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## POLYELECTROLYTE – SURFACTANT COMPLEXES USED IN THE COAGULATION FLOCCULATION PROCESSES

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### Abstract

The removal of formazine fines particles from water by precipitation with polyelectrolyte and surfactant complex of Polyacrylamide (industrial product Praestol 611 made by Degussa) and Sodium Lauryl Sulphate (SLS) was experimentally studied. Calcium oxide was added to initiate precipitation of the polyelectrolyte complex together with the fines particles. The experiments were carried out with complexes having the surfactants concentration higher than the critical aggregation concentration – *cac*, and the quantity added corresponded to zeta potential  $\zeta$  equal with zero for the complex mixture – formazine suspension. Using video microscopy and image analysis method, the kinetic of the flocculation process has been studied. The result showed the optimum flocs duration to form. The flocs' sedimentation velocity, the precipitate humidity, the volume obtained and the initial and final turbidity of the water' samples have been measured. The water's final turbidity was the main criteria for establishing the optimum operation conditions. The results showed that unlike the classic method of coagulation – flocculation, the water final turbidity of and the process duration are much smaller, the sedimentation of the flocs occurs much faster, but the humidity and the volume of the sludge obtained are higher. Using these results the favourable operation conditions have been determined.

*Key words:* coagulation – flocculation, flocculation kinetic, polyelectrolyte – surfactant complex

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