

Accepted Manuscript

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PII: S0925-8388(17)34357-8

DOI: [10.1016/j.jallcom.2017.12.161](https://doi.org/10.1016/j.jallcom.2017.12.161)

Reference: JALCOM 44247

To appear in: *Journal of Alloys and Compounds*

Received Date: 6 June 2017

Revised Date: 6 December 2017

Accepted Date: 15 December 2017

Please cite this article as: L. Ning, X. Guan, J. Ma, M. Wang, X. Fan, G. Zhang, F. Zhang, W. Peng, Y. Li, A highly sensitive nonenzymatic H_2O_2 sensor based on platinum, ZnFe_2O_4 functionalized reduced graphene oxide, *Journal of Alloys and Compounds* (2018), doi: 10.1016/j.jallcom.2017.12.161.

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A Highly Sensitive Nonenzymatic H₂O₂ Sensor Based on Platinum, ZnFe₂O₄ Functionalized Reduced Graphene Oxide

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ABSTRACT: We report a simple method for the preparation of a hydrogen peroxide (H₂O₂) sensor based on reduced graphene oxide (rGO). ZnFe₂O₄ and Pt nanoparticles were supported on graphene sheets (Pt/ZnFe₂O₄/rGO) to modify the glassy carbon electrode, which were used to detect H₂O₂. The morphology and structure of Pt/ZnFe₂O₄/rGO were characterized by scanning electron microscopy, transmission electron microscopy, X-ray powder diffraction and X-ray photoelectron spectroscopy. The property of the H₂O₂ sensor was evaluated by cyclic voltammetry and amperometry. The prepared H₂O₂ sensor showed a wide linear range from 0.5 μ M to 10.2 mM with a low detection limit of 0.1 μ M.

KEYWORDS: Zinc ferrite; Graphene; Pt nanoparticles; Electrodeposition; Nonenzyme sensor; Hydrogen peroxide detection

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