

## Oxford ICP Standard Operating Procedure

### LOG IN

Swipe into the system; this will activate the tool's computer monitor. The "system status" window should read "User". (If the "system status" window indicates "View Mode", click on that window and login with user name "ENGINEER" and password "COLUMBIA".)

### VERIFY SYSTEM STATUS

Select "Pumping" from the SYSTEM pull down menu to display a vacuum system schematic. The system should be at high vacuum ( $5 \times 10^{-6}$  mT or better) 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 experiment.

### PRE-CLEAN THE REACTION CHAMBER

Under the "Process" tab, click on *recipes*, select *load*, and highlight the OPT O2 PLASMA CLEAN process. This O<sub>2</sub> – based cleaning process should run for a minimum of 10 minutes to establish a consistent set of background conditions for the processes that will follow. *Accept* the yellow alert when it appears, marking the end of the process.

### VENT THE SYSTEM

If the system has not automatically vented, initiate the vent cycle from the *pumping* page by clicking *stop*, and then clicking *vent*. Note that, to assure potentially hazardous gasses have been cleared, the *vent* process initiates a system pump-down cycle and a nitrogen purge cycle before the chamber is actually brought to atmospheric pressure. The *vent* process thus takes several minutes.

### INSTALL YOUR SAMPLE

When the system has fully vented, open the chamber using the pneumatic controls. Clear any debris that has accumulated on system surfaces with the nitrogen blowgun located near the tool. Place your sample(s) at the center of the chamber's base plate, and use the pneumatic controls to lower the lid and seal the chamber. (If necessary, you may use a small amount of vacuum grease on the backside of your sample to anchor it in place and to help assure thermal contact. *DO NOT contaminate your process - and the chamber - by using tape or other adhesives to secure the sample.*)

### DEFINE YOUR PROCESS

Back on the *recipe* page, highlight and *load* the appropriate process. Edit operating parameters as necessary by right-clicking on the recipe step and changing parameter values as required, selecting *ok* to finish editing a step.

**IMPORTANT:** To purge residual gas from system feed lines, *any step involving a change in process gas should be preceded by a flow step*, wherein the process gas (or gas combination) to be used is flowed through the system at a high rate (e.g., 70 sccm) and low pressure (e.g., 10mt) for at least 90 seconds. No RF or ICP power should be applied during this step.

*Save* the recipe if you wish the changes to be permanent.



#### **RUN YOUR PROCESS**

Select *run* to initiate the process. The tool will automatically pump down, run the process, and (probably) vent the chamber after process completion. Accept the yellow alert that appears when the process is complete, and initiate the vent process, if necessary, to retrieve your sample(s).

#### **RELEASE THE SYSTEM**

*Leave the tool as you found it* by lowering the lid and initiating the vacuum cycle. Assure that the chamber crosses over to turbo pumping before punching out of the card reader to end your session. Record all pertinent information in the system log book.

*Please see a super-user or staff member for assistance with process development.*