TORONTECH

PLD PULSED LASER DEPOSITION SYSTEM

Adaptable PLD Pulsed Laser Deposition System and Thermal Evaporation System – PLD-T is an advanced high vacuum thin film deposition system that allows for the deposition of various materials using both Pulsed Laser Deposition and Thermal Evaporation techniques. This system is capable of depositing intricate materials and crystalline structures onto substrates with minimal setup required.

The Pulsed Laser Deposition technique facilitates efficient non-thermal ablation, preserving the stoichiometry of the target materials. Utilizing this method, it is possible to deposit materials such as nitrides, oxides, superlattices, polymers, and composites.

APPLICATIONS

- **Pulsed Laser Deposition (PLD)** – Enables precise, stoichiometric transfer of complex materials such as oxides, nitrides, polymers, and composites.
- **Crystalline Thin Films** – Facilitates deposition of superlattices and advanced crystalline structures for semiconductor and optoelectronic applications.
- **Thermal Evaporation** – Supports metal and dielectric thin film deposition using boat, basket, or coil evaporation sources.
- **Scanning Electron Microscopy (SEM) & TEM Sample Preparation** – Produces high-quality coatings for non-conductive specimens and support grids.
- **Spectroscopic and Structural Studies** – Provides uniform thin films suitable for EDS/WDS, EBSD, and optical characterization.

- **Thin Film Research & Development** – Useful for microelectronics, nanotechnology, superconductors, and solar cell investigations.

- **Plasma Cleaning & Substrate Preparation** – Ensures contamination-free surfaces for accurate and reproducible thin film growth.

- **Academic and Research Laboratories** – Flexible platform for teaching, advanced training, and multi-disciplinary research projects.

FEATURES

- **Target Manipulator:** Adjustable rotation speed for precise positioning.
- **Thermal Sources:** Three thermal sources with special feedthrough for enhanced functionality.
- **Real-time Thickness Measurement:** Quartz crystal monitoring system with 1 nm precision for accurate measurement.
- **User-Friendly Interface:** Intuitive touch screen for easy control of the coating process and rapid data input.
- **Plasma Cleaning:** Facility for plasma cleaning to ensure optimal substrate preparation.
- **Upgradable Software:** User-friendly software that can be updated via the network for improved performance.
- **Sample Handling:** Equipped with a rotary sample holder and electronic shutter for efficient sample management.
- **Motorized Boat Selection:** Capability to select and handle boat materials with motorized functionality.
- **Substrate Heating:** 500 °C substrate heater to facilitate controlled deposition processes.
- **Warranty and Insurance:** Two-year warranty on the system, and worldwide coverage by public and product liability insurance for added protection against property damage or personal injury caused by the Vac Coat systems.

Thermal Evaporation Sources (Boat/Basket/Coil):

The Pulsed Laser Deposition System is adaptable to three independent heat-resistant thermal evaporation sources, which can be in the form of boats, baskets, or coils. These sources are designed for efficient material evaporation without causing contamination transfer to other materials. The length of the source holders is adjustable within the range of 5 to 10 cm, catering to specific customer requirements.

SPUTTER COATERS / VACUUM COATING SYSTEMS

Target Manipulator:

The PLD system features a multi-target manipulator equipped to handle three targets, each with a diameter of 2 cm. The targets are of standard size, and all target manipulators are motorized, allowing for precise target rotation and positioning during the deposition process.

Intuitive Touch Screen Control with Vibrant Display:

The PLD-T Pulsed Laser Deposition System is designed with a user-friendly 7-inch colored touch screen, providing an intuitive interface for easy control and monitoring. The touch screen allows for fully automatic control and effortless data input, making it accessible even to users with limited experience.

Users can conveniently observe vacuum levels, current status, and deposition information displayed in both digital format and graphical curves directly on the touchscreen. Additionally, the system includes a history page where data from the last 300 coatings can be saved and reviewed for reference and analysis. This feature enhances efficiency and facilitates a seamless user experience throughout the coating process.

SPUTTER COATERS / VACUUM COATING SYSTEMSSPUTTER COATERS / VACUUM COATING SYSTEMS

These specifications outline the key components and features of the Pulsed Laser Deposition & Thermal Evaporator System, highlighting its capabilities in vacuum operation, power supply, gas flow control, data analysis, and ease of use.

Options and Accessories for PLD-T:

Thermal Evaporation Sources:

- Available in Boat, Basket, or Coil configurations to suit different deposition requirements.

Substrate Heater:

- Capable of heating up to 500°C to facilitate precise substrate temperature control during deposition.

Evaporation Sources Materials:

- Various materials compatible with thermal evaporation sources, enabling a wide range of material choices for deposition.

Quartz Crystal Sensors:

- Essential for real-time thickness monitoring with high precision using quartz crystal sensors.

Sealing Gaskets:

- Gaskets designed for effective sealing, ensuring airtight conditions during the deposition process.

These options and accessories enhance the versatility and functionality of the PLD-T system, allowing for tailored and efficient thin film deposition processes while maintaining high precision and control.

TECHNICAL SPECIFICATIONS

Specifications of Pulsed Laser Deposition & Thermal Evaporator System:

Vacuum System:

- High vacuum turbomolecular pump for efficient vacuum operation.
- Diaphragm backing pump to support the vacuum system.

Vacuum Measurement: Full range vacuum measuring gauge to accurately measure vacuum levels.

Real-time Thickness Measurement: Quartz crystal monitoring system with 1 nm precision for accurate measurement.

Power Supply: 5 KW high current power supply for effective operation.

Gas Flow Control: Precision Mass Flow meter (MFC) for precise control of gas flows.

Data Recording and Analysis: Capability to record and plot coating parameters graphs for detailed analysis.

Data Transfer: Ability to transfer curves and deposition process data to a PC via a USB port for further analysis and documentation.

Utilities: Power Requirements: 220V-240V, 50/60HZ, 16A.

Dimensions: Box Dimensions: 50 cm H x 60 cm W x 47 cm D.

Weight: Shipping Weight: 70 kg.

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