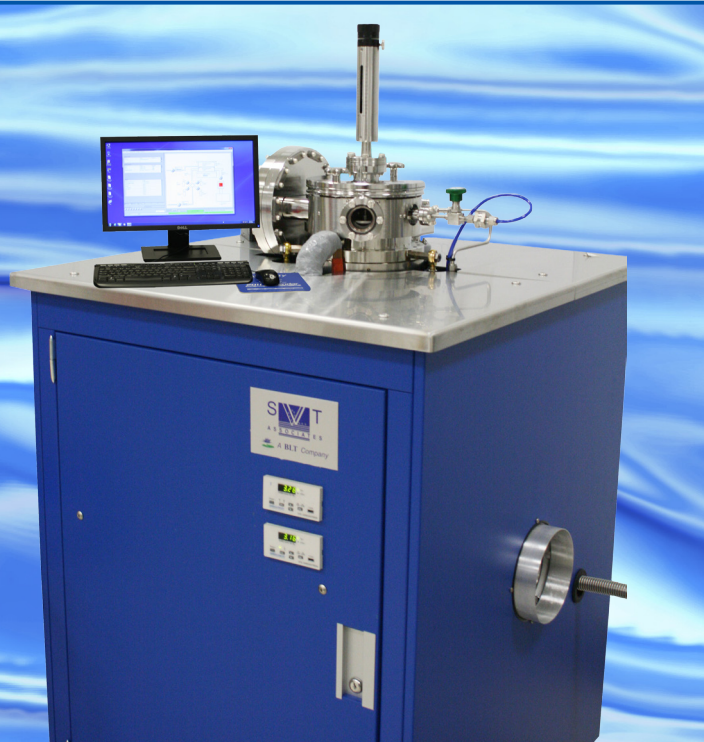


ALD System

Atomic Layer Deposition

Engines for Thin Film Innovation



SVT Associates' ALD System

- SVT Associates' Atomic Layer Deposition (ALD) system is a versatile research deposition tool for thermal or energy enhanced ALD
- With up to 8 precursor lines and a hot wall deposition chamber, a wide range of applications may be performed by a single system
- Sample introduction is rapid and convenient with a quick hatch or the optional load lock
- SVT Associates' ALD system can be interfaced with other deposition and metrology tools
- Integration of in-situ metrology tools and the RoboALD™ software/system automation increases process reproducibility
- Fully UHV Upgradeable
- Demo and deposition services available

SVT Associates, Inc.

- Leading manufacturer of thin film deposition equipment since 1993
- In-house laboratory for materials research and process development
- Established a diverse range of deposition components, systems, integrated sensors, and process control
- Developed strong combination of equipment manufacturing and process know-how
- Seven Applications Laboratory deposition systems producing world class materials
- Diverse system product line spanning the thin film deposition market
- Leading supplier with over 190 systems in the field

Applications

- High-k Dielectrics
- Nanocoatings
- MEMS
- Photonic Crystals
- Diffusion Barriers
- Device Encapsulations
- Surface Modification Layers



Specifications Model ALD-P-100B

ALD REACTOR MODULE

Reactor Chamber

- Up to 4" (100 mm) Wafer Capacity
- Optional Hot Wall Chamber Design – Temperature Controlled
- (UHV Compatible version available)
- Gas Inlet Injection Port for Precursor Manifold(s)
- Close Coupled Sample Heater to 350 C (500 C with Hot Wall Option)
- Pumping Port
- Provision for Quartz Crystal Monitoring and RGA

Reactor Pumping

- Dual Stage Rotary Vane Pump – 5 cfm (8.5 m3/hr)
- Heated Pumping Line Isolated with Valve
- Hot trap and Particle Filter, in Pumping Line
- Oxygen service and Dry Pump Pumping Options Available

Base Pressure

- <3 x 10⁻³ Torr or better with standard pumping

Vacuum Gauge

- Baratron® Gauge

Electronics

- Control Electronics
- Sample Heater Power Supply and Controller
- Chamber walls Heater Power Supply, Thermocouple and Temperature Controller
- Gas Line Heater Power Supply,
- Thermocouple and Temperature Controller

ALD Console

- Clean Room Compatible Metal Enclosure

Safety

- Software safety interlocks
- Door Interlocks
- Low voltage Emergency Off (EMO)
- Single point power connection

PRECURSOR MANIFOLD(S)

Carrier Gas Line

- Common Line to ALD Valves (Typically Ar) with Mass Flow Controller

Precursor Admission

- Precursor sources from Liquid, Solid, or Gas phase
- Heated Precursor Manifold with up to 4 Precursors Each
- (Option for second Manifold for up to 8 Precursors)
- Fast ALD High Temp Valves (15 msec)
- Metal VCR® fittings
- Gas Line Heating to 200 C

PROCESS CONTROL

Robo-ALD™

- Software and Firmware – PLC
- Based on NI LabVIEW® platform

- Recipe Entry and Operation Loops
- Logging of parameters – T, P, Flow, (Optional RGA)
- Log files can be exported to Excel®
- Automated pumpdown / vent to atmosphere

Deposition Uniformity

- < ± 1 % over 100 mm – Reference – Al₂O₃, thickness > 20 nm

Deposition Mode

- Standard, or “soak” mode for high aspect ratio samples

LOAD LOCK (OPTIONAL)

Load Lock Chamber

- 100 mm Wafer Capacity
- Magnetic Transfer Rod, Manual Gate Valve
- Pumping, Venting, and Vacuum Gauge

PLASMA SOURCE (OPTIONAL)

- Inductively Coupled Plasma Source
- RF Generator and Tuning Network
- Qty (2) MFC (Options for additional Gases)
- O₂, N₂, H₂ Compatible

EXTERNAL SERVICES

Electrical Service

- 220/380 VAC, 50A, Single or Three Phase, 50-60 Hz

COMPRESSED AIR/N₂/Ar

Valve Manifold

- 75 PSI CDA at 0.1 cfm (500 kPa at 2.8 liter/min) pressure regulated
- Relative humidity < 20% Dry N₂ may be substituted

Carrier Gas

- 5 PSI (35 kPa) Research Grade N₂ or Ar
- Also used to vent reactor

Exhaust

- Vacuum Pump and Cabinet

COOLING WATER

Reactor Chamber

- 2 l/minute at approx. 20 C, or a water chiller when outer chamber wall is run >150 C

