Preparation of a Zinc Oxide-Reduced Graphene Oxide Nanocomposite for the Determination of Cadmium(II), Lead(II), Copper(II), and Mercury(II) in Water

Wei Liu^{*}

School of Architecture, Chang'an University, Xi'an, 710064, P. R. China.

^{*}E-mail: cauliuwe@chd.edu.cn

doi: 10.20964/2017.06.06

Received: 26 November 2016 / Accepted: 18 March 2016 / Published: 12 May 2016

An effective electrocatalyst was generated through the hybridization of graphene with ZnO. First, a proper amount of graphene oxide was used to cover the ZnO nanoparticles. Then, the composite of ZnO and graphene (ZnO/RGO) was produced through the in situ reduction of graphene oxide. The obtained ZnO/RGO composite was employed to determine Cu(II), Cd(II), Hg(II) and Pb(II) in aqueous solutions. The limits of detection for Cu(II), Cd(II), Hg(II) and Pb(II) were measured to be 0.04 μM , 0.03 μM , 0.06 μM and 0.03 μM , respectively, which are remarkably lower than the guideline values set by the World Health Organization (WHO).

Keywords: Zinc oxide; Graphene; Electrochemical sensor; Mercury; Square wave stripping voltammetry

[FULL TEXT](#)

© 2017 The Authors. Published by ESG (www.electrochemsci.org). This article is an open access article distributed under the terms and conditions of the Creative Commons Attribution license (<http://creativecommons.org/licenses/by/4.0/>).