## Thermodynamics of Fluid Polyamorphism: Interconversion of Molecular or Supramolecular Polymorphs

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Fluid polyamorphism is a surprisingly ubiquitous, yet poorly understood, phenomenon in condensed matter. It is either found or predicted, often at extreme conditions, for a broad group of very different substances, including, but not limited to, helium, carbon, silicon, phosphorous, sulfur, cerium, and hydrogen. This phenomenon is also hypothesized for metastable and deeply supercooled water, presumably located a few degrees below the experimental limit of homogeneous ice formation. A generic phenomenological approach based on the Landau theory of phase transitions and on the concept of interconversion of alternative molecular or supramolecular states, unifies all the controversial examples of fluid polyamorphism with or without phase separation. This generic phenomenology opens the way to construct transient equations of state, working between two thermodynamic limits, for various materials of physically different nature, polyamorphic or not, wherever molecular interconversion may take place.