

A Novel Process for Fabricating Aluminum Nitride Diaphragms and Cantilevers

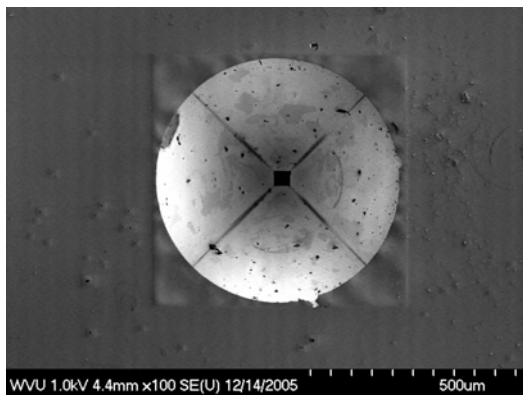
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ABSTRACT

Aluminum nitride (AlN) is a material that shows great promise in the development of piezoelectric MicroElectroMechanical Systems (pMEMS). This is due to AlN's high temperature stability, high dielectric strength, chemical inertness and complete compatibility with silicon micromachining techniques.

Piezoelectric MEMS devices typically consist of a bulk silicon frame and an active deflection element. In sensor and actuator devices, this deflection element is typically a cantilever or a diaphragm. In this presentation, a novel method of fabricating free standing SiO_2/AlN diaphragms and cantilevers using a combination of conventional silicon micromachining techniques and copper vapor laser ablation is shown.



SEM image of a SiO_2/AlN diaphragm
(back-side view)



Microscope image of a SiO_2/AlN cantilever
(back-side view)