

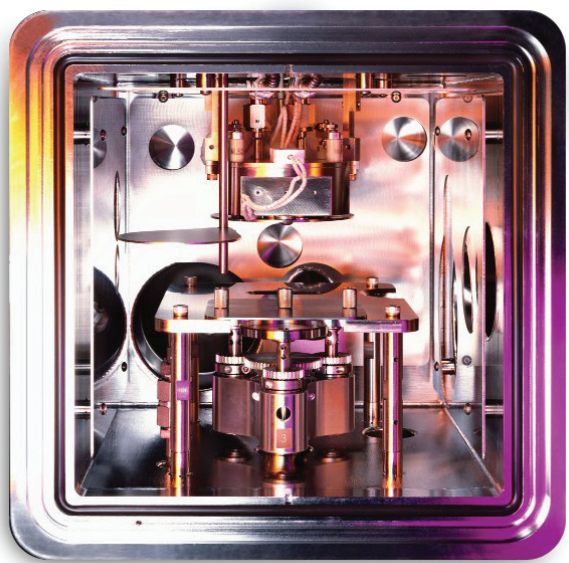
The PVD Products Nano PLD system is capable of depositing high quality epitaxial and multi-layer films on substrates up to 2" in diameter.

Like our larger PLD systems, this unit features a rectangular box-style chamber with front-mounted hinged door. This provides for quick and easy access for substrates and target changes, along with the ability to easily clean the chamber. The chamber includes multiple user accessory ports for target and substrate viewing, RHEED, a sputter or ion source, as well as spectroscopy.

Our substrate heater uses IR lamps housed within a water-cooled shroud to minimize heat load on the chamber walls. Lamps are stock items and easily field replaceable. Substrates can be heated to 950°C without using silver paste. A complete enclosed optical train with laser beam rastering is provided, along with PVD Products unique Intelligent Window. Laser beam rastering provides excellent film uniformity and target material utilization.

## Nano PLD System

Designed for researchers interested in small-scale thin film materials development with high-pressure RHEED compatibility



## Nano PLD Chamber

Can support an optional magnetron sputter source, ion source, atom source or effusion cell

A large water-cooled plate protects the targets from the substrate heater radiation. Either four 2" diameter targets or eight 1" diameter target carousels are available, along with programmable target rastering and indexing.

The base pressure is below  $5 \times 10^{-7}$  Torr using a rear-mounted 260 L/sec turbo pump package. The system includes all pneumatic vacuum valves and closed-loop pressure control with one MFC, along with all necessary vacuum gauges.

Various options include dual-position load lock, RF bias on the substrate, variable target-to-substrate distance, ion gun, magnetron sputter sources, high-pressure RHEED systems, nano-particle production, etc.

The system comes with a computer with PVD Products PLD Pro III LabVIEW™ software to operate all the Nano PLD functions as well as the excimer laser. This system is ideal for developing new processes and materials via PLD.

# Nano PLD

## Specifications

### Maximum Substrate Size

One 2" or multiple small substrates.

### Maximum Substrate Temperature

**950°C** (in oxygen) for all substrate materials.  
No thermal paste required.

### Temperature Uniformity

± 5°C across 2" diameter Si substrate.

### Operating Pressure Range

5 x 10<sup>-7</sup> Torr base to ~300 mTorr.

### Target Size

Includes four 2" or eight 1" diameter targets.

### Target to Substrate (Throw) Distance

Fixed at 75 mm (other distances available on request).

### 60° Nominal Angle

Of incidence of the laser beam on target.

### Base Pressure of the Main Chamber

P < 5 x 10<sup>-7</sup> Torr guaranteed, with system at room temperature without targets in the chamber.

### Base Pressure with Load Lock

P < 5 x 10<sup>-8</sup> Torr guaranteed, with system at room temperature without targets in the chamber.

### Operational Wavelength

248 nm (KrF). Other excimer laser wavelengths or lasers available on request.

## System Options

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

RF Bias on substrate

Magnetron sputter source with RF or DC power supply

Ion source for IBAD processing

High-pressure RHEED package

Additional MFCs

Custom substrate holders

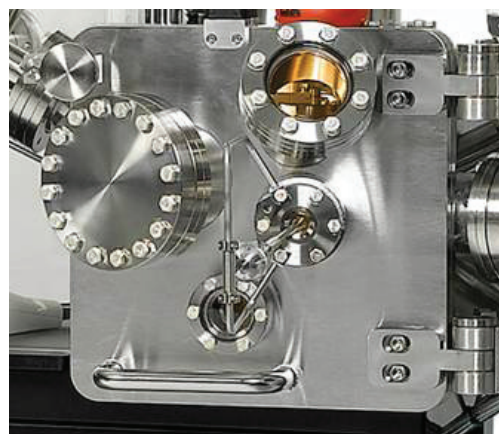
Variable target-to-substrate distance

Optical Pyromete



**Nano PLD Substrate Heater**

Non-contact substrate heater and pneumatic shutter assembly



**Nano PLD Chamber**

Chamber front door with two viewports, RHEED screen port and a port with an optional wobble stick for wafer transfer from the load lock

## PVD Products

Fueled by creative problem-solving, our team of experienced engineers and technicians is passionate about finding the best solution to your unique deposition system demands. We provide end-to-end support, from design through installation and continuing maintenance.

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