DEPOSITION

Equipment name	Technique	Wafer sizes	Competence
ASM Epsilon 2000E	Reduced Pressure CVD	100 & 200 mm	Epitaxy of Si and Si_xGe_{1-x}
Bruce	LPCVD	Pieces-100 mm	SiN, LTO, TEOS, a-Si, poly-Si, in-situ phosphor doped poly-Si
Oxford Plasma Technology Plasmalab 80+	PECVD	Pieces – 100mm	SiO_2, SiN, SiON, a-Si
Molecular Beam Epitaxy machines	MBE	75, 100, 150, and 200 mm	Growth of SiGe structures on patterned / unpatterned substrates. Strain engineering and growth of relaxed SiGe layers.
Oxford plasmalab System100	PECVD	100 and 150 mm	Si_3N_4 and SiO_2 deposition
Oxford plasmalab System400	Sputter-deposition	100 and 150 mm	Al, AlSi, Ni deposition
Von Ardenne CS730 Clustersystem	DC and RF sputter deposition	Pieces up to 150mm	Deposition of dielectrics (e.g. Gd_2O_3, Lu_2O_3), metals and silicon. Sputter etch
Pfeiffer Vacuum Classic PLS 580	E-beam evaporation	Pieces up to 6 wafers 150mm,	Deposition of dielectrics and metals
Oxford Instruments FlexAL Plasmalab System 100	Plasma enhanced atomic layer deposition (PE-ALD)	Pieces up to 200mm	Ultrathin layers, conformal deposition Ti, Al, Ta based materials
Centrotherm	Low pressure chemical vapor deposition (LPCVD)	Pieces up to 150mm Batch processing	3 furnaces: polysilicon, siliconnitride, low temperature silicondioxide
Aixtron 200FE reactor	ALD, CVD, LIALD, MOCVD	Pieces-50mm	High-k oxides
Edwards E306A	Metal evaporator	Pieces-200mm	Al, Au, Cu, Ti, Cr etc.
Trikon Delta 201	PECVD	100mm	SiN, SiOx, BPSG, PSG
STS	PECVD	100mm	SiN, SiOx, BPSG, Ge doped SiOx
Thermco	LPCVD	100mm	Poly-si, Si_3N_4
NORDIKO 2550	PVD	100mm	Al, Al/Si, Ti, TiW
Nordiko	PVD	100mm	Al, Al/Si, Cu, Ti, Pt, Ni, NiFe, TaN,
Temescal	Metal evaporation	Pieces-100 mm	Ag, Al, Au, Cr, Ge, Ni, Pd, Pt, Ti.
Lab600	Dielectric evaporation	Pieces-100 mm	SiO2, Si, TiO2, HfO2,YtO, SnO2, ZnO2, ITO, In2O3, AlF3. MgO2, Al2O3, ZnS, Ga2O3, ZnSe, Na3AlF6
PC310	PECVD	Pieces - 100mm & 200mm	SiOx, SiNx, Am-Si
Plasmalab 400	Sputter	Pieces-100 mm	SiOx, Al
Tempress	Tubular furnace	3'' wafers	LPCVD Polysilicon, nitride, oxide, + anneal, dry and wet oxidation

Alliance Concept	Sputter deposition including N2 sputter reactive	Pieces – 3''-masks	Ni, Pt, Ta, TaN, Ti, TiN, Au, Cr, Al, W …..
Oxford PECVD	PECVD Deposition	Pieces – 3''	SiN, SiOx low temperature
Plassys	Evaporation	Pieces – 3''	Ni, Pt, Ta, Ti, Au, Cr, Al, W, Er, Yb…..
Beneq	ALD	Pieces – 3''-masks	In development
Corial	PECVD	Pieces-100 mm	SiO_2, Si_3N_4, a-Si
Plassys	Electron gun deposition	Pieces-100 mm	Al, Au, Ti, Pt, Ni, Pd, Cr
Nordiko	Sputtring system DC	Pieces-100 mm	Al, Ti, Au, Cr, Cu, Nb
AC450 Alliance concept	Sputtring system RF	Pieces-100 mm	SiO_2, Al_2O_3
Corial	LPCVD	Pieces-100 mm	Poly-Si

DRY ETCHING

Equipment name	Technique	Wafer sizes	Competence
Applied MaterialsP5000 Cluster with 2 MxP and 1 Mark II chamber	RIE	100 mm	Metal etching, poly-Si and SiGe etching, SiO_2/SiN etching
Applied Materials Centura with Deep Si etch chamber and dielectric etch chamber	RIE	100 – 200 mm	Si etching & SiN/SiO_2 etching
Oxford Plasma Technology Plasmalab 80+	RIE	Pieces – 100mm	SiO_2, SiN, SiON, Si, SiC
Plasmalab	RIE	75 - 100 - 150 mm	Si and SiO_2 etching
Surface Technology Systems - ICP	ICP	100 mm	Si and Al etching
Oxford Instruments PlasmaLab 100	ICP-RIE	Pieces up to 150mm	3 chambers: Silicon, metal and dielectric etching with HBr, Cl_2 and F based chemistries
TRIKON OMEGA 201 ICP	RIE	100mm	Metal etching – Al, Al/Si, TiW, Ti
TRIKON MORI OMEGA 201	RIE	100mm	Poly-Si, Si, SiO_2, SiN
TRIKON PERIE OMEGA 201	RIE	100mm	SiO_2, SiN
STS Mesc Multiplex ASE	BOSCH™ DRIE	100mm	Si – can be used for through wafer etch
	RIE	100mm	SiO2 deep etch
STS ICP	RIE	Pieces-100 mm	Si, SiOx, SiNx, GaAs, InP, polymers
Oxford ICP	RIE	Pieces-100 mm	Si, SiOx, SiNx, GaAs, InP, polymers
2xOxford RIE	Dry etching	Pieces – 200mm	SF6, CF4, CHF3, N2, Ar, H2
Oxford RIE-ICP 2 chamber	Dry etching	Pieces – 3''	Cl2, SiCl4, BCl3, SF6, Ar, He, CH4
STS ICP	Dry etching	Pieces – 3''	Deep Si etch
MU400	Ion Beam Etching – IBE	Pieces-100 mm	RIE-IBE with SIMS detection
Applied Materials 200 mm	RIE	200 mm	Metal etching, Si etching, SiO_2/SiN etching
Applied Materials 300 mm	RIE	300 mm	Metal etching, Si etching, SiO_2/SiN etching
Oxford	ICP Chlore	Pieces-100 mm	Metal etching
STS-SPX HRM	D-RIE	Pieces-100 mm	Bosch process
STS-Multoplex ICP	ICP (SF6, CHF3, Ar, O2)	Pieces-100 mm	Silicon etching, SiO_2/SiN etching

LITHOGRAPHY

Equipment name	Technique	Wafer sizes	Competence
XLS 7500/2145	I-Line	100 mm	Resolution 0.65 µm
DSW 8500/2035	G-Line	100 mm	Resolution 1.0 µm
ALS 2035	G-Line	100 – 200 mm	Resolution 1.0 µm
SUSS MJB4	G-line	Pieces-100mm	Resolution 1.0 µm
Karl Suss MA6 Mask aligner	H-Line	100 mm, 150 mm	Resolution 0.8 µm
Leica EBPG 5000	E-beam	Pieces up to 150mm	Resolution sub 10nm
EVG, 3 systems	Nanoimprint (UV-NIL)	100-150mm	Resolution sub 10nm
Interference lithography	Laser IL	Pieces up to 150mm	Full wafer exposure, periode 140-1500nm
Karl Suss, spin coater P6700	G-line	100mm	Resolution 3.0 µm
ULTRATECH 1500 1X Stepper	Broadband	100mm	Resolution 0.8um
SUSS MicroTec MA6/BSA Proximity Aligner	Broadband	100mm	Resolution 0.8µm in contact (0.5µm in vac contact)
CANON PLA600-FA Proximity Aligner	Broadband	100mm	Resolution 0.8µm in contact
EV 420 Double Sided Aligner	Broadband	100mm	Resolution 2.0 µm on 1-3um resists Set up for MEMS applications High aspect ratio polymers Also set up for wafer to wafer alignment pre bonding
Suss MA6	DUV & NFH	Pieces-100 mm	0.5um
Suss MA1006	UV	Pieces-100 mm	1um
2x VISTEC EBPG 5000+	e-beam lithography	Pieces – 3’’-masks	Nanometer resolution on HSQ, PMMA, Copolymer
2 x Suss Microtec inluding bottom side alignment MA/BA6	Optical lithography	3’’ wafers	Know-how on many resist types
JBX 6300 FS- JEOL	Electron beam lithography	Pieces-100 mm	Resolution 10 nm
MJB4	Optical lithography	Pieces-100 mm	Resolution 0.5 µm Resolution 1.0 µm

OXIDATION & ANNEALING

Equipment name	Technique	Wafer sizes	Competence
Bruce Furnaces	Furnace anealing	Pieces-100 mm	T=600-1150 C O_2, H_2O, N_2, N_2O, Trans-LC
Mattson 2800	RTA	100 & 150 mm	T=450-1100 C N_2, Ar, O_2, N_2O
THERMCO	Furnace oxidation	Pieces – 100mm	T=450 – 1150°C N_2, Ar, O_2, H_2O
THERMCO	Furnace annealing	Pieces – 100mm	T=450 – 1150°C N_2, Ar,
STEAG AST	RTA	100 & 150 mm	T=350-1150 C H_2O, N_2, O_2, H_2 / N_2
Centrotherm	Thermal oxidation	Pieces up to 150mm Batch processing	T=600-1050°C 2 Furnaces: dry only and dry or wet oxidation
Centrotherm	Furnace annealing	Pieces up to 150mm Batch processing	T=300-1050°C N2, H2, Ar
Jipelec Jetfirst	RTA	Pieces up to 150mm	T=300-1100°C N2, H2, Ar
Carbolite furnace	Furnace annealing	Pieces-150 mm	T=250-600 C N_2, forming gas
Hitech furnace H4-7032	Dry oxidation	Pieces-100mm	up to 1100 C, dry oxidation of Si
AST SHS 100 RTP	RTA	100mm	T=400-1100C, N_2, O_2, N_2/5%H_2
Thermco 9000	Oxidation and Annealing and pre deposition	100mm	T=600 – 1180C O_2, H_2O, N_2, Trans-LC, $POCl_3$, SS boron disks
Jipelec Jetfirst 150	RTA	Pieces-100 mm	400C – 1100C N2/5%H2, Ar, O2, N2
Jetfirst-100	RTA	Pieces-100 mm	T=450-1100 C N_2
Jetfirst-200	RTP	Pieces-100 mm	T=450-1100 C N_2, O_2, N_2/H_2

OTHER PROCESS EQUIPMENT

Equipment name	Technique	Wafer sizes	Competence
BALZERS	PVD – resistive source	Pieces – 100mm	Al, Al-Si
BALZERS	PVD – resistive source	Pieces – 100mm	Au
BOLESLAWIEC	PVD e-gun	Pieces – 100mm	R-metals (W, Ti, Mo, Ta, Cr, Ni, …), Al,
EVG 150	Automatic resist coating/development	100-150mm	
SCFluid	Supercritical drying	Pieces up to 150mm	Drying of high density, high aspect ratio nanoscale structures
Harrich Plasma	plasma cleaner	Pieces-150mm	plasma cleaning & surface treatment
EATON NV 6200 AV Medium Current Implanter	Implant	100mm	Ph, As, Boron, BF_2
LOGITECH CDP	Chemical Delayer	100mm	Dielectrics
EVG 501	Wafer bonding	100mm	Si-pyrex anodic bonding
Cambridge Nanotech	ALD	100mm	HfO2/MgO/TiN
SEMITOOL SAT	Wafer Cleaning	100mm	O3 based clean with HF and/or NH4OH additives for silicon substrates
JENOPTIK HEX-03	Hot embosser	Pieces	Polymer embossing
Suss Microtec substrate bonder	Wafer bonding	3'' wafers	molecular bonding, thermal reflow, thermo-compression, thermal or UV cured adhesive and anodic bonding