



A Hybrid Silicon Laser-Quantum Well Intermixing Wafer Bonded Integration Platform

Tech ID: 27644 / UC Case 2007-591-0

BRIEF DESCRIPTION

An approach for integrating InP-based photonic devices together with low loss silicon photonics and complementary metal-oxide-semiconductor (CMOS) electronics.

BACKGROUND

The integration of grating sections, optical gain regions, amplifiers, and photodetectors with electroabsorption gives rise to a variety of photonic integrated circuits such as tunable lasers, wavelength converters, pre-amplified photodetectors, and more. However, previous attempts at combining external modulation with silicon photonics have required time-consuming processes and/or multiple growth steps that result in higher product costs and poor device yield.

DESCRIPTION

Researchers at the University of California, Santa Barbara have developed an approach for integrating InP-based photonic devices together with low loss silicon photonics and complementary metal-oxide-semiconductor (CMOS) electronics. This method requires only standard lithography techniques and requires no discrete laser placement or metal-organic chemical vapor deposition (MOCVD), allowing for quicker fabrication with higher device yield.

ADVANTAGES

- ▶ Enables a wide range of InP-based functionalities to be performed on silicon on insulator (SOI)-based platforms
- ▶ Requires no discrete laser placement or MOCVD growth
- ▶ Quicker device fabrication
- ▶ Higher device yield

APPLICATIONS

- ▶ Modulators
- ▶ Tunable lasers
- ▶ Amplifiers
- ▶ Photodetectors

PATENT STATUS

| Country | Type | Number | Dated | Case |
|---------|------|--------|-------|------|
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OTHER INFORMATION

KEYWORDS

InP, Hybrid Silicon Laser-Quantum Well Intermixing, SL-QWI, Photonics, Electroabsorption modulators, Wafer-bonded integration platforms, Lasers, Photodetectors, Amplifiers, CMOS, indmicroelec

CATEGORIZED AS

- ▶ **Optics and Photonics**
 - ▶ All Optics and Photonics
- ▶ **Communications**
 - ▶ Other
- ▶ **Nanotechnology**
 - ▶ Electronics
- ▶ **Semiconductors**
 - ▶ Design and Fabrication
- ▶ **Sensors & Instrumentation**

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2007-591-0

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