

VAPOR DEPOSITION CHAMBER INSTRUCTIONS

To use the vapor deposition chamber, one must be an approved trained user (see MCF staff for instructions on becoming a user).

The vapor deposition chamber is used for deposition of thin films (<250 nm) of Cr, Au, Co and Al. To create thicker films, or films of other materials please get prior approval from MCF staff.

Please make sure you are familiar with detailed instructions, the following instructions are only to be used as a guide.

1. Press VENT to bring chamber up to atmospheric pressure.
2. When pressure reads 7.6×10^2 torr, rotate chamber top to the upright position and lock it into place using pin.
3. Remove safety guard and glass bell jar from the stand. All metallic film residues need to be removed from the stand with vacuum cleaner.
4. Place samples onto sample holder using screws or clips. If your samples are lightweight you may use double-sided stick tape.
5. Attach sample holder to the chamber top. Make sure that the setscrew on the sample holder is tightened to the shaft.
6. Install boat or rod between connections under round screws. Tighten these screws.
7. Place metal to be used into a sample boat. For chromium deposition use a plated rod as the source. If evaporation boat becomes damaged, install a new boat.
8. Rotate the 4-position sample turret to place evaporation source under the shutter.
9. Using "Data" button scroll down cursor to usage reading. Make sure that number is below 500-600. If not please call MCF staff to exchange piezo-crystal for deposition reading.
10. Put glass bell jar and safety guard jar back onto the stand.
11. Slowly lower the chamber lid from the upright position down onto the bell jar and ensure that it seats correctly.
12. Press CYCLE button to begin the pumping process. The chamber will automatically open the fine pumping valve after 3-5 minutes. If the pressure does not decrease, check that the chamber is sealed well. Once the pressure in the chamber is less than 1.0×10^{-6} torr you may begin deposition.
13. Press RUN button to get the system in *closed* mode.
14. Using the DATA button and the arrows, input the values for "density" and "z" ratio for the material you are depositing. (on quartz microbalance).
15. Press RUN button to get the system in *open* mode.

16. Press both START buttons (on the left top corner of the panel) to start sample holder rotation.
17. Press REMOTE or SS1 buttons to open the shutter.
18. Switch current selector to LT and very slowly increase current until the microbalance display reads the desired deposition rate.
19. Continue to deposit the metal until the desired thickness has been reached, then close the shutter, stop rotation and slowly reduce current to zero.
20. Turn LT switch back to the "off" position.
21. Wait 10 to 15 minutes before opening chamber to allow all surfaces in chamber to cool.
22. Press VENT and wait for chamber to come to atmospheric pressure.
23. Remove samples, close chamber and press CYCLE button to evacuate chamber.

Note: chamber should always be under vacuum when not in operation.