

Operating Procedure for EVAP2 (Lesker PVD75 Ebeam/Thermal Evaporator)

Sample Load/Chamber Pump and Vent

1. To vent chamber and load sample, select the **Start PC Vent** icon.
<https://www.youtube.com/watch?v=8wNqwkyr1ZQ>
2. Upon completion of vent cycle, open door and load sample.
3. Verify that Mylar window cover is in place, and replace if needed. Close Chamber Door. <https://www.youtube.com/watch?v=eKj2C-tCZ48> and <https://www.youtube.com/watch?v=wZkiYxIrSyQ>
4. To pump chamber select **Rough Pump**, **Backing Valve**, then **Turbo**.
5. Allow chamber to pump for 1 hour, then select **Filament ON**.
<https://www.youtube.com/watch?v=oxr0E0H6R-c>

Recipe Selection and Edit

1. Select the **SQS-242** icon using the touch screen, or the track ball on the keyboard.
2. Select **File**.
3. Select **Process**.
4. Select the desired process.
5. Select **Yes**.
6. **NOTE:**
 - Processes with the prefix **EB** utilize **Electron Beam Source #1**.
 - Processes with the prefix **Thermal** utilize **Thermal Source #2**.
7. Select **Edit**.
8. Select **Process**.
9. To edit the **Deposition Rate**, enter the desired rate in the **SetPt** window.
10. **NOTE: SetPt values may range from .5A/sec to 5A/sec for all metals EXCEPT for Ni. Ni may be run at a maximum rate of 3A/sec.**
11. To edit the **Film Thickness**, enter the desired thickness value in the **FinalThick** window. <https://www.youtube.com/watch?v=fGYrWJz6III>
12. **NOTE: This value is expressed in KiloAngstroms**
13. Select the **SQS-242** icon to minimize that screen.

Run Process

14. Select the **Deposition** icon.
15. If you are using **Electron Beam Source #1**, select the desired Crucible Position for your process. Below are the allowable configurations for metals.

Pos 1: Titanium (Ti)	(Directly in Hearth)
Pos 1: Chromium (Cr)	(Copper Crucible)
Pos 2: Aluminum (Al)	(Directly in Hearth)
Pos 3: Platinum	(Directly in Hearth)
Pos 3: Nickel	(Directly in Hearth)
Pos 4: Gold (Au)	(Tungsten Crucible with Spacers)
Pos 4: Silver (Ag)	(Tungsten Crucible)
Pos 4: Copper (Cu)	(Tungsten Crucible)

DO NOT CHANGE THE POSITION OF ANY METAL WITHOUT SMIF APPROVAL. ALL METALS MUST REMAIN IN THE ABOVE POSITIONS. CONTACT SMIF STAFF FOR INFO CONCERNING ALL OTHER METALS

16. If you are using the **Thermal Source #2** there is no Crucible Position selection.
17. In the **Power Window** verify that the EBeam and Thermal Source Power supply **Setpoints** are set to **0%**.
 - **EB ON** and **EB Off** icons control **Source #1** (EBeam Gun).
 - **Power Supply 2 On/Off** icon controls **Source #2** (Thermal Source).
18. Select the desired Power Supply **ON** icon. (**EBeam or Thermal Source**)
19. Select the **Platen Motion** icon.
20. In the **Platen Motor** window select the Motor **ON** icon.
21. In the **Drive Motor Continuous** window select the **Fwd** icon to turn it **ON**.
22. Select the **Sigma** icon.
23. In the **SQS-242** window, verify the **Sigma Launch 242** is **ON**. If not, select **ON**.
24. In the the **Sigma Process Name** window verify that the desired recipe name is displayed.
25. In the **Sigma Control** window, select **Sigma Start Process ON**.
26. **This will START your process!**
27. Select **SQS-242** to view **Power Ramp** and **Dep Rate** graph if desired.
28. Select **View**. <https://www.youtube.com/watch?v=PI8o2F1twNc>
29. Select **Sensor Reading** to display crystal info.

Sample Unload

30. Upon completion of your process, under the **Sigma Control** window select **Sigma Start Process OFF**.
31. Select the **Deposition** icon.
32. In the **Power** window turn the chosen power supply **OFF**. (See **Step 17**).
33. Select **Start PC Vent**. (Vent Time is approximately 5 minutes).
34. Open door and remove samples.
35. Close chamber door.
36. Pump chamber by selecting **Rough Pump, Backing Valve**, then **Turbo**.

How To Reboot the Computer After An Unrecoverable Error

37. Shut down the computer using the Start menu.
38. Allow the system to sit idle for 10 seconds.
39. Restart the computer using the toggle switch located on the front panel.
40. Select the **KWare** icon. Wait 10 seconds after software is fully open.
41. Login using **“admin”** as the user name and the password. Wait 10 seconds.
42. Select the **Sigma Screen**.
43. Select the **“Launch SQS242”** icon. There is no username or password required.
44. Wait 10 seconds. System is ready for use.

