

Structure and interaction parameters of anionic surfactant micellar systems in aqueous polymer solution of poly (ethylene glycole)

Micellar systems of surfactants play important role in production of stable colloidal solutions in various applications. Thus, for water solutions of anionic surfactants sodium oleate (SO) and dodecylbenzene sulphonic acid (DBSA) used for double layer sterical stabilization of magnetic nanoparticles in aqueous ferrofluid. The present work is dedicated to the investigations of structural and interaction parameters of SO and DBSA micellar systems under effect of addition of water-soluble neutral polymer poly (ethylene glycol) (PEG). This polymer is used, in particular, in practice to improve biocompatibility of ferrofluids.

Summary

The presence of polymer-micelle interaction and polymer-surfactant complex formation in the range of characteristic concentration from critical aggregation concentration (CAC) to critical micelle aggregation (CMC) was observed by the tensiometric technique. The formation of micelles with morphology close to spherical (no transition to prolong ellipsoids), large degree of ionization (up to 25%) and larger value of reverse screening length as compared to free surfactant solutions were found from the analysis of the concentration dependences of the mentioned above parameters for different surfactant/polymer ratios and for different molecular mass of PEG (1- 20 kDa)

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