

# Pulsed Laser Deposition

## FOR THIN FILM GROWTH

### THIN FILM GROWTH OF HIGHEST QUALITY OXIDES AND NITRIDES

TSST Pulsed Laser Deposition systems for thin film growth are state-of-the-art, highly flexible PLD systems for thin film research, ideally suited and field proven for research on a large variety of materials including complex oxides.

### EXPERIENCE

Closely collaborating with the University of Twente, 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

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

TSST is specialised in customized products. With almost 20 years of experience TSST is able to offer individually designed systems adapted to the need of our customer. This includes preparing a system for future upgrades.

### System characteristics

- Thin film growth of highest quality complex materials
- Fully customized design, including adaptation to a specific lab layout
- Remote support, service and on site training by TSST engineers
- $<10^{-7}$  mbar base pressure
- Up to 1000°C growth temperature
- Up to 6 targets for heterostructure growth

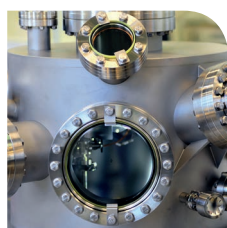


# Pulsed Laser Deposition (PLD)

\* optional

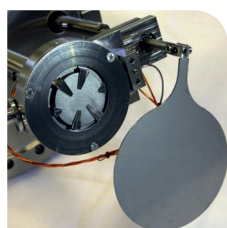
## Typical System Specifications

### VACUUM CHAMBER



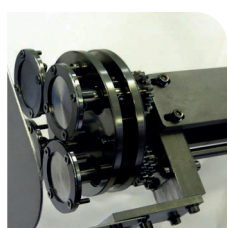
Chamber shape	Cylindrical, spherical*
Base Pressure	$<10^{-7}$ mbar, $<10^{-8}$ mbar*
Pumping	Turbo (300L/min), Turbo (700L/min)*
Bakeout*	Heating tape
Process gasses, pressure	O <sub>2</sub> , Ar, N <sub>2</sub> , automated* up/downstream pressure control

### HEATER STAGE



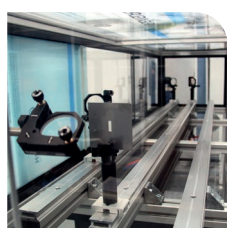
Resistive	Up to 950°C, <1" substrates
Radiation	Up to 800°C, <2" substrates
Movement	Z, (X,Y)*, continuous rotation*
Shutter	Prevents contamination of targets during (pre)ablation

### TARGET STAGE



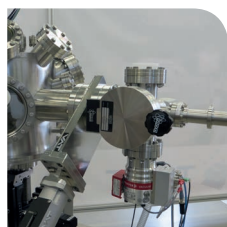
Movement	Spinning, Z*, (X,Y,Z, scanning stage)*
Amount of targets	Up to 6
Targetsize	Up to 1", 2"*
Transfer	Whole carrousel, individual*

### OPTICS



Fluence	Full range flexibility for complex materials and metal ablation
Spotsize	1.0-3.0mm <sup>2</sup> , homogeneous fluence by mask imaging
Safety	Fully enclosed, UV tight, visually transparent

### LOADLOCK\*



Pumping	Turbo (>70L/min)
Base pressure	$<10^{-5}$ mbar

### TSST CONTROL SOFTWARE

Full manual to automated control, including growth recipes and parameter logging



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