Photothermal behavior of responsive hydrogel/nanoparticle composites

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Stimuli-responsive hydrogels have received increasing attention for self-shaping materials for applications in biomedical devices, soft robotics, and biomimetic systems. Typically, thermo-responsive hydrogels such as poly(N-isopropyl acrylamide) have been extensively studied due to its well-defined swelling behavior respond to temperature. Recently, Hauser et al. showed that incorporation of light absorbing nanomaterials into responsive hydrogels enables control of swelling behavior by additional stimuli, light, but little attention has been given to fundamental studies on the effects of light absorbing nanomaterials on photothermal behavior of the composites. In this presentation, we show fabrication process of composites of responsive hydrogels and silver nanoparticles (NPs) and discuss about effects of the NPs on photothermal behavior of the nanocomposites.