

SESSION 2: PLENARY II – PHOTONICS IC VOLUME MANUFACTURING

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With insatiable demands for instant access to information and data, the global IP traffic is forecast to grow at 32% CAGR from 2012 to 2015 (from LightCounting presentation at OFC 2012). As one of its beneficiaries, the optoelectronic components industry is experiencing an explosive growth from the increasing use of FTTX access systems, optical interfaces/interconnects, and continuing transition to higher data rates.

In order to meet the optical systems' requirements for complexity, performance, volume, and cost, optoelectronic components are following the footsteps of digital IC and MMIC to evolve from discrete components/hybrid assembly into photonic IC (PIC) technology, where active and passive optical components, and even electronic ICs are fabricated on a single semiconductor chip.

Infinera Corporation is the leader in PIC technology and has commercialized 50-100 Gbps InP-based large-scale PICs since 2004, with 860 million field hours without a single failure. Jacco Pleumeekers will give an introduction of PICs and describe the manufacturing status of Infinera's 3rd generation LS-PICs.

OneChip Photonics has developed an InP-based Multi-Guide Vertical Integration (MGVI) technology, which is a versatile and cost-efficient regrowth-free PIC platform that allows for decoupling of epitaxial growth and wafer fabrication, thereby enabling for outsourcing manufacturing to separate commercial foundries. Valery Tolstikhin will describe fundamentals and applications of the MGVI technology and report on manufacturing and performance of the PIC products for cost-sensitive telecom and datacom markets.

Aurion Inc. has developed a Si-based Heterogeneous PIC platform, which adds InP functionality to the underlying Si photonic circuits. This technology can leverage the best-in-class performance from III-V active devices and low-cost Si-based passive optical components as well as advanced electronic device for drivers. Eric Hall will describe this Heterogeneous PIC technology and present some example products.

