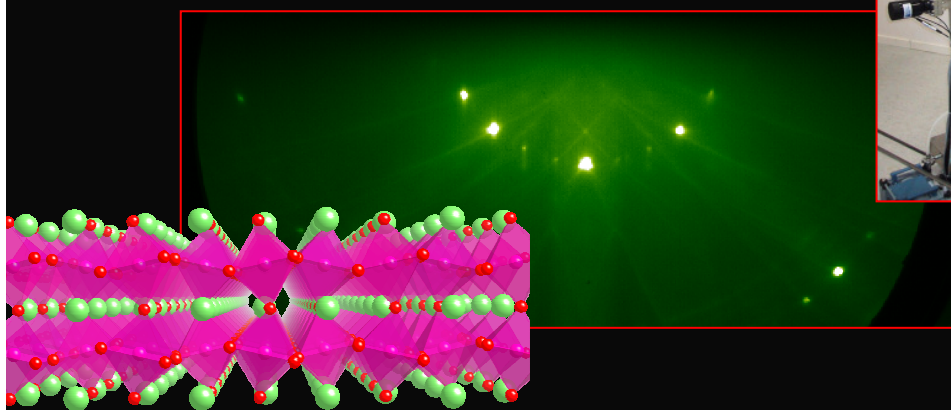
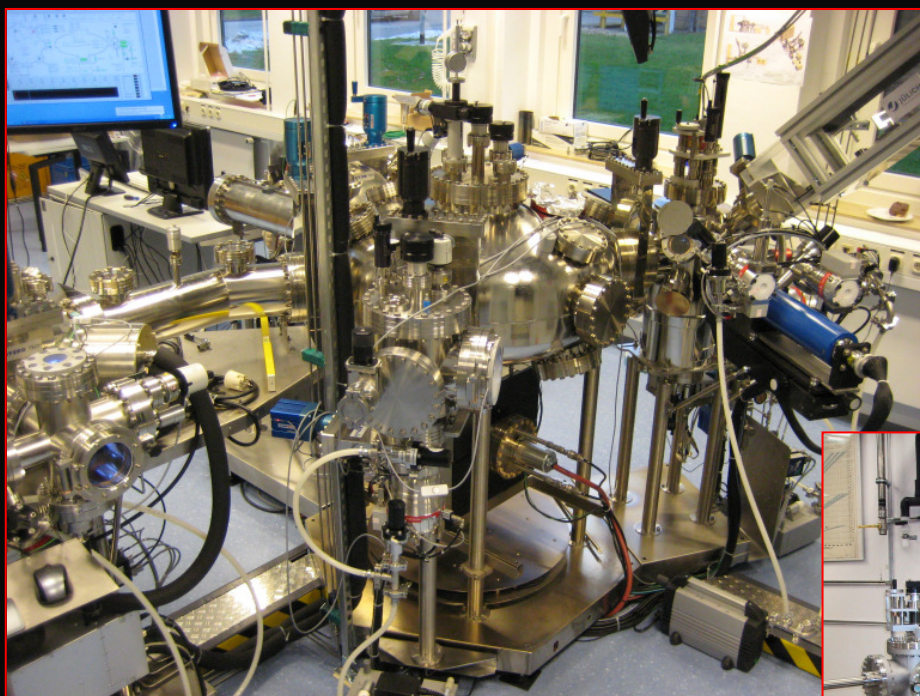


modular flexible upgradeable



- The Laser MBE solution that grows: Start with a PLD chamber and a load lock, add more modules later!
- UHV PLD deposition chamber, UHV transfer of substrates and targets via load-lock
- Modular concept: Easy upgrade to central transfer module and additional modules
- Advanced process automation, perfect also for superlattice deposition
- Oxygen resistant substrate heater with advanced temperature measurement, 1000°C
- Laser heating of substrate optionally available
- Flexible advanced target manipulator with cross-contamination shielding and target carousel transfer
- Vacuum chamber prepared for system upgrades (RHEED, plasma sources, OES/FTIR,...)
- SURFACE Fluence Control option, for 100% reproducible results

# SURFACE

# Laser - MBE cluster

## The SURFACE Laser MBE Chamber

The **SURFACE PLD/Laser MBE** chamber is designed for research and provides all the features needed for advanced **Laser MBE**:

- UHV transfer of substrates and PLD targets
- Cool wall design prevents outgassing from chamber walls over deposition time
- Ports for in-situ analysis: RHEED, OES or FTIR, mass spectroscopy
- Ports for additional deposition or plasma sources
- Advanced SURFACE substrate heater or laser heater
- Target manipulator holding a carousel with up to five 1" diameter PLD targets

In addition, two mass flow controller channels for process gas supply into the chamber are standard. They enable automated control of the process atmosphere and pressure. The design of the target manipulator in connection with the control software avoids cone formation on the target surface and guarantees even wear of the target.

The system can be equipped with the **SURFACE high-pressure RHEED** system.

## Laser Star – The UHV Laser MBE Cluster

The **Laser Star** system combines different coating and analytical technologies into one powerful system. It is easily upgraded with up to seven individual process chambers, enabling complex processing without exposing the sample to air! Key features of the **central transfer chamber with load lock** are:

- Up to seven additional ports (CF63/4½" or CF150/8")
- Low  $10^{-10}$  Torr range base pressure
- High pumping speed at low pressures by TSP/IGP combination pump
- Precise central heavy duty manipulator with 6" and 1 kg load capability
- Optional internal storage system for substrates and **Laser MBE** targets
- Camera system with overhead display for convenient monitoring of transfers

**Add on chambers:**

- **Laser MBE**, sputtering, e-beam evaporation, multiple evaporators
- Analysis tools: XPS/ESCA, UHV-AFM/STM, transfer tunnels to other systems
- Multi-chamber Laser-MBE/PLD system for small production applications

## SURFACE Substrate Heaters/Manipulators

Laser MBE of oxide based materials frequently operates under high oxygen process pressures. SURFACE substrate heaters are designed to handle these conditions:

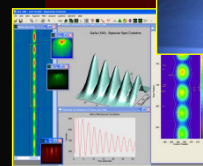
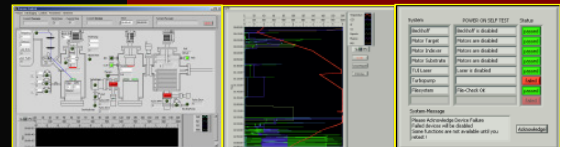
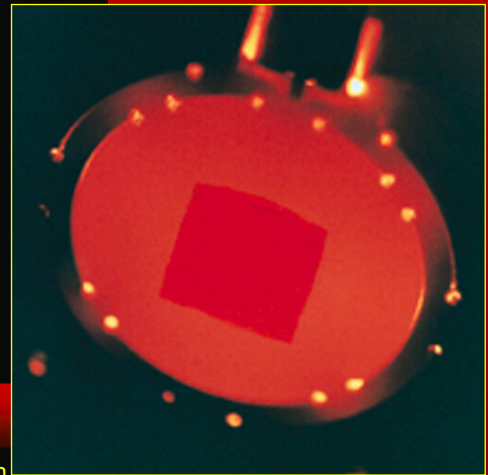
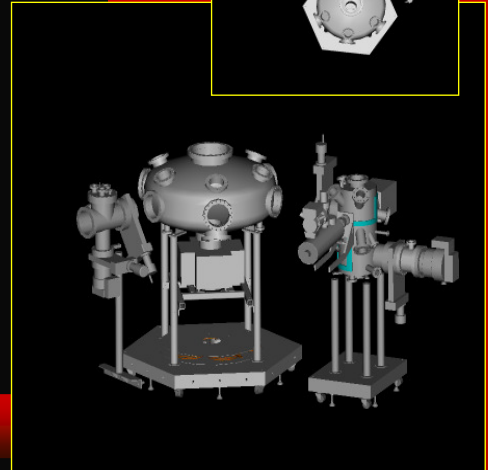
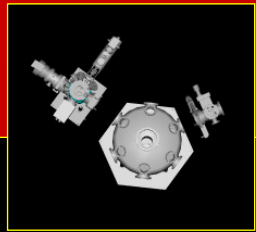
- high oxygen resistance
- lowest base pressure at high temperature
- max. 1000°C substrate temperature at 10 Torr  $O_2$
- excellent temperature homogeneity
- RHEED-optimized substrate manipulator with  $\pm 120^\circ$  rotation,  $\pm 3^\circ$  tilt, and 1" height adjustment for optimized substrate position relative to the e-beam
- substrate front shutter

Optionally, Laser Heaters are available for even higher temperatures, lower base pressures, and faster heating/cooling rates.

## PlumeMaster - The Powerful Automation Platform

All SURFACE PLD systems are highly automated to control the whole deposition process. This ensures easy operation of the system.

The software is based on the proven Windows **XP pro** operating system and implemented in LabView. Several process steps with individual set-tings can be combined into one deposition program. Intuitive process visualization, highly flexible data logging with data export, and self-test capability are additional features.



# SURFACE

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