

Theses Awarded

S.B.

- **Beth Cholst** (M. KOLLE)
Elastic Stretchable Optical Fibers

M.ENG.

- **Ariana Eisenstein** (V. SZE)
An FPGA Platform for Demonstrating Embedded Vision Systems
- **Taylor Farnham** (K. K. VARANASI)
Hydrate Mitigation: Controlling Nucleation, Growth and Adhesion of Clathrate Hydrates
- **Luis Fernandez** (A. P. CHANDRAKASAN)
Parallel Implementation of Sample Adaptive Offset Filtering Block for Low-Power HEVC Chip
- **Matthew Fox** (V. SZE)
Functional and Timing Models for a Programmable Hardware Accelerator
- **George Kakuru** (C. G. SODINI)
Design of On-Chip Measurement Circuits
- **Pranav R. Kaundinya** (R. HAN)
Synthetic Impedance Generation in mm-Wave Oscillators and Amplifiers
- **Anders Wen-Dao Lee** (C. G. SODINI)
The Design of a High Precision, Wide Common Mode Range Auto-Zero Comparator
- **Sarathy Sudarshan** (K. K. VARANASI)
Nanoengineered Surfaces for Controlling Wetting and Electromagnetic Interactions
- **Wegene Tadele** (C. WARDE)
Design of Optoelectronic Activation Functions for COIN Co-processor
- **Michael Wu** (R. HAN)
A Common Platform for Current Sensor Product Evaluation in Industrial Automation Applications

S.M.

- **Ermal Dreshaj** (V. M. BOVE, JR.)
Holosuite: An Exploration into Interactive Holographic Telepresence
- **Chuhong Duan** (A. P. CHANDRAKASAN)
Energy Efficient Reconfigurable SRAM Using Data-Dependency
- **Preetinder Garcha** (A. P. CHANDRAKASAN)
Fully Integrated Therman Energy Harvesting System to Start up at 20 mV

- **Sami Khan** (K. K. VARANASI)
Wetting and Interfacial Properties of Rare-Earth Oxide Ceramics
- **Sara Nagelberg** (M. KOLLE)
Tunable Liquid Microlenses formed from Dynamically Reconfigurable Double Emulsions
- **Sirma Orguc** (A. P. CHANDRAKASAN)
0.3v Biopotential Sensor Interface for Stress Monitoring
- **Cheng Peng** (D. ENGLUND)
Towards Infrared Plasmonics and Nonlinear Optics in Graphene
- **Wendi Reib** (C. G. SODINI)
Increasing Patient Throughput in the MGH Cancer Center Infusion Unit
- **Joseph Sandt** (M. KOLLE)
Scalable Manufacture and Synchronized Optical/Mechanical Characterization of Tunable Elastic Photonic Fibers
- **Christopher Wing** (M. KOLLE)
Bragg Reflector Geometries for Colorimetric Orientation and Deformation Sensing
- **Patricia Yen** (T. BUONASSISI)
Determining the Structure-Property-Process Relationships for Laser-Fired Contacts for Solar Cells

S.M. & M. ENG.

- **Naomi Arnold** (D. S. BONING)
Wafer Defect Prediction with Statistical Machine Learning
- **Ana Maria Ortiz Garcio** (D. S. BONING)
Evaluating Inventory Ordering Policies: A Methodology and Application
- **Kyle Wilke** (E. N. WANG)
Thin Film Evaporation from Nanopores for Thermal Management

PH.D.

- **Solomon Adera** (E. N. WANG)
Thin Film Evaporation on Micropillar Arrays
- **Brian Albert** (L. C. KIMERLING AND J. MICHEL)
Germanium on Silicon Heteroepitaxy for High Efficiency Photovoltaic Devices
- **Georgios Angelopoulos** (A. P. CHANDRAKASAN AND M. MEDARD)
Improving the Energy Efficiency and Reliability of Wireless Sensor Networks Using Coding Techniques

PH.D. (CONTINUED)

- **Bichoy Bahr** (L. DANIEL)
Monolithically Integrated MEMS Resonators and Oscillators in Standard IC Technology
- **Wubin Bai** (C. A. ROSS)
Block Copolymer Self-Assembly and Templating Strategies
- **David Berney Needleman** (T. BUONASSISSI)
Performance Limits of Silicon Solar Cells Due to Structural Defects
- **Hyun Ho Boo** (H.-S. LEE)
Virtual Ground Reference Buffer Technique in Switched-Capacitor Circuits
- **Riley E. Brandt** (T. BUONASSISSI)
Accelerating the Development of Novel Photovoltaic Materials
- **Patrick Brown** (V. BULOVIĆ)
Energy Level Engineering in Colloidal Quantum Dot Solar Cells
- **Sergio Castellanos** (T. BUONASSISSI)
Electrical-Impact Assessment of Dislocations in Silicon Materials for Solar Cells
- **Rupak Chakraborty** (T. BUONASSISSI)
Structural Defect Engineering of Tin (II) Sulfide for Solar Cells
- **Ritchie Chen** (P. ANIKEEVA)
High-Performance Ferrite Nanoparticles for Magnetothermal Neural Excitation
- **Bhavya Daya** (A. P. CHANDRAKASAN AND L. S. PEH)
SC²EPTON: High-Performance and Scalable, Low-Power and Intelligent, Ordered Mesh On-Chip Network
- **Aalap Dighe** (J. VOLDMAN)
Reconfigurable Neural Probes for Chronic Electrical Recording
- **Bruno Do Valle** (C. G. SODINI)
Subdermal Implantable EEG Monitor for Seizure Detection
- **Burak Dura** (J. VOLDMAN)
Microfluidic Single-Cell Technologies for Assaying Lymphocyte Interactions
- **Dina El-Damak** (A. P. CHANDRAKASAN)
Power Management Circuits for Ultra-low Power Systems
- **Sema Ermez** (S. GRADEČAK)
Self-seeded III-V Semiconductor Nanowire Growth by Metal-organic Chemical Vapor Deposition (MOCVD)
- **Wenjing Fang** (J. KONG)
Synthesis of Bilayer Graphene and Hexagonal Boron Nitride by Chemical Vapor Deposition
- **Wenjing Fang** (M. DRESSELHAUS)
Synthesis of Bilayer Graphene and Hexagonal Boron Nitride
- **Stephen Guerrero** (A. I. AKINWANDE)
Highly Scaled Silicon Field Emitter Arrays with Integrated Silicon Nanowire Current Limiters
- **Sungjae Ha** (A. P. CHANDRAKASAN AND T. PALACIOS)
Energy-Aware System Design Using Circuit Reconfigurability with a Focus on Low-Power SRAMs
- **Daniel Hanks** (E. N. WANG)
Evaporation from Nanoporous Membranes for High Heat Flux Thermal Management
- **Wardah Inam** (D. J. PERREAULT)
System Analysis and Design of High-Efficiency Power Converters for Grid Operation
- **Ryan Iutzi** (E. FITZGERALD)
Interband Quantum Tunneling at the Band-Edges in III-V Semiconductor Heterojunctions for Low-Power Logic and Detectors
- **Daniel Kumar** (H.-S. LEE)
Calibration of Sampling Clock Skew in High-Speed Time-Interleaved ADCs
- **John Haeseon Lee** (D. S. BONING AND B. ANTHONY)
Measuring the Concentration of Microparticles in Suspension Using 2D Ultrasound Images
- **Luozhou Li** (D. ENGLUND)
Diamond Device Fabrication for Quantum Information Processing and Sensing
- **Zhipeng Li** (V. STOJANOVIĆ)
Efficient Baseband Design and Implementation for High-Throughput Transmitters
- **Bolin Liao** (M. DRESSELHAUS)
Nanoscale Electron, Phonon and Spin Transport in Thermoelectric Materials
- **Seungbum Lim** (D. J. PERREAULT)
High Frequency Power Conversion Architecture for Grid Interface
- **Maria Luckyanova** (M. DRESSELHAUS)
Observation and Manipulation of the Wave Nature of Phonon Thermal Transport Through Superlattices
- **Qiong Ma** (P. JARILLO-HERRERO)
Optoelectronics of Graphene-Based van der Waals Heterostructures
- **Jonathan P. Mailoa** (T. BUONASSISSI)
Beyond the Shockley-Queisser Limit: Intermediate Band and Tandem Solar Cells Leveraging Silicon and CdTe Technology
- **Vitor Manfrinato** (K. K. BERGGREN)
Electron-beam Lithography Towards the Atomic Scale and Applications to Nano-Optics
- **Tim Milakovich** (E. FITZGERALD)
Integration of GaAsP Alloys on Si for High-Efficiency III-V/SI PV

PH.D. (CONTINUED)

- **Ashley E. Morishige** (T. BUONASSISSI)
Predictive Engineering of Metal Impurities in n-type Crystalline Silicon for Cost-Effective, High-Performance Solar Cells
- **Jacob Mower** (D. ENGLUND)
Photonic Quantum Computers and Communication Systems
- **Faraz Najafi** (K. K. BERGGREN)
Superconducting Nanowire Single-Photon Detectors: New Detector Architectures and Integration with Photonic Chips
- **Eric Newton** (M. A. SCHMIDT)
Design of Curved Electrodes to Enable Large Stroke - Low Voltage Micro Actuators
- **Samuel Nicaise** (K. K. BERGGREN)
Template-Based Control for Bottom-Up Nanostructures-Multilayer
- **Arun Paidimarri** (A. P. CHANDRAKASAN)
Circuits and Protocols for Low Duty Cycle Wireless Systems
- **Brian Pearson** (L. C. KIMERLING AND J. MICHEL)
Germanium Photodetectors on Amorphous Substrates for Electronic-Photonic Integration
- **Michael Price** (A. P. CHANDRAKASAN)
Energy-Scalable Speech Recognition Circuits
- **Ujwal Radhakrishna** (D. A. ANTONIADIS)
Modeling Gallium Nitride based High Electron Mobility Transistors: Linking Device Physics to High Voltage and High Frequency Circuit Design
- **Joaquin Rodriguez-Nieva** (M. DRESSELHAUS)
Novel Electronic Behaviors in Graphene Nanostructures
- **Amelia Servi** (K. K. GLEASON)
Advancing Hydrophobic Desalination Membranes using Initiated Chemical Vapor Deposition (iCVD)
- **Sophia Sklan** (M. DRESSELHAUS)
Dynamical Tuning of Phonon Transport for Information and Energy Control
- **Brian Solomon** (K. K. VARANASI)
Enhancing Separation and Drag Reduction
- **Geoffrey Supran** (V. BULOVIĆ)
Enhancing Quantum Dot Luminescence in Visible and Infrared Light Emitting Devices
- **Lidan Wu** (J. HAN)
High Throughput Microfluidic Technologies for Cell Separation and Single Cell Analysis
- **Gilad Yahalom** (A. P. CHANDRAKASAN)
Analog-Digital Co-Existence in 3D-IC
- **Do Yeon Yoon** (H.-S. LEE)
A Continuous-Time Multi-Stage Noise-Shaping Delta-Sigma Modulator for Next Generation Wireless Applications
- **Tao Yu** (J. L. HOYT AND D. A. ANTONIADIS)
InGaAs/GaAsSb Quantum-well Tunnel-FET for Ultra-low Power Applications

