Simulation of a Tsang Suspension

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Abstract

This paper investigates the effects of design parameter variation on the mechanical performance of the out-of-plane assembly mechanism of the Tsang suspension. A variety of designs exploring the design space were fabricated using SU-8 as a structural material. We used the Structural Mechanics Module in the COMSOL Multiphysics® software to simulate the reaction forces of the design. COMSOL Multiphysics® will help us to choose the optimal design parameters of Tsang structures. Figure 1 shows a two dimensional layout of a generic Tsang supension, which consist of two anchors connected by two identical springs joined by a plate which could potentially hold a transducer for MEMS applications. Figure 2 shows a simulated image of an assembled Tsang suspension. Figure 3 shows an SEM image of an SU-8 fabricted Tsang Suspension.

Reference

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Figures used in the abstract

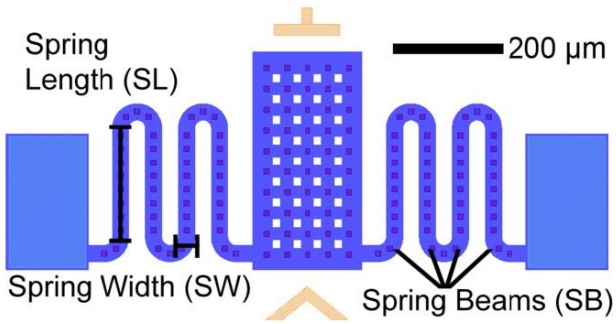

Figure 1: Layout of a Tsang suspension

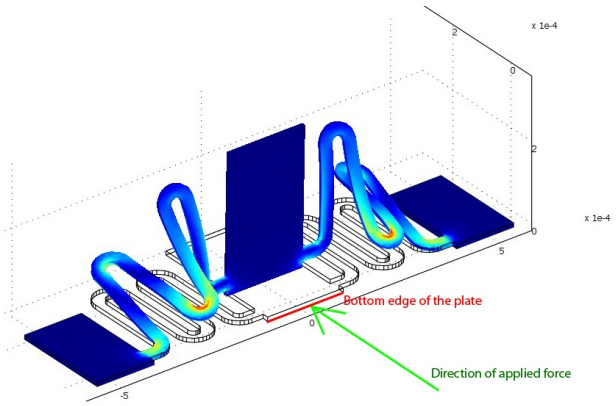

Figure 2: Simulation of a Tsang suspension showing the direction of the applied boundary condition

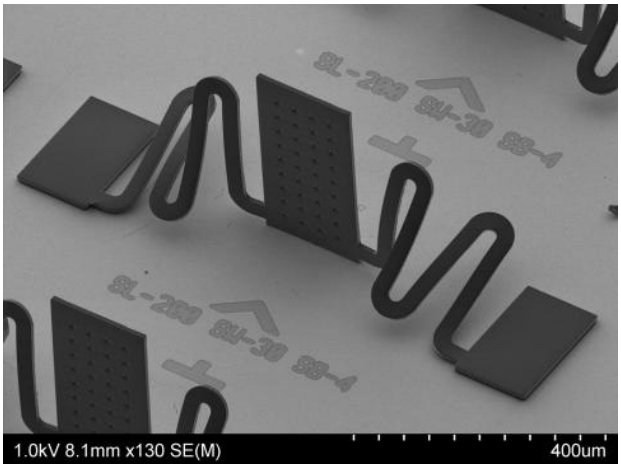

Figure 3: SEM image of an assembled Tsang suspension