PlasmaTherm 770 ICP

Operating Procedures LINK

Process Description:

A relatively new method of high aspect ratio material removal is plasma etching using an inductively coupled RF source. The substrate is RF-biased independently of the inductively coupled RF plasma, which results in low ion energies and thus low ion bombardment. An ICP system will produce a high density plasma that provide high chemical etch selectivities with high etch rates.

Equipment Description:

The purpose of this system is to selectively remove (etch) thin films of metals. The PlasmaTherm770 SLR system is equipped with a loadlock to transport wafers into the etch chamber while keeping the chamber under vacuum. The system has a 2MHz, 1000W inductively coupled coil used to generate and control the plasma density. The substrate is independently biased using a 13.56MHz, 500W power supply. The system computer controls the transfer of wafers between the loadlock and the process chamber, the vacuum pumping cycles, and the process parameters. The user can program the process parameters, such as gas flow, pressure, and the setting of each power supply. The system is configured for 4-inch diameter wafers and uses a clamp to hold the sample on the RF chuck. Helium back-side cooling is used to keep the sample cool during the etch.

Materials Allowed		***Materials Not Allowed***
All metals	Photoresists	BP sodium glass
AlGAs	Polysilicon	Polymers
Carbon	Silicon	SU8
GaAs	Silicon dioxide	
InP	Silicon nitride	

Gases Available	
Argon	Helium
Boron Trichloride	Hydrogen
Chlorine	Methane
Halocarbon 14 (CF4)	Sulfur Hexafluoride (SF6)
Halocarbon 23 (CHF3)	