

# 2019 Radiation Damage Effects in Electronics and MEMS

Drs. Ken Goretta and Jacob Calkins | June 24-26, 2019 | Arlington, VA

Basic Research Innovation Collaboration Center (BRICC)

4100 North Fairfax Drive, Suite 450 | Research Room

Arlington, VA 22203

Day 1

11:00	Registration	
12:00	Welcome and BRICC Logistics	AFOSR/BRICC
12:05	Senior Leadership Comments	TBD
12:30	Radiation Effects in N-Face and Nonpolar m-Plane III-Nitrides and Heterostructures	Lintereur, Azaree / Michael Scarpulla (Penn State University / University of Utah)
13:00	WMD Radiation on Vertical GaN Materials, Junctions, and Interfaces	Weatherford, T.R. (Naval Postgraduate School)
13:30	TEM Investigation on WMD Radiation of Vertical GaN Materials, Junctions, and Interfaces	Specht, Petra (UC Berkeley)
14:00	Exploration of Radiation Effects in Beta-Gallium Oxide Materials and Devices	Ringel, Steven (Ohio State University)
14:30	Break	
15:55	Fundamental Studies and Modeling of Radiation Effects in $\beta$ -Ga <sub>2</sub> O <sub>3</sub>	Pearson, Stephen (University of Florida)
15:30	Radiation Effects Research on Two-dimensional Transport in Diamond-based Semiconductor Structures	Christou, Aristos (University of Maryland)
16:00	Radiation Effects in Ultra-Wide Bandgap AlN and Diamond Schottky Diodes	Zhao, Yuji (Arizona State University)
16:30	Adjourn	

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Day 2

08:00	Registration	
08:25	Welcome and BRICC Logistics	AFOSR/BRICC
08:30	Radiation Effects in III-V MOSFETs for Sub-10 nm CMOS	del Alamo, Jesus (MIT)
09:00	Radiation Effects in Vertical 2D Heterostructure Devices Formed Using Synthesized Materials	Vogel, Eric / Pantelides, Sok (Georgia Tech/ Vanderbilt University)
09:30	Spatiotemporal Evolution of High-Density Surface Plasmas Produced by Prompt X-rays	Miloshevsky, Gennady (Virginia Commonwealth University)
10:00	Break	
10:30	A New Approach to Develop Atomic Scale Understanding of Radiation Effects in Emerging Nanoscale Memory and Logic Materials and Devices	Lenahan, Patrick (Penn State University)
11:00	Spin Based Low Field Magnetoresistance as a Novel Tool for the Investigation of Radiation Effects in 3D and Vertically Integrated Microstructures	Flatté, Michael (University of Iowa)
11:30	RER-3D: A Research Center for Radiation Effects Reliability Mechanisms Unique to 3D Integration	Alles, Michael / Robert Reed (Vanderbilt University)
12:00	Lunch	
13:00	Effect of Proton, Helium and Neutron Radiation on 2D Materials and Devices	Saptarshi Das (Penn State University)
13:30	Physics of Failure and Radiation Effects in Emerging Electronic Materials and Devices in Space Applications	Robert Reed (Vanderbilt University)
14:00	Break	
14:30	Graduate Student and Post-doc Poster Session	
16:30	Adjourn	

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Day 3

08:00	Registration	
08:25	Welcome and BRICC Logistics	AFOSR/BRICC
08:30	Characterizing and Modeling Radiation Effects in Neuromorphic Computing Paradigm	Barnaby, Hugh (Arizona State Univ.)
09:00	Radiation Effects of Brain Inspired Computing Systems	Iyer, Subramanian (UC Los Angeles)
09:30	Impact of Radiation on Spatio-Temporal Pattern Recognition in Memristor-Based Neuromorphic Circuits	Cantley, Kurtis (Boise State University)
10:00	Break	
10:30	Radiation Characterization of STT-RAM Devices	Bagherzadeh, Nader (UC Irvine)
11:00	Quantifying the Relationship Between Optical and Heavy-Ion-Induced Charge Generation in Si-Based Devices and Circuits	Cressler, John / Ildefonso, Adrian (Georgia Tech)
11:30	Correlation of Laser- and Ion-Induced Effects on Emerging Technologies	Reed, Robert (Vanderbilt University)
12:00	Lunch	
13:00	Exploration of Damage Mechanisms in MEMS Based Memory and Logic Devices	Alphenaar, Bruce (University of Louisville)
13:30	Basic Science of Radiation Effects in Ferroelectric Multi-Functional MEMS/NEMS	Bassiri-Gharb, Nazanin (Georgia Tech)
14:00	Radiation Effects in Nanoscale Electromechanical Logic Devices and Pathways Toward Robust Computing in Extreme Environment	Feng, Philip (Case Western Reserve University)
14:30	Radiation Survivability of MEMS Microelectronic Circuits with Carbon Nanotube Field Emitters	Amsden, Jason (Duke University)
15:00	Adjourn	