — 2006 - Present
- Department of Electrical and Computer Engineering
- Frederick F. Jenny Professor of Emerging Technology

Intel Corporation, Intern, Circuit Research Labs — 2006
- Research of innovative power delivery solutions for advanced nanoscale processors.

Infineon Technologies Corporation, Intern, Infineon Power University — 2003 - 2005
- Developed twelve short courses on intermediate engineering topics
- Authored *Fundamentals of Power Semiconductors for Automotive Applications*, (978-0-9789866-0-5) published by Infineon Technologies, AG in October, 2006.

Hitachi Semiconductor, Application Engineering Manager — 1999 - 2002
- Developed and led a team of five application engineers
- Named Field Application Engineer of the Year in 2000.

National Semiconductor, Senior Application Engineer — 1995 - 1999
- Provided on-site hardware and software engineering support for five states.
- Reviewed all new analog and mixed signal integrated circuits for feasibility and market acceptance as part of management's North American Linear Action Team.

SGS-THOMSON Microelectronics, Application Engineer — 1990 -1995
- Acted as technical liaison for domestic and international smart power design centers.
- Co-defined and oversaw the development of ten custom digital, analog, and mixed signal integrated circuits.

Education:

Purdue University — 2006
- Doctorate of Philosophy, Department of Electrical and Computer Engineering
- Dissertation: Power Delivery and Decoupling Networks for Nanoscale Technologies
- Advisor: Professor Kaushik Roy

Purdue University, Master of Science in Electrical Engineering — 1999
- Thesis: Cross Talk Reduction Techniques for Integrated Instrumentation Amplifiers
- Advisor: Professor Maher E. Rizkalla

University of Illinois, Bachelor of Science in Electrical Engineering — 1990
- Area of Concentration: Solid State Electronics

Honors and Awards:

1. Valparaiso University Author's Award (April, 2009).
2. First Prize, Student Poster Competition, "Point Vibration Therapy Device for Individuals on the Autism Spectrum," ASEE Illinois/Indiana Section Conference (March, 2009).
3. 2008-2009 Class of Northwest Indiana Innovators Nominee, Society of Innovators (September, 2008).
4. Frederick F. Jenny, Jr. Professorship of Emerging Technology, Valparaiso University (July, 2008).
5. Most Improved Region 31 Chapter Award, Alpha Phi Omega (April, 2008).
6. Dean's Choice Award, Valparaiso University Celebration of Undergraduate Scholarship (April, 2008).
7. STEM Faculty Peer Reviewed Research in Scholarly Journals Reception, Valparaiso University (April, 2008).
8. ASEE Assistive Technology Development Assistance Award (December, 2007).
9. Valparaiso University Author's Award (April, 2007).
10. Senior Member, IEEE (November, 2006)
11. Best Student Presentation Award, IEEE Conference on Nanotechnology (July, 2006).
12. Purdue University School of Electrical and Computer Engineering 2006 Outstanding Graduate Student Award (April, 2006).
13. Purdue University School of Electrical and Computer Engineering External Review Committee, Graduate Student Representative (April, 2006).
14. Graduate Student Representative, Purdue University School of Electrical and Computer Engineering Advisory Board (October, 2005).
15. Graduate Student Representative, Purdue University School of Electrical and Computer Graduate Committee (August, 2005).
16. Selected by Purdue University School of Electrical and Computer Engineering to receive a Department of Education Graduate Assistance in Areas of National Need (GAANN) Fellowship (August, 2002).
17. Purdue University Benjamin Franklin Meissner Fellowship (August, 2002).
18. Avnet Million Dollar Award (December, 2000)
19. Hitachi Semiconductor Engineer of the Year (November, 2000).
20. Hitachi Semiconductor Employee of the Month (November, 2000).
21. National Semiconductor Cyrix Certification (October, 1998).
22. National Semiconductor Excellence in Instruction Award (July, 1997).
23. SGS-THOMSON Microelectronics Technology Training Award (June, 1994).

Teaching Interests:

- Engineering problem solving
- Signals and systems
- Embedded system design
- Nanotechnology

Research Interests:

- Assistive devices
- Nanotechnology
- Analog and digital circuit design
- Integrated capacitor structures

Grants and Contracts Received:

1. M.M.Budnik and E.W.Johnson, "A Vertical Carbon Nanotube Capacitor," Richardson Summer Research Grant, March, 2009, $5,000.
2. M.M.Budnik, "Revisions to ECE 200, ECE 201, ECE 261L, and ECE 262L for Valparaiso University's College of Engineering," Kempf Engineering Curriculum Development Award, March, 2009, $2,500.
3. M.M.Budnik, "An Undergraduate Research Fellow Program for Valparaiso's University's College of Engineering," Alton Riethmeier Faculty Research Award, March, 2009, $1,000.
4. M.M.Budnik, "TLE7810 Integrated Circuit Evaluation Board," Infineon Technologies equipment grant, March, 2009, $300.
5. M.M.Budnik, "Infineon Technologies and Valparaiso University: Bridging Theory into Practice," equipment grant, February, 2009, $500.
6. M.M.Budnik, "Bridging Theory into Practice at the American Society for Engineering Education Conference on Industry and Education Collaboration," Infineon Technologies, AG, November, 2008, $1,250.
7. M.M.Budnik, "Bridging Theory into Practice at the American Society for Engineering Education Conference on Industry and Education Collaboration," Valparaiso University College of Engineering matching funds November, 2008, $1,250.
8. G.S.Duncan, K.Sevener ,M.M.Budnik, "Braille Machine Project," Valparaiso University Guild Campus Gifts Grant, October, 2008, $750.
9. G.S.Duncan, K.Sevener ,M.M.Budnik, "Braille Machine Project," Valparaiso University College of Engineering matching funds, December, 2007, $750.
10. M.M.Budnik, "Camp Invention, Instructor for Mission to Mars Module," July, 2008, $525.
11. M.M.Budnik, "Camp Invention, Instructor for Mission to Mars Module," Valparaiso University College of Engineering matching funds, July, 2008, $525.
12. M.M.Budnik, "Frederick F. Jenny, Jr. Professorship of Emerging Technology," Valparaiso University, April 30, 2008, $10,000.
13. M.M.Budnik, "Bridging Theory into Practice Phase 1 Proposal," Infineon Technologies, February, 2008, $25,000.
14. M.M.Budnik, "Door Demonstrator Senior Design Project Board Layout, Manufacturing, and Population at BGM Engineering," Infineon Technologies AG equipment grant, December, 2007, $8,600.
15. M.M.Budnik, A.Vernon, S.G.Duncan, "Point Vibration Therapy Assistive Device for Individuals on the Autistic Spectrum," SolidWorks equipment grant, December, 2007, $534.
16. M.M.Budnik, A.Vernon, S.G.Duncan, "Point Vibration Therapy Assistive Device for Individuals on the Autistic Spectrum," ASEE and Design in Engineering Education, December, 2007, $250.
17. M.M.Budnik, A.Vernon, S.G.Duncan, "Point Vibration Therapy Assistive Device for Individuals on the Autistic Spectrum," Valparaiso University College of Engineering matching funds, December, 2007, $250.
18. M.M.Budnik, "XC-866 Development Equipment for ECE322 Embedded Microcontroller Laboratory," Infineon Technologies AG equipment grant, November, 2007, $13,606.
19. M.M.Budnik, A.Vernon, S.G.Duncan, "Point Vibration Therapy Assistive Device for Individuals on the Autistic Spectrum," Wheat Ridge Foundation, November, 2007, $7,500.
20. M.M.Budnik, A.Vernon, S.G.Duncan, " Point Vibration Therapy Assistive Device for Individuals on the Autistic Spectrum," Valparaiso University College of Engineering matching funds, November, 2007, $7,500.

21. M.M.Budnik, "Door Demonstrator Senior Design Project," Infineon Technologies AG equipment grant, December, 2007, $1,362.

22. M.M.Budnik, "Camp Invention, Instructor for Problem Solving on Planet Zak Module," July, 2008, $500.

23. M.M.Budnik, "Camp Invention, Instructor for Problem Solving on Planet Zak Module," Valparaiso University College of Engineering matching funds, July, 2008, $500.

24. M.M.Budnik, "M16C/26A Quick Start Kits for Senior Projects," Renesas equipment grant, October 2006, $548.

25. D.Tougaw, M.Hagenberger, P.Trapp, E.Johnson, M.Budnik, L.Mainstone, D.Walther, J.Raman, L.Sanders, **"**Entrepreneurship Education at Valparaiso University: Ambitious, Attainable, and Sustainable**,"** Kern Entrepreneurship Education Network**,** August, 2007, $50,000.

26. K.Sevener, M.M.Budnik, P.Johnson, G.S.Duncan, "Kempf Engineering Curriculum Development Award for 2007," Valparaiso University, College of Engineering, June, 2007, $4,800.

27. M.M.Budnik, "Bridging Theory into Practice," Infineon Technologies AG, equipment grant, December, 2006, $300.

28. M.M.Budnik, "Switchmode Power Supply Design," Infineon Technologies Corporation, 567458A, June, 2006, $4,000.

29. M.M.Budnik, "Motor Control for Automotive Applications," Infineon Technologies Corporation, 567458B, June, 2006, $3,000.

30. K.Roy, M.M.Budnik, "An Integrated Power Delivery and Decoupling Network Minimizing Ohmic Loss and Supply Voltage Variation," MOSIS Integrated Circuit Fabrication Service, 0508.116, August, 2005, $90,533.

31. M.E.Rizkalla, M.M.Budnik "An Octal CMOS Instrumentation Amplifier with Isolation Wells Featuring Cross Talk Reduction of 61dB," MOSIS Integrated Circuit Fabrication Service, 1999, approximately $2,000.

32. M.E.Rizkalla, M.M.Budnik, "A Quad CMOS Instrumentation Amplifier with Isolation Wells Featuring Cross Talk Reduction of 61dB," MOSIS Integrated Circuit Fabrication Service, 1998, approximately $2,000.

33. M.E.Rizkalla, M.M.Budnik, "A Quad CMOS Instrumentation Amplifier with Increased Component Spacing Featuring Cross Talk Reduction of 42dB," MOSIS Integrated Circuit Fabrication Service, 1998, approximately $2,000.

34. M.E.Rizkalla, M.M.Budnik, "A Quad CMOS Instrumentation Amplifier Featuring Cross Talk Reduction of 29dB," MOSIS Integrated Circuit Fabrication Service, 1998, approximately $2,000.

35. M.E.Rizkalla, M.M.Budnik, "A CMOS Instrumentation Amplifier," MOSIS Integrated Circuit Fabrication Service, 1997, approximately $2,000.

36. M.E.Rizkalla, M.M.Budnik, "A CMOS Operational Amplifier," MOSIS Integrated Circuit Fabrication Service, 1997, approximately $2,000.

Books and Book Chapters:

1. M.M.Budnik, "Carbon Nanotube Capacitors," in *Cutting Edge Nanotechnology*, ed. A.Lazinica, Intech, Vienna, Austria, to be released September, 2009.

2. M.M.Budnik, M.Mallette, M.McGinty, P.Cooke, "Introduction to Digital Control of Switching Voltage Regulators," in *Bridging Theory into Practice, vol. 2*, ed. Infineon Technologies, Munich, Germany, 20 pages, to be released 2010.

3. M.M.Budnik, M.Mallette, M.McGinty, P.Cooke, "Features of Digital Controlled Switching Voltage Regulators," in *Bridging Theory into Practice, vol. 2*, ed. Infineon Technologies, Munich, Germany, 19 pages, to be released 2010.

4. M.M.Budnik, M.Mallette, M.McGinty, P.Cooke, "The Mathematics of Digital Controlled Switching Voltage Regulators," in *Bridging Theory into Practice, vol. 2*, ed. Infineon Technologies, Munich, Germany, 19 pages, to be released 2010.

5. M.M.Budnik, M.Thomas, "Introduction to Wireless Communication," in *Bridging Theory into Practice, vol. 2*, ed. Infineon Technologies, Munich, Germany, 22 pages, to be released 2010.

6. E.W.Johnson, M.M.Budnik, D.Beck, B.Beres, M.Lemus, S.Zika, "Electrostatic Discharge in High Frequency Applications," in *Bridging Theory into Practice, vol. 2*, ed. Infineon Technologies, Munich, Germany, 20 pages, to be released 2010.

7. M.M.Budnik, Ryan Scott, "Electric Motors," in *Bridging Theory into Practice, vol. 2*, ed. Infineon Technologies, Munich, Germany, 20 pages, to be released 2010.

8. M.M.Budnik, *Fundamentals of Power Semiconductors for Automotive Applications, 2nd Edition*, Infineon Technologies Corporation, Munich, Germany, 315 pages, 2008.

9. M.M.Budnik, *A Distributed Power Delivery and Decoupling Network Minimizing Ohmic Loss and Supply Voltage Variation in Silicon Nanoscale Technologies*, copyrighted TX6-476-829, February 25, 2007.

10. M.M.Budnik, *Fundamentals of Power Semiconductors for Automotive Applications, 1st Edition*, Infineon Technologies Corporation, Munich, Germany, 293 pages, 2006. (ISBN-13: 978-0-9789866-0-5).

Patents

1. High Density Capacitor for Integrated Circuit Technologies, M.M.Budnik, A.Raychowdhury, A.Bansal, K.Roy. Utility patent application 2007-0171594, July 26, 2007. Provisional patent application 64488.P1.US, December 20, 2006. Patent pending.

2. Manufacturing Techniques and Layouts for Carbon Nanotube Capacitors, M.M.Budnik, E.W.Johnson, J.D.Wood. Utility patent application December 12, 2008. Patent pending.

3. A Point Vibration Therapy Device, M.M.Budnik, G.S.Duncan, A.Vernon. Utility patent application TBD. Patent pending.

Refereed Publications:

1. M.M.Budnik, "Bridging Theory into Practice: First Steps Toward the Development of an Electrical Engineering Book of Knowledge," accepted for the Proceedings of the 2009 ASEE Conference on Industry and Education Collaboration (CIEC), Palm Springs, CA, February 3-5, 2010.

2. D.Beck, G.Vrabel, M.M.Budnik, "Introduction to Nanotechnology: Implementation of a Cooperative Program for Gifted and Talented Elementary School Children," Proceedings of the 2009 IEEE Frontiers in Education Conference (FIE), San Antonio, TX, October 18-21, 2009.

3. M.M.Budnik, "An International, Multi-Disciplinary, Academic-Industrial Partnership for an Undergraduate Engineering Capstone Course Sequence," Proceedings of the 2009 International Symposium on Academic Globalization (AG), Orlando, FL, July 10-13, 2009.

4. M.M.Budnik, E.W.Johnson, "A Carbon Nanotube Capacitor," Proceedings of the 2009 IEEE Nanotechnology Materials and Devices Conference (NMDC), Traverse City, MI, June 2-5, 2009.

5. D.Tougaw, E.Johnson, M.M.Budnik, "Entrepreneurship Throughout an Electrical And Computer Engineering Curriculum," Proceedings of the 2009 ASEE Annual Conference, Austin, TX, June 14-19, 2009.

6. L.Sanders, M.M.Budnik, "Encouraging Scientific Imagination in Elementary Students," Proceedings of the 2009 ASEE Illinois/Indiana Section Conference, Valparaiso, IN, March 27-28, 2009.

7. M.M.Budnik, P.Cooke, "An Innovative Opportunity for Industry and Education Collaboration," Proceedings of the 2009 ASEE Illinois/Indiana Section Conference, Valparaiso, IN, March 27-28, 2009.

8. M.M.Budnik, J.D.Wood, E.Johnson, " A Thin, Vertical, Parallel Plate Capacitor with Multi-Wall Carbon Nanotube Electrodes," Proceedings of the 2008 IEEE Conference on Nanotechnology (NANO), Arlington, TX, August 18-21, 2008.

9. M.M.Budnik, J.D.Wood, E.Johnson, "Electrical Models for Vertical Carbon Nanotube Capacitors," Proceedings of the 2008 IEEE Great Lakes Symposium on VLSI (GLSVLSI), Orlando, FL, May 4-6, 2008.

10. N.Bruce, M.Gill, H.Golz, K.Grutz, C. Kaiser, M. Mallette, M. McGinty, E. Nielsen, J. Ray, M.M.Budnik, G.S.Duncan, A.Vernon, "A Point Vibration Therapy Device for Individuals on the Autism Spectrum," Valparaiso University Celebration of Undergraduate Scholarship, April 16, 2008.

11. J.D.Wood, M.M.Budnik, E.W.Johnson, "Electrical Models for Vertical Carbon Nanotube Capacitors," Valparaiso University Celebration of Undergraduate Scholarship, April 16, 2008.

12. N.Ault, M.M.Budnik, "Projected Capacitance/Area of Multi-Level Interleaved Finger Capacitors for Integrated Circuits," Valparaiso University Celebration of Undergraduate Scholarship, April 16, 2008.

13. M.M.Budnik, J.Wood, N.Spagnuolo, K.Roy, "An Active Suppression Circuit for the Reduction of di/dt Event Supply Voltage Variation," Proceedings of the 2008 Applied Power Electronics Conference (APEC), Austin, TX, Feb. 24-28, 2008.

14. J.D.Wood, M.M.Budnik, "A Carbon Nanotube Capacitor Structure." Proceedings of the 2007 International Semiconductor Device Research Symposium (ISDRS), College Park, MD, Dec. 12-14, 2007.

15. P.Johnson, M.Budnik, K.Sevener, J.Will, "Motivation, Inspiration, and Economics of an International Service Project," Proceedings of the 2007 National Capstone Design Course Conference, Boulder, CO, June 11-13, 2007.

16. M.Hagenberger, P.Johnson, D.Tougaw, J.Will, M.Budnik, K. Sevener, "Managing Senior Projects – Educating Graduates and Undergraduates in a Senior Project Course." Proceedings of the 2007 ASEE Annual Conference, Honolulu, HI, June 24-27, 2007.

17. D.Tougaw, J.Will, P.Johnson, M.Hagenberger, M.Budnik, "Integrating Entrepreneurship in Senior Design Projects." Proceedings of the 2007 National Collegiate Inventors and Innovators Alliance (NCIIA) Conference, Tampa, FL, March 22-24, 2007.

18. J.D.Wood, P.R.Mutreja, N.W.Spagnuolo, M.M.Budnik, "Reduction of Microprocessor Supply Voltage Variation Using Linear Voltage Regulators," 21st National Conference on Undergraduate Research (NCUR), San Rafael, CA, April 12-14, 2007.

19. M.M.Budnik, K.Roy, "A Power Delivery and Decoupling Network Minimizing Ohmic Loss and Supply Voltage Variation in Silicon Nanoscale Technologies." *IEEE Transactions on VLSI*, vol. 14. no. 12, pp. 1336 - 1346, December, 2006.

20. M.M.Budnik, A.Raychowdhury, K.Roy, "Power Delivery for Nanoscale Processors with Single Wall Carbon Nanotube Interconnects." Proceedings of the 2006 IEEE Conference on Nanotechnology (NANO), Cincinnati, OH, July 16-20, 2006.

21. M.M.Budnik, A.Raychowdhury, A.Bansal, K.Roy, "CNCAP: A High Density, Three-Dimensional Carbon Nanotube Capacitor Structure." Proceedings of the 2006 Design Automation Conference (DAC), San Francisco, CA, July 24-28, 2006.

22. M.M.Budnik, K.Roy, "Minimizing Ohmic Loss in Nanoscale Microprocessor IR Events." Proceedings of the 2006 International Symposium on Quality Electronic Design (ISQED), San Jose, CA, March 27-29, 2006.

23. M.M.Budnik, K.Roy, "Minimizing Ohmic Loss and Supply Voltage Variation Using a Novel Distributed Power Supply Network." Proceedings of the 2006 Design, Automation, and Test in Europe (DATE) Conference, Munich, Germany, March 6-10, 2006.

24. M.M.Budnik, K.Roy, "Implications of SiO_2 Breakdown in an Integrated Nanoscale Power Supply." Proceedings of the 2005 International Semiconductor Device Research Symposium (ISDRS), Bethesda, MD, December 7-9, 2005.

25. M.E.Rizkalla, M.El-Sharkawy, A.S.C.Sinha, M.M.Budnik, "Minimizing Cross-Talk Between Instrumentation Amplifiers Using Guard Rings." Proceedings of the 17th Int'l. Conference on Computers and Their Applications (CATA2002), San Francisco, CA, April 4-6, 2002.

26. M.E.Rizkalla, M.M.Budnik, M.El-Sharkawy, A.S.C.Sinha, "Noise Reduction Techniques for Multi-Channels for Analog VLSI Applications." Proceedings of the 17th Int'l. Conference on Computers and Their Applications (CATA2002), San Francisco, CA, April 4-6, 2002.

27. M.E.Rizkalla, M.M.Budnik, M.El-Sharkawy, A.S.C.Sinha, H.Gundrum, "Minimizing Cross Talk for Multi-Channel VLSI Analog Chips." Proceedings of the 44th IEEE 2001 Midwest Symposium on Circuits and Systems, August, 2001, pp. 593-597.

Application Notes, Technical Briefs, and Presentations:

1. A.Vernon, E.Strell, M.M.Budnik, "A Point Vibration Therapy Device," Michigan City Department of Special Education, May 27, 2009.

2. R. Van Aartsen, K. Wagner, S. Lehmann, E. Devine, K. Sajevic, W. Burgett, J. Blackwell, C. Handley, G.S.Duncan, (M.M.Budnik, A.Vernon), "Point Vibration Therapy Device for Individuals on the Autism Spectrum," Butler Undergraduate Research Conference, April 17, 2009.

3. J.Blackwell, W.Burgett, E.Devine, C.Handley, S.Lehmann, C.Renken, K.Sajevic, E.Strell, R.Van Aartsen, "Point Vibration Therapy Device for Individuals on the Autism Spectrum," Valparaiso University Celebration of Undergraduate Scholarship, April 14, 2009.

4. D.Beck, L.Gatz, M.M.Budnik "Valparaiso Community Schools Gifted and Talented Program: An 'Elementary' Introduction to Nanotechnology," Valparaiso University Celebration of Undergraduate Scholarship, April 14, 2009.

5. R. Van Aartsen, K. Wagner, S. Lehmann, E. Devine, K. Sajevic, W. Burgett, J. Blackwell, C. Handley, G.S.Duncan, (M.M.Budnik, A.Vernon), "Point Vibration Therapy Device for Individuals on the Autism Spectrum," ASEE Illinois/Indiana Section Conference, March 27-29, 2009.

6. D.Beck, M.M.Budnik, "K-12: Quantum Wells, Tunneling, and Single Electron Memories," Network for Computational Nanotechnology, January, 2009.

7. P.Cooke, M.M.Budnik, M.Mallette, M.McGinty, T.Petersen, "Introduction to Digital Control," TechOnline webinar, December 2, 2008.

8. C.Spielman, M.M.Budnik, "MOSFETs, High Side Drivers, and Low Side Drivers," TechOnline webinar, July 24, 2008.

9. R.Beier, M.M.Budnik, "Advanced Power Dissipation," TechOnline webinar, July 8, 2008.

10. M.M.Budnik, J.D.Wood, "Undergraduate Research in the College of Engineering," presented to the Valparaiso University College of Engineering National Council, April 12, 2008.

11. M.M.Budnik, "Exploring Academic Careers," Purdue University Graduate School, April 8, 2008.

12. M.M.Budnik, "Point Vibration Therapy Assistive Device for Individuals on the Autistic Spectrum," Indiana-Kentucky Synod of the Evangelical Lutheran Church of America Christian Education Team, November 26, 2007.

13. M.M.Budnik, K.Ly, "Switching Power Supplies," Infineon Technologies Corporation, 47 pages, June, 2007.

14. M.M.Budnik, T.Pattantyus, "Introduction to Motor Control," Infineon Technologies Corporation, 21 pages, November, 2006.

15. M.M.Budnik, "A Power Delivery and Decoupling Network for Nanoscale Processors," Indiana University Purdue University Indianapolis (IUPUI), April 24, 2006.

16. K.Roy, M.M.Budnik, "How to Mentor Graduate Students," Purdue University Workshop for New Assistant Professors, September, 29, 2005.

17. M.M.Budnik, "What Do You Do with a BS Engineering Degree?" Purdue University School of Electrical and Computer Engineering ECE400 Senior Seminar, September 26, 2005.

18. M.M.Budnik "Introduction to Microprocessor Power Delivery Paths and Decoupling Networks," Purdue University School of Electrical and Computer Engineering ECE695KR, September 20 and 22, 2005.

19. R.Krause, R.Notarantonio, M.M.Budnik, "Introduction to Protected Low Side Drivers," Infineon Technologies Corporation, 96 pages, September, 2005.

20. M.M.Budnik, G.Krall, "RLC Load Characteristics," Infineon Technologies Corporation, 114 pages, June, 2005.

21. M.M.Budnik, R.Beier, "The ABC's of Electrostatic Discharge (ESD), Electrical Over Stress (EOS), and Safe Operating Area (SOA)," Infineon Technologies Corporation, 83 pages, May, 2005.

22. M.M.Budnik, R.Beier, "Semiconductor Manufacturing," Infineon Technologies Corporation, 47 pages, February, 2005.

23. M.M.Budnik, R.Beier, "Semiconductor Reliability," Infineon Technologies Corporation, 45 pages, January, 2005.

24. M.M.Budnik, G.Krall, "Switching Power Supply Design," Infineon Technologies Corporation, 104 pages, December, 2004.

25. M.M.Budnik, G.Krall, "Introduction to Power Supplies," Infineon Technologies Corporation, 92 pages, September, 2004.

26. M.M.Budnik, R.Beier, "Semiconductor Fundamentals," Infineon Technologies Corporation, 103 pages, August, 2004.

27. M.M.Budnik, R.Beier, "Dynamic Thermal Analysis," Infineon Technologies Corporation, 86 pages, July, 2004.

28. M.M.Budnik, R.Beier, "Introduction to Static Thermal Analysis," Infineon Technologies Corporation, 82 pages, July, 2004.

29. M.M.Budnik, R.Beier, "Introduction to Protected High Side Drivers," Infineon Technologies Corporation, 105 pages, July, 2004.

30. M.M.Budnik, R.Beier, "Introduction to Power MOSFET Devices," Infineon Technologies Corporation, 112 pages, June, 2004.

31. M.M.Budnik, G.Krall, "Introduction to Controller Area Network (CAN) and Local Interconnect Network (LIN)," Infineon Technologies Corporation, 133 pages, April, 2004.

32. M.M.Budnik, G.Krall, "Design and Implementation of Linear Voltage Regulators," Infineon Technologies Corporation, 167 pages, March, 2004.

33. M.M.Budnik, R.Beier, "Protected Field Effect Transistors," Infineon Technologies Corporation, 266 pages, February, 2004.

34. M.M.Budnik, "A Corporate Technology Overview," Hitachi Semiconductor, 229 pages, July, 2002.

35. M.M.Budnik, "A Systematic Approach to Consumer Appliance Controller Design," Hitachi Semiconductor, 95 pages, December, 2001.

36. M.M.Budnik, "An Introduction to the Hitachi Semiconductor E6000 Microcontroller Development System," Hitachi Semiconductor, 24 pages, August, 2001.

37. M.M.Budnik, "An Introduction to the Hitachi Embedded Workbench C Programming Environment," Hitachi Semiconductor, 32 pages, July, 2001.

38. M.M.Budnik, "Expected Microcontroller Reliability in Consumer Cooking Applications," Hitachi Semiconductor, 4 pages, May, 2001.

39. M.M.Budnik, "Internet Connectivity in the Home Appliances," Hitachi Semiconductor, 6 pages, August, 2000.

40. M.M.Budnik, "A Connected HVAC System," Hitachi Semiconductor, 154 pages, May, 2000.

41. M.M.Budnik, "A User's Manual to the H8/3664 Microcontroller and E10T Emulator," Hitachi Semiconductor, 199 pages, January, 2000.

42. M.M.Budnik, J.Wright, "A Consumer Laser Leveling System," National Semiconductor, 28 pages, March, 1999.

43. M.M.Budnik, J.Johnson, T.Regan, "Voltage Regulation - An Introduction to Power Supply Design," National Semiconductor, 115 pages, May, 1998.

44. J.Johnson, M.M.Budnik, J.Wright, "Microcontroller Design Trade-Offs in Industrial Control Systems," National Semiconductor, 169 pages, December, 1996.

45. M.M.Budnik, "Operational Amplifiers and Comparators in Today's Automotive Applications," National Semiconductor, 32 pages, March, 1996.

46. M.M.Budnik, "Linear and Switching Voltage Regulators in Today's Automotive Applications," National Semiconductor, 36 pages, March, 1996.

47. M.M.Budnik, C.Sonino, "Program Management of Integrated Circuit Design," SGS-Thomson Microelectronics, 48 pages, December, 1994.

Supervised Student Research:

1. Matt Jackson, "Embedded System Emulation," ECE490, Spring, 2009. 2 credit hours.

2. Kevin Wagner, "Embedded System Design," Infineon Technologies, AG, Door Demonstrator Project, Spring, 2009. 0 credit hours.

3. David Beck, "Valparaiso Community Schools Gifted and Talented Program: An 'Elementary' Introduction to Nanotechnology," Valparaiso University Celebration of Undergraduate Scholarship, Spring, 2009. 0 credit hours.

4. Larry Gatz, "Valparaiso Community Schools Gifted and Talented Program: An 'Elementary' Introduction to Nanotechnology," Valparaiso University Celebration of Undergraduate Scholarship, Spring, 2009. 0 credit hours.

5. Collin Seanor, "Valparaiso Community Schools Gifted and Talented Program: An 'Elementary' Introduction to Nanotechnology," Spring, 2009. 0 credit hours.

6. Zachary Slade, "Valparaiso Community Schools Gifted and Talented Program: An 'Elementary' Introduction to Nanotechnology," Spring, 2009. 0 credit hours.

7. Tyler Petersen, "Introduction to Digital Control," Bridging Theory into Practice, Spring, 2009. 0 credit hours.

8. Matthew Lemus, "Bridging Theory into Practice," ASEE Conference on Industry and Education Collaboration, Spring, 2009. 0 credit hours.

9. Sara Zika, "Bridging Theory into Practice," ASEE Conference on Industry and Education Collaboration, Spring, 2009. 0 credit hours.

10. Ben Beres, "Bridging Theory into Practice," ASEE Conference on Industry and Education Collaboration, Spring, 2009. 0 credit hours.

11. David Beck, "Bridging Theory into Practice," ASEE Conference on Industry and Education Collaboration, Spring, 2009. 0 credit hours.
12. Kevin Wagner, "Embedded System Design," Infineon Technologies, AG, Door Demonstrator Project, Fall, 2008.
13. Tyler Petersen, "Introduction to Digital Control," Bridging Theory into Practice, Fall, 2008.
14. David Beck, "Introduction to Electrostatic Discharge," Bridging Theory into Practice, Fall, 2008.
15. Matt Lemus, "Introduction to Electrostatic Discharge," Bridging Theory into Practice, Fall, 2008.
16. Ben Beres, "Introduction to Electrostatic Discharge," Bridging Theory into Practice, Fall, 2008.
17. Sarah Zika, "Introduction to Electrostatic Discharge," Bridging Theory into Practice, Fall, 2008.
18. David Beck, "Introduction to Nanotechnology," Valparaiso Community Schools, Fall, 2008.
19. Larry Gatz, "Introduction to Nanotechnology," Valparaiso Community Schools, Fall, 2008.
20. Nikke Ault, "Inductors for Power Supply Applications," Bridging Theory into Practice, Summer, 2008.
21. Nikke Ault, "Embedded System Design," Infineon Technologies, AG, Door Demonstrator Project, Summer, 2008.
22. Megan Mallette, "Introduction to Digital Control," Bridging Theory into Practice, Spring, 2008.
23. Megan McGinty, "Introduction to Digital Control," Bridging Theory into Practice, Spring, 2008.
24. Aaron Gnagey, "Embedded System Design," Infineon Technologies, AG, Door Demonstrator Project, Spring, 2008.
25. Nikke Ault, "Projected Capacitance/Area of Multi-Level Interleaved Finger Capacitors for Integrated Circuits," Valparaiso University Celebration of Undergraduate Scholarship, Spring, 2008.
26. Joshua D. Wood, "Electrical Models for Vertical Carbon Nanotube Capacitors," 2008 IEEE Great Lakes Symposium on VLSI (GLSVLSI), Spring, 2008.
27. Joshua D. Wood, "A Thin, Vertical, Parallel Plate Capacitor with Multi-Wall Carbon Nanotube Electrodes," 2008 IEEE Conference on Nanotechnology (NANO), Fall, 2007.
28. Joshua D. Wood, "A Carbon Nanotube Capacitor Structure." 2007 IEEE International Semiconductor Device Research Symposium (ISDRS), Spring, 2007.
29. Megan Mallette, "Intermediate Step Down Switching Voltage Regulators," Bridging Theory into Practice, Spring, 2007.
30. Nicholas Spagnuolo, "An Active Suppression Circuit for the Reduction of di/dt Event Supply Voltage Variation," 2008 IEEE Applied Power Electronics Conference (APEC), Spring, 2007.
31. Joshua D. Wood, "Reduction of Microprocessor Supply Voltage Variation Using Linear Voltage Regulators," 21st National Conference on Undergraduate Research (NCUR), Fall, 2006.
28. Priyanshu Mutreja, "Reduction of Microprocessor Supply Voltage Variation Using Linear Voltage Regulators," 21st National Conference on Undergraduate Research (NCUR), Fall, 2006.
29. Nicholas Spagnuolo, "Reduction of Microprocessor Supply Voltage Variation Using Linear Voltage Regulators," 21st National Conference on Undergraduate Research (NCUR), Fall, 2006.
30. Priyanshu Mutreja, "A Low Leakage, High Density, Carbon Nanotube Capacitor for Decoupling Applications," submitted to *ACM Journal of Emerging Technologies in Computing*, Fall, 2006..

Teaching Experience and Courses Developed:

1. MBA602 - Managing Technology and Innovation, Valparaiso, College of Business Administration, Valparaiso University.
2. Introduction to Nanotechnology, Part 2, Valparaiso Community Schools Gifted and Talented Program, January, 2009. Course duration, six hours.
3. Introduction to Nanotechnology, Valparaiso Community Schools Gifted and Talented Program, November, 2008. Course duration, six hours.
4. ECE200 - Computational Techniques for Electrical and Computer Engineers, Part 1, College of Engineering, Valparaiso University.
5. ECE201 - Computational Techniques for Electrical and Computer Engineers, Part 2, College of Engineering, Valparaiso University.
6. ECE261L - Linear Circuits Laboratory, College of Engineering, Valparaiso University.
7. ECE322 - Embedded Microcontrollers, College of Engineering, Valparaiso University.
8. ECE322L - Embedded Microcontrollers Laboratory, College of Engineering, Valparaiso University.
9. ECE360 - Signals and Systems, College of Engineering, Valparaiso University.
10. ECE499 - Nanotechnology Initiatives, College of Engineering, Valparaiso University.
11. GE497 - Senior Design, Part 1, College of Engineering, Valparaiso University.
12. GE498 - Senior Design, Part 2, College of Engineering, Valparaiso University.
13. ECE495D - VHDL Design, Purdue University, School of Electrical and Computer Engineering
14. M.M.Budnik, "Analog Power Electronics," Infineon Technologies Corporation, December, 2005. Course duration, forty hours.
15. M.M.Budnik, "Automotive Electronics," Infineon Technologies Corporation, May, 2004. Short course duration, sixteen hours.
16. M.M.Budnik, "An Introduction to Hitachi Semiconductor Microcontroller Technology," Hitachi Semiconductor, 2002. Short course duration, sixteen hours.
17. M.M.Budnik, A.Cottongim, "C Coding Comparisons of Common 8-bit and 16-bit Microcontrollers," Hitachi Semiconductor, 2002. Short course duration, four hours.
18. M.M.Budnik, "The SuperH Microprocessor," Hitachi Semiconductor, 2001. Short course duration, four hours.
19. M.M.Budnik, "The SuperH-DSP," Hitachi Semiconductor, 2001. Short course duration, two hours.
20. M.M.Budnik, "The H8 Microcontroller," Hitachi Semiconductor, 2001. Short course duration, four hours.
21. M.M.Budnik, "Hitachi Embedded Workbench – A C Programming Environment," Hitachi Semiconductor, 2001. Short course duration, four hours.
22. M.M.Budnik, "The E6000 Emulator – A Full Featured Emulator for the Development of Embedded Systems," Hitachi Semiconductor, 2001. Short course duration, eight hours.
23. M.M.Budnik, "The E10T Emulator – A Low Cost Emulator for the Development of Embedded Systems," Hitachi Semiconductor, 2000. Short course duration, six hours.
24. M.M.Budnik, J.Johnson, T.Regan, "Voltage Regulation - An Introduction to Power Supply Design," National Semiconductor, 1998. Short course duration, eight hours.
25. J.Johnson, M.M.Budnik, J.Wright, "Microcontroller Design Trade-Offs in Industrial Control Systems," National Semiconductor, 1996. Short course duration, eight hours.

Professional Development and Training:

1. Valparaiso University Faculty Workshop (2009).
   Successfully completed a one day workshop on "Enriching Valparaiso University Through International Students."
2. Valparaiso University Faculty Workshop (2008).
   Successfully completed a one day workshop on "The Changing Professoriate: Trends, Challenges, and Implications for Nurturing a Supportive Academic Workplace."
3. National Effective Teaching Institute Workshop (2008).
   Successfully completed a three day workshop sponsored by the American Society for Engineering Education.
4. Building Relationship Versatility: Social Styles at Work (2007)
   Successfully completed a two day course on inter-personal communication.
5. Engineering Education Workshop (2007)
   Successfully completed a three day workshop at Bucknell University workshop on re-engineering engineering education.
6. What's New in Instructional Technology (2007)
   Successfully completed a two day course devoted to exploring the emerging technology for academic professionals.
7. National Semiconductor Analog Signal Path Design Seminar (2006)
   Attended a one day seminar on analog input and output signal paths.
8. Purdue University, Preparing Future Faculty (2005).
   Explored faculty roles, responsibilities, and development opportunities at different types of higher education institutions. Worked on transition from graduate student to assistant professor.
9. Purdue University, Center for Instructional Excellence (2005)
   Successfully completed a fourteen part series of instructional workshops including topics such as student-teacher relationships, the basics of testing, and university policies related to teaching.
10. Purdue University, Grant Writing Workshop (2005)
    Successfully completed a one day workshop dedicated to the writing of research grants. Topics included components of successful grants, the grant review process, and grant funding organizations.
11. Infineon Technologies Corporation, Train the Trainer (2004).
    Successfully completed two day course devoted to increasing skills in lecture development, presentation giving, and educational planning.
12. National Semiconductor, Enhancing Communication and Presentation Skills (1999).
    Successfully completed two day course devoted to improving public speaking.
13. Dale Carnegie, Leadership Training for Managers (1998).
    Successfully completed forty hour course devoted to honing the skills necessary to lead and manage small and medium groups of individuals.
14. National Semiconductor, Communication and Team Work (1995).
    Successfully completed two day course devoted to improving team work through effective communication.
15. SGS-THOMSON Microelectronics, The Application of Engineering Tools (1994).
    Successfully completed three day course devoted to improving the quality of engineering work through the use of various analysis tools (design-of-experiments, Ishikawa diagrams, Pareto analysis, etc.).
16. Dr. Chester L. Karrass, Effective Negotiation (1993).
    Successfully completed two day course devoted to exploring negotiation skills and multi-cultural negotiations.
17. SGS-THOMSON Microelectronics, Engineering Economics (1990)
    Successfully completed three week course detailing the business of semiconductor product development.

Leadership and Service:

1. IEEE Calumet Section, Treasurer (2009).
2. IEEE Nanotechnology Materials and Devices Conference, Session Chair, Optical Devices (2009).
3. IEEE Nanotechnology Materials and Devices Conference, Session Chair, Modeling of Nanodevices and Systems (2009).
4. Valparaiso University 18th Annual, Student-Athlete's Academic Honors Dinner (2009).
5. IEEE Calumet Section, Secretary (2008)
6. Valparaiso University Student Institute of Electrical and Electronics Engineers (IEEE) and Students in Free Enterprise (SIFE) Introduction to Engineering (2008).
7. 10th International Symposium on Quality Electronic Design, Session Chair, Power Analysis and Delivery Systems (2009).
8. Valparaiso Community Schools, Gifted and Talented Program, "Introduction to Nanotechnology" (2008).
9. 10th International Symposium on Quality Electronic Design, Member of Technical Program Committee (2008-2009).
10. 10th International Symposium on Quality Electronic Design, Power Conscious Circuits and Systems Committee Co-Chair (2008-2009).
11. Camp Invention, Instructor for Mission to Mars module (2008).
12. Valparaiso University Graduation Reader (2008).
13. Valparaiso University 17th Annual, Student-Athlete's Academic Honors Dinner (2008).
14. Valparaiso University Fundamentals of Engineering Exam Review, General Session, Electric Circuits, 23 students, (2008).
15. Valparaiso University Fundamentals of Engineering Exam Review, General Session, Ethics and Economics, 23 students, (2008).
16. Valparaiso University Home School Visit Day, Guest Lecturer. (2008)
17. 9th International Symposium on Quality Electronic Design, Session Chair, Power and Thermal Management (2008).
18. 9th International Symposium on Quality Electronic Design, Member of Technical Program Committee (2007-2008).
19. Alpha Phi Omega National Service Fraternity, Advisor to the Zeta Gamma chapter at Valparaiso University (2007 - Present).
20. Valparaiso University ,University Honor Council (2007 - Present).
21. Camp Invention, Instructor for Problem Solving on Planet Zak module (2007).
22. Valparaiso University, Summer Writing Circle (2007).
23. Valparaiso University 16th Annual, Student-Athlete's Academic Honors Dinner (2007).
10. Indiana Project Lead the Way Presenter, "Enabling Tomorrow's Computers (2007).
24. Midnight Brunch, Union Board, Valparaiso University (2006)
25. 8th International Symposium on Quality Electronic Design, Session Chair, Low Power Circuits (2007).
26. 8th International Symposium on Quality Electronic Design, Member of Technical Program Committee (2006-2007).
27. Intel International Science and Engineering Fair Special Awards Judge (2006).

28. Infineon Technologies AG Visit to Valparaiso University's College of Engineering (2006).
29. Advisory Board, Purdue University School of Electrical and Computer Engineering (2005-6).
30. Graduate Committee, Purdue University School of Electrical and Computer Engineering (2005).
31. English Conversation Group, School of Electrical and Computer Engineering (2005).

News Articles:

1. A.Lavalley, "Just showing off: VU engineering students display their talents," Post-Tribune, May 15, 2009, p. E1.
2. "Valpo University students will demonstrate engineering work," Northwest Indiana Times, April 30, 2009.
3. "Valparaiso Authors Honored for Work," ValpoLife.com, April 16, 2009.
4. "Engineering professor lauded at ASEE section conference," Northwest Indiana Times, April 3, 2009. (Also includes story on the Valparaiso University Point Vibration Therapy Design Team winning first prize in the student poster competition.)
5. "Engineering educators hold event at Valparaiso University," Northwest Indiana Times, March 29, 2009.
6. "VU to Host Engineering Educators From Region," ValpoLife.com, March 27, 2009.
7. "College helps engineers entering workforce," Northwest Indiana Times, March 5, 2009.
8. "Salute, Fall 2008," Northwest Indiana Times, December 4, 2008.
9. "College helps engineers entering workforce," Evening Source, WVUR Radio, November 20, 2008.
10. B.Williams, "VALPARAISO: Elementary students discover fun of math, science," November 16, 2008.
11. "College helps engineers entering workforce," Northwest Indiana Times, November 12, 2008.
12. "Professionals on the move," Northwest Indiana Times, September 1, 2008.
13. "Professionals on the move," Northwest Indiana Times, August 31, 2008.
14. B.Williams, "New pres calls VU to new beginnings," Northwest Indiana Times, August 27, 2008.
15. B.Williams, "Church, VU perfect Braille Bible press," Northwest Indiana Times, August 20, 2008.
16. "Researcher named to technology chair," Northwest Indiana Times, August 17, 2008.
17. B.Williams, "A better world by design," Northwest Indiana Times, May 4, 2008, p. A9.
18. D.Lawrence, "Disciplines unite in unprecedented design," The Torch, May 8, 2008, p. 8.
19. S.Ruffin, "Senior named to all-USA team," The Torch, February 28, 2008, p. A1.
20. S.Ruffin, "Senior's innovation sets the curve," The Torch, December 7, 2007, p. A1.
21. "VU faculty research supported by grants," Northwest Indiana Times, November 23, 2007, p. A18.
22. "Student research attracts national attention," Post Tribune, October 31, 2007, p. D6.
23. T.Reynolds, "Physics for kids: Elementary students learn problem-solving at Camp Invention," Post Tribune, August 10, 2007, p. E1.
24. B.Williams, "Kids camp takes aim at reinventing summer," Northwest Indiana Times, July 26, 2007, p. A8.
25. "Valparaiso authors honored for work," Northwest Indiana Times, April 9, 2007, p. A11.
26. "VU introduces new faculty trio," Post Tribune, Friday August 24, 2006, p. B2.

Reviewing Activities:

1. IEEE Journal of Solid-State Circuits (JSSC)
2. IEEE Transactions on Nanotechnology (TNANO)
3. IEEE Transactions on Circuits and Systems I (TCAS)
3. IEEE International Symposium on Quality Electronic Design (ISQED)
4. IEEE Applied Power Electronics Conference and Exposition (APEC)