

2024 Radiation Damage of Electronics Review

Dr. Kenneth Goretta | October 23-25, 2024 | Albuquerque, NM -hybrid

Basic Research Innovation Collaboration Center (BRICC)
4100 N Fairfax Drive, Suite 450 | Arlington, VA 22203

Agenda Day 1 | Wednesday, October 23, 2024

Time	Topic	Speaker
8:15-9:00	Check in and test Zoom link	
9:00-9:10	Opening remarks	Art Edwards and Michael Yakes, AFRL
9:10-9:30	Space Vehicles Directorate and radiation-damage research	Jesse Mee, AFRL/RV
9:30-10:00	Overview of Center of Excellence	Ron Schrimpf, Vanderbilt U
10:00-10:30	Overview of MURI project	Rongming Chu, Penn State U
10:30-11:00	BREAK	
Theory session: Renee van Ginhoven, AFRL/RD, chair		
11:00-11:35	Radiation-induced crystalline defects and threshold defect formation and properties in GaN/AlN/AlGaIn by molecular dynamics	Mia Jin and Blair Tuttle, Penn State U
11:35-12:00	Local defect properties and their signatures in electrical probes of GaN defect spin dynamics	Michael Flatte, U Iowa
12:00-1:00	LUNCH	
1:00-1:25	Defect processes enabled by radiation-induced excess electron-hole pairs – A comparative study of Ga ₂ O ₃ , GaN, and SiC	Sok Pantelides, Vanderbilt U
1:25-1:50	Fundamental studies of radiation damage mechanisms in wide-band-gap semiconductors	Chris Van de Walle, UCSB
1:50-2:25	Thermalization of radiation-induced carriers in insulators and wide bandgap semiconductors	Max Fischetti/Dallin Nielsen, U Texas at Dallas
2:25-3:50	Poster session	
3:50-5:10	Panel 1: Modeling and Simulation	Art Edwards, AFRL/RV, moderator
5:10	MEETING ADJOURN	

Agenda Day 2 Thursday, October 24, 2024		
Time	Topic	Speaker
8:15-8:30	Check in and test Zoom link	
8:30-8:35	Opening remarks	Ken Goretta, AFRL/AFOSR
Defects session: Tadj Asel, AFRL/RX, chair		
8:35-9:00	Mechanisms of cavity formation in GaN devices induced by swift heavy ion irradiation	Xing Wang, Penn State U
9:00-9:25	Near-zero-field magnetization spectroscopy and electrically detected magnetic resonance studies of GaN devices	Pat Lenahan, Penn State U
9:25-9:50	DLTS and DLOS studies of radiation effects in GaN and Ga ₂ O ₃ for electronics and AlGaInP for space PV	Steve Ringel, Ohio State U
9:50-10:20	BREAK	
10:20-10:45	Impact of radiation-induced defects on WBG/UWBG transistors	Aaron Arehart, Ohio State U
10:45-11:45	Panel 2: Single-Event Burnout	Art Edwards, AFRL/RV, moderator
11:45-12:45	LUNCH	
Irradiation studies session: Shin Mou, AFRL/RX, chair		
12:45-1:10	Threshold voltage hysteresis and gate leakage in AlGaIn/GaN HEMTs	Dan Fleetwood, Vanderbilt U
1:10-1:45	Responses of wide bandgap semiconductors to swift heavy ion irradiation: single-ion and broad-beam experiments	Maik Lang, U Tennessee Knoxville; Adam Neal, AFRL/RX
1:45-2:05	Impact of heavy ion irradiation on GaN devices	Jianan Song, PSU
2:05-2:30	Probing defect evolution in GaN under heavy ion irradiation: insights from advanced diffraction techniques	Reeja Jayan, CMU
2:30-4:00	Poster session	
4:00-5:10	Panel 3: What next?	Michael Yakes, AFOSR, moderator
5:10	MEETING ADJOURN	

Agenda Day 3 Friday, October 25, 2024		
Time	Topic	Speaker
8:15-8:30	Check in and test Zoom link	
8:30-8:35	Opening remarks	Michael Yakes, AFRL/AFOSR
8:35-9:00	Analyzing radiation induced defects in GaN MESFETs and JFETs with AC transconductance method	Tania Roy, Duke U
Devices session: Michael Yakes, AFRL/AFOSR chair		
9:00-9:25	Device design and testing	Rongming Chu, Penn State U
9:25-9:50	Development of High Al-content AlGaIn vertical diodes for radiation studies	Jim Speck, UCSB
9:50-10:15	Heavy-ion-induced leakage current in power devices	Enxia Zhang, U Central Florida
10:15-11:30	Parallel meetings: Advisory Board; CoE team and colleagues; MURI team and colleagues	
11:30	Feedback and closing remarks	Art Edwards, Michael Yakes, and Ken Goretta
ca 12:00	MEETING ADJOURN	