

# Operation Procedure for PARYL1

## PDS 2010 LABCOTER 2 Parylene Deposition System

### Start Up

1. Verify the PROCESS START/STOP green button is in the “out” position.
2. Turn on the system via the main power button (the red emergency off button may have to be released)
3. Switch the VACUUM switch to VENT if not already there to insure the chamber is vented
4. Wrap cloth tape around the lower portion of the inlet baffles and place it in the hole on the left side of the turntable insuring a tight fit and turning the holes towards the chamber wall (the left, away from the turntable).
5. Make sure the FURNACE and CHAMBER GAUGE switches are switched to DISABLE.
6. Make sure the VAPORIZER switch is set to DISABLE
7. Insure the temperature and pressure set points are correct. Refer to the Useful Parameters for Parylene Deposition Sheet.
8. Apply microsoap release agent (2% in DI water) to all bare chamber surfaces, including the baffles, cold trap, bell jar, window, chiller probe, vacuum line and both sides of the turntable unless there is already parylene deposited on them. This will insure easy parylene removal later.
9. Remove the cold trap cover.
10. Turn on the chiller and place the chiller probe into the cold trap housing and make a note of the time as the probe need to cool for 45 minutes prior to starting a run (*See note below*).
11. Make an aluminum foil boat (using the boat form for a guide) and measure out the desired amount of parylene to be deposited and place it in the boat. Record this value and the running total in the process log.
12. Load the boat and parylene into the vaporizer chamber on the lower left section of the system and close/latch the door.

### Operation

13. Remove the chamber bell jar if not already removed
14. Depress the PROCESS START/STOP button “in” and look for it to illuminate green.
15. Switch the FURNACE and CHAMBER GAUGE selectors to ENABLE
16. Load devices to be processed onto the turntable
17. Switch the VAPORIZER selector to ENABLE. The turntable should start to rotate. Check for smooth rotation.
18. Place the bell jar back on the chamber insuring that the lower seal is flush with the chamber base plate on all sides
19. NOTE: *At this point insure the chiller probe has been cooling for at least 45 minutes*
20. Switch the VACUUM selector to VACUUM and hold the chiller probe in down in the cold trap to insure a good vacuum seal. Also press down on the top of the bell jar to insure a good vacuum seal.
21. The chamber will pump to base pressure and if all other set points are reached, the vaporizer heater will be enabled

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22. Vaporizer will go to a lower set point for 30 minutes (the minimum run time), if used, and then increase to the main set point.
23. As the parylene is depositing the chamber pressure will increase to its set point (which can be varied depending on desired process characteristics).
24. Once the parylene has finished depositing the chamber will pump back down to base pressure (signaling the end of vaporization).
25. A bake out will then occur for 5 minutes to insure complete parylene vaporization.
26. The PROCESS START/STOP button will then blink signaling the end of the process and the heaters will automatically shut off.
27. Turn the VACUUM selector to VENT
28. Turn the FURNACE and CHAMBER GAUGE selectors to DISABLE.
29. Turn the VAPORIZER switch to DISABLE
30. Turn off the mechanical chiller allowing the probe to warm for a very brief period of time then removing it carefully from the cold trap and placing it in its holder.
31. Clean the chiller probe with scotchbrite and then reapply microsoap solution to it.  
**This MUST be done after every run.**
32. Open the chamber and remove devices.
33. Remove any loose parylene sheets or if a lot of parylene has been deposited, clean the parylene off all chamber components.
34. Reapply microsoap solution as needed ONLY TO BARE CHAMBER COMPONENTS, NOT TO PREVIOUSLY DEPOSITED PARYLENE.
35. Record all appropriate information in the log book

#### Shut Down

36. Place the bell jar back on the chamber
37. Remove the foil boat from the vaporizer chamber. *CAUTION: the chamber and boat may be hot, allow enough time for it to cool before removing it.*
38. Clean up and loose parylene around the system
39. Power the system down by pressing the red emergency off button, unless it will be used again within a short period of time (less than 1 day).
40. Press the PROCESS START/STOP green button so it is in the "out" position
41. Place the cover back on the cold trap