

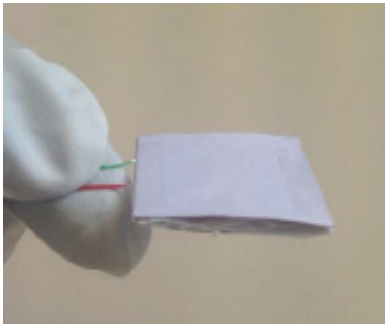
FLEXIBLE ELECTROSTATIC KINETIC ENERGY HARVESTER

Flexible device able to generate electric power from mechanical deformation

PRESENTATION

Our device converts mechanical energy into electricity, when repeatedly pressed and released by an external mechanical action. The device has a sandwich structure, with flexible or solid electrodes on the surface and with an organic electret material core (see picture). It can be embedded into an object, a cloth or be used as a “second skin”.

Electric charges trapped within the device induce an electric current through a charge when a mechanical deformation is applied. The device has no resonance frequency and thus works at any mechanical frequency. Besides, the organic material is designed in such a way so that electric charges remain stable over time, leading to long standing performances. With a finger tapping activation, the first 3cmx3cm prototype reaches a peak voltage of 27 V and a power of 45.6 μ W. Performances can be further largely enhanced by optimizing triboelectric effect, increasing the size of the device and/or by using it under different conditions (higher mechanical frequencies, more pressure).



*Prototype of electrostatic kinetic energy harvester
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Mechanical (kinetic) energy harvester - (Tribo)electret material -
Triboelectricity - Electrostatic transducer

COMPETITIVE ADVANTAGES

- Flexible or solid surface
- Works at any mechanical frequency
- Long standing electric charge storage

INTELLECTUAL PROPERTY

Pending patent

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APPLICATIONS

Powering/improving battery lifetime for :

- Embedded chips in smart clothes and shoes
- “Second skin” biomedical sensors
- Smart cards, semi-active RFID systems,
- Strain or pressure sensors (for car wheels for example)