Supporting Information

Hybrid Magnetic Hydrogels Used as Artificial Marine Animals for Noncontact Cleaning

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Characterization of Magnetic Hydrogels

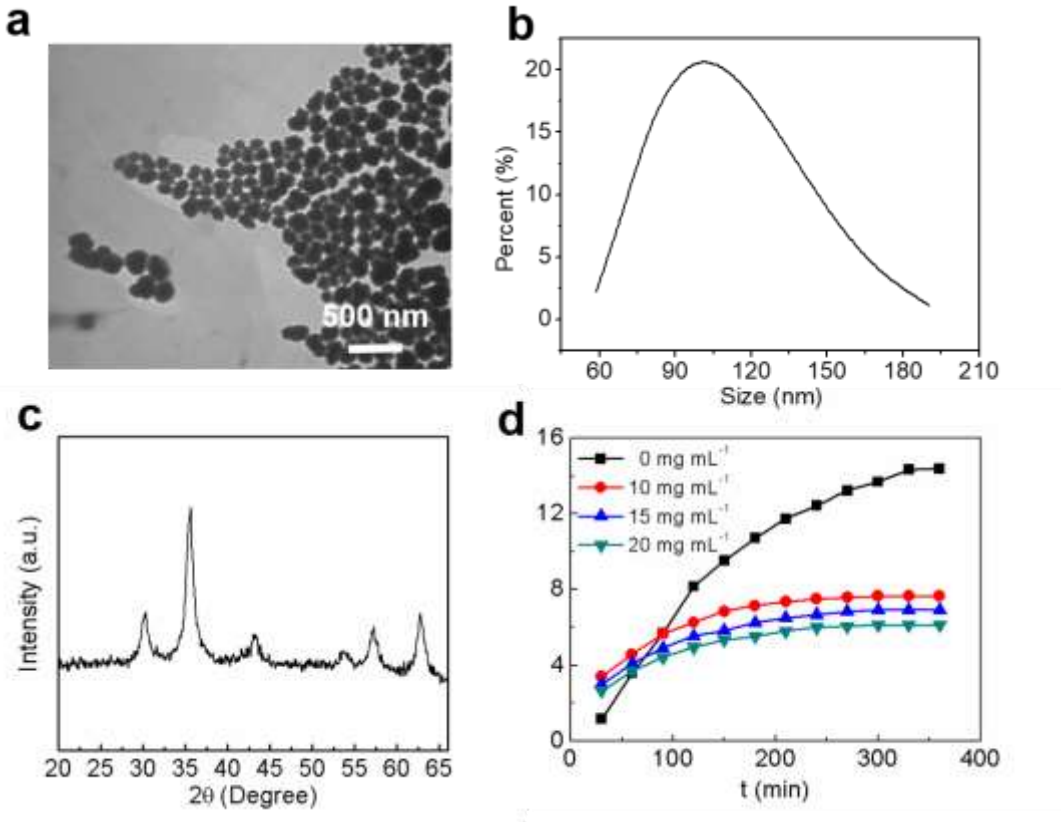

Figure S1. (a) TEM images, (b) particle size distribution, (c) XRD of Fe_3O_4 nanoparticles. (d) Swelling test of pure hydrogels and magnetic hydrogels.

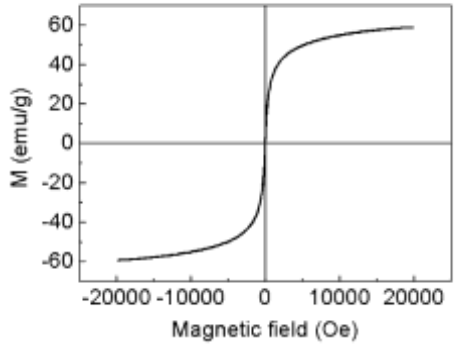

Figure S2. Magnetic hysteresis loops of Fe_3O_4 nanoparticles.

Mechanical Properties of Magnetic Hydrogels

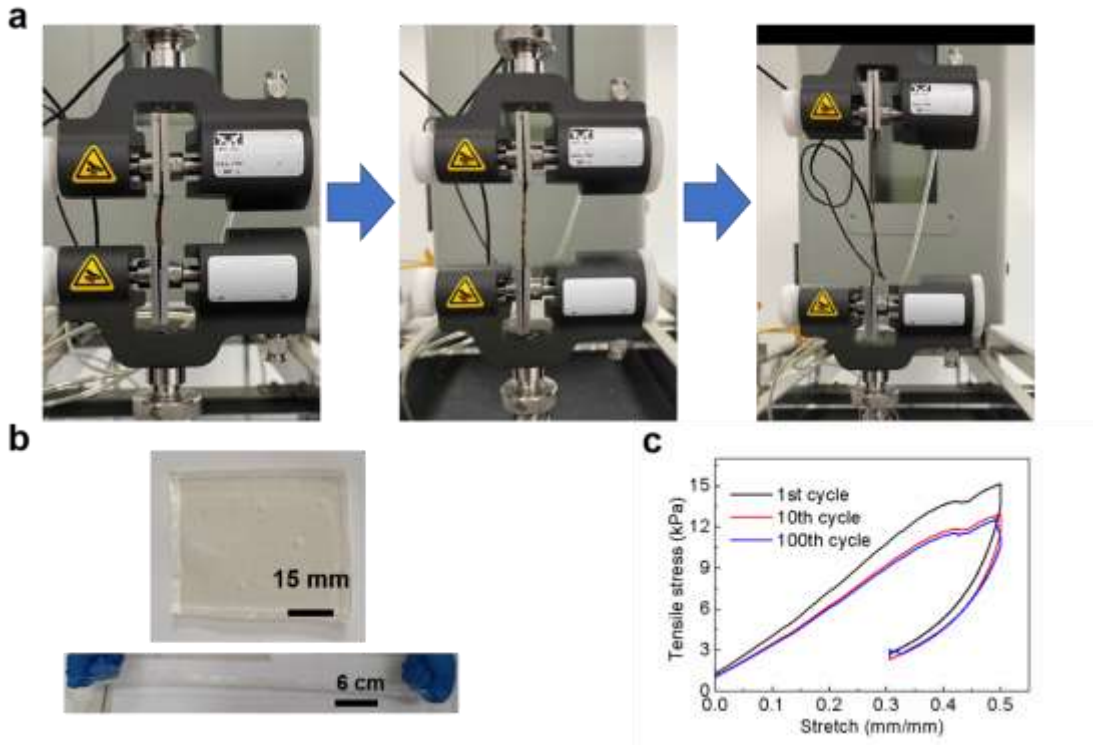

Figure S3. (a) Tensile processes of the double-network magnetic hydrogel. (b) Extensive stretching of Ca-Alg/PAAM DN hydrogels. (c) Cyclic tensile test of magnetic hydrogels (20 mg mL^{-1}).

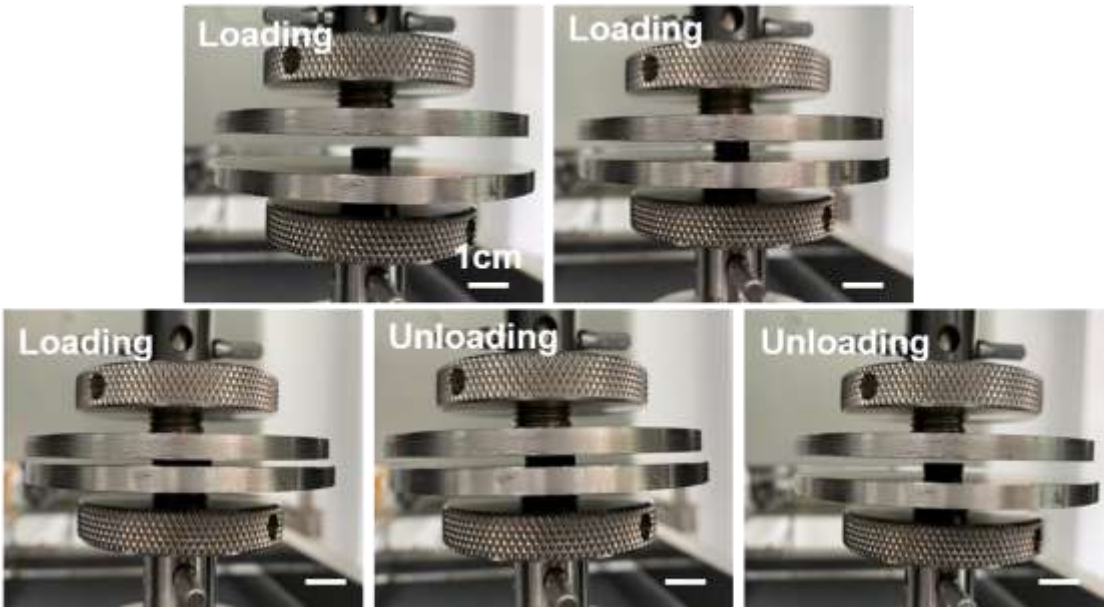

Figure S4. Compressive processes of the double-network magnetic hydrogel.

Magnetically Responsive Hydrogel Based Marine Animal Robots' Movement

Figure S5. Photographs of magnetic hydrogels in two shapes (a scallop and a starfish).

Table S1 Parameters of magnetic hydrogels

Sample	length (cm)	width (cm)	weight (g)	swim distance (cm)	time (s)	speed (cm/s)
starfish	3.7	3.7	1.8	30	2.0	15
scallop	3.7	3.7	3.2	30	2.0	15

Supporting Movie

Movie S1 shows the scallop and starfish shaped magnetic hydrogels swimming under the magnetic navigation.

Movie S2 shows a soft scallop-shaped robot cleaning up the stains on the inside of a fish tank.

Movie S3 and S4 shows a soft scallop-shaped robot overcoming different obstacles to clean up the fish tank.