REGULARITIES OF MODIFICATION OF SOLID CARBON-CONTAINING ELECTRODES WITH TOSILATE SALTS OF ARYLDIAZONIUM

Gusar A.O, Dorozhko E.V, Slepchenko G.B

National Research Tomsk Polytechnic University, Tomsk, Russia
anngsa@mail.ru

The search for new electrode materials and electrode surface modifiers in the voltammetry method extends the possibilities of this method in determining both inorganic and organic substances with a higher sensitivity. Among the wide range of organic modifiers used for the surface modification of solid electrodes, promising organic agents are tosylate salts of aryldiazonium, which during the electrolysis ensure the covalent bonding of the functional groups of aryl (Ar) to the electrode surface [1]. To date, only work on the electrochemical modification of carbon-containing electrodes by tosylate salts of aryldiazonium has been known, however, the question of their application for the chemical modification of solid carbon-containing electrodes has not been considered [2].

The novelty of this work is due to the fact that the development of new organically-modified solid carbon-containing electrodes modified with tosylate salts of aryldiazonium with phenyl groups by a chemical method will make it possible to determine a wide range of elements with higher sensitivity and selectivity.

In the work, carbon-containing, glass-graphite and carbon-steel electrodes were used as working electrodes. They were kept in solution of tosylate salts of aryldiazonium with phenyl groups ($[COOHC_6H_4N_2]OJ_3$, $[CNC_6H_4N_2]OJ_3$, $[C_{16}H_{33}C_6H_4N_2]OJ_3$). Silver chloride electrodes were used as auxiliary and reference electrodes. To evaluate the reversibility of electrode processes on carbon-containing electrodes before and after chemical modification by tosylate salts of aryldiazonium with phenyl substituents, an equimolar mixture of $Fe(CN)_6^{3-/4-}$ 0,25 M hexacyanoferrate salts in the background of 0,5 M KCl was used. Carrying out the data of the study, it was observed that the oxidation and reduction currents of $Fe(CN)_6^{3-/4-}$ are maximal for the $[COOHC_6H_4N_2]OJ_3$ modifier of the carbon electrode at the time of holding the indicator electrode in the solution of the above aryldiazonium salt for 2 seconds. And at a concentration of the modifier of 30 mg/l.

References:

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