

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

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## Abstract

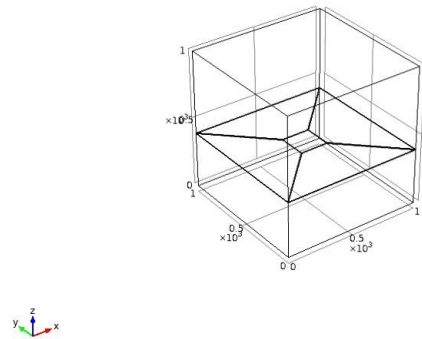
In this work, we present the performance analysis of novel micro machined Piezoresistive fluid flow pressure sensor using COMSOL Multiphysics. The principle of the sensing mechanism is based on the deflection of four sensing layers embedded on a thin membrane. The fluid passes through the layer causes 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

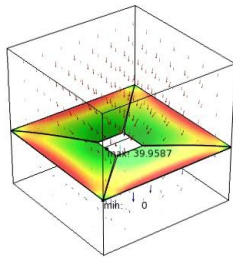
1) Dan Li et al., "A MONOLITHIC PIEZORESISTIVE PRESSURE – FLOW SENSOR WITH INTEGRATED SIGNAL - CONDITIONING CIRCUIT", IEEE SENSORS JOURNAL, VOL. 11, NO. 9, pg 2122 – 2128 (SEPTEMBER 2011).

## Figures used in the abstract

COMSOL  
MULTIPHYSICS



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



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