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Amperometric detection of hydroxypurines at an electrode modified with a composite based on mixed-valence ruthenium and cobalt oxides in flow injection analysis

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Abstract

© 2017, Pleiades Publishing, Ltd.A composite material based on mixed-valence ruthenium and cobalt oxides, electrodeposited on the surface of a screen printed electrode, exhibits high catalytic activity in the electrooxidation of uric acid, xanthine, and hypoxanthine. Catalysis manifests itself as a decrease in the substrate oxidation overvoltage and an increase in current at the potential of modifier oxidation. A method is proposed for the simultaneous amperometric detection of two-component systems uric acid–xanthine, xanthine–hypoxanthine, and uric acid–hypoxanthine using a screen printed electrode with two working electrodes modified by this composite. The dependence of the analytical signal on the concentration of analytes is linear in the range 5 × 10–8 to 5 × 10–3 M for uric acid and xanthine and from 5 × 10–7 to 5 × 10–3 M for hypoxanthine.

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Keywords

chemically modified electrodes, electrooxidation of hydroxypurines, flow injection analysis, mixed-valence ruthenium and cobalt oxides

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