

PREFACE

Surface active agents or Surfactants constitute a unique class of compounds having amphiphilic nature that are capable of forming molecular aggregates in solution without any external aid. The shape and size of the aggregates are functions of parameters such as chemical nature of the surfactant, nature of the additives and the solvent polarity. Morphology transition of surfactant assemblies have been the subject of intensive investigation from both theoretical and experimental points of view during the past three decades. The interest in the micellar morphology originates not only from the variety of supramolecular structures (such as micelles, vesicles, wormlike micelles etc.) formed by the surfactant, but also from the industrial application due to segregation of polar and nonpolar domains with particular characteristics in a given system.

Lipids are one of the vital components in biological systems. Aggregation of lipid molecules into bilayers forms the structure of the bio-membranes. Beside this, surfactants are also present in the gastrointestinal tract and lungs as well. Natural surfactants have also been found in crude oil. Synthetic surfactants, on the other hand, have a wide range of domestic and industrial use. Examples include cosmetic products, dyestuff, mineral processing, oil field industry, pharmaceuticals, paints etc.

A comprehensive understanding of the process of surfactant aggregation in solution is pivotal in the field of surfactant chemistry in order to develop surfactant systems with adaptive functionality. This thesis aims to explore the aggregation characteristics of various surfactants in solution, their biological relevance, compatibility and their applicability.