

CVC Thermal Evaporator

Idle condition check:

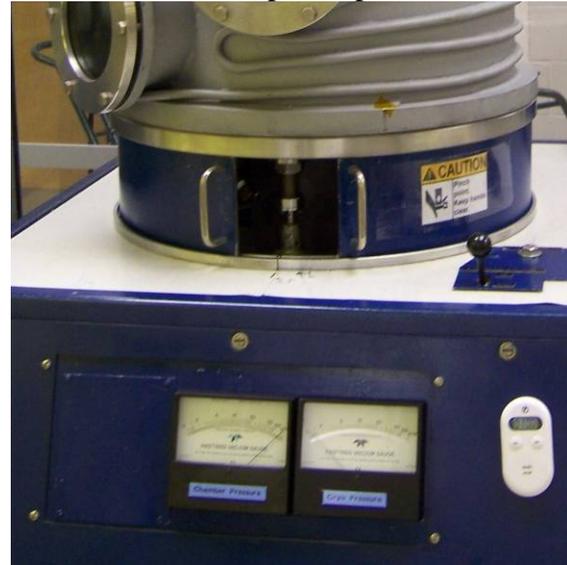
- Cryopump temperature is less than 16K
 - Temperature gauge on the top shelf of the rack



- High-vacuum gage is OFF
 - RED LED display on the gauge reads OFF



- Chamber is under vacuum
 - Bell is down and chamber vacuum gauge (left side of front panel) reads below atmospheric pressure



- Shutter control is set to Auto



Loading a sample:

- Close the Hi-Vac valve
 - Rotate handle counter-clockwise until valve is firmly closed. Do not over tighten it.



- Open nitrogen vent and wait until chamber is at atmosphere (chamber will slide on its base when pushed)



- Close nitrogen vent

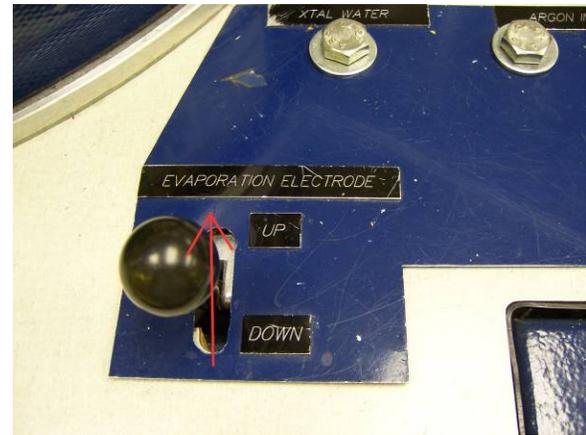


- Raise the chamber up using the Raise Chamber button, be extremely careful not to hit the HEPA filter!

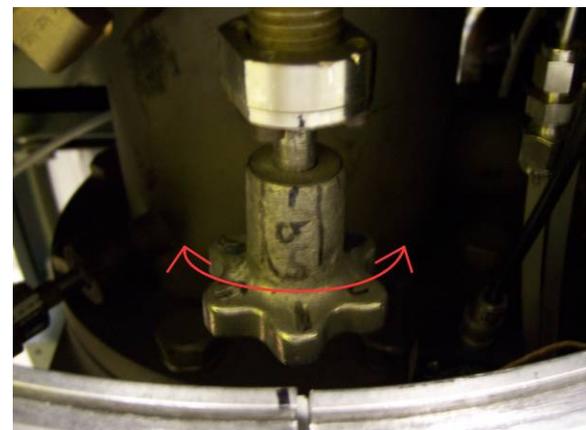


- Place sample in an appropriate holder at the top of the chamber directly above the source cathode

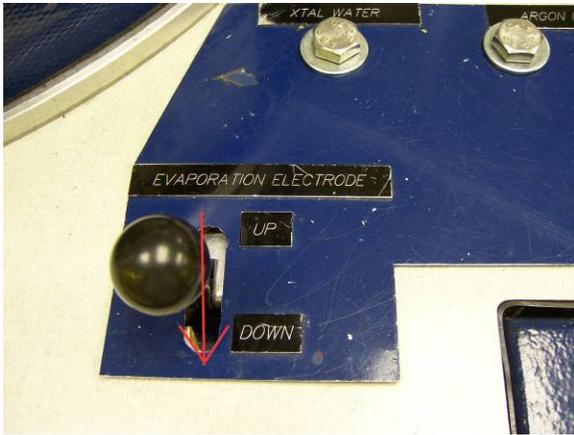
- Raise the electrode



- Load deposition material as needed and rotate crucible under the electrode using the knob beneath the chamber



Lower the electrode

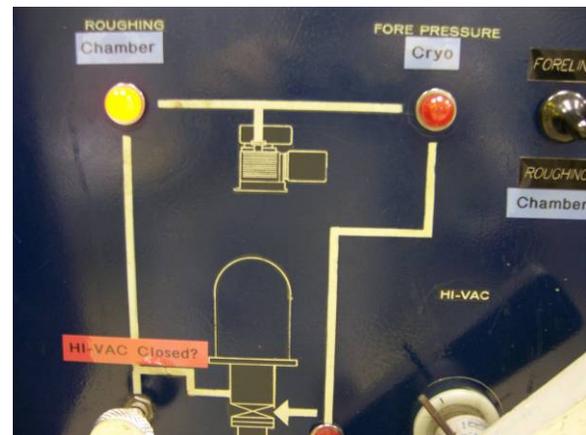
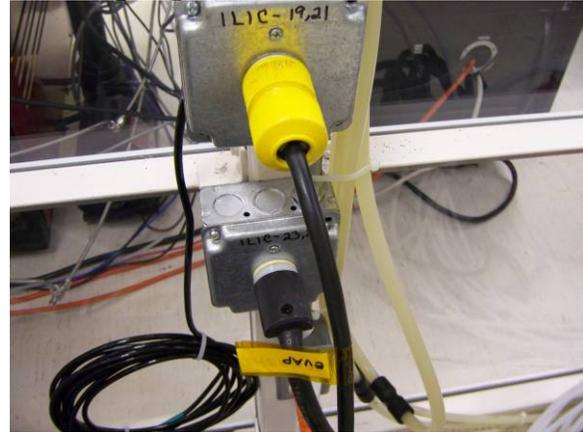


Running a process:

- Lower the chamber using the Lower Chamber button and verify it is centered on the base



- In the chase area plug in the roughing pump and move the roughing/foreline toggle switch down to pump the chamber the orange light will illuminate



- Wait until the chamber vacuum gauge reads 100 microns of mercury

- Close valve by moving toggle switch back to the center position. Do not go to the foreline setting.



- Unplug the roughing pump
- Open the hi-vac valve it requires a lot of turning, about 130 revolutions



- Turn on the hi-vacuum gauge by moving the toggle switch up to H.V. On, wait until it reads 5×10^{-6} Torr and turn it back to the middle position H.V. Off



- Set material properties and desired film thickness in the crystal thickness monitor



- Turn on filament #1 and begin ramping up the current using the large variac



- When you've reached the evaporation threshold press start on the thickness monitor



- You can adjust the variac to get the desired deposition rate. Once the thickness setpoint is achieved ramp the variac back down to zero before turning off the filament



Unloading a sample:

- Close the Hi-Vac valve
 - Rotate handle counter-clockwise until valve is firmly closed



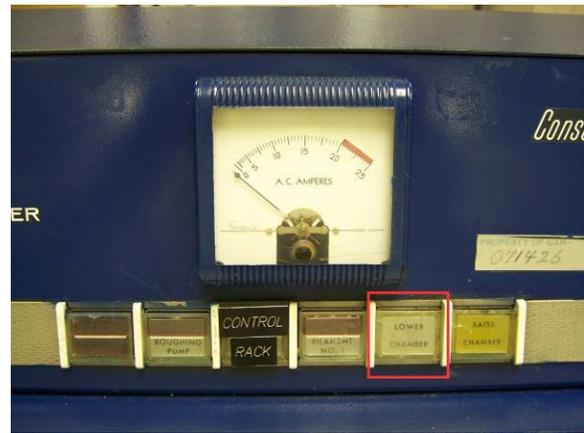
- Open nitrogen vent and wait until chamber is at atmosphere (chamber will slide on its base when pushed)
- Close nitrogen vent



- Raise the chamber up using the Raise Chamber button, be extremely careful not to hit the HEPA filter!

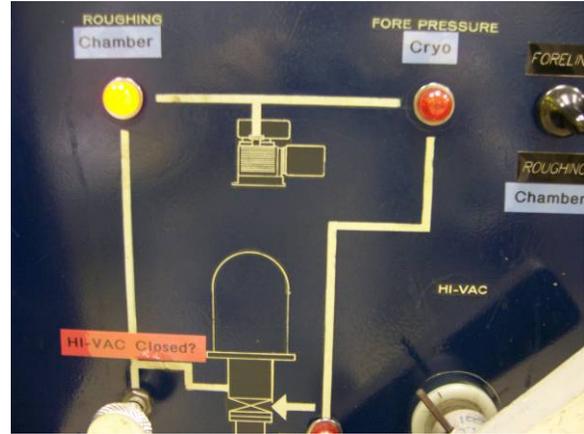
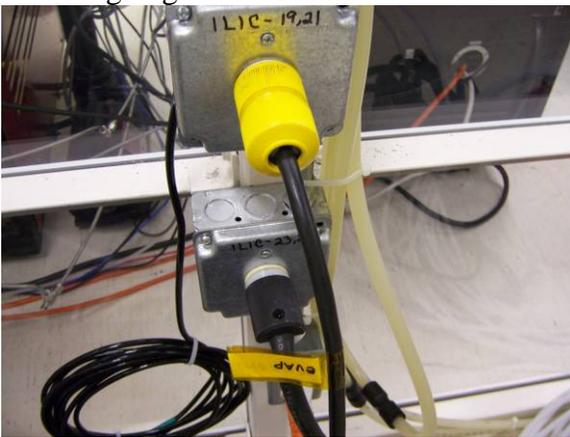


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Common Process Parameters

- Chrome
 - Use a tungsten wire basket
 - 10 Volts
 - Electrode pair 1-3
 - Ramp up at 20 units per minute to a maximum of 95, deposition begins at about 90

- Gold and Aluminum
 - Use an alumina coated wire basket
 - 20 Volts
 - Electrode pair 1-3
 - Ramp variac at 5 units per 5 minutes to maximum of 35, deposition begins at about 30
 - Ramp down at the same rate as the ramp up to avoid destroying the crucible