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Infinity Ion Beam Deposition System

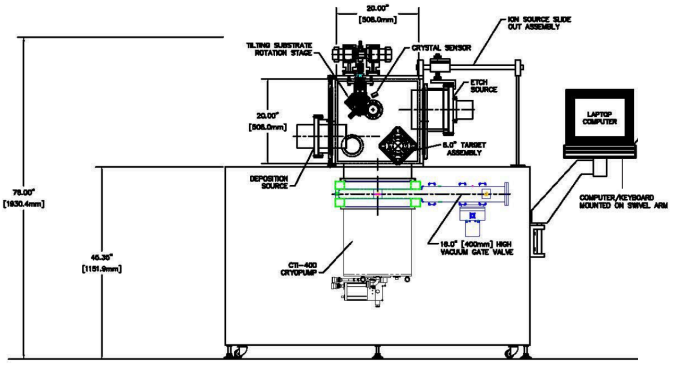
Technical Specification Sheet

The Infinity Ion Beam Deposition System provides the best quality films for the most demanding and challenging applications.

Benefits Include:

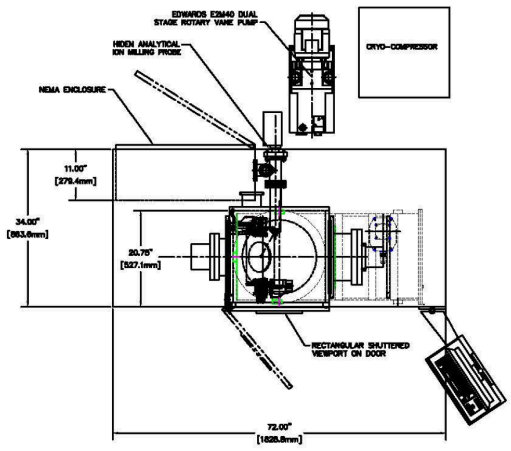
- Pre-configured end-to-end ion beam deposition system with options for hardware and monitors
- Independent control of ion energy and flux – provides control of film microstructure, stoichiometry and stress
- Stable deposition rates enable excellent control of film thickness and uniformity
- Second ion source for ion-assisted deposition and pre-clean
- Easy-to-use software built on GE Cimplicity – access to source code provided

Infinity Ion Beam Deposition System



Infinity Ion Beam Deposition System Schematic

Bird's-eye View



Typical Deposition Rates

Compound	Symbol	MW (amu)	Deposition Rate (A/min)	Sputter Yield (molecules/ions)
Aluminum Oxide (1102)	Al203	101.9	33	0.05
Cadmium Sulphide (1010)	CdS	144.46	880	1.2
Gallium Arsenide (100)	GaAs	144.64	260	0.38
Gallium Arsenide (110)	GaAs	144.64	640	0.95
Galliium Phosphide (111)	GaP	100.69	636	1.04
Gallium Antimonide (111)	GaSb	191.47	748	0.88
Indium Antimonide	InSb	236.57	608	0.60
Lead Telluride (111)	PbTe	344.8	1508	1.48
Lithium Niobate (Y-cut)	LiNb03	147.85	156	0.20
Molybdenum Carbide	Mo2C	203.89	112	0.20

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Specifications

Criteria for Selecting an Ion Beam

Process:
- Inert or reactive gas
- Substrate/film specifications

System:
- Single wafer

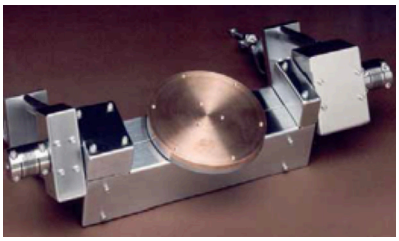
Water Cooling

Angled Deposition

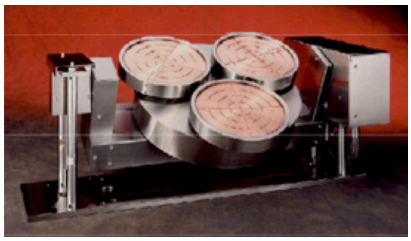
Substrate Size:
- 1-inch to 8-inch diameter
- Process rates
- Substrate rotation

Substrate Stage Tilt Fixture: Single and Multi-Rotation

- Single rotation available in 6 and 8- inch diameter
- Water-cooled
- Deposition uniformities < ± 2%
- Etch uniformities < ± 5%
- Tilt capability for enhanced uniformity optimization



Single Rotation Fixture



Multi-Rotation Fixture

Ion Beam Deposition Sources

RF Sources (10 or 12cm)	DC Sources (8, 10 or 12cm)
– Best for reactive processes	– Best for non-reactive processes
– Lowest contamination levels (no filament)	– Filament (lowest price)
– Excellent for dielectrics, good for metals	– Excellent for metals, good for dielectrics
– Best MTBM (200+ hours)	– Plasma bridge or hollow cathode neutralizers

Ion Etch & Assist Sources

These have the same DC and RF ion source trade-offs as above, but must address a larger surface area:

- RF sources: up to 12 and 16cm
- DC sources: up to 11, 15 and 21cm

Ion Beam Endpoint Control

Deposition processes:
- Time-power: often used for simple deposition processes (1-20 layers)
- Quartz Crystal Monitoring (QCM): Inficon IC6 with a failsafe for time-power

Etch processes:
- Time-power
- Optical emission spectrograph
- Secondary ion mass spectrometers (SIMS)

Ready to learn more about the Infinity Ion Beam Deposition System? Contact us today.

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