

Nonionic Reverse Micelles in Nonaqueous Media

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In the recent years, there has been increasing interest in studying the self-assembly of amphiphiles in nonpolar solvents because of their wide range of potential applications in diverse fields including controlled synthesis of nanostructured materials, catalytic activities, pharmaceutical and cosmetic formulations. Due to the opposite structure of reverse micelles compared to the conventional normal micelles in water it is often difficult to tune the control parameter of the amphiphile. Therefore, free structure control of reverse micelles is still a matter of open discussion. Water is the only well-known parameter, which modulates the geometry of reverse micelles. The ternary mixtures of lecithin/water/oil are well-known example to demonstrate water induced dramatic reverse micellar growth. For instance, addition of a small amount of water in the binary mixture of lecithin/oil causes the micelles to grow axially resulting flexible cylinders. In this contribution, influence of additional intrinsic parameters apart from water such as solvent engineering, lipophilic tail architecture, hydrophilic moiety of the surfactant, temperature, and concentration to the free structure control of nonionic reverse micelles in nonaqueous media will be discussed.