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

OXFORD PLASMA PRO SYSTEM 100 COBRA - Cl RIE

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.
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Updated and edited by James Vichiconti.

General Notes

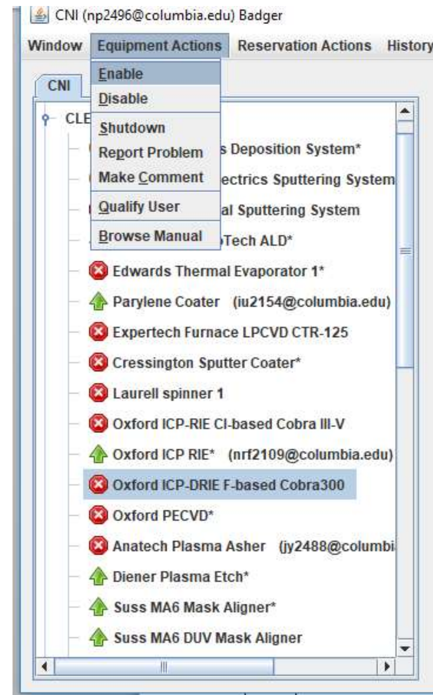
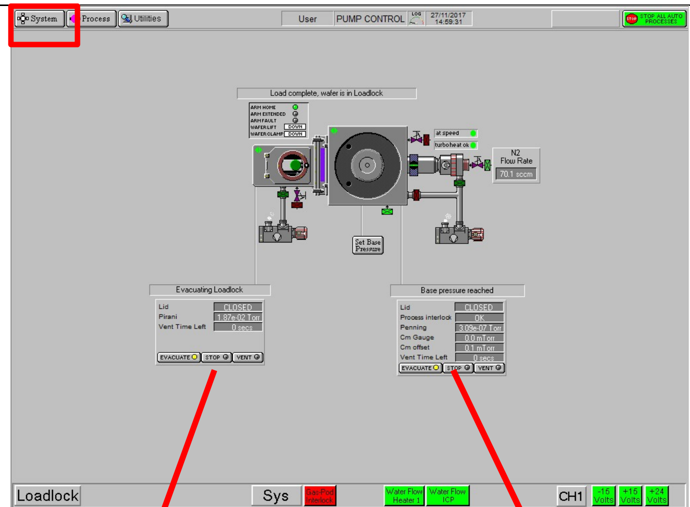
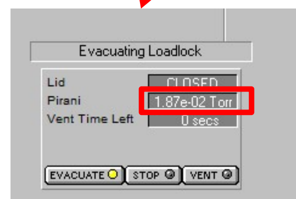
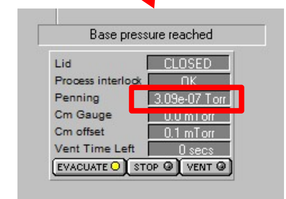
Cl RIE carrier wafer and usage:

Wafer type	process
Al2O3	Ar Milling
SiO2	Chlorine RIE, Fluorine RIE, Clean
Si	Seasoning for Si etches

Chiller range:
5C to 50C

Wafer clamp ring:
4” semiconductor standard with primary flat.

Wafer Processing:
The CNI cleanroom staff recommends processing full 4” wafers in order to utilize the heat transfer properties of the stage and to maintain consistency of active process area.
However, it understood that some users may wish to process wafer pieces. These users should mount their sample on a carrier wafer with crystal bond. Be sure to use a carrier wafer that will not be etched by the process that you intend to run as this will adversely affect the etch process.
Some users may yet to choose the ‘Fomblin method’ of mounting wafer pieces. DO NOT USE STAFF CARRIER WAFERS FOR MOUNTING WAFER PIECES WITH FOMBLIN. This makes a mess of our wafers and contaminates the chamber with fluorine compounds. Users can provide their own carrier wafer for this type of piece mounting.

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 pressure should be < $4e^{-2}$ Torr. The main chamber should be at high vacuum < $5e^{-6}$ Torr 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- O2 Clean 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.	**LOAD SAMPLE** When the loadlock is fully vented, open the lid by pulling the handle. Place your wafer on the transfer arm. If your wafer has a flat, make sure to mount your wafer that the flat is between the two screws (see picture).	

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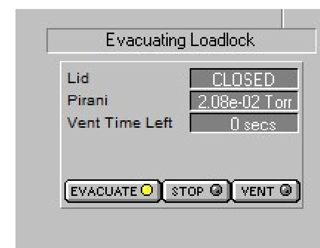
<td>Close the loadlock lid and press Evacuate to pump down the loadlock.</td>
<td>



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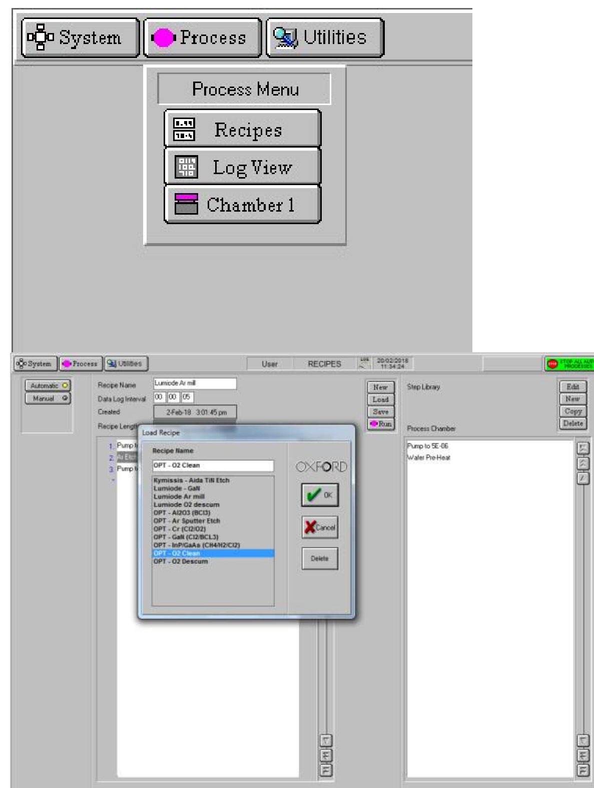
<td>6.</td>
<td>SELECT PROCESS
Select your recipe and load. Edit operating parameters as necessary by right-clicking on the recipe step and changing parameter values as required, select ok to finish editing a step. You cannot save a recipe in Users level.

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


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7.	**RUN PROCESS** Select 'Run' to start 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. Do not forget to load the the sapphire wafer before pumping down. 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 pinkish.	
11.	**RETURN TO NORMAL** Leave the tool as you found it. Loadlock should be under vacuum. Do not leave the tool before the cleaning recipe is complete. 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.	