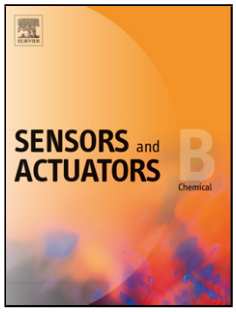


Title: Visible light-assisted room temperature gas sensing with ZnO-Ag heterostructure nanoparticles

Authors: Qiuping Zhang, Guangzhong Xie, Ming Xu, Yuanjie Su, Huiling Tai, Hongfei Du, Yadong Jiang

PII: S0925-4005(17)32378-X
DOI: https://doi.org/10.1016/j.snb.2017.12.052
Reference: SNB 23740

To appear in: *Sensors and Actuators B*

Received date: 17-8-2017
Revised date: 8-12-2017
Accepted date: 11-12-2017

Please cite this article as: Qiuping Zhang, Guangzhong Xie, Ming Xu, Yuanjie Su, Huiling Tai, Hongfei Du, Yadong Jiang, Visible light-assisted room temperature gas sensing with ZnO-Ag heterostructure nanoparticles, Sensors and Actuators B: Chemical https://doi.org/10.1016/j.snb.2017.12.052

# Visible light-assisted room temperature gas sensing with ZnO-Ag heterostructure nanoparticles

Qiuping Zhang[a], Guangzhong Xie[a], Ming Xu[b], Yuanjie Su[a,*], Huiling Tai[a,*], Hongfei Du[a], Yadong Jiang[a]

[a] *State Key Laboratory of Electronic Thin Films and Integrated Devices, School of Optoelectronic Information, University of Electronic Science and Technology of China (UESTC), Chengdu 610054, China*
[b] *Key Laboratory of Information Materials of Sichuan Province, School of Electrical and Information Engineering, Southwest University for Nationalities, Chengdu 610041, China*

* Corresponding authors.
*E-mail addresses*: yjsu@uestc.edu.cn (Y. Su), taitai1980@uestc.edu.cn (H. Tai).

A gas sensor based on ZnO-Ag nanoparticles is successfully developed for visible light-assisted gas detection. Because a heterojunction forms between the two materials and surface oxygen vacancies increase, the sensor exhibits excellent sensing performances toward $NO_2$ gas at room temperature under light illumination. The optimal sensitivity can be obtained by tuning the working wavelength using different LED light sources.

ZnO-Ag nanoparticles, heterostructure, oxygen vacancy, $NO_2$ gas sensing, grain-boundary barrier