Notes for Running the NSF/SFS Sputtering and Evaporation System

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7/2015

- The Load Lock should be below 16 Torr at all times when the Turbo is Running to prevent it from overheating and to reduce wear.

- The Load Lock should be Above 0.1 Torr at all times when the Turbo is Off to prevent backstreaming of oil into the system.

Function	Rotary Setting
Sample Loading	211.5
Ion MIlling	216
Back Sputter Gun	275
Front Sputter Gun	

Loading a Sample

1. Vent the Loadlock by switching off the turbo, and opening the green N2 valve.
2. When the Turbo reaches 50 Hz, close the Butterfly Valve
3. Unscrew the load lock door, and open the N2 all the way. Make sure the Butterfly Valve between the roughing pump and the turbo is closed.
4. When there is the sound of blowing N2, open the door and load your sample onto the magnetic sample positioning arm.
5. Turn off the N2 blowing into the load lock, then close the door and tighten the black knob.
6. Open the butterfly valve to rough out the chamber, then turn on the turbo pump.
7. Wait for the turbo to spin up to 1500 Hz. It will take a few minutes.
8. Turn off the Chamber IG, and flood it with Ar.
9. Throttle the Cryopump with the Gate Valve to increase the pressure to 2-5 mTorr. This creates an over pressure between the chamber and the load lock.
10. Open the load lock gate valve and slide the sample holder onto the rotating fork.
11. Unscrew the manipulator from the Sample, and remove it from the chamber.
12. Close the load lock gate valve, open the Cryopump Gate Valve all the way.
13. Turn off the flow of Ar, then turn on the IG.
14. The system should pump down to < 5e-7 Torr in a few minutes.

Ion Milling the sample

1. Load your sample, and pump down to <5e-7 Torr.
2. Use the rotary motor to position your sample over the Ion Mill.
3. Make sure the shutter is covering the Front Gun and Ion Mill.
4. Turn IG off, open the mass flow controller 3 to bring the chamber pressure to 4e-4 Torr.
5. Turn on the Ion Mill power supply main power and the source power.
6. Check that the Discharge voltage is 40V and that the Discharge light is not flashing.
    a. If the discharge light is flashing, turn up the Cathode current until it stops flashing
7. Turn the Neutralizer Current to 0 A by turning the dial CCW.
8. Turn on the Beam power supply on.
9. Check that the Accelerator voltage is at 100V and that the Beam Voltage is at 400V.
10. Let the beam warm up for 3 min without a neutralizer current so that the beam current stabilizes.
11. Once the beam current has stabilized, turn the Neutralizer current up and wait a few minutes for it to stabilize.
12. Open the shutter to Ion Mill your sample.
13. End with the shutter closed, and then dial the Neutralizer current to 0A.
14. Turn the Beam and then the Source Power supplies off
15. Turn the main Ion Mill power switch off.
16. Turn off the Ar flow on mass flow controler 3.
17. Turn the IG back on.