**Center for Nanophotonics, TTU**

**ICP (Plasma Etching)**

To initialize:

1. Make sure the main pump is heated up

2. Gas line (N): turn on valves in the other room: 1 red + 1 red + 1 black -|

3. Cooling water: turn on the valve and pump

4. Power: press 2 green buttons below the chamber from left to right (system & mechanical)

5. Refrigerated water: turn on the valve behind the machine

6. In the computer interface, initialize, press standby, start pumping chamber.

7. If necessary, pump gas line (Make sure gas source is turned off!)

To shut down:

1. Make sure all of the gas sources are turned off. Feed in inertia gas in gas line if necessary.

2. Shut down software

3. Press red bottom below the chamber to turn off power

4. Turn off refrigerated water, cooling water

5. Go to the other room to turn off Nitrogen gas line (3 valves), check Helium gas, tail gas processing machine.

To operate:

1. Purge chamber if necesary.

2. After chamber is under normal pressure, open/clean chamber, and put in sample, apply grease if necessary.

3. Pump chamber to 10 to -5 Torr (overnight pumping sometimes)

4. Choose working parameter:

Gas flow: Cl2:16, BCl:2, Ar:5, for Oxygen ashing: Oxygen:20

Voltage: 175/350 for normal eching, 50/150 for Oxygen ashing

Time: 1 min corresponding to 5 um etch down normally (1:00 for Oxygen ashing?)

5. Turn on gas, Helium, pressure, then turn on oscillator power

6. After etching ends, remember to turn off source and helium!

7. Purge (or vent to normal pressure), take out sample, pump chamber.