GENERAL PROCESS AND OPERATION SPECIFICATION

Cressington 108 Manual Sputter Coater

I. SCOPE

a. The purpose of this document is to describe requirements and basic operating instructions for the Cressington 108 Manual Sputter Coater that coats thin conductive layers of gold on non-conductive SEM samples.

II. SAFETY

a. Be sure that you are trained and signed off to use this equipment.
b. If you are unsure about any procedure or indication while operating this equipment be sure to contact a staff member or trainer for assistance.
c. If you encounter any issue, please notify or email the staff.

III. APPLICABLE DOCUMENTS, MATERIALS AND REQUIREMENTS

a. Thickness estimate table is provided in Appendix A
b. Front and back panel maps

IV. OPERATION

a. Load stub mounted samples onto the coater sample table.
    i. Adjust table height if necessary.
b. Rotate the gas control knob filly clockwise (closed).
c. Open the valve on the Argon gas supply.
d. Flip the Power switch located on the front panel of the control unit to the on position.
    i. The switch will glow red when on. The pump will automatically start to pump down the chamber.
    ii. Apply decent force to the lid to ensure a seal is made when pumping.
e. Wait until the chamber pressure is less than 0.04 mbar.
f. Rotate the gas control knob counter clockwise until the chamber pressure is 0.4 mbar.
g. Allow Argon to flow at this pressure for 30 seconds.
h. Rotate the gas control knob clock to a pressure of 0.06 mbar.
i. Press and hold Pause and use the up/down buttons to adjust the timer on the digital display.
    i. **IMPORTANT:** Sputtering for more than 200 seconds will damage the tool.
j. Press Test to check the sputtering current.
    i. Adjust the sputtering current using the rear panel knob to be between 20-40 mA (clockwise to increase, counter clockwise to decrease).
k. Press Start to begin sputtering.
l. Once complete, turn the gas control knob fully clockwise to shut off Argon flow.
m. Close the Argon gas supply valve.
n. Leave the main unit on for a minute to ensure the chamber gets free of process gases.
o. Switch off the Power on the front panel.
p. Vent the chamber by rocking the vent valve on the top plate.
q. Lift top plate to remove samples.
r. Fill out logbook.

V. QUALITY

a. The thickness of deposition is based on process time, power, table height, and gas pressure. Any of these parameters can affect coating thickness.

VI. SIGNATURES AND REVISION HISTORY

a. Author of this document: Mitchell Roselius
b. Author Title or Role: Student Technician
c. Date: 1/12/2021
d. Revision: Rev A

Approvals:

Technical Manager Signature:_____

Date: _____

Revision History:

Revision	**Author**	**Date**
Original Issue	Manouchehr Teimouri	03/05/2018
Rev A	Mitchell Roselius	1/20/2021
Rev B		
Rev C		

APPENDIX A: Thickness Estimate Table

Results were compile using a Gold target with Argon gas.
Working distance measured from sample table to target.
All thickness values are approximate and are intended for reference olny. Actual results may vary.

30 mm WORKING DISTANCE									
	0.02 mbar			0.05 mbar			0.08 mbar		
	20 sec	40 sec	60 sec	20 sec	40 sec	60 sec	20 sec	40 sec	60 sec
20 mA	12 nm	24 nm	36 nm	10 nm	21 nm	31 nm	7 nm	14 nm	21 nm
30 mA	17 nm	35 nm	53 nm	16 nm	33 nm	50 nm	13 nm	25 nm	38 nm
40 mA	22 nm	48 nm	67 nm	25 nm	51 nm	77 nm	19 nm	39 nm	57 nm
50 mm WORKING DISTANCE									
	0.02 mbar			0.05 mbar			0.08 mbar		
	20 sec	40 sec	60 sec	20 sec	40 sec	60 sec	20 sec	40 sec	60 sec
20 mA	7 nm	13 nm	20 nm	4 nm	9 nm	14 nm	3 nm	5 nm	7 nm
30 mA	9 nm	20 nm	30 nm	8 nm	16 nm	24 nm	5 nm	10 nm	14 nm
40 mA	17 nm	33 nm	50 nm	11 nm	22 nm	34 nm	8 nm	15 nm	23 nm
70 mm WORKING DISTANCE									
	0.02 mbar			0.05 mbar			0.08 mbar		
	20 sec	40 sec	60 sec	20 sec	40 sec	60 sec	20 sec	40 sec	60 sec
20 mA	4 nm	7 nm	11 nm	1.3 nm	2.7 nm	4.2 nm	0.9 nm	1.9 nm	2.8 nm
30 mA	6 nm	12 nm	18 nm	2.9 nm	5.8 nm	8.7 nm	1.7 nm	3.5 nm	5.3 nm
40 mA	7 nm	15 nm	23 nm	4.6 nm	9.4 nm	14 nm	2.6 nm	5.3 nm	8 nm

APPENDIX B: Front and Back Panel Maps