

Plasma Assisted MOCVD Systems

Nano-Master, Inc. has developed the first Table Top Plasma Assisted Metal Organic Chemical Vapor Deposition (PA-MOCVD) system for InGaN and AlGaIn deposition processes. The features include five bubblers with individual cooling baths, heated gas lines, 950 °C platen, three gas rings, RF plasma source with Shower Head Gas Distribution and N₂ flush at the end of the process, 5 10⁻⁷ Torr base pressure, 250 l/sec turbo pump with oil-free scroll pump, PC controlled, fully automated and safety interlocked.

Recently this technology has been extended to five 4" wafer stand alone batch system which can be integrated into a cluster configuration to meet high throughput production needs.



NMC-3000 TableTop System

- Application: Green LED's (GaN, InGaN, AlGaIn, ...)
- 950 °C Platen, 2" Wafer
- 5 10⁻⁷ Torr Base Pressure
- PC Controlled with LabVIEW
- Recipe Driven, Password Protected
- Fully Safety Interlocked

NMC-4000 Stand Alone System

- 14" Stainless Steel Cube Chamber
- One 6" Wafer with 8" Platen or Five 4" Wafers on 12" Platen
- RF Plasma Source with Auto Tuner
- 1100 °C Platen, Rotating
- Manual or Automatic Wafer Loading and Unloading
- Compatible with Cluster Configuration

Atomic Layer Deposition Systems



Atomic layer deposition provides a unique method for depositing defect free ultrathin films on surfaces. This technique uses sequential surface reactions to coat substrates with high conformality and precise thickness control at the atomic scale. The process consists of sequential introduction of desired precursor vapors with hydroxyl groups, each of which forms about one atomic layer per pulse. Key challenges relate to fast removal of gas in the chamber to enhance throughput as well as activation of Nitrogen to form stoichiometric compounds of nitrides. Nano-Master, with extensive expertise in plasma processing and vacuum technology is able to provide unique solutions on its Plasma Assisted ALD product line.

NLD-4000

- HfO₂, Al₂O₃, TiO₂, ZnO, ZrO₂ and various other Films
- Growth <100 nm/hr, <1 nm Growth/Cycle
- < 1% Thickness Variation, ~ 100% Step Coverage Film Conformality
- 8" 400 °C Platen, PID Controlled, Rotation Optional
- Load Lock Chamber for Auto Load Unload
- Horizontal Gas Flow
- ~ 5x10⁻⁷ Torr Base Pressure with 250 l/sec Corrosive Turbo Pump
- Four 500 cc SS Electropolished Bubblers, Auto N₂ or Ar Flushing
- Optional Dual Chamber Showerhead RF Plasma Source 600 W RF Power Supply and Auto Tuner or 1 KW ICP
- PC Controlled, Fully Automated and Safety Interlocked