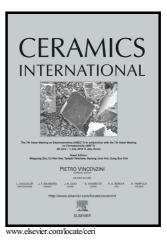
Author's Accepted Manuscript

Rare-earth-doped tungsten oxide microspheres with highly enhanced photocatalytical activites

Le Xu, Danxia Gu, Xueting Chang, Linge Chai, Zhao Li, Xiaokun Jin, Shibin Sun



 PII:
 S0272-8842(17)30856-8

 DOI:
 http://dx.doi.org/10.1016/j.ceramint.2017.05.055

 Reference:
 CERI15215

To appear in: Ceramics International

Received date: 17 April 2017 Revised date: 7 May 2017 Accepted date: 8 May 2017

Cite this article as: Le Xu, Danxia Gu, Xueting Chang, Linge Chai, Zhao Li Xiaokun Jin and Shibin Sun, Rare-earth-doped tungsten oxide microspheres wit highly enhanced photocatalytical activites, *Ceramics International* http://dx.doi.org/10.1016/j.ceramint.2017.05.055

This is a PDF file of an unedited manuscript that has been accepted fo publication. As a service to our customers we are providing this early version o the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting galley proof before it is published in its final citable 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

ACCEPTED MANUSCRIPT

Rare-earth-doped tungsten oxide microspheres with highly enhanced photocatalytical activites

Le Xu¹, Danxia Gu², Xueting Chang², Linge Chai¹, Zhao Li¹, Xiaokun Jin¹, Shibin Sun^{2*}

¹Central Iron and Steel Research Institute, Beijing 100081, People's Republic of China ²Institute of Marine Materials Science and Engineering, Shanghai Maritime University, Shanghai 200135, People's Republic of China

*Corresponding author. Tel/fax: +86 21 38282611. sunshibin@shmtu.edu.cn

Abstract

Rare-earth-doped WO_{2.72} microspheres (RE-WO_{2.72} MSs) have been successfully synthesized by using a facile solvothermal route with tungsten salt as precursor, RE (RE=Ce, La, and Y) metal salts as dopants, and ethanol as solvent. Results of X-ray diffraction (XRD), X-ray photoelectron spectrometry (XPS), and energy dispersive spectroscopy (EDS) showed that the solvothermal process allowed for the homogeneous doping of WO_{2.72} while maintaining the original crystal structure. The RE doping could effectively engineer the bandgap of WO_{2.72}, which could not only enhance the light-harvesting ability but also deduce up-shift of both the conduction band and valence band. Compared to the undoped WO_{2.72} nanorods (NRs), the RE-WO_{2.72} MSs exhibited highly enhanced photocatalytic properties for the degradation of methylene blue (MB) under full spectrum light irradiation. This work provides a versatile

Download English Version:

https://daneshyari.com/en/article/5437695

Download Persian Version:

https://daneshyari.com/article/5437695

Daneshyari.com