Rainbow
STANDARD OPERATING PROCEDURE
CAFE Name: *rainbow*
Model Number: Lam Rainbow 9600 Metal Etch System
Location: ICL
What it does: metal dry etcher
Introduction: The Lam Rainbow model 9600 etch system is designed for metal etching of Aluminum, Aluminum Silicon and a limited number of other metals and metal alloys.

This system is a single wafer processor and is intended to operate in the automatic mode with cassette to cassette wafer transfer.

Safety: Keep hands away from all moving parts. Do not push the system beyond its limits. If you encounter problems with this system, report them immediately.

Procedure: When the start button is pressed, the following sequences take place:

a. All robotic movements are initialized.
b. After system is initialized, the transfer arm picks the wafer from the load cassette and transports it to the optical sensor for flat orientation.
c. After the wafer is oriented, it is transported to the entrance load lock and pumped to a suitable transfer pressure.
d. When the proper transfer pressure is reached the wafer is then transported into the chamber for processing.
e. The processing gasses are turned on and stabilized, then the RF power turns and the process begins.
f. After the process is complete, the wafer is transported to the exit load lock. This load lock is designed to perform a resist strip and a dry surface passivation.
g. The wafer is transported out of the exit (plasma) load lock to a rinse station for a wet passivation, spin-dried, and then placed into the exit storage cassette.

System chamber process gases are: Chlorine, Boron Trichloride, Sulfur Hexaflouride, Nitrogen, Argon, Oxygen. Plasma load lock gases are Halocarbon 14 (CF_4), Oxygen, H_2O vapor.

Before Using this system, you must first **RESERVE THE SYSTEM** in CORAL
Before Using this system, you must use the **ENGAGE THE MACHINE** in CORAL.

You must first decide if you want to perform a dry passavation and a photo resist strip on your wafers.

I Note: During process if the ALARM warning flashes the process may be aborted. Select the alarm screen,(this command can be found at the bottom of the screen) if the alarm text is red the process will be aborted (red is a hard alarm). If the text is white the process will keep running (white is a soft alarm), this is an indication non-critical malfunction has taken place during process.

1. Select the desired recipe either from the hard dive or A drive.
2. Adjust the process time in the recipe. You will see a prompt on the screen which will flash red "ALTERED". This is to let you know that you have changed parameters.
3. For 6-inch wafer processing: simply place the wafers in the cassette, no pre load wafer orientation is required.
4. Place the cassette onto the entrance elevator. The wafers do not have to be oriented prior to loading, the system will orient them automatically.

Go to the STATUS page to monitor your process:

To enter the status page press the menu push button the press 1 on the key pad.

5. Press the **START** push button. If you are running the first wafers through the system for a test on the etch process and do not want to send any other wafers through the system, press the stop push button after the first wafer is starting to load.

   Note: If you have mistakenly entered a parameter or (parameters) and discover this mistake when your recipe is running, you can mannually end point that step by select the proper number from the menu at the bottom of the status page.

   The **STOP** command only prevents other wafers from the load cassette form going through the system for processing.

   Note: After the etch process is complete you must perform a dump rinse before a resist strip. If the dump rinse is not performed you will have a difficult time removing the photo resist from your wafers. Wet passavation for 6 inch wafers can be programmed into your process.

6. Remove your wafers from the cassette and strip the photo resist. The cassettes must be placed back onto the elevators. **DO NOT** take the cassettes from the system.

   Note: If you encounter any problems with this system contact the person in charge of the system for help.

Author:Joseph Walsh,<walsh@mtl.mit.edu>