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Supramolecular assembly of small molecular gelators mediated by additives

Small molecule gel (SMG) is a class of supramolecular material that is formed by low molecular weight gelators in solvents. SMGs have important application in many fields such as foods, cosmetics and pharmaceuticals. The properties of these materials depend on their multi-level (hierarchical) structure and affect their applications. Significant efforts in the past years have been devoted to developing novel gelators in order to achieve gels with desirable structure and properties. However, the molecular assembly property of a gelator is heavily dependent on solvent properties. Therefore, molecular design is not an efficient approach. Recently, it has been proven that the structure formation in SMGs is a nucleation and growth process. On the basis of this mechanism, the hierarchical structure and hence the properties of the gels can be conveniently manipulated by controlling the thermodynamics and kinetics of nucleation. In this presentation, different approaches, in particular, molecular additive-assisted approach, that have developed to control the hierarchical structures of SMGs will be covered.

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