

Electron Beam Evaporator

1. Fill logbook.
2. Log into the system.
3. Press **Chamber Vent Sequence** button
4. Acknowledge the warning
5. Press **Start Selected Sequence** button.
6. After vent, open the chamber door.
7. Mount sample and load the deposition materials. Record the pocket number of each deposition metal. When you load your sample and deposition material, be careful not to touch inside with contaminated hands.
8. Close chamber door and press **Chamber Pump Down Sequence** button and press **Start Selected Sequence** button.
9. Set up your deposition parameters, during the system pump down to base deposition pressure set-points.

Set-up of deposition parameters

The system has three sources

Source 1 : 6 e-beam pocket sources

Source 2 : Thermal source 2

Source 3 : Thermal Source 3

The system uses two control outputs and two sensor inputs

Output 1 : 6 e-beam source 1

Output 2 : Thermal source 2 and 3

Sensor 1 : Source 1 (e-beam)

Sensor 2 : Source 2 and 3 (thermal)

- ✓ When deposit more than one layer, need to rotate pockets with door open to put the metal crucibles into the pocket. On the top panel, toggle switch from auto to manual, then push the cw or ccw button shortly to place the pocket you want and put crucibles and record which metal crucible in which pocket. After finish placing the crucibles into pockets, toggle switch back from manual to auto.

10. Open SQS-242 software. ID is super and no PW. Just click the OK button.

11. Click **Edit/Films** to open the Film Edit window. Choose the film for the source location you will use

12. If you want to make a new recipe, click **Copy** button and give a new name of the file.

13. Click Deposit Button

- Set P, I, and D Value
- Rate Sampling
 - ✓ Set at continuous
- Shutter Delay
 - ✓ Accuracy 10%
 - ✓ Wait 100
 - ✓ Hold

14. Click **Condition** Button

At precondition, use Ramp 2, not Ramp 1

- ✓ Ramp 2 pw 20 %
- ✓ Ramp 2 time 60 s
- ✓ Soak 30 s

15. Click **Source/Sensors** button

- At source choose deposit material
- Set max pw 30-40 %
- Slew rate 5
- Sensor Tooling: Measure the real deposit thickness and the put the ratio of real thickness and setting thickness for each material

16. Click **Errors** button

- At Crystal Fail, choose enabled

17. Close Edit file window

18. Open Edit Process window.

Find the process file or make new file. To make new file, click copy button and type the new name.

19. Click **Layer** button.

- Choose right Film, Output, and Input
- Set deposition rate and the final thickness
- Choose Indexers for src/pkt and sweep mode.

20. Click **Rate Ramp** button

- To set ramp, click Insert button and put start thickness, ramp time, and Setpt (deposit rate)

21. After check **Deposit, Condition, Source/Sensors**, and Errors, close process edit window.

22. When the deposition pressure is achieved, perform the deposition.

23. Click Start Process Green button. It will be red during the deposition.

After finish the deposition, it will change to green again.

24. After deposition is over, wait for 10 minutes to cool down.

25. Select **Chamber Vent Sequence** button and press **Start Selected Sequence** button.

26. After vent, open the chamber and remove your sample and deposition materials.

27. Close chamber door and select **Chamber Pump Down sequence** button and press **Start Selected Sequence** button.

28. Complete logbook.