

Edwards Auto 306 Thermal Evaporator in DBH 260 Instrument Room

To keep the Edwards Auto 306 thermal evaporator operative as long as possible, we need every user to understand the correct working procedure.

BEFORE USING THIS INSTRUMENT YOU MUST BE TRAINED BY A CURRENT USER. THESE GUIDELINES ARE MEANT TO BE A REMINDER OF OPERATION; THEY DO NOT REPLACE TRAINING BY A KNOWLEDGABLE PERSON.

The steps for operating the thermal evaporator are as follows:

- 1) Before starting the system, please check to ensure that the cycling water and nitrogen are running properly.
- 2) Turn on the main power switch, keep on pressing the down arrow at the right side of status LED panel, until the LED panel shows "sequence run", then press "yes".
- 3) Press "start". The LED panel will show "pump warm up".
- 4) After warm up (it takes about 15 mins), press "vent" to fill the chamber with nitrogen. Then open the chamber and load the sample.
- 5) Close the chamber and then press "Cycle". The chamber will be pumped down to high vacuum. Liquid nitrogen is necessary for fine-pumping. If "High Vacuum Failed" appears during the pumping or evaporation process, press "Seal" and make sure everything is right. Then press "Cycle" again.
- 6) When the pressure is 5×10^{-6} , the chamber is ready for evaporation. This process takes about 30~60 mins.
- 7) Set up the evaporation parameters for the material being deposited (density, z-factor)
- 8) Change current switch to "LT"
- 9) Put the selector on the "1" position (it is recommended to use the left sample pan to evaporate the metal. if you use the right sample pan, then choose "2")
- 10) Press "reset" on the top panel.
- 11) Adjust the current knob slowly to reach the suitable temperature for evaporation. Please notice the vacuum should not be lower than 5×10^{-5} during the whole evaporation process. **Our evaporator does not have over heating protection, please keep an eye on the machine when evaporation is running. You have to stay there during the whole evaporation process.** If you cannot get the material deposited at a current of 7-8 amps, please make sure your material can be used for thermal evaporation. If you need long evaporation, please re-add liquid nitrogen after 3-4 hours or consider to do it in several runs.
- 12) After evaporation, turn the current knob all the way down, switch back the selector, press "trip", switch back the current switch.
- 13) Press "seal"
- 14) After system is cooled down, press "vent"
- 15) Take out the sample
- 16) Close chamber, press "cycle".
- 17) Press "seal" when the pressure reaches 10^{-4} . Then press "Stop".
- 18) When the LED panel shows "standby" (it takes about 15 mins), turn off the main power.

Dr. Yu Zhu, 7 July 2009