

SESSION 13

GaN RF Devices

Chairs: Martin Kuball, University of Bristol
David J. Meyer, Naval Research Laboratory

As development in GaN RF transistor technology continues, one of the major research thrusts has been to increase the frequency performance to achieve millimeter wavelength solid-state power amplifier operation. This session will discuss some of the techniques that are used to address challenges facing GaN transistors such as parasitic contact resistance, dc-RF dispersion, and linearity. The session begins with a talk from United Monolithic Semiconductors on gate metal stack variation and the impact it has on gate leakage current and two-tone linearity. Next, a talk from ETH-Zurich and EPFL will discuss the benefits of regrown n+ GaN ohmic contacts for vertically-scaled AlInN barrier HEMTs, leading to a demonstration of CW power at W-band. The third talk of the session will be from researchers at the University of Fukui, who will discuss the correlation between electroluminescence and current collapse in AlGaIn/GaN HEMTs. The fourth talk from Ferdinand Braun Institut will present a study of dispersion in 100 to 200 nm gate length AlGaIn/GaN HEMTs based on three different heterostructure designs. The final talk of this session from the Naval Research Laboratory will discuss a vertically-oriented III-N/SiC hot-electron transistor that uses a 4-5 monolayer graphene base to achieve much lower base resistance compared to other doped semiconductors.

