

Challenges and Opportunities in the III-V Industry: A Quarter Century View

Dr. John C.C. Fan
President and Chief Executive Officer

Kopin Corporation
200 John Hancock Rd.
Taunton, MA 02780 USA

Over the past 25 years, advances in epitaxial growth technology have been one of the key contributors to the rapid growth of the III-V industry. GaAs HBT power amplifiers and pHEMT switches have become the forefront of the wireless revolution that continues today. Over the past several years, GaAs BiHEMT technology has emerged as a means to monolithically integrate functionality of GaAs HBT power amplifiers with high-performance pHEMT RF switches. Challenges to grow such structures are significant because of the complexity and large number of epilayers and the impact of HBT growth over the underlying pHEMT layers. In addition, new wireless standards impose more stringent linearity requirements and ever tightening spec windows. To achieve high yield and reproducibility for a large volume of wafers, sophisticated in-situ monitoring and post-growth characterization are necessary. This presentation will address the current challenges and landscape faced by a high-volume epitaxial wafer foundry and will provide insights into future directions for materials-driven advances in the III-V industry.