

PLASMA CLEANER

USER'S MANUAL FOR THE BASIC PLASMA CLEANER

SAFETY INFORMATION - The Plasma Cleaner is designed for safe and efficient operation when used properly and in accordance with this manual. Failure to observe the following precautions could result in serious personal injury:

- ❖ The Plasma Cleaner is an electrical instrument. To avoid electric shock, please observe all standard precautions.
- ❖ Do not use the Plasma Cleaner near flammable materials
- ❖ In case of using oxygen gas for the processing gas, an oxygen compatible pump must be used.
- ❖ In case of using toxic gases or gases that ionize to toxic products, like CF₄, an efficient exhaust filter must be used.
- ❖ Do not plug vacuum pumps whose input electrical current requirement exceeds 7 amps into the Plasma Cleaner.
- ❖ Do not open the Plasma Cleaner door when the chamber is under vacuum.

Operation:-

EVACUATING THE CHAMBER

- ❖ Put the sample in the Plasma Cleaner chamber.
- ❖ Turn on the Plasma Cleaner main power.
- ❖ Check that the 3-way valve is closed (lever should be in vertical position).
- ❖ Close the front door and hold the door against the plasma chamber.
- ❖ Turn on the vacuum pump switch on the front of the Plasma Cleaner. It will take a few minutes (10 minutes) to evacuate the air in the Plasma Cleaner chamber. The vacuum will hold the Plasma Cleaner door in place.

BLEEDING IN AIR

- ❖ Open the 3-way valve to room air (rotate the 3-way valve clockwise).
- ❖ To bleed room air into the chamber, slightly open the metering valve (1/8 of a turn or less) and allow the air to enter the Plasma chamber.

GENERATING PLASMA

- ❖ Select the appropriate RF power level.
- ❖ Look through the window of the plasma cleaner and wait until a glow is observed. For air, the plasma should be purple-pink to violet in color.
- ❖ Adjust the metering valve slightly until the plasma intensity is visibly maximized. This broadly corresponds to optimal plasma generation conditions.

NOTE: For optimal plasma uniformity, the RF power level should be set to MED or HI. Process pressures of 800-1000 mTorr and process times of 1-3 minutes are good initial process parameter values. Optimal process parameter values will depend on the sample material and intended application.

PROCESSING

- ❖ Process the sample for the desired duration.
- ❖ At the end of the process, turn off the RF power.'
- ❖ Rotate the metering valve to its original position.
- ❖ Close the 3-way valve (lever is in the vertical position).

VENTING THE CHAMBER

- ❖ Turn off the vacuum pump.
- ❖ Slowly open the 3-way valve to vent (rotate anti-clockwise).
- ❖ Once atmospheric pressure is reached, open the front door.
- ❖ Close the 3-way valve (lever is in the vertical position).
- ❖ Turn off the Plasma cleaner main power.
- ❖ Remove the sample.