

Q300T T PLUS

Triple target sputter coater for specimens up to 200 mm diameter



Suitable for large samples up to 200 mm Ø or multiple small samples, the Q300T T Plus is a large chamber, turbo-pumped coating system ideally suited for sputtering a single large diameter specimen up to 8" / 200 mm or multiple smaller specimens over a similar diameter – ideal for thin-film applications and SEM/FE-SEM. It is fitted with three individual sputtering heads to ensure even deposition of individual large specimens or multiple specimens. For economical coating of small specimens, 'single target' mode can be selected. The Q300T T is designed to sputter a range of oxidising and non-oxidising (noble) metals for scanning electron microscopy (SEM) and thin film applications. The Q300T T is fitted as standard with three 57 mm Ø x 0.3 mm chromium (Cr) targets.

NB: please note it is not possible to sequentially sputter three different sputtering metals from each sputtering head - for sequential coating see the Q300T D Plus Dual Target Sequential Sputtering System.

Recommended applications:

- Wafer inspection
- Multiple sample preparation for SEM

Q300T T Plus features

New user interface has been thoroughly updated:

- **Dual-core ARM processor for a fast, responsive display**
- **Capacitive touch screen is more sensitive for ease of use**
- **User interface software has been extensively revised, using a modern smartphone-style interface**
- **Comprehensive context-sensitive help**
- **USB interface allows easy software updates and backing up/copying of recipe files to USB stick**

- **Process log files can be exported via USB port in .csv format for analysis in Excel or similar. Log files include date, time and process parameters.**
- **16GB of flash memory can store more than 1000 recipes**
- **Quick and easy creation of process sequences with a simple copy, drag and drop operation**

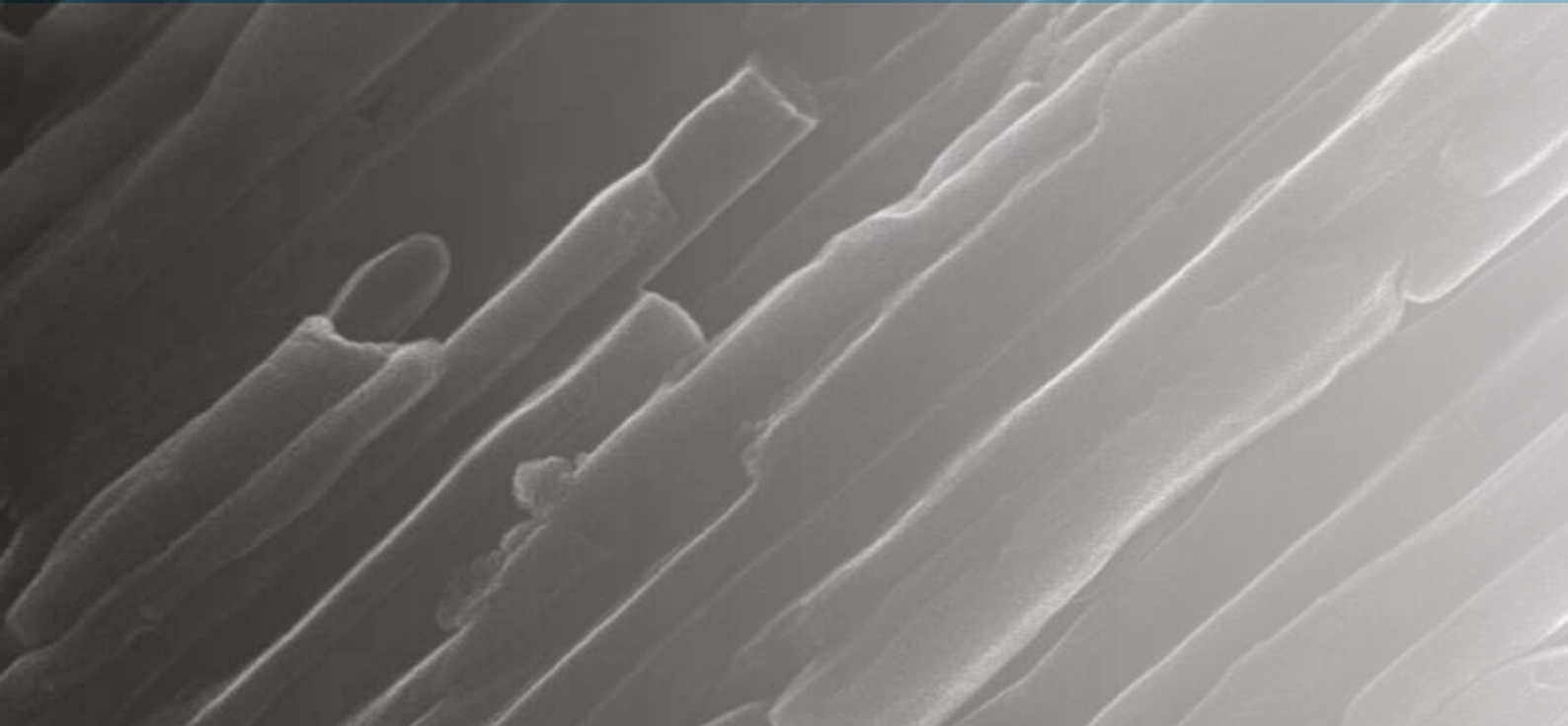
Allows multiple users to input and store coating recipes. New feature to sort recipes per user according to recent use.

System prompts user to confirm target material and it then automatically selects appropriate parameters for that material

Intuitive software allows the most inexperienced or occasional operator to rapidly enter and store their own process data. For convenience a number of typical sputtering and carbon coating profiles are already stored but also allows the user to create their own.

Software detects failure to achieve vacuum in a set period of time and shuts down the process in case of vacuum leak, which ensures pump protection from overheating.

Sea mineral sample 3nm Cr, mag x 25k



The Q Plus Series is also available in a smaller chamber format:

Q150R Plus

An automatic sputter and carbon coater suitable for use with Tungsten/LaB₆ SEM and Benchtop SEM



Q150T Plus

An automatic turbomolecular coater - capable of both sputtering and carbon coating for a wide range of applications



Q150V Plus

An automatic high-vacuum coater for ultra-fine coatings - capable of both sputtering and carbon coating, with an ultimate vacuum of 1×10^{-6} mbar



The Q300T T Plus is part of Quorum Technologies internationally acclaimed Q series of coaters, used by thousands of customers worldwide. Designed to provide high-quality coating solutions for SEM, TEM and thin-film applications, the Q Plus series is versatile, affordable and easy to use. **These products are for Research Use Only.**

Detachable chamber with built-in implosion guard

Removable glass chamber and easily accessible base and top plate allows for an easy cleaning process.

Users can rapidly change the chamber, if necessary, to avoid cross contamination of sensitive samples.

Tall chamber option is available for improved uniformity for sputtering and to hold larger substrates.

Triple Target Sputtering System

The Q300T Plus is fitted with three individual sputtering heads to ensure even deposition of individual large specimens or multiple specimens. For economical coating of small specimens, 'single target' mode can be selected. They are ideal coaters for the preparation of large specimens for examination by SEM, FEG-SEM. To ensure even deposition, the Q300 Plus series of coaters are fitted with a rotating specimen stage and three individual magnetron target assemblies, which enhance the efficiency of the process by using low voltages.

Multiple stage options

The Q300T Plus has specimen stages to meet most requirements. All are easy-change, drop-in style (no screws) and the rotation speed is variable between pre-set limits.

Flat rotation stage for 200 mm/8" and 150 mm/6" wafers (fitted as standard).



Q300T Plus has a 200 mm wafer capability



Q300T T Plus features

Safety

The Q300T T Plus meets key industry CE standards

- All electronic components are protected by covers
- Implosion guard prevents user injury in event of chamber failure
- Vacuum interlocks remove power from deposition sources to prevent user exposure to high voltage in event of chamber being opened
- Overheating protection shuts down power supply

Vacuum control

High vacuum turbo pumping allows sputtering of a wide range of oxidising and non-oxidising metals for thin film and electron microscopy applications. Automatic vacuum control which can be pre-programmed to suit the process and material, therefore removing the need for manual intervention or control.

Cool magnetron sputtering

Sputter coating is a technique widely used in various applications; it is possible to create a plasma and sputter metals with high voltage, poor vacuum and no automation. However, this is not suitable for electron microscopy applications because it can heat the sample and result in damage when the plasma interacts with the sample. The Q Plus series uses low temperature enhanced-plasma magnetrons optimised for the turbomolecular pump pressures, combined with low current and deposition control, which ensures your sample is protected and uniformly coated.

The Q300T T Plus uses easy-change, 57 mm diameter, disc-style targets which are designed to sputter oxidising and noble metals. The Q300T T Plus is fitted as standard with a chromium (Cr) sputter target. Other target options include; Au, Au/Pd, Pt/Pd, Pd, Pt, Cu, Ir, W, ITO and Al etc.

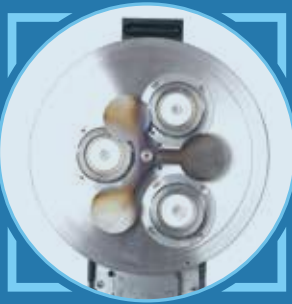
Pulsed cleaning for aluminium sputtering

Aluminium (Al) rapidly forms an oxide layer which can be difficult to remove. The Q300T T Plus has a special recipe for aluminium that reduces the oxide removal time and prevents excessive pre-sputtering of the target.

Film thickness monitor

The Q300T T Plus can be fitted with an optional film thickness monitor (FTM), which measures the coating thickness on a quartz crystal monitor within the chamber, in order to control the coating thickness of material deposited on to the sample.

Triple target sputter head and film thickness monitor option



Specifications

Instrument case

590 mm W x 535 mm D x 420 mm H (maximum height during the opening of the coating head: 772 mm)

Weight

36 kg (packed: 59 kg)

Packed dimensions

730 mm W x 630 mm D x 690 mm H

Work chamber

Borosilicate glass with integral PET implosion guard Size 300 mm outside diameter x 127 mm High

Display

115.5 mm W x 86.4mm H (active area), 640 RGB x 480 (display format), capacitive touch colour display

User interface

Full graphical interface with touch screen buttons, includes features such as a log of the last 1000 coatings and reminders for when maintenance is due

Specimen stage

A flat rotation stage for 6" (150 mm) and 8" (200 mm) wafers is fitted as standard.

A rotating/tilt stage and the 'rota cota' rotary tilt stage are also options

Vacuum

Rotary pump: 4 m³/hr, two stage rotary pump with oil mist filter for the Q300T T Plus

Turbo pump: Internally mounted 70L/sec air cooled

Vacuum Measurement: Pirani gauge as standard, wider range gauge available as an option

Ultimate vacuum: 5 x 10⁻⁵ mbar*

Sputter vacuum range: 5x10⁻² to 5x10⁻³ mbar*

**Typical ultimate vacuum of the pumping system in a clean instrument after pre-pumping and venting with dry nitrogen gas*

Processes

Sputter Deposition Current:

Single target: 1 - 150mA

All targets: 60 - 420mA

Visual status indicator

A large status multi-colour indicator light provides a visual indication of the state of the equipment, allowing users to easily identify the status of a process at distance.

The indicator LED shows the following states:

- Initialisation
- Process running
- Idle
- Coating in progress
- Process completed
- Process ended in fault condition

Audio indication also sounds on completion of the process.

Services

Gases: process gas argon, 99.999% Nominal 5 psi