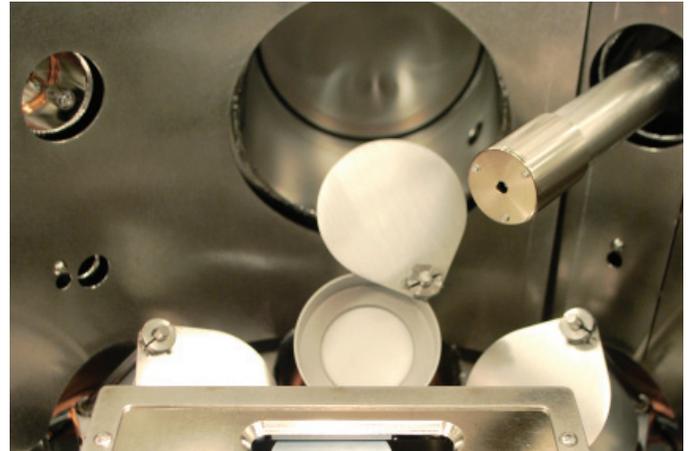


PVD Products **PLD/MBE 2100, 2300, 2500** systems provide a field-proven laser deposition system that allows the end user to deposit films in several modes such as monolayer-by-monolayer, multi-layers, and combinatorial growth modes. The systems include an oxygen-compatible substrate heater that provides actual substrate temperatures of 950°C for silicon and other non-transparent substrates, and 850°C for transparent substrates such as sapphire or LaAlO<sub>3</sub>, without the need for silver paste. The heater is easily repaired in the field with replacement lamps which are always in stock. A programmable Z-stage provides variable target-to-substrate distances from 55 to 105 mm.

This system also includes a PVD Products unique Intelligent Window that keeps the optical beam path clean for extended periods of time and provides a mechanism to measure the energy that has entered the deposition chamber. The optical beam path is completely enclosed for safety and includes the ability to raster the laser beam across the 2" diameter target to enhance film uniformity.

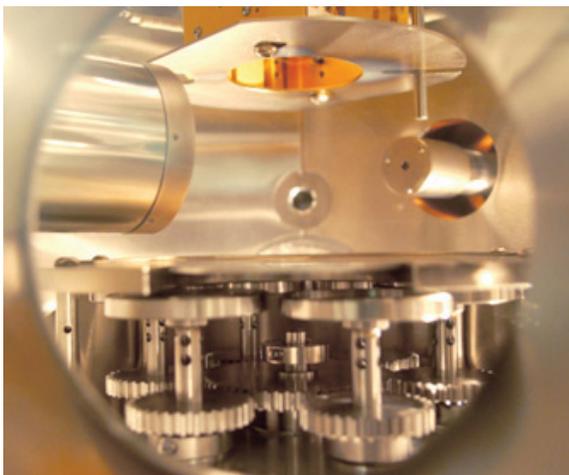


## PLD 3000

Shown with optional dual position load lock and a COMPEX 200 series excimer laser

## PLD/MBE Side Port

View showing Staib RHEED assembly and bottom of heater with silicon wafer and target pedestals



Ports are provided for a dual-wafer load lock, high-pressure RHEED, optical spectroscopy, substrate and target viewing. The PLD/MBE 2100 provides a single additional port that can be used for either a magnetron sputter source, ion or atom source or effusion cell. The PLD/MBE 2300 provides three ports for the addition of any combination of three magnetron sputter sources, ion or atom sources or effusion cells. The PLD/MBE 2500 provides four ports for the addition of effusion cells or atom source, and one 6" port for the addition of ion source, magnetron or an additional effusion cell.

The systems come equipped with a Pfeiffer HiPace turbo pump (360 L/sec for PLD 2100, 680 L/sec for the PLD 2300 or 2500) backed by an Edwards dry scroll pump. A complete set of vacuum gauges is provided, including a capacitance manometer that, coupled with a VAT Series 64 stepper motor controlled gate valve, provides closed-loop pressure control from 5 to over 500 mTorr. The PLD/MBE 2100, 2300, 2500 can be integrated with a variety of different excimer or other lasers.

Unlike circular PLD chambers, our cylindrical chamber includes modular and removable SS shields for easy cleaning of material buildup on chamber sidewalls.

# PLD/MBE 2100, 2300, 2500

## Specifications

### Maximum Substrate Size (All Systems)

Can handle 2" diameter or multiple small substrates.

### Number of Targets (All Systems)

Six 2" diameter or smaller targets with optional inserts.

### Maximum Substrate Temperature (All Systems)

950°C for silicon, 800°C for transparent substrates. Fully oxygen compatible, programmable Eurotherm controller. No silver paste required.

### Base Pressure

$< 5 \times 10^{-7}$  Torr standard,  $< 5 \times 10^{-8}$  Torr with optional dual-wafer load lock,  $< 5 \times 10^{-9}$  Torr with optional UHV system.

### Pumping Package

Pfeiffer HiPace 400 for the PLD/MBE 2100 and a HiPace 700 turbo pump for the 2300 and 2500 units. All backed by an Edwards dry scroll pump VAT PM5 closed-loop pressure controller, Series 64 gate valve, full vacuum gauging with capacitance manometer.

### Operating Pressure

Base pressure to ~500 mTorr.

### Target to Substrate (Throw) Distance

Programmable from ~55 to 105 mm.

### 60° Nominal Angle

Of incidence of the laser beam on target, with programmable laser beam rastering.

### Laser Wavelength

248 nm standard. Others available on request.

### MFCs

Standard MFC calibrated for oxygen at 50 sccm. Additional MFCs optional.

### Software Control

Full PVD Products PLD Laser Pro 3 LabVIEW™ interface controlling all system functions, recipe storage and recall, auto pump and vent sequences, pressure/temperature control and full data logging.

### Input Power

Power distribution boxes available for all requirements.

## System Options

Dual wafer load lock

Additional MFCs

RF bias on substrate holder

Magnetron sputter sources with RF or DC supplies

Atom and ion sources

Effusion cells

Beam attenuation packages



**PLD/MBE 2100 Deposition System**

With COMPex 200 series laser



**PLD/MBE 2300 Deposition System**

With COMPex 200 series laser, optional load lock, HP RHEED and two magnetron sputter sources



**PLD/MBE 2500 Deposition System**

Five effusion cells and Staib HP RHEED gun and re-entrant screen

## 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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