PVD PRODUCTS

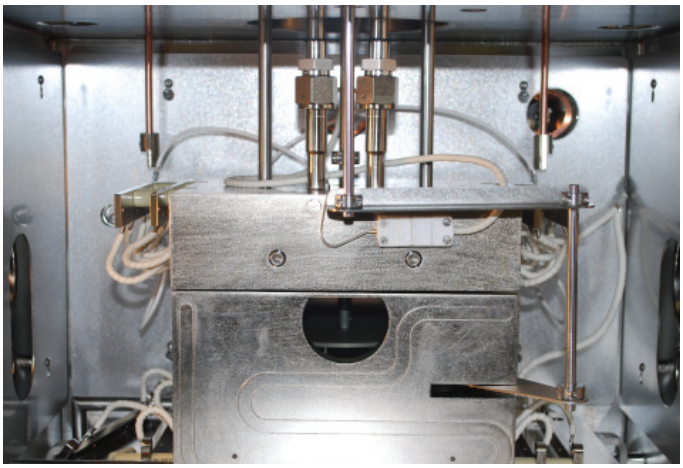
PLD
4000, 5000, 6000

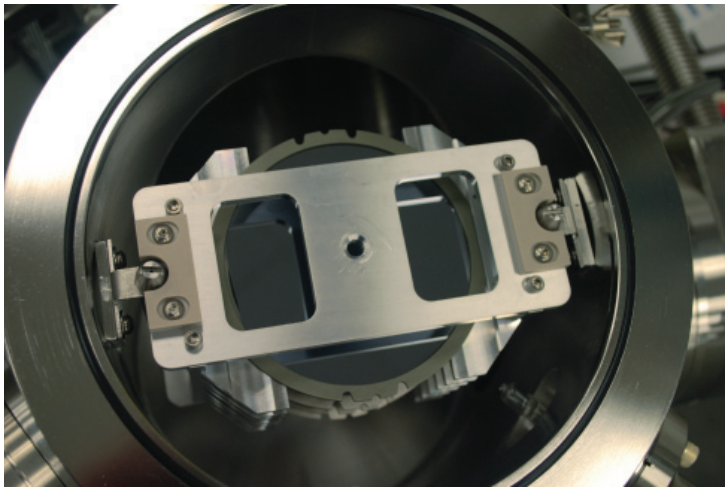
PVD Products turn-key **PLD 4000, 5000, 6000** are field-proven systems capable of depositing high-quality, uniform films on substrates up to 4" (100 mm), 5" (125 mm), or 6" (150 mm) in diameter, respectively. Our systems use a box-style chamber with a large, front-mounted, hinged door for easy access 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. Heating elements are easily field-replaceable.

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, LaAlO3, 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. Laser beam rastering provides excellent film uniformity and target material utilization.

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 X 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.

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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 LaAlO3). No thermal paste or bonding required.

Temperature Uniformity
± 3°C across 5" diameter Si substrate.

Operating Pressure Range
5 x 10^{-7} 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^{-7} Torr guaranteed, with system at room temperature without targets in the chamber.

Base Pressure with Load Lock
P < 5 x 10^{-8} 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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