

# SESSION 16

## GaN RELIABILITY

**Chairs: Shawn Burnham, HRL Laboratories**  
**Karen Moore, Freescale**

Last, but not least, Session 16 on GaN Reliability ends the conference oral presentations with discussions on industry-leading approaches to GaN HEMT lifetesting, radiation degradation evaluation, leakage modeling and hot-phonon assessment. The session begins with an invited talk from Dr. Bruce Paine of Boeing Network and Space Systems, who will describe a proven systematic approach to isolating and identifying unique degradation mechanism Arrhenius behavior using RF and/or DC lifetesting. Next, Dr. Travis Anderson of the Naval Research Laboratory provides an update on their ongoing leading efforts to characterize degradation related to proton irradiation using pulsed IV data with physical feedback from energy-dispersive X-ray spectroscopy. Dr. Mirwazul Islam of the University of South Carolina will then use device simulation to clearly establish physical leakage mechanisms for GaN-on-Si by matching simulation results to empirical data, resulting in a very accurate, yet simple compact model. Finally, Dr. Cemil Kayis of ASELSAN, Inc. addresses the difficult task of evaluating hot-phonon effects in GaN HEMTs using a combination of IV, current-transient and low-frequency phase noise measurements, which reveals an optimal sheet density that results in lower degradation.

