

Amperometric detection of caffeine and paracetamol on a dual screen printed electrode modified with mixed-valence ruthenium and cobalt oxides in flow-injection analysis

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Abstract

It is found that the mixed-valence ruthenium and cobalt oxides (CoO_x-RuO_x) composite electrodeposited on screen printed electrode exhibits catalytic activity during caffeine and paracetamol electrooxidation. These compounds are oxidized at different potentials which provides selective voltammetric determination at simultaneous presence. A method of amperometric determination of caffeine and paracetamol on a dual electrode modified with CoO_x-RuO_x composite in a flow injection analysis is developed. The linear relationship between an analytical signal and analyte concentration is found in the range from 5×10⁻⁷ mol/l to 5×10⁻³ mol/l. Using a modified dual screen printed electrode as an amperometric detector in flow injection analysis allows to determine up to 360 samples/hour. The developed method has been tested in the analysis of some pharmaceuticals.

Keywords

Caffeine and paracetamol electrooxidation, Chemically modified electrodes, Flow injection analysis of pharmaceuticals, Mixed-valence ruthenium and cobalt oxides, Modified dual screen printed electrode