ATC-E UHV SERIES

Electron Beam Evaporation Systems

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GENERAL INFORMATION

AJA International **ATC-E UHV Series Electron Beam Evaporation Systems** are available in ATC-1800E and ATC-2200E cylindrical, UHV style chambers. These physical vapor deposition systems offer exceptional value while delivering optimal performance and utilizing top quality sub-components. They inherit many design features and common parts from the highly evolved ATC & ATC Orion sputtering tools and can be outfitted with single or multi-pocket linear UHV e-beam sources, thermal evaporation sources, ion / plasma sources, Knudsen cells, low temperature evaporation cells for organic materials and Radak Sources. In addition, these systems are available with load-locks, QCM control, heated or cooled substrate holders with tilting capability, planetaries, various pumping packages and automated control.

SYSTEM FEATURES

- **Accommodates 6-pocket (15cc) linear electron beam source**
- **In-situ Crucible Exchange**
- **Secondary Thermal Evaporation Sources**
- **Ion Source For Ion Assisted Deposition and Sample Pre-Cleaning**
- **Accommodates up to 8” Diameter Substrates**
- **Substrate Heating, Cooling (LN2/H2O), Tilting, RF Biasing, Rotation and Z-Motion**
- **Single and Multi-Crystal Controllers Available for Single-Layer, Multi-Layer, and Co-Deposition Applications**
- **Turbo-pumped Load-Lock Systems Available with Cassettes**
- **UHV Base Vacuum (e10-8 to e10-10 Torr)**
- **Accommodates up to (4) MFC Gas Lines**
- **Semi-Automatic or LabVIEW Based Computer Control System**

SUBSTRATE HOLDERS – HEATING / COOLING

AJA can fit your customized evaporation system with a wide variety of substrate holders. Our substrate heaters can be equipped with azimuthal rotation, heating up to 1000°C, RF/DC bias capability and tilting in a single axis plane. Our cooled stages can be equipped with H2O or LN2 cooling in the static or rotational modes. Additional features include azimuthal rotation, RF/DC bias and tilting in a single axis plane. Substrate holders can be semi-automatic or fully automated depending on the process requirements. Custom configurations are also available when heating and cooling are required.

For batch coating applications domed-styled substrate carriers optimized for lift-off processing and planetary-style holders are also available. Process gas ring or gas distributor options are offered for reactive processing or applications requiring an anneal step.

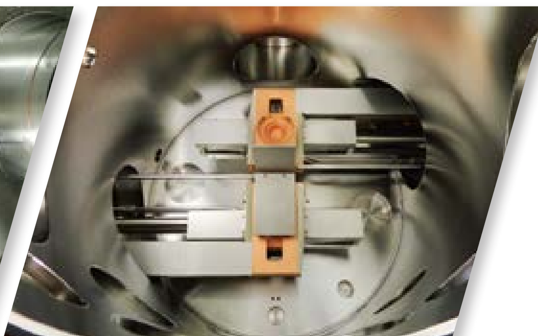
Glancing Angle Deposition (GLAD) 4" Substrate Holder with 800°C heating, rotation, and +/- 180° tilting

Glancing Angle Deposition (GLAD) 6" Substrate Holder with water cooling, rotation, and +/- 180° tilting

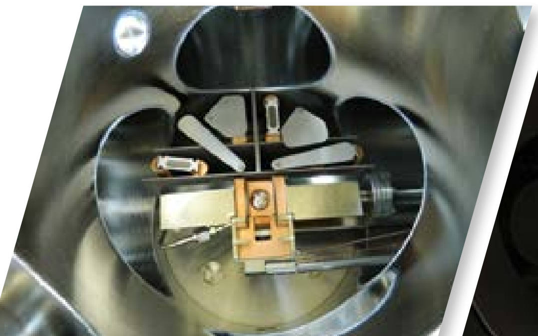
EVAPORATION SOURCES

AJA offers a variety of sources on our ATC-E Series Evaporation Systems. The vertical cylinder ATC-E series chambers are best suited for linear, multi-pocket, UHV, e-beam sources which are side mounted and attached to a convenient slide rail for service and loading access. Spare ports on the chamber bottom straddling the linear e-beam source allow for the addition of multiple secondary thermal evaporation sources. Secondary thermal sources are typically optimized for specific materials (organic materials) or to allow co-evaporation capabilities. The ATC 2200-E system allows (2) UHV multi-pocket linear e-beam evaporation sources for co-evaporation along with secondary thermal sources as well.

6-pocket, 15cc UHV linear e-beam evaporation sources



Dual 6-pocket, 15cc UHV linear e-beam evaporation sources

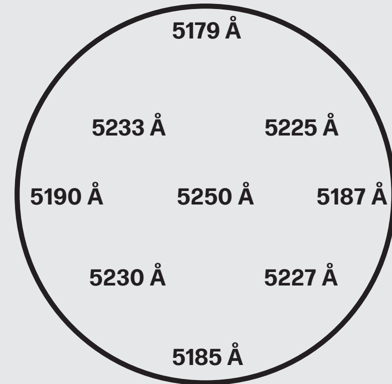


6-pocket, 15cc UHV linear e-beam evaporation sources with 4 secondary thermal evaporation sources

Up to 6 thermal evaporation furnaces on easy access slide rail

TYPICAL RATE / UNIFORMITY DATA

The ATC-E Series Evaporation Systems can be configured for high rate, low rate, multi-layer and co-deposition applications depending on the chamber, sources, substrate carrier and general configuration chosen. Proper power, crucible liner or boat material, soak, and XY sweep decisions must be made for each material to be evaporated to ensure the desired rates, stability and film characteristics. Typically, materials with good heat transfer properties (eg. Al) do not require XY sweep but may require a liner (Au) whereas materials with poor thermal properties (eg. Cr) tend to tunnel and spit unless the e-beam power is diffused with an XY sweep. Proper substrate fixturing is required to obtain the best uniformity.



Deposition of SiO_2 with XY sweep on 100mm diameter Si wafer with simple, azimuthal rotation, run for 75 seconds at 8450V, 24 mA, 500 mm working distance. Uniformity is +/- 0.7%.

SYSTEM OPTIONS

Bake-out Jacket

In-situ Crucible Exchange

Ion Source

Secondary Thermal Evaporation Source with In-situ Refill Mechanism

Load-lock Cassette

In-situ Crucible Video Monitoring System

For questions, quotes and ordering information please contact us directly:

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