

MOLECULAR BEAM EPITAXY

What We Offer

Design &
Simulation



Prototyping &
Fabrication



Testing &
Characterization



Epitaxial growth is a semiconductor fabrication technique used to grow highly ordered crystalline layers on a substrate with precise control over thickness, composition, and material quality. These properties are critical for the performance of microelectronic, power, and optoelectronic devices.

Among the main methods, liquid-phase, vapour-phase, and molecular beam epitaxy (MBE), MBE is particularly important for research and advanced device development. It enables atomic-level control of growth under ultra-high vacuum, making it ideal for complex heterostructures and quantum-scale architectures that drive innovation in next-generation semiconductor devices.

Key applications

- Development of III-V semiconductor devices
- Fabrication of optoelectronic components such as laser diodes, LEDs, and infrared photodetectors
- Growth of quantum-scale structures, including quantum wells, superlattices, and heterostructures with atomic precision
- Research and prototyping of advanced electronic materials with precise doping control (n-type and p-type layers) for next-generation devices

Epitaxial Growth

Compact MBE System SVT-V-2

- Source materials:
Group III: In, Ga, Al
Group V: As, Bi
- Dopants: Si (n-type), Be (p-type)
- Substrate temperature: up to 1000 °C
- Thickness uniformity: <2% over 2" wafer
- Vacuum levels:
Growth chamber: $\sim 5 \times 10^{-9}$ Torr
Load lock: $\sim 5 \times 10^{-8}$ Torr
- Substrate size: 2" or $\frac{1}{4}$ of 2" wafer

Cleanroom class: ISO7

Contact person:

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MBE System Veeco GENxplor R&D

- Source materials:

Group III: In, Ga, Al

Group V: As, Sb, Bi

- Dopants: Si, Te (n-type), Be (p-type)

- Substrate temperature: up to 1850 °C

- Thickness uniformity: <1.5%

- Vacuum levels:

Growth chamber: $\sim 5 \times 10^{-9}$ Torr

Load lock: $\sim 5 \times 10^{-8}$ Torr

- Substrate size: 2", ¼ 2", 3" or ¼ 3 wafer

Cleanroom class: ISO7

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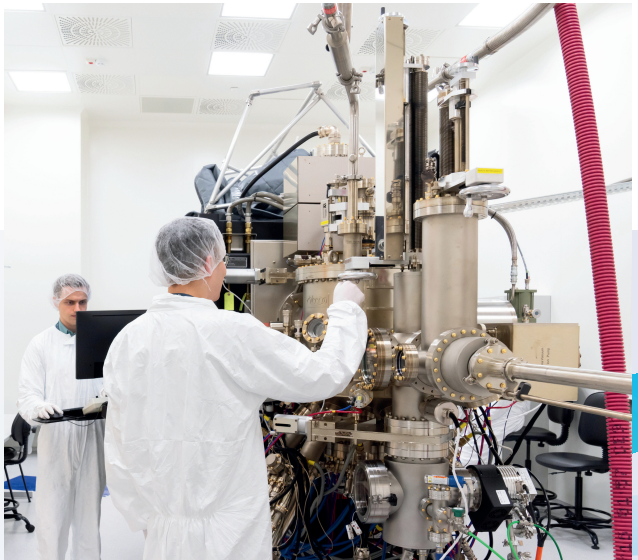
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Features:

- Valved cracker sources for As₂ and Sb flux
- Fast-acting shutters and master wafer shutter
- Load lock equipped with turbo molecular pump
- Automation of growth processes using RoboMBE

Capabilities:

- Epitaxial growth of quantum well structures for laser and detector applications
- Precise control of layer thickness and composition
- Deposition of high-quality III-V semiconductor heterostructures including: InGaAs/GaAs, GaAsBi/AlGaAs, InAs/AlAsSb, and InGaAs/AlAsSb
- Suitable for R&D and small-scale manufacturing applications



If you have any questions, please contact us by email:
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