

SESSION 4

MATERIALS

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Session 4 features various materials based topics ranging from improvements in epitaxial material growth technique and in-situ measurement for better device uniformity and layer control, through epitaxial methods for combining III-V's with silicon, to advancements in carrier technology for thin wafer handling. In our lead paper, Skyworks reveals some keys of pHEMT layer epitaxial growth for superior device parameter uniformity across wafer and runs. JENOPTIK follows by explaining how to save time and money by replacing time consuming and destructive ex-situ measurements with in-situ measurements for quickly calibrating AlGaAs ternary laser diode epitaxial layers. HKUST demonstrates how one might grow GaAs (and therefore the above mentioned device layers) - free of anti-phase domains - on exact (001) silicon via orderly arrays of GaAs nanowires. NTU and MIT exhibits more anti-phase domain free GaAs on silicon, aided by Ge interlayers, leading to InGaAs HEMT epi-layers showing promising mobility and sheet charge results. Finally, Brewer Science and Corning share a method for thin wafer handling - relevant to wafer thinning requirements in state-of-the-art semiconductor device fabrication processes - which combines customized glass and bonding agents to provide flexibility in the post-thinning processes that are not available with traditional carriers.

