

Accepted Manuscript

A new multiwalled carbon nanotube/copolymer based Ag (I) carbon paste electrode for potentiometric measurements

Nastaran Sohrabi-Gilani, Mohammad Hossein Nasirtabrizi, Aiyoub Parchehbaf Jadid

PII: S0263-2241(18)30331-2
DOI: <https://doi.org/10.1016/j.measurement.2018.04.050>
Reference: MEASUR 5451

To appear in: *Measurement*

Received Date: 15 November 2017
Revised Date: 17 March 2018
Accepted Date: 16 April 2018

Please cite this article as: N. Sohrabi-Gilani, M. Hossein Nasirtabrizi, A. Parchehbaf Jadid, A new multiwalled carbon nanotube/copolymer based Ag (I) carbon paste electrode for potentiometric measurements, *Measurement* (2018), doi: <https://doi.org/10.1016/j.measurement.2018.04.050>

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.



**A new multiwalled carbon nanotube/copolymer based Ag (I) carbon paste electrode
for potentiometric measurements**

Nastaran Sohrabi-Gilani*, Mohammad Hossein Nasirtabrizi, Aiyoub Parchehbaf Jadid
Department of Chemistry, Ardabil Branch, Islamic Azad University, Ardabil, Iran

Corresponding Author: (Nastaran Sohrabi-Gilani)

Islamic Azad University, Basij square, Ardabil, postal code: 5615731567 Tel.: +984533728020,
E-mail address: n.sohrabi@iauardabil.ac.ir

Abstract

For the first time, acetophenone oxime-functionalized glycidyl methacrylate-methyl acrylate copolymer (GMA-MA/APO) was synthesized, characterized and used as an ionophore in the construction of multi-walled carbon nanotube based Ag (I) carbon paste electrode (MWCNT/GMA-MA/APO). The construction, performance and application of this novel silver carbon paste electrode were described. The electrode exhibited a Nernstian response of 60.2 ± 0.2 mVdecade⁻¹ for silver ion over a wide concentration range of $3.1 \times 10^{-7} - 10^{-1}$ M within pH range of 2-9. It had a low detection limit of 1.2×10^{-7} M and short response time (5 s). It also showed a good selectivity for a long lifetime (2 months). Finally, the developed modified electrode was successfully applied in the potentiometric titration of bromide and chloride mixture and direct determination of silver content in radiological film and different environmental water samples with satisfactory results.

Keywords: carbon paste electrode, acetophenone oxime, potentiometric, multi-walled carbon nanotube, Ag (I)

1. Introduction

The importance of monitoring and controlling heavy metal levels in our environment has increased significantly over the last few years [1]. Silver is an important chemical element which has widespread applications in the electrochemistry, electronic and photographic industry, medicine, jewelry and different household products [2, 3]. Therefore, these applications may

Download English Version:

<https://daneshyari.com/en/article/7120634>

Download Persian Version:

<https://daneshyari.com/article/7120634>

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