Chapter Five Conclusion And Recommendations

5.1 Conclusion

The modeling was used to simulate the mechanical behavior of a MEMS cantilever which is used for the detecting of blood glucose concentration. ANSYS package was found to be a powerful tool for simulation analysis for the Piezoresistive Microcantilever .The deflection under surface pressure for different thicknesses of the Piezoresistive Microcantilever was obtained.

5.2 Recommendations

- 1. The results obtained by simulation need to be verified experimentally.
- 2. Also it is recommended to use another semi-conductor material to build the Piezoresistive Microcantilever for Glucose Sensing in order to obtain the most efficient Sensor.

References

- 1. Porter, T.L. & Eastman, M.P. 2001. Sensor based on piezoresistive microcantilever technology. Sensors and Actuators .
- Sepaniak, M., P.D. & Nickolay Lavrik. 2004. Cantilever transducers as a platform for chemical and biological sensors, Review of Scientific Instruments 75(7): 2229-2253.
- 3. Elena Gaura & Robert Newman , 2006 , SMART MEMS AND SENSOR SYSTEMS , London WC2H 9HE .
- Prime Faraday Technology Watch –2002 http://www.amazon.co.uk/exec/obidos/ASIN/1844020207
- 5. Vashist, S.K. 2007. A Review of Microcantilevers for Sensing Applications. Online Journal of Nanotechnology.
- 6. Venkata Chivukula 2006. Simulation of SiO2-based piezoresistive microcantilevers. Sensors and Actuators B 125(2): 526-533.
- Mohd Zahid Ansari, C.C. 2008. Design and Analysis of a high sensitive Microcantilever Biosensor for Biomedical Applications. Proceedings of International Conference on BioMedical Engineering and Informatics.
- Nina Korlina Madzhi, Anuar Ahmad & Lee Yoot Khuan. 2008. Design and Fabrication of Polysilicon-based Piezoresistive Microcantilever for Biological Sensing. International Conference on Nanoscience and Nanotechnology 1136: 801-806.
- Stephen Beeby , Graham Ensell ,Michael Kraft and Neil White 2004 MEMS mechanical sensors , British Library Cataloguing in Publication Data , London .
- 10.Arno Lenk . Ballas ,Roland Pfeifer Electromechanical Systems in Microtechnology and Mechatronics, 2011 , Springer Heidelberg Dordrecht London .
- 11.K. Hema. Assistant Professor, E.I, U.P.T.U, GNIOT, Mems Pressure Sensor in Automotive Industry Greater Noida-East Zone, India.
- 12.F.J. Canu, A. Diaz, S.O Martines, S.P Mora, H. Ceballos, D. R. Jimenez, 2005"A knowledge-based entrepreneurial approach for business intelligence in strategic technologies: Bio-MEMS"

Systems, Omaha, NE, USA.

- 13.C. C. Mohd Zahid Ansari, , presented at 2008 International Conference on BioMedical Engineering and Informatics.
- 14.Taylor & Francis Group, 2006 Microengineering, MEMS, and Interfacing A Practical Guide .
- 15.Pavel Ripka Alois Tipek 2007 Modern Sensors Handbook ,First published in Great Britain and the United States.
- 16.Liu, Chang . 2013"Piezoresistive Sensors". Foundations of MEMS . Upper Saddle River, NG: Prentice Hall. https://en.wikipedia.org/wiki/Piezoresistive_effect.
- 17.Jones, Deric P., 2010 Biomedical Sensors, 1st ed. New York: Momentum Press.
- 18.Nina Korlina Madzhi, Anuar Ahmad, 2012, Design Simulation and Analysis of Polysilicon -based CMOS Micromachined Piezoresistive Proceedings of the World Congress on Engineering.
- 19. Robert H. Bishop. p. cm , 2008 , Mechatronic Systems, Sensors, and Actuators.
- 20.Hsu & Tai-Ran 2008, MEMS and micro systems design Lectures, http://www-engr.sjsu.edu.
- 21.Nakasone, N, Stolarski, TA & Yoshimoto, S 2006, Engineering analysis with ANSYS Software, Elsevier, Oxford.