World Academy of Science, Engineering and Technology
International Journal of Chemical and Molecular Engineering
Vol:12, No:05, 2018

Electrochemical Detection of Hydroquinone by Square Wave Voltammetry Using a Zn Layered Hydroxide-Ferulate Modified Multiwall Carbon Nanotubes Paste Electrode

Authors : Mohamad Syahrizal Ahmad, Illyas M. Isa

Abstract : In this paper, a multiwall carbon nanotubes (MWCNT) paste electrode modified by a Zn layered hydroxide-ferulate (ZLH-F) was used for detection of hydroquinone (HQ). The morphology and characteristic of the ZLH-F/MWCNT were investigated by scanning electron microscope (SEM), transmission electron microscope (TEM) and square wave voltammetry (SWV). Under optimal conditions, the SWV response showed linear plot for HQ concentration in the range of 1.0×10^{-5} M – 1.0×10^{-3} M. The detection limit was found to be 5.7×10^{-6} M and correlation coefficient of 0.9957. The glucose, fructose, sucrose, bisphenol A, acetaminophen, lysine, NO_3^-, Cl^- and SO_4^{2-} did not interfere the HQ response. This modified electrode can be used to determine HQ content in wastewater and cosmetic cream with range of recovery 97.8% - 103.0%.

Keywords : 1,4-dihydroxybenzene, hydroquinone, multiwall carbon nanotubes, square wave voltammetry
Conference Title : ICNB 2018 : International Conference on Nanotechnology and Biosensors
Conference Location : Rome, Italy
Conference Dates : May 03-04, 2018