



SC7620 'Mini' Sputter Coater/Glow Discharge System

Quick Overview

The SC7620 is a compact, low cost SEM sputter coater. When combined with the optional carbon attachment SC7620-CF it makes the ideal low-cost SEM sputtering and carbon coating system package. Additionally, the SC7620 is fitted as standard with a glow discharge function, making it ideal for the hydrophilisation, or 'wetting', of carbon-coated TEM grids and other surface modifications. A panel-mounted switch allows the system to be easily changed between sputter coating and glow discharge modes. The SC7620 is robust, easy to operate and is backed up with a three-year warranty.

The SC7620 is primarily designed for coating specimens prior to examination in tungsten filament SEMs. For extra fine grain coating required for most FE-SEM applications, high vacuum coating is required - see the [Q150T](#), or for larger specimens see the [Q300T T](#).

Key Features

- * **Low cost**
- * **Simple operation**
- * **Magnetic deflection sputter coating head**
- * **Compact design, small footprint**
- * **Glow discharge capability**
- * **Carbon fibre evaporation option**
- * **Adjustable height specimen stage**
- * **Easy to change sputter targets - gold/palladium (Au/Pd) standard**
- * **Robust and reliable**
- * **Three-year warranty**

Product Description

Easy operation

The SC7620 is ideally suited to the budget-conscious user who none-the-less demands quality results from an easy-to-use instrument. Designed for routine applications, the SC7620 uses a basic magnetron sputter head with a simple-to-replace disc target (gold/palladium (Au/Pd) as standard). The head is hinged for easy operation and fitted with electrical safety interlocks. A panel-mounted switch allows the system to be changed between sputter coating and glow discharge modes.

To prevent accidental damage the high voltage lead is shielded. The plasma current is variable by adjustment of the vacuum level using an argon leak valve with the plasma voltage pre-set. For maximum sputter coating efficiency the gas injector system ensures that argon gas enters the chamber close to the plasma discharge. Venting is to argon.

www.quorumtech.com

Quorum Technologies Limited Company No. 04273003 Registered Office: Unit 19,
Charlwoods Road, East Grinstead, West Sussex, RH19 2HL, UK

Fast cycle times

The 100mm/4" diameter Pyrex cylinder is mounted on an aluminium collar and sealed with O rings. The small vacuum chamber means pump-down times and cycle times are fast; it also allows a small economical rotary pump to be used.

The specimen stage is height-adjustable over a wide range and can easily be removed to accommodate larger specimens. The system is controlled manually by a 180-second timer with 15-second resolution. Pressure and plasma current are monitored by analogue meters.

Quality coating

The SC7620 will deposit a quality coating and has the advantage of simple operation, ensuring reliability and suitability for general use. It can be simply converted to deposit carbon by the addition of an optional carbon evaporation attachment, consisting of a switchable voltage power supply and a carbon fibre head (see SC7620-CF below). The carbon attachment includes an additional glass cylinder. This is taller than the standard sputter coater cylinder and ensures that the distance between the carbon fibre and the specimens is optimal.

Glow discharge (hydrophilisation)

A three-way switch on the front panel allows the SC7620 to be switched to glow discharge mode.

Freshly-made transmission electron microscopy (TEM) carbon support films tend to have a hydrophobic surface that hinders the collection of TEM sections from the surface of water baths and prevents the spreading of suspensions of particles in negative staining solutions. However, after glow discharge treatment with air, carbon film can be made hydrophilic and negatively-charged, thus allowing collection of TEM sections and easy spreading of aqueous suspensions.

Other possible treatments include magnesium acetate treatment to create hydrophobic and positively-charged surfaces. If alkylamine is used as a process gas, the carbon film surface will become hydrophobic and positively-charged, while using methanol as a process gas results in the surface becoming hydrophobic and negatively-charged. Such treatments can allow the optional absorption of selected biomolecules.

The SC7620 also comes complete with 1m x 12mm bore vacuum hose and fittings, and requires only the addition of a rotary pump with a capacity of 50L/m or greater - see Options and Accessories.

Additional Information

Requirements

A 50L/m two-stage rotary pump with oil mist filter is recommended (see EK3175). If intending to use an existing rotary pump it is important that its capacity is 50L/m or greater.

www.quorumtech.com

Quorum Technologies Limited Company No. 04273003 Registered Office: Unit 19,
Charlwoods Road, East Grinstead, West Sussex, RH19 2HL, UK

Options and Accessories

Pumps

EK3175 50L/m two-stage rotary pump with oil mist filter (115/230V 50/60Hz)
07803 Spare oil mist filter

Carbon evaporation attachment

A carbon coating accessory ([SC7620-CF](#)) which consists of an evaporation power supply and carbon fibre head is available. Fitting the optional carbon evaporation attachment is simple. The normal sputtering head is tilted back and replaced with the carbon fibre head. Connection is then made to the power supply. To ensure that the exposed sputtering head cannot be powered when the add-on carbon head is under vacuum, a positive-break mechanical interlock ensures electrical isolation of the sputtering head. We also offer a 'stand alone' SEM carbon coater, see the [Q150R](#).

Choosing a target

Gold/Palladium (Au/Pd): Supplied as standard. Has the same properties (sputtering rate, secondary electron yield, cost) as gold but the sputtered grain size is smaller.

Gold (Au): Gold sputter coating is still widely used in many laboratories

Silver (Ag): Compared to the other metals, it is relatively easy to remove silver. Therefore it is useful for museum and forensic specimens.

Palladium (Pd): Sometimes used instead of gold and gold/palladium for x-ray microanalysis.

Ordering Information

SC7620	'Mini' Sputter Coater 220 - 240V
Dimensions	340mm W x 130mm D x 250mm H (unpacked) excluding chamber
Supplied with	SC502-314B gold/palladium (Au/Pd) target, 1m length of 12mm bore flexible vacuum hose, 1 x KF25 hose adapter flange and fittings to fit a rotary pump, 1 x rotary pump plug, comprehensive operating instructions
SC7620-CF	Carbon fibre evaporation attachment, including 1m C5421 carbon fibre cord
EK3175	50L/m two-stage rotary vacuum pump with oil mist filter
07803	Spare oil mist filter

Additional or spare sputtering targets

All targets are 57mm Ø x 0.1mm thick (unless specified otherwise)

SC502-314A	Gold (Au) target
SC502-314A/0.2mm	Gold target (Au) 0.2mm thick
SC502-314B/0.2mm	Gold/palladium (Au/Pd) target 0.2mm thick
SC502-314B	Gold/palladium (Au/Pd) target
SC502-314G	Palladium (Pd) target
SC502-314E	Silver (Ag) target

www.quorumtech.com

Quorum Technologies Limited Company No. 04273003 Registered Office: Unit 19,
Charlwoods Road, East Grinstead, West Sussex, RH19 2HL, UK

Additional carbon fibre for use with the optional carbon evaporation attachment

A0819	Carbon fibre cord - high purity (1m)
A0819-5	Carbon fibre cord - high purity (5m)
C5421	Carbon fibre cord - standard grade (1m)
C5421-10	Carbon fibre cord - standard grade (10m)
C5421-100	Carbon fibre cord - standard grade (100m)
C5461	Carbon fibre cord - standard purity, fine strands (1m)
C5461-10	Carbon fibre cord - standard purity, fine strands (10m)
C5461-100	Carbon fibre cord - standard purity, fine strands (100m)

Site Requirements

Electrical: Ensure that a suitable mains electricity supply (110VAC - 20A or 240VAC - 13A, frequency 50/60Hz) is available. Check that the voltage label attached to the side of the cabinet is suitable for the local voltage and frequency.

The units are supplied for either 230V or 110V operation at 50/60Hz. The power rating is 250VA excluding the rotary pump. The rotary pump outlet is rated at 230V at 10A or 110V at 16A. The 240V pump outlet uses either a three-pin plug (404440310) or 110V standard US plug - both supplied.

Sputtering Gas: Ensure that a suitable gas supply is available, such as a commercial cylinder of argon gas (Zero Grade) fitted with a two-stage regulator, in order to deliver gas at a pressure of around 5-10psi (0.5bar).

Vacuum Pump: Ensure that a suitable vacuum pump is available. The work chamber has to be evacuated to less than 10-2mbar. This can be achieved in a reasonable time (depending on the cleanliness of the chamber) using a floor-mounted 50L/m or 90L/m two-stage rotary pump. Alternatively you can use a 30L/m desk-top mounted two-stage rotary pump, preferably incorporating an anti suck-back device and fitted with an oil mist filter on the exhaust port.

Where a rotary pump is used, ensure that it has been filled with oil, in accordance with the manufacturer's instructions. The exhaust should be filtered or expelled to a safe area. All pumps we supply are fitted with an exhaust filter.

Carbon evaporation attachment (optional): The SC7620-CF Carbon Accessory Power Supply can be used in conjunction with the SC7620 'Mini' Sputter Coater. The units are supplied for either 230V or 110V operation at 50/60Hz. Ensure that a suitable mains electricity supply (110VAC - 20A or 240VAC - 13A, frequency 50/60Hz) is available. Check that the voltage label attached to the side of the cabinet is suitable for the local voltage and frequency.

Space requirement: 340mm W x 320mm D x 310mm H (including chamber and sputtering head). Weight: 14kg. Additional space is required for the rotary pump, which can be located either on the floor or on the bench with the coater.

www.quorumtech.com

Quorum Technologies Limited Company No. 04273003 Registered Office: Unit 19,
Charlwoods Road, East Grinstead, West Sussex, RH19 2HL, UK