

# SESSION XI

Material

*Chair: Thomas Anderson, Airtron*

III-V epitaxial structures are increasingly finding applications in wireless consumer products. The ability to tailor the layer can lead to superior performance of epitaxial devices over conventional ion implanted MESFETs. However, in production, epitaxial growth technologies are relatively immature compared to ion implantation. As a result, epitaxial wafers tend to be more expensive and more difficult to reproduce with high yield. There recently have been significant developments that are helping to bring down the cost of epitaxial wafers towards that of fully characterized ion implanted wafers. For example, both MBE and MOCVD technologies now offer reliable and uniform multi-wafer growth. The high throughput and improved reliability of these machines reduces the cost of producing an epi wafer.

The authors of the first paper in this session compare these two technologies specifically for HBT manufacturing. The second paper from Rockwell also addresses the differences in the two technologies such as cost, complexity, repeatability, uniformity and difficulties in characterizing these epitaxial structures. In addition to a more general comparison of competing technologies such as ion implantation, MOCVD and MBE, there are also specific issues pertaining to which device technology is appropriate for a particular application. The last two papers in the session address two important issues for cost effective epitaxy: the effect of the substrate surface quality and the ability to non destructively characterize the layer parameters.