COLUMBIA UNIVERSITY
IN THE CITY OF NEW YORK
COLUMBIA NANO INITIATIVE / CENTER FOR INTEGRATED SCIENCE AND ENGINEERING

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.

CNI Shared Facilities

F RIE carrier wafer and usage

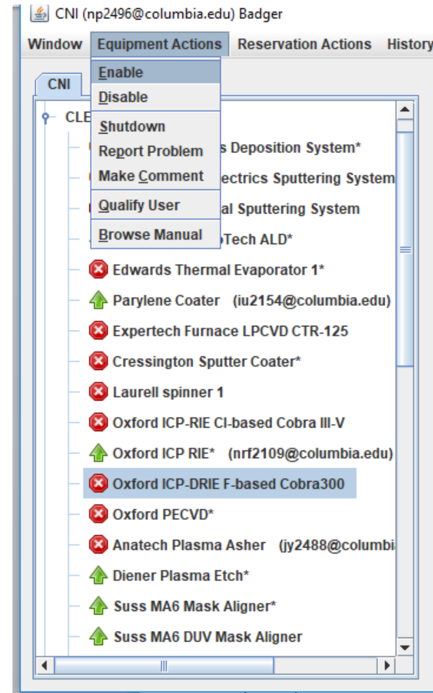
Wafer type	process
SiO2	Bosch Process, Si etches
Si	Seasoning for Si etches, SiO2 etches

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.

<table>
<tr>
<td>1.</td>
<td>Enable the tool in BADGER</td>
<td>
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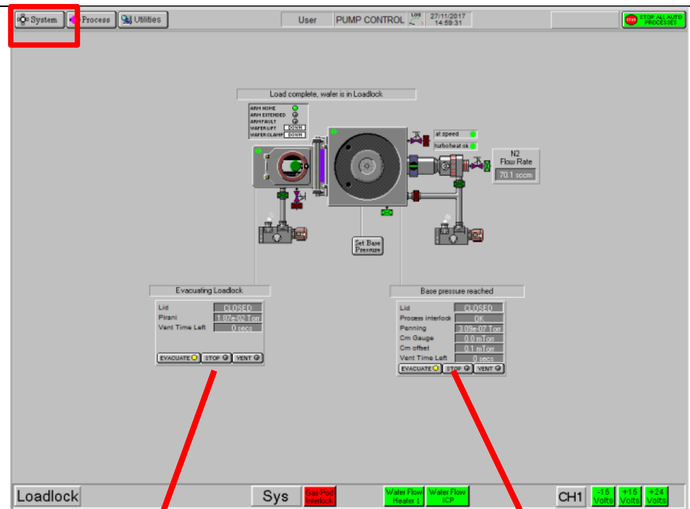
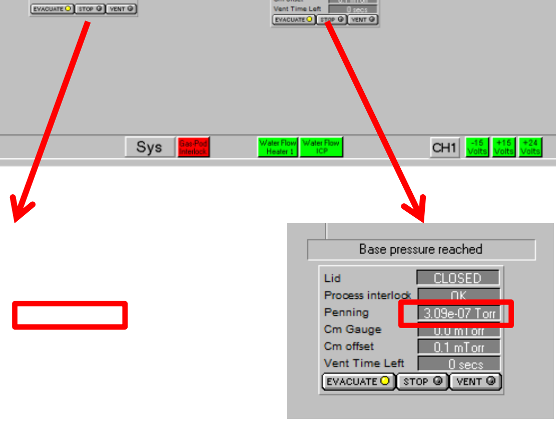
<td>2.</td>
<td>VERIFY SYSTEM STATUS
Select “pumping” from the SYSTEM pull down menu to display the vacuum system schematic.
The load lock should be< $4e^{-2}$
The main chamber should be at high vacuum <$5e^{-6}$ with the roughing pump and turbo running. Click on Accept to clear any alerts that may be displayed; contact a lab staff member</td>
<td>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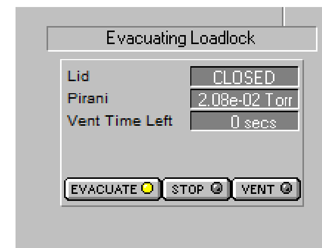
	or super-user if accepting an alert does not allow you to continue with your run.	
3.	**PRE CLEAN AND CONDITIONING (Not mandatory)** Make sure there is a wafer in the load lock, before you run the clean recipe. **Do not** start any recipe without a wafer inside. For all processes you can use Sapphire 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.	

<table>
<tr><td></td><td>If your wafer has a flat, make sure to mount your wafer that the flat is between the two screws (see picture).</td><td>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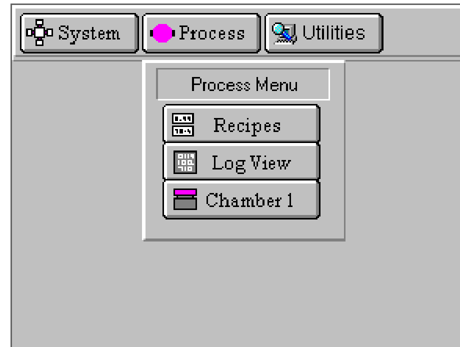
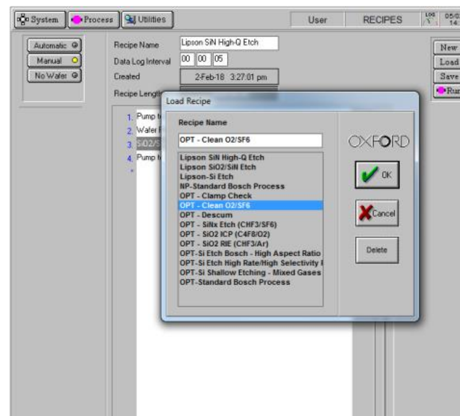
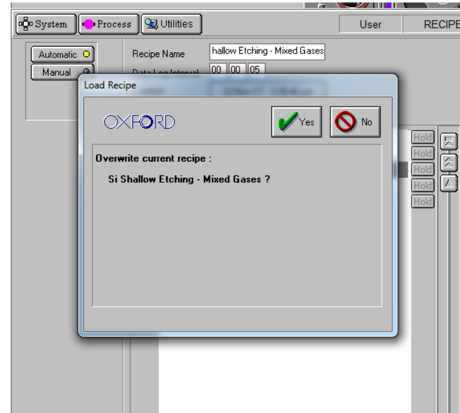
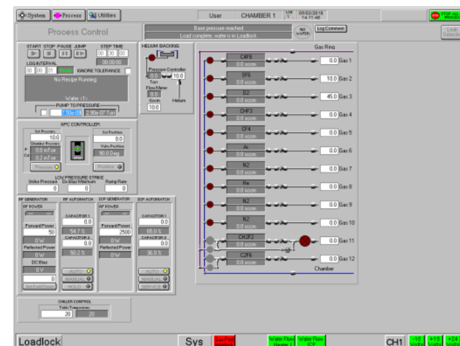
<td>6.</td>
<td>DEFINE PROCESS
Select your recipe and load. Edit operating parameters as necessary by right-clicking on the recipe step and changing parameter values as required, select ok to finish editing a step. You cannot save a recipe in Users level.

Contact staff if you want to save your recipe.</td>
<td>


</td>
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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-10min 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.	