Supporting Information for

Preparation of magnetic ZIF-8/ reduced graphene oxide composite aerogel for efficient ofloxacin removal

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1. The optimum synthesized conditions and photographs of products

Fig. S1 showed the photographs of ZIF-8 and Fe_3O_4. Fig. S1a showed the product diagram of ZIF-8 crystal, which was synthesized by solution method to obtain a milky white solid powder. Fig. S1b and 1c were the photographs of Fe_3O_4 nanoparticles, which were synthesized by hydrothermal method to obtain a dark brown solid powder. Seen from Fig. S1c, the obtained Fe_3O_4 was attracted to the bottle wall by a magnet, indicating that Fe_3O_4 was a good magnetic material.

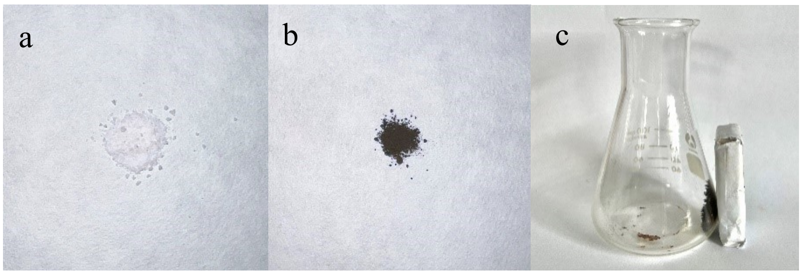

Fig. S1 The photographs of ZIF-8(a) and Fe_3O_4 (b,c).

In order to explore the optimum synthesized conditions of reduced graphene oxide hydrogels and their aerogels, the different mass ratios of GO to L-Cys were researched firstly. Fig. S2a and S2b showed the photographs of graphene hydrogels with the different mass ratios of GO to L-Cys and their aerogels after freeze-drying, respectively. In Fig. S2a, from left to right, the hydrogels with the different mass ratios of GO to L-Cys were successively 1:4, 1:6, 1:8, 1:10 and 1:12. As could be seen from Fig. S2b, when GO:L-Cys was 1:4, reduced graphene oxide aerogel molding was better than that of others. Therefore, the mass ratio of GO:L-Cys (1:4) was selected in this following experiment to prepare a series of subsequent composite aerogel.

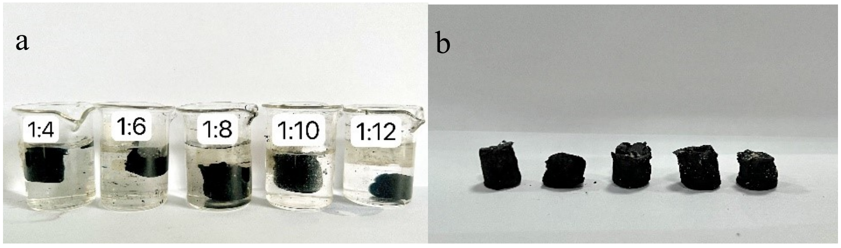

Fig. S2 The photographs of reduced graphene oxide hydrogels(a) and aerogel(b) with different mass ratio of GO to L-Cys.

Moreover, in order to explore the optimum synthesized conditions of Fe_3O_4/rGO hydrogels and their aerogels, the various dosages of Fe_3O_4 were explored too. Fig. S3 was the photographs of Fe_3O_4/rGO, Fig. S3a was the Fe_3O_4/rGO hydrogel with different dosages of Fe_3O_4. It could be clearly seen from Fig. S3a that when the dosage of Fe_3O_4 was gradually increased, the aerogel molding deteriorated, so the dosage of Fe_3O_4 was selected as 10 mg. Fe_3O_4/rGO hydrogel (Fig. S3b) and Fe_3O_4/rGO aerogel (Fig. S3c) adding 10 mg Fe_3O_4 could be easily separated by magnet. It illustrated that Fe_3O_4/rGO aerogel could be used to deal with PPCPs in the wastewater, and could be provided a good idea to synthesize magnetic graphene oxide-based aerogels.

Fig. S3 The photographs of Fe_3O_4/rGO hydrogel with various dosages of Fe_3O_4 (a), Fe_3O_4/rGO hydrogel(b) and Fe_3O_4/rGO aerogel(c) adding 10 mg Fe_3O_4.

Under the optimum conditions of the mass ratio of GO:L-Cys (1:4) and the dosage of Fe_3O_4 (10 mg), Fe_3O_4/ZIF-8/rGO-15 aerogels with the various dosages of ZIF-8(10, 15, 20, 25 mg) were prepared too. Fig. S4a and Fig. S4b showed the photographs of Fe_3O_4/ZIF-8/GA-15 hydrogel and its aerogel, respectively. Fig. S4a and Fig. S4b were the photographs images of FZG15 hydrogel and FZG15 aerogel respectively. In Fig. S4a and Fig. S4b, the obtained FZG15 was handily attracted by the magnet, which are similar to the Fe_3O_4/rGO hydrogel and Fe_3O_4/rGO aerogel (Fig. S3). The density of FZG15 aerogelis 1.60 $mg\cdot cm^{-3}$ (Table 2). Seen from Fig. S4c, the FZG15 aerogel was placed on a very light fine leaf, and the fine leaf still does not bend, which indicated that the FZG15 aerogel had ultra-light properties.

Fig. S4 The photographs of Fe_3O_4/ZIF-8/rGO(FZG15) hydrogel(a), aerogel(b) and it placed on thin leaf(c).

The compressive properties of FZG15 were shown in Fig. S5a, Fig. S5b and Fig. S5c, which were corresponding the status of before supporting, supporting and after supporting 100 g weight respectively. Seen from Fig. S5a, the height of FZG15 before supporting was about 1 cm, and after supporting, FZG15 was pressed to ~50% of its previous height (Fig. S5c), indicating the FZG15 composite aerogel had excellent mechanical properties.

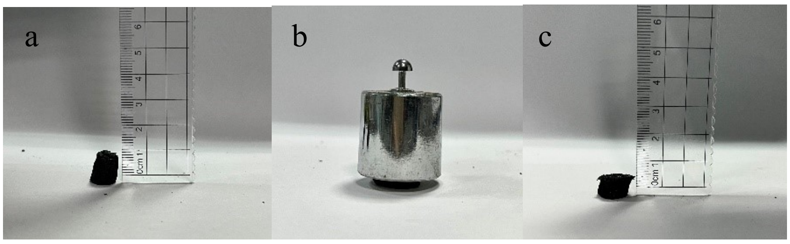

Fig. S5 The mechanical performance test with FZG15

Before supporting(a), supporting (b) and after supporting (c) 100 g weight.