

SCS PDS2010 Parylene CVD Standard Operation Protocol (SOP)



1. **Enable** the tool in **iLab**.
2. **Turn on** the tool by rotating red **EMO button** and press **Main Power button**.
3. Check the Vacuum (pressure). If it is below 990 mTorr, **switch to Vent**.
4. Open the vaporization chamber and **dispose the boat** and source leftover from the previous user's process. Clean the stainless-steel area where the door seal contacts using IPA spray bottle.
5. Open the chamber lid and remove the chamber to the cleaning bench. Remove the rotating stage, all the rubber seals and other components inside chamber. Please **inspect and remove Parylene coating** as much as you can. Make sure the center small hole is not clogged.
6. **Switch Vacuum to Hold**.
7. **Apply the liquid soap layer** to all the inside chamber surface including inlet and outlet area using liquid soap-soaked cleanroom wipes. Also, apply the soap layer on cold trap surface.
8. Place the rotating stage and baffle. Make sure baffle does not touch the stage. **Load your sample** on the sample stage.
9. **Place the chamber wall, rubber seal and chamber lid**.
10. Prepare the boat for dimer. Measure Parylene dimer and place it on the boat. **Load the dimer boat** in the vaporization chamber and close the door.
11. Apply liquid soap layer on cold trap. Clean the stainless-steel area where the cold trap seal contacts using IPA spray bottle. Place the cold trap. Make sure that cold trap handle and tube do not interfere the chamber structure.

12. **Open LN2 line by turning on two switches** (big red and small black) in the chase.
13. While you hold the cold trap, **switch Vacuum switch** to hold and **vacuum**. Wait until Vacuum (pressure) changes down to 700 mTorr, you may release the cold trap.
14. Please **check the process parameter** settings in Furnace, Chamber Gauge, Vaporizer, and Vacuum with Table 1.
15. **Press the green Start/Stop button.**
16. **Switch Furnace and Chamber Gauge selector to Enable.**
17. **Switch Vaporizer selector to Enable.**
18. Wait until Vacuum (pressure) changes down to 100 mTorr, you may leave the tool, and monitor the gauges over the window from cleanroom outside.
19. The process typically takes around 4 hours. Figure 1 explains process flow overview.
20. **Once the process is done, the green Start/Stop button will blink.**
21. **Press the green Start/Stop button to stop blinking.**
22. Once the vaporization temperature is below 100C, **switch Vacuum to Vent** and wait until Vacuum (pressure) becomes 990 mTorr.
23. **Switch Furnace and Chamber Gauge selector to Disable.**
24. **Switch Vaporizer selector to Disable.**
25. **Close LN2 line by turning off two switches** (big red and small black) in the chase.
26. **Turn off** the tool by pressing red **EMO button**.
27. Move the cold trap from the canister to holder.
28. Open the chamber lid and remove the chamber to the cleaning bench. **Pick up your sample.**
29. **Switch vacuum to hold.**
30. **Clean the chamber and cold trap** as step 5 described. Place back the chamber part to the system.
31. Please **do not open the vaporization chamber** and dispose the dimer boat. It is still hot.
32. **Disable** the tool from **iLab**.

Current Base Pressure (mTorr)

Table 1. Process Parameters

Parylene Type	C	N
Furnace Temp (Set point, C)	690	650
Chamber Temp (Set point, C)	135	135
Vaporizer Temp (Set point, C)	175	160
Vacuum Pressure (Base + mTorr)	+15	+50
(mTorr)		

If you need to deposit Parylene N, please contact the staff to change the internal setting.

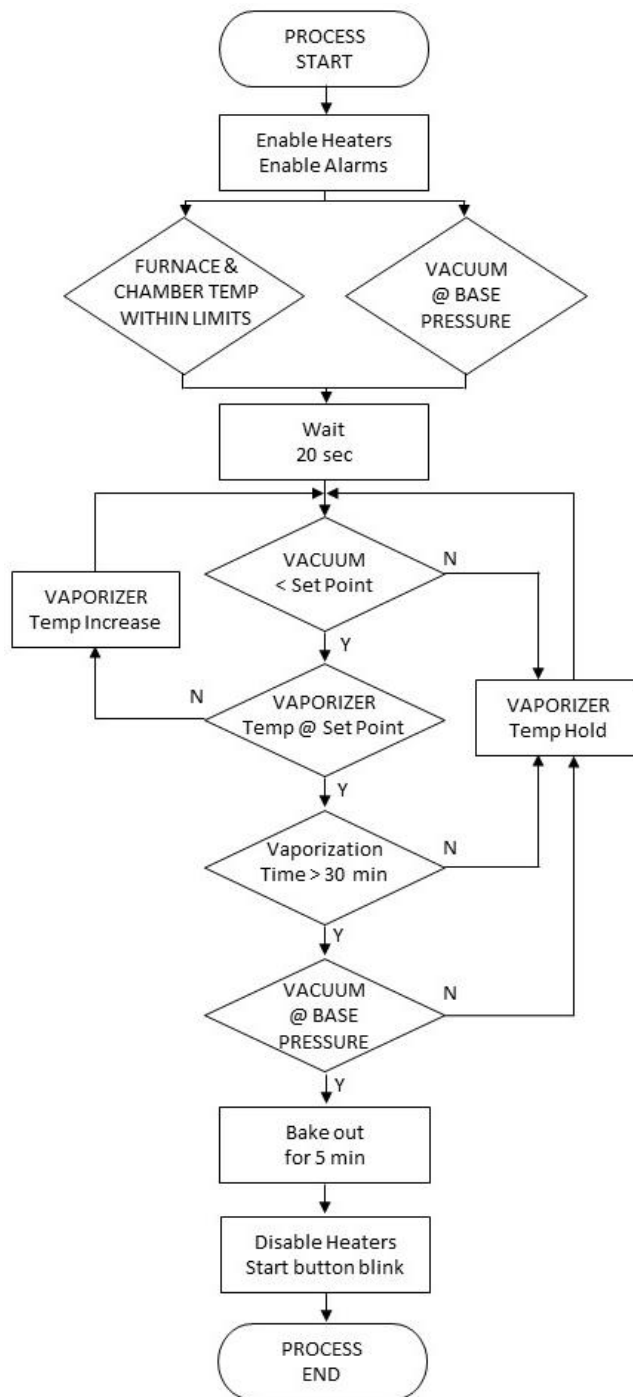


Figure 1. Process Flow Overview

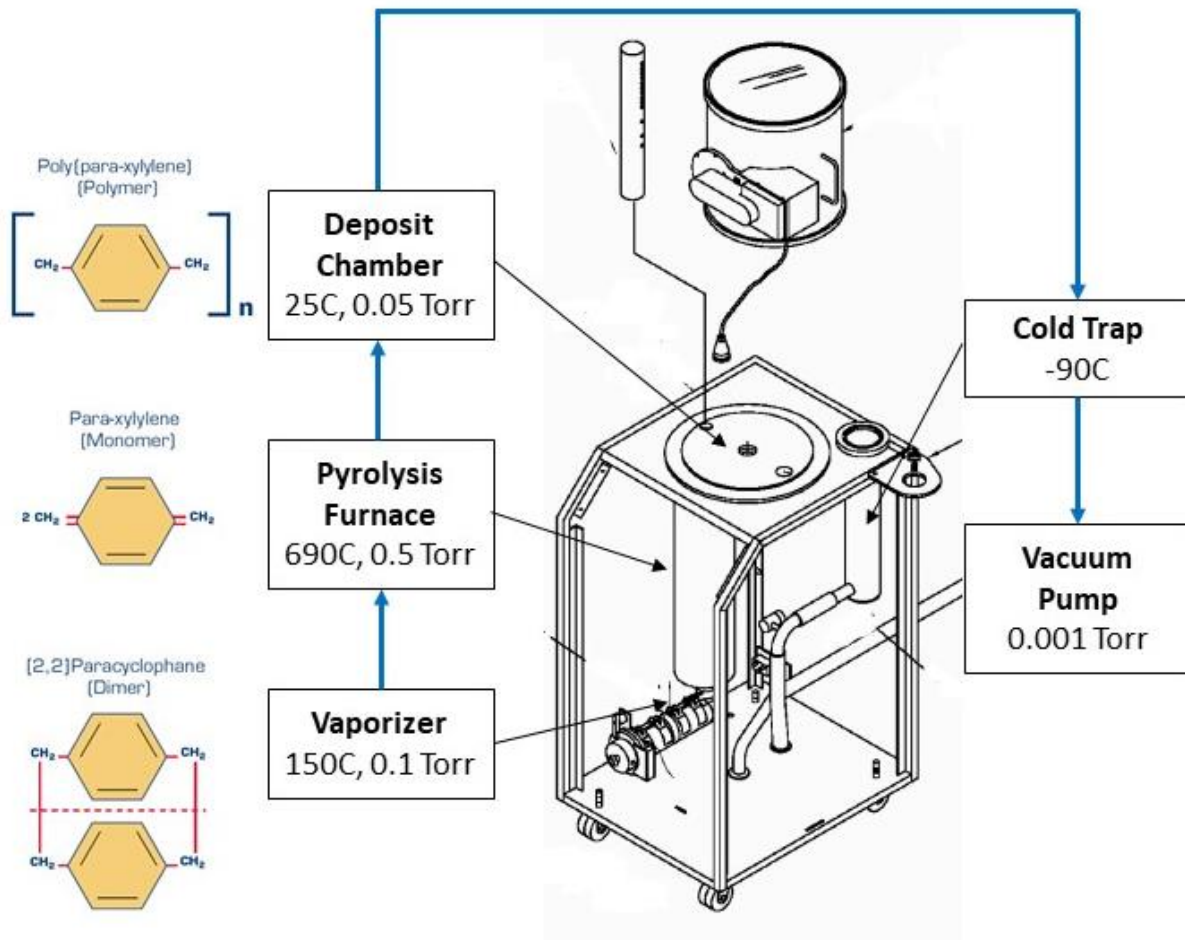


Figure 2. Parylene polymerization process steps and system components

Table 2. Release agent (liquid soap) application area

	the interior of the coating chamber
	the interior of the chamber lid and sight glass
	the inlet and outlet ports of the chamber
	the inlet and outlet baffles
	the turntable and fixturing