

High Resolution Sputter Coater

AGB7234-DRY



Compact benchtop high resolution coater with MDP pumping system for automatic coating of samples prior to analysis by high resolution SEMs

The Agar sputter coaters are ideally suited for routine sample coating applications. Simple and economical to operate, the compact bench top units offer rapid pump down times, fine grain coatings and negligible sample heating.

The Agar high resolution sputter coaters offer real solutions to the problems encountered when coating difficult samples for FEG-SEM. In order to minimise the effects of grain size, the high resolution coater offers a full range of target materials with unprecedented control over thickness and deposition conditions.

To minimise charging effects in the SEM, the stage design and wide range of operating pressures allows precise control of the uniformity of the coating. The high/low chamber configuration allows easy adjustment of working distance.

Sputter Chamber

Two alternative height 150 mm diameter Pyrex work chambers are provided:

- Ø150 x 250mm used in combination with the standard stage
- Ø150 x 165mm used in combination with rotary planetary tilting stage

This enables the working distance to be readily changed.



The motorised specimen stage with manual tilt delivered standard with the system has four holders which move in a non-repetitive rotary planetary motion. A choice of 4 speeds are available and the specimen platform can be tilted from 0-90°.

Specimen tables can be selected to suit a wide range of standard SEM stubs. 4 specimen tables are included with the rotary planetary tilting specimen stage.

Sputter Head

The hinged top-plate contains the 'cool' planar magnetron sputtering head with a quick change of 28 mm dia target.

Targets such as Tantalum, Gold, Gold/Palladium, Platinum, Platinum/Palladium, Iridium or Tungsten can be readily interchanged. Some targets of 28 mm dia can be delivered with a thickness of 0.1 mm or 0.2 mm. A vacuum safety interlock prevents operation with the chamber open.

Control System

The complete operating cycle including pumping, argon flushing, timing and venting is carried out under microprocessor control with user defined inputs to select the sputtering current and coating time. The sputter current is set on a digital programmer and is independent of the argon pressure in the chamber. Manual operation is also possible, and this mode is used to set the operating parameters.

Alternatively, the film thickness monitor delivered standard with the high resolution coater can be used to terminate the sputtering process when the desired thickness has been reached.

The precision argon leak valve is solenoid operated and gas pressure can be closely controlled.

Pumping System

The system is pumped by a turbo-molecular drag pump (MDP) backed by a rotary pump. The turbo-molecular drag pump is bolted to the main chassis and the rotary pump complete with anti-vibration platform is designed to sit on the bench behind the main unit.

The system is designed to achieve a vacuum of 1×10^{-3} mBar in 1 minute with a base pressure of 1×10^{-5} mBar.

The high-capacity pumping system in combination with the precision leak valve provide the gas handling capability necessary for use with non-noble metal targets.

Should you require an oil free alternative to the rotary pump please specify "Dry Pump Option" on your purchase orders. Dry Pump Spec: 0.9m³/hr, Modified Software Control, Oil Free.

Thickness Monitors

The Agar film thickness monitors are designed for use with the coating units. Each monitor has a four digits LED display, push button zero and crystal lifetime check.

The density of two different target materials can be stored in the memory. The tooling factor compensates for differences between the specimen and crystal positions in the chamber. The monitor can also be used with the Agar carbon coater.

Resolution of measured coating thickness is better than 0.1nm for any material.

The high-resolution carbon coaters include a terminating film thickness monitor as standard.

Specifications

Chamber size - 150mm dia x 250mm high 150mm dia x 165mm high

Sputter target – ø28mm. Optional Cr, Ta, Au, Au/Pd, Pt, W, Ir, Ag can be quoted separately.

Sample table - Motorised Rotary Planetary stage with manual tilt (standard) Manual tilt 0 90°
Variable speed rotation 4 sample tables delivered standard (specify when ordering)

Sputter supply - Programmable digital control, microprocessor-based Safety interlocked Current control independent of vacuum, 80mA max.

Sputter head - Low voltage planar magnetron type with quick target change Wrap-around dark-space shield

Analogue metering - Vacuum: atmosphere - 0.001mb, Current: 0 - 100mA

Control method - Automatic operation of gas purge and leak functions, Independent power/pressure adjustment allows operation at argon gas pressure ranges of 0.2 - 0.005 mbar.
Automatic process sequencing
Full manual override
Digital timer (0-300 sec) with pause Automatic vent

Thickness monitoring - Film Thickness Monitor for Agar SEM Turbo Coater (AGB7240) included standard

Dimensions - Width 600mm (23.6"), Depth 600mm (23.6"), Height 450mm (17.7")

Weight - 40kg

Power consumption - 550 VA max.

Pumping System

Configuration - Turbo-drag/rotary pump combination. Optional diaphragm pump instead of rotary pump

Pumping speed - 300 litres/min @ 0.1mb

Pump downtime - 1 min. to 1x10⁻³mb (1.5 min. with diaphragm pump option)

Ultimate pressure - 1x10⁻⁵ mBar

Bench Top System - Vacuum pump is mounted on benchtop compatible anti-vibration table with stainless steel bellows coupling system

Services required

Supply	100 – 120 or 200 – 240 VAC, 50/60Hz (to be specified on order)
Power	175 VA max.
Argon Gas	Purity min. 99.9% Pressure: regulated 7 – 8 psi (0.5 – 0.6 bar) Hose connection: 6.0 mm (1/4")

Thickness Monitors (optional)

General specification	Microprocessor based 4-digit display, push button zero 6MHz crystal with lifetime check 5/sec update rate
Thickness range	0 nm to 999.9 nm
Resolution	Better than 0.1nm
Density range	0.50-30.00gm/cm ⁻³
Tooling factor range	0.25-8.0
Termination range	0 nm to 999.9 nm