OXFORD ICP/DRIE PlasmaPro System100 Cobra300

These instructions are intended for reference only, and will not replace the thorough training required for proper system operation. Contact a clean room staff member with questions or to report a system problem.
F RIE carrier wafer and usage

<table>
<thead>
<tr>
<th>Wafer type</th>
<th>process</th>
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<tbody>
<tr>
<td>SiO2</td>
<td>Bosch Process, Si etches</td>
</tr>
<tr>
<td>Si</td>
<td>Seasoning for Si etches, SiO2 etches</td>
</tr>
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**Materials Restrictions**

Allowable materials:
CMOS compatible materials and standard resists only
Cr, W, Al,
Ti and Pd must be covered during etch

Do not allow the following materials in to the Oxford fluorine RIE:
No Glass (Fused Silica, Quartz and Sapphire okay)
Pt, Au, Ag, Cu (ie persistent metals)
High vapor pressure materials Pb, In, ITO, etc.
III-Vs materials
No Li containing compounds
SU-8 (this resist contains antimony)

Please consult staff if you have any doubts as to whether a material is permitted or not.
1. Enable the tool in BADGER

2. VERIFY SYSTEM STATUS
   Select “pumping” from the SYSTEM pull down menu to display the vacuum system schematic.
   The load lock should be $< 4 \times 10^{-2}$
   The main chamber should be at high vacuum $< 5 \times 10^{-6}$ with the roughing pump and turbo running. Click on Accept to clear any alerts that may be displayed; contact a lab staff member
or super-user if accepting an alert does not allow you to continue with your run.

3. **PRE CLEAN AND CONDITIONING (Not mandatory)**

Make sure there is a wafer in the load lock, before you run the clean recipe. **Do not** start any recipe without a wafer inside.

For all processes you can use Sapphire wafer as a carrier (located next to the tool)

Under the “Process” tab, click on *Recipes*, select *load*, a pop-up message will appear if you want to overwrite the current recipe, you should select Yes. highlight the clean process recipe **OPT- Clean O2/SF6** and Run.
Accept the yellow alert when it appears, marking the end of the process.

4. **VENT THE LOAD LOCK**
   On the pumping page click ‘stop’ and then ‘vent’.

5. **INSTALL SAMPLE**
   When the loadlock is fully vented, open the lid by pulling the handle. Place your wafer or mount your sample on a carrier wafer using Crystalbond.

   Close the loadlock lid and press Evacuate to pump down the loadlock.
If your wafer has a flat, make sure to mount your wafer so that the flat is between the two screws (see picture).
6. **DEFINE PROCESS**

Select your recipe and load. Edit operating parameters as necessary by right-clicking on the recipe step and changing parameter values as required, select ok to finish editing a step. You cannot save a recipe in Users level.

Contact staff if you want to save your recipe.
7. **RUN PROCESS**  
Select ‘Run’ to initiate the process. The tool will automatically pump down and run the process. Accept the yellow alert that appears when the process is completed.

8. **VENT THE SYSTEM**  
On the pumping page click ‘stop’ and then ‘vent’ the loadlock.

9. **RETRIEVE SAMPLE**  
When the loadlock is fully vented, open the chamber and retrieve your sample/wafer. Before pumping down don’t forget to leave a carrier wafer in the chamber. Evacuate the loadlock.

10. **RUN CLEAN RECIEPE**  
Run a clean recipe. To determine for how long you should run the recipe, you should watch the plasma color changes to...
pink. For SiO2 etch you should run the clean in a ratio of 1:1 (for example 3 min etch – 3 min clean) For Si etch 2:1 (20 min etch-10 min clean).

| 11. | **RETURN TO NORMAL** | Leave the tool as you found it. Loadlock under vacuum. Do not leave the tool before the cleaning recipe finished. Always leave a carrier wafer inside the loadlock. Cleanup the area, do not leave swabs or dirty wipes next to the tool. |
| 12. | **BADGER LOGOUT**: Don’t forget to disable the tool in badger after you’re done. | ![Badger Screen Shot](image) |