

## High Resolution Sputter Coater AGB7234



### **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.

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### 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 57mm dia target. 3.2 mm thickness Chromium target and 0.1 mm Platinum/Palladium target are delivered standard.

Other targets such as Tantalum, Gold, Gold/Palladium, Platinum, Platinum/Palladium, Iridium or Tungsten can be readily interchanged. Some targets of 57 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  $1 \times 10^{-3}$  mBar in 1 minute with a base pressure of  $1 \times 10^{-5}$  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: 0.9m<sup>3</sup>/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	Cr $\varnothing$ 57 x 3.2mm and Pt $\varnothing$ 57 x 0.1mm fitted as standard. Optional Ta, Au, Au/Pd, Pt, W, Ir, Ag Shutter for target conditioning included standard.
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 <sup>-3</sup> mb (1.5 min. with diaphragm pump option)
Ultimate pressure:	1x10 <sup>-5</sup> mBar

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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<sup>3</sup>

Tooling factor range: 0.25-8.0

Termination range 0 nm to 999.9 nm

### Ordering Information

<i>Product</i>	<i>Order Code</i>
High Resolution Sputter Coater	AGB7234
Rotary Planetary Tilting Stage	AGB7231 (delivered standard with new AGB7234)
Benchtop pumping system for coater*	AGB7366 (delivered standard with new AGB7234)
Film Thickness Monitor for Agar SEM Turbo Coater	AGB7240 (delivered standard with new AGB7234)
Thickness monitor crystals (Pk 10)	AGB7732
Chromium Disc Target, 57mm dia x 3.2mm	AGB7396 (one delivered standard with new AGB7234)
Platinum/Palladium Disc Target, 57mm dia x 0.1mm	AG8076
Platinum/Palladium Disc Target, 57mm dia x 0.2mm	AG91115
Tantalum Disc Target, 57mm dia x 0.3mm	AGB7399
Gold Disc Target, 57mm dia x 0.1mm	AGB7390
Gold Disc Target, 57mm dia x 0.2mm	AGB7390-2
Gold/Palladium Disc Target, 57mm dia x 0.1mm	AGB7391
Gold/Palladium Disc Target, 57mm dia x 0.2mm	AGB7391-2
Platinum Disc Target, 57mm dia x 0.1mm	AGB7392 (one delivered standard with new AGB7234)
Platinum Disc Target, 57mm dia x 0.2mm	AGB7392-2
Tungsten Disc Target, 57mm dia x 3.2mm	AGB7389
Iridium Disc Target, 57mm dia x 0.3mm	AGB7388
Silver Disc Target, 57mm dia x 0.1mm	AGB7394

\*MDP is not included