

A Synthetic Strategy to Attach 2,6-Dichlorophenolindophenol onto Multi Walled Carbon Nanotubes and Their Application for Electrocatalytic Determination of Sulfide

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Abstract : A chemically modified glassy carbon electrode for electrocatalytic determination of sulfide was developed using multiwalled carbon nanotubes (MWCNTs) covalently immobilized with 2,6-dichlorophenolindophenol (DPIP). The immobilization of 2,6-dichlorophenolindophenol with MWCNTs was performed with a new synthetic strategy and characterized by UV-visible absorption spectroscopy, Fourier transform infrared spectroscopy and cyclic voltammetry. The cyclic voltammetric response of DPIP grafted onto MWCNTs indicated that it promotes the low potential, sensitive and stable determination of sulfide. The dependence of response currents on the concentration of sulfide was examined and was linear in the range of 10 - 1100 μM . The detection limit of sulfide was 5 μM and RSD for 100 and 500 μM sulfides were 1.8 and 1.3 %. Many interfering species had little or no effect on the determination of sulfide. The procedure was applied to determination of sulfide in waters samples.

Keywords : functionalized carbon nanotubes, sulfide, biological samples, 2,6-dichlorophenolindophenol

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