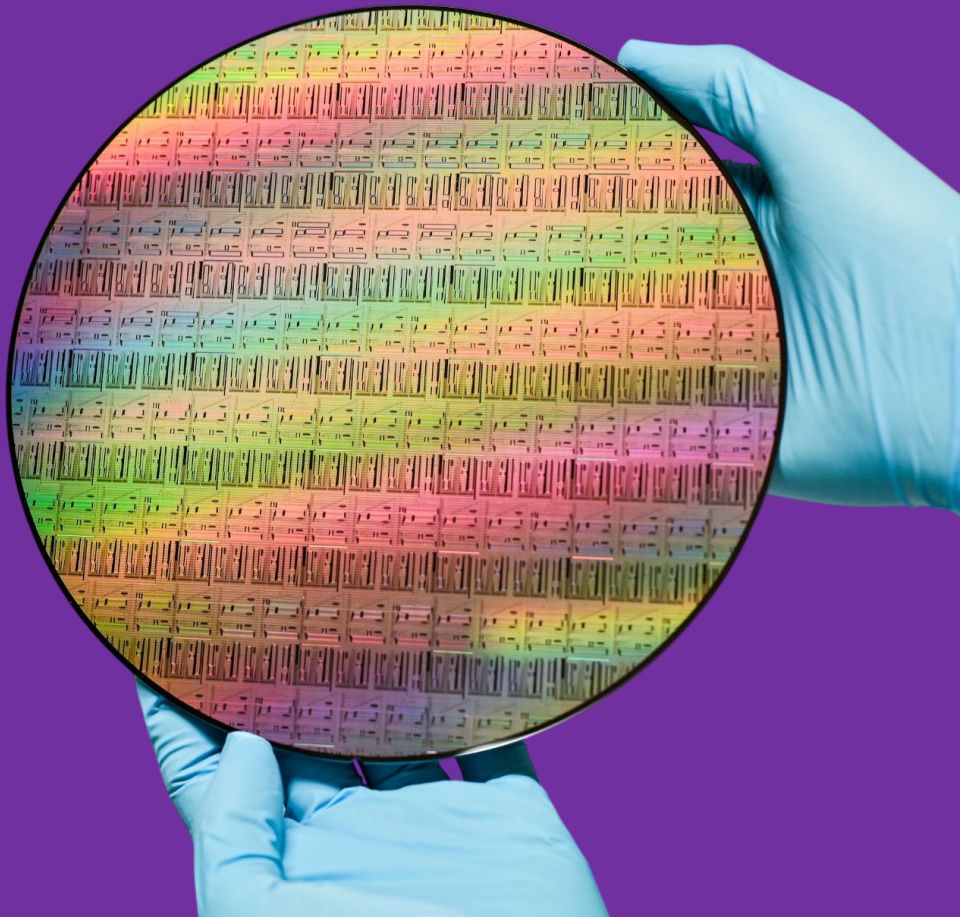


Next-Generation Heterogeneous SiN-TFLN Photonic Platform

Henry Francis
henry.francis@ligentec.com



Our PIC technology is an enabler for:

Sense

Biosensing
OCT / LiDAR
Metrology & Instrumentation
Atomic Clocks / GPS-less navigation
...



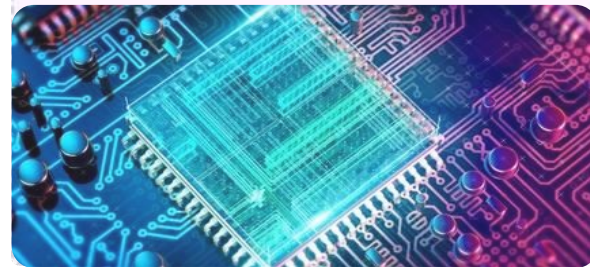
Connect

Telecom / Datacom
Satellite Communication
Optical Circuit Switching
Quantum Key Distribution (QKD)
...



Compute

Quantum Computing
Neuromorphic Computing
Optical I/O and interposers (AI)
...



LIGENTEC's High-performance PIC Platforms

LIGENTEC: European PIC manufacturing



Ghent, Belgium



Europe based



LIGENTEC HQ, Lausanne, Switzerland



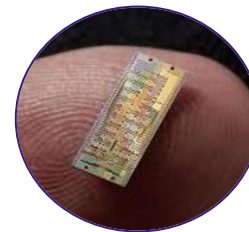
Corbeil, France



Team of 80+ photonic enthusiasts

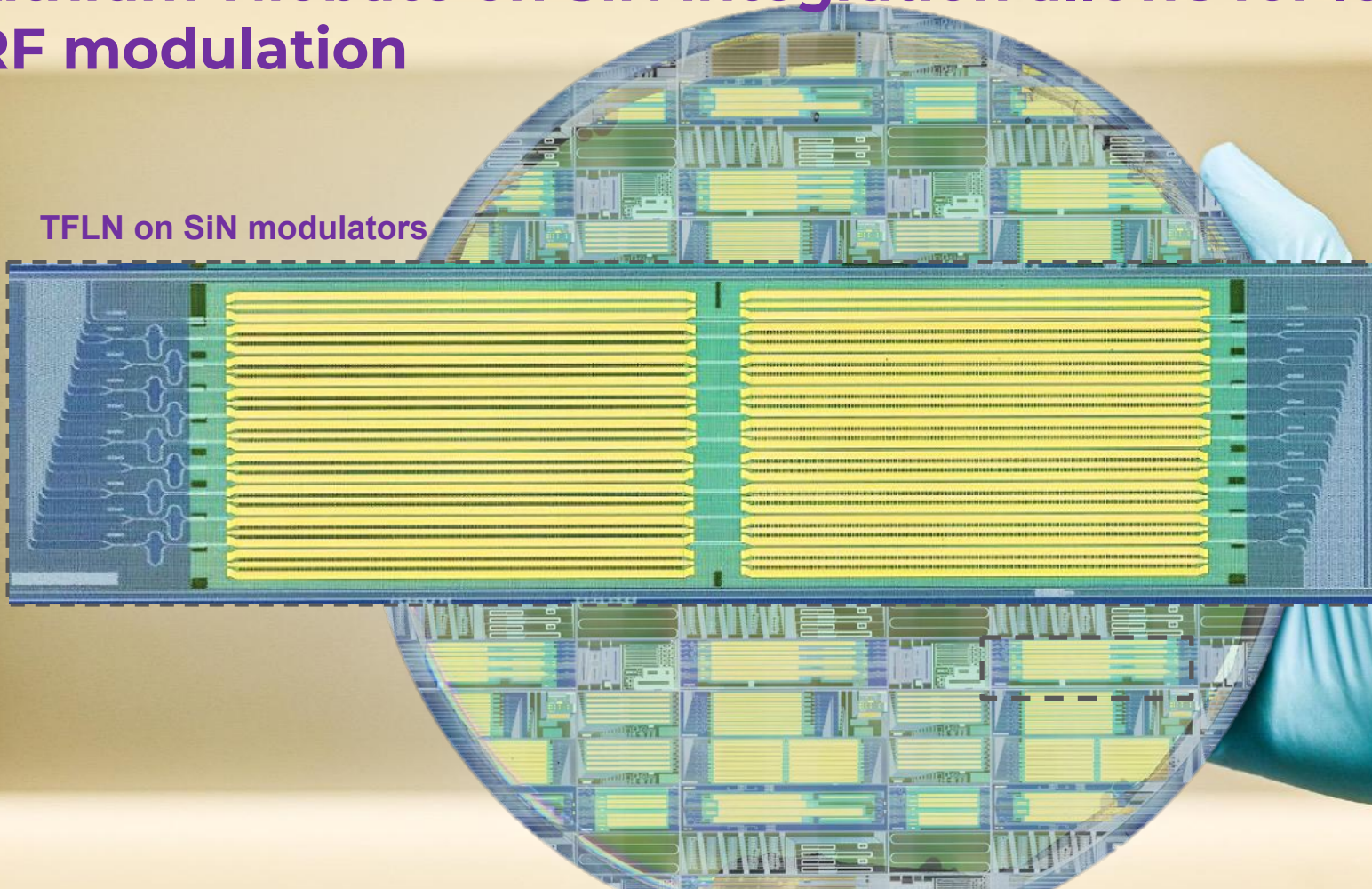
Best-in-class integrated photonic circuits

- Low Loss SiN
(down to < 0.2 dB/m)
- 3+ technology platforms
(AN800, AN350, AN150, custom)
- Integration with actives
- Extensive PDK

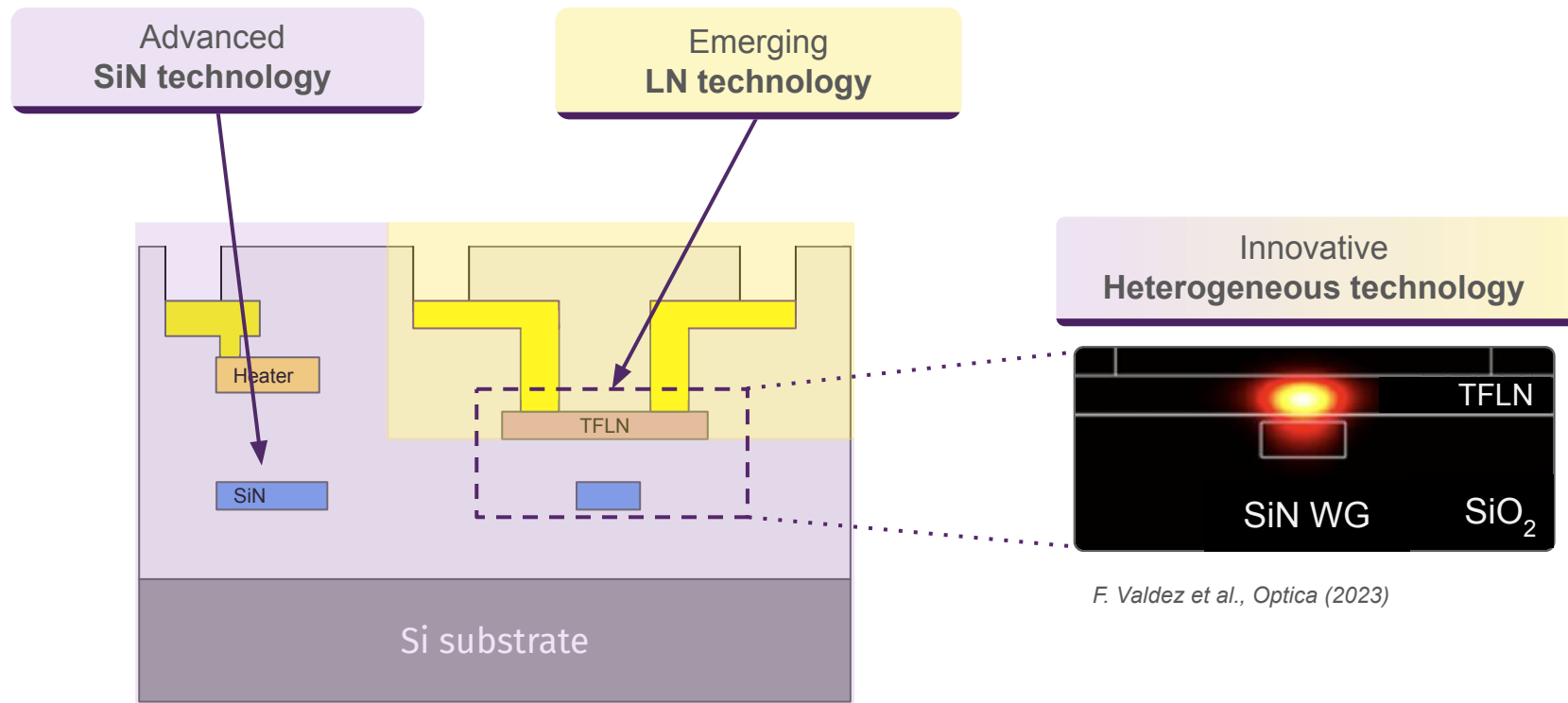


Lithium-Niobate on SiN integration allows for low-loss RF modulation

TFLN on SiN modulators

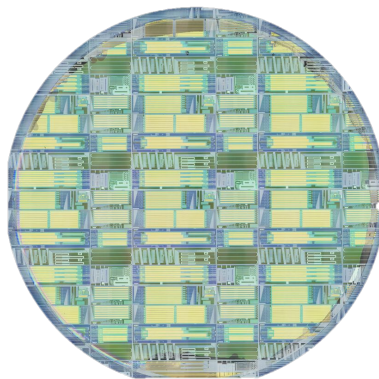
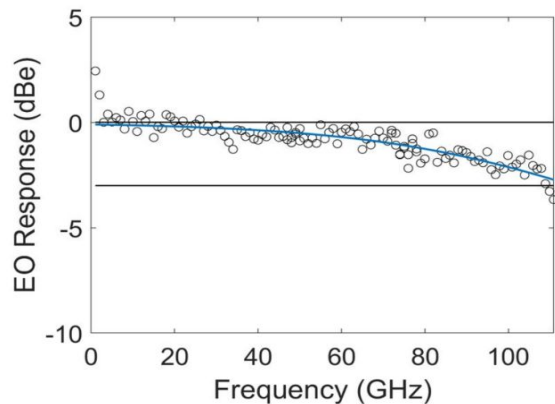
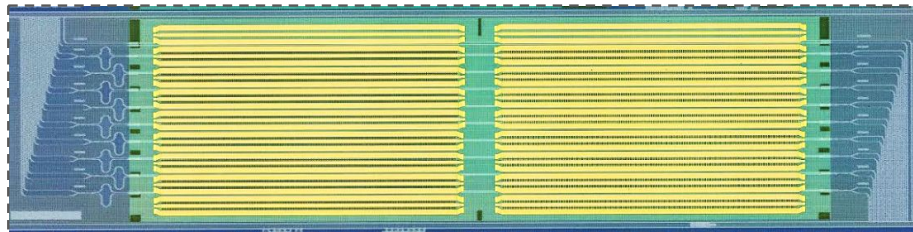


Heterogeneous integration of EO material on mature SiN platform



F. Valdez et al., Optica (2023)

Low loss & high speed modulator



TFLN on SiN

- Only essential components in TFLN, all others remain in SiN
- All standard building blocks available

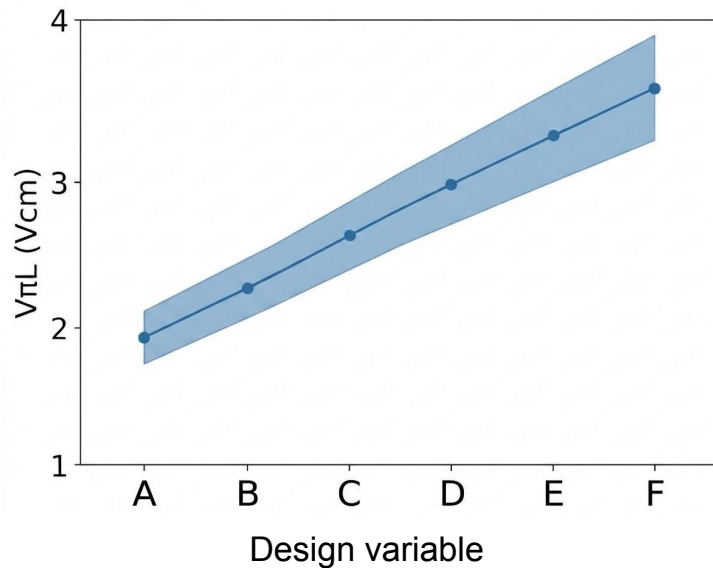
Modulator specifications

- Bandwidth: 110 GHz
- $V_{\pi}L$: 2 V.cm
- > 35 dB extinction ratio

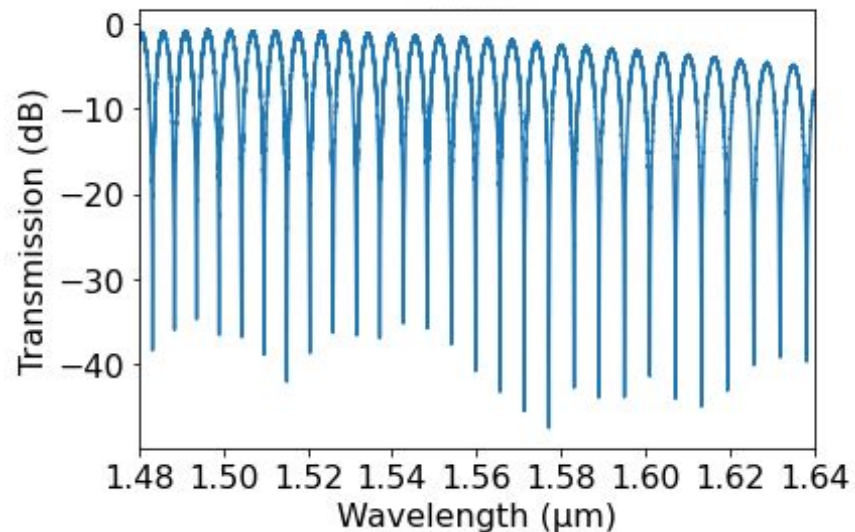
Hybrid mode approach

- Low propagation loss: 5 dB/m
- Simplified fabrication
- Escalator loss: < 20 mdB
- Fibre to fibre loss: < 2.5 dB

LNA-1.6 - latest results

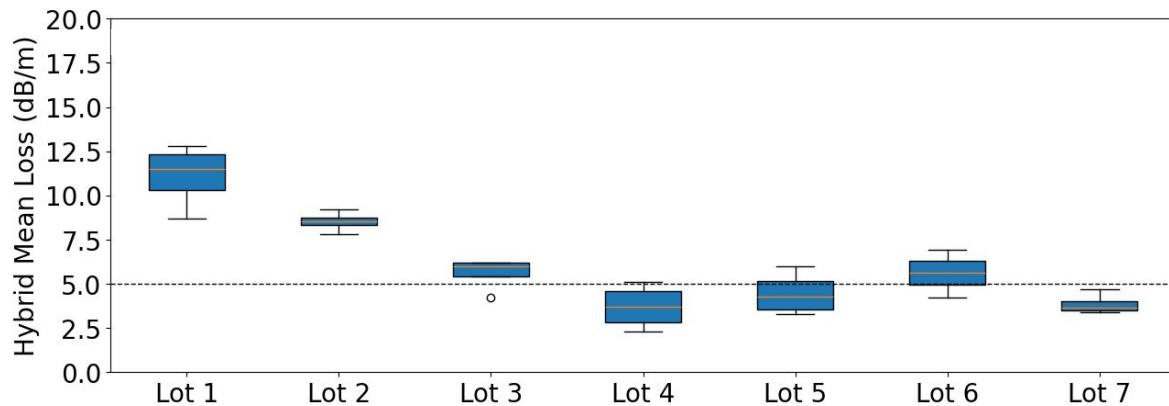


Modulator efficiency 2 V.cm

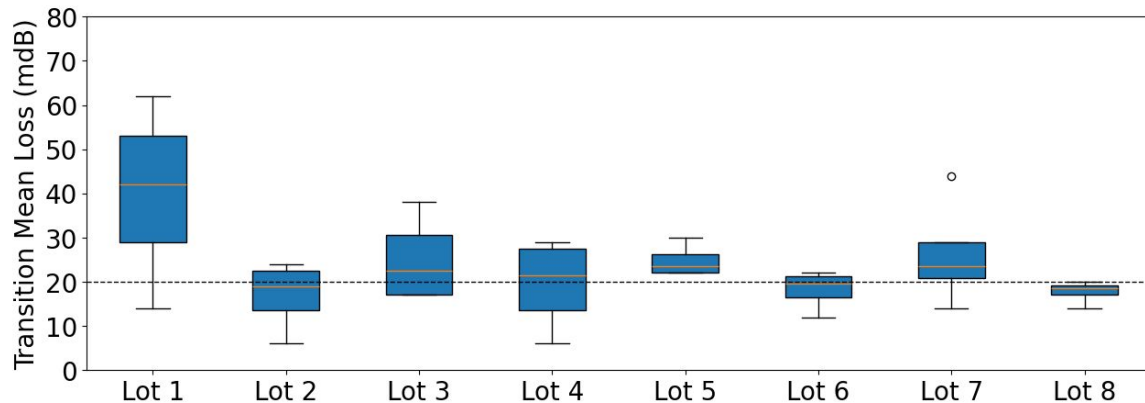


MZI extinction ratio > 35 dB

LNA-1.6 - latest results



Optical loss in modulator:
5 dB/m



Optical transition loss to
modulator:
20 mdB