

Accepted Manuscript

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PII: S2214-1804(18)30027-8
DOI: doi:[10.1016/j.sbsr.2018.08.001](https://doi.org/10.1016/j.sbsr.2018.08.001)
Reference: SBSR 235

To appear in: *Sensing and Bio-Sensing Research*

Received date: 25 March 2018
Revised date: 28 July 2018
Accepted date: 1 August 2018

Please cite this article as: P.S. Ganesh, B.E. Kumara Swamy, Omolola E. Fayemi, El-Sayed M. Sherif, Eno E. Ebenso, Poly(crystal violet) modified pencil graphite electrode sensor for the electroanalysis of catechol in the presence of hydroquinone. *Sbsr* (2018), doi:[10.1016/j.sbsr.2018.08.001](https://doi.org/10.1016/j.sbsr.2018.08.001)

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Poly(crystal violet) modified pencil graphite electrode sensor for the electroanalysis of catechol in the presence of hydroquinone

P.S. Ganesh^{1,2}, B.E. Kumara Swamy^{3*}, Omolola E. Fayemi^{1,2}, El-Sayed M. Sherif^{4,5} and Eno E. Ebenso^{1,2*}

¹ Department of Chemistry, School of Physical and Chemical Sciences, Faculty of Natural and Agricultural Sciences, North-West University (Mafikeng Campus), Private Bag X2046, Mmabatho 2735, South Africa.

² Material Science Innovation & Modelling (MaSIM) Focus Area, Faculty of Natural and Agricultural Sciences, North-West University (Mafikeng Campus), Private Bag X2046, Mmabatho 2735, South Africa.

³ Department of PG Studies and Research in Industrial Chemistry, Kuvempu University, Jnana Sahyadri, Shankaraghatta-577451, Shimoga, Karnataka, India.

⁴ Center of Excellence for Research in Engineering Materials (CEREM), King Saud University, P.O. Box 800, Al-Riyadh 11421, Saudi Arabia.

⁵ Electrochemistry and Corrosion Laboratory, Department of Physical Chemistry, National Research Centre, El-Behoth St. 33, Dokki, Cairo 12622, Egypt

Abstract

A pencil graphite electrode was modified with poly(crystal violet) film and characterized using cyclic voltammetric method (CV). The film coated electrode exhibited excellent electrocatalytic properties towards electrochemical detection of hydroquinone (HQ) and catechol (CC) and the process was found to be adsorption-controlled. A linear relationship was observed between the peak current response and concentration for both HQ and CC by using differential pulse voltammetry (DPV) technique and the detection limits of 30.35 nM and 27.76 nM were obtained for HQ and CC respectively. The redox potentials were observed to be pH dependent and confirms transfer of the same protons and electrons number in the oxidation and reduction mechanisms. Furthermore, successful selective separation of HQ and CC in a binary mixture was achieved.

Key Words: Pencil Graphite Electrode, Electroanalysis, Voltammetry, Hydroquinone, Catechol,

***Corresponding Author:** Email address: kumaraswamy21@yahoo.com (B.E.Kumara Swamy)

Eno.Ebenso@nwu.ac.za (Eno E. Ebenso).

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