GEMStar-8 XT PEALD™ Benchtop PEALD/Thermal ALD System

Molecular Innovation™

The GEMStar XT platform is the next generation of the popular GEMStar line of full-feature, benchtop Atomic Layer Deposition Systems.

A small, rugged, lightweight machine for heavyweight R&D efforts, GEMStar XT makes optimal use of lab space and research budgets.

The GEMStar-8 XT PEALD Plasma Enhanced Atomic Layer Deposition system offers our greatest flexibility for both processing and substrate size including 300 °C (500 °C optional) PEALD and Atomic Layer Deposition (ALD) processing of up to 200 mm dia (8 inch wafers) in a single system.

GEMStar-8 XT PEALD is equipped with a 300 Watt air cooled direct Inductively Coupled Plasma (ICP) system with four metal sealed mass flow controlled gas inputs, dual 200 °C manifold zones and eight high speed c-seal material ALD valve ports, two locatable 175 °C material temperature zones. One standard port allows vapor push technology controlled by an additional high speed c-seal ALD valve offering a solution for low vapor pressure materials.

Some key features of the system include:

- The system accommodates substrates 200 mm diameter as standard. Door mounted end effectors are available for batch (Process Dependent) or other requirement on request
- 300 Watt Air Cooled Direct ICP Head with four metal sealed mass flow controlled plasma gas inputs
- Dual 200 °C manifold distributed gas delivery insures uniform gas distribution over the entire substrate and provides eight high speed ALD ports with dual (up to four optional) external gas connection ports
- Four 175 °C material bottle temperature zones
- Six DOT certified 150 ML Bottles with bellows sealed ON/OFF valves
- KF 50 Vacuum interface for high speed requirements
- All metal seal gas handling

- Mass flow controlled user selectable gas input up to 200 SCCM
- A KF 40 metrology interface allowing easy addition of QCM or other devices
- Touch safe exterior including USB controller with watchdog protection and EMO interface

Job/Script Control

The Arradiance GEMFlow ™ Control System allows complete user control over key operating parameters such as temperature, gas type, gas flow rate, plasma power and vacuum isolation.

User created/saved jobs allows substrate to substrate and batch to batch consistency without sacrificing flexibility

- Diagnostic system and logging creates traceable data of all system parameters during operation.
- Operational Laptop is Dell Mobile Precision M2800 CTO, Windows 7 Professional, 64-bit
- Internal GEMStar XT USB control module

Easy Maintenance

Simplified tool maintenance results from the use of a modular system design with benchtop access to all critical components.

- The modular system design allows easy swapping out of parts for service and cleaning, with minimal down time.
- Convenient and ergonomic benchtop access from the top and back to critical parts, precursor bottles, vacuum, power and gas connections.

GEMStar-8 XT PEALD Specifications	
Door Mounted Substrate End Effector	200 mm (8”) Dia. standard Other sizes available on request
System Dimensions	11” H x 32” W x 24” D designed to fit on desktop or lab bench
Reactor/Door Thermal Zones	1250 W reactor zone up to 300 °C ± 1 °C 250 W door zone up to 300 °C ± 1 °C 500 °C Processing available on request
Material Manifold	Dual 200 °C manifold zones 8 High Speed ALD Valve Controlled Material Ports Single Vapor Push Zone controlled by High Speed ALD Valve
Plasma Source	Power controllable with automatic tuning 300 W Direct ICP Air Cooled Head with easy access to four mass flow controlled plasma gas inputs with user selectable bellows sealed (ON/OFF) valves
Material Bottle Heated Zones	Four 175 °C movable insulated material zones
Material Bottles	Six DOT certified 150 ML Bottles with bellows sealed ON/OFF valves VCR-4 Connection
External Gas Input	Dual VCR-4 Input for external gasses such as available Ozone option Up four available on request Four VCR-4 Input for external Plasma gas inputs
Inert Carrier Gas	Mass Flow Controlled up to 200 SCCM. System couples carrier gas to first plasma gas input
Control System	GEMFlow™ Control Software Laptop Dell Mobile Precision M2800 CTO, Windows 7 Professional, 64-bit GEMStar XT USB control module
Half Rack	11” H x 12” W x 21” D locatable designed to fit on desktop or lab bench With RF Power Supply
Metrology Port	Spare KF-40 In Line metrology port for QCM or other customer needs
Equipment Safety	
Emergency Off	Standard controller interface
Touch Safe	All Exterior Components thermal and electrical
Watchdog	System will shut down if communication is lost to computer
Normally Closed Vales	All internal valves will close if power is lost
Certification	CE Marked Designed to comply with applicable SEMI S2 guidlines CSA available on request
Facilities Requirements	
Carrier Gas	10-20 psig regulated VCR-4 Type Connection
CDA (Clean Dry Air)	80 psig ± 5 psi regulated
Plasma Gas	Three 10-20 psig regulated VCR-4 Type Connection Carrier Gas is connected to initial Plasma Manifold input as part of system

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AC Power	Dedicated 110-120 50/60 Hertz VAC 20 Amps For Base GEMStar System Dedicated 110-120 50/60 Hertz VAC 20 Amps For Plasma System Power Strip For Plasma System Included
System Weight	250 lbs. Including Plasma System
Vacuum Pump (not included)	KF 50 Vacuum Connection Recommend 36 CFM dry pump

ARRADIANCE after many years of internal system, process, research and testing offers the **only** Benchtop **PEALD** and **Thermal ALD** system for your material development critical to your needs. Do not be fooled by other's claims.

We were told it could not be done, so we did it!