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Electrocatalytic oxidation and flow-injection determination of sulfur-containing amino acids at graphite electrodes modified with a ruthenium hexacyanoferrate film

Shaidarova L., Ziganshina S., Tikhonova L., Budnikov G.
Kazan Federal University, 420008, Kremlevskaya 18, Kazan, Russia

Abstract

The electrochemical behavior of sulfur-containing amino acids (cysteine, cystine, and methionine) at graphite electrodes modified with a ruthenium(III) hexacyanoferrate(II) film was studied. Glassy carbon and carbon paste were used as graphite materials. The electrocatalytic oxidation of amino acids at a modified electrode resulted in a decrease in the oxidation potentials of amino acids and an increase in the currents of their oxidation peaks as compared to those observed at an unmodified electrode. The voltammetric characteristics and hydrodynamic conditions for detecting the maximum catalytic current were found. A procedure is proposed for the electrocatalytic determination of cysteine, cystine, and methionine at a carbon-paste electrode modified with an inorganic film of ruthenium(III) hexacyanoferrate(II) under the conditions of flow-injection analysis.

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