



SPUTTER COATERS



COMPACT MANUAL AND AUTOMATIC
BENCHTOP COATING UNITS
WITH INTEGRATED PUMPING SYSTEM
FOR FINE GRAIN COATING OF SEM SAMPLES

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SPUTTER COATERS

Introduction

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 sputter coaters can be supplied complete with an integrated pumping system or pump connection kit for use with an alternative pump. The integrated pumping system can be readily interchanged and shared with the Agar carbon coater. Alternatively, the dual pumping system with changeover valve enables two Agar coating units to share the same pump.

The Agar range of film thickness monitors can be added to measure coating thickness.

Sputter Chamber

The fully annealed Pyrex work chamber (120 x 120mm) is sealed with wide section 'O' rings to the base-plate and hinged top-plate. The base-plate contains the large area pumping port and a feedthrough port for the optional film thickness monitor.

The standard specimen table accepts up to 6 samples. The height of the table is adjustable to give working distances of 25mm to 80mm. A larger specimen table accepting up to 12 samples is optionally available and is supplied as standard with the film thickness monitor.

Sputter Head

The hinged top-plate contains the 'cool' planar magnetron sputtering head with a quick change 57mm dia gold foil target. Other targets such as platinum and gold/palladium can be readily interchanged. A vacuum safety interlock prevents operation with the chamber open.

Control System - Manual Coater

All controls are front panel mounted for easy access. Sputtering conditions are controlled by the argon leak valve in conjunction with the manual power selector. Sputtering time is set via the digital timer. A test facility allows the conditions to be pre-set prior to initiating the timed sequence which can be interrupted by use of the pause button.

A meter displays vacuum level and sputtering current.

The optional film thickness monitor can be used to determine coating thickness.

Control System - Automatic

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.

Further automation can be achieved with the addition of the thickness monitor with terminator. With this fitted, the automatic coating thickness can be terminated when the pre-set coating thickness has been reached. The terminating capability can only be used with the automatic coating unit.

Pumping System

The compact pumping system is mounted on an anti-vibration platform and is designed to sit on the bench top behind the coating unit. The pump is connected to the coater by a short stainless steel bellows with standard KF16 fittings. Pump down to 0.1mb is 35 seconds with an ultimate pressure of 5×10^{-3} mb.

The dual pumping system includes a changeover valve and two stainless steel bellows for connection to two Agar coating units. Either unit can be evacuated by operation of the valve.

A rotary pump connection kit is available for users wishing to use an alternative pump.

Thickness Monitors

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

The density of two different target materials can be stored in the dual source 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. The terminating facility is only compatible with the automatic sputter coater.

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

Specifications

Chamber size:	120mm dia x 120mm high (4.75" x 4.75")
Chamber size for SE:	150mm dia x 165mm high (5.9" x 6.5")
Sputter target:	Gold fitted as standard (Au/Pd or Pt auto only) 57mm dia. x 0.1mm thick
Sample table:	Holds 12 SEM stubs Height adjustment 50mm
Sputter supply:	Microprocessor based safety interlocked variable, 40mA max.
Sputter head:	Low voltage planar magnetron type with quick change target wrap-around dark-space shield
Analog metering:	Vacuum atmosphere - 0.001mb Current 0-50mA
Dimensions:	420mm wide x 295mm deep
Weight:	10Kgs

Manual Coater

Sputter Supply:	Manual power selection
Control method:	Manual gas and current control Digital timer (0-30 sec) with pause Manual vent

Automatic Coater

Sputter supply:	Programmable digital control
Thickness control:	Use terminating film thickness monitor
Control method:	Automatic operation of gas purge and leak functions Automatic process sequencing Full manual override Digital timer (0-300 sec) with pause Automatic vent

Pumping System

Rotary pump:	High speed, direct drive, 2 stage
Pumping speed:	2.0/2.4 cu.m/hr (50/60Hz) Pumpdown time to 0.1mb is 25/30 sec
Bench top system:	Vacuum pump is mounted on benchtop compatible anti-vibration table with stainless steel bellows coupling system

Dimensions: 330mm wide x 215mm deep
Weight: 14Kgs

Thickness Monitors

General specification: Microprocessor based
4 digit display, push button zero
6MHz crystal with lifetime check
5/sec update rate
Thickness range: 0.0-999.9nm (pos./neg.)
Resolution: 0.1nm (gold or carbon)
Density range: 0.50-30.00gm/cm⁻³
Tooling factor range: 0.25-8.0
Data change facility: 2 source memory
(e.g. Au sputter and C evaporation)

Terminating Version

Terminating facility: 0-0.999nm (for use with auto coater only)

Ordering Information

<u>Product</u>	<u>Order Code</u>
Manual coater	B7340
Automatic coater	B7341
Desktop pumping system	B7366
Dual pumping system	B7736
Rotary pump connection kit	B7368
Film thickness monitor	B7348
Film thickness monitor - terminating	B7349
Thickness monitor crystals (Pk 10)	B7732
Gold target	B7390
Au/Pd target (Auto coater only)	B7391
Platinum target (Auto coater only)	B7392