

Abstract Submitted  
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**Thermal and Photo Actuators Based on Temperature-Responsive Hydrogel and Nanocomposites** YING ZHOU, ADAM HAUSER, Univ of Mass - Amherst, MARK KUZYK, Washington State Universtiy, RYAN HAYWARD, Univ of Mass - Amherst — Combining temperature-responsive hydrogels with plasmonic nanoparticles that transduce light into heat provides a simple and effective route to prepare photo-responsive materials. Using nanocomposites of poly(N-isopropyl acrylamide) (PNIPAm) hydrogels loaded with gold nanoparticles, we explore the fabrication and light-induced deformation of micro-scale actuators with different geometries: planar bilayers prepared by photo lithography and cylindrical actuators fabricated by depositing PNIPAm droplets on fibers of passive materials. We characterize the extent and kinetics of bending and unbending in response to temperature, flood illumination, and waveguided light.

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