Inductively Coupled Plasma RIE (ICPRIE) System

The SENTECH ICP plasma etch system (SI 500)enables the application of a wide range of plasma etching process from normal RIE to high density process

Specifications:

- PTSA ICP source (13.56 MHz, 1200 W) with integrated automatic matching network.
- RF bias : 13.56 MHz, 600 W
- Insulated, cooled and heated (-30ºC up to 250ºC) electrode for 6" substrates or 6" carriers (2", 3", 4" wafers, sample pieces).
- He-backside cooling with dynamic temp control
- Software controlled through PC.
- Useful for III-V and metal etching

Process Capabilities:

- **Substrates used**: III-V (GaAs, GaN on sapphire)
- **Substrates can be used but NOT available**: Metals, any material having high bond energy
- **Substrate history**: Due to contamination issues and chances of damage to the spatula inside the processing chamber due to intermixing of etched materials, nothing other GaAs and GaN are allowed to be etched in the chamber (this was decided after elaborate discussion with SENTECH, Germany)
- **Substrate size**: Small pieces, 2", 3", 4" wafers
- **Substrate temperature**: -30ºC to 250ºC (as per system specifications). However, we have noticed that if we do the processing at temperatures above 30ºC, the resist starts melting inside the chamber and its vapors may contaminate the chamber. Due to this, we keep the substrate temperature fixed at 25ºC for our processing
- **Gases used**: BCl3, Cl2, Ar, SF6 and O2 (process gases)
- **Chamber base vacuum**: Up to 1E-04 Pa (with Turbo Pump connected to Process Chamber)