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Mixed Micelle Behavior of Dodecyl- β -D-glucopyranoside with Cationic Gemini Surfactants : A Fluorescence Study

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Abstract -The mixed micellar properties of a sugar surfactant dodecyl- β -D-glucopyranoside (β -C12G) with a series of cationic gemini surfactants in aqueous solution have been investigated at different temperatures, i.e., 288, 298, 308, and 318 K. The steady state fluorescence measurements have been carried out to calculate critical micelle concentrations (cmc) for the various binary combinations of β -C12G+12-0-12/12-2-12/12-6-12. The composition of the mixed micelles and the interaction parameter (β) were evaluated from the cmc data for these mixtures. The binding constant (K_{sv}) of the mixed systems were determined from the ratio of intensity of peaks (I₁/I₂) of the pyrene fluorescence emission spectrum. It has been concluded that there is a difference in mixed micellar behavior of β -C12G with 12-0-12, 12-2-12, and 12-6-12. This difference is due to the dimeric nature and increase in the number of methylene groups of the spacer.

Keywords : Sugar amphiphiles, synergism, mixed micelles, fluorescence measurements.

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