

Accepted Manuscript

Title: Capacitive and resistive response of humidity sensors based on graphene decorated by PMMA and silver nanoparticles

Authors: Ishrat Rahim, Mutabar Shah, Afzal Khan, Jingting Luo, Aihua Zhong, Min Li, Rashid Ahmed, Honglang Li, Qiuping Wei, Yongqing Fu



PII: S0925-4005(18)30559-8
DOI: <https://doi.org/10.1016/j.snb.2018.03.069>
Reference: SNB 24354

To appear in: *Sensors and Actuators B*

Received date: 9-10-2017
Revised date: 13-3-2018
Accepted date: 13-3-2018

Please cite this article as: Ishrat Rahim, Mutabar Shah, Afzal Khan, Jingting Luo, Aihua Zhong, Min Li, Rashid Ahmed, Honglang Li, Qiuping Wei, Yongqing Fu, Capacitive and resistive response of humidity sensors based on graphene decorated by PMMA and silver nanoparticles, *Sensors and Actuators B: Chemical* <https://doi.org/10.1016/j.snb.2018.03.069>

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.

Capacitive and resistive response of humidity sensors based on graphene decorated by PMMA and silver nanoparticles

Ishrat Rahim¹, Mutabar Shah¹, Afzal khan¹, Jingting Luo^{2,*}, Aihua Zhong², Min Li², Rashid Ahmed^{3,**}, Honglang Li⁴, Qiuping Wei⁵, Yongqing Fu⁶

¹Department of Physics, University of Peshawar, 25000 Peshawar Pakistan

²Shenzhen Key Laboratory of Advanced Thin Films and Applications, College of Physics and Energy, Shenzhen University, 518060 Shenzhen, China

³Department of Physics, Faculty of Science, Universiti Teknologi Malaysia, UTM Skudai, 81310 Johor, Malaysia

⁴Institute of Acoustics, Chinese Academy of Sciences, 100190, Beijing, China

⁵School of Materials Science and Engineering, State Key Laboratory of Powder Metallurgy, Central South University, Changsha 410083, China

⁶Faculty of Engineering and Environment, Northumbria University, Newcastle upon Tyne, NE1 8ST, UK

Corresponding authors: *luojt@szu.edu.cn (Jingting Luo)

**rashidahmed@utm.my (Rashid Ahmed)

*Corresponding author. *E-mail:* luojt@szu.edu.cn (Jingting Luo)

Highlights

- Graphene based efficient thin film humidity sensor was fabricated using the simple drop casting technique.
- Graphene is a zero-band gap material but the band gaps obtained for Gr-AgNps and Gr-AgNps-PMMA thin film were 4.7 and 4.1 eV respectively.
- Increase in capacitance and a gradual decrease in resistance was observed for the sensors with the subsequent increase in the relative humidity
- The devices showed an excellent stability and response by recording their resistance and capacitance respectively

Download English Version:

<https://daneshyari.com/en/article/7139416>

Download Persian Version:

<https://daneshyari.com/article/7139416>

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