Oxford 80+ PECVD SOP

1. Scope
   1. This document provides the operating procedure for plasma enhanced chemical vapor deposition with the Oxford 80+.

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[**Table 1, Recipe Parameters and Results** 7](#_Toc263941517)

1. Reference Documents

Referenced within this Document

* + 1. Ecosys Burn Box SOP

External Documents

* + 1. None

1. Equipment and/or Materials
   1. Oxford 80+
   2. Wafer/Sample
   3. Tweezers
2. Safety
   1. Follow all Nanofab safety procedures.
   2. The stage can be very hot. Do not touch.
3. Setup Procedures

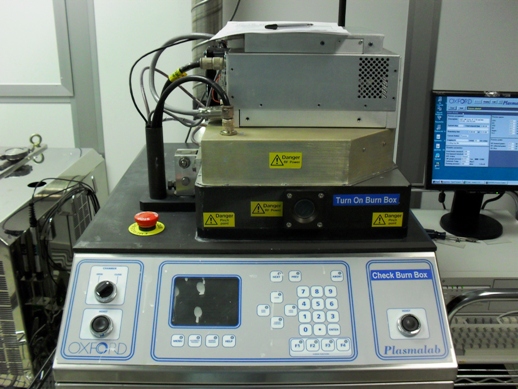
Record Information on Log Sheet

* + 1. Record all requested setup and processing information on the log sheet.

Turn on the Burn Box

* + 1. Follow the procedures in the *Ecosys Burn Box SOP* to turn on the burn box.

Figure , Oxford 80+ PECVD (Chamber A)

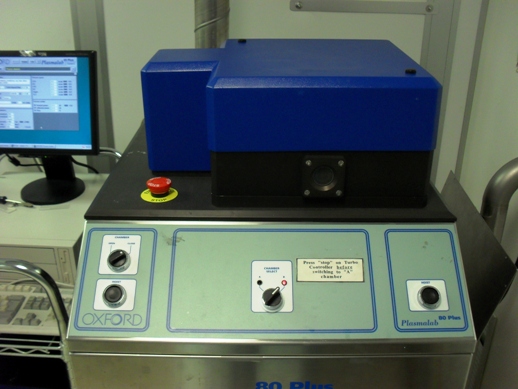


Open/Close Switch

Hoist Buttons

Check Status of the Machine

* + 1. If the machine is not turned on, contact lab staff.
    2. Ensure Oxford program is running on the PC.
       1. If not, double-click the Oxford icon on the desktop.
    3. If the switch is in Chamber A mode, skip to *6.4*.
    4. If the switch is in Chamber B mode. Do *6.3.4.1* - *6.3.4.3*.
       1. Abort pump down program if it is running.
       2. Stop the turbo pump.
          1. Open the Chamber B front panel.
          2. Press the turbo pump stop button. See *Figure 2, Oxford 80+ Chamber B (RIE)*.
       3. Turn the chamber select switch to chamber A. See .



Chamber Select Switch

Turbo Pump Stop Button

Figure , Oxford 80+ Chamber B (RIE)

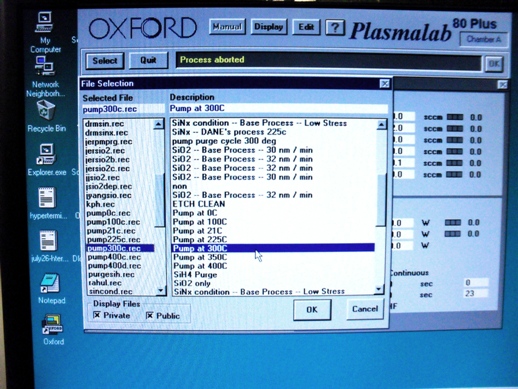
Start Chamber Warm Up

* + 1. Go to the recipe list.
       1. Click the Select button. See .
    2. Select pump300c.rec recipe.
    3. Click OK.
    4. Press Start. See .
    5. Wait for the chamber to reach operating temperature. See .

NOTE: The status bar will read ‘Adjusting temperature’.

* + 1. When the chamber has reached operating temperature, abort the pump down process.
    2. Continue to section *7, Deposition Procedures*.

1. Deposition Procedures



Select Button

Display Button

Edit Button

Recipe List

Figure , Oxford Toolbar

Vent Chamber

* + 1. Select vent recipe.
       1. Click Select. See .
       2. Select the vent recipe from the list.
       3. Click OK.
    2. Press start.
    3. When the vent process is complete turn the selector knob to Open. See .
    4. Press and hold both Hoist buttons simultaneously. See .
    5. Swing the lid out of the way.

Load Sample

* + 1. Use wafer tweezers to place sample on the stage.
    2. Turn the selector knob to Close.
    3. Press and hold both Hoist buttons to lower the lid.
    4. You may have to use your forehead to align the lid as it closes.
    5. Align lid with base.

Edit Recipe

* + 1. Click the Edit button. See .
    2. Select Process from the drop down menu.
    3. Go to File>Open.
    4. Select a process recipe from the list.
    5. Click on the process step to edit the parameters, as needed. See .
    6. Click OK.
    7. Save the recipe.
       1. Go to File>Save.
       2. **If you are using someone else’s recipe or making a new recipe,** go to File>Save As to rename the recipe.

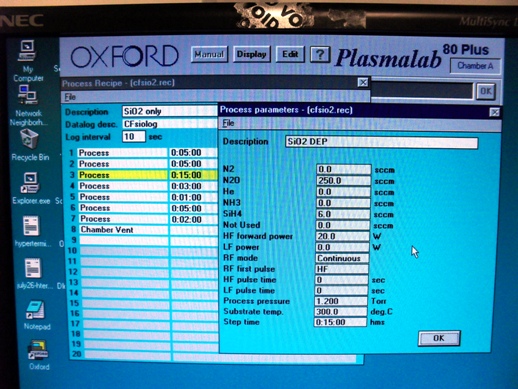


Figure , Recipe Editor

Select Recipe

* + 1. Click Display button.
    2. Choose Status from the drop down menu.
    3. Click Select.
    4. Choose your recipe from the list.
    5. Click OK.

Start Deposition Process

* + 1. Press Start Button.

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

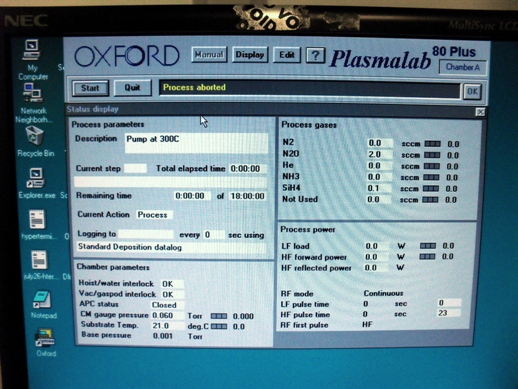
* + 1. Monitor process parameters during deposition. See .
    2. Wait until status bar says Process complete.

Unload Sample

* + 1. When the vent process is complete turn the selector knob to Open.
    2. Press and hold both Hoist buttons.
    3. Swing the lid out of the way.
    4. Use wafer tweezers to pick up the sample.
    5. Turn the selector knob to Close.
    6. Press and hold both Hoist buttons to lower the lid.
    7. You may have to use your forehead to align the lid as it closes.
    8. Align lid with base.

Pump Down Chamber

* + 1. Select pump down recipe.
       1. Click Select.
       2. Select pump21c.rec.
       3. Click OK.
    2. Press start.



Start Button

Figure , Status Screen

1. Process Notes

Typical Film Characteristics

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Table 1, Recipe Parameters and Results** | | | | | |
| **Recipe** | **Time** | **Pressure** | **Power** | **Thickness** | **Flatness** |
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Process Summary

1. Revision History

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