Phase and Rheological Behaviour of LSB and Brij-35 in Water and Branched Alcohol Media

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The effect of branched alcohols (tert-butanol, 2-Methyl-1-butanol, 2-Methyl-1-pentanol) in LSB/water system has been studied. The nature and structure of alcohols determine the extension of micelle phases. There is an extensive micelle phase from water to tert-butanol. Regarding to micelle phase, we have paid special attention to reverse micelles. The more hydrophobic alcohol are present, the more water will be incorporated in the reverse micelles. Reverse micelles behave like Newtonian fluid and alcohol plays the role of solvent. Hexagonal liquid crystal phase is poorly sensitive to the kind of alcohol so that the type of alcohol does not affect the phase behaviour even the viscoelastic behaviour. On the contrary, the location and extension of lamellar liquid crystal is modified by the kind of alcohol as well as its elastic properties. This liquid crystal is the most type of alcohol sensitive. The lamellar liquid crystal has gel behaviour where the type of alcohol affects the elastic properties.

The phase and rheological behavior of dodecyl surfactants (laurylsulfobetaine and Brij-35) as a function of surfactant and tert-butanol concentrations are also investigated. Hexagonal liquid crystal that appears at high LSB concentrations is not present in Brij-35 system. The incorporation of tert-butanol destroys the cubic phase but favours the lamellar liquid crystal formation. Rheology properties of the liquid crystals are similar in both systems. Lamellar liquid crystal has gel behaviour