

Trilayer hydrogel hybrid arrays with regular patterns

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Stimulus-responsive hydrogels have been applied in various fields because they have flexibility and biocompatibility and are reversible contraction and expansion by external stimulation such as pH, electricity, and temperature. If a local expansion rate is programmed in advance in the hydrogel two-dimensional structure, complex motion or curvature of the three-dimensional structure can be expressed when swelling occurs. In this presentation, we design a trilayer structure using soft temperature responsive hydrogels and hard polymers, and introduce the three-dimensional curvatures form by connecting and arranging these unit structures. The three-dimensional shape design using the stimulus-responsive hydrogel is expected to be applicable as a method of implementing various forms and driving of the flexible actuator.