

Electronic Supplementary Material (ESI) for RSC Advances.

Electronic Supplementary Information

Integrated microfluidic device for the spherical hydrogel pH sensor fabrication

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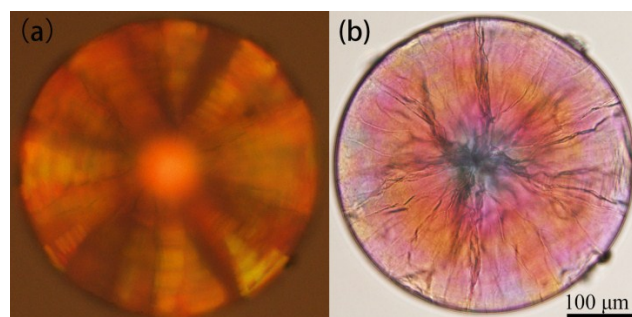


Fig. S1 Microscopic photographs of the hydrogel beads with 1% AA, 19% H₂O concentration. (a) with Halogen Light ; (b) without Halogen Light. The different colour part in (a) is caused by the defects in (b).

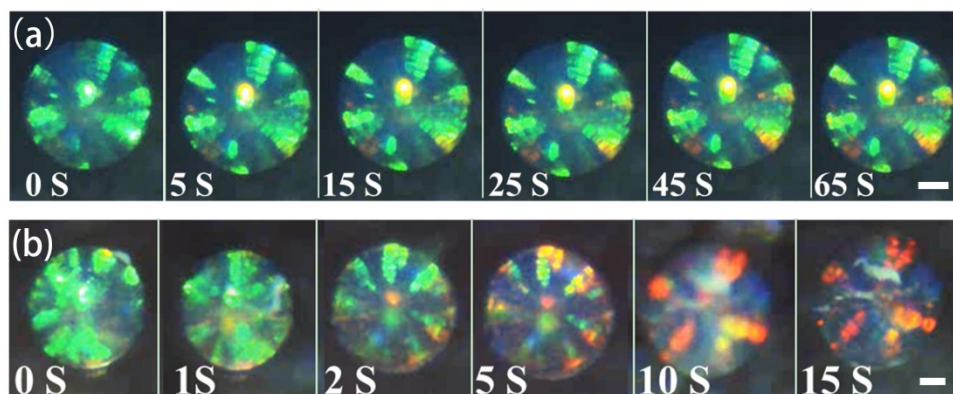


Fig. S2 Photographs of inverse opal hydrogel beads during buffer pH value increase from 5 to 6. We compare two types of hydrogel beads which are fabricated using hydrogel precursors with different AA concentrations: (a) 1% AA, 19% H₂O; (b) 3% AA, 18% H₂O. Both of them show that the structural colour change along with size increasing. The beads of higher AA concentration have faster response to pH stimuli. The scale bar is 100 μm.

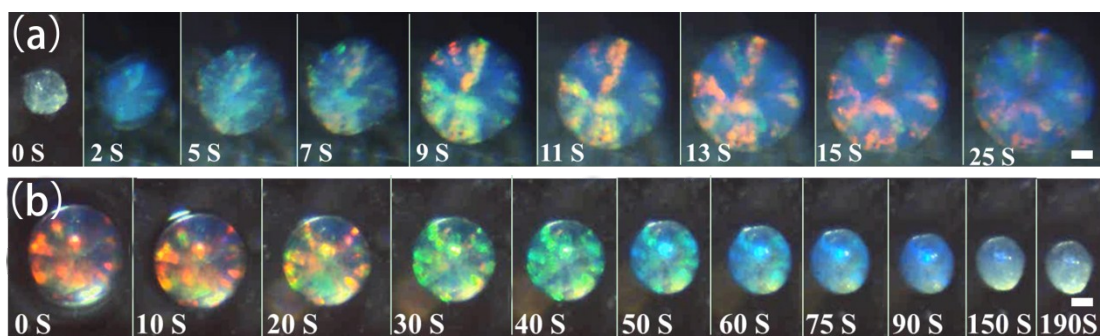


Fig. S3 Photographs of the reversibility of the hydrogel bead with 3% AA, 30% H₂O composition in pH 6 buffer. (a) from drying to buffer solution; (b) from buffer solution to drying. After completely drying up over 10 times, the beads still have fast response and colour change if put back into buffer solution. If expose to the air, the colour of the beads gradually change upon size decrease with buffer solution evaporating. The beads have robust mechanical property, reversibility and reproducibility. The scale bar is 100 μm .