Electrochemical Performance of Chitosan Oligosaccharide/Carbon Nanotube Composite for Detection of Trace Copper(II) Ion

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Chitosan oligosaccharide (COS)/multi-walled carbon nanotube (MWCNT) composite was prepared by electrostatic self-assembly method. The thickness of COS uniformly enwrapped on the surface of MWCNTs is around 3.3 nm. COS/MWCNT composites exhibit excellent electrochemical property in 1mM $[\text{Fe}(\text{CN})_6]^{3-/4-}$ solution. The results showed that the composites with 10 wt % MWCNTs presented obvious redox peak and low impedance and have good electrochemical response. The redox peak currents were linear while the concentration of copper sulfate ranging from 2×10^{-8} to 2×10^{-6} M. The relationship between oxidation peak currents $I(\text{A})$ and Cu^{2+} concentration $C(\text{M})$ is: $i_{\text{pk}}(\text{A}) = 2.228 \times 10^{-6} + 12.96 \cdot C(\text{M})$,

Keywords: chitosan oligosaccharide (COS), multi-walled carbon nanotubes (MWCNTS), electrochemical properties, copper ion

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