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“Numerical schemes for mixtures of isotropic and nematic flows with anchoring and stretching effects modeled using a phase field approach”

Abstract:

The study of interfacial dynamics between two different components has become the key role to understand the behavior of many interesting systems. Indeed, two-phase flows composed of fluids exhibiting different microscopic structures are an important class of engineering materials. The dynamics of these flows are determined by the coupling among three different length scales: microscopic inside each component, mesoscopic interfacial morphology and macroscopic hydrodynamics. Moreover, in the case of complex fluids composed by the mixture between isotropic (newtonian fluid) and nematic (liquid crystal) flows, its interfaces exhibit novel dynamics due to anchoring effects of the liquid crystal molecules on the interface.

In this talk I will introduce a PDE system to model mixtures composed by isotropic fluids and nematic liquid