Abstract

The paper describes the performance analysis, structural design and fabrication of piezoresistive pressure sensor using simulation technique. A polysilicon double nano-wire piezoresistor was fabricated by means of RIE (reactive ion etching). The polysilicon double nanowire pressure sensor has 100x100nm2 cross section area and has a thickness about
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10nm. Finite element method (FEM) is adopted to optimize the sensor output and to improve the sensitivity of the polysilicon nano wire Piezoresistive pressure sensor. The double polysilicon nanowire is fabricated in such a way that it forms a bridge between the polysilicon diaphragm and the substrate. The proposed double nano wire polysilicon pressure sensor is compared with single nano wire polysilicon pressure sensor and bulk silicon pressure sensor. The fabricated polysilicon nanowire has high sensitivity of about 160 mV/V.KPa.

Reference


- R. He, P. Yang, “Giant Piezoresistance Effect in Silicon Nanowires”, Nature

Index Terms

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Key words
Piezoresistive pressure sensor, Nano wire, substrate