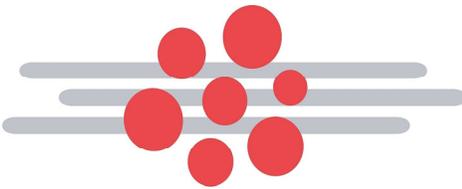


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Subject: Using the Denton DV-502A Evaporator	DATE 10/24/2007
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Start up (cold start)

- Turn on Main Power switch
- Make sure all valves are closed – turn on mechanical pump.
- Read vacuum gauge (click to foreline reading) until pressure is 30-40mTorr.
- Open back valve – do not unscrew all the way as stopping nut is missing. Note: never have roughing valve and backing valve open at the same time!
- Wait until pressure is back in 30-40mTorr range.
- Turn on Turbo Pump and press “Start” switch.
- Wait until light on turbo controller switches from yellow to green (~10-20 minutes)

Preparing to evaporate: loading sample and pumping down chamber

- Vent chamber by opening valve. Carefully lift bell-jar and rotate out of the way. You need to lift it up slightly to get it to rotate. Do not force. The rubber seal will likely fall off and must be replaced at bottom of jar before pumping back down.
- If chamber is dirty, vacuum or blow any metal flakes out. Load sample in center of stage.
- Use small wire baskets and put appropriate amount of metal(s) into basket(s).
- Replace bell jar and close vent valve.
- Close backing valve all the way and open roughing valve. Remember, never have both valves open at the same time.
- Switch vacuum gauge to read “Chamber” and wait until it drops to ~100mT.
- Close roughing valve and open backing valve.
- Open valve to turbo pump with lever to “open.” Never open main valve unless the chamber pressure is below 100mT and the backing valve is opened.

- To achieve better vacuum in a timely manner, fill nitrogen dewar with funnel on the left side of the unit. You can observe spraying of liquid nitrogen from a filled trap via the slot for the main valve lever on the left.

Evaporation

- Read high vacuum using high vacuum gauge.
 - Turn to “On” and hit “Meter Read” button.
 - When it illuminates, it will take a few seconds to start reading.
 - With the knob still in the “ON” position, use the “zero set” knob to set the reading to zero.
 - Then click to the appropriate range as the vacuum improves.
 - The chamber should achieve pressures in the mid- 10^{-6} range pretty quickly. After 15-30 minutes it should be in the 10^{-7} range and potentially will go into the low 10^{-7} range should you be that patient.
- Program the thickness monitor for your evaporation
 - Turn the monitor on using the switch in the right rear of the unit.
 - Hit the “program” button to enter the programming mode.
 - FL1 is for chrome, FL2 is for gold, feel free to enter other commonly used settings in the other slots and update this record. Use the “enter” button to cycle through the desired parameters. As of now, the shutter does not function, so thickness limits are only for the user’s benefit.
 - Once your program is entered (you must hit “enter” to ensure each value is set), hit “program” again to return to the read-out mode.
 - Hit “zero” to zero the timer and thickness reading.
- Once the desired pressure is reached it is time to evaporate. Select which electrodes you are using – left or right.
- If desired, the stage can be rotated by switching on the button and the speed of this rotation can also be controlled with the knob.
- Turn on the filament power and slowly increase the power. It will take a second before the current flows, so it is advised to turn the knob to 15 or so and after a current is registered, to turn it down a bit.
- Watch the thickness monitor and slowly turn up the current until a decent deposition rate is achieved. If no deposition is monitored by the time you have reached 20-25 amps, there is probably something wrong.
- Evaporate the desired amount and then slowly turn the power down. When the knob is down to zero, turn off the power switch.
- If a second metal is to be evaporated, switch to the other set of electrodes, reprogram the monitor and repeat the process.
- When evaporation is done, turn off the stage rotation and turn off the high vacuum gauge by turning the knob to “off.” (try not to have the gauge on when venting the chamber).

Venting the chamber

- Close the main valve.

- Vent chamber with vent switch. Never vent the chamber while the main valve is open.
- When the chamber is fully vented – i.e. when you no longer hear gas entering the bell jar – carefully lift the jar as before and remove your sample. The electrodes may still be hot, so be cautious when reaching into the chamber.
- If you are finished with the evaporator, close the bell jar and pump down with the roughing pump as above.

End of the Day

- Once again, when the chamber is below 100mT, open the main valve.
- Let the turbo pump on the chamber for a few seconds and then close the main valve.
- Turn off the turbo pump. Allow 10-20 minutes for the pump to wind down.
- Close the backing valve.
- Turn off the mechanical pump and vent using “MP Vent” switch.
- Turn off system power.