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

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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,

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