Foot print of the SI 591 (all dimensions in mm)

Backing pumps 700

655

Configuration

RIE

Plasma

Etcher

SI 591

RIE plasma etcher for halogen and fluorine chemistry with load lock, turbo pump, substrate electrode for 4"-8" wafers (< 4" on carrier), 600 W RF power supply, 4 gas lines including MFC's, and SENTECH plasma process systems operating software (Windows 7 based).

System Options

NanoMes (interferometric endpoint detection and measuring system) Additional gas lines PE electrode Reactor heating Temperature controlled substrate electrode In-situ ellipsometer Cluster configuration - Single wafer loading - Cassette to cassette loading

Utility requirements

ower	3 x 400 V +/-5 %, 16 A, 50 Hz
Compressed air	5 bar (oil and water free)
litrogen	3-4 bar, 25 liter per run, process purity
Cooling water	4–6 bar (filtered), 2 l/min
xhaust	DN 40 KF (processed gas)
	Ø _A 80 mm (gas box)

Ordering information

SI 591	RIE plasma etcher with vacuum load lock
SI 591-1M	RIE plasma etcher module for cluster tool
ADAT	integration
SI 4TK	4 port transfer chamber (others optionally)
SI TK CTOC	Cassette station for C to C vacuum loading
SI TK XX1	Single wafer vacuum load lock

Technical details and specifications are subject to change without notice.

RIE



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RIE Plasma Etch System SI 591

VCSEL etching with endpoint detection

HBT etching with endpoint detection

Nanostructure etching







SENTECH SI 591 RIE plasma etch reactor with opened lid – The shower head upper electrode, the substrate electrode with lift pins, and cover of the free substrate electrode area are shown.

The RIE Plasma Etcher SI 591 from SENTECH

The RIE plasma etcher SI 591 is designed for modularity and process flexibility in the area of III-V and silicon processing. SENTECH SI 591 can be configured as single reactor or as cluster tool with cassette to cassette loading.

The SI 591 plasma etcher is well suited for fluorine and chlorine chemistry based processes. Etch processes for GaAs, InP, and GaN are available through SENTECH reference laboratory at the Ferdinand-Braun-Institut für Höchstfrequenztechnik Berlin (www.fbh-berlin.de).

For high process stability and repeatability the SI 591 features MFC controlled gas flow, flow rate independent gas pressure control, dry pump operated load lock, remote field control (RFC) of all system components via serial field bus (interbus), and SENTECH plasma process systems operating software.



SENTECH cluster tool with two SI 591 RIE plasma etch modules in head-on configuration for through wall installation – The two reactors, the transfer chamber with transfer robot, the load lock with transparent lid, and the control rack are shown.



compact RIE plasma etcher with small foot print

SENTECH SI 951

SENTECH Plasma Process Systems Operating Software

SENTECH plasma process systems operating software offers access level based interaction. The server-client architecture allows communication via LAN and the internet.

Time sensitive etch process steps are controlled in real time by the remote field controller via serial field bus (interbus).

The user-friendly software interface enables quick and comfortable process development and recipe generation. The status of the etch system is displayed. Executed recipe steps are marked.

Intelligent etch process control is available using jumps, loops, and calls in etch recipes.

Main parameter settings can be changed during the etch process by internal parameter comparison and external parameter control via in-situ measurement techniques.

An extended data logging records all analog parameters on the monitor and in an ASCII file.

Up to eight reactor units can be controlled at the same time and independently from each other.

racterize GaAs/AlGaAs Vertical Cavity Surface Emitting Laser (VCSEL) structure etched on SENTECH SI 591 RIE plasma etcher. Courtesy Ferdinand-Braun-Institut für Höchstfrequenztechnik (FBH) Berlin.



Erfolg durch Leistung

Smooth vertical sidewalls and low redeposition cha-

The heterostructure for a Hetero Bipolar Transistor (HBT) underneath the metal layer was selectively etched. The materials etched for the HBT are InGaAs, GaAs and InGaP. Courtesy Ferdinand-Braun-Institut für Höchstfrequenztechnik Berlin.



Submicrometer lines in Cr on quartz (SE and BSE mode). Courtesy IAP /Friedrich-Schiller-Universität Jena.





SENTECH plasma process systems operating software -Etch process data logging.

