



waferscale pulsed laser deposition.

THIN FILM GROWTH ON LARGER AREA

Thin film growth of highest quality oxides and nitrides

Demcon TSST waferscale Pulsed Laser Deposition systems are designed around similar principles as our PLD systems for small samples, allowing for easy transfer of growth parameter recipes. The system can be customized to include options such as RHEED, a moveable mask stage, or an extended lifetime laser entrance window, offering the perfect versatile waferscale PLD system to grow, investigate and develop thin films on wafers up to 100mm in diameter.

Experience

Closely collaborating with the University of Twente, Demcon TSST integrates fundamental knowledge on thin film growth

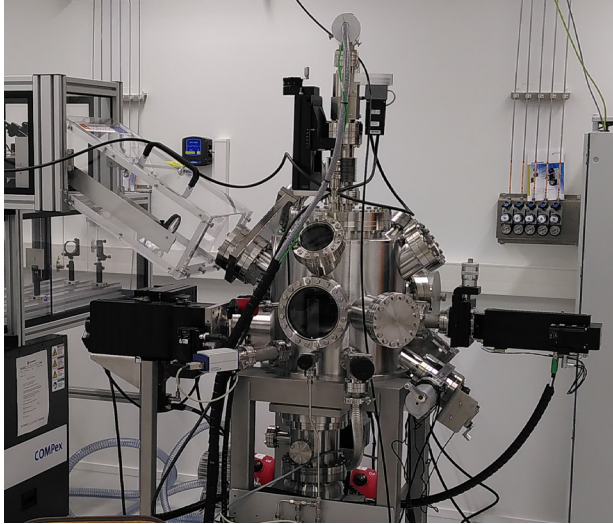
and parameter optimisation in its designs of the PLD systems. Therefore, the systems offer full flexibility in altering and investigating the essential parameters such as gas mixtures, process pressure, fluence target to substrate distance and substrate temperature with the highest possible accuracy

Service

Demcon TSST PLD systems are installed and acceptance tested on site by experienced Demcon TSST engineers. A full user training is part of the installation procedure, during which the thin film deposition process is demonstrated. Demcon TSST engineers are always available for support, while our software with extensive data logging supports quick and effective remote service.



TSST



TYPICAL SYSTEM SPECIFICATIONS

Vacuum chamber

- Pressure <math>< 10^{-8}</math> mbar
- Automated Upstream/downstream pressure control
- Gasses O₂, N₂, Ar, etc.

Heater stage

- Radiative heating
- Pyrometer controlled sample temperature up to 900C*
- Adjustable wafer rotation
- Shutter
- Inserts for various sample sizes

Target stage

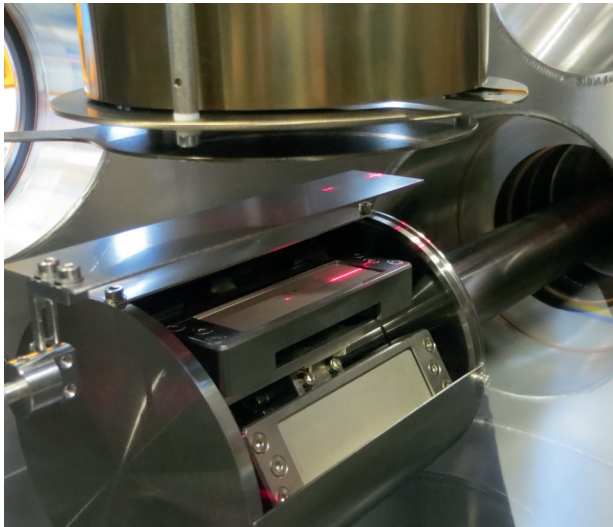
- Up to 6 targets of 3"x1"
- Unused targets are shielded
- Advanced target scanning
- Target clamping

Optics

- Wide range fluence control (ceramics to metal)
- Spot sizes 1-3 mm²
- Fully enclosed
- Beam scanning with constant lens target distance

Loadlock

- Pressure <math>< 10^{-5}</math> mbar
- Individual target and wafer transfer



Demcon TSST control software enables full manual to automated control, including growth recipes and parameter logging. Total system footprint similar to conventional PLD, flexible to fit specific lab layouts.

Options:

- RHEED compatible
- Moveable mask stage
- Software controlled combinatorial PLD
- Manual/automated valves and manipulators
- Extended lifetime laser entrance window
- manual/motorised beam attenuator
- Laser energy measurement window



Many other custom solutions are possible. Please contact us for further information.

* Measured on metal base plate