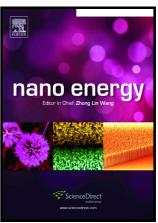
Author's Accepted Manuscript

Triboelectrification-Enabled Thin-Film Tactile Matrix for Self-Powered High-Resolution Imaging

Xiao Xiao Zhu, Ze Bin Li, Xiao Shi Li, Li Su, Xiao Yan Wei, Shuang Yang Kuang, Bing Wu Su, Jin Yang, Zhong Lin Wang, Guang Zhu



www.elsevier.com/locate/nanoenergy

PII: S2211-2855(18)30376-8

DOI: https://doi.org/10.1016/j.nanoen.2018.05.061

Reference: NANOEN2769

To appear in: Nano Energy

Received date: 15 April 2018 Revised date: 15 May 2018 Accepted date: 23 May 2018

Cite this article as: Xiao Xiao Zhu, Ze Bin Li, Xiao Shi Li, Li Su, Xiao Yan Wei, Shuang Yang Kuang, Bing Wu Su, Jin Yang, Zhong Lin Wang and Guang Zhu, Triboelectrification-Enabled Thin-Film Tactile Matrix for Self-Powered High-Resolution Imaging, *Nano Energy*, https://doi.org/10.1016/j.nanoen.2018.05.061

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

Triboelectrification-Enabled Thin-Film Tactile Matrix for Self-Powered High-Resolution Imaging

Xiao Xiao Zhu^{a,c}, Ze Bin Li^{a,c}, Xiao Shi Li^g, Li Su^{a,c}, Xiao Yan Wei^{a,c}, Shuang Yang Kuang^{a,c}, Bing Wu Su^{a,c}, Jin Yang^g, Zhong Lin Wang^{a,c,e,f*}, Guang Zhu^{a,b,c,d,e*}

^aCAS Center for Excellence in Nanoscience, Beijing Key Laboratory of Micro-Nano Energy and Sensor, Beijing Institute of Nanoenergy and Nanosysterms, Chinese Academy of Sciences, Beijing 100083, China

^bDepartment of Mechanical, Materials and Manufacturing Engineering, The University of Nottingham Ningbo China, Ningbo 315100, China

^cSchool of Nanoscience and Technology, University of Chinese Academy of Sciences, Beijing 100049, China

^dNew Materials Institute, The University of Nottingham Ningbo China, Ningbo 315100, China

^eCenter on Nanoenergy Research, School of Physical Science and Technology, Guangxi University, Nanning 530004, China

^fSchool of Materials Science and Engineering, Georgia Institute of Technology, Atlanta, GA 30332, USA

^gDepartment of Optoelectronic Engineering, Chongqing University, Chongqing 400044, China

zlwang@binn.cas.cn

zhuguang@binn.cas.cn.

*Corresponding authors at: Beijing Institute of Nanoenergy and Nanosystems, Chinese Academy of Sciences, Beijing 100083, China.

Abstract

Tactile sensors have broad applications in human-machine interfacing technologies. In this work, we report a type of a thin-film-based flexible integrated triboelectric sensing matrix (ITESM) that is of high resolution and large area. It has a total of 3,600 sensing units and a resolution of 50 dots per inch (dpi), which are 14 times and 25 times of the state-of-the-art works on the triboelectric sensor array, respectively. When touched by an external object, the ITESM generates a voltage signal in its bit electrode lines and word electrode lines due to the combination of triboelectrification and electrostatic induction. With the assistance of a signal processing circuit that

Download English Version:

https://daneshyari.com/en/article/7952553

Download Persian Version:

https://daneshyari.com/article/7952553

<u>Daneshyari.com</u>