

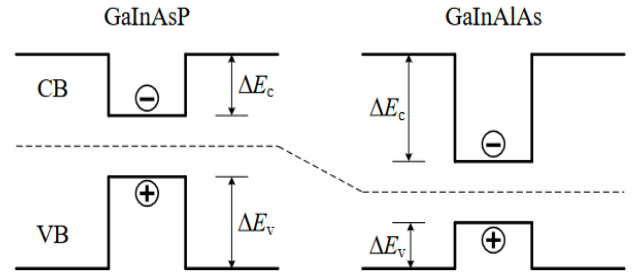
The III-V Lab O-band SIBH-OPIC-1.0 InP Photonic Integrated Circuit technology is now available as a flexible Multi-Project-Wafers offer.

► **SIBH-OPIC-1.0 is a High-Performance O-Band Technology suitable for demanding Photonics Applications in terms of:**

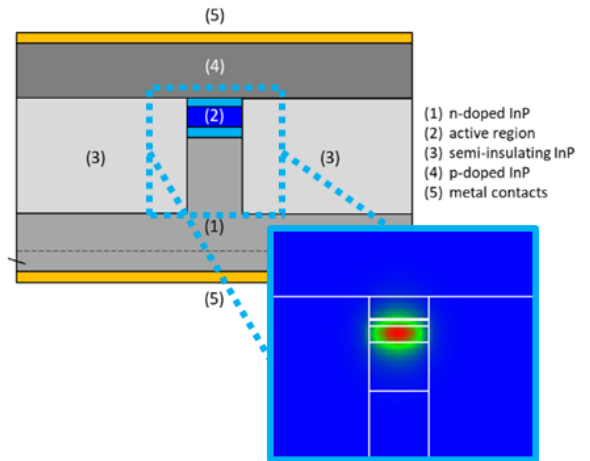
- Thermal Efficiency
- Optical Power
- Active and Passive Building Blocks Integration

► **Strong competitive advantage thanks to Semi Insulating Buried Heterostructure (SIBH) associated to Aluminium Quantum Wells:**




- High energy efficiency for lasers and gain sections
- Fully compatible with very high-speed modulators
- Compatible with spot size converters
- Good thermal dissipation
- Suitable for high temperature operation



Aluminum Quantum Wells








SIBH

BB	Parameters	Performance Indicators
 DFB	Length	<ul style="list-style-type: none"> • Threshold Current @ 45°C: <10mA
	Phase shift	<ul style="list-style-type: none"> • Slope Efficiency @ 45°C: 0.15W/A
	Emission wavelength	<ul style="list-style-type: none"> • Emission Wavelength Range: 1310nm-1350nm • SMSR: >45dB
 EAM	Length	<ul style="list-style-type: none"> • SER @ -2V: 9dB • E/O BW: >30GHz
 SOA	Length	<ul style="list-style-type: none"> • Gain: 47.8cm⁻¹ @ 4.17kA/cm² Current Density and -25dBm Pin

DFB : Distributed Feedback Laser

EAM : Electro Absorption Modulator

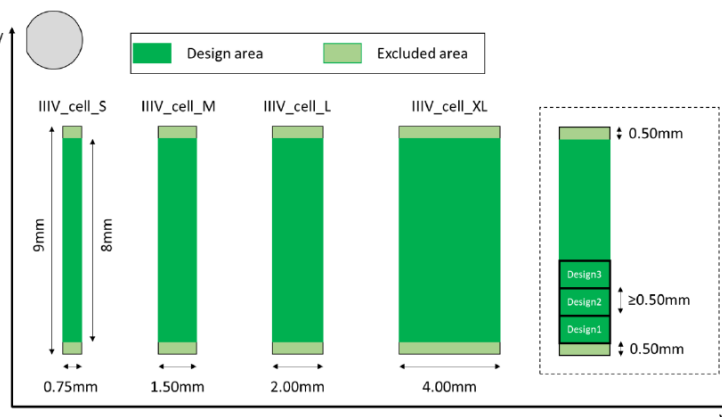
BB	Parameters	Performance Indicators
 WG	Optical path length	<ul style="list-style-type: none"> • Loss: <3dB/cm
	Bending radius	
	Bending type	
 2x1 MMI	Length: 301μm	<ul style="list-style-type: none"> • Excess loss: <1dB
	Width: 15μm	
 2x2 MMI	Length: 915μm	<ul style="list-style-type: none"> • Excess loss: <1dB
	Width: 23μm	
 DBR	Length	<ul style="list-style-type: none"> • Reflectivity up to 95%
	Wavelength	<ul style="list-style-type: none"> • Thermal tuning range: <= 5nm
	Sampling	
 SSC	Maximum output mode diameter	<ul style="list-style-type: none"> • Mode diameter : H: 3μm x V: 3μm

SOA : Semiconductor Optical Amplifier

WG : Waveguide

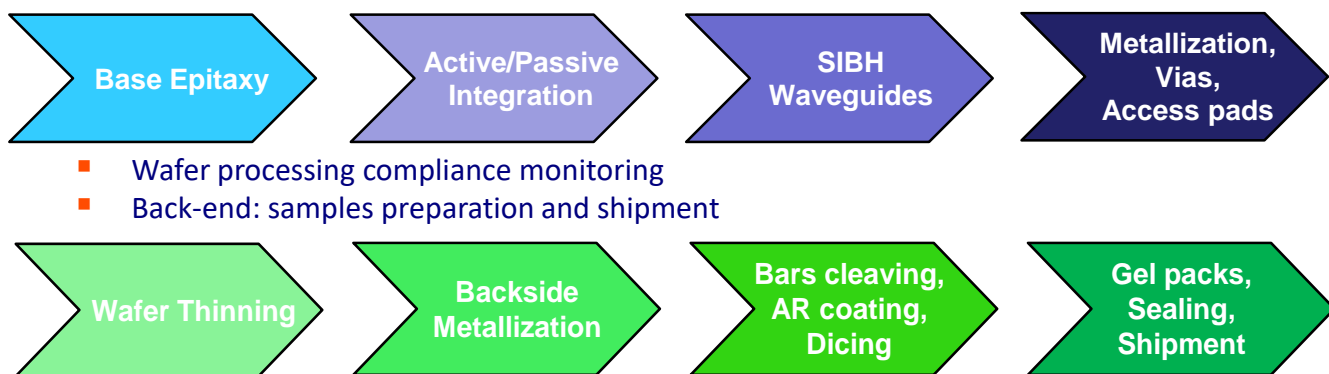
You can easily design your own high performance functions by using a comprehensive Process Design Kit compatible with the main photonic design and simulation tools available on the market. The main available building blocks are illustrated above. More are available in our Design Manual available on demand at foudry@3-5lab.fr.

- ▶ The design cell area can be selected to perfectly match with your project from 0.75x8.00 mm² to 4.00x8.00 mm².
- ▶ Several cells can be ordered depending on the required amount of different PIC designs.



▶ A full turn-key MPW offer from Process Design Kit to diced PICs:

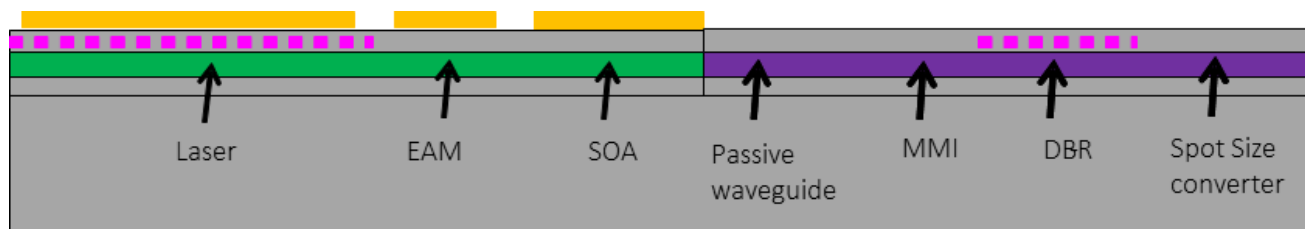
- 2 Multi-Project-Wafer runs per year / Dedicated runs on demand
- Process Design Kit and PIC design support
- Front-end: wafer manufacturing



- ▶ At least one MPW run every 6 months taking advantage of the latest building blocks of the yearly PDK release. 1st MPW scheduled for second half 2024.

▶ Future PDK releases will include:

- Selective area growth for active/active integration
- Semi-Insulating substrates for increased modulation speed
- Deep waveguides for better optical confinement and smaller waveguide bending radius
- Electro-optical phase modulators for increased modulation speed
- Photodiodes with telecom-grade bandwidth and responsivity



Cross-section view of a PIC

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(*) Joint lab between Nokia, Thales and CEA

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Early announcement,

1st MPW scheduled for second half 2024

III-V Lab is certified ISO9001-2015