

When precision is paramount, Reticle delivers.

Reticle

Ion Beam Sputter Deposition
for precision optical coatings

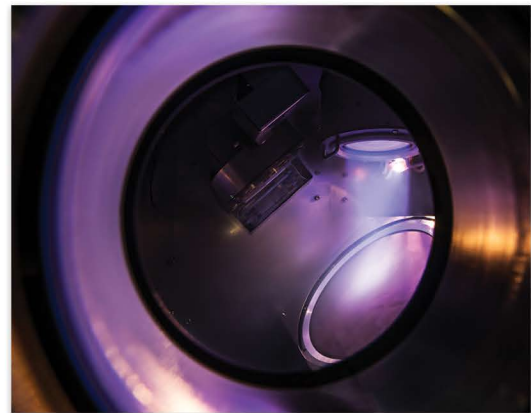


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A **ANGSTROM**
ENGINEERING
Your Thin Film Partner

Reticle

Ion Beam Sputter Deposition (IBSD)

A focused beam of highly energetic ions is accelerated toward a target comprising the material to be deposited. Thoughtful design of the ion beam focusing optics confine the beam entirely to the area of the target, eliminating any risk of contamination. The IBSD process creates a highly energetic flux of deposition material, leading to films with improved density, hardness, and surface roughness compared to those deposited by evaporation processes. Contrary to conventional magnetron sputtering, IBSD takes place in a high vacuum environment, minimizing noble gas inclusion in the deposited film and improving the environmental stability of the coating.



Deposition Ion Source

Self-aligned ion optics are configured specifically for the desired deposition requirements and geometry of your process.

Secondary Ion Source

A variety of possible ion sources can be optimized for substrate cleaning/etching, ion assisted deposition, or reactive IBSD.

Target Carousel

The deposition ion source is directed toward a continually rotating, water-cooled material target assembly that indexes multiple targets, each optimized in both size and position for the required deposition geometry.

Vacuum

Reticle can be configured for both high and ultra-high vacuum environments. Several techniques can be utilized for improved base pressure, increased pumping speeds, and overall process stability.

Precise Thickness Control

Real-time optical correction and layer termination are achieved via wavelength agile optical monitoring or in-situ ellipsometry. Deposition rate and film thickness can be controlled using time and power, or physical measurements such as a quartz crystal microbalance (QCM). Depending on the substrate being coated, both direct and indirect optical measurement configurations are available.



Film Uniformity

Planetary Motion

Introduces a third axis of motion to the variable angle stage. The size, position, and gear ratio of each planet are optimized to provide best possible film uniformity.

Variable Angle Sweep

In-built angular motion through the deposition flux improves thickness uniformity and sidewall coverage.

Uniformity Shaping

A flux correction shield can be implemented between the source and substrate. The shape of each correction shield can be modeled and empirically optimized for any process.

"The Angstrom system has revolutionized our work-flow. We are much more confident in our processing, and can push true scientific boundaries without worrying about the possibility that some technical detail will throw the experiment off. Angstrom Engineering has been wonderful to work with. The instrument and customer service are by far the best. Aeres process control software provides among the best control I've ever worked with. It was immediately easy to produce the desired deposition in a highly reproducible way."

*Dr. Matthew White
University of Vermont*

Productivity & Throughput

AERES Process Control Software

Control station PC with touch-screen manages each control variable, including primary and secondary ion sources, power output, planetary and angular motion, and target carousel. Feedback from an optical monitor, ellipsometer, or QCM is automatically tracked and recorded for review.



Automated Load Lock

A secondary vacuum chamber can be annexed, allowing for a significant improvement in throughput. Keeping the main chamber pumped down minimizes the risk of contamination and eliminates the need for vent and pump down cycles.



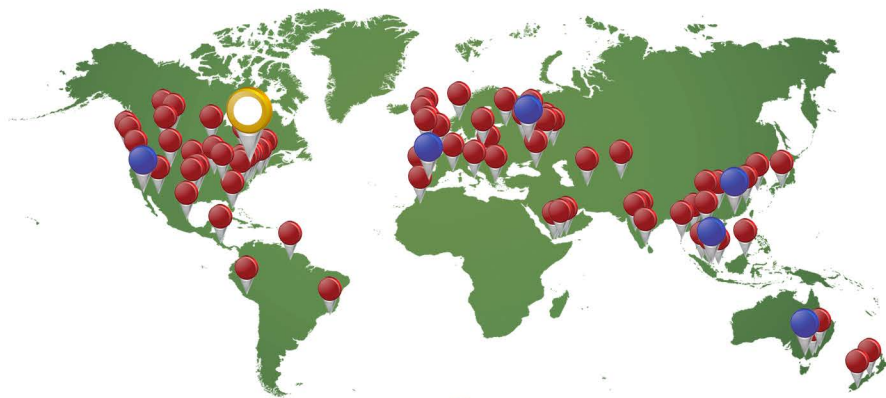
Which Reticle do you need?



The substrate area to be coated, system throughput requirement, and target carousel configuration are the determining factors in selecting which of the standard Reticle platforms will best suit your process. Whether you're coating 100 micron wide laser diode bars or 300 mm diameter wafers, there is a Reticle platform that will make it happen.

Service and Support: Our Commitment

An Angstrom system in your lab makes us partners; we become part of your team. We guarantee **same day** response to any service inquiry regarding parts, technical support, and software support.



-  Head office and manufacturing facility
-  Service and Support facilities
-  Some of our existing systems in use



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