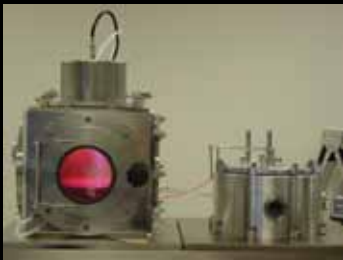


Reactive Ion Etching Systems



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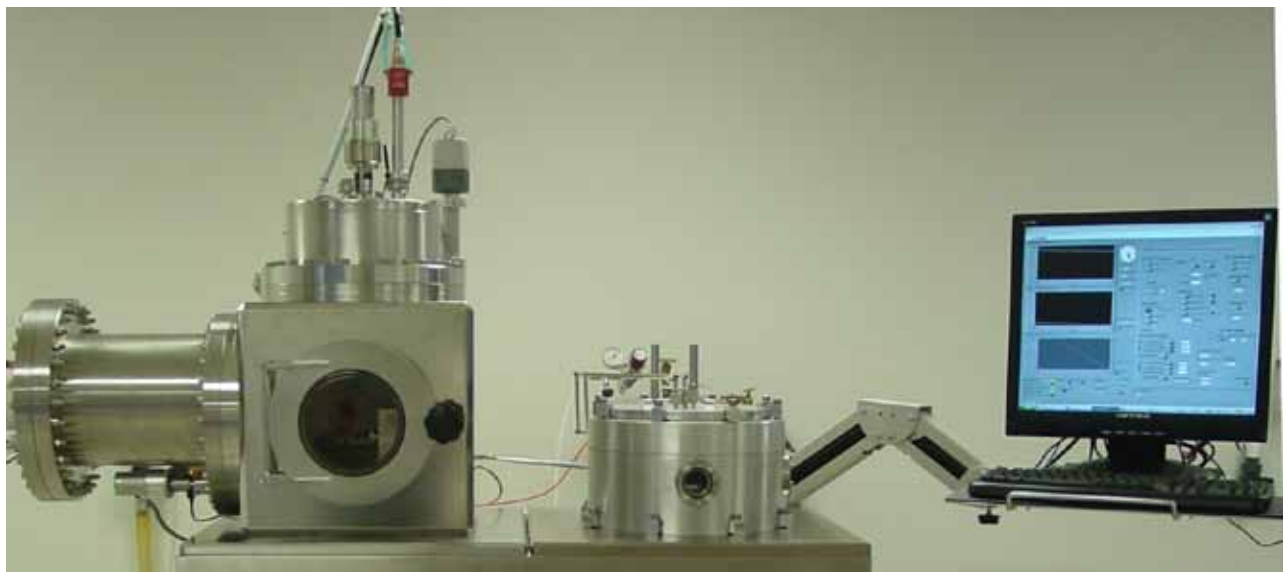
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NANO-MASTER Reactive Ion Etching Systems



NRE-4000

NANO-MASTER's NRE-4000 is a stand alone Reactive Ion Etching (RIE) system with shower head gas distribution and water cooled RF platen. It has a stainless steel cabinet and a 13" cylindrical Aluminum chamber that opens from top for wafer loading. It can accept up to 8" (200 mm) wafers. The chamber has two ports, one with a 2" window the other with a blank off for diagnostic equipment such end point detection. The chamber is extremely clean in design and reaches a base pressure in the 10^{-7} Torr range or lower depending on the pumping package. It can be operated in the pressure range of 20 mTorr to 8 Torr. The standard pumping package consists of a throttle valve, 250 l/sec corrosive turbo molecular pump, sieve filter, and a 10cfm PFPE prepared mechanical pump. The RF power is provided by 600 W 13.5 MHz power supply, and an auto-tuner. The substrate DC bias is continuously monitored and reaches as high as -500 V, which is important for anisotropic etching. The system is PC controlled which allows for complete automation of the system and recipes. The real time system pressure and DC bias are displayed in graphic format, while the flow and power are displayed in alpha numeric format. Four levels of authorization Auto, Engineering, Process and Maintenance prevents unauthorized use of the system while giving maximum flexibility to user for setting up recipes in Process mode and running in Auto mode with high reproducibility. Auto load and unload is available for single wafers and cassette to cassette. Other options include high temperature platens and a larger chamber to handle 12" (300mm) wafers.



Ion Beam / RIE System

NANO-MASTER Reactive Ion Etching Systems

FEATURES

- 13" Aluminum hard anodized chamber
- Gas Distribution: Shower Head
- Up to 200mm substrates
- MFC's with SS gas lines
- DC Bias: up to -500V Self Bias up to -1000V external bias
- Automatic pressure control
- 600W RF power supply with auto tuner
- Water cooled platen
- 260l/sec corrosive turbo molecular pump with suitable backing pump
- PC Controlled with LabVIEW Software
- Recipe Driven, Password Protected
- Fully Safety Interlocked
- Small footprint



NRE-3000

OPTIONS

- NM-ICP downstream high density plasma source for high rate etching
- Plasma source for Isotropic etching
- He backside cooling with mechanical chuck
- Additional MFC's
- Auto Load/Unload
- Dry Pump
- 8 or 12 line Gas Box
- Substrate cooling down to -20°C and heating up to 200°C
- Spectroscopic End Point Detector
- Electostatic chuck

APPLICATIONS

- Compound Semiconductors
- GaAs – Sensor Applications
- Photonic Applications
- Photo resist stripping
- Etching of dielectric, silicon-based, sputtered metals and DLC films



NRE-4000 with Load Lock

NANO-MASTER Reactive Ion Etching Systems

GENERAL SPECIFICATIONS

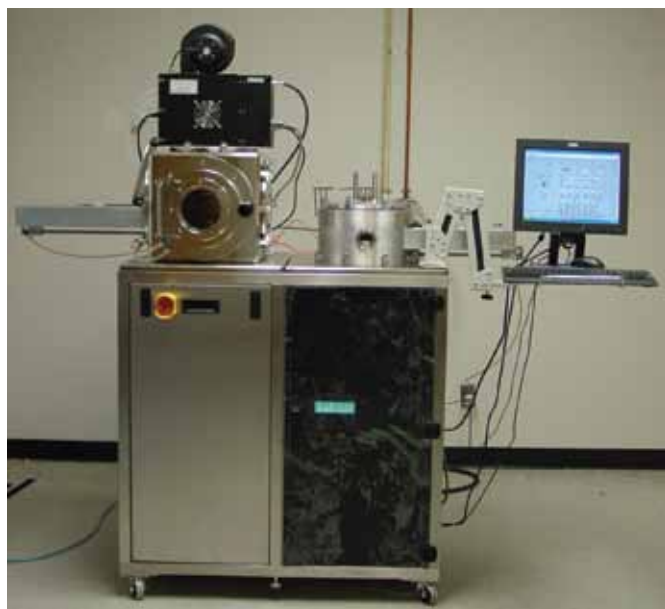
Maximum Substrate Size:	8"
Substrate Temperature Range:	Up to 200°C
Gas Lines:	Heated and Electropolished
MFCs:	Up to 8 MFCs
System Control:	PC Controlled with LabVIEW and Touchscreen User Interface
Loading and Unloading:	Manual or Automatic

FACILITY REQUIREMENTS

Power Input:	208V/380V/415V, 20A/Phase, 50/60Hz
Chilled Water:	2gpm @ 50psi, 18°C
Compressed Air:	1/4" Swagelok, 80-90 PSI
Processed Gas:	1/4" Swagelok, 20 PSIG
Nitrogen:	1/4" Swagelok, 10 PSIG
Exhaust (System):	NW25

DIMENSIONS

	Width	Depth	Height
NRE-4000	26"	44"	60"
NRE-3500	26"	26"	60"
NRE-3000	26"	26"	32"



**NRP-4000 Dual PECVD/RIE System
with ICP Source and Auto Load/Unload**



PECVD/RIE System