



IIT Bombay Nanofabrication Facility

Tool Name: ALD LL (Atomic Layer Deposition Load Lock)

Standard Operating System (SOP)

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Tool's Overview

Checklist (Before starting the tool)

Current precursors attached to system

1. Port 0: DI water
2. Port 1: Aluminium
3. Port 2: Titanium
4. Port 3: Hafnium

System Start UP process

1. Switch "ON" MCB behind the system. 3 Phase MCB is for pump and 1 Phase MCB is for equipment. Switch ON the pump.
2. GN2 for solenoid operations should be at 80 psi. Start pump-> control pump-> start->enter.
3. Ensure EMO is released.
4. Press reset button. (Glow).
5. MCB on tool must be started CB1: Main supply, CB2: E Box, CB3: Turbo, CB4: RF generator, PC, matching unit etc.
6. Start the PC.
7. Turn E Box ON using the switch provided at E Box.
8. Start software Fiji V 17.2.0 version.
9. System will start initializing. Remarks will be 1. E Box initialization 2. Initializing load lock 3. Substrate holder is centered in load lock.

10. Go to **Vacuum** system tab. Pump down the chamber and LL without turbo. (Preparing system for pumping) (waiting for LL pump below 0.05 Torr).
11. Start heater (Click on Heater). Check the set temperatures at various heaters for chamber and precursors.
12. Check the temperature of precursors. Once the desired temperature is achieved wait for 30 mins. This ensures that cylinder has attained required temperature.
13. In software go to Process tab. Choose any parameter on recipe and right click for loading new recipe.
14. Recipes are saved in C drive in Cambridge Nanotech folder -> Sub folder Recipe-> Maintenance and Process.
15. Run recipe for head space with cylinder closed for that particular precursor. Ensure the entire atmosphere between cylinder and valve is removed.
16. **After the completion of process close precursor valve and Run Head space recipe.**
17. Go to Vacuum systems and click on Chamber and Load.

Shutdown procedure

1. In S/W go to vacuum system tab.
2. Click on Pump chamber & L.L without turbo.
3. Shut all valves off for precursor.
4. Run head space recipe for precursors.
5. Turn all heaters off.
6. Stop Program-> Yes.
7. Turbo will start turning off.
8. Close the program.
9. Turn OFF EBox.
10. Turn OFF MCB from the system panel sequentially as CB4, CB3, CB2, CB1.
11. Press EMO.
12. Turn OFF pump on the pump controller. Press O -> Enter.
13. Switch off MCB on wall (3 phases for pump and 1 phase for equipment).
14. Close all facilities gases and chiller water.