Self-assembly of pH-responsive low molecular weight gelators

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Hydrogels can be formed when certain small molecules self-assemble in solution to form long anisotropic structures that entangle to form a network. One effective way of making hydrogels in this manner is to use pH-triggered systems where at one pH the molecules disperse but, when the pH is changed, there is a decrease in solubility driving gel formation. In many cases, even under the conditions where the molecules can be effectively dispersed, self-assembly occurs into surfactant-like aggregates. This complicates understanding but provides interesting opportunities to form interesting materials.

Here, we will discuss the self-assembly of some dipeptide-based gelators at high and low pH, focussing on the types of interesting material that can be formed and how one can control the properties of the resulting gels.