

## PROTEIN-STABILIZED EMULSIONS AND NANOEMULSIONS

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This presentation will summarize briefly our current understanding of the scientific and technological basis for the formation of emulsions containing micrometer and nanometer sized droplets, with applications in food, cosmetic and pharma industries [1-3]. The focus will be on protein-stabilized emulsions. Their specific features will be summarized in comparison to the surfactant- and particle-stabilized emulsions [3]. The subtle relations between the material characteristics of the emulsions (oil type, emulsifier, pH, etc.) and the optimal hydrodynamic conditions for emulsification will be discussed [3] in the context of obtaining emulsions with desired properties. Examples of appropriate mixtures of proteins with other emulsifiers (lipids, lysolipids, natural gums) will be given. The differences between oil-in-water and water-in-oil emulsions will be briefly discussed [4,5]. Special focus will be given on the recent advance in production of nanoemulsions using high pressure homogenizers, high viscosity of the continuous phase, and/or high oil volume fraction during emulsification [6,7]. Some new methods for self-emulsification will be briefly reviewed [8,9]. The basic physicochemical and hydrodynamic concepts will be illustrated by multiple examples with real systems.

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