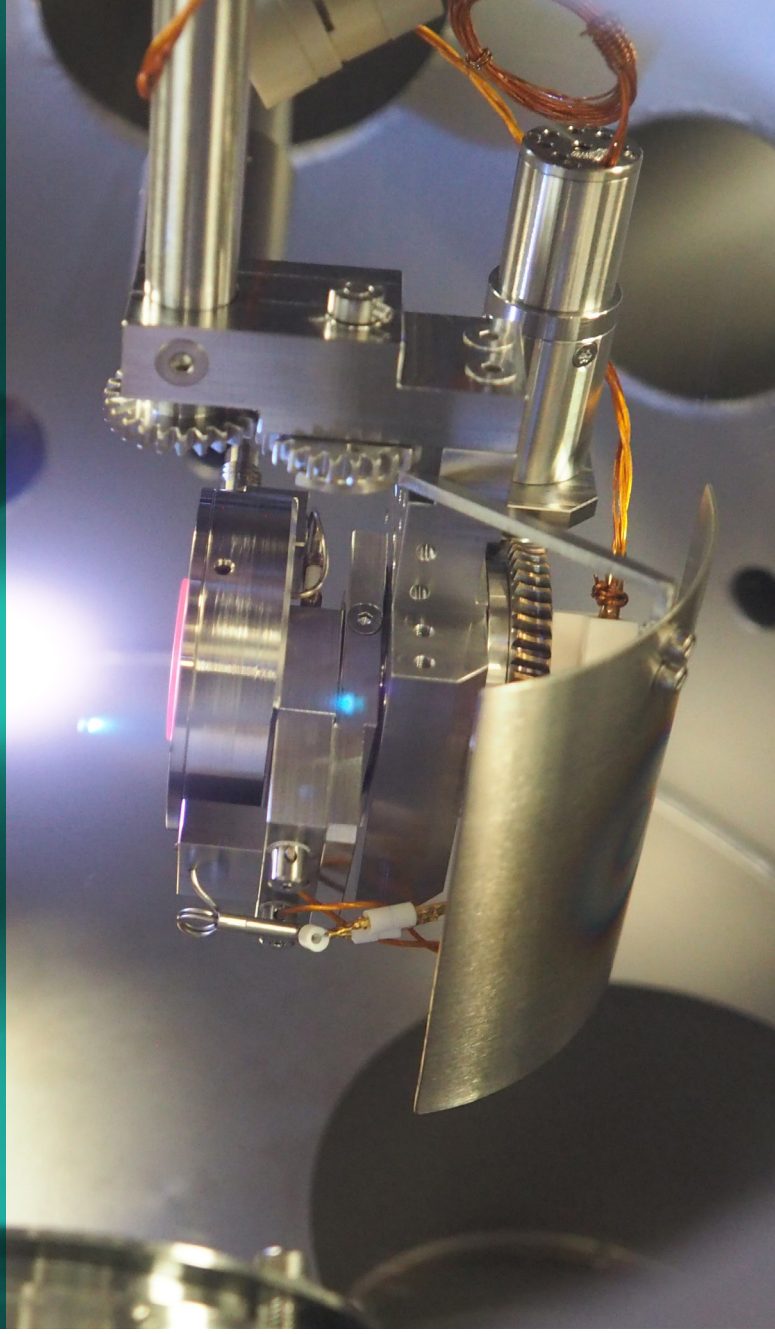
pulsed laser deposition.

FOR THIN FILM GROWTH WITH ATOMIC PRECISION



Thin film growth with atomic precision

Demcon TSST 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, 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 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.

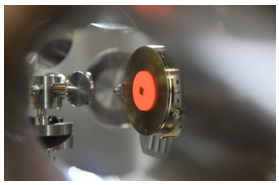
DEMCON | TSST

TYPICAL SYSTEM SPECIFICATIONS

but not limited to

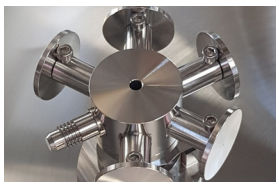
Vacuum chamber

Chamber shape	Cylindrical, spherical
Base pressure	$<10^{-8}$ mbar, down to $5.0x10^{-10}$ mbar
Pumping	Turbo (700l/s), TSP, Ion getter
Bakeout	Heating tape, bakeout tent
Process gases, pressure	O_2, Ar, N_2, O_3 automated up/downstream pressure control
Deposition geometry	Vertical or horizontal



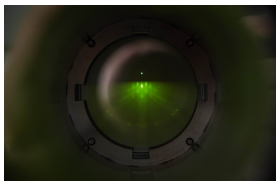
Heater stage

Infrared laser	Up to 1100°C, <1" substrates
Radiation	Up to 1000°C, <1", <2" substrates
Contact	Up to 900°C, <1" substrates
Movement	X, Y, Z, tilt, azimuth movement
Shutter	Allows use of RHEED while closed



Target stage

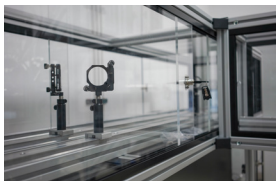
Movement	X, Y, Z, scanning stage
Amount of targets	Up to 6
Targetsize	Odd shaped up to 1", 2"
Transfer	Individual or whole carousel



High pressure RHEED

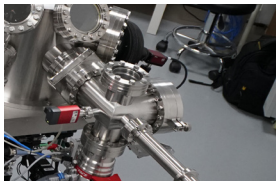
Electron gun specifications	30kV, higher voltages
Operational process pressure	Up to 0.5 mbar
Pumping	Differentially pumped
Vibrational limiting solutions	

Optimal signal-to-noise by stabilisation solutions for magnetic effects of the heater



Optics

Fluence	Full range flexibility for complex materials and metal ablation
Fluence control	Manual or motorised attenuator
Spotsize	1.0-3.0 mm^2, homogeneous fluence by mask imaging
Safety	Fully enclosed, UV tight, visually transparant



Loadlock

Pumping	Turbo (>70l/s)
Base pressure	$<10^{-5}$ mbar
Heater and target storage	

Demcon TSST control software

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