

Inductively Coupled Plasma (ICP) System

Versatile Research Etching Tool



ICP 400 System Features

SVT Associates Inductively Coupled Plasma (ICP) system performs RF plasma etching of semiconductor, dielectric, and metal materials on up to 4 inch (100 mm) diameter wafers. Depending on user requirements, the system can be upgraded to accept up to 12 inch (300 mm) diameter wafers.

- Versatile ICP/RIE Etching System
- Small Footprint Tabletop Design
- Low Cost of Ownership
- Wide Pressure Sensing Range – ATM to UHV
- Excellent Process Control
- High Pumping Throughput
- Customizable Process Gases
- Fast Process Development for Small Runs
- Long Platen Lifetime

SVT Associates, Inc.

- Leading manufacturer of thin film deposition and processing equipment since 1993
- In-house laboratory for materials research and process development
- Established a diverse range of deposition and processing components, systems, integrated sensors, and process control
- Developed strong combination of equipment manufacturing and process know-how
- Seven Applications Laboratory deposition and processing systems producing world class materials
- Diverse system product line spanning the thin film deposition and processing market
- Leading supplier with over 190 systems in the field



Automated System Controls:

- Programmable fully automatic recipes ensures run-to-run process repeatability
- Integrated real-time display of processing variables together onto one screen
- Two automatic RF matching networks supplemented with front-mounted manual controls
- Logging of parameters including pressure, RF power, gas flow rates all exportable to Microsoft Excel

Safety Features:

- Automated recipes for safe operation
- ICP control software with adjustable access limits
- Emergency Off (EMO) switch
- Air-cooled chamber walls contained in stainless steel chassis

Optional Features:

- Helium backside cooling of the wafer
- Glove box availability
- Interface with other deposition and metrology tools
- Residual gas analyzer
- Optical emission spectrometry
- Higher power RF sources with corresponding matching networks
- Additional platen sizes available on request

Materials Etched by ICP:

- GaN, AlN, ZnO
- Si, GaAs, InP
- Ni, Fe, Cu
- Al_2O_3 , SiO_2 , Si_3N_4
- SU-8, S1800 series, AZ series

ICP Etching Applications:

- Nanomaterials
- MEMS
- Optics
- Through-wafer Etching
- Refractory Materials

Technical Specifications:

Console	Cleanroom compatible metal enclosure
Footprint	78 cm x 129 cm = approx. 1m ²
Power	(2x) 13.56MHz RF power sources
RF Match	(2x) Type-L networks with automatic and manual matching modes
Process Monitoring	DC self-bias measureable up to 300 V
Uniformity	Etch rate variation < 3% over 4" wafer
Platen Size	4.8" diameter exposed RF-hot surface
Platen Coolant	Recirculated water or 3M dielectric liquid maintains platen at room temperature
Mass Flow Controllers	(6x) 100 sccm max
Chamber Purge	Computer-controlled N ₂ line with purge rate adjusted by needle valve
Process Gas Capability	BCl ₃ , Cl ₂ , SF ₆ , CF ₄ , Ar, O ₂ , N ₂ , He
Process Pressure	1-100 mTorr
Base Pressure	<10 ⁻⁶ Torr
Throttle Valve	Butterfly-type
Throttle Valve Controller	Automatic full-open and full-close manual override switches
Control Computer	Desktop PC
Operating System	Microsoft Windows 7
Control Software	Custom executable application running on the National Instrument LabVIEW platform

