壓電厚膜微致動器之製作

謝仁豪、鄭江河

E-mail: 9126598@mail.dyu.edu.tw

摘 要

本篇論文將低溫燒結壓電粉末進行漿料調配，以刮刀成型法製作壓電厚膜生胚。將壓電厚膜生胚貼附在矽晶片上，並共燒900℃1 小時，製作致動器模組，藉由晶圓切割機切割陣列狀之壓電厚膜微致動器，以阻抗分析儀量測致動器之共振頻率，計算出壓電厚膜之楊氏係數，並藉由雷射位移計量測位移量，反算壓電係數 值。 經由文獻可發現壓電厚膜在高溫燒結時容易與矽晶片產生反應，而降低壓電特性。因此本文將燒結溫度降低使結構緻密，並且網版印刷障礙層，阻隔壓電厚膜之鉛含量擴散至矽晶片，使得壓電特性提高。本文將障礙層、底部電極、壓電厚膜、上部電極沉積於基板上，其基板為氧化鋁或矽晶片。

關鍵詞 : 壓電、低溫燒結、致動器、網版印刷、障礙層

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