

# HIGH VACUUM DESK SPUTTER & CARBON COATER - DSCT



The High Vacuum Desk Sputter & Carbon Coater - DSCT is designed as a versatile instrument that combines both sputter coating and carbon fiber coating capabilities with interchangeable heads. It is well-suited for preparing samples for Scanning Electron Microscope (SEM) analysis.

## APPLICATIONS

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- **Scanning Electron Microscopy (SEM)** – Prepares non-conductive specimens with conductive coatings for high-resolution imaging.
- **Field Emission SEM (FE-SEM)** – Produces ultra-fine, uniform coatings essential for advanced, high-resolution surface analysis.
- **EDS/WDS Analysis** – Applies contamination-free carbon coatings ideal for accurate elemental and compositional studies.
- **Transmission Electron Microscopy (TEM)** – Creates thin, uniform carbon films for specimen support grids and sample preparation.
- **Electron Backscatter Diffraction (EBSD)** – Provides stable, conductive coatings that improve diffraction pattern quality.
- **Thin Film Research** – Supports the deposition of various materials, including noble metals, carbon, and even challenging targets like tungsten and chromium.

- **Porous and Fragile Samples** – Achieves even coatings with optional planetary rotation stages to protect delicate structures.
- **Academic and Research Laboratories** – Versatile dual-mode system makes it suitable for teaching, training, and multi-application research use.

## FEATURES

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### Hardware:

- High vacuum level with built-in turbo pump 90 L/s (Leybold)
- Two-stage rotary vane backing pump (Diaphragm and scroll pump)
- 80 W sputtering switching DC power supply
- Carbon fiber evaporation head
- 500 W high-current carbon fiber DC power supply
- Quartz crystal thickness monitor with precision of 1nm and resolution of 1 Å
- Full range vacuum gauge (Leybold)
- Automatic venting valve
- Sample rotation, height and tilt adjustable
- Planetary sample holder (optional)
- Electronic shutter
- Easy-to-change specimen stages (rotation stage as standard)
- Two-year warranty
- CE conformity

## **Automation:**

- Sputtering semi-full automatic control
- Carbon coating semi-full automatic control
- Intuitive touch screen to control the coating process and rapid data input
- User friendly software, updatable via network
- Repeatable, programmable coating process in the automatic mode
- Pulsed or flash carbon fiber coating modes
- Manual or automatic Timed and Thickness deposition
- Carbon fiber coating in flash or pulse modes
- Records and plots coating parameters graphs
- Storing coating recipes for repeatable depositions

## **Carbon Evaporation of DSCT**

The mini-sized coating system, model DSCT, possesses the capability to create uniform thin films with fine grains on various surfaces through carbon coating. It achieves this using carbon fiber (or alternatively, a carbon rod). The process involves passing an electric current through the carbon fiber, operating in either pulsed or flash mode. This results in the controlled evaporation of carbon, which is then deposited onto the sample. Notably, this method reduces the generation of debris typically associated with traditional carbon deposition processes.

## **Pulsed Carbon Fiber Evaporation**

The small-chamber desk vacuum sputter and carbon coater are equipped to carry out pulsed carbon fiber evaporation. This method employs short pulses, enabling more precise control over the deposition process and resulting in a significant reduction in the generation of debris typically associated with traditional carbon deposition techniques.

## **Sample Holder Stages**

The DSCT offers flexibility in its sample stage configurations, catering to the specific needs of users. The standard sample stage is designed to be rotatable with adjustable height and angle, providing ease of use and versatility. For those requiring uniform coating of porous specimens, an optional rotary planetary sample stage is available and recommended.

## **Touch Screen Control with Colorful Display**

The DSCT, known as the Desk SEM Coater, features a user-friendly interface with a 7-inch colored touch screen. This interface offers complete automatic control and simplified data input, making it exceptionally easy to operate. Users can monitor crucial parameters like vacuum, current, and deposition, presented as either digital data or graphical curves directly on the touch screen. Moreover, the device stores information from the last 300 coatings in its history log, and this data can be conveniently transferred to a PC using the built-in USB port.

Desk Sputter Coater

## **THEORY & METHOD**

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This high-vacuum coater excels in producing uniform films with fine grain sizes, making it ideal for specimens that demand high-resolution and high-quality characterization, including FE-SEM, EDS/WDS, TEM, and EBSD applications. Equipped with a 2-inch magnetron cathode, an 80 W switching DC power supply, and a high current power supply for carbon evaporation, the DSCT finds utility in various research and thin film applications.

Moreover, the DSCT can be optionally configured with a water-cooled cathode, enhancing its suitability for prolonged sputtering deposition. Additionally, it can be equipped with a higher-power supply to facilitate sputtering of materials like chromium, tungsten, and other oxidizing metal targets.

## TECHNICAL SPECIFICATIONS

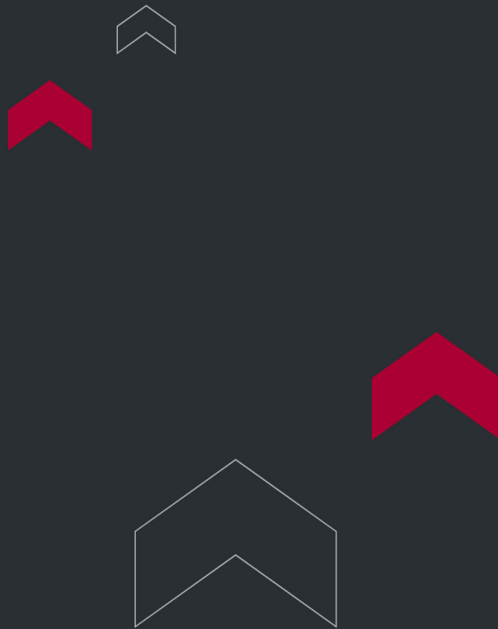
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- Ultimate Vacuum: Less than  $5 \times 10^{-6}$  Torr
- It controls the sputtering rate to achieve a finer grain structure, typically around 2nm gold grain size.
- It automatically regulates the sputtering power independently of pressure.
- Precision Mass Flow meter (MFC) is used for fine control of vacuum pressure.
- Utilities: 220/110V, 50/60HZ, 10/15A
- Shipping Weight: 42kg

## Options and Accessories

- Carbon rod evaporation head
- High-current power supply for carbon rod
- Quartz crystal sensor
- Planetary sample rotation system
- Spare glass chamber
- Sputtering targets
- Carbon fiber

- Sealing gaskets



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