

Controlling interfaces and soft networks with active fluids

Zvonimir Dogic

Department of Physics, University of California, Santa Barbara

Active fluids are composed of energy-consuming microscopic constituents. They exhibit large-scale autonomous chaotic flows and motions. We study how such active fluids influence the structure and dynamics of passive soft matter systems. In one case we study how active flows modify the behavior of phase-separating binary polymer mixtures. The active flow can both enhance and suppress droplet coalescence. We discuss the asymmetry in the activity-driven interface deformations and the interface disintegration. In the second part, we discuss how active fluids can be used to control the structure, mechanics, and dynamics of passive elastic networks. We discuss the activity-induced onset of rigidity and its possible relevance to the experimentally observed system-sized spontaneous oscillations.