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Surfactants in Foam Stability: a Phase Field Model

The role of surfactants in stabilizing the formation of bubbles in foams is studied using a phase-field model. The analysis is centered on a van der Waals–Cahn–Hilliard-type energy with an added term accounting for the interplay between the presence of a surfactant density and the creation of interfaces. In particular, it is concluded that the surfactant segregates to the interfaces, and that the prescription of the distribution of surfactant will dictate the locus of interfaces, which is in agreement with experimentation.

This is joint work with Massimiliano Morini and Valeriy Slastikov.