The current study is divided into micro sensor and actuator. The micro sensor is presented by the fabrication of a micro humidity sensor with suspending structures. The MEMS device is developed by utilizing thin-film platinum resistors as temperature sensing and humidity sensor elements. Polyimide is regarded as the component for detecting the humidity. A variation in humidity causes moisture-dependent bending of the microcantilever, which changes the measured resistance. The results of the humidity measurement are discussed with the characteristic of the simple structure and the material. This actuator presents a novel technique of the fabrication of electromagnetic micro actuator. The technology uses optical lithography, electron Beam Evaporation, electroplating forming microcoils. The structure of the actuating device uses the polymaterial (polyimide) to regard as the insulating layer. When an electrical AC current is applied to the electroplated copper coil, the PDMS membrane with a magnet is attracted and repelled. The controlled displacement is attained.

Keywords: Polyimide, Residual stress, Micro-cantilever beam, MEMS, Microcoil, Humidity sensor, PDMS.
結果與討論

6.2.1 磁場強度

6.2.2 磁場梯度

6.2.3 位移量測原理

6.2.4 不同尺寸線圈下的位移量

6.2.5 微型電磁式致動器運用於微幫浦原理

6.2.6 電磁式微幫浦之製作流程

6.2.7 電磁式微幫浦之性品質測

6.2.8 不同電流下的流率變化

第七章 結論

7.1 微型懸臂樑濕度感測器

7.2 電磁式致動器

參考文獻

REFERENCES


[3] 余錦漢, 以高分子聚合物技術進行溼度感測元件之研究, 中原大學電子工程學系, 碩士論文


[6] 王禹翔, 應用於高氣體流速微懸臂流量感測器, 大葉大學, 碩士論文