

2022 Radiation Damage of Electronics Review

Drs. Kenneth Goretta, Michael Yakes; Art Edwards | September 20-21, 2022 | VA - hybrid

Agenda Day 1 | September 20, 2022

MURI Kickoff

| Time | Topic | Speaker |
|-------------|---|---------------------------|
| 8:30-9:00 | Check-in / Zoom Login | |
| 9:00-9:10 | Welcome Remark by AFOSR/AFRL | |
| 9:10-9:40 | Defects in GaN Electronic Devices: Which Ones Matter? | Rongming Chu |
| 9:40-10:20 | Multi-Scale Simulations of Radiation-Induced Defects in AlGaIn/GaN Systems (Ab Initio Study of Radiation Induced Defects in GaN) | Mia Jin (Blair Tuttle) |
| 10:20-10:40 | BREAK | |
| 10:40-11:10 | Characterizing Structure and Chemistry of Radiation-Induced Defects in GaN Using Electron and Atom Probe Microscopy | Xing Wang |
| 11:10-11:40 | Characterizing Radiation-Induced Defects Using X-Ray Total Scattering Methods | Reeja Jayan |
| 11:40-13:30 | LUNCH | |
| 13:30-14:00 | Magnetic Resonance Tools to Study Radiation Damage in GaN Devices | Pat Lenahan |
| 14:00-14:30 | Identifying the Spin Character of Radiation-Induced Defects via Magnetic Field Effects on Electronic Transport | Michael Flatte |
| 14:30-15:00 | TBD | Tania Roy |
| 15:00-15:30 | Questions & Answers & Comments | |
| 15:30 | MEETING ADJOURN | |

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Agenda Day 2 | September 21, 2022

Radiation Effects Center of Excellence Review

| Time | Topic | Speaker |
|-------|--|--------------------------------|
| 8:30 | Check-in / Zoom Login | |
| 9:00 | Welcome and Overview of Air Force Engagement in COE | Art Edwards |
| 9:10 | COE Overview and Introduction | Ron Schrimpf |
| 9:30 | Workforce Development Activities and Opportunities | Mike Alles |
| 9:50 | Rad Effects in WBG Semiconductors | Dan Fleetwood |
| 10:10 | Radiation-induced defect dynamics in wide-gap semiconductors | Sok Pantelides |
| 10:30 | BREAK | |
| 10:50 | Diffusion of point defects in Ga ₂ O ₃ | Chris Van de Walle |
| 11:10 | Monte Carlo simulation of high-energy (~100 eV) electron relaxation in GaN | Max Fischetti |
| 11:30 | Development of WBG and UWBG materials for radiation studies | Jim Speck |
| 11:50 | Development of GaN and beta-Ga ₂ O ₃ test structures and devices for radiation studies | Esmat Farzana |
| 12:10 | LUNCH | |
| 1:15 | Progress on Trap Characterization for Radiation Studies | Steve Ringel and Aaron Arehart |
| 1:35 | Radiation Testing Capabilities and Radiation Effects on 3D NAND Flash Cells | Enxia Zhang |
| 1:50 | Effects of Geometry and Cycling on the Radiation Response of Charge-Trapping NAND Memory Devices with SiON Tunneling Oxide | Isabella Wynocker |
| 2:05 | Radiation Effects in Photonic Integrated Circuits | Robert Reed |
| 2:25 | Fault injection emulation in a radiation hardened microcontroller | Stefania Esquer |

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|-------------|------------------------|--|
| 2:40 | Discussion and Wrap-up | |
| | MEETING ADJOURN | |

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