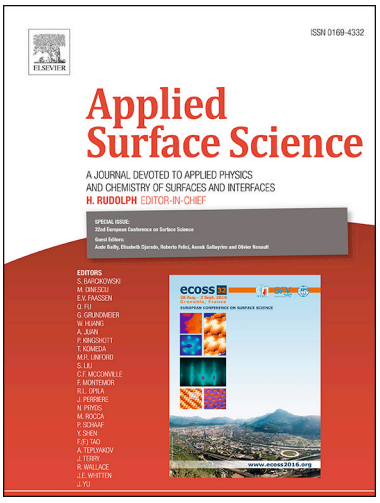
Accepted Manuscript



Full Length Article

SnO_2/Graphene Quantum Dots Composited Photocatalyst for Efficient Nitric Oxide Oxidation under Visible Light

Yang Xie, Shan Yu, Yunqian Zhong, Qian Zhang, Ying Zhou

PII: S0169-4332(18)31105-X
DOI: https://doi.org/10.1016/j.apsusc.2018.04.145
Reference: APSUSC 39144

To appear in: *Applied Surface Science*

Received Date: 4 February 2018
Revised Date: 4 April 2018
Accepted Date: 15 April 2018

Please cite this article as: Y. Xie, S. Yu, Y. Zhong, Q. Zhang, Y. Zhou, SnO_2/Graphene Quantum Dots Composited Photocatalyst for Efficient Nitric Oxide Oxidation under Visible Light, *Applied Surface Science* (2018), doi: https://doi.org/10.1016/j.apsusc.2018.04.145

SnO_2/Graphene Quantum Dots Composited Photocatalyst for Efficient Nitric Oxide Oxidation under Visible Light

Yang Xie[a, †], Shan Yu[a, †], Yunqian Zhong[a], Qian Zhang[a], Ying Zhou[a, b]*

[a] The Center of New Energy Materials and Technology, School of Materials Science and Engineering, Southwest Petroleum University, Chengdu 610500, China

[b] State Key Laboratory of Oil and Gas Reservoir Geology and Exploitation, Southwest Petroleum University, Chengdu 610500, China

*E-mail: yzhou@swpu.edu.cn
Tel: +86-28-83037411;
Fax: +86-28-83037406;

[†]Y. Xie and S. Yu contributed equally in this paper.

ABSTRACT: In the present work, we have prepared tin oxide (SnO_2)/graphene quantum dots (GQDs) composites and applied them for photocatalytic removal of nitric oxide (NO). In contrast to SnO_2 alone, SnO_2/GQDs composite has exhibited a remarkably enhanced activity under both full spectrum and visible light illumination. The crystal structure, morphology and surface state of the composite was further studied by X-ray diffraction, transmission electron microscopy, Fourier-transformed infra-red spectroscopy and X-ray photoelectron spectroscopy. Moreover, diffraction and reflectance spectra and photoluminescence spectra together with the photoelectrochemical tests show that the presence of GQDs in the composite could promote the visible light response as well as charge separation efficiency of the system. This makes SnO_2/GQDs composite generate more active species ($\bullet O_2^-$ and