

2017 Radiation Damages Effects in Electronics and MEMS

Dr. Kenneth Goretta | June 22-23, 2017 | Arlington, VA

Basic Research Innovation and Collaboration Center (BRICC)
4075 Wilson Blvd., Suite 350 | Liberty Room
Arlington, VA 22203

AFOSR and DTRA Joint Review Agenda Day 1 | June 22, 2017

Time	Title	Speaker
07:30	Registration	
07:55	Welcome and BRICC Logistics	AFOSR/BRICC
08:00	Opening Remarks	Dr. Wax (DTRA)
08:15	Evaluation of Radiation-Induced Photonic Defects in Si, Ge, Chalcogenides and Polymers	Anu Agarwal (MIT)
08:45	Spin-Polarized Silicon Photonic and Electronic Interconnects	Vanessa Sih (Univ. of Michigan)
09:15	Basic Single-Event and Total-Ionizing Dose Mechanisms in Antimony (Sb)-Based CMOS Transistors with High-K Dielectric	Suman Datta (Univ. of Notre Dame)
09:45	BREAK	
10:00	Radiation Effects in III-V MOSFETs for Sub-10 nm CMOS	Jesus del Alamo (MIT)
10:30	Basic Single-Event and Total-Ionizing Dose Mechanisms in Ge/InGaAs-based CMOS Transistors with ALD High-k Dielectric	Krishna Saraswat (Stanford University)
11:00	Scaled InGaAs Nano-MOSFET Advanced Radiation Hardness Tests (SMART)	Peide Ye (Purdue University)
11:30	Investigation of Physical Mechanisms for Radiation-Induced Effects in Non-Silicon Channel CMOS Devices	Robert Reed (Vanderbilt University)
12:00	Lunch and Poster Session (Justice Room)	
13:30	Ion Irradiation Effects in Graphene-Silicon Hybrid Devices for Combating WMD	Sarah Haigh (Univ. of Manchester)
14:00	Radiation Effects in Two-Dimensional Material/High-K Dielectric Interfaces	Steven Koester (Univ. of Minnesota)
14:30	Radiation Effects in Vertical 2D Heterostructure Devices Formed Using Synthesized Materials	Eric Vogel (Georgia Tech)
15:00	BREAK	
15:30	Radiation Tolerance of New Self-Healing Crystalline Memristors for Neuromorphic Computing	Alan Doolittle (Georgia Tech)

16:00	Characterizing Intrinsic and Extrinsic Radiation Effects in Oxide RRAM Devices	Shimeng Yu (Arizona State Univ.)
16:30	Radiation Characterization of STT-RAM Devices	Nader Bagherzadeh (UC Irvine)
1700	MEETING ADJOURN	
No Host Dinner/Drinks at TBD		

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AFOSR and DTRA Joint Review Agenda Day 2 | June 23, 2017

Time	Title	Speaker
07:30	Registration	
08:00	Welcome and BRICC Logistics	AFOSR/BRICC
08:10	Radiation Effects Introduction	Jacob Calkins (DTRA)
08:15	Analysis of Radiation-Induced Changes in Robotic Materials, Components, and Subsystems	Arthur Witulski (Vanderbilt University)
08:45	On the Radiation Sensitivity and Failure Mechanism of Critical Radiation-Hardened Robotic Components	Lei Cao (Ohio State University)
09:15	A New Approach to Develop Atomic Scale Understanding of Radiation Effects in Emerging Nanoscale Memory and Logic Materials and Devices	Patrick Lenahan (Penn State Univ.)
09:45	BREAK	
10:00	Quantifying the Relationship Between Optical and Heavy-Ion-Induced Charge Generation in Si-Based Devices and Circuits	John Cressler (Georgia Tech)
10:30	Correlation of Laser- and Ion-Induced Effects on Emerging Technologies	Robert Reed (Vanderbilt University)
11:00	TBD	Robert Reed (Vanderbilt University)
11:30	Exploration of Damage Mechanisms in MEMS Based Memory and Logic Devices	Bruce Alphenaar (Univ. of Louisville)
12:00	Lunch	
13:00	The Impact of Radiation Damage on Mechanical and Electrical Properties of MEM/NEM Structures	Michael Alles (Vanderbilt University)
13:30	Radiation Effects in Nanoscale Electromechanical Logic Devices and Pathways Toward Robust Computing in Extreme Environment	Philip Feng (Case Western Reserve University)
14:00	Understanding Radiation Damage Mechanisms in MEMS/NEMS through Combined Optomechanical Interrogation and Micro-Analysis	Juejun Hu (MIT)
14:30	Radiation Survivability of MEMS Microelectronic Circuits with Carbon Nanotube Field Emitters	Jason Amsden (Duke University)
15:00	MEETING ADJOURN	