

COACERVATES : A NOVEL STATE OF SOFT MATTER — AN OVERVIEW

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Abstract —Coacervation is usually defined as the spontaneous formation of a dense liquid phase from a macromolecular solution of poor solvent affinity. In "coacervation", the loss of solvation arises from the interaction of complementary macromolecular species. The formation of such macromolecule-rich fluids is well-known in mixtures of complementary polyelectrolytes; it can also occur from mixtures of polyelectrolytes with colloidal particles, leading to condensed soft matter phases with interesting properties. Though the polymer solution and gel states are adequately studied, characterized and mostly understood, the same for the coacervate phase is not true. Coacervates are macro-ionic hydrated complexes of a pair (self or complementary) of charge-neutralized polymers. Such a condensed phase remains in thermodynamic equilibrium with its supernatant that mostly contains a dilute dispersion of smaller intermolecular aggregates of the constituent polymers. This article intends to elucidate the salient features of this novel soft matter with some specific examples.

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