Physicochemical control of foam and emulsion properties

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This presentation summarizes our recent understanding on how various essential foam and emulsion properties could be modified using appropriate conventional and natural surfactants, cosurfactants, polymers, solid particles and their mixtures [1-10]. On the basis of numerous experimental studies, we will discuss the effects of these substances on: (1) mean bubble and drop size upon foaming and emulsification; (2) foam and emulsion stability against coalescence and Ostwald ripening; and (3) foam and emulsion rheological properties. The observed experimental trends are analysed using existing and original theoretical models, and the key mechanisms and factors controlling these foam/emulsion properties are clarified. The interplay between the properties of the adsorption layers, the behaviour of the respective foam and emulsion films, and the hydrodynamic conditions during foaming and emulsification will be also discussed.

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