

Enabling III-V and CMOS Synergy: Advances in Contact Technology

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III-V semiconductors have become central to the advancement of microelectronics, offering a unique combination of electronic and optical properties that enable a wide range of applications. In both microelectronics and optoelectronics, contacts play a critical role in III-V semiconductor devices, acting as the primary electrical interface between the device and external circuitry.

Traditionally based on noble metals, gold-free metallization schemes, which are critical for CMOS compatibility, have shown considerable promise, with materials such as titanium and nickel being explored for their potential to form ohmic contacts without introducing gold-related contamination risks into CMOS fabrication lines [1-7].

In this paper, we will review the last 10 years of efforts to develop Si CMOS compatible contact technology on III-V materials at CEA-Leti. After a brief overview of our group's contributions, we will focus on 2 examples of recent studies in 300 mm [8,9].

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