

ADDITIONAL DEPOSITION OPERATING PROCEDURE CHA Metal Evaporation System

Rev. 11/28/2001

Program the Rate Monitor

1. To deposition another layer on top of the previously deposited layer, rotate the hearth to the crucible containing the new material.
2. Reprogram the XTC RATE MONITOR for the new layer:
 - A. If an Err 1 appears on the display, press **START** to clear.
 - B. Press **PROG** to enter the program mode.
 - C. Press and hold **E** ↓ until the cursor is at **DENSITY**. Using the numeric keypads enter the density of the material you want to evaporate, then press **E** ↓.
 - D. The cursor should now be at **Z-RATIO**. Using the numeric keypads enter the z-ratio of the material you want to evaporate, then press **E** ↓.
 - E. Advance the cursor until **TOOLING FACTOR**. Ensure that the tooling factor is correct. If not, using the numeric keypads enter the tooling factor then press **E** ↓.
Presently, the factor for XTAL 1 is 85%.
 - F. Press **PROG** to exit the program mode. The XTC should display **READY**.
If it does not display READY, press **STOP** and **RESET**.
 - G. Press **START** to place the XTC in operation mode (should clear the READY display).
 - H. Press **MPWR** on the XTC to use the manual power control. It should read **MANUAL** in lower right corner of display.

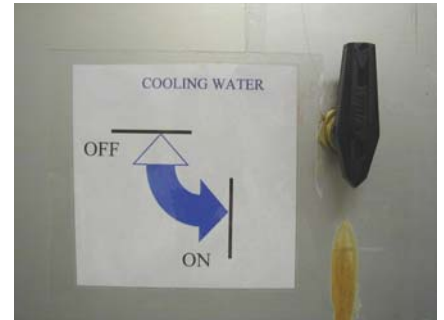


NOTE:

- If the thickness of the previous layer is larger than the additional layer, use the previous layer's z-ratio.
- If the thickness of the previous layer is thin compared to the additional layer, use the additional layer's z-ratio.
- If the thickness of both layers is similar, use a weighted average of their z-ratio.

Deposition

1. Turn **ON** the **cooling water** using the valve on the back of the right side panel.



2. Turn **KEY LOCK ON** to the power supply.
3. Press **MAIN POWER ON**. Ensure all the green interlock lamps are lit.
4. Press the green **HV ON** push button. Observe the proper high voltage reading on the HV meter. (IF required adjust using the **VOLTAGE ADJUST** potentiometer to read 10.00 KV.)
5. Ensure the **SOURCE EMISSION CURRENT ADJUST** potentiometer is fully **counter-clockwise (0)**.
6. Press the green **SOURCE FILAMENT ON** push button.
7. **Slowly** increase the **SOURCE EMISSION CURRENT ADJUST** potentiometer to the desired deposition condition.
8. Inspect the e-beam on the crucible for correct position. It may be necessary to adjust the e-beam.

LATERAL
↔



LONGITUDINAL
↑↓

9. Use the lateral and longitudinal **POSITION** potentiometer to adjust the location of the e-beam.

The **AMPLITUDE** is the distance range of the e-beam oscillation.

The **FREQUENCY** is the rate of oscillation.

10. **Open the shutter** and simultaneously press **#2 on Keypad** to **ZERO** the deposition on the **XTC monitor**.

11. Watch the thickness value on the monitor until it reaches the desired deposition thickness. Close the shutter at the proper deposition thickness.



Record deposition parameters in logbook.

12. Decrease the **SOURCE EMISSION ADJUST** potentiometer to zero.
13. Press the red **SOURCE OFF** push button.
14. Press the red **HV OFF** push button.
15. Press **STOP** on XTC monitor.
16. If you are completely done with all layers, press **MAIN POWER OFF** and turn the **KEY LOCK OFF**.
17. If you are not done and you need to deposit another layer let this source cool for 15 minutes, then continue with the **ADDL. DEPOSITION** section.