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Synthesis and Compositions of Crystal Hydrogels

The process includes synthesizing monodispersed hydrogel nanoparticles containing specific reactive functional groups, self-assembly of these particles to form a crystalline structure, and subsequent crosslinking neighboring spheres to stabilize the entire network. The resulting network is dimensionally and thermodynamically stabile under various pH and temperature conditions. The color and volume of these crystalline hydrogel networks can reversibly change in response to external stimuli such as temperature, pH and other environmental conditions. These new materials may lead to a variety of technological and artistic applications, ranging from sensors, displays, controlled drug delivery, jewelry and decorative consumer products.

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