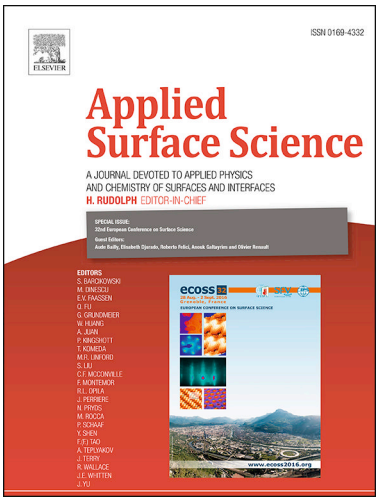
Accepted Manuscript




Full Length Article

# Fabrication and Characterization of Amino-grafted Graphene Oxide modified ZnO with high photocatalytic activity

Dongdong Zhang, Yiping Zhao, Li Chen

PII: S0169-4332(18)31951-2
DOI: https://doi.org/10.1016/j.apsusc.2018.07.053
Reference: APSUSC 39868

To appear in: *Applied Surface Science*

Received Date: 12 March 2018
Revised Date: 9 July 2018
Accepted Date: 10 July 2018

Please cite this article as: D. Zhang, Y. Zhao, L. Chen, Fabrication and Characterization of Amino-grafted Graphene Oxide modified ZnO with high photocatalytic activity, *Applied Surface Science* (2018), doi: https://doi.org/10.1016/j.apsusc.2018.07.053

# Fabrication and Characterization of Amino-grafted Graphene Oxide modified ZnO with high photocatalytic activity

Dongdong Zhang [a], Yiping Zhao [a,*], Li Chen [b*]

[a] State Key Laboratory of Separation Membranes and Membrane Processes, School of Materials Science and Engineering, Tianjin Polytechnic University, Tianjin 300387, China

[b] School of Materials Science and Engineering, Tianjin University of Technology, Tianjin 300384, China

Correspondence to: Yiping Zhao (yipingzhao@tjpu.edu.cn) and Li Chen (tjpuchenlis@163.com).

## Abstract

ZnO-NGO composites with high photocatalytic ability were successfully synthesized by in situ growth of zinc oxide (ZnO) on aminated grapheme (NGO). The TEM results showed that the ZnO particles were well dispersed and in contact with the surface area of NGO，which is necessary to improve the photocatalytic activity. ZnO-NGO-2 showed enhanced decompition activities for methyl orange (MO) and methyl blue (MB). The photodegradation efficiency could reach 99% under xenon lamp irradiation and a decomposing rate constant of the pseudo-first-order kinetics. Fourier transform infrared spectroscopy (FT-IR), X-ray diffraction (XRD), X-ray photoelectron spectroscopy (XPS), Photoluminescence (PL) and UV-Vis spectrophotometry (UV-Vis) were conducted to characterize the synthesized nanocomposites. Transient photocurrent (I-t) and EIS under light irradiation analyses were also performed to illustrate the effective separation of photogenerated carriers. The presence of NGO in