

中文摘要

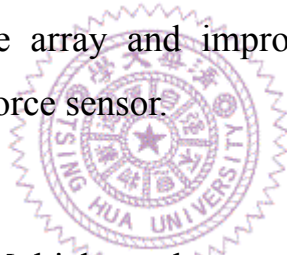
本研究主要探討微探針整合其他微機電元件之製作與其應用。文中發展兩種微探針之製作，包含整合導線且具有適當絕緣之微電極陣列，以及整合平板與彈簧之微力感測器元件結構，以闡述微機電製程製作微探針的多樣性。在整合導線方面，該元件可供感測生物電訊號之用，並有整合前級放大器，降低訊號傳遞路徑，以減少雜訊耦合，因此可提高感生物電訊號之解析度。另一方面，利用簡單的製程將探針整合於運動平板之上，免去需透過組裝整合之不便，且其扭轉剛體結構設計，除了可做微力感測器之載具外，亦可直接驅動之供微調控探針平台之用。上述兩個微探針整合型元件在製造上，都分別導入局部氧化的機制，除提供微電極陣列的電性上之絕緣外，亦保護了微力感測器之微探針的尖銳度。



關鍵字：微探針、微電極陣列、微力感測器

Abstract

The fabrications and applications of micro probes integrated with other MEMS components are investigated in this study. Two typical cases in microprobe, multielectrode array (MEA) and micro-force sensor, have been applied for illustrating the variety of fabricating MEMS micro-probes. The multielectrode array with signal lines can be utilized for sensing bio-information. For enhancing recording sensitivity, the potential of integrating the pre-amplifier enables to decrease the distance between interconnection passway. On the other hand, a simple fabrication process is achieved for the proposed micro-force sensor with movable plate and torsional spring. The proposed processes in these devices have their common characteristic in local oxidation for providing the electrical isolation in multielectrode array and improving the sharpness of the microprobe on the micro-force sensor.



Keywords: Micro-probe, Multielectrode array (MEA), Micro-force sensor