Erratum to: Enhancing power generation of piezoelectric bimorph device through geometrical optimization

Abstract

In this paper, it is demonstrated that the power output of a bimorph energy harvesting device can be significantly enhanced through geometrical optimization. The results of the study show that the maximum power is generated when the length of piezoelectric layer is 1/3 and the length of proof mass is 2/3 of the total device length. An optimized device with a total volume of approximately 0.5 cm3 was fabricated and was experimentally characterized. The experimental results show that the optimized device is capable of delivering a maximum power of 1.33 mW to a matched resistive load of 138.4 kΩ, when driven by a peak mechanical acceleration of 1 g at the resonance frequency of 68.47 Hz. This is a very significant power output representing a power density of 2.65 mW/cm3 compared to the value of 200 µW/cm3 normally reported in literature.