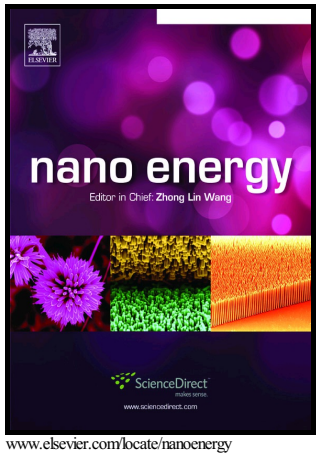

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Abstract:

Flexible nanogenerators with advantages of conformal structure and easy assembly have become an appealing research field for wearable electronics recently. Here, an all-in-one filler-elastomer-based high-performance stretchable piezoelectric nanogenerator (SPENG) is reported. By mechanically shearing and uniformly dispersing high weight compositions of PZT particles and Ag-coated glass microspheres fillers into the identical solid state silicone rubber matrixes, the piezoelectric layer and electrode layers are prepared, respectively, and the SPENG can be fabricated in an all-in-one structure with tight adhesion and reliable durability, which is very important to the tension sensing and energy harvesting for the limb motion with large strain and variable degree of freedom. The stretchable energy harvester exhibits excellent output performances (Voc≈20V, Isc≈0.55 μ A, 3.93μW/cm^3) and can respond to different external stimulations (such as stretched, clustered, folded, twisted, etc.). The SPENG can be not only mounted on a joint to efficiently capture and convert random body kinetic energy into electricity