

Preliminary Agenda

Tuesday, February 11

7:00 Registration and Continental Breakfast

8:00 “Welcoming Remarks and Overview of the Technical Program”
Adam Bushmaker, MRQW General Chair and the Technical Program Chair
The Aerospace Corporation

Keynote

8:15 "Chip Scan: 3D X-ray Imaging of CMOS Circuits"
Tony Levi, University of Southern California

Session I: Failure Analysis
Chair: Dicky Daniel, The Aerospace Corporation

9:15 "Imaging Operation and Degradation in a GaN HEMT"
William Hubbard, Nanoelectronic Imaging

9:30 "AFM-in-SEM for precise endpoint delayering"
Greg Johnson, Zeiss

9:45 TBD
Steve Tetlak, AFRL

10:00 "Atomic Force Microscopy and Nanoscale Infrared Spectroscopy for Failure Analysis - From Carrier Profiling to Identifying Nanocontaminants"
Thomas Mueller, Bruker

10:15 TBD

10:30 TBD

10:45 Break

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Session II: Device Reliability
Chair: Don Pierce, The Aerospace Corporation

11:15 "Atomic Scale Damage in Wide Band Gap Devices Explored with Near Zero Field Magnetoresistance Techniques Capable of In-Situ Measurements"
Pat Lenahan, Penn State University

11:30 "Linking Device Reliability Problems to Specific Atomic-Scale Defects using Magnetic Resonance Spectroscopy"
Jason Ryan, NIST

11:45 "Improving reliability of MOSFETs in heavy ion environments"
Oscar Mansilla, Microchip

12:00 "Electronics in Extreme Environments: A Global Perspective"
Ashraf Alam, Purdue University

12:15 Lunch

Session III: Government Programs
Chair: Matt Gadlage, NSWC Crane

1:30 "NASA GSFC Updates"
Pete Majewicz or Susana Douglas, NASA GSFC

1:45 "Strategic Rad-Hard Electronics Council (SRHEC)"
April White, NSWC Crane

2:00 "NRO Programs and Plans"
Robert Ciccariello or Mike Walsh, NRO

2:15 TBD
Ethan Johnson, AFRL/RV

2:30 "Microelectronics Commons Update"
Tim Morgan, Microelectronics Commons

2:45 Break

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Session IV: Radiation Effects
Chair: Ron Schrimpf, Vanderbilt University

3:15 "Development of Vertical β-Ga2O3 Devices for High-Power and Extreme Radiation Applications"
Esmat Farzana, Iowa State University

3:30 "Mechanisms of Destructive Single-Event Effects in Wide Bandgap Devices"
Steve Kosier, Vanderbilt University

3:45 "High-Performance Wide and Ultra-Wide Bandgap Semiconductor Devices"
Siddharth Rajan, Ohio State University

4:00 "Understanding the SOI Technologies: Physics, Fabrication, and Radiation Effects"
Hugh Barnaby, Arizona State University

4:15 **End of Sessions**

5:30 **Reception at Sheraton Gateway Los Angeles Hotel**
6101 W. Century Blvd., Los Angeles, CA 90045

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Wednesday, February 12

7:00 Registration and Continental Breakfast

Session V: GaN and III-V
Chair: Stephen Tetlak, AFRL

8:45 "JEDEC Power GaN Standard Update"
Rod Deleon, Boeing

9:00 "JEDEC RF GaN Standard Update"
Purushothaman Srinivasan, Global Foundries

9:15 TBD
Justin Park, Northrop Grumman

9:30 "Relative MOS capacitor analysis and the applications for reliability testing in GaN power devices"
Brian Rummel, Sandia

9:45 "Thermal Measurements and Modeling RF GaN"
Sukwon Choi, PSU

10:00 TBD

10:15 Break

Session VI: Hardware Assurance
Chair: Jesse Theiss, The Aerospace Corporation

10:45 "Methods of Physical Inspection for Post-Silicon Assurance"
Adam Kimura, Battelle Memorial Institute

11:00 "Pix2Net"
Michael Strizich or Eric Henson, MITRE

11:15 "Counterfeit/Obsolete Parts"
Sultan Lilani, Integra Technologies

11:30 "Approaches for Detecting Recycled FPGA Devices"
Frank Werner, Georgia Tech Research Institute

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11:45 TBD

12:00 Lunch

Session VII: Emerging Technologies
Chair: Matt Marinella, Arizona State University

1:15 TBD

1:30 "Ferroelectric FETs for Government Applications"
Sayeef Salahuddin, UC Berkeley

1:45 "Reservoir Computing for Aerospace Applications"
Matt Voegtle, The Aerospace Corporation

2:00 TBD

2:15 "Emerging Packaging Technologies"
Chris Bailey, Arizona State University

2:30 Break

Session VIII: Advanced Packaging
Chair: Robert Ciccariello, The Aerospace Corporation

3:00 "Metal-Embedded Chip/Chiplet Assembly (MECA) Platform for Next Generation RF & mmWave Subsystems"
Avantika Sodhi, HRL

3:15 "Highly Accelerated Life Test (HALT) for Class P Electronics"
Reza Ghaffarian, NASA JPL

3:30 "Microelectronics Packaging for Next-Generation Defense Applications"
Dan Benveniste, Northrop Grumman

3:45 TBD

4:00 "Braided Solder Columns Reduce Mechanical Stress for Large Heterogeneous 2.5D Packaging for Space and Commercial Applications"
Marty Hart, TopLine

4:15 End of Sessions

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Thursday, February 13

7:00 Registration and Continental Breakfast

Session IX: COTS Parts
Chairs: Christine Rink and Brian Kosinski, The Aerospace Corporation

8:45 COTS MISW (Mission Success Improvement Workshop) Status Update
Christine Rink or Brian Kosinski, The Aerospace Corporation

9:00 Panelist Introductions
Christine Rink and Brian Kosinski, The Aerospace Corporation

9:15 Panel Discussion
Mark Porter, NASA JPL
Cindy Reukert, Blue Canyon
Additional Panelists TBD

10:15 Break

Session X: Memory
Chair: Keith Avery, AFRL

10:45 "Radiation-Hardened Magneto-Resistive Random Access Memory (MRAM)"
Romney Katti, Honeywell

11:00 "Risk Mitigation Trade-Offs for Space Memories"
Helmut Puchner, Infineon

11:15 "18GB DDR4 and 4Gb Parallel MRAM Single Event Effects"
Peter Nelson, Frontgrade

11:30 "Fundamental Rad-Effects Characterization of MRAM Bit-Cell Elements for ANGSTRM"
Thomas Boone, Western Digital

11:45 "Scalable Smart MEM Technologies for Embedded, Chiplet, and AI Architectures"
Marti McCurdy, Spirit, and Max Simmons, NuMem

12:00 Lunch

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Session XI: SOCs and FPGAs
Chair: Steve Guertin, NASA JPL

1:15 "SEE Qualification Methods for RH SOCs and Limitations when Applied to COTS SOCs"
Steve Guertin, NASA JPL

1:30 "Microchip FPGA Qualification and Reliability Update"
Minh Nguyen, Microchip

1:45 "AMD Versal™ Adaptive SoC Qualification and Reliability Update"
Ken O'Neill, AMD

2:00 "AMD Versal™ Adaptive SoC AI/ML SEE Solution and Beam Results"
Pierre Maillard, AMD

2:15 "Update on CertusPro FPGA SEE and PEM-INST-001 Level 1 Qualification"
Brian Baranski, Frontgrade

2:30 Break

Session XII: Photonics
Chairs: George Tzintzarov, The Aerospace Corporation
Alireza Azizi, NASA Jet Propulsion Laboratory

3:00 "Developing Guidelines for Qualification and Screening of Integrated Photonic Devices"
Ali Azizi, NASA JPL

3:15 TBD
TBD, Raytheon

3:30 TBD

3:45 Closing Remarks

4:00 End of Workshop

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