

MBE

SYSTEMS FOR QUALITY CONTROL AND CHARACTERISATION OF MBE PROCESSES



Hidden's extensive range of systems for quality control and characterisation of MBE Processes

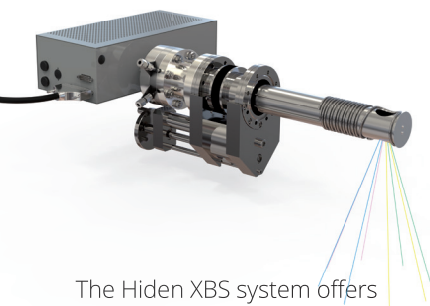
Molecular Beam Epitaxy (MBE) is a versatile thin-film deposition technique used in the field of materials science and semiconductor device fabrication. It enables the precise growth of high-quality crystalline structures, layer by layer, with atomic-level control

Hiden Analytical systems - Modular SIMS, HALO 201 MBE, XBS, and AutoSIMS - provide researchers and industry professionals with powerful tools for surface analysis, deposition species analysis, and process optimization. These innovative solutions contribute to advancements in various fields, such as electronics, nanotechnology, and materials research.



XBS

Deposition rate monitor for molecular beam analysis and control



The Hiden XBS system offers accurate material growth monitoring with high sensitivity, a broad atomic mass range, ultra-low detection limits, versatile ion source, and robust, vacuum-compatible, water-cooled shroud.

- ▶ High sensitivity, enhanced detection from 100% to 5 ppb
- ▶ 320 or 510 amu mass range
- ▶ Detection limits down to 30 ions/second in molecular beam studies
- ▶ Monitor growth rates of 1Å/minute and lower
- ▶ Cross beam ion source with beam apertures configured for multiple beam positions
- ▶ Integral UHV compatible water-cooled shroud

AutoSIMS

Automatic surface analysis system

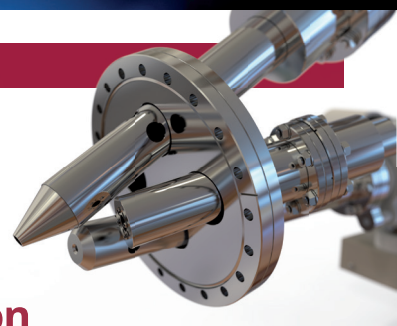


The Hiden AutoSIMS offers automated surface analysis, facilitating efficient and accurate assessments of material properties and growth dynamics.

- ▶ Fully automated, unattended, SIMS analysis
- ▶ Large X-Y sample stage
- ▶ Oxygen ion gun for high sensitivity analysis
- ▶ Customisable cassette style sample holder
- ▶ Parameters can be specified via spreadsheet
- ▶ 3D characterisation
- ▶ Nanometre depth resolution
- ▶ Modular servicing for high up-time

Modular SIMS

High sensitivity in-situ analysis for substrate characterisation and contamination research



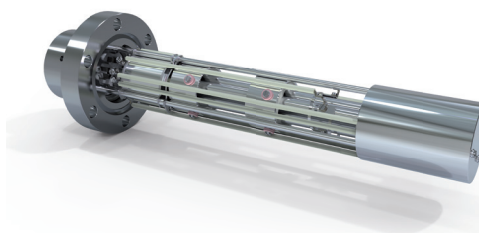
The Hiden Modular SIMS is used in MBE for surface analysis, offering crucial data on material composition, structure, and growth.

- ▶ Pre-growth substrate purity analysis
- ▶ Elemental surface mapping
- ▶ 3D depth profiling

- ▶ 'Feature MS' mode allows mass spectral data to be gained from a specific area of interest, for example a contaminant or grain boundary
- ▶ Excellent sensitivity and dynamic range
- ▶ Customised software interface for SIMS

HALO 201 MBE

RGA analyser for MBE chambers



The HALO 201 MBE is a sturdy tool for RGA, effectively monitoring gas composition in MBE chambers to enhance material growth.

- ▶ Vacuum diagnostics
- ▶ Leak detection
- ▶ Vacuum fingerprint analysis
- ▶ 200 amu mass range

- ▶ Dual Faraday/Electron multiplier detectors
- ▶ Contamination resistant source shroud
- ▶ Molybdenum wiring in place of copper wiring to improve lifetime in MBE environments