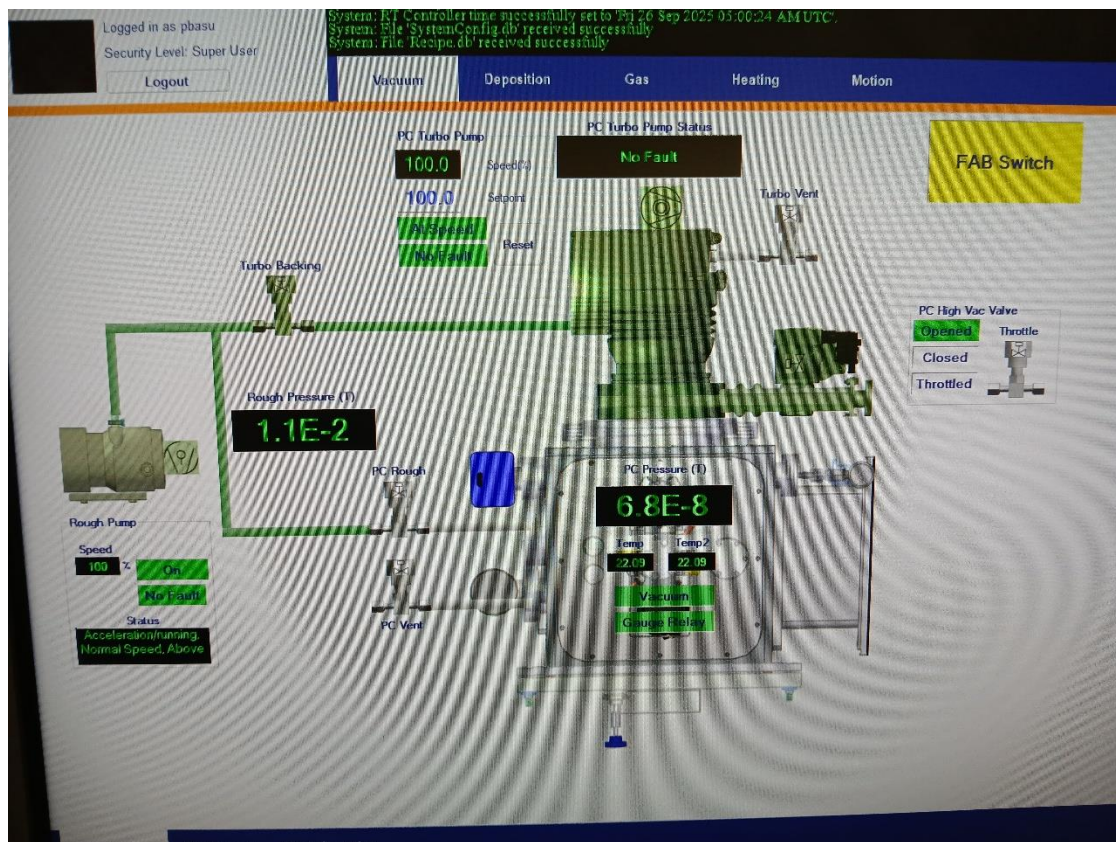


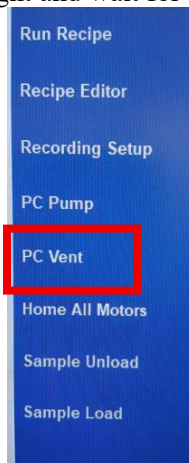
STANDARD OPERATING PROCEDURE

Lesker PVD 200 DC Sputter

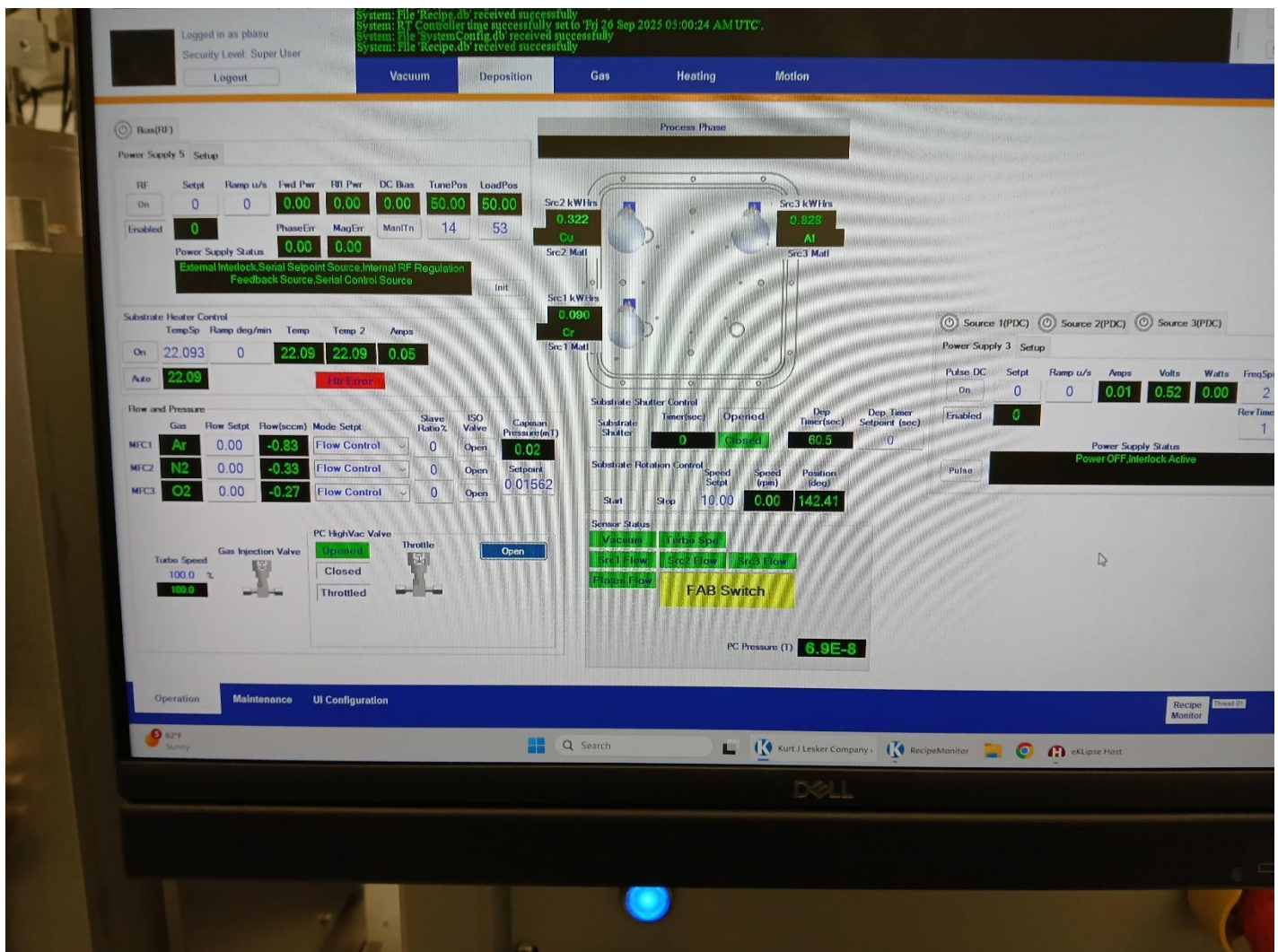
1. Start iLAB session.
2. Login with credentials on the top left of the screen.
3. **If any user wants to use the substrate heater temperature greater than 350°C, they should remove the mylar plastic film covering the glass window of the main chamber door before loading their samples.**
4. The main GUI shows the PC Pressure as the chamber pressure in Torr. Users are suggested NOT to click anything on the main GUI “Vacuum” page.



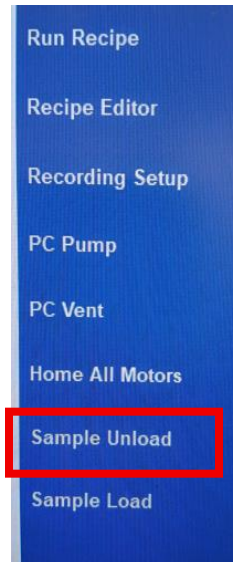
- Click “PC Vent” on the top right and wait for the chamber to vent to atmosphere.



- After the chamber pressure reaches atmosphere, the “PC Vent” recipe will be complete, and the user can open the main chamber door.
- Click the “Deposition” Tab in the main GUI and the orientation of the three sputter guns are shown in the schematic below along with various other deposition parameters.

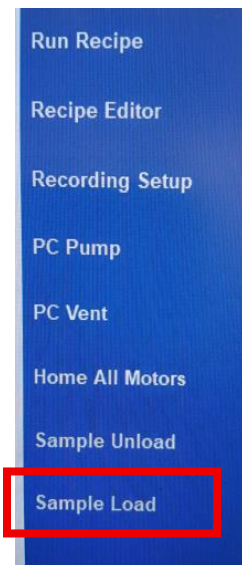


8. The numbering and arrangement of the sputter sources/guns as shown in the schematic below is same as in the actual main chamber. Src 1 means Source 1/ Gun 1; Src 2 means Source 2/Gun 2 and Src 3 means Source 3/Gun 3. All three sources/guns are DC sputter sources/guns.
9. Click “Sample Unload” and the substrate holder will be brought down for unloading.

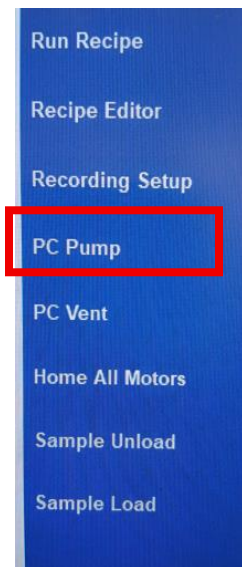


10. Once the “Sample Unload” recipe is completed as seen on the screen the substrate shutter will open, and all the sputtering gun shutters will also open. Users can physically unload the substrate holder from its slot to load their samples.
11. During this time users can also swap/load any sputtering target they brought from any source/gun and remove the Al foil from the sputtering source/gun they want to use.

12. After loading their samples, users can place the substrate holder in its slot and then click “Sample Load”.

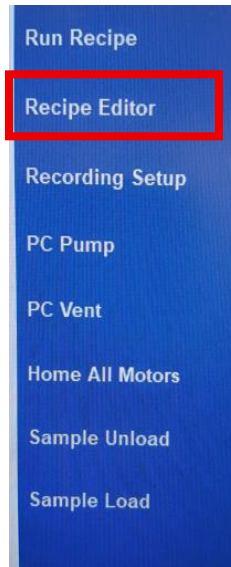


13. The substrate holder along with the sample will be raised and the substrate shutters and the sputter gun shutters will be closed and when the “Sample Load” recipe is complete, it will show on the screen.
14. Close the main chamber door and place the door latch in its slot and click “PC Pump”.



15. When the chamber pumps down, the door latch will automatically come off its slot.
16. Wait for the chamber PC Pressure (Base Pressure) to come down below 5E-6 Torr.

17. While the chamber is pumping down user can select “Recipe Editor”.



18. After selecting “Recipe Editor” the page with all the process recipes will open. Users should always duplicate either Master Deposition Src 1- PDC, Master Deposition Src 2- PDC or Master Deposition Src 3- PDC depending on which source/gun they want to sputter from. Do NOT make edits/changes in any of these Master Deposition recipes.
19. After duplicating, users should rename the duplicated main recipe preferably with their name

20. Click View Recipe and the recipe details will open. The recipe details of Master Deposition Src 1- PDC are shown below.

Kurt J. Lesker Company

Logged in as pbsau
Security Level: Super User
Logout

Recipe: Recipe PC Pump started in thread #1
Recipe: Recipe PC Pump completed successfully in thread #1
System: RT Controller time successfully set to 'Thu 25 Sep 2025 05:00:03 AM UTC'.
System: File 'SystemConfig.db' received successfully
System: File 'Recipe.db' received successfully
System: RT Controller time successfully set to 'Fri 26 Sep 2025 05:00:24 AM UTC'.
System: File 'SystemConfig.db' received successfully
System: File 'Recipe.db' received successfully

Ack Host Control
Msgs
Screenshot

Vacuum Deposition Gas Heating Motion

Name: Master Deposition Src1 - PDC
Description:
Category: Deposition
Owner: KJLC
Security Level: Basic User
Return To List
Click to Edit
DoubleClick to Edit
Type to Edit
Export

of 21 | Delete Step | Duplicate Steps
Disable Edit
Include In Run List

Drag	Step	Equipment Type	Equipment Name	Equipment Operation	Other Value	Notes	Skip	Config
1	1	Recipe	Set Abort Recipe	Abort Process			☐	
2	2	Recipe	Run Recipe	Master Recording			☐	Recipe
3	3	Recipe	Run Recipe	Pre Deposition Substrate Heater		Pre-Bake Substrate	☒	Recipe
4	4	Recipe	Run Recipe	Master Substrate Bias		Pre-RF Bias	☐	Recipe
5	5	Recipe	Run Recipe	Substrate Heater Turn On		Turn On Heater Assist	☒	Recipe
6	6	Recipe	Run Recipe	Upstream Pressure Control Initiate - User Set Value			☐	Recipe
7	7	Recipe	Run Recipe	Substrate Rotation Motor Start - User Set Value			☐	Recipe
8	8	Recipe	Run Recipe	Master Substrate Bias Initialization		Turn On RF Bias Assist	☐	Recipe
9	9	Recipe	Run Recipe	PWS1 Pulsed mode Turn On		DC Pulse Enable On	☐	Recipe
10	10	Recipe	Run Recipe	Plasma Ignition - Pws1+Src1			☐	Recipe
11	11	Recipe	Run Recipe	Pressure Control Reduction - User Set Value			☐	Recipe
12	12	Recipe	Run Recipe	Reactive Gas Introduction MFC2		Reactive Enable - MFC2	☒	Recipe
13	13	Recipe	Run Recipe	Reactive Gas Introduction MFC3		Reactive Enable - MFC3	☒	Recipe
14	14	Recipe	Run Recipe	Ramp and Burn In - Pws1 - Voltage - Current Check			☐	Recipe
15	15	Recipe	Run Recipe	Deposit with Timer - Src1 - Voltage - Current Check			☐	Recipe
16	16	Recipe	Run Recipe	Plasma Extinguish - Pws1+Src1			☐	Recipe
17	17	Recipe	Run Recipe	PWS1 Pulsed mode Turn Off		DC Pulse Enable Off	☐	Recipe
18	18	Recipe	Run Recipe	Master Substrate Bias Turn Off		Turn Off RF Bias Assist	☐	Recipe
19	19	Recipe	Run Recipe	Upstream Pressure Control Turn Off			☐	Recipe
20	20	Recipe	Run Recipe	Substrate Heater Turn Off		Turn Off Heater Assist	☒	Recipe
21	21	Recipe	Run Recipe	Substrate Rotation Motor Stop			☐	Recipe

21. Each of the steps in this recipe are sub-recipes within the main Master Deposition recipe. They are basically accessed from the drop-down menu as shown in the above photo.
22. Users are requested to duplicate each of these sub recipe steps and rename them accordingly when they want to incorporate the sub recipe steps in their recipe. Do NOT make edits/ changes in the original sub recipes.
23. After duplicating the sub recipes and renaming them, users can change the process parameters within the respective sub recipe.
24. Users can incorporate their renamed sub recipes within their renamed main recipe from the drop-down menu as stated in step 20.
25. If users want to skip any sub recipe step, they can select Skip as shown in the right and that sub recipe step won't be executed while running the main recipe.

26. When the PC Pressure (Base Pressure) drops below 5E-6, click “Run Recipe”.



27. After clicking “Run Recipe” this window will pop up as shown below. Users can make any final/additional changes on the recipe parameters in this window and then select Continue Load on the bottom left.

Recipe User Set Values

Recipe steps listed below require user values, enter these values into the “Value” column or accept the defaults already in place. Then click “Continue Load”

Recipe Name	Step	Equipment Type	Equipment Name	Equipment Operation	Notes	Minimum	Maximum	Value
Master Recording	2	System	Signal Recording Interval	Set Value = n.nn				1
Master Recording	3	System	Signal Recording Name	Set Value = abc123				Master Rec...
Upstream Pressure Control Initiate - Us...	12	MFC	PC Capman Pressure Setpoint	Set Value = n.nn	Ignition pressure value (m...			15
Substrate Rotation Motor Start - User ...	2	Motor	Substrate Rotation_Speed	Set Value = n.nn				20
Plasma Ignition - Pws1+Src1	9	Power Supply	Power Supply 1 Output Setpoint	Set Value = n.nn				50
Pressure Control Reduction - User Set ...	2	MFC	PC Capman Pressure Setpoint	Set Value = n.nn	Pressure reduction value (...)			3
Ramp and Burn In - Pws1 - User Set V...	2	Power Supply	Power Supply 1 Output Setpoint	Set Value = n.nn	Ending power supply ram...			140
Ramp and Burn In - Pws1 - User Set V...	4	Recipe	Dwell	N Seconds	Burn-in time (seconds)			60
Deposit with Timer - Src1 - User Set V...	3	Recipe	Dwell	N Seconds	Deposition time (seconds)			3600

Continue Load

Cancel Recipe Load

28. Once the recipe starts to run and sputter deposition begins, users should write down the relevant parameters under the “Deposition” Tab in the main GUI in the handwritten logbook.

29. After the recipe completes as seen on the screen, click “PC Vent”.

30. Once the chamber reaches atmosphere and the PC Vent recipe completes, open the main chamber door.
31. Click “Sample Unload” and the substrate holder will be brought down for unloading.
32. Once the “Sample Unload” recipe is completed as seen on the screen the substrate shutter will open, and all the sputtering gun shutters will also open. Users can physically unload the substrate holder from its slot to unload their samples.
33. During this time users should unload any target they installed in any of the guns and make sure the sputtering gun is reassembled with the Al foil on the sputtering gun. If they swapped any Aggiefab provided target with their own target they should ensure that the Aggiefab provided target is re-installed and they take their own target back with them.
34. After unloading the sample from the substrate holder, place the substrate holder in its slot and then click “Sample Load”.
35. The substrate holder along with the sample will be raised and the substrate shutters and the sputter gun shutters will be closed and when the “Sample Load” recipe is complete, it will show on the screen.
36. Close the main chamber door and place the door latch in its slot and click “PC Pump”.
37. When the chamber pumps down, the door latch will automatically come off its slot.
38. Log out from the tool.
39. End iLAB session.

SIGNATURES AND REVISION HISTORY

- a. Author of this document: Prithvi Basu
- b. Author Title or Role: Research Engineer
- c. Date: 10/13/2025
- d. Revision: Original Issue

Approvals:

Technical Manager Signature: *Sandra G Malhotra, 11/5/2025*

Revision History:

Revision	Author	Date
Original Issue	Prithvi Basu	10/13/2025
Rev B	Prithvi Basu	11/5/25, added caution about Mylar over windows when using substrate heater
Rev C		
Rev D		