

Emulsions and emulsifiers

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Abstract - Emulsions are heterogeneous systems of one liquid dispersed throughout another in the form of droplets usually exceeding 0.1 μm in diameter. Emulsions are generally categorised into single emulsions which include water-in-oil and oil-in-water and multiple emulsions including water-in-oil-in-water and oil-in-water-in-oil. Emulsions are prepared by phase inversion method, membrane emulsification method, dry gum method, and wet gum method. Continental/dry gum method or bottle/general method are most commonly employed techniques for emulsification. Membrane emulsification method which is based on principle of dispersing one immiscible phase (dispersing phase) into another phase (continuous phase) by applying pressure is used for the preparation of multiple emulsions. Emulsifier / emulgents is a substance which stabilises the emulsion by increasing the kinetic energy. Emulsifiers are generally classified based on their chemical structure into four types including synthetic, natural, finely divided solids, and auxillary agents; by mechanism of action into three categories including monomolecular films, multimolecular films, and solid particle films. There are different theories which help in understanding emulsification process which include surface tension theory, surface orientation theory, and plastic/interfacial film theory. Stability of emulsion is one of the critical parameter which is difficult to attain. The instability of emulsions is categorised into flocculation, creaming, coalescence, and breaking which were further detailed in the text.

Key words - Emulsions, Emulsifiers, Water-in-oil, Microemulsion

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