Designing and Simulating the Performance Analysis of Piezoresistive Fluid Flow Pressure Sensor

K. PraveenKumar¹, P. Suresh¹, K. Subash¹, M. Alagappan¹, A. Gupta¹

¹PSG College of Technology, Coimbatore, Tamil Nadu, India.

Abstract

In this work, we present the performance analysis of novel micro machined Piezoresistive fluid flow pressure sensor using COMSOL Multiphysics. The principle of the sensing mechanism is based on the deflection of four sensing layers embedded on a thin membrane. The fluid passes through the layer causes the deflection of the sensing layer which measures the pressure of the fluid. The following figure 1 shows the principle design of the sensor. The simulation results demonstrate the feasibility of the new concept and open the new area of research in the design of flow pressure sensors to obtain the higher level of sensitivity with lower power consumption.

Reference

Figures used in the abstract

**Figure 1**: Flow pressure sensor geometry using COMSOL Multiphysics.

**Figure 2**: Displacement of the sensing membrane for the applied velocity of 1 m/s. (air)