# 1 Objective:

This Standard Operation Procedure states how Plasma Cleaner should be operated.

# 2 Responsibilities:

## 2.1 Director / HOD / PI

The Director/HOD/PI has overall responsibility for ensuring a system is established for the safe use of the Plasma Cleaner.

## 2.2 Designated Person

There shall be a designated person to oversee the correct operation and maintenance of the Plasma Cleaner.

a. This person shall periodically inspect the Plasma Cleaner to ensure its operational performance.

b. He/she will make necessary arrangements for repair works of the Plasma Cleaner.

d. He/she will report to the Director/HOD/PI unsafe practices by direct Plasma Cleaner users.

## 2.3 Staff/ Research personnel

a. Plasma Cleaner users shall attend appropriate training on the safe use of the machine.

b. Users shall report any injuries, defects or breakdowns to their supervisor.

# 3 Procedures:

<u>Preparatory Steps</u>

1. Make sure white vacuum pump is turned on. (Turn it off after use)
2. Make sure dessicator is not in use.
3. The valves at the front and back of the plasma cleaner should be closed (black Swagelok turn-valve connected to the door of the chamber and push valve at the back)

<u>Main Procedure</u>

1. Gently hold the chamber door to prevent it from falling down on the table. Exerting too much force might damage the chamber.
2. Gently open the Swagelok valve and let air into the plasma chamber. Usually, the 2 black knobs of the pressure gauge are open all the time, watch the two small spheres, make sure they will not hit hardly on the top.
3. The weak vacuum inside the plasma chamber will suddenly break. Be alert and make sure the door doesn't drop on the table!

4. Put samples into the plasma chamber place them on a glass plate and make sure the chamber doesn't get contaminated with PDMS!
5. Close the Swagelok valve.
6. Put the cover back on and apply slight pressure.
7. Open the vacuum valve by pulling it fully outwards. In a second the vacuum should be able to hold the cover shut without assistance. (**When pulling outwards the vacuum valve, please hold the whole valve tightly to prevent the situation that there is too much force on the connection with the chamber.**)
8. Turn on the pressure gauge and the power of the plasma cleaner.
9. Wait till the pressure reach 200mTorr. Gentle open the Swagelok and let air in till the stabilize at 300 mTorr by tweaking the Swagelok.
10. Wait ~2min.
11. Turn plasma cleaner power to MED for 30s.
12. Check whether plasma colour is purple, if any other colour e.g. red means sample is contaminated.
13. After 30s, turn off the plasma cleaner by turning the knob back to the original position.
14. Close the vacuum valve at the back of the machine.
15. Let air into the plasma chamber slowly by regulating the Swagelok valve. If air is let in too fast, it might displace samples. Do not let the silver and black bead hit the top of the gauges. Usually, the 2 black knobs of the pressure gauge are open all the time.
16. Once the beads cannot rise high anymore, grip the door tight as it will fall off any moment once the vacuum breaks.
17. Take samples out. Close the Swagelok valve.
18. Press the door gently on again and open the vacuum valve for ~5sec and shut it. Now a weak vacuum exists to hold the cover in place.
19. Turn off the pressure gauge and the power of the plasma cleaner.