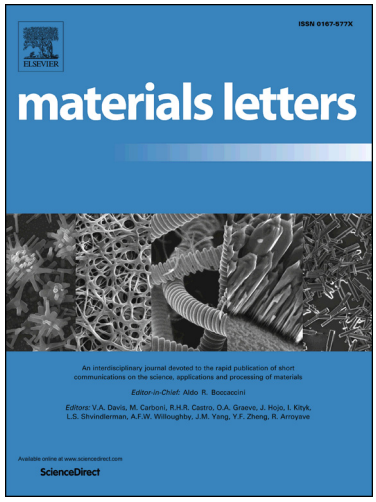

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PII: S0167-577X(18)30954-6
DOI: https://doi.org/10.1016/j.matlet.2018.06.049
Reference: MLBLUE 24489

To appear in: *Materials Letters*

Received Date: 7 May 2018
Revised Date: 13 June 2018
Accepted Date: 13 June 2018

Please cite this article as: L. Zhu, W. Zeng, Y. Li, New insight into gas sensing property of ZnO nanorods and nanosheets, *Materials Letters* (2018), doi: https://doi.org/10.1016/j.matlet.2018.06.049

New insight into gas sensing property of ZnO nanorods and nanosheets

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Abstract

ZnO nanorods and nanosheets were synthesized via a facile hydrothermal route, and their gas sensing properties were tested to figure out the effect of surface morphologies on gas sensing performance. It was surprisely found that the ZnO nanorods exhibit quicker response and recovery speed towards ethanol, which may be ascribed to the better conductivity and lower potential barrier, whereas the nanosheets display larger ethanol gas response owing to its higher specific surface area.

Keywords: Semiconductors; hydrothermal; sensors; functional

1. Introduction

Zinc oxide (ZnO), a promising wide band gap (3.37 eV, at 300 K) n-type semiconductor with distinct electrical, catalytic and optical property [1, 2], plays a vital role in diverse fields, to name a few, gas sensor [3, 4], solar cell [5], varistor [6], photocatalysis [7, 8], and etc. Recently, in order to achieve effective monitor of certain gases, researchers have devoted much efforts to developing ZnO nanostructures based gas sensors. So far, various morphological ZnO nanostrcutrures such as

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