

# Advanced Compound Semiconductor EPITAXIAL MOCVD Wafers III-V



GaAs • InP • Epitaxy

## Custom Epitaxial Materials for the Commercial Markets

### Materials Growth

Masimo Semiconductor offers a large library of epitaxial growth experience on high Production Veeco (E-300/E-450) MOCVD reactors. The reactors are outfitted to grow InP and GaAs substrate based material systems and growth can be performed on 2", 3", 4", or 6" substrates. Masimo Semiconductor has developed significant know-how growing materials with challenging specifications such as high-strain materials, bi-facial growth and ultra-low particle count.



### Material Characterization

All material characterization is performed in a class 1000 clean-room, located adjacent to the MOCVD laboratory. A pass-through allows wafer transfer from MOCVD to characterization.

- > Photoluminescence
- > X-Ray Diffraction
- > Dopant Measurements (Polaron / Hall)
- > Particle Count (Surfscan)
- > Optical Microscope (Nomarski)



### MOCVD

- > InP
- > InGaAs
- > InAlAs
- > InAsP
- > InGaAlAs
- > InGaAsP
- > GaAs
- > AlGaAs
- > InGaAlAs
- > GaAsP
- > AlGaP
- > InGaP
- > InAlP
- > InAlGaP

### Typical Devices

#### Lasers

- > VCSEL's
- > Visible & IR (EE) Laser Diodes
- > DH, QW, DFB Lasers
- > Quantum Cascade Lasers (QCL)

#### LEDs

- > Vis & IR LED
- > Resonant Cavity (RCLED)
- > Superluminescent (SLED)
- > Micro-LED's

#### Photodetectors

- > InGaAs PiN
- > Photocathodes
- > APD's
- > QWIP
- > High-Speed Detectors / Modulators

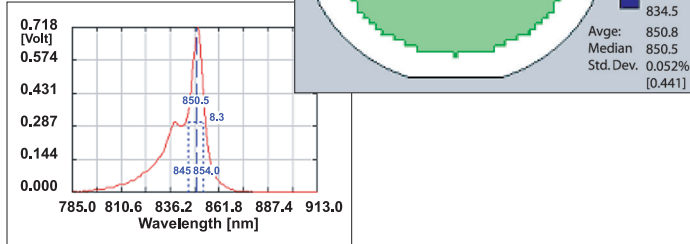
#### Photovoltaics

- > Thermophotovoltaics (low band gap solar cells including SJ and lateral MJ designs)
- > Laser Power Converters (single and multi junction)
- > Single Junction III-V Solar Cells (except GaN)

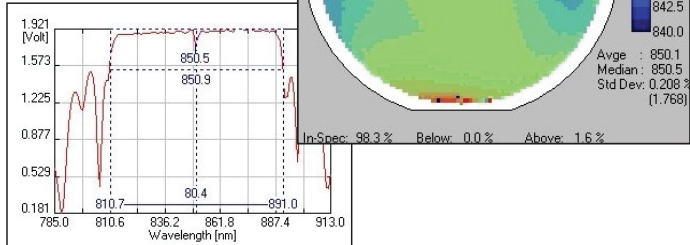
### Typical Applications

- > Sensors
- > Infra-Red Cameras
- > Wireless Communications
- > Wireless Power Conversion
- > Thermal Power Conversion
- > Instrumentation
- > GPS
- > Automotive
- > Medical Systems
- > LIDAR
- > Solid State Lasers
- > Data Centers
- > Fiber Amplifiers
- > Microwave TxRx Subsystems
- > Displays
- > High Speed Printing
- > Fuel Sensing

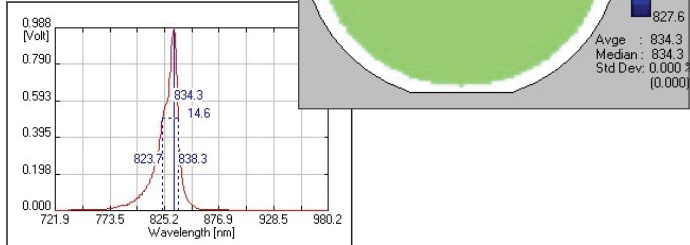
**PL 25x MQW  
GaInP VCSEL**



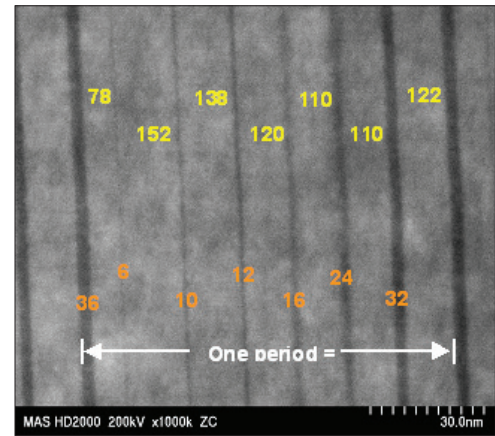
**FP-DIP  
850nm VCSEL**



**PL map for  
850nm VCSEL**



Our extensive MOCVD experience and capabilities enable us to grow a wide range of GaAs and InP epitaxial structures. We recognize that time-to-market is critical to our customers' success, so we strive to provide the fastest turnaround times possible. Our epitaxy engineers work closely with customers to assure every wafer meets all expectations. Shown on this page are some examples of epitaxial materials.



**STEM of 120 Period THz Laser Structure  
(Units in Angstroms)**

COMMITTED TO THE TOTAL SATISFACTION OF OUR CUSTOMERS

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25 Sagamore Park Road • Hudson, NH 03051 • Tel 603.595.8900 • Fax 603.595.0975

MasimoSemiSales@masimo.com • www.masimosemiconductor.com

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