Pioneer 120 Pulsed Laser Deposition System

- Stand-alone turn-key PLD system.
- Deposition of epitaxial films, multi-layer heterostructures / superlattices.
- Deposition of nanoscale thin films.
- Oxygen Compatibility for epitaxial oxide film depositions.

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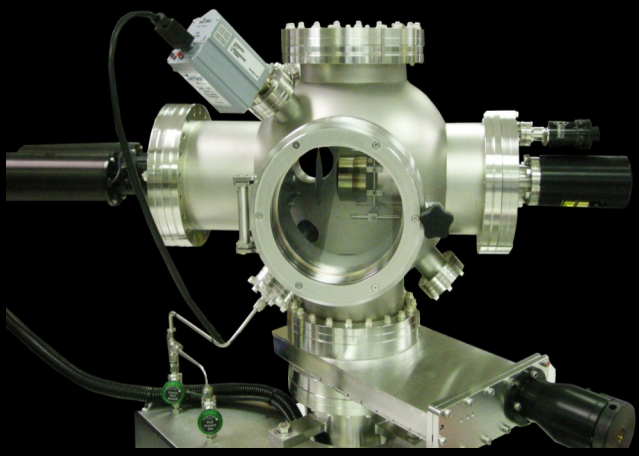
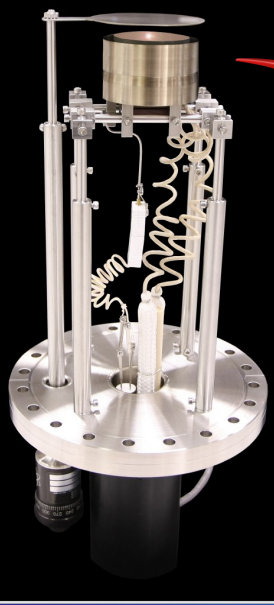
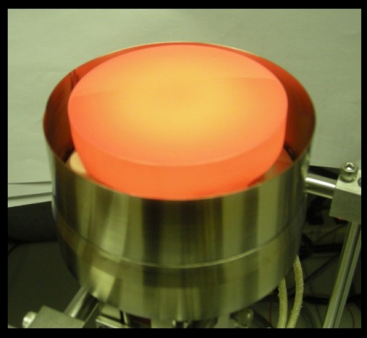
Pioneer 120 Pulsed Laser Deposition System



Deposition Chamber

- 8” CF Pumping port.
- 8” CF Substrate heater port.
- 8” CF Target carousel port.
- 8” CF port with access door (also serves as a view port).
- 8” CF view port (top of the system)
- 4.5” CF excimer laser port and / or 6.75” CF PED port.
  2.75” CF ports (for accesso-ries).

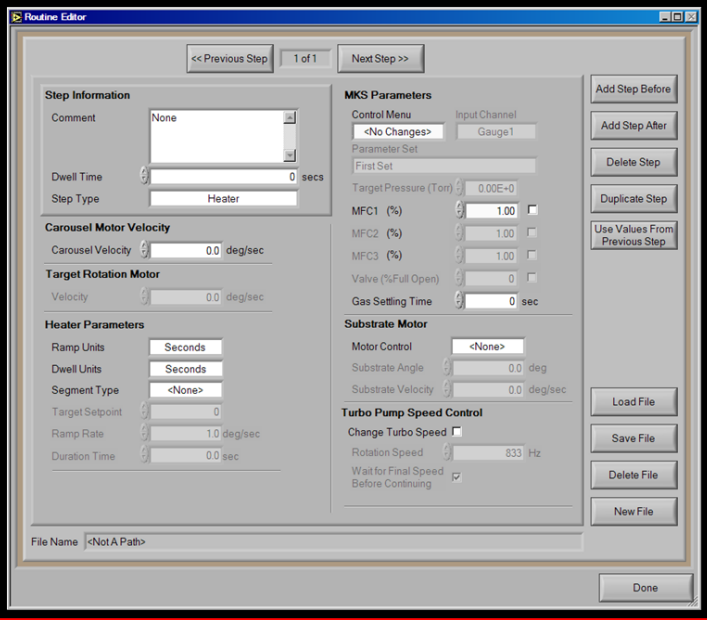




2-inch diameter heater

Programmable Conductive Substrate Heater

- Maximum heater temperature: 950 C.
- Maximum heater size: 2-inches in diameter (other sizes are custom).
- Heater temperature is controlled by a programmable PID temperature con-troller
- Heater is oxygen compatible up to 1 atmosphere of oxygen.
- Heater is mounted on an xyz support structure, xyz adjustments are *exsitu.*
- Pre-ablation shutter is included.
- K-type thermocouple provides input to the PID controller.
  The controller is integrated with Neocera system software (Labview 2013).



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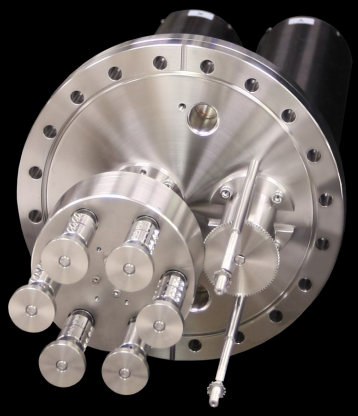
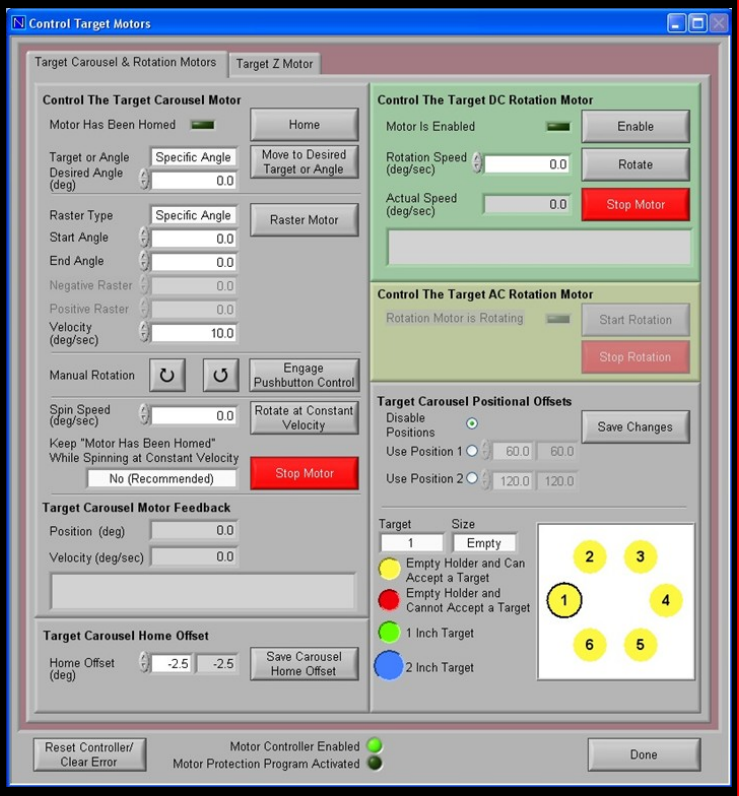


Multi-target Carousel

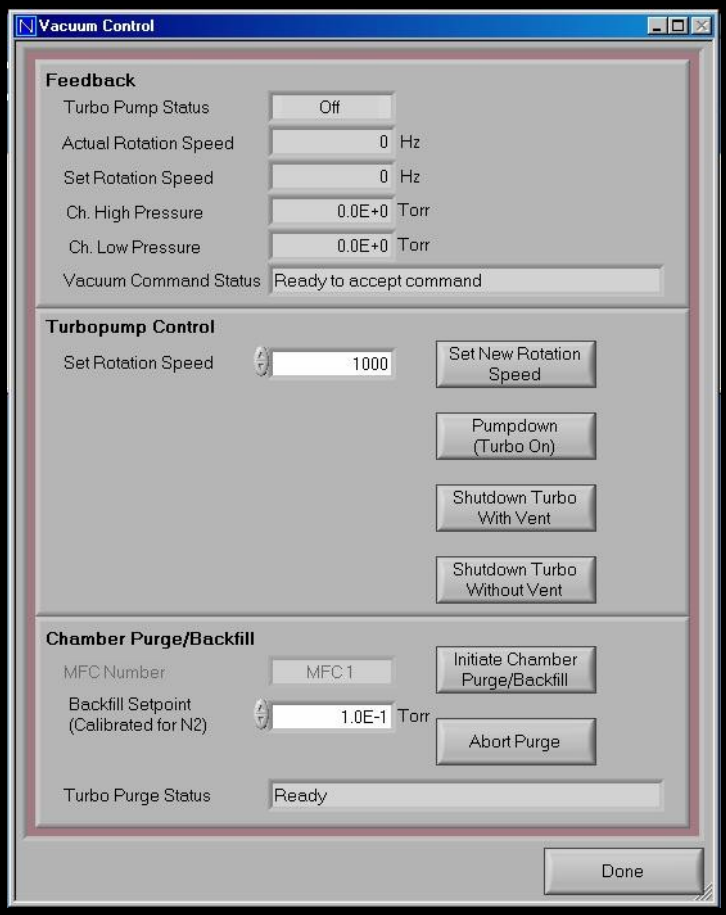
- Six 1-inch diameter targets or three 2-inch diameter targets.
- Target rotation, 360 degrees continuous (1-20 RPM).
- Target rastering (max 100 degrees/sec) for uniform ablation over the entire target surface.
- Target indexing for multilayers.
- Target height is adjustable (manual adjustability
- Target shield protects targets from cross-contamination.
- Ideal for depositing epitaxial films, multilayers and superlattices.
- Unique target rastering protocol.

- Target indexing, target rastering and target rotation are controlled by LabVIEW 2013 software, facilitating multilayers and superlattice depositions.
- Software controls external triggering of the laser-facilitates nano-scale thin film growth control.
- Software provides continuous composition spread of binary and ternary phase spreads (optional).



Vacuum Pumping Package

- All-dry vacuum pumps. Turbomolecular pump backed by diaphragm or scroll pump.
- Minimum base pressure: 5 x 10^{-7} Torr.
- Turbospeed is controlled by software.



Pressure Measurement / Control

- Wide range vacuum gauges for pressure measurement from atmosphere to 5 x 10^{-9} Torr.
- MKS Mass Flow Controllers are integrated with System software.
- Flow rates: ~100 SCCM for Oxygen.
- Closed-loop pressure control.

PLD System Software

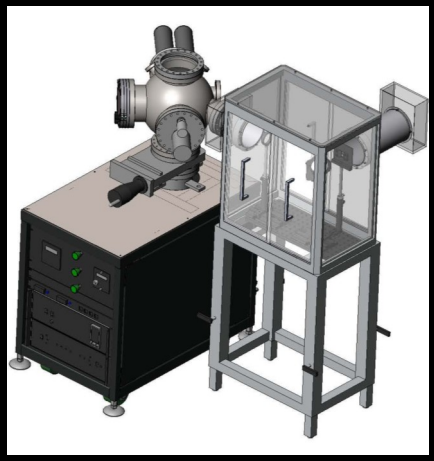
- Windows 7, LabVIEW 2013
- Controls substrate heating stage.
- Controls target carousel stage.
- Controls vacuum pumping stage.
- Controls Mass Flow Controller(s).
- External laser triggering.
- Optional process automation

PLD System Utilities:

- Power: 110/220V, 20A, 1 Phase.
- Water: 1 gallon/minute at 20C.

PLD Optics Package (KrF Excimer laser)

- 45° degree Laser Mirror (s) for 248 nm.
- Plano convex Lens for 248 nm. The focal length is approximately 50 cm.
- Adjustable Aperture.
- Anodized aluminum breadboard for mounting optics.
- Stable kinematic mounts for laser mirrors and lens with maximum clear aperture and wide angular range.
- A complete set of mounting rods, base plates.
- Light-tight enclosure to protect users from laser beam.



For further information, please contact: sales@neocera.com or +1-301-210-1010, ext 104