SESSION 5b:
EPITAXY & MATERIALS

Chairs: Guo-liang Zhou, *Skyworks Solutions*
Paul Pinsukanjana, *IntelliEPI*

5
b

Epi material is the foundation of compound semiconductor devices. This session focuses on epitaxial growth techniques and its process improvement. The session begins with an invited paper from Rodney Pelzel of IQE on the pros and cons of MOVPE vs. MBE growth technology for III-V epitaxial structures. The strength and limitations of each technology will be discussed from both technical and commercial aspects based on their first-hand experiences. The second paper from Yohei Otoki et al. of Hitachi Cable presents the results of GaN-HEMT and GaN p-n diode structure grown on low defect VAS (Void Associated Separation)-GaN substrates. The potential device performance improvement for GaN on VAS-GaN substrates vs. GaN grown on SiC substrates will be discussed. Nicole Killat et al. of University of Bristol investigated the correlation between the kink-effect of Fe-doped AlGaN/GaN HEMTs and the yellow luminescence (YL) from the correspondent epitaxial structure to explore the possible route for "kink-screening". In this third paper, they conclude that the kink effect is resulted from a more complex trapping mechanism and is not solely related to YL defect states. Therefore, YL analysis does not present a suitable method for "kink screening". The fourth paper presented by Sangmin Lee et al. of Cree focuses on thickness uniformity improvement of AlGaN epitaxial layer grown on 100-mm SiC substrate by improving the gas flow of their MOCVD reactor. They report a 25% improvement in the standard deviation of VT with no sacrifice of device performance and reliability. The final paper is presented by P. Waltereit et al. of Fraunhofer Institute for Applied Solid State Physics on development of an epitaxial growth process on European SiC substrates. They evaluated material quality both at epiwafer level, as well as, at transistor level for the growth process on semi-insulating 6H-SiC(0001) substrates, and compared the results with the growth process on 4H-SiC(0001) substrates.