

GEMStar XT-R™ Benchtop Thermal ALD System



Molecular Innovation™

The GEMStar XT™ platform is the industry's only true benchtop Atomic Layer Deposition (ALD) System, now more configurable to meet our Customer's needs and budgets

GEMStar XT™ family produces best in class ALD films from high aspect ratio particles through 200mm substrates both in single substrate and batch modes of operation

Not yet ready for PEALD development, the GEMStar XT-R™ Thermal Atomic Layer Deposition systems offers 300 °C (450 °C optional) ALD processing through the full range of substrates, including Solar Cell ALD development and the ability to upgrade to full Plasma Enhanced (PEALD) capability in the future!

Configured standard with either a single (S) or dual (D) 200 °C manifold zones, four (S) or eight (D) high speed material ALD valve ports (one with vapor push technology), two locatable 200 °C material temperature zones and an external gas interface, the GEMStar XT-R™ represents one of the most configurable systems in its price range.

Key System Features

- ◆ Adjustable reactor temp up to 300°C
- ◆ Up to 200°C uniform gas distribution delivery
- ◆ Pulsed Vapor Push (PVP™) to handle very low pressure material
- ◆ Selectable flow-through and exposure modes of deposition
- ◆ Substrate configurable end effectors up to 200 mm diameter substrates, batch cassette options as well as a heated platen
- ◆ User selectable carrier gas MFC controlled input up to 200 SCCM
- ◆ Field proven GEMFlow™ Control System
- ◆ Watchdog protection and EMO interface
- ◆ Operator touch safe exterior



Ease of Operation

The Arradiance GEMFlow™ Software provides complete user control over all key operating parameters such as temperature, gas flow rate, high-speed ALD valves, RF Power and vacuum isolation.

- ◆ Preloaded on business level Windows® Laptop
- ◆ User created processes can be saved enabling substrate to substrate and batch to batch consistency without sacrificing flexibility
- ◆ Diagnostic system and logging creates traceable data of all system parameters during operation
- ◆ Internal GEMStar XT USB control module

Safety

GEMStar XT Systems are designed to be SEMI S2 Compliant where applicable without sacrificing the needs of material research and development needs

- ◆ CE Compliant, CSA Optional
- ◆ Watchdog protection and EMO interface
- ◆ Operator touch safe exterior
- ◆ RGIP™ Reactor Gas Injection Protocol avoids accidental, unwanted, or unsafe chemical material reaction for all gas injection ports for simple and complex nanolaminate processes

Serviceability

Modular ergonomic design with top panel access to all critical components

- ◆ Fast precursor changes and reconfiguration
- ◆ Easy access power, vacuum and gas connections
- ◆ Perfectly suited for glove box configuration

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Specifications	
System Dimensions	11" H x 32" W x 24" D designed to fit on desktop or lab bench
Door Mounted Substrate End Effector	Specify end effector diameter at time of order (200 mm default, 150 mm, 100 mm) Other sizes or batch cassettes available on request
Reactor/Door Thermal Zones	Two controllable zones up to 300 °C ± 1 °C 450 °C Processing available on request
Material Manifold	Single (S) or Dual (D) controllable manifold zones up to 200 °C Four (S) or eight (D) High Speed ALD Valve Controlled Material Ports Single Pulsed Vapor Push (PVP™) Zone controlled by High Speed ALD Valve
Material Bottle Heated Zones	Up to four movable zones up to 200 °C
Material Bottles	Up to four or six (2 STD) DOT certified 150 ML Bottles with bellows sealed valves
External Gas Input	Single-S or up to four (2 STD)-D Input for external gasses such as optional Ozone
Inert Carrier Gas	Mass Flow Controlled up to 200 SCCM
Control System	GEMFlow™ Control Software Windows® Professional 64-bit Laptop GEMStar XT™ USB control module
Metrology Port	Spare KF-40 In Line metrology port for QCM or other customer needs Spare KF-25 Reactor port for other customer needs
Vacuum Gauge	Convection Vacuum Gauge
Upgradeable PEALD	KF-50 PEALD Reactor for Plasma Enhance capability
Equipment Safety	
Emergency Off	Standard DB9 port to support EMO or other safety shut down requirements
Touch Safe	All Exterior Components thermal and electrical
Watchdog	System shuts down to Safe mode if communication is lost with computer
Normally Closed Vales	All internal valves close when power removed
Certification	CE Marked Designed to comply with applicable SEMI S2 guidelines CSA optional on request
Facilities Requirements	
Carrier Gas	10-20 psig regulated VCR-4 Type Connection
CDA (Clean Dry Air)	80 psig ± 5 psi regulated
AC Power	Dedicated 110-120 VAC 50/60 Hz 20 Amps
System Weight	<150 lbs.
Vacuum Pump (optional)	KF 50 Vacuum Connection Minimum of >= 12 cfm Fomblin Two Stage Rotary Vane Vacuum Pump or Dry Pump