Smart Lenses Created with Transparent Shape Memory Gels

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Gel is a dispersion system consisting of a solid three-dimensional network as the continuous phase and a liquid (dispersing medium) within a solid as the discontinuous phase. Gel exhibits no flow and behave like solids when in the steady state due to the three-dimensional cross-linked internal network structure, which may result from chemical bonds (chemical gels) or physical bonds (physical gels), as well as crystallites or other junctions. Virtually any fluid can be used as an extender including water (hydrogels), organic solvent (organogel), and air (aerogel). Since 2001, high-strength gels like topological gel, nanocomposite hydrogel, tetra-PEG gel, double-network gel were developed [1-3]. In our group, one novel hydrogel [4,5] is developed. The hydrogel has the property of shape memory, and is great transparent and flexible (Fig. 1). We named it TF-SMG. In this paper, we report the development of smart lenses (Fig. 2) with this excellent gel material of TF-SMG.

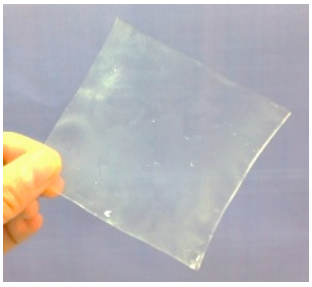

Fig.1 TF-SMG

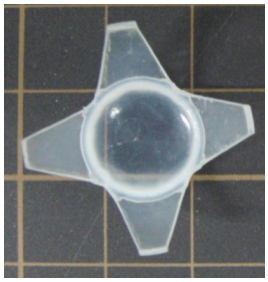

Fig. 2 Smart lens

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