Electronic Supplementary Material (ESI) for Soft Matter.
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Electronic supplementary information (ESI)

Visible-light/temperature dual-responsive hydrogel constructed by α-cyclodextrin and an azobenzene linked surfactant

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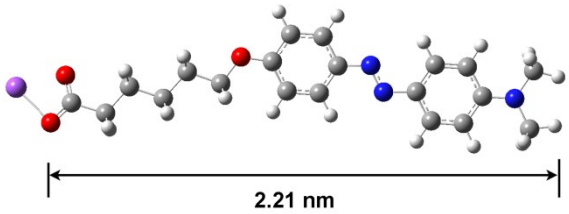

Fig. S1 B3LYP/6-31G (d, p)-optimized structure of a *trans*-DAH.

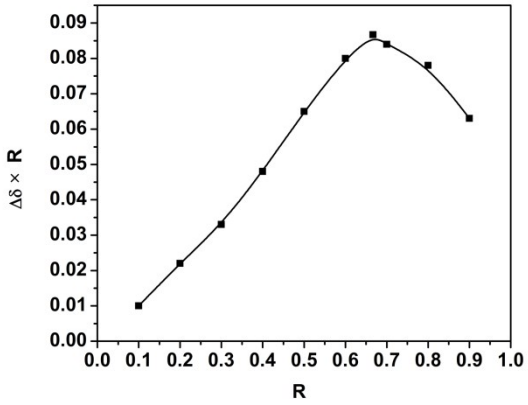

Fig. S2 ^{1}H NMR Job's plot corresponding to the chemical shift of H-5 of α-CD in D_2O. [DAH]+[α-CD]=15 mM.

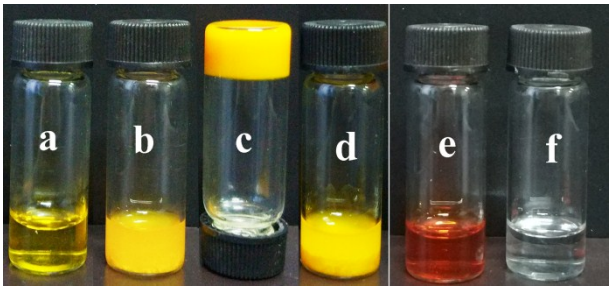

Fig. S3 Representative sample appearance images of DAH@2α-CD at different concentrations: (a) 5 mM, (b) 15 mM, (c) 30 mM, (d) 60 mM, and the individual component of DAH (30 mM, e) and α-CD (60 mM, f).

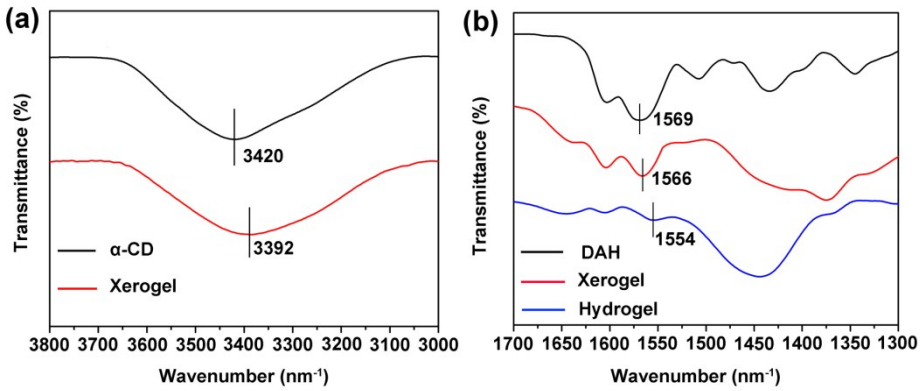

Fig. S4. FTIR spectra of pure α-CD, DAH, xerogel and hydrogel at 30 mM in D_2O.

Fig. S5 Visual appearance of gel-sol transition caused by addition of urea.

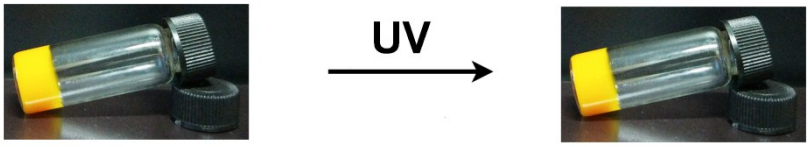

Fig. S6 Visual appearance of hydrogel upon UV light (350 or 365 nm) irradiation.

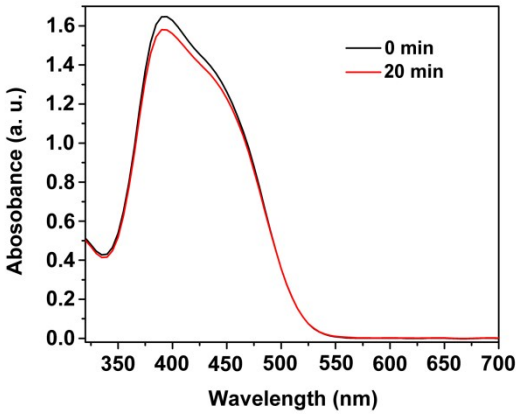

Fig. S7 UV-Vis spectra of 8 mM DAH in aqueous solution before and after UV-365 nm light irradiation.

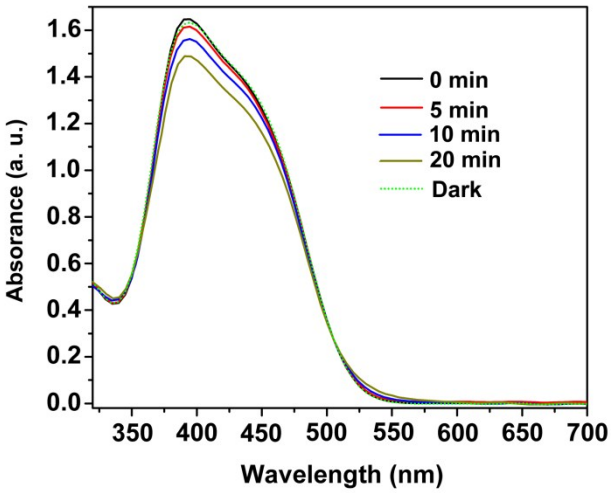

Fig. S8 UV-Vis spectra of 8.0 mM DAH at different times of visible light (420 nm) irradiation and stirring in the dark.

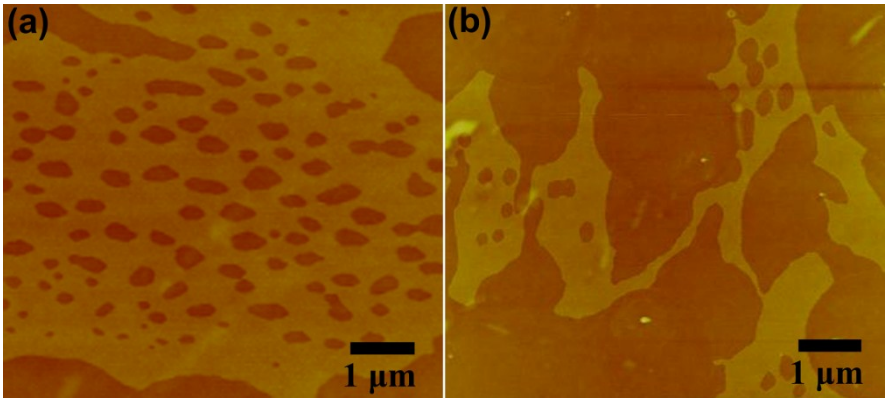

Fig. S9 Tapping-mode AFM images of a 30 mM sample at 35 (a) and 50 °C (b).

AFM measurements were conducted by a Nanoscope IIIA from Digital Instruments in tapping mode under ambient conditions. For the sample preparation, 20 μL of aggregate solution was placed on a freshly cleaved mica surface and the excess was removed by absorption onto filter paper. The resultant substrates were dried under vacuum.

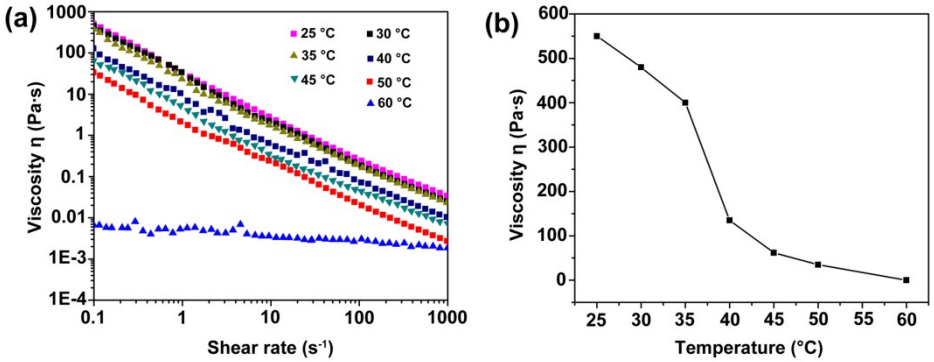

Fig. S10. Viscosity-shear rate curves (a) and viscosity changes (b) for a 30 mM sample at different temperatures.