

Web of Science

Search

Search Results

My Tools ▾

Search History

Marked List

24 of 723

Chemical sensor development based on polycrystalline gold electrode embedded low-dimensional Ag₂O nanoparticles

By: **Rahman, MM** (Rahman, Mohammed M.)^[1,2]; **Khan, SB** (Khan, Sher Bahadar)^[1,2]; **Asiri, AM** (Asiri, Abdullah M.)^[1,2]; **Al-Sehemi, AG** (Al-Sehemi, Abdullah G.)^[3]

[View ResearcherID and ORCID](#)

ELECTROCHIMICA ACTA

Volume: 112 Pages: 422-430

DOI: 10.1016/j.electacta.2013.08.164

Published: DEC 1 2013

[View Journal Impact](#)

Conference

Conference: 12th International Fischer Symposium

Location: Lubeck, GERMANY

Date: JUN 03-07, 2012

Abstract

We have prepared low-dimensional silver oxide nanoparticles (NPs) by a sono-chemical method using reducing agents in alkaline medium. The resulting NPs were characterized by UV/vis and FT-IR spectroscopy, X-ray powder diffraction (XRD), X-ray photoelectron spectroscopy (XPS), X-ray energy dispersive spectrometry (XEDS), and field-emission scanning electron microscopy (FESEM). They were deposited on a flat-polycrystalline gold electrode (AuE, surface area, 0.0216 cm²) to give a sensor with a fast response toward 4-nitrophenol (4-NPh) in liquid phase. The sensor also displays good sensitivity and long-term stability, and enhanced electrochemical performances. The calibration plot is linear ($r^2 = 0.9873$) over the large concentration range (LDR, 1.0 μ M to 0.5 mM). The sensitivity and detection limit is calculated to similar to 4.740 μ A cm⁻² mM⁻¹ and similar to 0.19 μ M (signal-to-noise ratio, at a SNR of 3), respectively. We also discuss possible future prospective uses of this metal oxide nanomaterials in terms of chemical sensing. (C) 2013 Elsevier Ltd. All rights reserved.

Keywords

Author Keywords: Ag₂O nanoparticles; Optical properties; 4-Nitrophenol; I-V technique; Sensitivity

KeyWords Plus: PERFORMANCE LIQUID-CHROMATOGRAPHY; DIFFERENTIAL-PULSE VOLTAMMETRY; GLASSY-CARBON ELECTRODE; SILVER NANOPARTICLES; THIN-FILMS; CATALYTIC-REDUCTION; DIAMOND ELECTRODES; PHENOLIC-COMPOUNDS; RESERVE BATTERIES; NATURAL-WATERS

Author Information

Reprint Address: Rahman, MM (reprint author)

King Abdulaziz Univ, Ctr Excellence Adv Mat Res, POB 80203, Jeddah 21589, Saudi Arabia.

Addresses:

[-] [1] King Abdulaziz Univ, Ctr Excellence Adv Mat Res, Jeddah 21589, Saudi Arabia

Organization-Enhanced Name(s)

King Abdulaziz University

[-] [2] King Abdulaziz Univ, Fac Sci, Dept Chem, Jeddah 21589, Saudi Arabia

Organization-Enhanced Name(s)

Citation Network

30 Times Cited

94 Cited References

[View Related Records](#)



[Create Citation Alert](#)

(data from Web of Science Core Collection)

All Times Cited Counts

30 in All Databases

30 in Web of Science Core Collection

6 in BIOSIS Citation Index

1 in Chinese Science Citation Database

0 in Data Citation Index

0 in Russian Science Citation Index

0 in SciELO Citation Index

Usage Count

Last 180 Days: 2

Since 2013: 28

[Learn more](#)

Most Recent Citation

Santhoshkumar, A. [ZnO nanoparticles: hydrothermal synthesis and 4-nitrophenol sensing property](#). JOURNAL OF MATERIALS SCIENCE-MATERIALS IN ELECTRONICS, JUL 2017.

[View All](#)

This record is from:

Web of Science Core Collection

- Science Citation Index Expanded

- Conference Proceedings Citation Index- Science

Suggest a correction

If you would like to improve the quality of the data in this record, please [suggest a correction](#).

King Abdulaziz University

 [3] King Khalid Univ, Fac Sci, Dept Chem, Abha 61413, Saudi Arabia

E-mail Addresses: mmrahmanh@gmail.com

Publisher

PERGAMON-ELSEVIER SCIENCE LTD, THE BOULEVARD, LANGFORD LANE, KIDLINGTON,
OXFORD OX5 1GB, ENGLAND

Categories / Classification

Research Areas: Electrochemistry

Web of Science Categories: Electrochemistry

Document Information

Document Type: Article; Proceedings Paper

Language: English

Accession Number: WOS:000329886100054

ISSN: 0013-4686

eISSN: 1873-3859

Other Information

IDS Number: 292EX

Cited References in Web of Science Core Collection: **94**

Times Cited in Web of Science Core Collection: **30**