

DRIE Operating Procedure

Shortcuts:

F2: Edit a process.

F3: Start a process

F9: Pumping

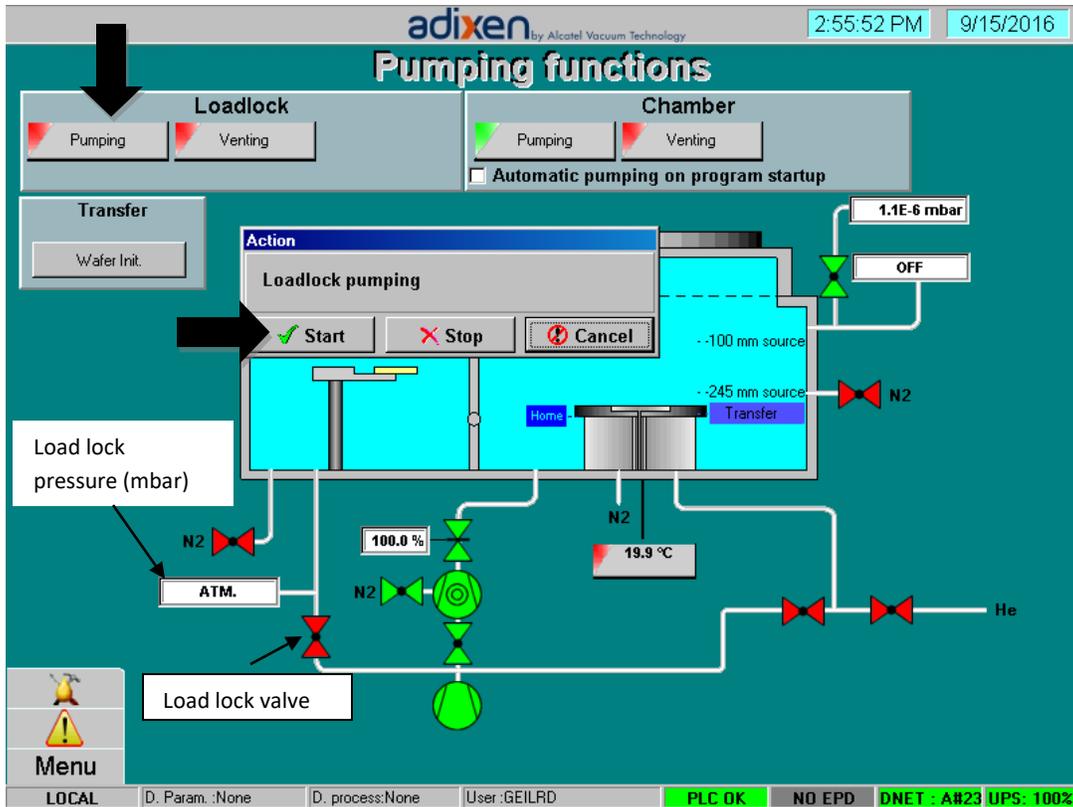
Logging in:

Username: GEILRD

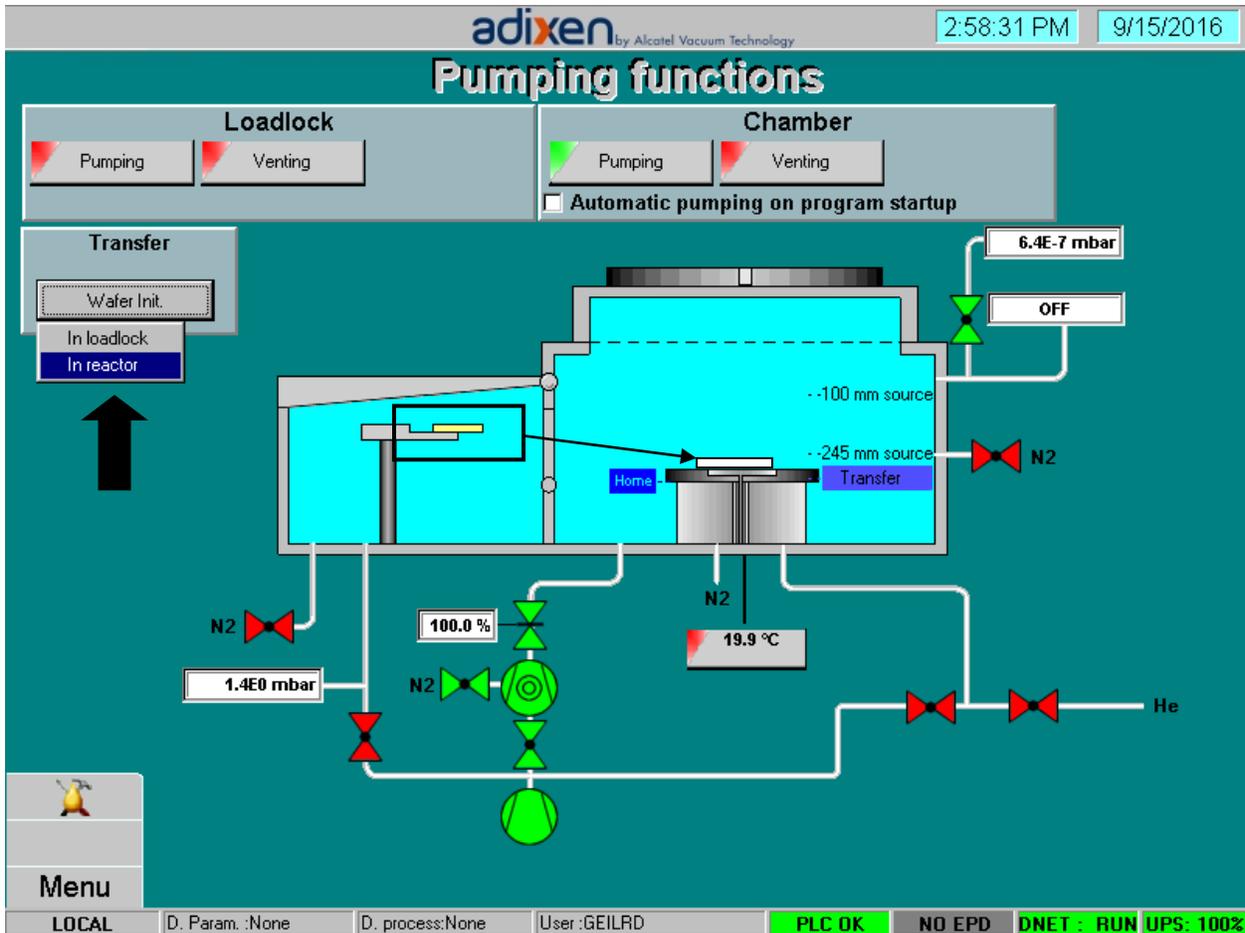
Password: 1234

Load Sample

1. Confirm that a wafer is not already in the chamber by viewing the Pumping screen (F9) and looking for the wafer icon's position. The icon should be in the load lock.
2. Place the wafer on the sample holder in the load lock (LL). Make sure the flat of the wafer is aligned with the flat of the sample holder.
3. Press F9 to view the Pumping Functions screen.
4. Pump down the load lock by pressing *Pumping* in the LL box on the top left of the screen (image below). Press *Start* in the dialog box.
5. It is not obvious when LL pumping is complete. Instead, watch for the LL valve to turn from green to red. Red indicates that the valve has closed and pumping has completed. The LL pressure will reach $\sim 5E-1$ mbar when pumping is complete.



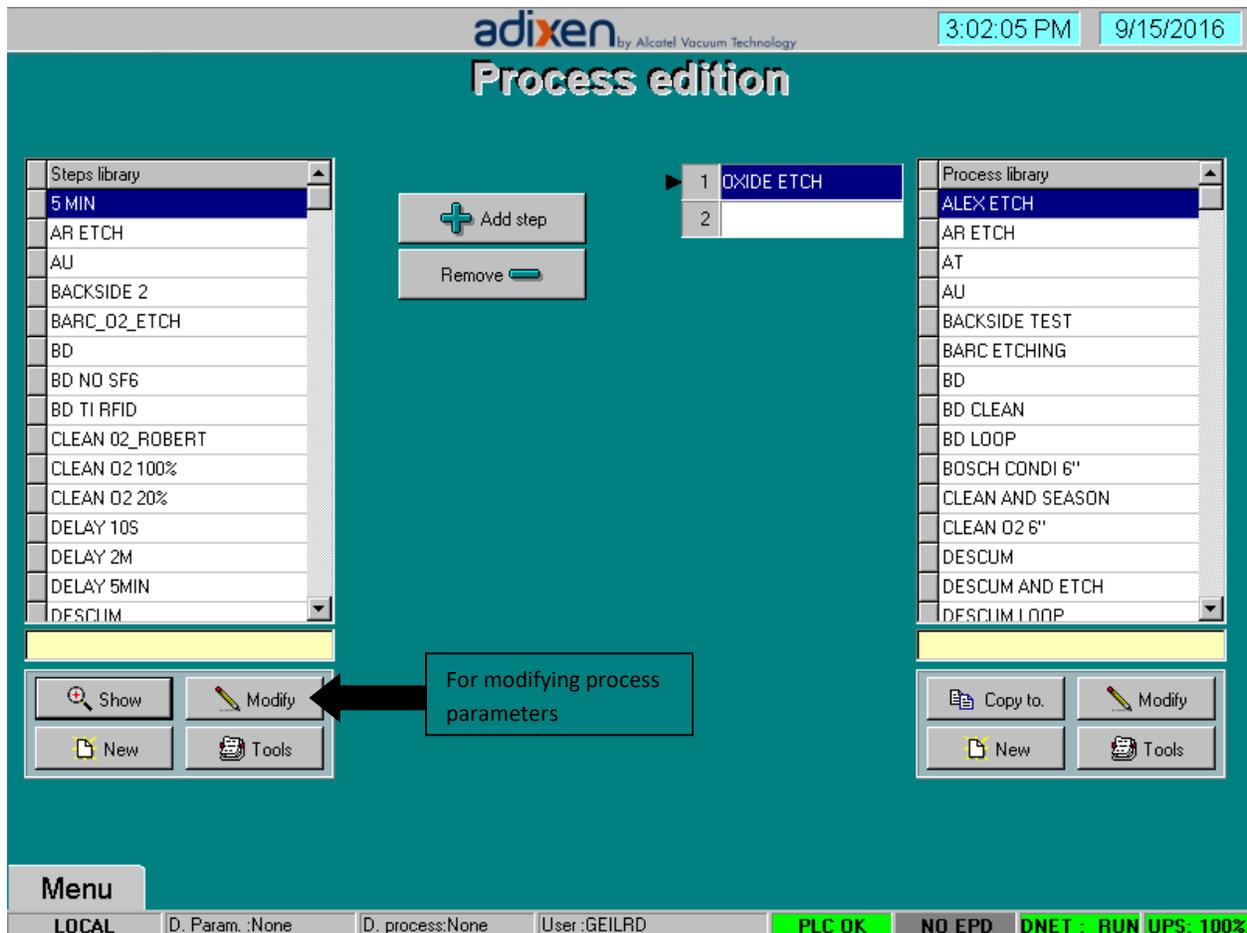
6. Open the chamber door when the LL is done venting. Use the handle underneath the LL to extend the wafer into the process chamber.
7. With the arm is fully extended, press down on the handle to lower the wafer onto the chuck.
8. Retract the arm (with arm still pressed down) into the LL and then close the chamber door. You should feel the door clicking into place.
9. Perform the "Wafer Initiation" Procedure: Press "Wafer Init" in the Transfer box. Confirm that the wafer is in the chamber by pressing "In reactor". The yellow wafer icon should move from the load lock to the etch chamber.



Wafer Initiation

Edit Process

1. Go to the Process Edition screen (F2) to set up a process (image below). The Process Library appears on the right hand side of the screen. The recipes are made up of individual steps that appear to the left of the screen. Details regarding these individual steps can be found in the Step Library on the left hand side.
2. Modify process conditions, including etch time, by pressing "Modify" under the list of process steps on the left. Talk to the CHANL staff if you want to make major changes to a process.



Run Process

1. Open the “Go Process” screen (F3)
2. Select your process name from the dropdown box.
3. Press “Go”. You will be asked again if you need to perform the wafer initiation procedure. If the Go button is greyed out, you may need to acknowledge an alarm or perform the Wafer Initiation process.
4. The process control screen will appear and the process will proceed.
 - i. The process will halt if the system generates a fault, which appears as a flashing yellow triangle icon. Acknowledge the alarm(s) and continue the process by pressing “Resume”. Contact the CHANL staff if the alarm continues.

adixen by Alcatel Vacuum Technology

4:54:41 PM 9/16/2016

Process control

Process in progress :
O2 CLEAN LOOP

Step in progress :
2 CLEAN O2 100%

Pumping

Loadlock

Chamber

SH movement

SH

Current SH position from source :
200.00 mm

Loop

Number of loops : 2 1 Duration : 02 h 20 m 00 s 00 h 00 m 12 s

Process

Main info.	Misc. info.	Integrated cabinet	Separated cabinet
Pressure :	3.8E-3 mbar	SF6	0.0 sccm 0.5 sccm
Position :	100.0 % 100.0 %	C4F8	0.0 sccm 0.6 sccm
Source, RF1 :	2000 W 2000 W 0 W	O2	200.0 sccm 198.8 sccm
SH, RF2 :	75 W 75 W 3 W	C4F8	0.0 sccm 0.1 sccm
	1.9 V	He	0.0 sccm 0.1 sccm
		Ar	0.0 sccm 0.2 sccm
Time :	00 h 10 m 00 . 00 s 00 h 00 m 03 . 70 s		

Thermalization

Duration :	SH heating :	Center He regulation :
00 h 00 m 00 s	20.0 °C	7.0 sccm 7.0 sccm
00 h 00 m 00 s	20.0 °C	1.0E1 mbar 1.0E1 mbar

Temporization

Duration : 00 h 00 m 00 s 00 h 00 m 00 s

Process

Step

Step

Step

Loop

Loop

Loop

Loop

LOCAL

D. Param. :None

D. process:None

User:GEILRD

PLC OK

NO EPD

DNET : RUN

UPS: 100%

Process Control screen

Unload Sample

1. Open Load-lock door
2. Extend arm into the chamber and *lift the arm up*
3. With arm still lifted up, fully retract the arm back into the load lock
4. Close the chamber door and make sure it “clicks” into place
5. Perform the Wafer Initiation process and select “In Load Lock”.
6. Vent the load lock by pressing “Venting” then “Start” in the Load Lock box.
7. Press “Venting” then “Stop” when you hear vent gas escaping.
8. Remove the sample and close the chamber door.

Notes:

- The DRIE is equipped for etching 6" wafers, but can handle smaller pieces and 4" wafers.
- Pieces must be mounted on a carrier wafer. There are many options for mounting your pieces. We usually use a low temperature/water soluble version of CrystalBond. Talk to the CHANL staff if you need advice with the mounting process.
- Watch for high He flow rates (F3: Process Edition > Thermalization box). It should be as low as possible, ideally < ~10 sccm. The system will generate an alarm if it reaches 30 sccm. A high flow rate is indicative of poor contact between the wafer and the chuck and could happen if the wafer breaks or there is debris on the chuck.