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Low loss PICs through Heterogeneous Integration

We demonstrate the integration of TFLN for ultra-high-speed (>120GHz), low-voltage modulation alongside high-speed photodetectors (PD) directly onto our low-loss (dB/m) silicon nitride (SiN) waveguide core. The low-loss platform enables tunable lasers, comb lasers and excellent optical interconnect between fibers and PICs. We address commercial viability by outlining our manufacturing scaling strategy executed in collaboration with X-FAB. By transitioning this complex heterogeneous process to a high-volume automotive-qualified foundry, LIGENTEC bridges the gap between high-performance prototypes and cost-effective industrial scaling for telecom and datacom markets.

These heterogeneous integrated PICs serve a diverse array of applications, spanning from ultra-high-speed connectivity in quantum computing and AI data centers to advanced sensing solutions. For example, in sensing, these PICs enable integrated source-swept optical coherence tomography (SS-OCT) systems by facilitating the co-integration of III-V photodiodes, tunable lasers, and integrated collimating lenses directly onto a SiN PIC platform.

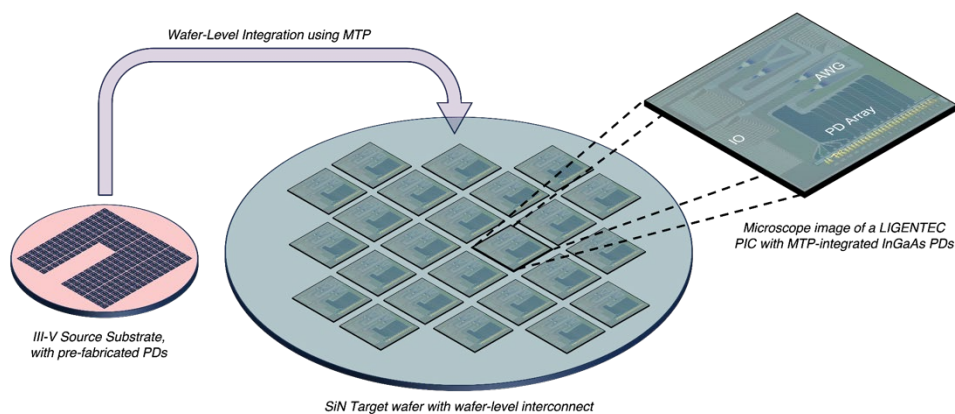


Figure 1: Micro-transfer Printing for Photodetector Integration

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