Supplementary Information

Buckling, symmetry breaking, and creasing in periodically microstructured hydrogel membranes

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Figure S1. (a) The volumetric swelling ratio of the poly(2-hydroxyethyl methacrylate-co-N-isopropylacrylamide-co-acrylic acid) (43.7:40.8:14.5 mol%) bulk hydrogel in buffer solutions of different pH values at room temperature (25°C). (b) The volumetric swelling ratio of the hydrogel vs. the temperature at pH 4, 5, and 6, respectively.
Figure S2. The 3-D reconstruction confocal images of the hydrogel membrane at pH 2 (a) and pH 4 (b).

**Movie S1.** Recovery of the hydrogel membrane from the twisted chiral structure to circular pore array by heating the sample from 25 °C to 45 °C. The movie is ten times faster than the actual process.

**Movie S2.** Triggering of the buckling instability to symmetry breaking in the hydrogel membrane via cooling the film from 45 °C to 25 °C. The movie is ten times faster than the actual process.