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Analysis of electrical responses of MEMS piezoresistive microcantilever

(Conference Paper)

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Abstract

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In this paper, an optimization of mechanical and electrical performance of single-layer silicon piezoresistive micro cantilever (PRM) sensor in which both piezoresistor and micro cantilever structures are made of the same material of single-crystalline silicon was discussed. Using Covent or Ware 2008, the mechanical and electrical behaviors of the PRM structure was investigated by studying few contributing factors that affect the performance of the device. The performance of PRM sensor was investigated by observing the effects of applied loads to the current change and sensitivity of the device. Apart from that, the effects of thermal noise to the device's performance were also investigated. From the simulation results, at applied loads between 1 to 10 μN, significant current increase of about 0.094% was observed. This current increase can be translated into an increase of sensitivity in the device. Simulation results also revealed that at temperature change between 290 K to 300 K, the PRM sensor shows insignificant change to sensitivity. © 2014 IEEE.

Author keywords

Coventor Ware 2008 MEMS microcantilever piezoresistor

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Engineering controlled terms: MEMS Nanocantilevers Silicon

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References (6)

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1 Harley, J.A., Kenny, T.W.
1/f noise considerations for the design and process optimization of piezoresistive cantilevers
(2000) *Journal of Microelectromechanical Systems*, 9 (2), pp. 226-235. Cited 173 times.
doi: 10.1109/84.846703
View at Publisher

2 Wang, Z., Yue, R., Zhang, R., Liu, L.
Design and optimization of laminated piezoresistive microcantilever sensors
(2005) *Sensors and Actuators, A: Physical*, 120 (2), pp. 325-336. Cited 23 times.
doi: 10.1016/j.sna.2004.12.006
View at Publisher

3 Yang, M., Zhang, X., Ozkan, C.S.
Modeling and optimal design of high-sensitivity piezoresistive microcantilevers within flow channels for biosensing applications
(2003) *Biomedical Microdevices*, 5 (4), pp. 323-332. Cited 7 times.
doi: 10.1023/A:1027361814435
View at Publisher

4 Yu, X., Zhang, H., Li, X., Li, T., Zhang, D.
Design and characterization of high-sensitivity cantilevers
(2005) *IEEE Sensors*, p. 4. Cited 2 times.

5 Rahim, R.A., Bais, B., Majlis, B.Y., Fareed, S.

Design optimization of MEMS dual-leg shaped piezoresistive microcantilever

(2013) *Proceedings - RSM 2013: 2013 IEEE Regional Symposium on Micro and Nano Electronics*, art. no. 6706555, pp. 379-382. Cited 3 times.
ISBN: 978-147991183-7
doi: 10.1109/RSM.2013.6706555

View at Publisher

6 Ansari, M.Z., Cho, C.

Thermal characteristics of microcantilever biosensors

(2011) *Communications in Computer and Information Science*, 127 CCIS, pp. 166-176. Cited 4 times.
ISBN: 978-364218471-0
doi: 10.1007/978-3-642-18472-7_13

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