The present thesis constituted by two sets of studies (clouding phenomenon and micellar growth) on surfactant-additive systems. Studies on clouding are related to anionic surfactant + TBAB or AMT and an anionic surfactant having TBA^+ as counterion. Effect of nature of the headgroup on the CP can be explained by considering interactions of TBA^+ with surfactant heads. CP data supports the general proposition based on water affinities of headgroup and counterions. The proposition works well even for temperature-induced micellar growth. Establishment of a Hofmeister-like series for surfactant headgroups in the context of clouding and micellar growth has been attempted.Conversion of individual micelles to giant aggregate may be the reason of clouding specifically in ionic surfactant solution (*e.g.*, TBADS). The process is observed more gradually than that in nonionic surfactant solutions. This may be due to the presence of charged micelles in the former case. For clouding, only a small fraction of individual micelles is needed that convert into giant aggregates.

It was found that clouding in charged surfactant solutions is a general phenomenon which can also be observed with a typical biosurfactant (NaDC). NaDC and AMT are biocompatible material and an appropriate composition can be decided by the interplay of concentrations of NaDC and AMT. Additives can be used as an effective tool for the tuning of clouding at a desired temperature. A good database is needed with other bile salt – drug – additive combinations before coming to a generalization.

Micellar growth in ionic surfactant solutions in presence of additives is also a important phenomenon from the technological point of view. Cationic surfactants have usually been used for the purpose. Anionic surfactants are not utilized in micellar growth phenomenon very effectively. However, both anionic and cationic surfactants are used and it has been shown that an additive can effectively be used for the required micellar growth.

It has been shown that anionic micelles grow in the presence of cationic moiety at relatively lower concentration than inorganic counterions. The greater ability of drug counterion to penetrate the headgroup region leads to micellar growth at even lower concentration.

Studies on the catanionic systems and gemini - salt - alcohol mixed systems can provide another simple and effective way to control the morphological transition in surfactant systems, which will benefit the design and control of self assembled structures. Thermal transition from vesicles to wormlike micelles with increasing temperature in a gemini - salt - alcohol mixed system is another dimension which can be used to design systems for specific applications (*e.g.*, fracturing fluids). This transition results in a drastic (1000-fold) increase in the fluid viscosity due to heating. The simplicity, low cost, and ease of preparation of the above system make it attractive for potential applications.