

Accepted Manuscript

Title: Growth of TiO₂ nanostructures exposed {001} and {110} facets on SiC ultrafine fibers for enhanced gas sensing performance

Authors: Bing Wang, Lei Deng, Lian Sun, Yongpeng Lei, Nan Wu, Yingde Wang



PII: S0925-4005(18)31518-1
DOI: <https://doi.org/10.1016/j.snb.2018.08.080>
Reference: SNB 25227

To appear in: *Sensors and Actuators B*

Received date: 23-3-2018
Revised date: 14-8-2018
Accepted date: 16-8-2018

Please cite this article as: Wang B, Deng L, Sun L, Lei Y, Wu N, Wang Y, Growth of TiO₂ nanostructures exposed {001} and {110} facets on SiC ultrafine fibers for enhanced gas sensing performance, *Sensors and Actuators: B. Chemical* (2018), <https://doi.org/10.1016/j.snb.2018.08.080>

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.

Growth of TiO₂ nanostructures exposed {001} and {110} facets on SiC ultrafine fibers for enhanced gas sensing performance

Bing Wang^{a,*}, Lei Deng^b, Lian Sun^a, Yongpeng Lei^c, Nan Wu^a, Yingde Wang^{a,*}

^aScience and Technology on Advanced Ceramic Fibers and Composites Laboratory,
College of Aerospace Science and Engineering, National University of Defense
Technology, Changsha 410073, P. R. China

^b Department of Materials Science and Engineering, College of Aerospace Science
and Engineering, National University of Defense Technology, Changsha 410073, P.
R. China

^c College of Basic Education, National University of Defense Technology, Changsha
410073, P. R. China

Highlights

1. TiO₂ nanostructures exposed {001} and {110} facets were controllably grown on the macro-meso-microporous SiC ultrathin fibers (MMM-SFs).
2. TiO₂ nanosheets exposed {001} facet (TNS001) show higher response than TiO₂ nanorods exposed {110} facet (TNR110) toward acetone.
3. The hierarchical TNS001@MMM-SFs sensor presents a high response (19.2), excellent reproducibility, outstanding selectivity and ultrafast response speed (1 s) to acetone.
4. The superior sensing performance is mainly attributed to the exposing of high-energy {001}

Download English Version:

<https://daneshyari.com/en/article/8947630>

Download Persian Version:

<https://daneshyari.com/article/8947630>

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