# Operation Procedure for RIE2
# Trion Minilock III-V Reactive Ion Etcher

Start Up
1. Verify the system is in Standby Mode
2. Fill out all appropriate information in the logbook
3. Press "**Cancel**" to exit Standby Mode
4. The loadlock should vent.  When complete open the loadlock.
5. Load samples on to the sample plate in the loadlock
6. Close the lid of the loadlock and press "**Load Wafer**".  This will pump the loadlock down and load the sample plate into the main chamber.  The system will ask to Vent the loadlock, but since it is already vented just click "**Do Not Vent**" then "**OK**"

Setting Up A Process
7. Press "**Load/Edit Recipe**" to go to the recipe edit screen
8. To load and/or edit a currently saved recipe press "**Recipe From Disk**"
9. Choose the desired recipe, then press "**Exit**"
10. Verify/Edit the recipe parameters
    a. Alter any recipe parameters as needed by clicking the parameter value under that parameter and typing in the new value then pressing "**Enter**".
    b. *Note: Pressure is in mTorr, Power for the ICP and RIE generators is in Watts, Time is in seconds and the gas flows are in standard cubic centimeters per minute (sccm).*
    c. All edits only apply to the active loaded recipe location and not the main recipe on the hard drive
    d. When complete press "**Exit**"
    e. To permanently save a recipe *(please only do this if parameters are very different from other loaded recipes or the process is specialized and will be used many times in the future)* press "**Load/Edit Recipe**" then press "**Save Recipe to Disk**" and type a new name using the keyboard and press "**Enter**". Contact SMIF staff if you need to permanently delete a recipe.
    f. Pressing "**Create New Recipe**" will start a new blank recipe that must be named first, then edited, then saved.

Running in Automatic Mode
11. IMPORTANT: Once the recipe has been loaded and edited as needed press "**Download Recipe**" (if not done at the end of the recipe editing) and insure the recipe name appears below the "Download Recipe" button. This will download the edited recipe to the active location so the process can be run.
12. *Press "**Automatic Single Process**".  This will automatically run the recipe. Note that no lot code is needed in the popup window, so this can be ignored*
13. Verify that the RF tunes properly (having less than 5% reflected power) during the process.  If it does not then the RF switches on the front of the tool may need to be manipulated.  See SMIF staff for further explanation on this.
14. If a recipe needs to be stopped early, press "**Abort**".
15. When the process completes the system will return to the main menu

16. Press "**Unload Wafer**".  This will bring the sample plate back into the loadlock and vent the loadlock.
17. Unload samples and repeat as needed.

Manual Process Control
18. IMPORTANT: Once the recipe has been loaded and edited as needed press "**Download Recipe**" (if not done at the end of the recipe editing) and insure the recipe name appears below the "Download Recipe" button. This will download the edited recipe to the active location so the process can be run.
19. Press "**Manual Process Control**"
20. Select the desired recipe step to run using the arrow buttons at the bottom of the screen. Usually this is step 1.
21. Set desired recipe parameters, noting that the process time is not used in manual mode
22. Press the "**Vacuum Closed**" button to toggle it to "**Vacuum Open**" (turns green)
23. Press the "**Press Iso Closed**" button to toggle it to "**Press Iso Open**" (turns green)
24. Once pumped down and ready to process, the "**Gases Off**" button will appear.  Press it to toggle it to "**Gases On**" (turns green)
25. Allow the gasses and the pressure to stabilize at their setpoints.
26. Press the "**RF Off**" button to toggle it to "**RF On**" (turns green).  This will start the process
27. The timer will count upwards to give you the process time, but it ignores the setpoint and will continue to run the process until manually stopped.
28. All parameters are editable while running in manual mode
29. Verify that the RF tunes properly (having less than 5% reflected power) during the process.  If it does not then the RF switches on the front of the tool may need to be manipulated.  See SMIF staff for further explanation on this.
30. When done press the "**RF On**" and "**Gases On**" buttons to toggle them off.
31. Press "**Exit**"
32. Press "**Unload Wafer**".  This will bring the sample plate back into the loadlock and vent the loadlock.
33. Unload samples and repeat as needed.

Shut Down
34. If processes have been run for a long period of time and the chamber is dirty then run the "**Clean**" recipe in automatic mode (30 minute O2 clean) with no samples in the chamber.  DO NOT load the sample plate into the chamber for this process.
35. When everything is complete, including the samples being removed, and the loadlock is closed press "**Standby**" to put the system back in idle pumped down Standby Mode.  This will pump down the loadlock and purge all of the gas lines.
36. Fill out any remaining information or comments in the logbook.