

EPITAXY ON DEMAND

The Fraunhofer Institute for Applied Solid State Physics IAF is one of a small number of world-leading research institutes with expertise encompassing the entire value chain in the field of III-V compound semiconductors and synthetic diamond. Based on these semiconductors, IAF develops electronic and optoelectronic devices as well as integrated circuits and systems.

In a clean room of 1000 m² and additional laboratory space covering 3000 m², epitaxy and processing equipment along with measurement technologies are available to realize high frequency circuits for communication technology, voltage converter modules for electrical engineering, infrared and UV detectors for safety and security applications, infrared laser systems for medical technology, and diamond devices for innovative applications in the field of quantum sensor systems.

CONTACT

**Fraunhofer Institute for
Applied Solid State Physics IAF**

Tullastrasse 72
79108 Freiburg
Germany

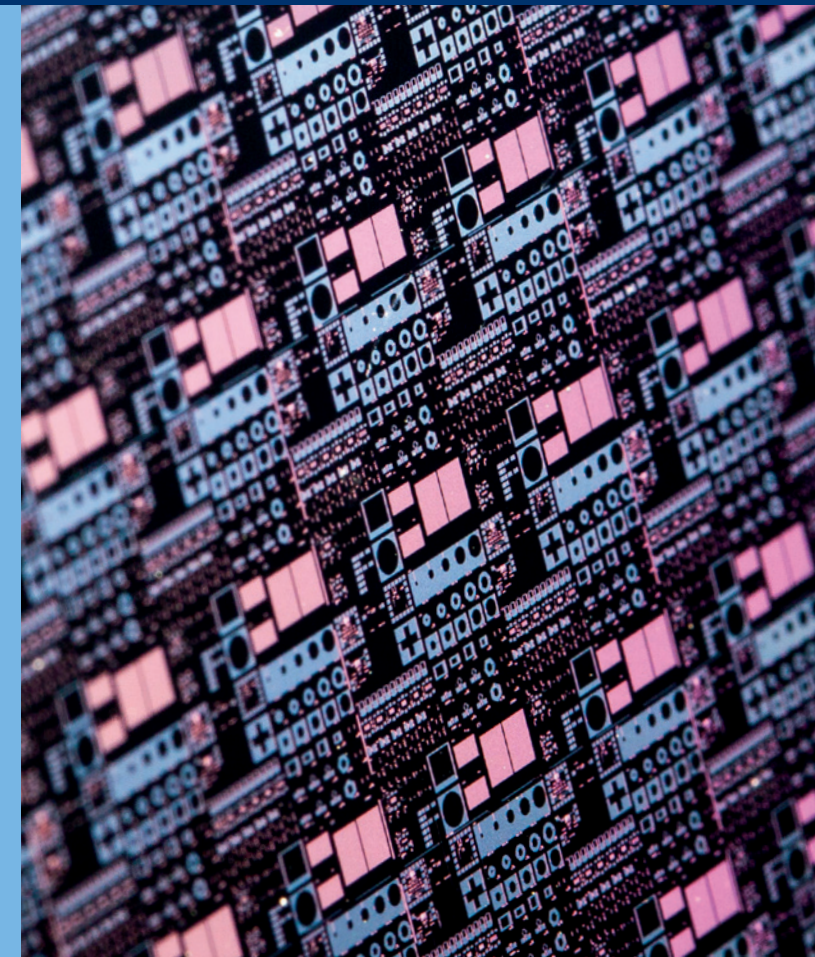
Phone +49 761 5159-0
info@iaf.fraunhofer.de
www.iaf.fraunhofer.de

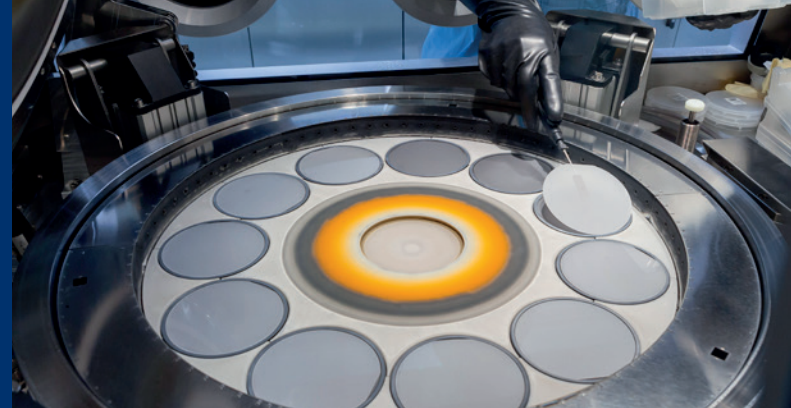
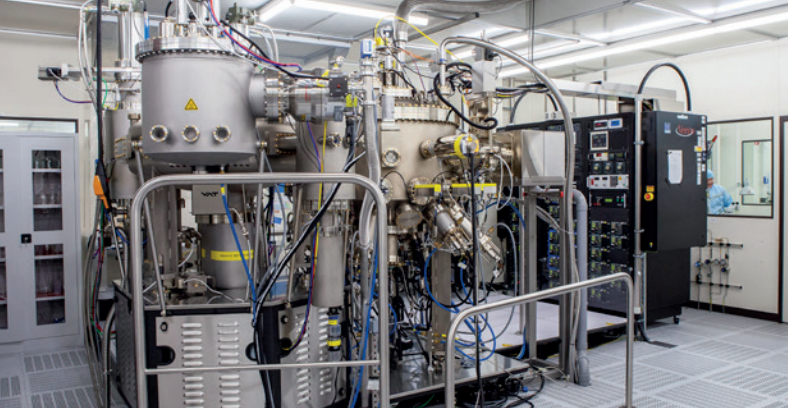
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Dr. Rolf Aidam
Epitaxy Expert

Phone +49 761 5159-487
rolf.aidam@iaf.fraunhofer.de





EPITAXY ON DEMAND

We offer specially tailored solutions in the field of III-V semiconductor epitaxy. Thanks to state-of-the-art equipment, we are able to realize pilot series production of devices for power and high frequency electronics as well as for semiconductor lasers. In this way, we create the transfer from research to industry.

In the field of wafer epitaxy you can commission the following services from us:

- Epitaxy of customer-specific layer structures
- Epitaxy development and small series production
- Scientific advice
- Extensive characterization of the grown layer structures

Our epitaxy is characterized by outstanding quality and reproducibility. We are looking forward to hearing from you and will be happy to advise you.

In the following areas, we already offer products that have been developed using our epitaxial technology:

Area	Products
Laser structures (emission wavelength 750 nm to 12 μm)	<ul style="list-style-type: none"> ▪ Diode lasers (GaAs 750–1080 nm, InP 1300–1700 nm and GaSb 1800–2400 nm) ▪ Quantum Cascade lasers ▪ VCSEL ▪ VECSEL
LEDs	<ul style="list-style-type: none"> ▪ IR-LED ▪ UV-LED
Detectors	<ul style="list-style-type: none"> ▪ Shortwave IR: InGaAs and extended InGaAs ▪ Mid- and longwave IR: Type-II-SL, QWIP ▪ UV Detectors
SESAM	
Electronics	<ul style="list-style-type: none"> ▪ III-V based pHEMT, mHEMT ▪ AlGaN HEMT on SiC and Si 8" wafers ▪ HBT
GaN-based templates	

...others on request

EPITAXY EQUIPMENT

Singlewafer MBE development tools

- Multiwafer MBE production tools for III-As/P and III-As/Sb
 - Capacity: 7 x 2", 5 x 3", 4 x 4", 1 x 6"
- Multiwafer MOVPE tool for III-As/P
 - Capacity: 6 x 2", 3 x 3", 1 x 4"
- Multiwafer MOVPE tool for III-N
 - Capacity: 11 x 4", 3 x 8", 12 x 3"

CHARACTERIZATION

- Photoluminescence
- High-resolution X-ray (HRXRD)
- Secondary-ion mass spectrometry (SIMS)
- Atomic force microscopy (AFM)
- Sheet resistance mapping
- Optical surface detection mapping
- Bow and warp measurement
- Hall and CV measurement
- Reflectivity, transmission and absorption measurement
- REM, FIB, EDX
- Fabrication of test devices and full electro-optical characterization