As an old but still gold-standard member of the compound semiconductor family, InP possesses the key advantages of emission and detection capabilities over 1000 nm in the photonics domain, as well as high speed and low noise performance in high-frequency RF applications. Though it is often overshadowed by rivals like GaAs and SiGe for mass-volume, cost-driven RF applications, InP remains a top choice for performance-driven niche markets like military communication, radar, and radiometry, as well as automatic test equipment. Moreover, different industrial actors (i.e., Skyworks, GCS, and IntelliEPI) are monitoring InP technology for the upcoming 5G move.

Currently, the real boost for the InP wafer market is expected in photonic applications. In optical communication, InP offers high performance in many functions including emission, photo detection, modulation, and mixing, but it is often challenged by other semiconductor platforms because of its high cost. Nevertheless, InP is an indispensable building block for laser diodes in transceivers used for telecom and datacom applications. Specific to the cyclic telecom market, which has recently slowed down, massive investment plans from different operators (i.e., China Telecom) are expected with the imminent 5G network. In fact, the InP wafer market for telecom is projected to reach around $53M by 2024. Also, significant investment in the datacom market is expected from different players, led by internet giants Google, Amazon, Alibaba, and more.

With the requirement of more data transfer at higher speeds, transceiver technology is migrating to technology offering better rates (100GbE and 400GbE), for which InP is more favorable. The wafer market for datacom is expected to explode, with an impressive CAGR of 28%. Last but not least, exciting LiDAR applications could be promising for InP, i.e., enabling eye safety at higher wavelength, which is currently in an early R&D phase.

This report provides an overview of the InP wafer and epiwafer markets’ size and market forecast for two large applicative markets: RF and photonics. Yole Développement (Yole) addresses the 5G network’s impact on the InP RF and photonic wafer markets. Moreover, this report outlines Yole’s understanding of current market dynamics and future evolution, with a technical description of InP wafer and epiwafer growth, and the main challenges.
InP market supply chain overview

InP market overview

Electric Industries (SEI) and AXT Inc. JX Nippon Group occupies third place in terms of wafer sales. Other players are either in pilot-line production and only delivering small wafer volumes, or still in the R&D stages.

This report furnishes an overview of the InP industry playing field, covering wafer, epiwafer, foundry, and IDM players. Also outlined is Yole’s understanding of the market’s current dynamics and future evolution, covering technical and economic aspects.

Photonic IC (PIC) is not a new concept. It was first introduced in 1969, and since then different PIC platforms like InP, silicon photonics, and polymer have been studied and developed. InP-based PIC is widely studied, since it allows emission at wavelengths > 1000 nm, corresponding to several windows of optical fibers and also being necessary for some other applications. During our discussions with industry players about
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