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Supplementary information

Robust, anti-fatigue, and self-healing graphene oxide/hydrophobically associated composite hydrogels and their use as recyclable adsorbents for dye wastewater treatment

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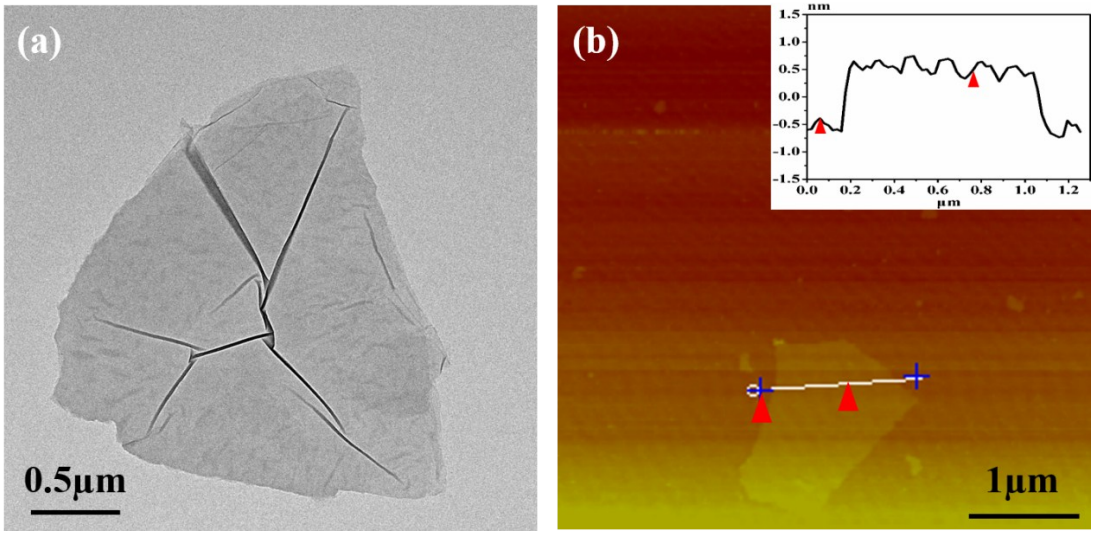

Fig. S1 TEM (a) and AFM (b) of GO.

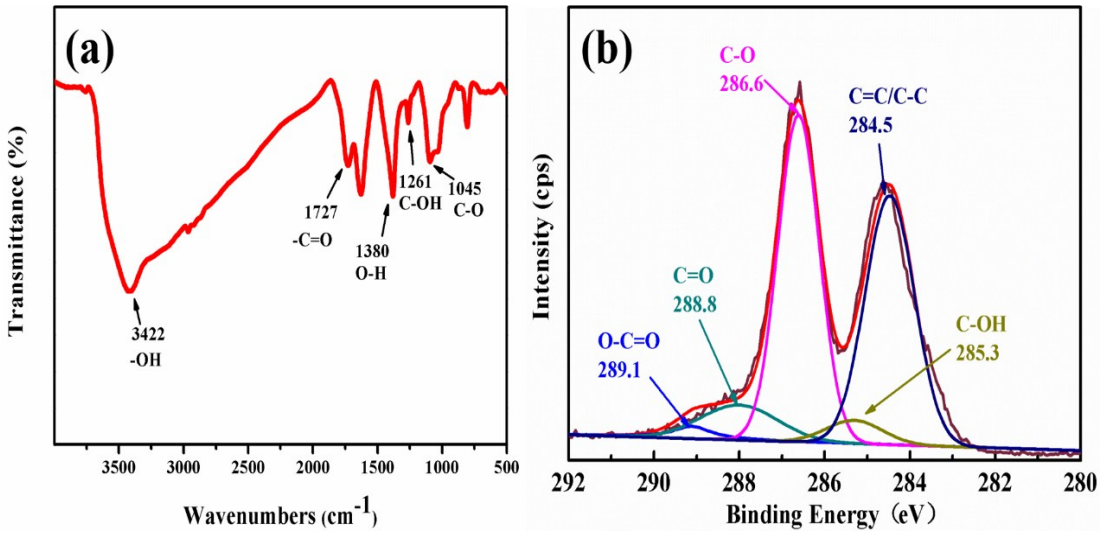

Fig. S2 FTIR spectrum (a) and C1s XPS spectra (b) of GO.

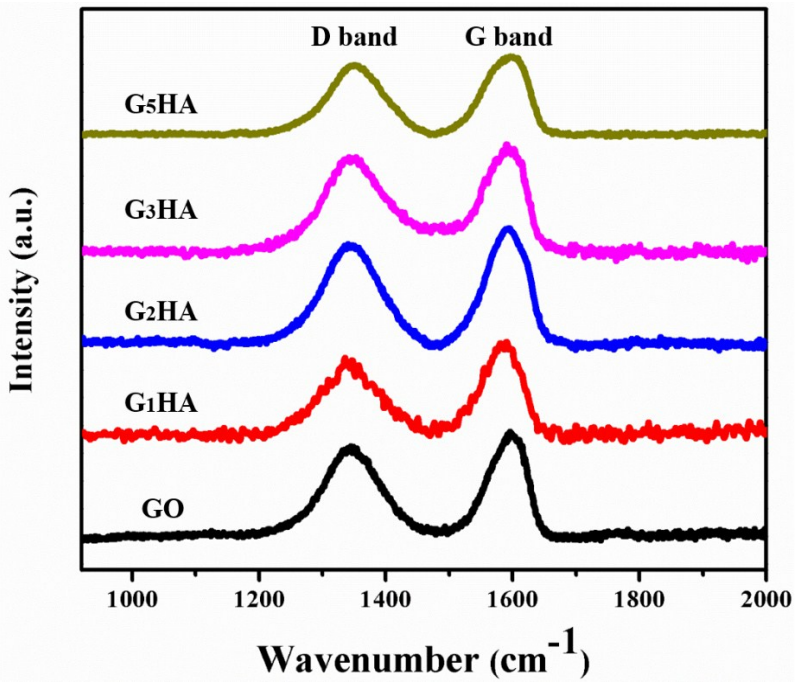

Fig. S3 Raman spectra of GO and GHA gels.

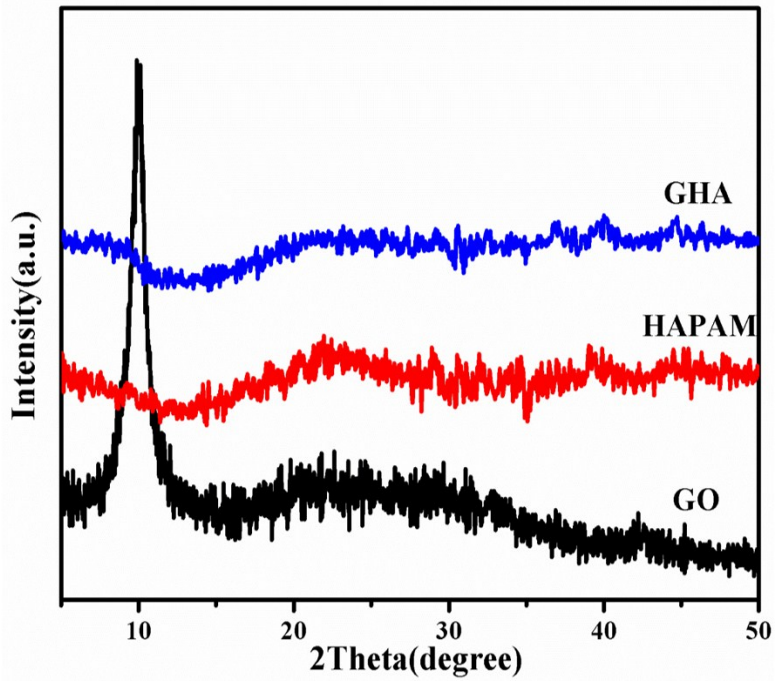

Fig. S4 XRD patterns of GO, HAPAM and GHA.

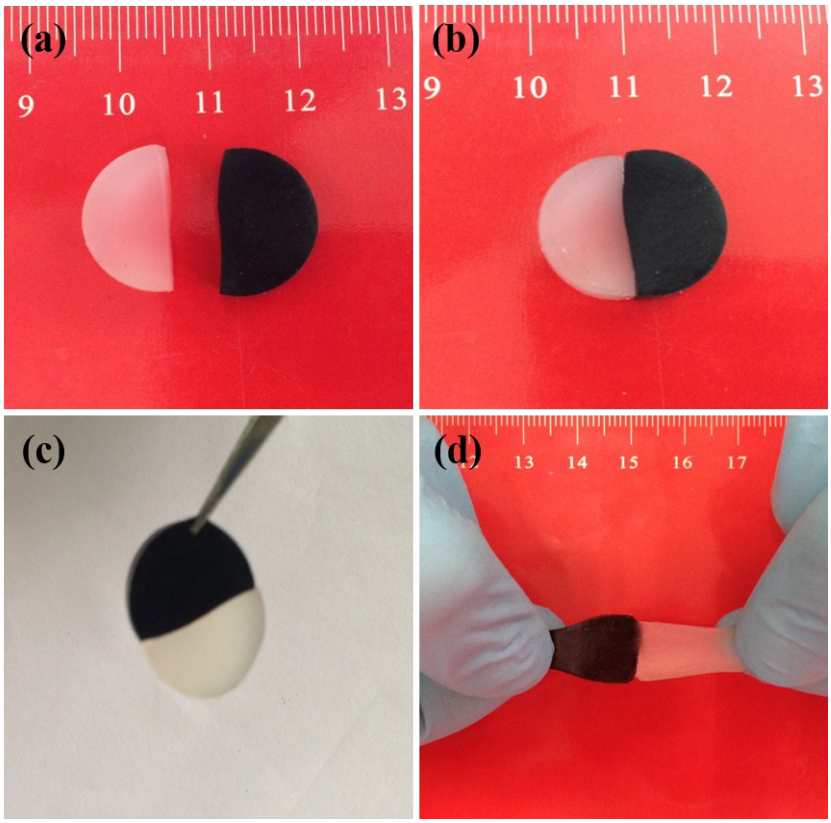

Fig. S5 Preparation of hybrid hydrogel with heterogeneous mechanical properties. Semicircular hydrogel samples of HAPAM and G_5HA (a) were jointed (b) to heal into a hybrid hydrogel (c), which exhibited distinct elastic properties upon stretching (d).

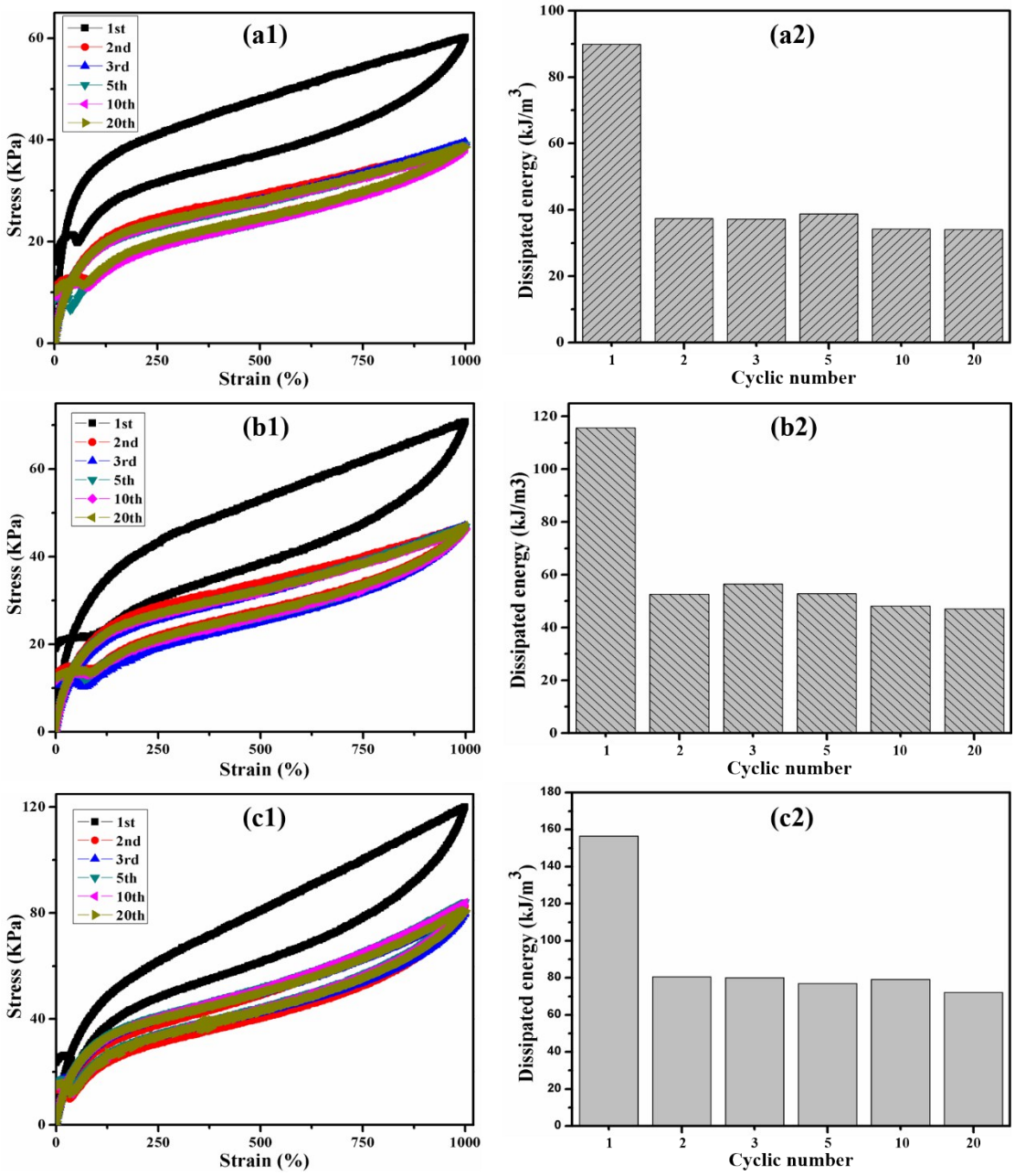

Fig. S6 Cyclic tensile loading-unloading curves of several selected cycles on G_1HA (a1), G_2HA (b1) and G_3HA (c1) at a maximum strain of 1000%. 10 min recovery was allowed for each same gel specimen after the former loading. Dissipated energies of G_1HA (a2), G_2HA (b2) and G_3HA (c2) were calculated from their loading-unloading curves.

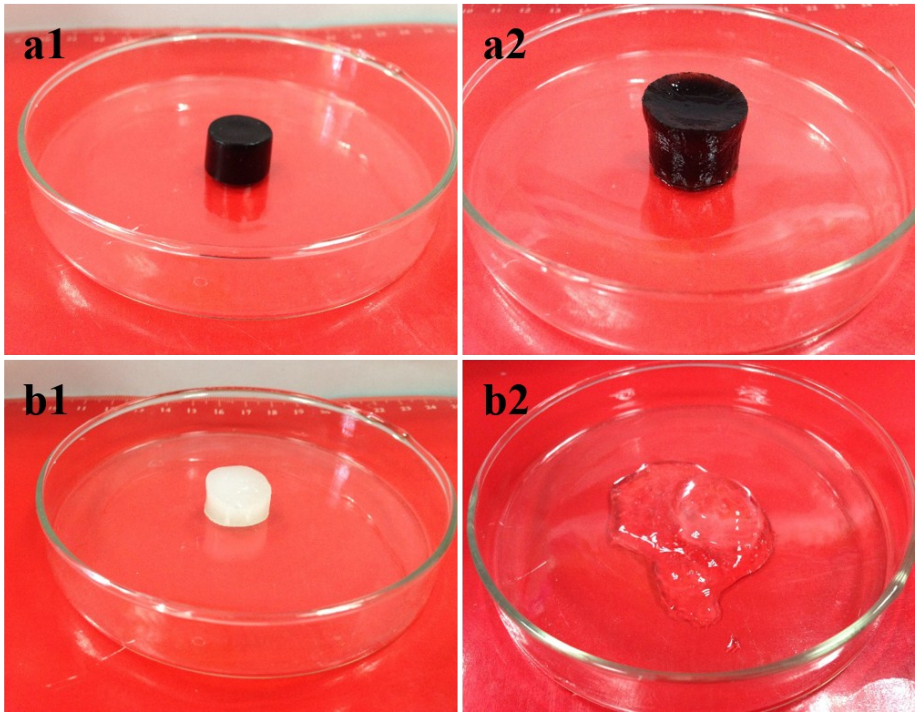

Fig. S7 Photographs of original G_5HA (a1) and HAPAM (b1) consecutively swelling for another month after achieving equilibrium swelling state. G_5HA (a2) remained to be an integrated columnar hydrogel while HAPAM (b2) disintegrated.