Desalination and Water Treatment
www.deswater.com
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doi: 10/5004/dwt.2012.2825

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42 (2012) 216–221
April

Microwave-assisted synthesis of ZnO for photocatalytic reduction of Cr(VI) in aqueous solution

Xinjuan Liu[a], Tian Lv[a], Likun Pan[a,*], Zhuo Sun[a], Chang Qing Sun[b]

[a]*Engineering Research Center for Nanophotonics & Advanced Instrument, Ministry of Education, Department of Physics, East China Normal University, Shanghai, 200062 China*
Tel. +86 21 62234132; Fax: +86 21 62234321; email: lkpan@phy.ecnu.edu.cn
[b]*School of Electrical and Electronic Engineering, Nanyang Technological University, Singapore 639798, Singapore*

Received 2 June 2011; Accepted 20 December 2011

ABSTRACT

ZnO sheets have been synthesized via microwave-assisted reaction of ZnO precursor in aqueous solution using a CEM microwave system. Their morphologies, crystal structures and photocatalytic performances in the reduction of Cr(VI) were characterized using scanning electron microscopy, transmission electron microscopy, X-ray diffraction spectroscopy and UV-vis absorption spectrophotometer, respectively. Results show that ZnO sheets synthesized in 5 min time scale exhibits a optimal photocatalytic performance in the reduction of Cr(VI) with removal efficiency of 81% under UV irradiation due to the maximal intensity of light absorption and the minimal probability of electron-hole pair recombination.

Keywords: Microwave-assisted synthesis; ZnO; Sheet; Photocatalysis; Cr(VI); UV light

*Corresponding author.

2011 Qingdao International Desalination Conference Symposium on Desalination and Water Treatment Global Platform for Water Solutions, June 20–23, 2011 Qingdao, China