壓電能量涉取系統的實驗評估

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摘 要

能量汲取即是將週遭的能量取得並將其轉換成可用的電 能。壓電材料為一機電偶合材料，可對其施加機械應變能量使其轉換成電能，反之對其施加電位能可使其轉換成機械應變能。而 利用壓電材料將週遭系統的振動能量轉換成電能即為壓電能量汲 取系統。 本論文的目的是為了瞭解壓電能量汲取系統的特性。基於上 述的目標，將研究的課題區分為以下部分：1. 壓電電能特性及特 性預測、2. 設計壓電能量汲取系統參數、3. 壓電能量汲取系統 結構設計以及4.以實驗量測的方法，觀察及探討當壓電能量汲取 系統的參數(1) 施力強度、(2)壓電元件黏貼位置、(3)壓電元件型 式(傳統壓電元件、整塊壓電材料與指叉式電極複合元件以及壓電 纖維複合材料)以及(4)施力模型(單一頻率簡諧力與隨機頻率力) 改變時，對其特性(轉換電壓、電流、功率)的影響。

關鍵詞 : 壓電能量汲取系統 ; 整塊壓電材料與指叉式電極複合元件 ; 壓電纖維複合材料

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