

# Supplementary Materials

## Dual-Structured Flexible Piezoelectric Film Energy Harvesters for Effectively Integrated Performance

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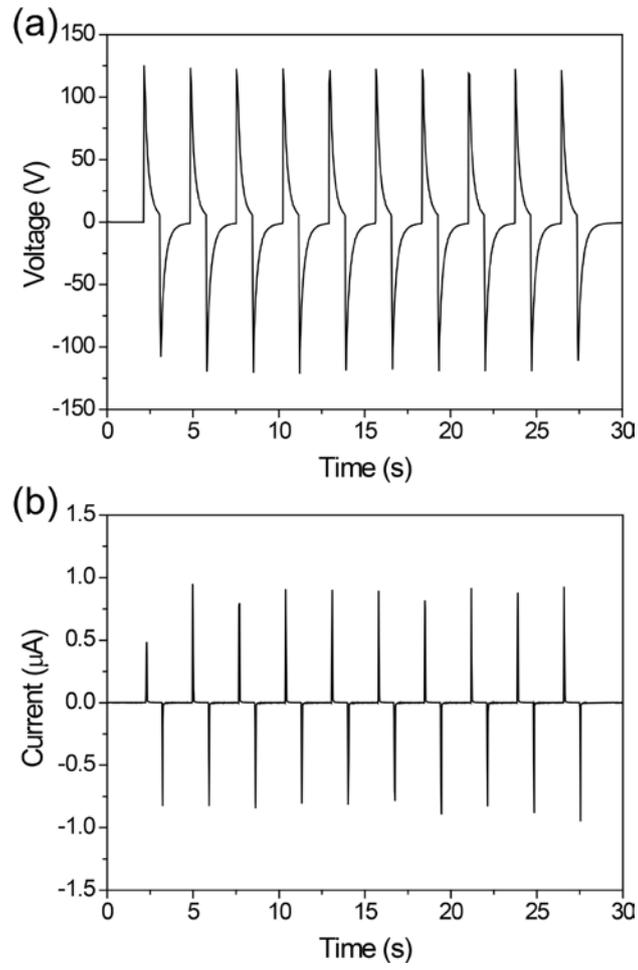
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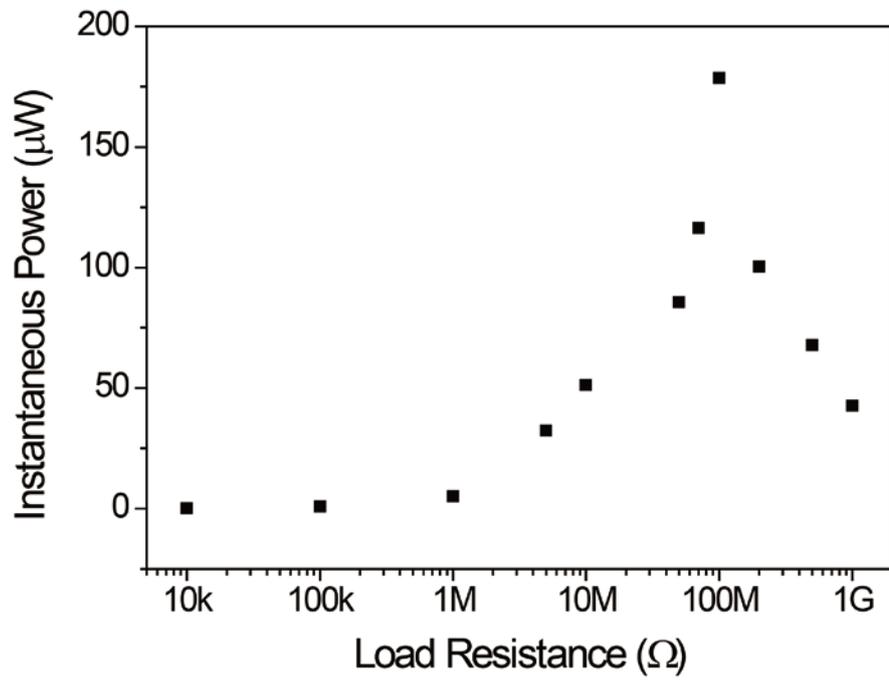
Bending ↓      ↑ Unbending



**Supplementary Figure S1.** Photographs of bending machine stage and clamped devices when the energy harvesting signals are measured.



**Supplementary Figure S2.** Generated (a) voltage and (b) current signals by a single-faced (uni-morph) energy harvesting device.



**Supplementary Figure S3.** Instantaneous power generated by the bimorph-integrated device according to external load resistance. The power is calculated by voltage divided by resistance square at the certain load resistance.

Type of Layers	Voltage	Current
1 <sup>st</sup> layer of stacked device	~9 V	~4 nA
2 <sup>nd</sup> layer of stacked device	~25 V	~50 nA
1 <sup>st</sup> layer of double-faced (bimorph) device	~140 V	~1.1 $\mu$ A
2 <sup>nd</sup> layer of double-faced (bimorph) device	~140 V	~1.3 $\mu$ A
Previous single-faced (uni-morph) device	~120 V	~0.8 $\mu$ A
Successful integration (bimorph)	~280 V	~2.2 $\mu$ A

**Supplementary Table S1.** Generated voltage and current signals by each PZT layer of the two different devices, uni-morph device, and the final successful integrated devices by the bimorph (double-faced) device. These values are maximum values of each unit.