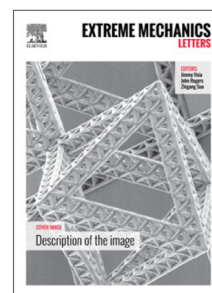


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Compressible Hexagonal-Structured Triboelectric Nanogenerators for Harvesting Tire Rotation Energy

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Abstract

Mechanical energy in a rolling tire is strong and stable, but it is always wasted and there is no effective means for harvesting. Herein, we demonstrate an array of compressible hexagonal-structured triboelectric nanogenerators (CH-TENGs) for harvesting the mechanical energy from a rolling tire. The CH-TENG units can be stacked in parallel connections and fixed in a rubber tire. The energy harvesting performances are systematically investigated and the maximum instantaneous power is 1.9 mW with the CH-TENG in 8 units, a weight load of 10 N and a speed of 2.51 m/s. The CH-TENGs have stable and durable characteristics for a 30-day continuous work and can drive a wireless tire pressure sensor once every 14 minutes when the moving speed is 2.51 m/s and weight load is 10 N. On the basis of the measured

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