

# Ion Beam Etching Systems



NIE-4000



NIR-4000

Etching of metals which do not have volatile compounds such as Cu, Au cannot be accomplished in RIE systems. On the other hand, physical etching with accelerating Ar ions is possible. Typically surface is patterned with thick resist for masking, and the energetic ion flux during etching overheats the substrate and the resist. Unless efficient means of removing the heat is found resist becomes very difficult to remove. Nano-Master technology has demonstrated capability of keeping substrate temperature below 50 °C while wafer is rotating to achieve the desired uniformity.

## Features:

- 14.5" SS Cube Ion Beam Chamber
- 12 cm DC Ion Gun 1000V, 500 mA ,DC Motor Driven SS Shutters
- Ion Beam Neutralizer
- Ar MFC
- Chilled Wwater Cooled 6" Substrate Platen
- Wafer Rotation 3-10 RPM, Vacuum Stepper Motor
- Wafer Tilt with a Stepper Motor through Differentially Pumped Rotational Seal
- Manual or Auto Wafer Load/Unload
- Typical Etch Rates: 20nm/min Cu, 50nm/min Si
- +/-5% over 4"area Etch Uniformity
- $5 \times 10^{-6}$  Torr < 20 minutes <  $2 \times 10^{-7}$  Torr (2 days) Base Pressure with 500 l/sec Turbo
- $8 \times 10^{-8}$  Torr Base Pressure with 1000 l/sec Turbo Pump
- Magnetron Sputtering of  $\text{SiN}_4$  to Protect Etched Metal Surfaces from Oxidation
- PC Controlled with LabVIEW Software
- Recipe Driven, Password Protected
- Fully Safety Interlocked

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