ION-IMPLANTATION FACILITY

MODEL: EATON NV-3204

INSTALLATION PLACE: Cleanroom of "Nanotechnology and Microsystems Laboratory", Department of Microelectronics

DESCRIPTION: Ion implantation is a materials engineering process by which ions of a material are accelerated in an electrical field and impacted into another solid. This process is used to change the physical, chemical, or electrical properties of the solid.

SPECIFICATIONS

1. Acceleration Energy: 20 – 200 KeV (selectable in 1 KeV increments)
2. Ion Beam Current: up to 500μA
3. Sample size: from small samples up to 100mm diameter wafers
4. Ion sources: gas or solid phase
5. Implantation ions or species: B, BF_2, P, As, N, Si, Ar, customize
6. Uniformity over one wafer: $\sigma \leq 0.75\%$ (nominal)
7. Repeatability, wafer to wafer and day to day: $\sigma \leq 0.5\%$ (nominal)
8. Mass range: 125 AMU at standard extraction voltage
9. Mass resolution: $M/\Delta M > 100/1$ (ΔM is the full width at half height)
10. Implant Angle: Adjustable 0 to 15 degs

APPLICATIONS

1. Selective doping in semiconductor substrates: Si, Ge, III-Vs, III-Ns
2. Modification of insulating layers: SiO_2, Si_3N_4, High-k
3. Fabrication of p-n junctions, field-effect transistors, bipolar-junction transistors
4. Modification of polymeric and nano-composite materials

CERTIFICATION/ACCREDITATION

The facility is not certified or accredited.

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