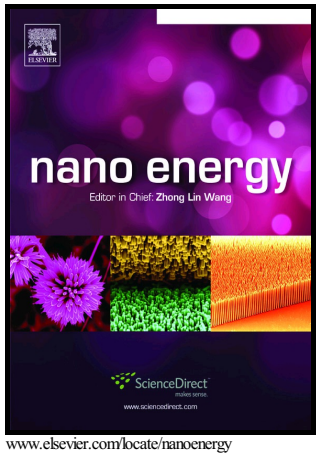

www.elsevier.com/locate/nanoenergy

High-Performance Flexible Triboelectric Nanogenerator Based on Porous Aerogels and Electrospun Nanofibers for Energy Harvesting and Sensitive Self-Powered Sensing

Hao-Yang Mi, Xin Jing, Qifeng Zheng, Liming Fang, Han-Xiong Huang, Lih-Sheng Turng, Shaoqin Gong

PII: S2211-2855(18)30191-5
DOI: https://doi.org/10.1016/j.nanoen.2018.03.050
Reference: NANOEN2598

To appear in: *Nano Energy*

Received date: 8 February 2018
Revised date: 19 March 2018
Accepted date: 20 March 2018

Cite this article as: Hao-Yang Mi, Xin Jing, Qifeng Zheng, Liming Fang, Han-Xiong Huang, Lih-Sheng Turng and Shaoqin Gong, High-Performance Flexible Triboelectric Nanogenerator Based on Porous Aerogels and Electrospun Nanofibers for Energy Harvesting and Sensitive Self-Powered Sensing, *Nano Energy,* https://doi.org/10.1016/j.nanoen.2018.03.050

High-Performance Flexible Triboelectric Nanogenerator Based on Porous Aerogels and Electrospun Nanofibers for Energy Harvesting and Sensitive Self-Powered Sensing

Hao-Yang Mi[a,b,d], Xin Jing[a,b,d], Qifeng Zheng[b,c], Liming Fang[e], Han-Xiong Huang[a], Lih-Sheng Turng[b,d*], Shaoqin Gong[b,c*]

[a]Department of Industrial Equipment and Control Engineering, South China University of Technology, Guangzhou, 510640, China

[b] Wisconsin Institute for Discovery, University of Wisconsin–Madison, Madison, WI 53715, USA

[c] Department of Biomedical Engineering, University of Wisconsin–Madison, Madison, WI 53706, USA

[d] Department of Mechanical Engineering, University of Wisconsin–Madison, Madison, WI 53706, USA

[e] School of Materials Science and Engineering, South China University of Technology, Guangzhou 510641, China

turng@engr.wisc.edu

shaoqingong@wisc.edu

***Corresponding authors:**

Abstract

Finding new means to enhance the performance of triboelectric nanogenerators (TENGs) is an ongoing pursuit. We report a novel flexible TENG made of highly porous cellulose nanofibril (CNF)/polyethylenimine (PEI) aerogel film paired with polyvinylidene fluoride (PVDF) nanofiber mats that exhibits outstanding triboelectric outputs. Modifying CNF with PEI not only enhances the mechanical properties of the CNF/PEI aerogel, but also greatly improves the power density by 14.4 times due to the enhanced tribopositivity. The