BENEQ TFS-200 ALD SOP

February 2020

See the staff first if the ALD is not turned on!

Start-up, Loading Substrates & Running Recipes

NOTE: Don’t forget to login into your FOM account.
1. Login onto the computer.
   Login: beneq <enter>    Password: beneq <enter>
   Press the LOGIN button
2. Acknowledge the errors in the alarm window by pressing “ALARM ACK”, turn ON the Dry Pump in the configuration window. Go to the CONTROL window and press on “Pumpdown”. Click YES when prompted to close the vacuum chamber door.

Skip steps 3-15 if you are loading the processing chamber directly through the top lid.
3. Make sure the load lock is pulled back to the load position by manually pulling the collar all the way to the right.
4. Go to the Load Lock window and make sure the gate valve is closed by clicking on GV CLOSE and it will turn green.
5. Press LOAD LOCK VENT and continue by pressing YES and wait until the tool is in an IDLE state.
6. Open the red lever and load lock. Load your clean substrate onto the substrate holder plate.
7. Close the Load Lock lid and red lever.
8. Click on PUMP DOWN LOAD LOCK and press YES to continue.
9. Wait until prompted to open the gate valve. Open the gate valve by pressing on GV OPEN thereby turning it green.
10. Push the collar of the substrate holder into the processing chamber.
11. Push the SUBSTRATE LIFTER button to lift the substrate from the transfer arm.
12. Pull the collar of the transfer arm out of the processing chamber to its home position.
13. Close the gate valve by pressing GV CLOSE.
14. Push the SUBSTRATE LIFTER button to lower the substrate into the holder lifter.
15. Push the HOLDER LIFTER button to lift the substrate into position for processing.
Manual loading the processing chamber through the top.

a. Go to the control window, configure the heating set points of the and press Heating. It will turn green for active heating.
b. If using a hot source turn on Heating in a similar manner for the selected Hot Source.
c. In the control window, select Vent to vent the processing chamber and load a wafer or substrate.
d. When vented the tool will say Idle in the top part of the screen. Open the top lid of the processing chamber and remove the secondary lid manually with the lid handle.
e. Make sure the substrate chuck in the upper most position. If it is not in the upper position depress Holder Lifter on the right side of the tool.
f. Load your sample in the processing chamber.
g. Place the secondary lid in the processing chamber.
h. Click Pump Down on the control window and Yes when prompted to close the chamber door. Go to step 16.

16. Go to the CONTROL tab and select your recipe from the drop down box located above RECIPE COMPILE AND DOWNLOAD.

17. Click on RECIPE COMPILE AND DOWNLOAD to load the desired recipe into the tool’s memory.

18. Click on START BATCH and START BATCH again in the pop-up box.

19. If any HOT SOURCES need to be heated, activate the HEATING button to allow the source to slowly reach temperature

20. Most recipes will allow time for the reactor and the hot sources to reach their operating temperatures followed by a delay to ensure a steady temperature. Click YES to continue once these have been achieved.

21. A pop-up window will eventually request the user to open any precursors necessary for the recipe, open the cabinet under the system and OPEN THE RIGHT VALVE ONLY. Click YES on the pop-up window.

22. The recipe should commence and its progress can be viewed by activating LOOP COUNTER on the CONTROL panel.

23. When the recipe is finished the system will request the user to close any open precursors and to hit YES to verify.

24. Unloading procedure can begin once the icon at the top reads IDLE.
Unloading Your Substrate and Shutdown

25. When the recipe is finished press **HOLDER LIFTER** to lower the substrate in the processing chamber.

26. Press **SUBSTRATE LIFTER** to raise the substrate in the processing chamber.

27. Go to the **LOADLOCK** tab and open the gate valve with **GV OPEN**.

28. Push the collar of the transfer arm into the processing chamber.

29. Press **SUBSTRATE LIFTER** to lower the substrate onto the transfer arm.

30. Pull the collar of the transfer arm out of the processing chamber.

31. Go to the **LOADLOCK** tab and click **GV CLOSE** to close the gate valve to turn it green.

32. Press **LOAD LOCK VENT** and click **YES**.

33. Open the red lever and load lock. Remove your processed substrate from the substrate holder plate.

34. Close the red lever and load lock. Press **PUMP DOWN LOAD LOCK** and click **Yes**.

35. Turn off the heaters in the **CONTROL** window.

36. Go to the **Configuration** window and click **Dry Pump** to turn off the pump.

37. Logoff from the ALD system in your FOM account.

<table>
<thead>
<tr>
<th><strong>Appropriate Substrates</strong></th>
<th><strong>Non-appropriate Substrates</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Silicon</td>
<td>Polymers</td>
</tr>
<tr>
<td>Quartz</td>
<td>Wet samples (Always better to dry the samples properly)</td>
</tr>
<tr>
<td>Borosilicate Glass</td>
<td>Anything with melting points or ignition points below 250°C</td>
</tr>
<tr>
<td>Soda Lime Glass</td>
<td>Plastic</td>
</tr>
<tr>
<td></td>
<td>Non-encapsulated particles</td>
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</tbody>
</table>