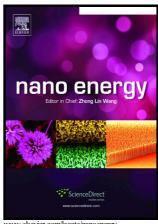
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www.elsevier.com/locate/nanoenergy

PII: S2211-2855(18)30436-1

https://doi.org/10.1016/j.nanoen.2018.06.041 DOI:

Reference: NANOEN2822

To appear in: Nano Energy

Received date: 18 May 2018 Revised date: 11 June 2018 Accepted date: 12 June 2018

Cite this article as: Si Wang, Guangzhong Xie, Huiling Tai, Yuanjie Su, Boxi Yang, Qiuping Zhang, Xiaosong Du and Yadong Jiang, Ultrasensitive Flexible Self-Powered Ammonia Sensor based on Triboelectric Nanogenerator at room temperature, Nano Energy, https://doi.org/10.1016/j.nanoen.2018.06.041

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#### **ACCEPTED MANUSCRIPT**

# Ultrasensitive Flexible Self-Powered Ammonia Sensor based on Triboelectric Nanogenerator at room temperature

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#### **Abstract**

An ultrasensitive self-powered ammonia (NH<sub>3</sub>) sensing system based on a vertical contact-separate mode triboelectric nanogenerator (TENG) has been proposed for room temperature detection of NH<sub>3</sub> concentrations both in the ambient environment and in human exhaled gases. Owing to the special output characteristics of the TENG adjusted by the load resistance of the NH<sub>3</sub> sensor, output voltage of the fabricated gas sensor has a proportional relationship with NH<sub>3</sub> concentration, which is the fundamental working mechanism of the self-powered gas-sensing system. The triboelectric ammonia sensor (TEAS) based on PANI-MWCNTs composite thin film possesses a NH<sub>3</sub>-sensing response of 10% at 0.01 ppm NH<sub>3</sub> and exhibits a great response of 255% at 100 ppm NH<sub>3</sub>. Meanwhile, the TEAS also holds fast

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