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

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 $5 \times 10^{-6}$ 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!
- 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
**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