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Ascatron SiC Process Tools

Ascatron SiC epi and device manufacturing is located at the Electrum Laboratory outside Stockholm. The clean-room has a total area of 1300 m^2 and provides the access to all equipment needed for processing of 100 mm diameter SiC wafers. The SiC process line has a capacity of 1000 wafers per year.

Process	Type	Parameters	Tools	Cap
Epitaxy	Hot-wall CVD	n/p 4H-, 6H, 3C-SiC n-doping 10^{14}-10^{19} cm^{-3} p-doping 10^{14}-10^{20} cm^{-3} Thickness up to 180 µm	2 Aixtron VP508GFR	S
Doping	Ion Implanter	40-330keV - Al, B, N, P RT & 600 ºC	Danfysik 1090*	S
Furnace Processes	Thermal Oxidations	Wet/Dry/N_2O (900-1250ºC)	Thermco 5200	B
	LPCVD	LTO, TEOS, Polysilicon	Bruce Furnace	B
	Annealing	1400-1800 ºC in Ar	Centrotherm Activator 150	B
	RTP		Mattson 100 RTP	S
Plasma Deposition	PECVD	SiO_2, Si_3N_4	Oxford Plasmalab 80 Applied Materials P5000	S S
Plasma Etching	RIE		Oxford Plasmalab 80 Oxford Plasmalab 100 Applied Materials P5000	S S S
	ICP		STS ICP DRIE Oxford ICP380	S S
	Microwave plasma ash	O_2	TePla300	B
Wet Etching	Wet cleaning process	Acid and solvent based		B
Metallisation	Plasma sputter	Au, Ni, Al, Ag, TiW	KDF 844NT, MRC 643	B
	Ion-beam sputter	Au, Ni, Al, Ti	Commonwealth IBS	B
	Evaporation	Au	PAK600	B
Lithography	Contact	Alignment Accuracy ~1µm Minimum Features ~1.5 µm	Karl Suss MA8	S
	Stepper	Alignment Accur. ~ 0.3 µm Minimum Features ~ 1µm	ALS 2035 G-line	S
	Lift-off			B
Metrology	SEM		Zeiss Ultra 55, Hitachi S-3400N	S S
	Ellipsometer		Horiba Uvisel ER SENTECH instrum.	S S
	Surface Profiler		Tencor-P10, Dektak3ST	S S
	AFM		Veeco Dimension 3100	S
	Sheet Resistance	4-point probe	Four Dimension 280	S
	Inspection Microscope		Nikon, Olympus, Leitz	S
Testing	Automated Probing		Karl Suss PA 150 Electroglass	S B
Dicing	High Speed Saw		Disco DFD640	S

Capacity of respective tool is marked as single wafer (S) and batch processing (B).

Equipment excluding epitaxy, RTP and LPCVD also compatible with 150 mm substrates.

* Performed at Ion Technology Center, Ångström Laboratoty in Uppsala