

Accepted Manuscript

Synthesis of copper-loaded activated carbon for enhancing the photocatalytic removal of methylene blue

Xin Jiang, Hongying Xia, Libo Zhang, Song Cheng, Qi Zhang, Quan Chen, Wenhai Hu



PII: S0167-7322(18)33180-5
DOI: doi:[10.1016/j.molliq.2018.09.087](https://doi.org/10.1016/j.molliq.2018.09.087)
Reference: MOLLIQ 9693
To appear in: *Journal of Molecular Liquids*
Received date: 21 June 2018
Revised date: 27 August 2018
Accepted date: 17 September 2018

Please cite this article as: Xin Jiang, Hongying Xia, Libo Zhang, Song Cheng, Qi Zhang, Quan Chen, Wenhai Hu , Synthesis of copper-loaded activated carbon for enhancing the photocatalytic removal of methylene blue. Molliq (2018), doi:[10.1016/j.molliq.2018.09.087](https://doi.org/10.1016/j.molliq.2018.09.087)

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.

Synthesis of copper-loaded activated carbon for enhancing the photocatalytic removal of methylene blue

Xin Jiang, Hongying Xia*, Libo Zhang**, Song Cheng, Qi Zhang, Quan Chen, Wenhai Hu

¹State Key Laboratory of Complex Nonferrous Metal Resources Clean Utilization, Kunming University of Science and Technology, Kunming, 650093, Yunnan, China

²Yunnan Provincial Key Laboratory of Intensification Metallurgy, Kunming University of Science and Technology, Kunming 650093, Yunnan, China

³Key Laboratory of Unconventional Metallurgy, Ministry of Education, Kunming 650093, Yunnan, China

⁴Faculty of Metallurgy and Energy Engineering Kunming University of Science and Technology, Kunming 650093, Yunnan, China.

Abstract

To enhance the photocatalytic performance of Cu₂O, the spent activated carbon (SAC) directly supported CuO powder and then was heated by microwaves to prepare an economical photocatalyst copper-loaded activated carbon (Cu/AC). The prepared Cu/AC catalyst was characterized by N₂ adsorption-desorption, X-ray diffraction (XRD), scanning electron microscopy (SEM), energy dispersive spectrometry (EDS), X-ray photoelectron spectroscopy (XPS), Raman spectroscopy and the zero charge point (pH_{pzc}). The analysis results indicated that Cu/AC had an important specific surface area of 1135 m²/g and mainly contained Cu₂O and metallic copper (Cu⁰). The Cu₂O particles were successfully loaded on the activated carbon. The photocatalytic activity of prepared Cu/AC was evaluated by means of methylene blue (MB) degradation. The effects of reaction parameters such as the pH, initial

* Corresponding author, **Co-Corresponding author at: State Key Laboratory of Complex Nonferrous Metal Resources Clean Utilization, Kunming University of Science and Technology, Kunming, Yunnan 650093, China.

E-mail address: hyxia@kmust.edu.cn (H.Y. Xia), zhanglibopaper@126.com (L.B. Zhang)

Download English Version:

<https://daneshyari.com/en/article/11026901>

Download Persian Version:

<https://daneshyari.com/article/11026901>

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