

Wet Etching Process

Researchers at the University of South Florida have developed a novel method of production of Micro Electro Mechanical System (MEMS) devices using standard wet etching techniques.

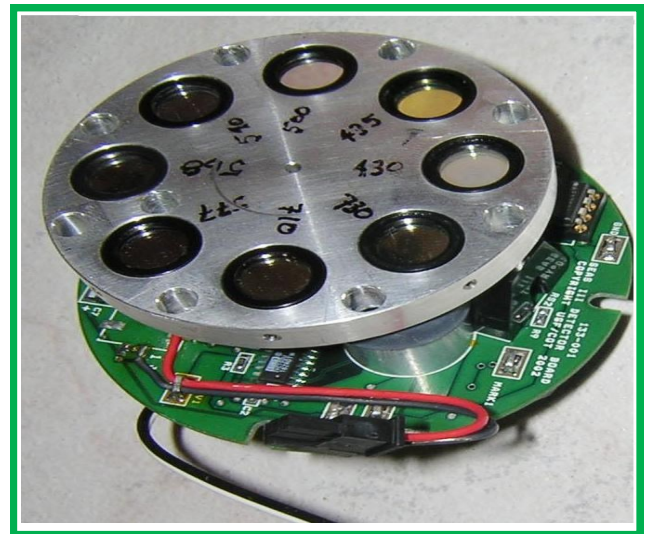
MEMS devices are based on using microelectronic wafer fabrication techniques to produce complex shapes in the μm to mm size range with embedded sensors, actuators and circuitry. MEMS etching processes can be broadly classified into two categories: wet and dry etchings. While wet etching is simple and economical, it is characterized by slow etch rates and straight edged geometries. Dry etching techniques, such as the Deep Reactive Ion Etching (DRIE), overcome the limitations of wet etching. However, DRIE is an expensive process. Hence, there is a need for an etching technique which offers the simplicity and economy of wet etching and the process capabilities of dry etching.

Researchers at USF have developed a technique that exploits the high selectivity of Potassium Hydroxide (KOH) etchant to microporous silicon over bulk silicon. Porous silicon (PS) is formed on the patterned wafer by Hydrofluoric Acid (HF) based electrochemical etching. Pores are formed in areas that are characterized by absence of surface (P-N) junction. The resultant wafer is selectively porous in areas where the oxide was patterned and the rest of the wafer is bulk silicon. This technology enables one to harness the advantages of dry etching using a relatively cheaper wet etching technique which would greatly benefit the fabrication industries.

ADVANTAGES:

- Cost effective
- Viable alternative to DRIE
- Easy Fabrication by bulk silicon etching technique

A Method for Fabrication of MEMS Devices



A MEMS Device Fabricated Using Wet Etching Technique

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