### Accepted Manuscript

Title: Effective hydrogen gas sensor based on NiO@rGO nanocomposite

Authors: Haibo Ren, Cuiping Gu, Sang Woo Joo, Jingjuan Zhao, Yufeng Sun, Jiarui Huang

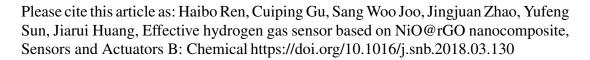
PII: S0925-4005(18)30629-4

DOI: https://doi.org/10.1016/j.snb.2018.03.130

Reference: SNB 24415

To appear in: Sensors and Actuators B

Received date: 30-9-2017 Revised date: 17-3-2018 Accepted date: 22-3-2018



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 proof before it is published in its final 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

#### Effective hydrogen gas sensor based on NiO@rGO nanocomposite

Haibo Ren<sup>1,2,†</sup>, Cuiping Gu<sup>1,†</sup>, Sang Woo Joo<sup>2,\*</sup>, Jingjuan Zhao<sup>1</sup>, Yufeng Sun<sup>3,\*</sup> and Jiarui Huang<sup>1,\*</sup>

<sup>1</sup> Key Laboratory of Functional Molecular Solids, Ministry of Education, Center for Nano Science and Technology, College of Chemistry and Materials Science, Anhui Normal University, Wuhu 241002, P. R. China.

\* Corresponding authors. E-mail: jrhuang@mail.ahnu.edu.cn (J.R. Huang); swjoo@yu.ac.kr (S.W. Joo), sunyufeng118@126.com (Y.F. Sun). † Equal contribution as the first author.

#### **Highlights**

- NiO@rGO nanocomposite consisting of NiO NPs uniformly anchored on rGO is developed.
- The preparation method involves freeze-drying followed by heat treatment.
- NiO@rGO sensor shows high response and selectivity to H<sub>2</sub> at low working temperature.
- High performance is ascribed to the electron transfer between NiO NPs and rGO.

**Abstract:** A NiO@rGO nanocomposite is prepared by a freeze-drying method combined with heat treatment. The morphology and structure are analyzed through X-ray diffraction, scanning electron microscopy, transmission electron microscopy, Raman spectra, and X-ray photoelectron spectroscopy. The results clearly show that NiO nanoparticles are uniformly anchored on the

1

<sup>&</sup>lt;sup>2</sup> School of Mechanical Engineering, Yeungnam University, Gyeongsan 38541, R. Korea.

<sup>&</sup>lt;sup>3</sup> School of Mechanical and Automotive Engineering, Anhui Polytechnic University Wuhu, 241000, P.R. China

#### Download English Version:

# https://daneshyari.com/en/article/7139918

Download Persian Version:

https://daneshyari.com/article/7139918

<u>Daneshyari.com</u>