The present dissertation deals with the physicochemical studies on surfactant aggregates in aqueous media in pure and mixed states. To begin with, introduction and corresponding literature survey have been presented; the reported information of understanding surfactant aggregation in a general way has been reviewed followed by a description of the scope and perspective.

Although reports on the studies of micellization behavior of sodium dodecylsulphate (SDS) and cetyltrimethylammonium bromide (C₁₆TABr) in presence of polyethyleneglycol (PEG) are available in literature, but those studies are fragmentary in nature. Systematic investigations on the interfacial and micellization behavior of SDS and C₁₆TABr in presence of PEG oligomers of varying molar mass are not so common in the literature. The mixed systems of long chain alkyltrimethylammonium bromide (CₙTABr) and bile salts are supposed to have manifold application potentials. However, such systems have not been studied in detail. Undoubtedly, systematic and elaborated studies on CₙTABr-bile salt systems with varying composition, CₙTABr chain length and bile salt structure are imperative in terms of biological and industrial point of view. Various analytical techniques (e.g., phase manifestation, conductance, mutual interactions among the surfactants, viscosity, fluorescence anisotropy, size as well as zeta potential, etc.) have been explored to characterize the different pure as well as mixed surfactant systems. Interaction of a cationic pseudo-isocyanine dye, pinacyanol chloride (PIN) with pure as well as binary surfactant mixtures of C₁₆TABr and sodium deoxycholate (NaDC) has been explored which is not studied previously to the best of our knowledge.

Finally attempts have been made to summarize and conclude based on the different experimental observations.

The dissertation then follows the basic data and off prints of the published papers.