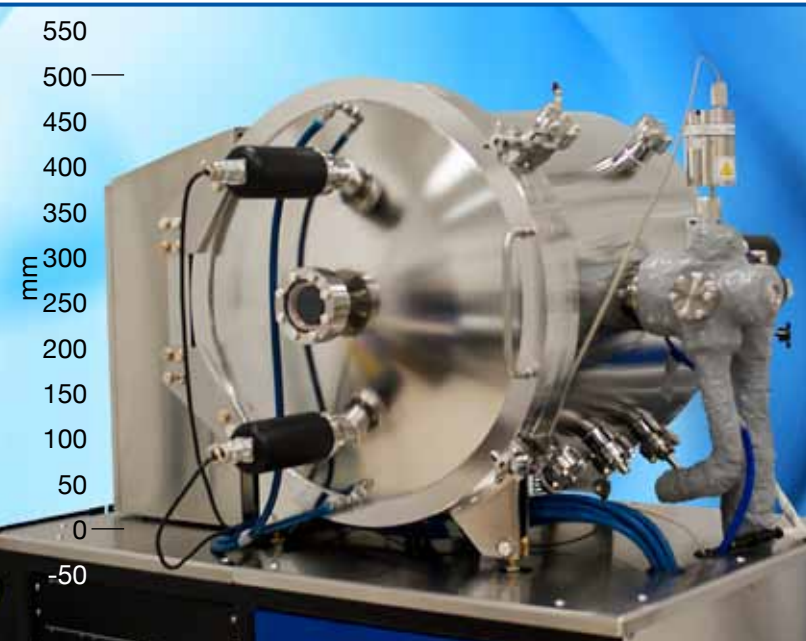


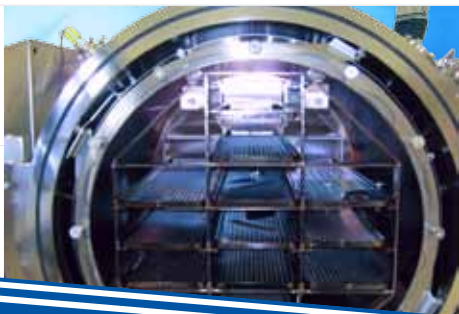
Large Scale ALD Model 503

Versatile Production Deposition System



ALD Model 503

- Atomic Layer Deposition (ALD) Model 503 is a versatile production deposition tool for thermal or energy enhanced ALD
- With four precursor lines standard (*additional lines available*) and a hot wall deposition chamber, a wide range of applications may be performed by a single system
- Integration of in-situ metrology tools and the RoboALD™ software/system automation increases process reproducibility
- Fully UHV Upgradable
- 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
- Hard Coatings



Specifications ALD Model 503

ALD REACTOR MODULE

Reactor Chamber	500 mm Diameter x 500 mm Hot Wall Chamber Design – Temperature Controlled (<i>UHV Compatible Version Available</i>) Three Gas Inlet Injection Ports (Two for Precursor Manifolds and One for Gas Inlet) Sample Heating to 500 °C Hinged Access Door, Pumping Port Provision for Quartz Crystal Monitoring and RGA
Reactor Pumping	Dual Stage Rotary Vane Pump – 53 cfm 90 m ³ /hr Heated pumping line isolated with valve Hot trap and particle filter in pumping line Other pumping options available
Base Pressure	< 3 x 10 ⁻³ Torr or better (<i>< 1 x 10⁻⁶ Torr with additional pumping</i>)
Vacuum Gauge	Convectron® Gauge
Electronics	Control Electronics 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

PRECURSOR MANIFOLD(S)

Carrier Gas Line	Common line to each ALD valve One mass flow control
Precursor Admission	Precursor sources from liquid, solid, or gas phase Heated precursor manifolds with 4 precursors standard (<i>additional precursor lines available</i>) 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, (<i>Optional RGA</i>) Log files can be exported to Excel® Automated pumpdown / vent to atmosphere
Deposition Uniformity	Average uniformity 3% or better throughout chamber – Reference – Al ₂ O ₃ , Thickness > 20 nm

Deposition Mode	Standard, or “soak” mode for high aspect ratio samples
Safety	Software safety interlocks Low voltage emergency off (EMO) Single point power connection

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 inner chamber wall is run > 350 °C

