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The biophysical function and properties of surfactant

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Abstract

Introduction: Surfactants are amphiphile molecules. They can be anionic, cationic, nonionic or amphoteric. They are among the main ingredients encountered in detergents and personal care products. They have to meet increasingly more stringent requirements of biodegradability and come from renewable raw materials. A surfactant is a compound that lowers the surface tension on the surface of a liquid. "Surface active agent" has a hydrophobic (non-polar, "fat-loving") tail and a hydrophilic (polar, "water-loving)) head. It Works as a foaming agent, emulsifier and dispersant. Miclle " An aggregate of molecules forming a colloidal particle that important in the chemistry of surfactants.

Methods: We investigate several physical properties inclued osmotic pressure, turbidity, solubilisation, magnetic resonance, surface tension, equivalent conductivity and self-diffusion) as a function of surfactants by modelling msthod, surfactometer tensiometer, conductivity cell, photoelectric colorimeter and so on.

Results and discussion: binary water–amphiphile mixtures, which often have a rich phase behaviour (Laughlin 1994). At the lowest concentrations, amphiphiles exist as monomers in solution. Above a 'critical micellization concentration', amphiphiles assemble in aggregates known as micelles. At higher concentrations the amphiphiles can become spontaneously organized into mesophases (or lyotropic liquid crystal phases). The most common of these are the hexagonal phase, in which amphiphiles are assembled into long cylinders arranged in a hexagonal pattern, and the lamellar phase, in which amphiphiles assemble into bilayers that stack parallel to each other. The dissolution of surfactants is an important process both in the everyday use of surfactant-based products and in the processing and manufacture of surfactant containing formulations (Warren n& Buchanan 2001). The evidence for the existence of ionic micelle in solutions of commercial soaps and soapless detergents is based primarily on data on electrical conductance and surface tension. The former show the formation of micelles by the rapid decrease in conductivity with increasing concentration- the ionic micelles have a lower conductivity than the ions. Surface-tension data indicate the formation of monolayers of soap molecules on the surface of the solutions at very high dilutions and the formation of colloidal aggregates (ionic micelles) at slightly higher concentrations. Electrical conductance and surface-

tension data for the solutions of the soapless detergents indicate that micelle formation reaches a very high value at relatively high dilutions.

Conclusion: nowdays industrial utilities in numerous fields,such as cosmetics, textile, polymers, paints and coating,leather, printing and agriculture medicine, gene transfection, genetics science for surfactant causase that biophysical investigation is important.

Keywords: detergent, personal care product, surfactant, amphiphile, anionic, cationic, nonionic,amphoteric.

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