



# Leica EM SCD500

**High Vacuum Sputter Coater**

For Highest Resolution FE-SEM Analysis

Living up to Life

**Leica**  
MICROSYSTEMS

# High Vacuum Sputter Coating

The Leica EM SCD500 is a versatile high vacuum film deposition system designed to produce very thin, fine-grained metal films and conductive carbon coatings for highest resolution analysis, as required of FE-SEM applications.

The Leica EM SCD500 offers many conversion options in one single unit, all which can be easily adaptable for a variety of applications:

- High Vacuum Sputtering
- Single and Multiple Carbon Thread Evaporation
- Thermal Resistance Evaporation
- Carbon Rod Evaporation
- Cryo preparation for freeze drying, freeze fracturing, double replica, freeze etching, cryo coating and vacuum cryo transfer with the EM VCT100

## Quality features

The Leica EM SCD500 is very versatile, modular device technologically designed to ensure optimal operational performance. The result is an assortment of quality features that make the Leica EM SCD500 a truly indispensable instrument.

- **High vacuum system** for best film quality
- **Oil-free vacuum** and membrane diaphragm pump provides contamination-free coating
- Integrated water-cooling for **consistent sputtering parameters** at high sputtering power
- Integrated planar magnetron system with electron deflection for **uniform and reproducible metal coatings**



## EM QSG100 Quartz Crystal Film Thickness Monitor

The Leica EM QSG100 is a quartz crystal film thickness monitoring system which ensures highest reproducibility of sputtered or evaporated layers by precisely measuring film thickness and coating rates. The EM QSG100 can be used with all EM SCD500 applications.

### EM QSG100 features:

- Precise film thickness control with automated quartz crystal film thickness monitor and shutter termination
- Optimized quartz head positioning for exact thickness measurement
- Memory functions: 5 layers with independent thickness value
- Programmable layer sequences for multiple coating layers
- Integrated library for multiple coating materials



- **Planetary drive stage** provides best uniformity of the sputter deposition; **Rotary and tilting stages** achieve excellent shadowing effects
- **Interchangeable vacuum chambers** for different sample sizes and processes
- Stepless **height adjustable specimen table** for defined film deposition with minimum specimen damage
- **Triple safety concept** with vacuum switch, sputter arm detection and implosion interlock safety shield.
- Integrated 3 digit **programmable timer** with process termination for repeatable coatings

- Pre-selectable and permanently stored **sputtering parameters**
- All operating parameters are displayed digitally for **easy read-out**
- Argon pressure and sputter current parameters can be adjusted during processing for **control of the coating rate**
- A built-in high voltage **etching device** for surface cleaning improves adhesion of the subsequent coating or makes carbon films hydrophilic.
- **Target shutter** for contamination-free coating
- The **quick fastening system** allows fast and simple replacement of foil targets.



# Multiple Applications

The user friendly bench top system is suitable for a wide range of applications. It can be quickly equipped for many preparation methods and is safe and easy to handle.

## **High Vacuum Sputtering for producing:**

- Fine-grained sputter coatings for high resolution SEM
- Conductive coatings on large scale samples (wafers, compact discs, etc)
- Metal films using Aluminium, Chromium, Cobalt, Copper, Gold, Gold/Palladium, Iridium, Iron, Molybdenum, Nickel, Platinum, Silver, Titanium and Tungsten for industrial processes
- Multiple layer systems
- Coated cryo samples for transfer to the chamber of analysis systems using the Leica EM VCT100

## **Carbon Thread Evaporation for producing:**

- Conductive carbon films on specimens for X-ray microanalysis (EDX, WDX)
- Carbon reinforcement films on collodion or formvar coated specimen support grids
- Carbon support films can be made hydrophilic using the integrated glow discharge

## **Thermal Resistance Evaporation for:**

- Evaporation of metal, carbon, metal/carbon and carbon rod
- Multiple layer systems without breaking vacuum
- Precious and non-precious metal layers or layer systems
- Normal, portrait, rotary and low angle shadowing
- Fine-grained carbon or carbon/metal mix coatings for high resolution TEM/SEM
- Conductive carbon films on specimens for X-ray microanalysis (EDX, WDX)
- Replicas and interference coatings

## **In combination with the Leica EM VCT100:**

- Coated cryo samples for transfer to the chamber of analysis systems
- Freeze Fracturing
- Double Replica
- Freeze Drying
- Freeze Etching

## High Vacuum Sputtering

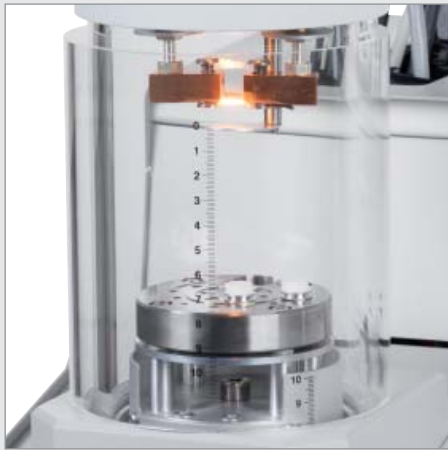


**High vacuum sputtering** using the planetary drive stage, SEM specimen mounts, stubs and quartz head.



**High vacuum sputtering** using the rotary stage, specimen clips and quartz head.

## Carbon Thread and Carbon Rod Evaporation



**Multiple Carbon Thread Evaporation** for the production of conducting carbon coatings on specimens for X-ray microanalysis (EDX, WDX), carbon reinforcement films and carbon support films.



**Carbon Rod Evaporation** by indirect evaporation using a shadowing sphere.

## Thermal Resistance Evaporation



**Thermal Resistance Evaporation** for the production of a 2-layer system using either carbon, metal, non-metal or organic substances.



**Thermal Resistance Metal/Carbon Mix Coating** for normal, portrait and rotary shadowing under pre-selectable coating angles.

# Vacuum Cryo Transfer for Cryo SEM

The Leica EM SCD500 in combination with the Leica EM VCT100 vacuum cryo transfer system is the ideal solution for contamination-free cryo SEM sample preparation.

The Leica EM VCT100 is a complementary unit which attaches to the Leica EM SCD500. The components of the EM VCT100 allow the preparation of freeze fracture and double replica followed by coating of the cryo sample. Depending on your preparation needs, specially designed specimen holders and carriers are available. The coated sample can then be transferred under vacuum and low temperature using the EM VCT100 shuttle to an SEM for subsequent cryo analysis.

The EM SCD500 in combination with the EM VCT100 also accommodates freeze etching and freeze drying techniques.

EM VCT100 shuttle for contamination-free cryo transfer to an analysis instrument.



From preparation to imaging, the EM VCT100 is a complete cryo transfer system. Its components include among others a cryo preparation workstation, transfer shuttle, docking station, a controlled cold stage (-150°C to +60°C), LN<sub>2</sub> Dewar and operating panel with touch screen.

For docking to an SEM or different analysis instrument such as AFM, SIMS, XPS, etc., a cryo adaption kit with cryo stage is included.

For more information see the Leica EM VCT100 brochure.



Docking Station and LN<sub>2</sub> Dewar



# “With the user, for the user”

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The Leica Microsystems Life Science Division supports the imaging needs of the scientific community with advanced innovation and technical expertise for the visualization, measurement, and analysis of microstructures. Our strong focus on understanding scientific applications puts Leica Microsystems' customers at the leading edge of science.

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### • Surgical Division

The Leica Microsystems Surgical Division's focus is to partner with and support surgeons and their care of patients with the highest-quality, most innovative surgical microscope technology today and into the future.

The statement by Ernst Leitz in 1907, “with the user, for the user,” describes the fruitful collaboration with end users and driving force of innovation at Leica Microsystems. We have developed five brand values to live up to this tradition: Pioneering, High-end Quality, Team Spirit, Dedication to Science, and Continuous Improvement. For us, living up to these values means: **Living up to Life.**

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