

Processes at Platinum Electrodes during the Cathode Polarization in Alcohol Erbium Nitrate Solution

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Abstract: The processes at platinum electrodes during the cathode polarization in an alcohol solution of erbium nitrate are discussed. The current density maxima on the cathode branch of voltammograms were found to correspond to the potentials of the hydrogen reduction reactions. The gel-like deposit $\text{Er}(\text{OH})_x(\text{NO}_3)_y(\text{C}_2\text{H}_5\text{O})_z \cdot n\text{H}_2\text{O}$, $x + y + z = 3$, formed during the cathode treatment was shown to be not a product of the electron exchange between the cathode and the solution components. The following formation mechanism of the erbium-containing deposit has been suggested. First, the electrochemical process of the hydrogen cathode reduction is implemented. This process leads to the ionic unbalance and causes the alkalinization of the cathode space. This creates conditions for the chemical process of the gel-like erbium hydroxide formation, which is physically adsorbed on the cathode surface as a precipitate.

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