

## Oxide Microstructure Fabrication: A Novel Approach

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(Received September 19, 1988; accepted February 13, 1989)

**Key words:** silicon machining, microstructures

Standard CMOS technology is well known for its high density integrated circuit fabrication capability. Although it is not optimised for silicon microstructure fabrication, we discovered many inherent features present in the CMOS process that allow the fabrication of silicon-dioxide-based micromechanical structures for sensor applications with just one additional postprocessing step. The novel layout design methodology that exploits the standard CMOS process for fabricating silicon-dioxide-based microstructures is reported in this letter. Prototype sandwiched oxide microbridges and cantilevers have been realised with this design.

### 1. Introduction

Silicon micromachining technology is well known for its capability in producing micromechanical structures for various sensor and actuator applications.<sup>(1)</sup> Using this technology, pin joints, gears and fluid valves are realised in micron dimensions.<sup>(2)</sup> Specifically, acceleration, vibration, force and gas flow sensors built with micromechanical structures such as microbridges and cantilevers exhibit greater accuracy and portability compared to the conventional sensors in use today. There is growing interest to integrate signal conditioning electronics along with the sensor, on the same chip, in order to improve the signal-to-noise ratio and transmit the transduced signal to a control system or display with greater reliability.<sup>(3)</sup> However, not many integrated micromechanical sensor systems are on the market today. This