

memsstar provides the best possible processing solutions from R&D through to high-volume manufacturing. We are market leaders in single-wafer dry release etching using vapor HF and XeF₂ chemistries and surface modification (SAM coating) processes.

XERIC Oxide Etch

Advanced dry release processing for current and next-generation MEMS devices. XERIC™ Oxide Etch system, using anhydrous hydrogen fluoride (aHF), offers many benefits to companies engaged in MEMS development and manufacturing.

This unique sacrificial vapor release etching process eliminates stiction in a single step and is compatible with the widest wide range of metals—especially Al/ alloy and other metals commonly used in MEMS mirrors and electrical contacts.

- **Sacrificial Oxides:**
Thermal oxide, TEOS, SOI, quartz, PECVD oxide, spin-on oxide, low-temperature spin-on glass
- **Protective Layers:**
Aluminium, silicon carbide, LPCVD nitride, PECVD nitride
- **Compatible Metal Layers:**
Gold, Copper, TiW, Nickel, Aluminium, Ti, TiO₂

XERIC Silicon Etch

The XERIC™ Silicon Etch system provides dry release etching using xenon difluoride (XeF₂) in conjunction with a continuous flow design for the etch material. The patented memsstar XERIC XeF₂ process is highly selective to a range of materials, notably SiO₂ and Si₃N₄.

Large undercuts of structures can be performed with no degradation in etch rate and a wide range of films including silicon (in all forms), molybdenum, germanium and tungsten can be etched.

- **Sacrificial Layers:**
Polysilicon, amorphous silicon, single-crystal silicon, molybdenum, germanium, tantalum, tungsten
- **Protective Layers:**
LPCVD & PECVD nitride, PECVD silicon dioxide, thermal oxide, TEOS, quartz

Applications: sensors, RF MEMS, micro bolometer arrays, accelerometers, RF switches, temperature gauges

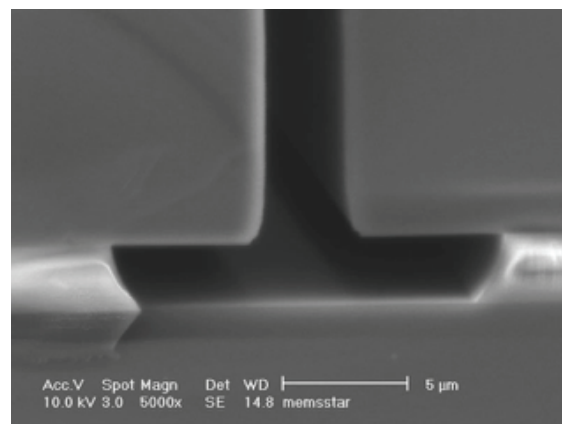
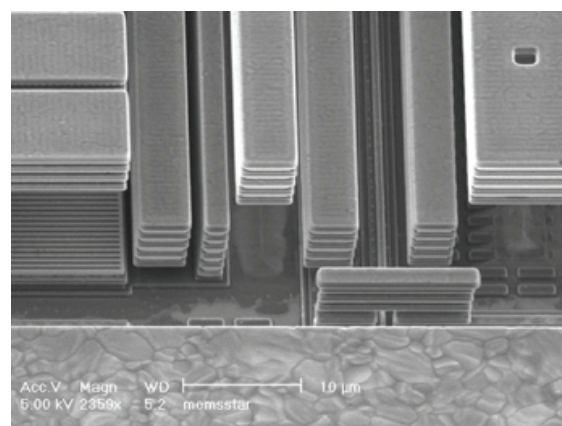
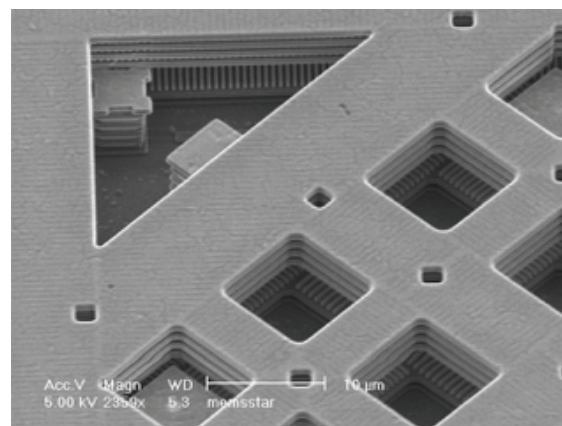
AURIX

Surface Preparation and Deposition

The AURIX system provides the ideal solution for advanced surface coatings to deliver reliable, cost-effective protection for sensitive devices.

The vacuum deposition environment of the AURIX™ system provides vapor-phase self-assembled monolayer (SAM) coating capabilities while eliminating the effects of moisture, which is crucial in creating repeatable and robust surface coatings. Precision-tuned processes with patented control minimise the amount of chemicals used and offer superior surface properties and improved surface energy control.

SAM coatings can be deposited immediately following the release etching process, enabling the MEMS structure to be treated without breaking process-vacuum, maximizing yield and throughput during production.



SAM Coating Materials

- Anti-stiction precursors: DDMS, FDTMS, FOTS
- Hydrophilic precursors: PEG, AECTS
- Bio-compatible precursors: PEG, PMMA

Standard Coatings Available

- Hydrophobic – anti-stiction
- Hydrophilic – microfluidic applications

Key Process Benefits

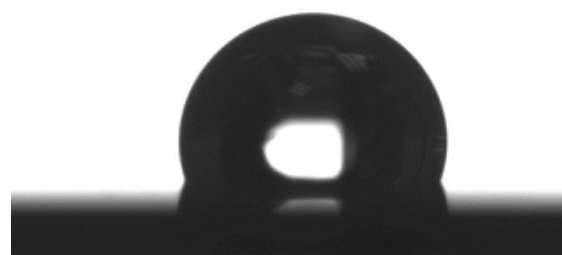
- Strict process control
- Elimination of stiction
- Compatible with wide range of materials

Advantages

- Continuous flow processing
- Short process times
- Precise precursor delivery
- Remote plasma processing
- Robust and cost-effective process
- Can be integrated with release etch for maximum protection from stiction

Key Process Features

- Process samples from 100mm – 200mm
- Single-wafer processing with high repeatability
- 1000 or 3000 configurations available
- Temperature control
- Large process window for optimisation



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