PlasmaEtch PE-50 Standard Operating Procedure

NYU Tandon School of Engineering Nanofabrication Facility
1. Startup
   a. Enable tool in Badger Software. Enabling tool will allow process gases to flow.

2. Command Entry
   a. Pushing the left or right arrow key from the “Commands” menu will take you to the “set-up” menu. Press the “Enter” key to access the settings. System timers and other set-up parameters are entered in this area.
   b. Use the left and right arrow keys to find a menu item within a menu area. Use the “up” arrow key to go to a previous menu area. Use the “enter” key to select a menu item.

3. Tool Operation Settings
   a. Plasma Time: 00:00 to 59:59
   b. Vacuum Set Point: 1.0 to 1000.0 mTorr – Vacuum level set point required before gases are introduced into the chamber.
   c. Atmospheric Vent: 0-59.59 minutes – Time allowed for chamber to vent to atmosphere when “CYCLE STOP” is initiated.
   d. Purge Vent: 0-59 seconds – Time allowed for purge air to be introduced in the chamber at the completion of a cycle.
e. Gas Stability: 0-59 seconds – Delay before RF Power is applied after process gases are on.

f. Vacuum Alarm: 0-59.59 minutes – Amount of time required to pump the system down to vacuum set point before initiating an alarm.

4. Tool Operation
   a. Press the “Enter” key to access the menu screen.
   b. Press the “Enter” key again to access the “Commands” menu.
   c. Select the “Plasma” command.
   d. Load the material to be processed. Close the chamber door.
   e. Run a 15-minute warm up cycle to allow the system to stabilize before processing material.
   f. Actuate the “Enter” key to start the cycle. The vacuum pump will start, and the chamber vacuum reading will be displayed.
   g. The vacuum chamber will pump down to set point, process gases will enter the chamber.

5. Run process
   a. The vacuum chamber will pump down to set point, process gases will enter the chamber.
   b. The process gases entering the chamber will become stabilized
   c. RF power will be applied to the process gases, creating a plasma. The plasma process timer will start.

6. Process complete
a. Process timer stops
b. RF power is turned off
c. Plasma glow is extinguished
d. Process gas valves are turned off
e. Vacuum pump is turned off
f. Chamber vent valve is opened for time set in “Purge Timer”.
g. Chamber is pumped down to vacuum set point in “Vacuum Set” parameter
h. After the vacuum set point is reached, the process is complete
i. The “Plasma Cycle Complete” message will be displayed in the system status area
j. The vacuum chamber will be vented according to the time programmed in the “Atmospheric Vent” timer setting in the set-up menu.
k. Remove sample from tool and log off tool from Badger system.
System Control Panel