Standard Operating Procedure for Thermal Cr/Au System

1 Switch ON the main switch on the right side of the system

2 Vent the chamber by opening the air admittance valve

3 Open the chamber when the pressure inside is equal to the atmospheric pressure. A subtle sound from the interlock confirms that the chamber is ready to be opened. Lift up the chamber and slide it on the side

4 **CLEAN** the chamber and Load the sample.

5 Switch ON the rotary pump by pressing the green push button of rotary pump on the main front panel.

6 Open the combination valve to Roughing position. Wait till the pressure falls below 4 x10-2mbar (It will take approx. 10-15mins)

7 Put the combination valve to Backing position.

8 Switch ON the turbo Pump. (Check for the speed and power of the turbo-they should increase initially)

9 Start opening the gate valve slowly when the turbo speed start increasing from 180Hz. Open the Gate valve completely.

10 Check for the speed it should be 1010Hz and power should be less than 10W.

11 Wait for around 1hr 30mins for the vacuum to reach 4.0E-6 mbar.

12 **Steps for performing thermal evaporation is as follows:**

13 A. For Chrome deposition-switch on the mains for LT(1) from the front panel

14 B. Verify that the current adjustment knob is on minimum position

15 C. Switch ON the LT(1) circuit breaker

16 D. Switch ON the quartz crystal monitor from the front panel and select filament 1 from the list

17 E. Very **slowly increase** the current by rotating LT1 knob in clockwise direction **(Slowly means increase the current up to 10mA in 15sec and halt for 15sec at that value)**

18 F. As the current is increased, with the clockwise turning of the LT knob, the material in the boat starts heating up (**Don't increase the knob beyond the 60V for Cr deposition and 40V (or 67mA current on LCD) for Gold deposition. If the boat is not heating up by this voltage then don't do the deposition and shut down the tool and also inform the SO / EMT team**)

G. Check the pressure in the chamber on the penning gauge. If the pressure is increasing too much (i.e. less than 6 x 10^{-6}mbar) reduce the current by turning the LT knob anticlockwise and keep at a lower value (not zero) till the degassing is complete

H. After degassing is complete and when the pressure reaches the minimum value increase the emission current

I. When the material in the boat starts melting, open the shutter and also activate the thickness monitor through the "START" push button on the thickness monitor controller

J. When the required thickness is reached close the shutter, bring the LT knob to minimum position to make the current zero, switch off the LT circuit breaker

K. When the evaporation is complete switch OFF the LT(1) K. The same set of steps to be repeated for Gold deposition, except that LT2 is to be activated and filament 2 should be chosen from the thickness monitor controller.

25. Once the deposition is over. **Wait for 10 minutes for degassing.**

26. Close the Gate valve completely.
27. Switch OFF the turbo Pump.
28. Vent the chamber, unload the sample and CLEAN **the chamber.**
29. Check for the speed of turbo, it should reach below 120 Hz or ----Hz.
30. Put the combination valve to roughing position and wait for the pressure to reach 4.0E-2 mbar.
31. Put the combination valve to CLOSE position.
32. Switch OFF the rotary pump
33. Switch OFF the MAINS.