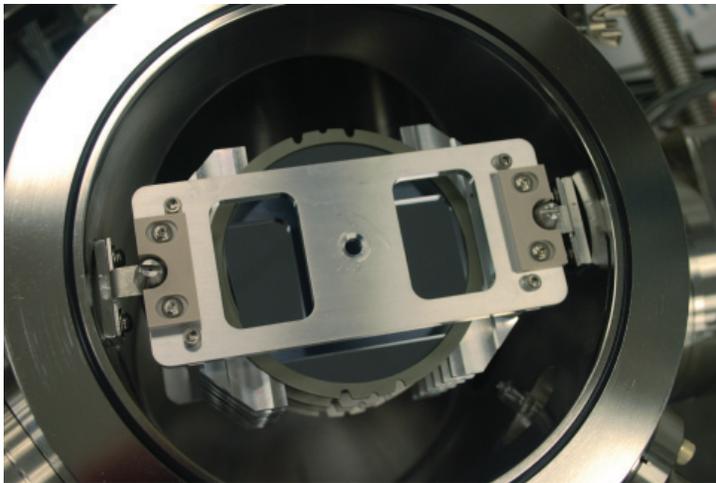
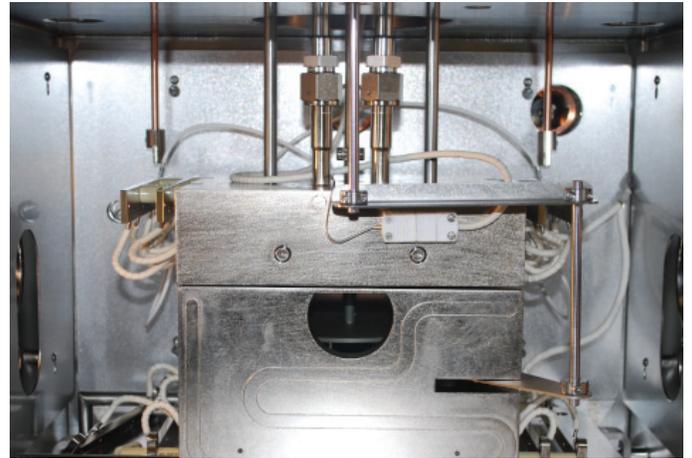


PVD Products turn-key **PLD 4000, 5000, 6000** are field-proven systems capable of depositing high-quality, uniform films on substrates up to 4" (100 mm), 5" (125 mm), or 6" (150 mm) in diameter, respectively. Our systems use a box-style chamber with a large, front-mounted, hinged door for easy access for substrate or target changes. The chamber includes multiple user accessory ports for target and substrate viewing, as well as for spectroscopy. A unique blackbody-style oven is used for very uniform substrate heating.

These systems are ideal for large-area deposition for device research or prototype production applications. They can produce high quality epitaxial and multi-layer thin films. Large transparent substrates such as sapphire, LaAlO<sub>3</sub>, and MgO can be heated to 850°C without the use of a thermal bonding agent (such as silver paste) or clamping. Silicon or other absorbing substrates can be heated uniformly to 950°C. Our systems include a laser-safe, constant-fluence optical train, which rasters the laser beam over one of several large-diameter rotating targets within the chamber.

## PLD 5000

Blackbody substrate heater



## PLD 4000

Multi-wafer cassette in automated load lock

These systems all include a constant fluence optical train with an Intelligent Window that keeps the beam path clean for extended periods of time with in-the-chamber energy monitoring. Pedestals for three or four large-diameter targets are included along with motor-driven target indexing. Base pressures below  $5 \times 10^{-7}$  Torr are readily achievable with a 680 L/sec turbo and dry pumping package.

Systems include complete pumping packages, vacuum gauging, pneumatic valves, one MFC, closed-loop pressure control, and a variety of excimer laser packages. They include complete PVD Products Laser Pro 3 LabVIEW™ software for full computer control of all deposition functions, including storing and recalling process recipes. Full data logging of all relevant parameters is also provided.

# PLD 4000, 5000, 6000

## Specifications

### Maximum Substrate Size

**PLD 4000:** Can handle one 4", 3", or 2" diameter substrate, or multiple small substrates per customer requirement.

**PLD 5000:** Can handle one 5", 4" or 3" diameter substrate, or three or four 2" diameter substrates, or multiple small substrates per customer requirement.

**PLD 6000:** Can handle one 6", 5", 4", 3" or 2" diameter substrates, or multiple small substrates per customer requirement.

### Maximum Substrate Temperature

**950°C** (in oxygen) for non-transparent substrates (such as silicon) and **850°C** for transparent substrates (such as LaAlO<sub>3</sub>). No thermal paste or bonding required.

### Temperature Uniformity

± 3°C across 5" diameter Si substrate.

### Operating Pressure Range

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

### Target Size

Includes multiple large-area targets up to 8" in diameter depending on substrate size (target pedestals are easily adaptable to other sizes).

### Film Thickness Uniformity

± 5% over 90% of a 5" diameter substrate (6" throw) for 500 nm thick film using 6" diameter target.

### Target to Substrate (Throw) Distance

Variable from 4.5" to 6" (may affect maximum temperature and film thickness uniformity).

### 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. UHV available.

### Operational Wavelength

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

PVD Products recommends a minimum of a 30 watt excimer laser for these large-area systems.



## Systems

### PLD 4000

4" diameter wafer with three 5" diameter targets. Same chamber size as PLD 5000.

### PLD 5000

5" diameter wafer with three 6" diameter targets. Same chamber size as PLD 4000.

### PLD 6000

6" wafer and three 8" diameter targets. Slightly larger chamber with larger turbo pump than PLD 4000, 5000.

## 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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