

## Author's Accepted Manuscript

Transparent triboelectric generators based on glass and polydimethylsiloxane

Jinkai Chen, Hongwei Guo, Peng Ding, Ruizheng Pan, Wenbo Wang, Weipeng Xuan, Xiaozhi Wang, Hao Jin, Shurong Dong, Jikui Luo



PII: S2211-2855(16)30423-2  
DOI: <http://dx.doi.org/10.1016/j.nanoen.2016.10.005>  
Reference: NANOEN1530

To appear in: *Nano Energy*

Received date: 18 July 2016  
Revised date: 4 October 2016  
Accepted date: 5 October 2016

Cite this article as: Jinkai Chen, Hongwei Guo, Peng Ding, Ruizheng Pan, Wenbo Wang, Weipeng Xuan, Xiaozhi Wang, Hao Jin, Shurong Dong and Jikui Luo, Transparent triboelectric generators based on glass and polydimethylsiloxane, *Nano Energy*, <http://dx.doi.org/10.1016/j.nanoen.2016.10.005>

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.

# Transparent triboelectric generators based on glass and polydimethylsiloxane

Jinkai Chen<sup>a</sup>, Hongwei Guo<sup>a</sup>, Peng Ding<sup>a</sup>, Ruizheng Pan<sup>a</sup>, Wenbo Wang<sup>a</sup>, Weipeng Xuan<sup>a</sup>, Xiaozhi Wang<sup>a\*</sup>, Hao Jin<sup>a</sup>, Shurong Dong<sup>a</sup>, Jikui Luo<sup>a,b\*</sup>

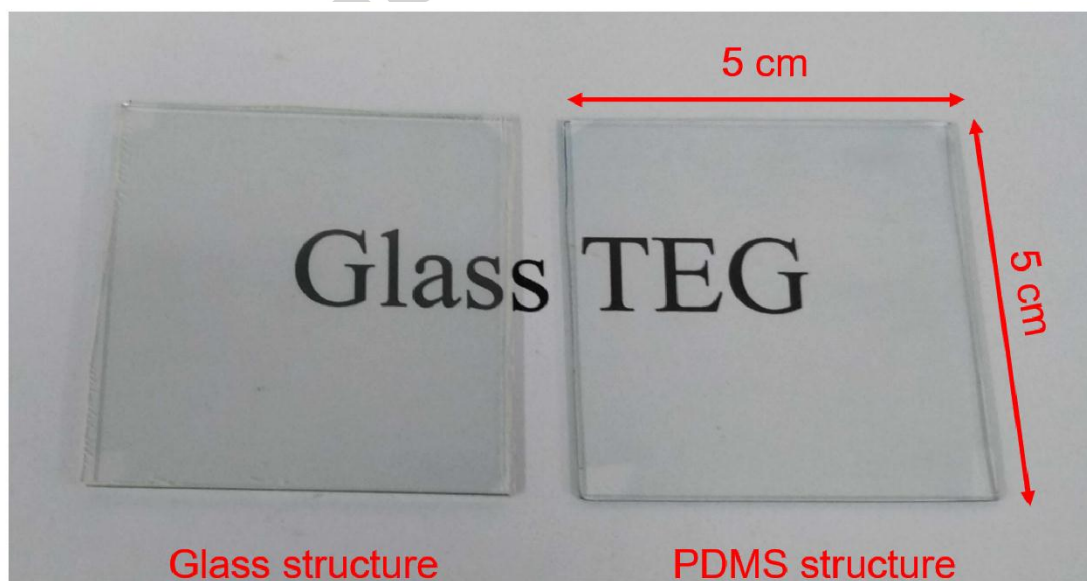
<sup>a</sup>Coll. of Info. Sci. & Electron. Eng., Zhejiang University, 38 Zheda Road, Hangzhou 310027, China.

<sup>b</sup>Inst. of Renew. Energy & Environ. Technol., Bolton University, Deane Road, Bolton BL3 5AB, UK

## Abstract

Glasses are widely used in modern society, mostly for achieving brightness for buildings, transportations etc. Here a transparent triboelectric generator (TEG) based on commercially available glasses and PDMS plates is proposed and fabricated to harvest mechanical energy. Using flat glass and PDMS plates, an open voltage up to 850 V, 20.6  $\mu$ A short circuit current and 3.13 mW power are achieved for devices with 5 cm  $\times$  5 cm dimension, whereas the transparency of glass and PDMS structures exceeds 81% and 89%, respectively. The TEGs show excellent mechanical stability and reliability upon cyclical contact for 10,000 times. The voltage and power outputs of the glass based TEGs improve with increasing contact force, frequency and distance, and with decreasing glass thickness and humidity level. Our results demonstrate the feasibility to utilize abundant glass windows to fabricate transparent TEGs for energy harvesting, which could make a great contribution to the sustainable development.

Graphical abstract



Download English Version:

<https://daneshyari.com/en/article/5452231>

Download Persian Version:

<https://daneshyari.com/article/5452231>

[Daneshyari.com](https://daneshyari.com)