ATAMI Standard Operating Procedure

Cressington 108 auto/SE sample coater

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Revision	Date	Description/Change	Curator
0	10/4/19	New document	Randy Greb

Contents

Scope:

Operations of the Cressington coater at ATAMI used for SEM sample prep.

System Specifications:

- Au/Pd target
- 150mm diameter chamber.
- Rotary tilt stage.
- Low voltage sputter head with 10-40mA programmable sputter current.
-

Safety

General

Follow all ATAMI safety protocols.

PPE Required

Nitrile gloves are required to avoid cross-contamination.

Safety glasses are required at all times when using this system.

Hazardous Energies

Electrical

NA

Mechanical

The rotational stage can be a pinch hazard.

Stored/Potential

NA

Thermal

NA

Materials/Consumables Hazards

NA

Interlocks

Sputtering should not occur unless the system is at correct pressure. Do not try to override standard .

Training Requirements

1. Pass all ATAMI required safety courses
2. Finish lab tour with qualified ATAMI trainer.
3. Complete all hands on training for this system and signed off by trainer.
4. Verify access to this document for reference.

Procedures

How to coat a sample using Automatic coating mode:

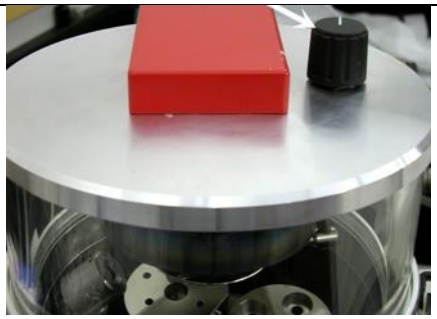
This procedure applies to standard gold thickness and grain size:

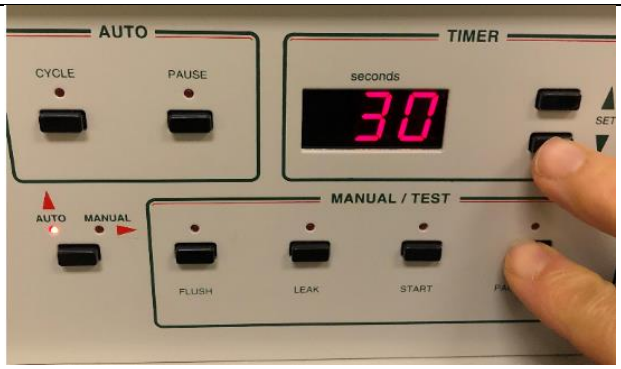
- 40 mA current
- 0.8 mb pressure
- 30 seconds coating time

For non-standard coating, you can adjust these parameters. But it is not necessary for basic SEM imaging.

You can also prefer to pages 22-23 of the Cressington manual for guidelines for very thin coating, thermally sensitive samples, tall samples, woven or tangle specimens, and specimens with fine detail.

Step	Action	Notes
1	Verify that the system is powered off.	
2	**Always put nitrile gloves on before handling samples and opening the top.**	This is necessary to prevent contamination with skin oil of the chamber and your samples.
3	Carefully open the top and load your sample in the sample holder.	You will need to experiment to optimize coating. In general, a flat simple coat at the standard rotating stage will be suitable (30-40 mm from the target). Otherwise, you can adjust tilt and rotation speed to improve coating on irregular samples.

Step	Action	Notes
		 You may also need to remove the upper glass chamber and sample ring to allow easy access to the sample table. 
4	After loading the sample, re-install the glass chamber and connector rings. Close the red top to ensure a clean connection that will seal.	
5	Move the shutter to the open position.	
6	Turn on the main power switch.	

Step	Action	Notes
		The system will start pumping down and should reach vacuum below .04 mBar. 
7	Check that current is set to 40 mA by pressing the “manual” button and then the “SET mA” button.	 You can use the up/down keys to change the current value if necessary.
8	If time is not set to 30 seconds. Change to “Auto”, press “Pause/test” button, and then change the time with the up/down keys.	 
9	Once the time and current is verified, you can press the Cycle button to run the coating process.	The coating process goes through the following steps: 1. Pump the chamber to 0.05 mbar; 2. Open argon flush for 3 seconds then close; 3. Pump to 0.15 mbar; 4. Open argon flush for 3 seconds then close; 5. Open leak valve

Step	Action	Notes
		6. Pump to 0.15 mbar and continue pumping for a further 20 seconds. 7. Switch on the sputter supply. 8. Sputter at preselected current for preselected time/thickness
10	After coating is done, do the following press off to vent the chamber and remove your sample. Be sure to put the chamber glass and top back in place.	Venting may take a few seconds.

Standard or Example Recipes

Basic coating recipe:

- 40 mA current
- 0.8 mb pressure
- 30 seconds coating time

Basic Troubleshooting

Plasma/sputter and film quality issues:

Step	If	Then	Notes
1	Film quality is poor (too much charging in the SEM, poor grain size, poor coverage).	Experiment with tilt and stage rotation. Refer to pages Contact ATAMI staff for help in optimizing coating parameters.	
2	If you do not see a plasma.	Check to make sure Ar pressure is not too high. Check all connections. Verify vacuum level and current and adjust if needed. Make sure the Ar bottle main valve is turned on. Do not adjust the regulator valve.	
3	Pressure is higher than 0.5mb after FLUSH and LEAK.	Ar pressure is set too high.	

Step	If	Then	Notes
		Contact Atami staff to adjust the Ar flow to the correct level.	
4	Meter shows select sputter current but no plasma is visible.	Contact ATAMI staff	
5			
6			

System does not pump down correctly:

Step	If	Then	Notes
1	It takes longer than 10 minutes to pump down to the 0.02 mBar range.	Press off to vent the chamber. Check for dirt and fibers in all the o-rings at the top and bottom of the chamber glass container. Wipe carefully with a clean, dry Technicloth wiper.	
2	It doesn't pump at all.	Check that pump is turned on.	The pump power switch is on the right side of the pump.
3			
4			
5			

Attachments

No attachments in this document.