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INSTRUMENT STANDARD OPERATING PROCEDURE MANUAL

College of Medicine

SAFETY AND LABORATORY COOMMITTEE, C.O.M, K.F.U.

Prepared by

Document Number	Name	Signature	Date
CM/EMU-011	**husain musa al nwaiser** **ali althani**		26/4/2021
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Document History

Document Section	Details of Amendments	Date	Modified by (Initials)
SOP	First Draft on SOP for the operation of **Leica EM SCD500 – High Vacuum Sputter Coater**		

1. **OBJECTIVE**

- The document describes the operation of **Leica EM SCD500 – High Vacuum Sputter Coater for SEM**
  - Specimens for SEM is coated with sputtered metal atoms using argon gas as ionized and accelerated onto the target's surface.

2. SCOPE

- Full automated software processor system
- Process gas (argon is fed at 0.5 mbar pressure).
- Sputter working distance 50mm.
- After specimen processing must be coated using Platium ,Silver or Gold or Carbon (layer thickness 10 nm).

3. RESPONSIBILITIES

- It is the responsibility of designated personnel in the lab to train staff and students on this procedure and to ensure adherence to this procedure under supervision.
- It is the responsibility of designated personnel (staff or Student) to follow the instructions of this procedure under supervision.

4. REFERENCES

- It is the responsibility of designated personnel in Research lab to train staff and students on this procedure and to ensure adherence to this procedure under supervision.
- It is the responsibility of designated personnel (staff or Student) to follow the instructions of this procedure under supervision.

5. DEFINITIONS

- Closed fully automated **Leica EM SCD500 – High Vacuum Sputter Coater**
- Controlled programming software.
- Housing with control, display and process selection panel
- Vacuum system(turbomolecular pump,roughing pump and vacuum ion gauge).
- Specimen chamber with build in height adjustable table.
- Gas inlet system with manually controlled gas dosing valve,electromagnetically controlled cut-off valve and push button activating rinsing gas.

- Hinged sputter head with planar magnetron magnet system,target holder and providing shield .
- HT 010 high voltage supply for sputter and etching device.
- Electromagnetically controlled venting valve coupled with main switch.
- Carbon tips(6.15,30mm long
- Platinum wire(0,1 mm or 0,2mm)
- Chrome coated tungsten wire.

6. SAFETY PRECAUTIONS

- Tightening the gas dosing valve with force will damage the valve seat.
- Before switching on the electricity check all the flanges are closed.
- It is necessary to switch on the **High Vacuum Sputter Coater EM SCD 500** after service work or after longer non- use.
- It is necessary to switch off the **High Vacuum Sputter Coater EM SCD 500** only for service operations before periods of long term non- use
- Water cooling is not required if sputter time is short (less than 300 seconds and sputter below 60Ma.
- Rinsing is not required if gas lines are filled with argon.
- Do not over tighten the gas dosing valve to avoid the damage.
- Do not adjust gas dosing valve while turbo pump is slowing down.

7. PROCEDURE FOR OPERATING Leica EM SCD500 – High Vacuum Sputter Coater

7.1. Turning on the instrument:

- Adjust gas cylinder
- Switch ON the System.

7.2. Software Operation.

7.3. Steps of the Procedure

- **Evacuation of vacuum chamber.**
- **It is necessary to switch off the High Vacuum Sputter Coater EM SCD 500 only for service operations before periods of long term non- use.**
- **Sample loading after adjust the sample table**
- **Install glass chamber and safety cover**
- **Close the vacuum chamber**
- **Switch on the system .**
- **Adjust the time and sputter current (100mA).**
- **Wait for vacuum.**
- **Sputtering with full thickness control**
- **Wait for vacuum.**
- **Switch off system after sputtering process.**

☐ **Evacuate specimen chamber.**

7.4. Turning off the Instrument

END OF PROGRAM

- **To turn off the instrument.**
- Evacuate specimen chamber
- Click shut down of computer
- Turn off the software.
- Turn off the electric main power source.
- All panel displays go out.
- Turn off the main switch

7.5. Warning

Write any the warning in BOLD and RED FONT.