

Theses Awarded

S.B.

- **Alexis D'Alessandro** (J. HAN)
Viability of Ion Concentration Polarization Technology for Creation of a Portable Desalination Unit
- **Frederick O. Daso** (B. L. WARDLE)
Manufacture of Aerospace-Grade Thermoset and Thermoplastic Composites via Nanoengineered Thermal Processing

S.M.

- **Saleem A. Aldajani** (M. P. SHORT)
Non-Destructively Detecting LWR Structural Material Embrittlement using Transient Grating Spectroscopy
- **Alex Barksdale** (J. HAN)
Lithium Extraction from Brines using Ion Concentration Polarization
- **Jinchi Han** (J. H. LANG)
Tunneling Nanoelectromechanical Switches based On Compressible Self-assembled Molecules
- **Ashley L. Kaiser** (B. L. WARDLE)
Capillary Densification and Adhesion Tuning of Aligned Carbon Nanotube Arrays for Shape-Engineerable Architectures
- **Ethan Lee** (J. A. DEL ALAMO)
Dielectric Reliability in GaN Metal-Insulator-Semiconductor High Electron Mobility Transistors
- **Saurav Maji** (A. P. CHANDRAKASAN)
Energy-Efficient Protocol and System for Security of Implantable Devices
- **Milica Notaros** (M. R. WATTS)
Integrated Visible-Light Liquid-Crystal Devices
- **Gladynel Saavedra** (V. SZE)
Saccade Latency Determination using Video Recordings from Consumer-grade Devices
- **Emily Salvador** (V. M. BOVE)
Funnel Vision: Low-cost Auto-Stereoscopic 360-degree Display with Conical Reflection and Radial Lenticular & Contextual Artificially Intelligent Character with Procedural Animation
- **Geoffrey Vaartstra** (E. WANG)
Comprehensive Modeling of Thin Film Evaporation in Micropillar Wicks
- **Patrick White** (J. BUONGIORNO)
Pathways and Frameworks for the Licensing and Regulation of Advanced Nuclear Reactors in the United States
- **Gufan Yin** (J. HU)
Photonic Inverse Design for 3-D Structures and Optical Phase Change Materials

- **Haoquan Zhang** (D. J. PERREAULT)
An Integrated Multi-Input Single-Output Buck Converter for Laterally-Arrayed Multi-Bandgap Solar Cells
- **Ryan Zimmerman** (V. BULOVIĆ)
Fabrication of Singulated c-Si Solar Cells for Semi-Flexible Photovoltaic Modules

M.ENG.

- **Kyle A. Beeks** (C. G. SODINI)
Arterial Blood Pressure Estimation using Ultrasound Technology and Transmission Line Arterial Model
- **Michael Delaus** (D. S. BONING)
Machine Learning for Automated Anomaly Detection in Semiconductor Manufacturing
- **Jiarui Huang** (A. P. CHANDRAKASAN)
Automatic 3D Surface Area Measurement for Vitiligo Lesions
- **Alex Lednev** (J. A. DEL ALAMO)
Time-dependent Dielectric Breakdown (TDDDB) in Novel GaN MIS-HEMT Devices
- **Elizabeth Lee** (L. DANIEL)
Sensitivity validation of a Coaxial Probe for a Multilayer Tissue Model, Using Simulation and Phantom Measurements
- **James Mawdsley** (R. HAN)
Terahertz Frequency Synthesis in CMOS for a Chip-Scale Molecular Clock
- **Allan Sadun** (L. DANIEL)
Robust Design Algorithms for Silicon Photonics
- **Rachel Yang** (D. J. PERREAULT)
Low-loss Inductor Design for High-frequency Power Applications
- **Yuechen Yang** (J. H. LANG)
Optimization of a Vibration based Electromagnetic MEMS Energy Harvester

PH.D.

- **Xiaowei Cai** (J. A. DEL ALAMO)
InGaAs MOSFETs for Logic and RF Applications: a Study in Reliability, Scalability, and Transport
- **Lucas Marcelo Caretta** (D. R. ENGLUND)
Chiral Spin Textures and Dynamics in Muti-sublattice Magnetic Materials
- **Yu-Hsiang** (K. A. NELSON)
Photoinduced Dynamics Studied by Ultrafast Single-Shot Pump-Probe Spectroscopy

PH.D. (CONTINUED)

- **Andrew Dane** (K. K. BERGGREN)
Superconducting Photodetectors, Nanowires, and Resonators
- **Cody Dennett** (M. P. SHORT)
Capturing Radiation-induced Microstructure Evolution in situ Through Direct Property Monitoring
- **Qingyang Du** (J. HU)
Novel Materials for Silicon-based Photonics
- **Sara Ferry** (M. P. SHORT)
Breaking the Bottleneck in Radiation Materials Science with Transient Grating Spectroscopy
- **Alex Jordan Hanson** (D. J. PERREAULT)
Enabling Miniaturized Grid-Interface Power Conversion
- **Megan Jackson** (Y. SURENDRANATH)
Molecular Control of Interfacial Inner-sphere Electron Transfer
- **Miaomiao Jin** (M. P. SHORT)
Computational Characterization of Radiation-induced Defect Dynamics and Material Response
- **Chiraag Juvekar** (A. P. CHANDRAKASAN)
Hardware and Protocols for Authentication and Secure Computation
- **Joon Ho Kang** (S. R. MANALIS)
Dynamics of Single-cell Mass, Volume, and Stiffness during Mitosis
- **Chang Sub Kim** (H. L. TULLER)
Controlling and Understanding Electro-Chemo-Mechanical Properties of Layered Cuprate Thin Films
- **Rakesh Kumar** (J. H. LANG)
A Cost-effective Battery Management and Monitoring Strategy for Micro-grids in India
- **Taehong Kwon** (J. HAN)
Novel Micro/Nanofluidic System for Separation and Monitoring of Cells and Proteins in Perfusion
- **Ivan Lemesh** (G. S. BEACH)
Static and Dynamic Properties of Magnetic Skyrmions in Engineered Multilayer Films
- **Jérôme Michon** (J. HU)
Novel Optical Sensors for Chemical and Biological Applications
- **Daniel Novy** (V. M. BOVE)
Programmable Synthetic Hallucinations: Towards a Boundless Mixed Reality
- **Seokjoon Oh** (Y. SURENDRANATH)
Graphite-conjugated Catalysts: Bridging Heterogeneous and Homogeneous Catalysts
- **Divya Panchathan** (G. MCKINLEY)
Droplet Levitation and Underwater Plastron Restoration using Aerophilic Surface Textures
- **Tahoura Sajida Samad** (K. RIBBECK)
Understanding Mucus Permeability Across Length Scales
- **Alexander Senko** (P. ANIKEEVA)
Transgene-free Strategies for Wireless Control of Animal Physiology using Magnetite Nanoparticles
- **Joohyun Seo** (H.-S. LEE/C. G. SODINI)
Non-invasive Central Arterial Pressure Waveform Estimation System using Ultrasonography for Real-time Monitoring
- **Aik Jun Tan** ()
Dynamic Modulation of Material Properties using Solid State Proton Gating
- **Zheng Jie Tan** (J. HU/N. X. FANG)
Multilayer Thin Film Oxides for Resistive Switching
- **Kyle Wilke** (E. N. WANG)
Tailoring Wetting Behavior at Extremes
- **Jacob Witten** (K. RIBBECK)
Understanding the Selective Permeability of Biological Hydrogels
- **Bing Yan** (Y. SURENDRANATH)
Designing Interfacial Structures for Selective Electrocatalysis
- **Xi Yang** (H.-S. LEE)
Flash Analog-to-Digital Converters with Time-Based Techniques
- **Yang Yang** (Q. HU)
Terahertz Laser Frequency Combs: Devices and Applications
- **Yoseob Yoon** (K. A. NELSON)
Effects of Interactions on Correlation, Thermalization, and Transport of Exciton-polaritons
- **Zhengdong Zhang** (V. SZE)
Efficient Computing for Autonomous Navigation using Algorithm-and-Hardware Co-design
- **Ahmad Zubair** (T. PALACIOS)
Tunneling and Ferroelectric based Transistors for High-frequency Application