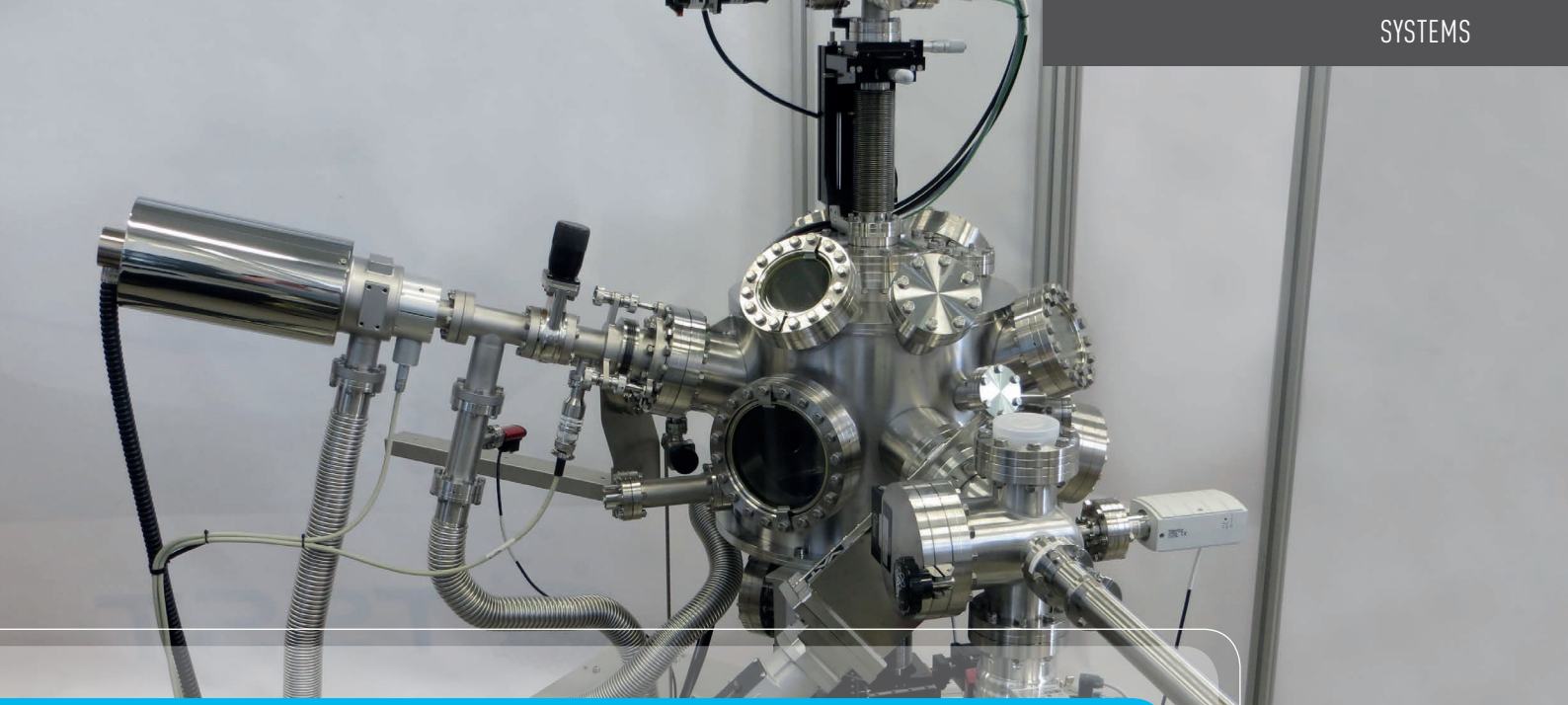


Advanced Pulsed Laser Deposition (PLD)

WITH IN SITU RHEED

THIN FILM GROWTH WITH ATOMIC PRECISION

TSST Advanced Pulsed Laser Deposition systems with in situ RHEED are state-of-the-art, highly flexible PLD systems for thin film research at atomic level, 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, during which monolayer growth control using RHEED is demonstrated.

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
• Single monolayer growth control with RHEED
• Fully customised design, including adaptation to a specific lab layout
• Remote support, service and on site training by TSST engineers
• Down to 5.0×10^{-10} mbar base pressure
• Up to 1200°C growth temperature
• Up to 6 odd shaped targets for heterostructure growth

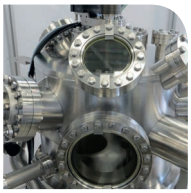
TSST

Advanced Pulsed Laser Deposition (PLD)

* optional

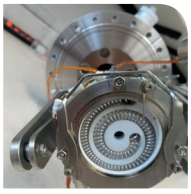
Typical System Specifications

VACUUM CHAMBER



Chamber shape	Cylindrical, spherical*
Base Pressure	$<10^{-8}$ mbar, down to $5.0x10^{-10}$ mbar*
Pumping	Turbo(700L/min), TSP*, Ion getter*
Bakeout*	Heating tape, bakeout tent
Process gasses, pressure	O_2, Ar, N_2, O_3 automated up/downstream pressure control

HEATER STAGE

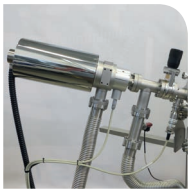


Infrared Laser	Up to 1200°C, 10x10mm substrates
Radiation	Up to 1000°C, <1", <2"* substrates
Resistive	Up to 950°C, <1" substrates
Movement	X,Y,Z, tilt, azimuth movement
Shutter	Allows use of RHEED while closed

TARGET STAGE

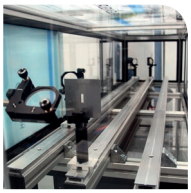
Movement	X,Y,Z, scanning stage, spinning*
Amount of targets	Up to 6
Targetsize	Odd shaped up to 1", 2"*
Transfer	Individual or whole carrousel

HIGH PRESSURE RHEED



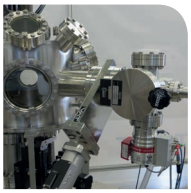
Electron gun specifications	30KV, higher voltages*
Operational process pressure	Up to 0.5mbar
Pumping	Differentially pumped
Vibrational limiting solutions	
Optimal signal-to-noise by stabilization solutions for magnetic effects of the heater	

OPTICS



Fluence	Full range flexibility for complex materials and metal ablation
Fluence control	Manual or automated attenuator*
Spotsize	1.0-3.0mm², homogeneous fluence by mask imaging
Safety	Fully enclosed, UV tight, visually transparant

LOADLOCK



Pumping	Turbo (>7z0L/min)
Base pressure	$<10^{-5}$ mbar
Heater and target storage*	

TSST CONTROL SOFTWARE

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

TSST

Institutenweg 25
PO Box 256
7500 AG ENSCHEDE
The Netherlands

T +31 (0) 53 2030 244
F +31 (0) 53 2030 248
info@tsst.nl
www.tsst.nl