LadHyX Seminar – November 19th, 10:45

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Surfactant-induced dissipation in sheared foams

Liquid foams are complex yield stress fluids made by dispersion of gas bubbles in a surfactant solution. Their rheology and stability strongly depend on the type of surfactants used to generate them. To understand it, we use numerical simulations of an elementary bubble rearrangement to resolve at the bubble scale the surfactant distribution and dynamics. We rationalize the results by extending the classical Lucassen model from a thermodynamic perspective (Mezache et al. Phys. Rev. Fluids 9:094008, 2024). Our framework reveals the origin of the surfactant-induced effective viscosity in sheared foams and is applicable to other surfactant-controlled systems. Finally, if time permits, I will present recent experimental results on surfactant-laden interfaces.