

Accepted Manuscript

Pre-treated glassy carbon electrode sensor for catechol: A voltammetric study

T.S. Sunil Kumar Naik, B.E. Kumara Swamy



PII: S1572-6657(18)30557-5
DOI: [doi:10.1016/j.jelechem.2018.08.022](https://doi.org/10.1016/j.jelechem.2018.08.022)
Reference: JEAC 12561

To appear in: *Journal of Electroanalytical Chemistry*

Received date: 25 June 2018
Revised date: 16 August 2018
Accepted date: 16 August 2018

Please cite this article as: T.S. Sunil Kumar Naik, B.E. Kumara Swamy, Pre-treated glassy carbon electrode sensor for catechol: A voltammetric study. *Jeac* (2018), doi:[10.1016/j.jelechem.2018.08.022](https://doi.org/10.1016/j.jelechem.2018.08.022)

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.

Pre-treated Glassy Carbon Electrode Sensor for Catechol: A Voltammetric Study

T. S. Sunil Kumar Naik and B. E. Kumara Swamy

Department of P. G. Studies and Research in Industrial Chemistry, Kuvempu University, Jnana Sahyadri, Shankaraghatta -577451, Shivamoga (D), Karnataka(S), India.

Abstract

The surface of glassy carbon electrode (GCE) was modified by electrochemical pre-treatment method and has been employed for the cyclic voltammetric determination of catechol (CC) in the presence of resorcinol (RS) in 0.2M phosphate buffer solution (pH 7.4) with scan rate 50mVs^{-1} . The electrochemical oxidation of catechol (CC) and resorcinol (RS) was investigated by both cyclic voltammetry (CV) and differential pulse voltammetric (DPV) methods at pre-treated glassy carbon electrode (PGCE). The modified electrode (PGCE) showed excellent electrocatalytic activity towards CC and RS determination. The parameters like effect of scan rate, concentration, and interference study were investigated at PGCE. The electrode process was found to be adsorption-controlled at PGCE. Furthermore, the modified electrode exhibited good limit of detection (CC= $0.94\mu\text{M}$, RS= $0.72\mu\text{M}$) and limit of quantification (CC= $31.5\mu\text{M}$, RS= $24.1\mu\text{M}$) for CC and RS. Hence, the pre-treated glassy carbon electrode shows good electrocatalytic properties and can be applied for the determination of CC and RS individually and simultaneously.

Keywords: Catechol, Resorcinol, Glassy carbon electrode, Modified electrode, Cyclic voltammetry.

*Corresponding Author: Department of P. G. Studies and Research in Industrial Chemistry, Kuvempu University, JnanaSahyadri, Shankaraghatta -577451, Shivamoga (D), Karnataka(S), India. Ph: +91-8282-256225 (Off), Fax: +91-8282-256255, E-mail address: kumaraswamy21@yahoo.com

1. Introduction

In recent years, carbon electrodes are frequently used for electrochemical investigations of oxidizable compounds [1]. The modification of electrode surface is one of the important parameter for the catalytic activity of a carbon electrode. There are several methods for surface modification which improves electrocatalytic activity of an electrode. Among them electrochemical pre-treatment method is one which increases the rate of the electron transfer at the electrode surface in

Download English Version:

<https://daneshyari.com/en/article/8946857>

Download Persian Version:

<https://daneshyari.com/article/8946857>

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