



Nano PLD



The PVD Products Nano PLD system is capable of depositing high quality films on substrates up to 2-inches in diameter. Like our larger PLD systems, this unit features a rectangular box style chamber with a front mounted hinged door. This provides for quick and easy access for substrates and target changes. The chamber includes multiple user accessory ports for target and substrate viewing, a sputter or ion source, as well as spectroscopy. Our substrate heater uses IR lamps that are easily field replaceable. Substrates can be heated to 950°C when using silver paste. Temperature uniformity of $\pm 5^\circ\text{C}$ is achievable. The heater has a water-cooled shroud to minimize the radiation effects on the chamber walls. A complete, enclosed optical train is provided and the system is compatible with PVD Products' optional

Intelligent Window. A large water-cooled plate protects the targets from the heater radiation. Either three 2-inch diameter targets or six 1-inch diameter target carousels are available along with programmable target rastering and indexing. The base pressure is below 1×10^{-6} Torr using a rear mounted 210-liter/sec turbo pump package. Includes manual vacuum valves and all necessary vacuum gauges. Various options include substrate rotation, Z-stage mounted heater, load-lock, ion gun, magnetron sputter sources, RHEED ports or complete systems, MAPLE capability, Nano-particle production, programmable laser beam rastering, etc. The system comes with a laptop computer to operate all the Nano PLD functions as well as the excimer laser. This system is ideal for starting up a PLD lab.



NANO PLD System Specifications:

Maximum substrate size: One 2-inch or multiple small substrates.

Maximum substrate temperature: 950°C (in oxygen) for all substrate materials in oxygen pressure up to 400 Torr. Thermal paste required.

Temperature uniformity: $\pm 4^\circ\text{C}$ across 2-inch diameter Si substrate.

Operating Pressure Range: 1×10^{-6} Torr base to 500 mTorr.

Target Size: Three 2-inch diameter targets or six 1-inch diameter targets.

Target to Substrate (Throw) Distance: 75 mm, adjustable.

Nominal Angle of incidence of the laser beam on target: 60° .

Base Pressure of the Main Chamber: $P < 1 \times 10^{-6}$ Torr guaranteed, with system at room temperature.

Base Pressure with Load Lock: $P < 1 \times 10^{-7}$ Torr guaranteed, with system at room temperature without targets in the chamber.

Operational Wavelength: 248 nm (KrF) or 193 nm (ArF). Others available on request.

Computer Control: MFC flow rate, turbo pump control, target rotation, target rastering, target indexing, laser functions, and substrate temperature.

Guaranteed Super conducting properties for YBCO on LaAlO₃:

$T_c > 87 \pm 1$ K across 2-inch diameter area for LaAlO₃ substrates.

$J_c > 1.5 \pm 0.5$ MA/cm² across 2-inch diameter area for LaAlO₃ substrates.

System Options:

Load locks for fast turnaround time and improved main chamber base pressure.

Ion source for IBAD processing.

RHEED Package.

Magnetron sputter source.

Additional MFC's.

Dry Pump package.

Custom Substrate Holders.

MAPLE Target Assembly.

Note: Specifications subject to change.

