Electrochemical Study of Stabilization Higher Oxidation States of d- and f-Metals in Molten Salts

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Conditions of stabilization higher oxidation states of d- and f-metals in molten salts of various anionic and cationic compositions, which determine, respectively, the composition of the first and second coordination spheres of the complexes, have been studied by voltammetry. The stabilization of higher oxidation states is observed when passing from pure chloride to oxochloride melts and from chloride-fluoride to oxofluoride melts. The possibility of stabilization higher oxidation states of chromium in the melts due to the formation of heteronuclear complexes has been demonstrated. It was shown that stabilization of higher oxidation states is accompanied by reaction of disproportionation with formation of fine metal powder in the bulk of the melt and surface coating.

Keywords: molten salts, anionic and cationic compositions, voltammetry, stabilization of higher oxidation states, disproportionation

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