BENEQ TFS-200 ALD SOP

January 2018

Start-up, Loading Substrates & Running Recipes

NOTE: Don’t forget to login into your FOM account.

1. Logon onto the computer.
   Login: beneq <enter>   Password: beneq <enter>
   Press the LOGIN button

2. Acknowledge errors, turn on pump and pump down chamber. Go to the CONTROL window.
   Click YES when prompted to close the vacuum chamber door.

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 loadlock window and make sure the gate valve is closed by clicking on GV CLOSE and turning it 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 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.

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 any HOT SOURCES to reach their operating temperatures and a certain delay to ensure a steady temperature, press YES to continue once these have been achieved.

21. A Pop-up will eventually request the user to open any precursors necessary for the recipe, open the cabinet under the machine and turn only the RIGHT valve to open for the necessary precursors and hit YES on the pop-up.

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

23. As the recipe finishes, it 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

1. When the recipe is finished click or press HOLDER LIFTER to lower the substrate in the processing chamber.
2. Click or press SUBSTRATE LIFTER to raise the substrate in the processing chamber.
3. Go to the LOADLOCK tab and open the gate valve with GV OPEN.
4. Push the collar of the transfer arm into the processing chamber.
5. Click or press the SUBSTRATE LIFTER to lower the substrate onto the transfer arm.
6. Pull the collar of the transfer arm out of the processing chamber.
7. Go to the LOADLOCK tab and close the gate valve by clicking on GV CLOSE and turning it green.
8. Press LOAD LOCK VENT and continue by pressing YES.
9. Open the red lever and load lock. Remove your processed substrate from the substrate holder plate.
11. Shut down the heaters in the CONTROL window + Dry Pump in Configuration
12. Logout and logoff your FOM account.

<table>
<thead>
<tr>
<th>Appropriate Substrates</th>
<th>Non-appropriate Substrates</th>
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</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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