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## Physicochemistry and Applications of Microemulsions

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**Abstract** Microemulsions are a class of microheterogeneous systems having unique features of stability, solubilization capacity, structural morphology, physical property and applicability. Depending on the types of oil and amphiphile, and environmental conditions, microemulsion systems of varied categories, consistencies and internal structures may result. The essentials of microemulsion systems are thus controlled by external factors and internal chemistry. The underlying physicochemical principles controlling their formation, phase behaviour and related properties supplemented with experimental observations need time to time assessment and appraisal to scientists and technologists. This review aims at such a purpose and makes a concise presentation of the physicochemistry and applications of microemulsions to bring the readers up-to-date with the present state of knowledge on the subject. The features that will be presented in some details are the theory of microemulsion formation, general procedure for their preparation, phase forming behaviour of mixed water, amphiphile and oil systems, viscosity and conductance behaviour in relation to internal consistency and structure. Important applications of microemulsions in enhanced petroleum recovery, biotechnology, pharmaceuticals, nanoparticle preparation, corrosion inhibition, etc. will also be discussed.

**Keywords :** Microemulsion, theory, preparation, phase behaviour, structure, properties, viscosity, conductance, application.

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