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Bachelor of Science
S.B.

2007

Roan, T. (M.L. Culpepper), "Design and Control of a Six–axis Nanopositioner for NanoEDM," June 2007.

Segado, M. (M.L. Culpepper), "Investigation of Flexural Contact Bearings on the Repeatability and Stiffness of Passive Kinematic Couplings," June 2007.

Moskwa, M. (J.A. Paradiso), "A Base Station for Data Collection for Sensor-Equipped Active RFID Tags," April 2007.

2006

Lewis, C. (J.A. Paradiso), "Prototyping and Expanding a Tool Set for a Ubiquitous Sensor Infrastructure," December 2006.

Farm, C. (S.G. Kim), "Electro-mechanical Modeling of Energy Harvesting System," June 2006.

Kim, J.S.C. (C.V. Thompson), "The Role of Hydrogen in the Growth of Carbon Nanotubes: A Study of the Catalyst State and Morphology," May 2006.

Above: Joyce Wu, PhD '07, Prof. Jesus A. del Alamo.

THESES AWARDED

{ **Master of Engineering**
M.Eng.

2007

Hopkins, J. (M.L. Culpepper), "A Generalized Approach to Constraint–Based Design of Multi–Axis Flexure Systems," June 2007.

Shamir, O. (L.A. Kolodziejski), "The Development of Ultra Broad Band Modulators," June 2007.

Dibiaso, C. (M.L. Culpepper), "Design of a Carbon Nanotube–Based Four Bar Compliant Mechanism," February 2007.

Malinowski, M. (J.A. Paradiso), "Micropower Active Tags for Shipment Monitoring and Identification," February 2007.

Puchala, K.A. (J. Voldman), "Selective Microorganism Concentration using a Dielectrophoresis-Based Microfabricated Device," February 2007.

Qazi, M. (A.P. Chandrakasan), "A 4kb Memory Array for MRAM Development," February 2007.

Pilawa, R. (D.J. Perreault), "Investigation of a Very High Frequency dc-dc Power Converter," January 2007.

2006

Gikandi, S. (J.A. del Alamo), "ELVIS iLab: A Flexible Platform for Online Laboratory Experiments in Electrical Engineering," September 2006.

Kovac, J.R. (J. Voldman), "An Opto-Fluidic Architecture for Image-Based Sorting of Biological Cells and Particles," September 2006.

Smalley, D. (V.M. Bove, Jr.), "Integrated-Optic Holovideo," September 2006.

Ali, H.P.A. (C.V. Thompson), "Carbon Nanotube Interconnects for IC Chips," August 2006.

Guo, Q. (C.V. Thompson), "Evaluation of Thin-Film Phase Change Material-Based Technologies," August 2006.

Kim, D.S. (J.A. Paradiso), "Sensor Network Localization Based on Natural Phenomena," August 2006.

Zou, T. (C.V. Thompson), "Evaluation of Potential Applications for Templated Arrays of Heterostructural Semiconductor Nanowires as Light Emitting Devices," August 2006.

Zhang, J. (D.J. Perreault), "Spread Spectrum Modulation System for Burst Mode DC-DC Converters," June 2006.

THESES AWARDED

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Master of Science
S.M.

2007

Truque, D. (D.S. Boning), "Modeling of Planarization Technologies," May 2007.

Grine, A. (L.A. Kolodziejski), "The Design and Fabrication of an Electrically Activated Photonic Crystal Microcavity Laser," June 2007.

Davis, M. (D.S. Boning), "Application of Commercial Best Practices for New Technology Development within the Constraints of Defense Contract Funded R&D," May 2007.

Gan, J. (D.S. Boning), "Decision Support Systems for Tool Reuse and EOL Processes," May 2007.

Hwang, I. (D.S. Boning), "Optimizing Inventory Levels using Financial, Lifecycle, and Forecast Variance Data," May 2007.

Subramanian, N. (D.S. Boning), "Lean Manufacturing in a Semiconductor Environment: Production Leveling," May 2007.

Fucetola, C. (H.I. Smith), "Resolution Limits and Process Latitude of Conformable Contact Nano-Lithography," February 2007.

Joh, J. (J.A. del Alamo), "Degradation Mechanisms of GaN High Electron Mobility Transistors," February 2007.

Sagneri, A. (D.J. Perreault), "Design of a Very High Frequency dc-dc Boost Converter," January 2007.

THESES AWARDED

Master of Science
S.M.

2006

Aylward, R.P. (J.A. Paradiso), "Sensemble: A Wireless Inertial Sensor System for Interactive Dance and Collective Motion Analysis," September 2006.

Barroeta Pèrez, G. (J.A. Paradiso), "S.N.A.K.E.: A Dynamically Reconfigurable Artificial Sensate Skin," September 2006.

Capozzoli, P. (B.L. Wardle), "Residual Stress and Electrochemical Properties of Proton-Conducting Materials for a MEMS Fuel Cell," August 2006.

Chambers, J. (B.L. Wardle), "Durability of Lamb-wave Structural Health Monitoring Sensors," August 2006.

Gomez, L. (J.L. Hoyt), "Electron Transport in Ultrathin-body Fully Depleted n-MOSFETs Fabricated on Strained Silicon Directly on Insulator with Body Thickness Rnaging from 2 to 25 nm," August 2006.

Nguyen, K.M. (C.G. Sodini), "A 77-GHz Power Amplifier in Silicon Germanium BiCMOS Technology," August 2006.

Tandon, N. (J. Voldman), "Biomimetic Electrical Stimulation for Cardiac Tissue Engineering," August 2006.

Yamamoto, N. (B.L. Wardle), "Thermomechanical Testing of Materials and Structures for a Microfabricated Fuel Cell," August 2006.

Bow, H. (J. Han), "Characterization of Nanofilter Arrays for Small Molecule Separation," June 2006.

Doddabasanagouda, S. (S.G. Kim), "Photothermal Nanotemplate via Directed Carbon Nanotube Assembly," June 2006.

Kwong, J. (A.P. Chandrakasan), "A Sub-threshold Cell Library and Methodology," June 2006.

Pierquet, B. (D.J. Perreault), "Inductance Cancellation Techniques with Applications to EMI Filters," June 2006.

Ramadass, Y. (A.P. Chandrakasan), "An Energy Optimal Power Supply for Digital Circuits," June 2006.

Sanchez, D. (K.K. Berggren), "Circuit-based Architectures for Evolvable Hardware," June 2006.

Sze, V. (A.P. Chandrakasan), "An Energy Efficient Sub-Threshold Baseband Processor Architecture For Pulsed Ultra-Wideband Communications," June 2006.

Tan, J.K. (C.G. Sodini), "An Adaptive Orthogonal Frequency Division Multiplexing Baseband Modem for Wideband Wireless Channels," June 2006.

Xia, R. (S.G. Kim), "Wireless Sensor Node with Piezoelectric Energy Harvester," June 2006.

Arfin, S. (R. Sarpeshkar), "A Miniature Implantable Wireless Neural Stimulation System," May 2006.

Balakrishnan, K. (D.S. Boning), "Analysis of Variation in On-Chip Waveguide Distribution Schemes and Optical Receiver Circuits," May 2006.

Lee, H. (J. Voldman), "Optimizing Mixer Geometries for Dielectrophoretic Micro-concentrators," May 2006.

Vasovski, S. (D.S. Boning), "A Global Sourcing Strategy for Durable Tooling," May 2006.

THESES AWARDED { **Doctor of Philosophy**
Ph.D.

2007

Bryant, R. (L.A. Kolodziejski), "Planar Nanoelectromechanical High-Index-Contrast Photonic Structures," June 2007.

Kern, A.M. (A.P. Chandrakasan), "CMOS Circuits for VCSEL-Based Optical IO," June 2007.

Lee, F.S. (A.P. Chandrakasan), "Energy Efficient Ultra-Wideband Radio Transceiver Architectures and Receiver Circuits," June 2007.

Lifton, J.H. (J.A. Paradiso), "A Sensor Network for Ubiquitous Computing and Example Applications to Virtual Worlds," June 2007.

Rosenthal, A. (J. Voldman), "Cell Patterning Technology for Controlling the Stem Cell Microenvironment," June 2007.

Seneviratne, D. (H.L. Tuller), "Materials and Devices for Optical Switching and Modulation of Photonic Integrated Circuits," June 2007.

Yu, A.A. (F.R. Stellacci), "Supramolecular NanoStamping (SuNS) – Fabricating Nano/Bio Devices using DNA as Movable Type," June 2007.

Cai, H. (D.S. Boning), "Modeling of Pattern Dependencies in the Fabrication of Multilevel Copper Metallization," May 2007.

Chen, L. (A.I. Akinwande), "Double-gated Isolated Vertically Aligned Carbon Nanofiber Field Emission and Field Ionization Arrays," May 2007.

Gassend, B. (A.I. Akinwande, M. Martinez-Sanchez), "A Fully Microfabricated Two-Dimensional

Electrospray Array with Applications to Space Propulsion," May 2007.

Gettings, K. (D.S. Boning), "Impact of Variation in Advanced Integrated Circuits," May 2007.

Liptay, T. (R.J. Ram), "Spectral Properties of Semiconductor Nanocrystals and their Properties," May 2007.

Mayer, P. (R.J. Ram), "High-Density Thermal Generation and Nanoscale Thermal Metrology," May 2007.

Somani, A. (D.S. Boning), "Environmentally Benign Manufacturing of Three Dimensional Integrated Circuits (3D ICs)," May 2007.

Xie, X. (D.S. Boning), "Physical Understanding and Modeling of Chemical Mechanical Planarization in Dielectric Materials," May 2007.

Fiorenza, J. (H.-S. Lee), "A Comparator-Based Switched-Capacitor Pipelined Analog-to-Digital Converter," March 2007.

Fu, J. (J. Han), "Microfabricated Nanofilter Array Based Devices for Advanced Biomolecule Separation," March 2007.

Wang, Y.C. (J. Han), "Electrokinetic Trapping of Biomolecules: Novel Nanofluidic Devices for Proteomic Applications," March 2007.

Barsotti, Jr., R.J. (F.R. Stellacci), "Nanomanufacturing for Biological Sensing Applications," February 2007.

Benbasat, A.Y. (J.A. Paradiso), "An Automated Framework for Power-Efficient Detection in Embedded Sensor Systems," February 2007.

Fiorenza, J.K. (C.G. Sodini), "A Comparator-Based Switched-Capacitor Pipelined Analog-to-Digital Converter," February 2007.

THESES AWARDED

{ **Doctor of Philosophy**
Ph.D.

2006

Olubuyide, O. (J.L. Hoyt), "Low Pressure Epitaxial Growth, Fabrication and Characterization of Ge-on-Si Photodiodes," December 2006.

Khuon, L. (C.G. Sodini), "Parallel Integrated Receivers for Multiple Antenna Wireless LAN Systems," October 2006.

Tadepalli, R. (C.V. Thompson), "Characterization and Requirements for Cu-Cu Bonds for Three-Dimensional Integrated Circuits," October 2006.

Wu, J. (J.A. del Alamo), "Through-Substrate Interconnects for 3-D Integration and RF Systems," October 2006.

Barkley, E.R. (C.G Fonstad, Jr.), "The Integration of InP/InGaAsP Ridge Waveguide Structures with Dielectric Waveguides on Silicon," September 2006.

Hertz, J. (H.L. Tuller), "Microfabrication Methods to Improve the Kinetics of the Yttria Stabilized Zirconia-Platinum-Oxygen Electrode," September 2006.

Jerng, A. (C.G. Sodini), "Delta-Sigma Digital-RF Modulation for High Data Rate Transmitters," September 2006.

Rivas, J. (D.J. Perreault), "Radio Frequency dc-dc Power Conversion," September 2006.

Sepke, T. (H.-S. Lee, C.G. Sodini), "Comparator Design and Analysis for Comparator-based Switched-capacitor Circuits," September 2006.

Haghgooie, R. (P.S. Doyle), "Structure and Dynamics of MR Fluids Confined in Microfluidic Devices," August 2006.

Nielsen, O.M. (M.A. Schmidt, K.F. Jensen), "A Thermally Efficient Microreactor for Thermophotovoltaic Generation," August 2006.

Salthouse, C. (R. Sarpeshkar), "Analog Adaptive Nonlinear Filtering and Spectral Analysis for Low-Power Audio Applications," August 2006.

Savin, T. (P.S. Doyle), "Multiple Particle Tracking to Assess the Structure of Biological Fluids," August 2006.

Underhill, P.T. (P.S. Doyle), "Systematic Development of Coarse-grained Polymer Models," August 2006.

Aberg, I. (J.L. Hoyt), "Transport in Thin-Body MOSFETs Fabricated in Strained Si and Strained Si/SiGe Heterostructures on Insulator," June 2006.

Bullard, J.W. (M.J. Cima), "Anisotropic and Tunable Characteristics of the Colloidal Behavior of Metal Oxide Surfaces," June 2006.

Dames, C. (G. Chen), "Thermal Properties of Nanowires and Nanotubes: Modeling and Experiments," June 2006.

Honore, F. (A.P. Chandrakasan), "Energy-Aware Architectures, Circuits and CAD for Field Programmable Gate Arrays," June 2006.

Khan, S.A. (K.F. Jensen, M.A. Schmidt), "Microfluidic Synthesis of Colloidal Nanomaterials," June 2006.

Murphy, E.R. (K.F. Jensen, M.A. Schmidt), "Microchemical Systems for Rapid Optimization of Organic Syntheses," June 2006.

Zhang, Z. (K.F. Jensen), "Microfabricated Reactor for Bioprocesses Development," June 2006.

Blasquez, R. (A.P. Chandrakasan), "Ultra-wideband Digital Baseband," May 2006.

Fan, A. (A.I. Akinwande, L.R. Reif), "Three Dimensional Integration Technology Using Copper Bonding," May 2006.

Xia, G. (J.L. Hoyt), "Silicon-Germanium Interdiffusion and Its Impacts on Enhanced Mobility MOSFETs," April 2006.