

Study of CMC and Micelle Formation of Anionic and Cationic Surfactants with respect to Temperature, Counter Ions, Solvents and Dioxane

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ABSTRACT

Micellization depends upon electrostatic repulsions and hydrophobic interactions. The importance of one of the two factors can be obtained from the studies of the thermodynamic properties of the micellization in which surfactant's alkyl chains; head groups, counter ions and the medium all play vital roles. The critical micelle concentrations (CMC) of anionic surfactants (Sodium decyl sulfate, Potassium decyl sulfate) and cationic surfactants, [dodecyl, tetradecyl, (cetyl), trimethyl ammonium bromide] have been determined over the temperature range 303-333 K by the electrical conductivity method. The micellar behaviour of surfactants CTAB has been studied in dioxane-water solutions. A comparison with micelle formation for CTAB in other binary solvents, namely methanol, ethanol, DMF, and THF has been made and discussed. The counter ion binding and thermodynamics of micellization have been quantitatively determined.

Key Words: Micellization, micellar, dodecyl, tetradecyl, trimethyl.