奈米微液滴產生器之壓電致動器模組研究

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摘 要

隨著近幾年來電子產業的蓬勃發展，液滴產生器不在只應用於噴墨印表機等傳統印刷上，更可應用於其他科技領域上，如應用於燃料上、液晶顯示器、光學通訊裝置和微機電元件製作上等新領域，目前最常見噴墨頭驅動方式為壓電式；本文利用雙面表面極化技術製作其壓電致動器，驅動時會以剪切變形模式推動結構振動薄膜以噴射出液滴。 利用ANSYS有限元素分析軟體來針對此整體壓電致動器模組做各種尺寸設計進行分析，目的為使具1μm直徑小孔之噴嘴能噴射出液滴，本論文以此為前提下進行壓電致動模組結構尺寸設計；壓電晶片以生胚製程製作，對其壓電特性進行量測，以不同電場和頻率驅動紀錄其位移變化數值，可獲得其壓電係數，並以各種波形對其驅動，觀察其位移、速度響應找出適當驅動波形；以剪切型致動模組應用於微液滴產生器，可於較小儲墨艙體下得到足夠致動能力，對其液滴噴射有更高的可能性。

關鍵詞 : 奈米微液滴 ; 壓電 ; 電鑄

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