Accepted Manuscript

Interference free detection of dihydroxybenzene isomers at pyrogallol film coated electrode: A voltammetric method

Pattan S. Ganesh, Bahaddurghatta E. Kumara Swamy, Omolola E. Feyami, Eno E. Ebenso

PII: S1572-6657(18)30102-4
DOI: https://doi.org/10.1016/j.jelechem.2018.02.018
Reference: JEAC 3870

To appear in: *Journal of Electroanalytical Chemistry*

Received date: 24 November 2017
Revised date: 7 January 2018
Accepted date: 7 February 2018

Please cite this article as: Pattan S. Ganesh, Bahaddurghatta E. Kumara Swamy, Omolola E. Feyami, Eno E. Ebenso , Interference free detection of dihydroxybenzene isomers at pyrogallol film coated electrode: A voltammetric method. The address for the corresponding author was captured as affiliation for all authors. Please check if appropriate. Jeac(2017), https://doi.org/10.1016/j.jelechem.2018.02.018

Interference free detection of dihydroxybenzene isomers at pyrogallol film coated electrode: A voltammetric method

Pattan S Ganesh[1,2], Bahaddurghatta E Kumara Swamy[1]*, Omolola E Feyami[2] and Eno E Ebenso[2]

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

[2] *Department of Chemistry, School of Mathematical and Physical Sciences, Faculty of Agriculture, Science and Technology, North-West University (Mafikeng Campus), Private Bag X2046, Mmabatho 2735, South Africa.*

Abstract

A carbon paste electrode was modified with pyrogallol red film using a cyclic voltammetric method (CV) and the influence of number of sweep segments on the surface area of working electrode was examined. The fabricated film coated electrode exhibited excellent electrocatalytic performance for the electro-oxidation of 1, 2- dihydroxybenzene and 1, 4-dihydroxybenzene. To know the kinetics of electrode process, scan rate study was conducted and it confirms the adsorption controlled electrode kinetics. The redox potentials were dependents on pH and witnessed an identical number transfer of protons and electrons. Also a linearity was observed for the peak current and concentration of both HQ and CC by using differential pulse voltammetric technique (DPV) and gave a detection limit of 0.018 and 0.021 μM respectively. Furthermore, successful selective separation of phenolic isomers was achieved in a binary mixture. A good analytical results were observed towards the quantification of CC and HQ in a tap water sample.

Key Words: Catechol, hydroquinone, pyrogallol film modified carbon paste electrode Voltammetry,

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