Operating the Sputter Ion Gun Power Supply (SIGPS)

1) Move the manipulator to the sputter gun position

- x = 1.200”

- y = 1.500“

- Z = 7.24 cm

-Theta = 288.0 Degrees

2) Turn off ion pumps/close gate valves for ion pump on MC and S2 from MC

3) Plug in 5 multimeters to read

a. anode voltage

i. technically it would be both anode and beam voltage because we are floating the supply for the beam voltage

ii. need to measure with a high voltage probe

b. anode current

c. filament current

d. Lens 1 Voltage

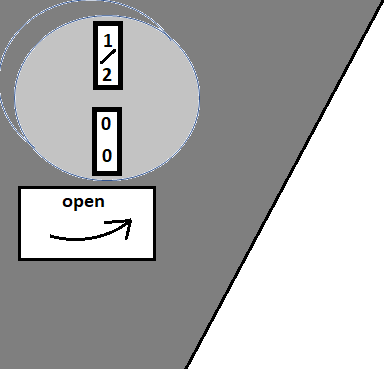
e. Lens 2 Voltage

4) Then we will let Argon gas into the chamber.

a. The sputter guns gas knob.

i. (0/0) is the initial location of the knob when the sputter gun gas flow is closed by turning the knob all the way clockwise (to the right) and aligns with the same label below the knob.

ii. (1/2) sticker represents a half turn on the knob. These are displayed in figure 1.

  
Figure 1: This displays the gas knob with the full turn and the half turn stickers.

` iii. When we tested this on Feb 20th; 2020 the pressure in the Main Chamber was 2:6 e - 9 torr prior to releasing Argon. Turning the valve for 4:5 rotations we saw a rise in pressure to 5:0 e – 6 torr. Set the lens voltage to 300 V and the beam voltage to 500 V.

5) Turn on the SIGPS.

a. Set anode to max (check should be around 250 V with no beam voltage)

b. slowly ramp up filament current.

i. When you get close to the max of the filament current you’ll see a few milliamps of anode current coming out.

c. set the beam voltage.

- Voltage max 750 V (due to lens supplies max limit)

\***going past 1.2 kV** will cause BNC to banana adapter to **spark**\*

d. adjust the lens voltages until you have maximum current on sample.

i. measure the current on your sample.

e. to really clean off the sample run this for about 30 mins.

**Shutting down procedures**

1. Close the gas knob
2. Ramp down the filament current, anode voltage, and beam voltages.
3. Then turn off the SIGPS and the external power supplies.
4. Open the gate valve in the MC for the ion pump and open the shut valve from S2 to MC