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Kinetics peculiarities of kaolin sedimentation in the presence of anionic and cationic polyacrylamide flocculants

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Abstract

Kinetics of sedimentation of the kaolin suspension with the mean particle radius $R = 9.07 \times 10^{-6}$ m in the presence of anionic (A) and cationic (C) polyacrylamide flocculants was studied by means of a VT torsion balance. Sedimentation proceeded in the regime of free (nonconstrained) settling. The dependence of the flocculating effect on the concentration of polymers was analyzed. When both flocculant A and flocculant C are added, the net flocculating effect depends on the order of introduction of polymeric components. It is established that the contributions from components A and C are not additive. To explain the peculiarities of flocculation when both components are added, the dependences of the viscosity of the binary mixtures of A and C on their composition and concentration were analyzed ; in addition, ζ -potential of kaolin particles after the addition of polymers A and C was determined. It was found that the particles of the dispersed phase reverse the sign of charge at a certain proportion between flocculants.
