

SESSION III

Materials

Chair: Joe Pellegrino, NIST

Control of the materials issues associated with the manufacturing of III-V materials is a formidable task. This is especially evident in the increased use of epitaxial heterostructures for wireless components. Both HBTs and PHEMTs require accurate control of layer thickness and composition. The demands of high volume production have challenged equipment vendors as well as substrate manufacturers. This session examines some of the issues relevant to the control of the material parameters for production of advanced heterostructures as well as the ongoing quest for larger substrates and equipment with greater output capabilities. The first paper by Kopin addresses the manufacturing of AlGaAs/GaAs HBTs by the MOCVD process and how the MOCVD growth process is correlated with device performance. The QED paper reports on an effort to utilize MBE grown carbon-doped HBT material and the prospects of transferring this technology to production. The third paper of the session reports on 100- and 150-mm wafer growth of GaAs materials for wireless applications using a converted silicon single-wafer reactor. In the final paper of the session, John Blevins of the Air Force Research Laboratory will present an overview of the Title III Semi Insulating Gallium Arsenide Wafer Project.