

Thematic direction: Disposal of chromium-containing wastewater. Part 3.

The nature of periodic concentration fluctuations of chromium(VI) when restoring steel shavings

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Abstract

The experimental data describing the periodic concentration fluctuations in the reaction mixture of six - and trivalent chromium during the process of recovery of Cr(VI) in sulfuric acid solutions of steel shavings. The dependence of the frequency of oscillation and frequency of changes in the concentration of Cr(VI) in the volume of the reaction mixture from temperature, initial content of chromium trioxide, sulfuric acid and hitch steel wool are revealed. Concentration fluctuations of reduced chromium Cr(III) forms are coincided in their early-phase with the oscillations in the concentration of Cr(VI) in solution, but greatly inferior in magnitude. The nature of fluctuations in the concentrations of Cr in the studied process is proposed to explain the cyclic nature of the processes of passivation and depassivation of the surface of the chip based education in the subsurface area and the degradation due to outgassing of chromiferous double hydroxides $\text{Fe}^{\text{II}}_y\text{Fe}^{\text{III}}_x(\text{OH})_{3x+2y-2z}(\text{CrO}_4)_z$ with the structure of foygerite.