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## Retrospect, Resurgence and Prospects of Micelles<sup>†</sup>

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**Abstract** — Recent studies on micellar systems were systematically overviewed, paying special attention to Gemini surfactants, mixed micelles, clouding phenomena and microemulsions. Gemini surfactants are surfactants that have two hydrophilic groups and two hydrophobic groups per amphiphilic molecule, rather than the single hydrophilic and single hydrophobic group of conventional surfactants. The greater efficiency and effectiveness of geminis over comparable conventional surfactants make them more cost effective as well as environmentally desirable. Mixed micelles have received wide attention for several decades, both in theoretical studies and in practical applications, because of their distinctive behaviour in comparison with normal micellar systems. Clouding (cloud point, CP) is a well known phenomenon observed in non-ionic surfactants. For charged micelles (i.e., ionic surfactants), the phenomenon rarely occurs, however, under special conditions, the CP in ionic surfactant solutions is observed. Some amphiphilic drugs, like ionic surfactants, also undergo pH-, concentration-, and temperature- dependent phase separation. It was observed that their CP can vary with additives. Due to their unique properties, namely, thermodynamic stability, ultralow interfacial tension, large interfacial area and the ability to solubilize otherwise immiscible liquids, microemulsions have attained increasing significance both in basic research and in industry. The uses and applications of microemulsions have been numerous. Several reviews on micellar systems and their applications have been published. However, this topic is developing quite rapidly and it is hoped that this review will help newcomers in the field as well as those already involved in this field.

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