

## Reactive Ion Etch (RIE)



### How It Works:

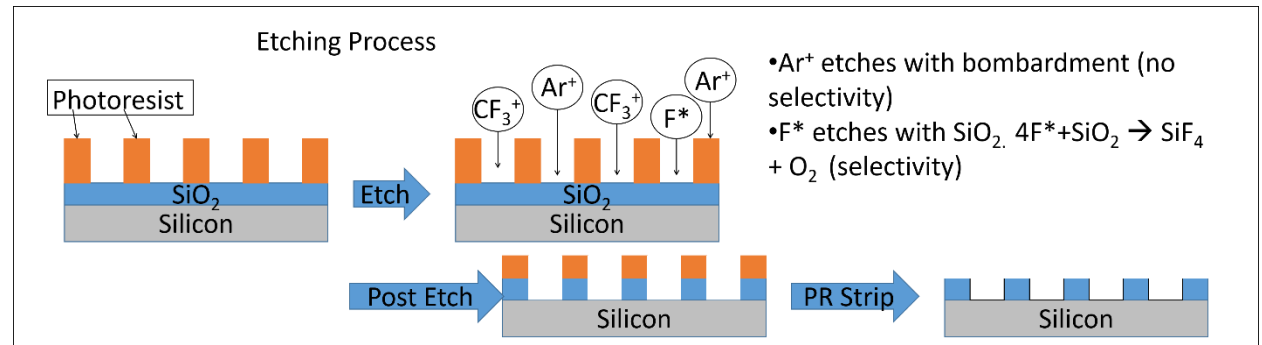
The sample holder is electrically isolated from the rest of the chamber which is held at ground. The platter has an RF voltage applied produces an oscillating electric field to ionize gas in the chamber. These ions are accelerated into the sample surface causing the surface to be broken off, and then evacuated from the chamber by the vacuum pump.

### Tool Operation:

Ion etch tools allow for both chemical and physical etch processes to occur simultaneously. By changing the type of etchant used, and the magnitude of the electric field the etching profile can be isotropic (the same in all directions) or anisotropic (etches faster in one direction than another.)

### Material / Applications:

There are several important uses for reactive ion etching. These include surface cleaning, roughening mirror finish wafers for biological applications, and highly anisotropic etches for high aspect ratio features.



### March Jupiter III Specifications

Power Supply:	110 VAC, 4 Amps, 50/60 Hz
RF Power:	Up to 200 Watts @ 30 KHz
Operating Pressure Range:	100 to 300 millitorr
Vacuum Pump:	Two stage mechanical roughing pump
Process/Purge gas:	2 process gas inputs/ 1 purge input
Typical gasses:	CF <sub>4</sub> , CHF <sub>3</sub> , and O <sub>2</sub> for etching SiO <sub>2</sub> and SiN <sub>x</sub> . Argon for surface pretreatment for adhesion. O <sub>2</sub> for ashing of organics like photoresist.
Etch rates:	10 to 20 angstroms/sec for SiO <sub>2</sub> . 30 to 45 angstroms/sec for photoresist strip.