

Oxford 80+ RIE SOP

1. Scope

1.1 This document provides the operating procedure for the Oxford 80+ reactive ion etch.

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3. Reference Documents

3.1 Referenced within this Document

3.1.1 None

3.2 External Documents

3.2.1 None

4. Equipment and/or Materials

- 4.1 Oxford 80+
- 4.2 Wafer/Sample
- 4.3 Tweezers

5. Safety

- 5.1 Follow all Nanofab safety procedures.

6. Setup Procedures

6.1 Record Information on Log Sheet

- 6.1.1 Record all requested setup and processing information on the log sheet.

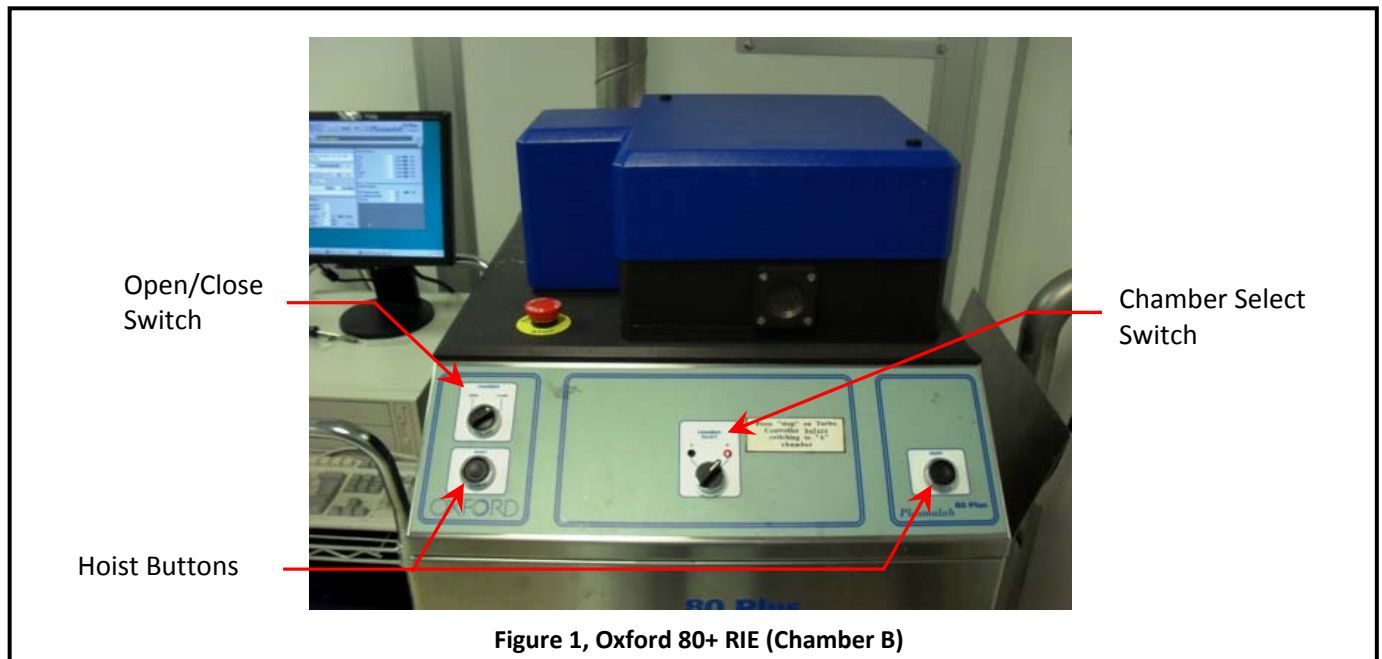
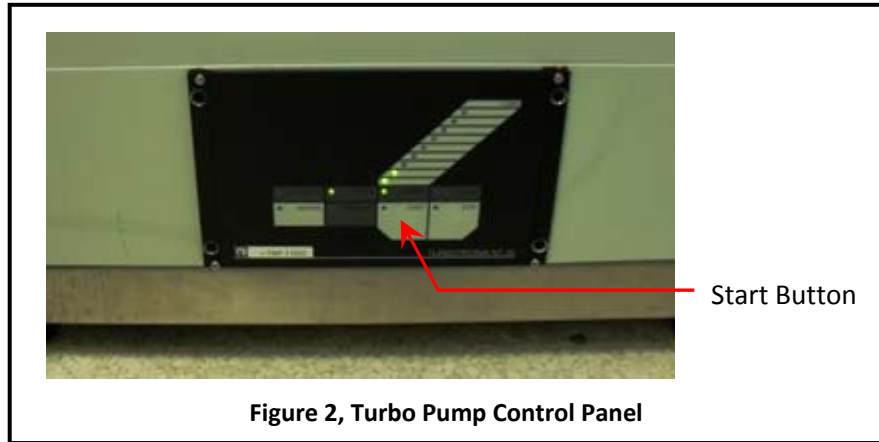


Figure 1, Oxford 80+ RIE (Chamber B)

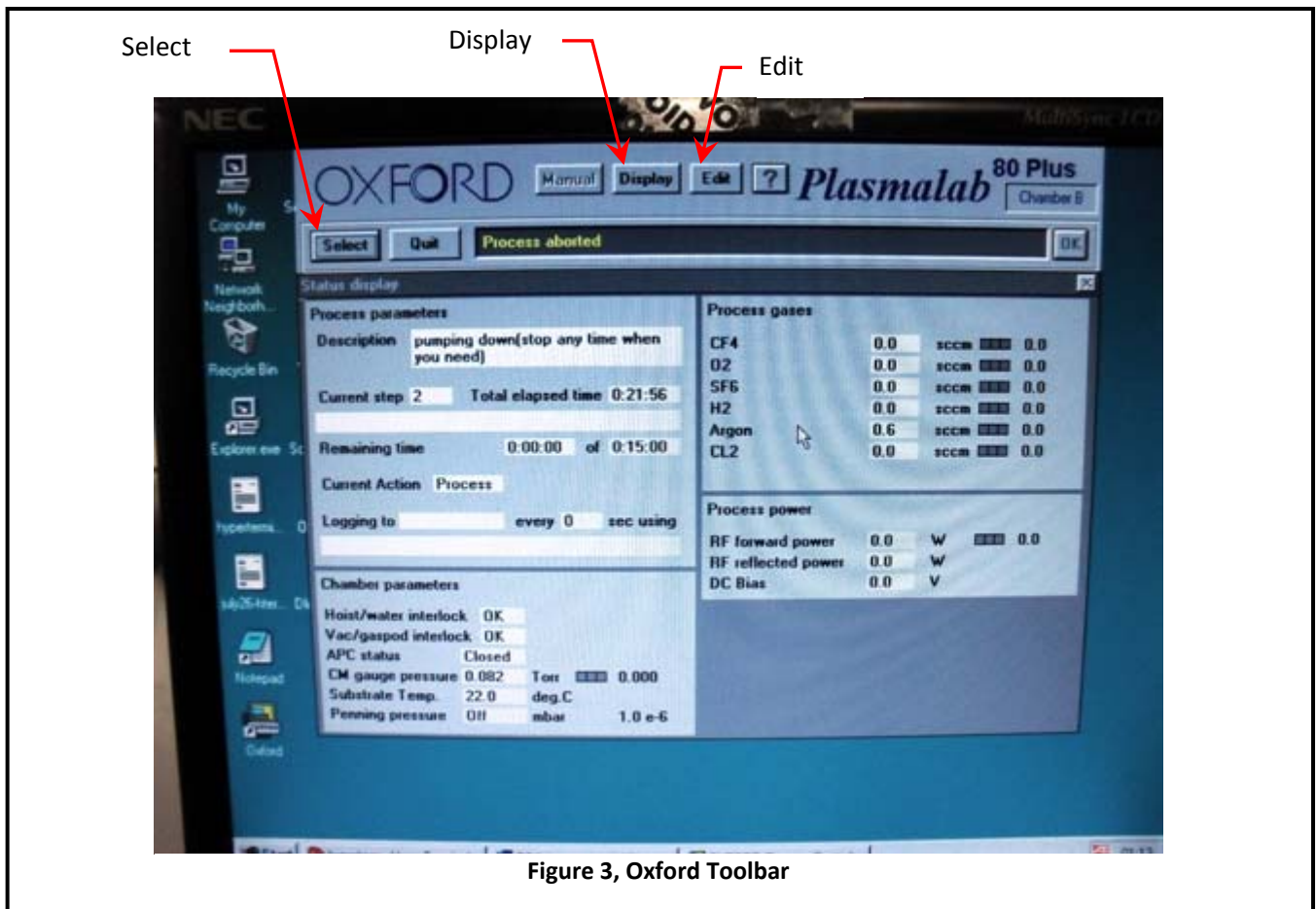
6.2 Check Status of the Machine

- 6.2.1 If the machine is not turned on, contact lab staff.
- 6.2.2 Ensure Oxford program is running on the PC.
 - 6.2.2.1 If not, double-click the Oxford icon on the desktop.
- 6.2.3 If the switch is in Chamber B mode, skip to section 7 *RIE Procedures*.
- 6.2.4 If the switch is in Chamber A mode: Do 6.2.4.1 - 6.2.4.3.
 - 6.2.4.1 Ensure that no program is running. Abort program if necessary.
 - 6.2.4.2 Turn the chamber select switch to chamber B. See *Figure 1*.
 - 6.2.4.3 Start the Turbo pump.



- 6.2.4.3.1 Open the Chamber B front panel.
- 6.2.4.3.2 Press the Turbo pump start button. See *Figure 2*.

7. RIE Procedures



7.1 Vent Chamber

- 7.1.1 If machine is in pump down mode, click Abort to stop pump down.
- 7.1.2 Select vent recipe.

- 7.1.2.1 Click the Select button. See *Figure 3*.
- 7.1.2.2 Select the vent.rec recipe from the list.
- 7.1.2.3 Click OK.
- 7.1.3 Click Start. See *Figure 5, Start Button*.
- 7.1.4 Wait until Vac/gaspod interlock says fault.
- 7.1.5 DO NOT try to open the chamber lid unless it says fault.

NOTE: The vent procedure takes 5 minutes.

7.2 Load Sample

- 7.2.1 When the vent process is complete turn the Chamber knob to Open. See *Figure 1*.
- 7.2.2 Press and hold both Hoist buttons simultaneously. See *Figure 1*.
- 7.2.3 Use wafer tweezers to place sample on the stage.
- 7.2.4 Turn the selector knob to Close.
- 7.2.5 Press and hold both Hoist buttons to lower the lid.



Figure 4, Recipe Editor

7.3 Edit Recipe

- 7.3.1 Click Edit. See *Figure 3*.
- 7.3.2 Choose Process from the drop down menu.

- 7.3.3 Go to File>Open.
- 7.3.4 Select a process recipe from the list.
- 7.3.5 Click on the process step to edit the parameters, as needed. See *Figure 4, Recipe Editor*.
- 7.3.6 Click OK
- 7.3.7 Save the recipe.
 - 7.3.7.1 Go to File>Save.
 - 7.3.7.2 **If you are using someone else's recipe or making a new recipe, go to File>Save As to rename the recipe.**

7.4 Select Recipe

- 7.4.1 Click Display button. See *Figure 3, Oxford Toolbar*.
- 7.4.2 Choose Status from the drop down menu.
- 7.4.3 Click Select.
- 7.4.4 Choose your recipe from the list.
- 7.4.5 Click OK.

7.5 Start Etch Process

- 7.5.1 Press Start Button.

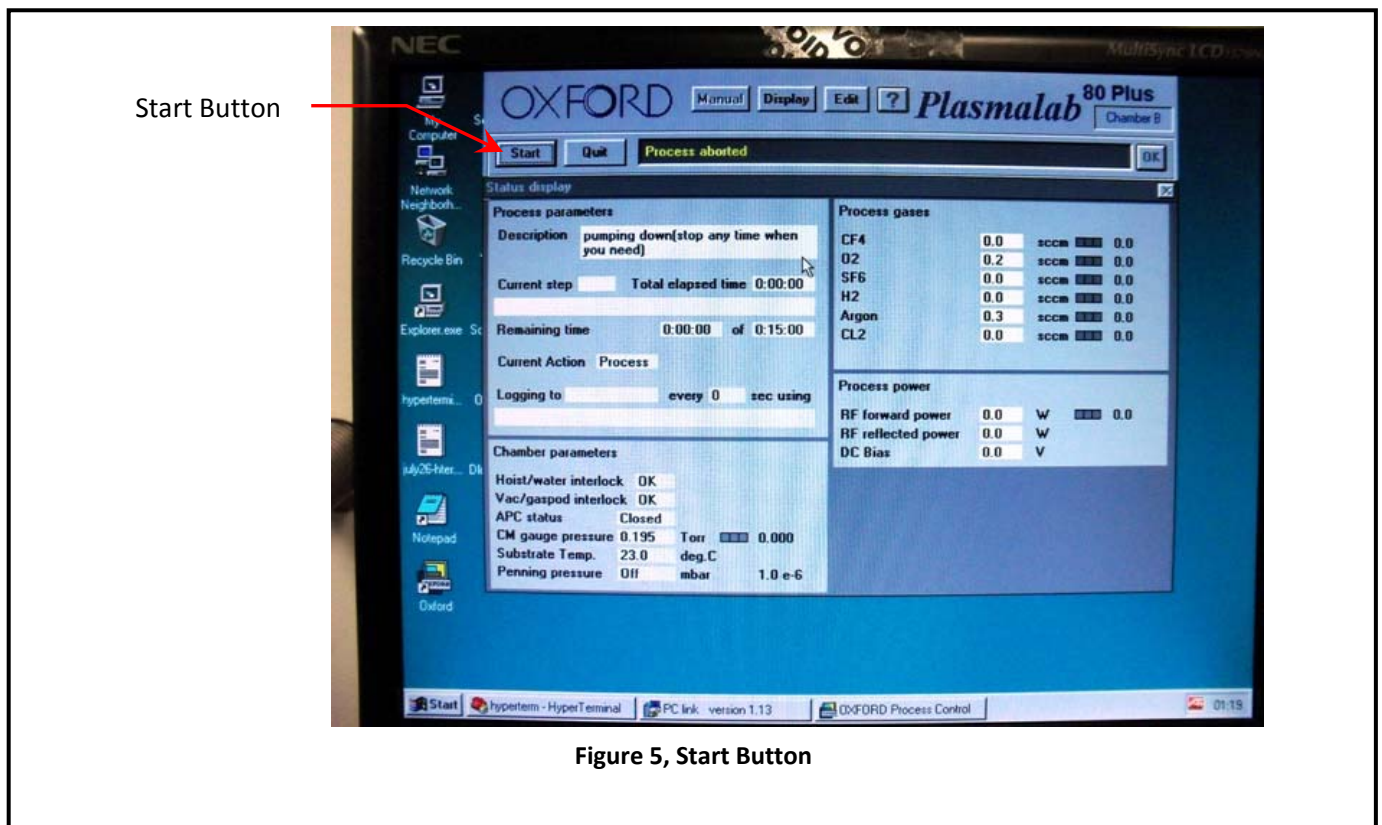


Figure 5, Start Button

NOTE: At the end of most programs the machine will vent and be ready for unloading.

7.5.2 Observe CM gauge pressure, process gas flows, and RF power to assure etch program runs correctly.

7.5.3 Wait until Vac/gaspod interlock says fault and status bar says process complete.

7.6 Unload Sample

7.6.1 Turn the selector knob to Open when the vent process is complete.

7.6.2 Press and hold both Hoist buttons simultaneously.

7.6.3 Use wafer tweezers to pick up the sample.

7.6.4 Turn the selector knob to Close.

7.6.5 Press and hold both Hoist buttons to lower the lid.

7.7 Pump Down Chamber

7.7.1 Select pump down recipe.

7.7.1.1 Press Select.

7.7.1.2 Select pump down recipe.

7.7.1.3 Click OK.

7.7.2 Press Start.

8. Process Notes

8.1 Typical Etch Characteristics

Recipe	Film Etched	Gas #1 Name	Gas #1 Flow	Gas #2 Name	Gas #2 Flow	Pressure	Power	Etch Rate

8.2 Process Summary

9. Revision History

Rev	Date	Originator	Description of Changes
1	10 June 2010	Sam Bell	