

Voltammetric oxidation of potassium thiocyanate using ErBa₂Cu₃O₇ modified glassy carbon electrode.

ABSTRACT

The electrochemical analysis of ErBa₂Cu₃O₇ (ErBCO) superconductor materials, adhered at a glassy carbon electrode surface placed in an aqueous media has been investigated by cyclic voltammetry technique. Voltammetric determination of the oxidation of Thiocyanate in 0.1 M NH₄Cl electrolyte solution by solid phase voltammetry has shown the effect of copper–thiocyanate complexes. Observation revealed a high peak of ErBCO appears at 220 mV vs Ag/AgCl when there is an absence of thiocyanate, while in the presence of thiocyanate, peak current increases by 3.1. The voltammetric response of the ErBCO was found to depend greatly on the scan rate and pH. From CC studies, the amount of charge, Q that was present on the electrode surface is 5.513 μC/cm. The diffusion coefficient, D, value for the copper–thiocyanate complexes was determined to be 7.48x10⁻⁵ cm²/s.

Keyword: ErBa₂Cu₃O₇–δ; Modified GC electrode; Potassium thiocyanate; Cyclic voltammetry