

## SESSION II

### Processing I – Dielectrics

*Chair: George Henry, Northrop Grumman ESSD*

Dielectrics fulfill vital roles in GaAs integrated circuits. Protecting the delicate GaAs surface from the environment while forcing the dielectric-to-GaAs interface into a reproducible state are a couple of the requirements for the first layer dielectric. Low dielectric constant material is desirable when trying to minimize parasitics, and either a high dielectric constant or very thin layer is wanted when fabricating high capacitance per unit area capacitors. The four papers in this session address a breadth of these requirements. The first paper reports on successfully driving the development of the SiN deposition process to high breakdown voltage, low leakage current capacitors allowing for fabrication of reliable, thin dielectric capacitors. Next is some excellent work of characterizing the effects of the PECVD nitride growth parameters on PHEMT device performance and reliability. In the third paper, the authors have exploited the low plasma induced damage of Remote Plasma Enhance CVD to achieve high quality MIMs and passivation of power PHEMTs. In the last paper, the focus changes to etching the polyimide planarization layer used to fabricate HBTs. They report on successful DOEs, which optimized an ICP type etcher for controlling via sidewall angles. These papers reflect the continuing evolution of GaAs IC processing which is as essential for us as our Si counterparts in staying cost competitive.