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Electrochemical behavior of Ti(IV)/Ti(III) redox couple on dropping mercury electrode in sulfuric acid aqueous and aqueous-organic media

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Abstract

The processes of electrochemical reduction of Ti(IV) and oxidation of Ti(III) in aqueous solutions of H2SO4 not containing and containing AcOH or MeCN are studied by the methods of classical and commutation polarography. It is shown that in the absence of organic solvents the heterogenous electron transfer is irreversible in the media with the sulfuric acid concentration up to 9 M, while in aqueous-organic solution the same occurs at the concentration up to 7 M. Organic solvents are involved into the process of complex formation and like H2SO4, influence the step of heterogenous electron transfer; this effects weakens with the increase in the concentration of sulfuric acid. © 2009 Pleiades Publishing, Ltd.

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