

Equipment and processes of the Dry Etching Area

The Dry Etching Area is the area where plasma etching techniques are carried out on different materials used in microfabrication.

Techniques

- Metal etching
- Semiconductors
- Polymers
- Deep silicon etching with HAR
- Etching for silicon nanostructures

Equipment and Available capabilities

Alcatel 601 E

- Automatic single-wafer up to 100 mm
- ICP Gen. up to 2000 W - 13,56 MHz
- RF Gen. up to 500 W - 300 KHz
- Gas lines: SF₆, C₄F₈, He, O₂
- 2 mechanical pumps 2 turbomolecular pumps
- Wafers thermalization: -110°C to 40°C (N₂ dewar); He-backside contact
- Bosch process
- Layer etching: Silicon, polysilicon, W and TaSi

OXFORD PLASMALAB S-100 no CMOS

- Automatic multiwafer up to 100 mm. Two chambers
- ICP Gen. to 5000 W-2 MHz and ICP Gen. up to 3000 W-13.56 MHz
- RF Gen. up to 600 W-13,56 MHz
- Gas lines: N₂, O₂, He, SF₆, Cl₂.
 - Chamber 1: HBr, BCl₃, Cl₂, SF₆, N₂, He, Ar
 - Chamber 2: SF₆, O₂
- 3 mechanical pump 2 turbomolecular pump
- Wafers thermalization: 20°C to 60°C; He-backside contact

- Layer etching: Group III-V compound semiconductors, SiC, diamond and photoresist stripping

Aplied Materials P5000

- Industrial platform 3 chambers up to 150 mm
- Magnetic field assisted, up to 90G – MERIE
- 3 RF Gen. up to 1250 W - 13,56 MHz
- 3 mechanical pumps 3 turbomolecular pumps
- Gas lines:
 - Chamber A: CF₄, C₂F₆, He, CHF₃, Ar
 - Chamber B: C₄F₈, CF₄, C₂F₆, O₂, He, CHF₃, Ar
 - Chamber C: HBr, Cl₂, CF₄, He/O₂, SF₆, N₂
- Layer etching: Polysilicon, SiO₂, Si₃N₄

Alcatel AMS-110 DE no CMOS

- Automatic single-wafer up to 100 mm
- ICP Gen. up to 3000 W - 13,56 MHz
- RF Gen. up to 600 W - 300 KHz
- RF Gen. Up to 500 W LF
- Gas lines: SF₆, C₄F₈, He, O₂ CH₄, Ar
- 1 mechanical pumps 1 turbomolecular pumps
- Wafers thermalization: -10°C to 420°C; He-backside contact
- Bosch process
- Layer etching: Silicon, polysilicon, W, TaSi, SiO₂, Si₃N₄, Al₂O₃, HfO₂, TiO₂, GaO, pyrex, polyimide, Graphene

SENTECH SI 500 No CMOS

- Automatic single-wafer up to 150 mm MNC
- ICP Gen. up to 2000 W - 13,56 MHz
- RF Gen. up to 600 W – 13,56 MHz
- Gas Lines: SF₆*, C₄F₈*, CF₄, O₂*, He, Ar. * Duplicate massflows
- 2 mechanical pump 1 turbomolecular pumps
- Temperature: -15°C up to 80°C. He-backside thermalization
- Bosch process
- Layer etching: Silicon, SiO₂, Si₃N₄, polyimide, graphene

SENTECH SI 500 SI

- Automatic single-wafer up to 150 mm MNC
- ICP Gen. up to 2000 W - 13,56 MHz
- RF Gen. up to 600 W – 13,56 MHz
- Gas lines: SF₆*, C₄F₈*, O₂*, He, Ar. * Duplicate massflows
- 2 mechanical pump 1 turbomolecular pumps

- Temperature: -15°C up to 80°C. He-backside thermalization
- Bosch process
- Layer etching: Silicon, SiC

SENTECH SI 500 CL

- Automatic single-wafer up to 150 mm MNC
- ICP Gen. up to 2000 W - 13,56 MHz
- RF Gen. up to 600 W - 13,56 MHz
- Gas Lines: Cl₂, BCl₃, Ar, N₂, O₂, He
- 2 mechanical pump 1 turbomolecular pumps
- Temperature: -15°C up to 80°C. He-backside thermalization
- Optical end point detection
- Layer etching: Group III-V compound semiconductors

ALCATEL GIR 160

- Parallel plate RIE manual single wafer up to 150 mm
- RF Gen. up to 500 W - 13,56 MHz
- Gas lines: SF₆, CHF₃, CF₄, O₂, He, N₂
- 1 mechanical pump 1 turbomolecular pump
- No control temperature
- Layer etching: Silicon, Polysilicon, SiO₂, Si₃N₄, SiC, TaSi

Dry etching Team

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