OXIDATION OF J^- IONS IN AQUEOUS SOLUTIONS ON CATALYZED AND NON-CATALYZED EBONEX ELECTRODE

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Ebonex is an conductive ceramic material which consists of an titanium oxides mixture with general formula Ti_nO_{2n-1} (n=4-10)[1].Thanks to its high conductivity and chemical stability Ebonex can be used as an electrode material or as substrate for different electrocatalysts. This material is also convenient for cathodic deposition of metals (Cu, Ru, Au, Ni, Pd and Pt)[2]. Ru-Ti_4O_7 electrode can be used, for example, for oxidation of J^- ions to J_2 or JO_3^- ion[3].

The voltammograms recorded in $2\cdot10^{-3}$ M KJ + 0.5 M Na_2SO_4 on Pt electrode, noncatalyzed Ebonex and Ebonex catalyzed by platinum are shown in this work (Fig.1.)

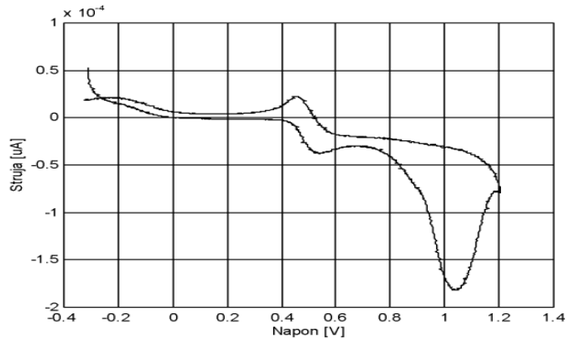

Fig.1. *Voltammogram of $2\cdot10^{-3}$ M KJ + 0.5 M Na_2SO_4 solution on Pt electrode; v = 5 mV/s*

There are two current peaks in anodic region. The first one can be attributed to $2J^- \rightarrow J_2 + 2e^-$ reaction (e^0 = 0.563 V) while second is connected to $2JO_3^- + 12\ H^+ + 10e^- \rightarrow J_2 + 6H_2O$ (e^0 = 1.195 V) reaction.

The peaks are much better defined on catalyzed than on non catalyzed electrode. This leads to the conclusion that the catalyzed electrode can be used for the oxidation of J^- to J_2 or JO_3^-.

References:

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