

# STANDARD OPERATING PROCEDURE

## CRESSINGTON 208 HR SPUTTER COATER



Originally prepared by:

Professor Adrian Brearley and Dr. Angelica Saenz-Trevizo

Revision I, August 2023

## **1. Scope**

This document is intended to serve as a reference document for the operation of the Cressington 208HR Sputter Coater located at the Nanomaterials Characterization Facility (NCF).

The document is under constant revision so please check for the most recent version.

## **2. Capabilities**

This instrument is intended to coat diverse materials with a thin layer of PdPt particles for SEM observation.

## **3. Pre-Operation Checklist**

- 3.1 Make sure that the system is found off upon arrival.
- 3.2 Verify that the sputter chamber (glass bell) is clean and clear so you can observe the plasma. After each deposition the glass bell gets coated with a thin layer of PdPt that eventually will obstruct the visibility of the plasma. In extreme cases, the layer gets too thick and can interfere with the plasma. Thus, ensuring the appropriate cleanliness of the bell is essential. Clean if needed with a wipe and water (wear gloves).
- 3.3 Make sure the gas regulator in the argon tank has a reading of at least 200 psi. Open the tank if needed.
- 3.4 Check that the green valve on the T connection attached to the gas regulator is closed (no argon flowing).
- 3.5 Check the oil level of the roughing pump (back of the instrument). Notify lab Staff if oil is low.
- 3.6 Open the top plate of the sputter chamber and check the status of the PdPt target. If there is very little material left or if the race track is deep, let Staff know so the target can be replaced.
- 3.7 Inspect the condition of the o-ring on top plate. Search for cracks or debris. Gently clean with one finger (wearing a glove) if debris is found. If broken o-ring inform Staff.

## **4. Operation**

- 4.1 Wear gloves
- 4.2 Lift the top plate of the sputter chamber (glass bell) and place the sample on the base of the plate
- 4.3 Gently clean the o-ring on the top plate to allow proper vacuum

- 4.4 Close the top plate gently
- 4.5 Switch ON the roughing pump located at the back of the instrument (switch located facing to the wall-back of the pump)
- 4.6 Switch the sputter coater ON (the unit will start up in AUTO mode so switch to MANUAL)
- 4.7 Open the green valve on the regulator (and the tank if needed) to allow for argon gas to flow
- 4.8 Allow for full vacuum to be reached (needle all the way to the right)
- 4.9 Press FLUSH for 2 seconds
- 4.10 Wait until full vacuum is recovered
- 4.11 Press LEAK
- 4.12 Wait until the TURBO PUMP UNIT indicates READY (LED becomes green) or until full vacuum is recovered
- 4.13 Press the Start/Stop button to initiate the deposition – verify that the Blue Glow of the Plasma becomes visible

**NOTE: after completion of the coating cycle, the plasma will automatically be Turned OFF, but you have to Turn Off the System to finish.**

Be aware that the deposition is set to last 100 seconds (at 80 mA-do not move values)

- 4.14 Switch OFF the coater and allow for chamber to ventilate (2-3 minutes)
- 4.15 Switch OFF the roughing pump
- 4.16 Lift the top plate and recover your sample
- 4.17 Close the green valve to interrupt the argon flow (the tank is usually left open)
- 4.18 Record your session in the logbook and report any issues



Figure 1. Control Panel and main buttons to press during operation.