

Specifications

Dimensions: Available in 2 inch wafers

Materials: InP-based heterostructures (e.g., $\text{In}_x\text{Ga}_{1-x}\text{As}$ and $\text{In}_x\text{Al}_{1-x}\text{As}$)

Epitaxial Structure: Repeated active-injector stages, lattice-matched or strain-compensated to InP

Wavelength Range: 4 to 12 μm (customizable upon request)

Uniformity: $< \pm 5\%$ across 2-inch wafer

Growth Method: MOCVD (Metal-Organic Chemical Vapor Deposition)

Applications: Industrial, medical, military, and research sectors

Features and Performance

Thickness Accuracy: $< 5\%$ error, validated by XRD and TEM

Interface Quality: Superlattice structures with RMS roughness $< 0.5 \text{ nm}$

Strain-Balanced Design: In composition in $\text{In}_x\text{Ga}_{1-x}\text{As}/\text{In}_x\text{Al}_{1-x}\text{As}$ adjustable from 30–70% to meet customer requirements

Wavelength Control: Emission range tunable from 4 to 13 μm ; Room temperature pulsed-wave operation with ridge waveguide structure is guaranteed.

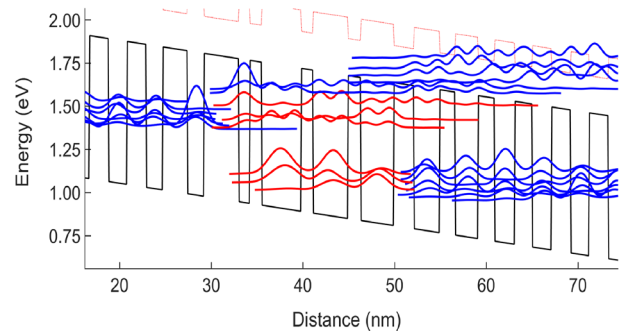
Customizability: All designs can be tailored based on specific application needs

Manufacturing and Quality

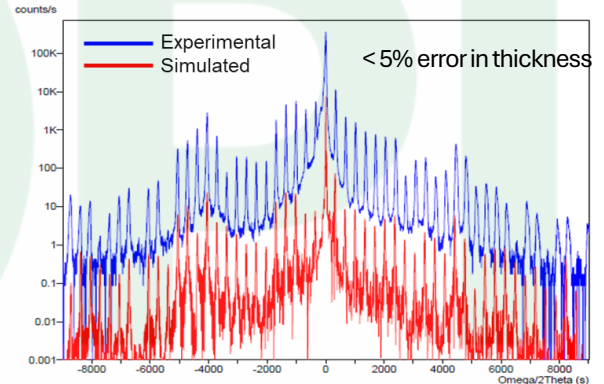
Reliable Production: EPI Solution™ provides high-performance QCL wafers with consistent quality. Our precise process control ensures reproducibility, high yields, and rapid feedback, supporting a stable supply chain and dependable quality—crucial for device development and scaling.

Manufacturing Excellence: Our QCL wafers are grown via advanced MOCVD systems optimized for material quality. Proprietary growth methods and strict monitoring enable superior uniformity, low defect density, and clean interfaces—supporting next-gen applications in sensing, spectroscopy, defense, and healthcare.

Simulation of QCL band diagram



Simulation and Experimental XRD results of the 30 stage QCLs



TEM characterization of the QCLs

