

PM1 ICP Etch Operational Procedure

1. Reference **Figure 1** on **page 2** for arrows within this procedure.
2. Vent the Load Lock via the "Vent Lock" icon if necessary. ←
3. **Load your sample(s)** and a pre-clean substrate into **Cassette 1** (the cassette on the left). Ensure the major flat is parallel to and facing the back of the cassette. The system will automatically map the cassettes when you close the door.
4. Pump the Load Lock via the "Pump Lock" icon. The ICON will change to "Pump Lock" when the "Vent Lock" process is complete. ←
5. Edit the process variables for your etch step. **Edit etch step.**
6. From the "Lot Operations" screen: ←
 - a. Select **Cassette 1**. ←
 - b. Enter a "Lot Name". ←
 - c. From the "Material ID/ Port Location" list select the substrate that you wish to process. ←
 - d. From the "Flow Name" list select the flow that you wish to run (i.e. "InP 200C Standard"). ←
 - e. Select "Execute Lot". ←
 - f. The selected wafer will now be removed from the "Material ID/ Port Location" menu list. ←
 - g. Once the chuck temperature has reached process set-point the system will begin running. If the actual temperature is different than your required process temperature it may take a while to attain your desired temperature so please be patient.
7. When the system has completed processing it will prompt you with an audible indicator and the Signal Tower will flash yellow.
8. Repeat steps 5-7 until all of your substrates have finished processing.
9. Vent the Load Lock, via the "Vent Lock" icon. ←
10. Remove your substrates and select "Pump Lock". ←

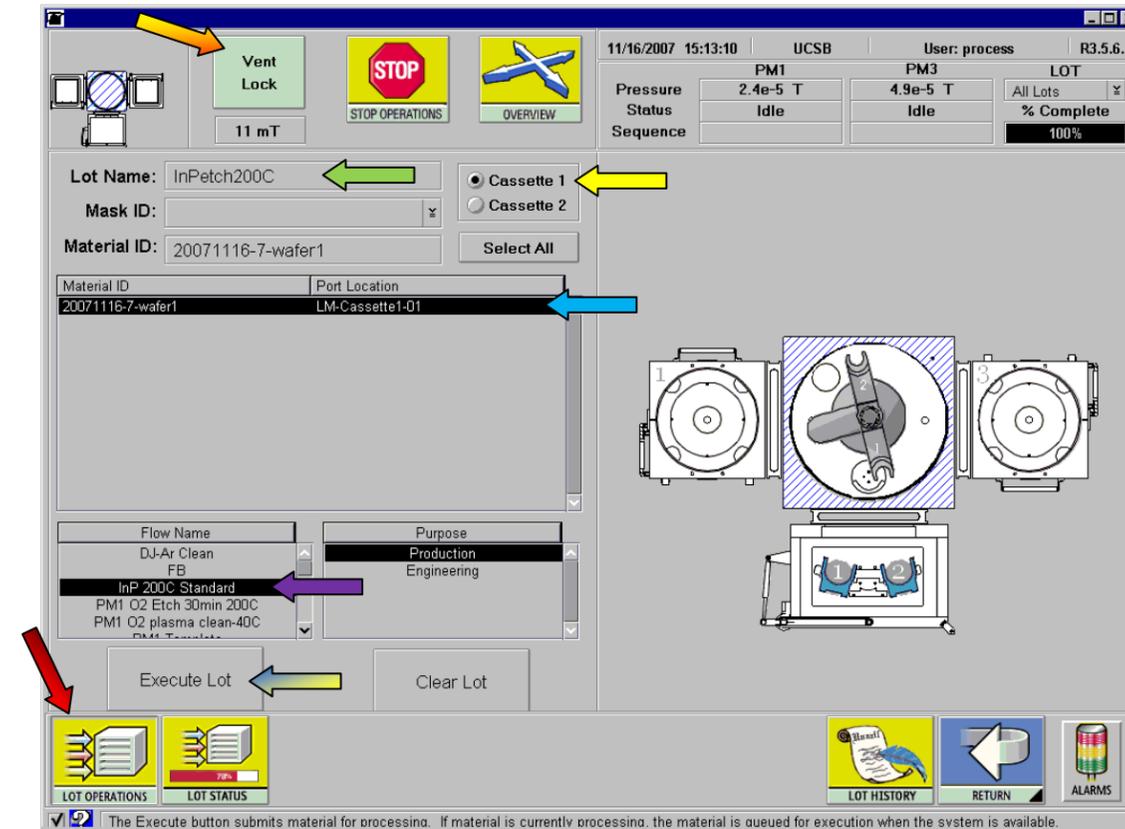


Figure 1

Load Sample(s):

- Remove cassette #1 (the left cassette).
- Place your sample(s) onto a carrier wafer at the center.
- Hold the carrier wafer at the edge opposite the major flat using wafer tweezers, and insert the carrier wafer **to the back of the slot** (otherwise, the carrier wafer will be broken). The major flat should be parallel to the back of the cassette (the side without the pins).
- Ensure the wafer isn't "cross slotted".
- Place the cassette back on the elevator (the pin side of the cassette should be facing the TM chamber).
- Close the door gently and click on the "Pump Lock" icon. ←

Edit Etch Step:

- From main screen, click on "EDITORS" icon.
- Focus on PM1 and select "Edit Step".
- Select the appropriate "Category Filter" i.e. "InP Process".
- Select the appropriate step from the "Directory of Process Steps" i.e. "InP Etch".
- Edit the "Setpoint" field for the corresponding step variable(s) you want to change.
- Select "SAVE STEP".

Name	Setpoint	Units	Max	Min	Error+	Error-	Warn+	Warn-
processTime	160.0	s	3.1536e7	0.0	0.0	0.0	0.0	0.0
pressure	7.0	mtorr			0.0	0.0	0.0	0.0
Temperature1TemperatureSetpt	40.0	degC	220.0	0.0	0.0	0.0	0.0	0.0
Temperature2TemperatureSetpt	40.0	degC	220.0	0.0	0.0	0.0	0.0	0.0
Temperature3TemperatureSetpt	40.0	degC	100.0	0.0	0.0	0.0	0.0	0.0
Temperature4TemperatureSetpt	180.0	degC	200.0	0.0	0.0	0.0	0.0	0.0
HeliumCoolerPressureSetpoint	5000.0	mTorr	10000.0	0.0	0.0	0.0	0.0	0.0
RF1ControlMode	Power							
RF1DCBiasSetpoint	0.0	volts	1000.0	0.0	0.0	0.0	0.0	0.0
RF1ForwardPowerSetpoint	250.0	watts	600.0	0.0	0.0	0.0	0.0	0.0
RF1ReflectedPowerSetpoint	0.0	watts	100.0	0.0	0.0	0.0	0.0	0.0
RF2ControlMode	Power							
RF2DCBiasSetpoint	0.0	volts	2000.0	0.0	0.0	0.0	0.0	0.0
RF2ForwardPowerSetpoint	900.0	watts	1000.0	0.0	0.0	0.0	0.0	0.0
RF2ReflectedPowerSetpoint	0.0	watts	100.0	0.0	0.0	0.0	0.0	0.0
AMN1ControlMode	Auto							
AMN1TuneSetpoint	0.0	percent	100.0	0.0	0.0	0.0	0.0	0.0
AMN1LoadSetpoint	0.0	percent	100.0	0.0	0.0	0.0	0.0	0.0
AMN2ControlMode	Auto							

Edit A Sequence:

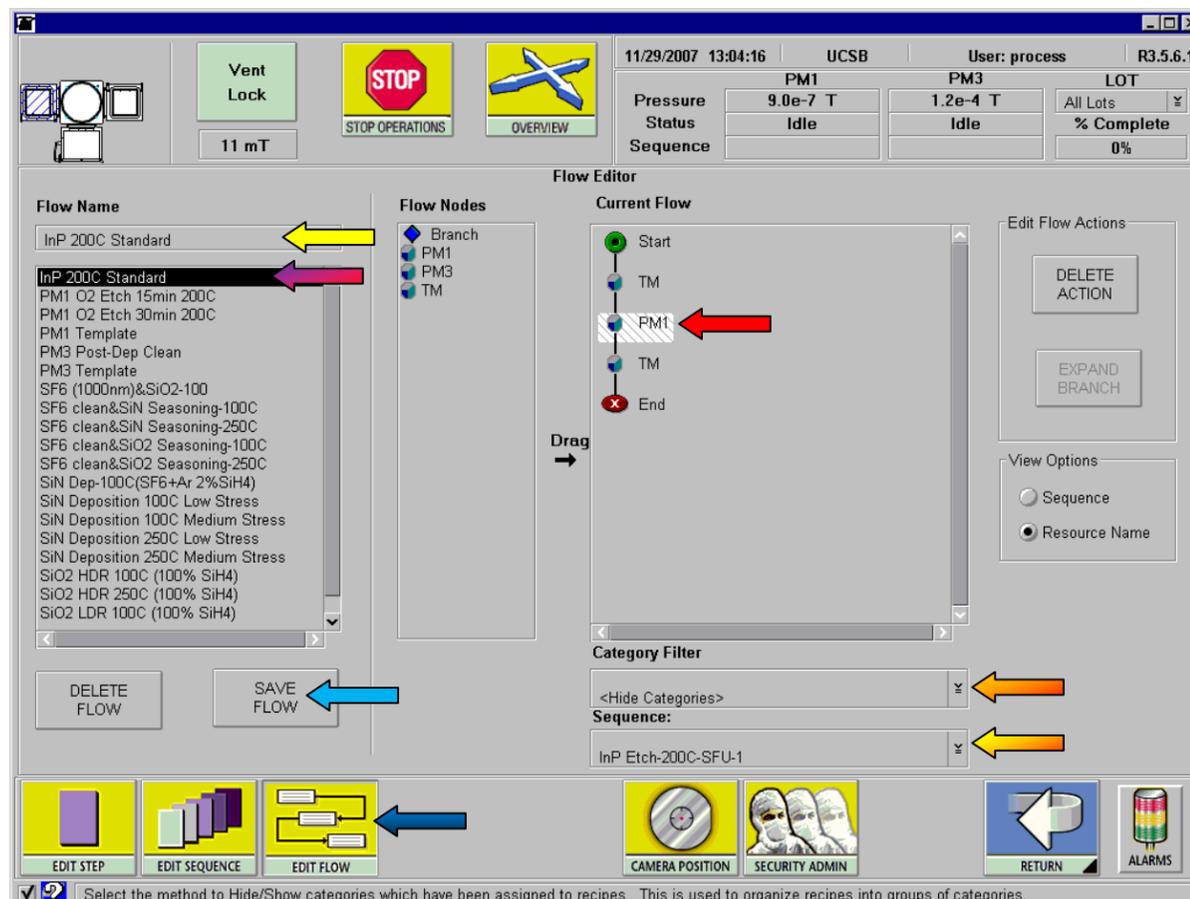
- From main screen, click on "EDITORS" icon.
- Set the Focus to PM1.
- Select the "EDIT SEQUENCE" icon.
- Select the appropriate "Sequence Category Filter (SCF)".
- Select Sequence from the "Sequence Directory for PM1".
- Select the appropriate "Process Step Category Filter".
- From the "Process Steps Available" select the process step to be added.
- Select a step from the "Sequence Contents" list that is either directly above or below the space you want to insert your new process step.
- To insert the step above the selected click the "INSERT" button.
- To insert the step below the selected click the "ADD" button.
- To delete a step from the sequence click the "Remove" button.
- Change the name in the "SCF" field if needed. "Save" the sequence.

Category	Sequence Name	Owner
InP Process	InP Etch-200C-SFU-1	NC

Process Steps Available	Sequence Contents
MR GaSb Etch	Ar Clean Initial PD-200C
MR GaSb Etch-80c	N2 Purge-200C
AC InGaN Etch	InP Initial Pumpdown-200C
AC InGaN Gas Stabilization	InP Gas Stab.-200C-SFU
AC_InGaN Ignition	InP Ignition-200C-SFU
Airmin Ar Clean Initial PD	InP Etch-200C-SFU
Airmin InP Etch cycle1-200C	purge & pumpdown - SEQUENCE

Edit A Flow:

- Navigate to the "Editors" screen.
- Select the "Edit Flow" icon. 
- Select a flow from the "Flow Name" list. 
- Click on "PM1" in the "Current Flow" field. 
- Select your Sequence "Category Filter". 
- Select your Sequence from the "Sequence" list. 
- If needed you can save the flow to a unique name by changing the name in the "Flow Name" field before saving. 
- "Save" the flow. 



The screenshot shows the Flow Editor interface. At the top, there are control buttons for Vent Lock, STOP OPERATIONS, and OVERVIEW. A status bar displays the date and time (11/29/2007 13:04:16), location (UCSB), user (process), and version (R3.5.6.1). Below this, a table shows process parameters for PM1 and PM3, including Pressure, Status, and Sequence. The main area is divided into several sections: Flow Name (a list of flows with 'InP 200C Standard' selected), Flow Nodes (a list of nodes including Branch, PM1, PM3, and TM), Current Flow (a diagram showing a sequence of Start, TM, PM1, TM, and End nodes), Edit Flow Actions (DELETE ACTION and EXPAND BRANCH buttons), View Options (Sequence and Resource Name radio buttons), Category Filter (a dropdown menu), and Sequence (a dropdown menu). At the bottom, there are buttons for EDIT STEP, EDIT SEQUENCE, EDIT FLOW, CAMERA POSITION, SECURITY ADMIN, RETURN, and ALARMS. A footer note states: 'Select the method to Hide/Show categories which have been assigned to recipes. This is used to organize recipes into groups of categories.'