

Systems with competing interactions under confinement.

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Systems as different as mixtures of lipids in water, ternary mixtures containing surfactants, diblock copolymers, or colloidal systems with competing interactions have similar topology of the phase diagram. In all these systems the same liquid crystal phases are formed such as fcc cluster crystals, hexagonal, bicontinuous gyroid, or lamellar ones. When the liquid crystal phase is confined its structure at the boundary is deformed in a specific way depending on the orientation of the confining surface with respect to the unit cell of the liquid crystal phase. I will present the results describing the influence of confinement on a few different liquid crystal phases formed in mixtures of amphiphilic molecules and colloidal systems with competing interactions. The universal behavior of these systems will be emphasized.