

# Theses Awarded

## S.B.

- **Adrian Grossman** (L. DANIEL)  
PCB design for a Wearable Hydration Sensor.
- **Christopher Klingshirn** (A. AGARWAL)  
Infrared Photoconductive PbTe Film Processing and Oxygen Sensitization
- **Abel Philip** (L. DANIEL)  
MetroExpress: A Platform for Efficient Package Delivery.
- **Jennifer Selvidge** (P. O. ANIKEEVA)  
Characterization and Connectorization of Optoelectronic Neural Probes
- **Nathan Spielberg** (A. J. HART)  
Maskless Photopatterning of Cells in Microfluidic Devices
- **Veronica Szlarzewski** (A. J. HART)  
A Mechanism for Testing the Torsional Mechanics of Origami-Inspired Hinges
- **Christina Tringides** (P. O. ANIKEEVA)  
Materials Selection and Processing for Reliable Neural Interfaces

## M.ENG.

- **Chen Dan Dong** (L. F. VELÁSQUEZ-GARCÍA)  
Scaling of Ultrafast Photon-Triggered Field Emission Cathodes Composed of Arrays of Sharpened Single-Crystal Si Pillars
- **Luis Fernandez** (A. P. CHANDRAKASAN)  
Parallel Implementation of Sample Adaptive Offset Filtering Block for Low-Power HEVC Chip
- **Letitia Li** (J. A. DEL ALAMO)  
Switching Circuit Energy Balance in iLabs on Experimental Lab Server Architecture.

## S.M.

- **Andrew Dane** (K. K. BERGGREN)  
Reactive DC Magnetron Sputtering Of Ultrathin Superconducting Niobium Nitride Films
- **Hyung Wan Do** (K. K. BERGGREN)  
Three-Dimensional Nanofabrication By Electron-Beam Lithography And Directed Self-Assembly
- **Yuxuan Lin** (M. S. DRESSELHAUS AND T. PALACIOS)  
Optical Properties of Two-Dimensional Transition Metal Dichalcogenides
- **Damak Maher** (K. K. VARANASI)  
Droplet deposition on hydrophobic surfaces for agricultural sprays

- **Philippa Mothersill** (V. M. BOVE JR.)  
The Form of Emotive Design
- **Faraz Najafi** (K. K. BERGGREN)  
Timing Performance Of Superconducting Nanowire Single-Photon Detectors
- **Kameron Oser** (K. K. BERGGREN)  
Doubling of Block Copolymer Line Patterns by Electron-Beam-Fabricated Templates
- **Seongjun Park** (P. O. ANIKEEVA)  
Opto-mechanical Control of Nerve Growth
- **Laura Perovich** (V. M. BOVE JR.)  
Data Experiences: novel interfaces for data engagement using environmental health data
- **Philip Ponce de Leon** (L. F. VELÁSQUEZ-GARCÍA)  
Parallel Nano-Manufacturing via Electro-Hydrodynamic Jetting from Externally-Fed Emitter Arrays
- **Weng Hong Teh** (D. S. BONING AND R. E. WELSCH)  
Stealth Dicing Characterization, Optimization, Integration, and Operations Management for Ultra-Thin Stacked Memory Dies
- **Ahmad Zubair** (M. S. DRESSELHAUS AND T. PALACIOS)  
Fabrication of Graphene-on-GaN Vertical Transistors

## PH.D.

- **Santiago Alfaro** (V. M. BOVE JR.)  
Digital Synesthesia: Using Mobile Technology and Sensory Substitution to Interact with Our World
- **Paul Azunre** (M. A. BALDO)  
A parallel branch-and-bound algorithm for thin-film optical systems, with application to realizing a broadband omnidirectional antireflection coating for silicon solar cells
- **Hyun Ho Boo** (D. S. BONING AND H.-S. LEE)  
Virtual Ground Reference Buffer Technique in Switched-Capacitor Circuits
- **Minjie Chen** (D. J. PERREAULT)  
Merged Multi-Stage Power Conversion: A Hybrid Switched-Capacitor/Magnetics Approach
- **Amy Chuong** (E. S. BOYDEN)  
Noninvasive Optical Inhibition with a Red-Shifted Microbial Rhodopsin
- **Daniel N. Congreve** (M. A. BALDO)  
Excitonic Spin Engineering in Optoelectronic Devices
- **Jean Anne Currivan** (M. A. BALDO)  
Nanoscale Magnetic Materials for Energy-Efficient Spin Based Transistors
- **Dina El-Damak** (A. P. CHANDRAKASAN)  
Power Management Circuits for Ultra-low Power Systems

## PH.D. (CONTINUED)

- **Sungjae Ha** (T. PALACIOS & A. P. CHANDRAKASAN)  
Electronic Systems for Interfacing with New Materials and Devices
- **Yu-Chung Hsiao** (L. DANIEL)  
Automated Modeling of Nonlinear Dynamical Subsystems for Stable System Simulation
- **Allen Long Hsu** (M. S. DRESSELHAUS)  
High Speed Graphene Electronic and Opto-electronic Devices
- **Allen Hsu** (T. PALACIOS)  
Graphene for Radio Frequency Electronics and Infrared Thermal Imaging
- **Sha Huang** (J. HAN)  
The Relevance of Red Blood Cell Deformability in the Pathophysiology of Blood Disorders
- **Tarun Jain** (R. KARNIK)  
Ion Transport across Individual Sub-Continuum Graphene Nanopores: Phenomenology, Theory, and Implications for Industrial Separations
- **Joy Johnson** (D. S. BONING)  
Slurry Abrasive Particle Agglomeration Experimentation and Modeling for Chemical Mechanical Planarization (CMP)
- **Jaejin Kim** (H. L. TULLER)  
Defect Equilibria and Electrode Kinetics in  $\text{Pr}_x\text{Ce}_{1-x}\text{O}_2$ -Mixed Conducting Thin Films: An in-situ Optical and Electrochemical Investigation
- **Daniel Kumar** (H.-S. LEE)  
Calibration of Sampling Clock Skew in High-Speed Time-Interleaved ADCs
- **Jongho Lee** (R. KARNIK)  
Desalination of Water by Vapor Transport through Hydrophobic Nanopores
- **Jianqiang Lin** (J. A. DEL ALAMO AND D. A. ANTONIADIS)  
InGaAs Quantum-Well MOSFETs for Logic Applications
- **Zohaib Mahmood** (L. DANIEL)  
Algorithms for Passive Dynamical Modeling and Passive Circuit Realizations
- **Faraz Najafi** (K. K. BERGGREN)  
Superconducting Nanowire Single-Photon Detectors: New Detector Architectures and Integration with Photonic Chips
- **Sean O'Hern** (R. KARNIK)  
Nanoporous Monolayer Graphene Membranes for Water Purification: From Concept to Realization
- **Philip Reuswig** (M. A. BALDO)  
Sensitized energy transfer for organic solar cells, optical solar concentrators, and solar pumped lasers
- **Omair Saadat** (T. PALACIOS)  
Processing Technology for High Quality AlGaIn/GaN MOSHEMT Interfaces
- **Javier Sanchez-Yamagishi** (P. JARILLO-HERRERO)  
Superlattices and Quantum Spin Hall States in Graphene and Hexagonal Boron Nitride Heterostructures
- **Yong Cheol Shin** (M. S. DRESSELHAUS)  
Synthesis of Graphene and h-BN by Chemical Vapor Deposition and their Transfer Process
- **Kristen Sunter** (K. K. BERGGREN)  
Increasing Free Space Coupling Efficiency into SNSPDs with Plasmonic Nanoantennas
- **Shuang Tang** (M. S. DRESSELHAUS)  
Materials Physics for Thermoelectric and Related Energetic Applications
- **James T. Teherani** (D. A. ANTONIADIS AND J. L. HOYT)  
Fundamental Limits of the Switching Abruptness of Tunneling Transistors
- **Stevan Lj. Urošević** (M. S. DRESSELHAUS)  
Engineering of Integrated Devices on Electro-Optical Chip: Grating Couplers, Algorithms, and Switches
- **Li Yu** (D. A. ANTONIADIS AND D. S. BONING)  
Efficient IC Statistical Modeling and Extraction Using a Bayesian Inference Framework
- **Zheng Zhang** (L. DANIEL)  
Uncertainty Quantification for Integrated Circuits and Microelectromechanical Systems
- **Rachel Zucker** (C. V. THOMPSON)  
Surface tension-driven shape evolution in solid-state micro- and nano-scale systems