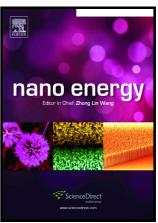
Author's Accepted Manuscript

All-in-One Filler-Elastomer-Based High-Performance Stretchable Piezoelectric Nanogenerator for Kinetic Energy Harvesting and Self-Powered Motion Monitoring

Xiujian Chou, Jie Zhu, Shuo Qian, Xushi Nu, Jichao Qian, Xiaojuan Hou, Jiliang Mu, Wenping Geng, Jundong Cho, Jian He, Chenyang Xue



www.elsevier.com/locate/nanoenergy

PII: S2211-2855(18)30643-8

DOI: https://doi.org/10.1016/j.nanoen.2018.09.006

Reference: NANOEN3011

To appear in: Nano Energy

Received date: 5 June 2018 Revised date: 29 August 2018 Accepted date: 2 September 2018

Cite this article as: Xiujian Chou, Jie Zhu, Shuo Qian, Xushi Nu, Jichao Qian, Xiaojuan Hou, Jiliang Mu, Wenping Geng, Jundong Cho, Jian He and Chenyang Xue, All-in-One Filler-Elastomer-Based High-Performance Stretchable Piezoelectric Nanogenerator for Kinetic Energy Harvesting and Self-Powered Motion Monitoring, *Nano Energy*, https://doi.org/10.1016/j.nanoen.2018.09.006

This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting galley proof before it is published in its final citable form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.

ACCEPTED MANUSCRIPT

All-in-One Filler-Elastomer-Based High-Performance Stretchable Piezoelectric Nanogenerator for Kinetic Energy Harvesting and Self-Powered Motion Monitoring

Xiujian Chou, Jie Zhu, Shuo Qian, Xushi Nu, Jichao Qian, Xiaojuan Hou, Jiliang Mu, Wenping Geng, Jundong Cho, Jian He*, Chenyang Xue*

Science and Technology on Electronic Test and Measurement Laboratory, North University of Muschip China, Taiyuan 030051, China

drhejian@nuc.edu.cn

xuechenyang@nuc.edu.cn

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-elastomerbased 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, 3.93 µW/cm³) 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

Download English Version:

https://daneshyari.com/en/article/10135926

Download Persian Version:

https://daneshyari.com/article/10135926

<u>Daneshyari.com</u>