

**Three-dimensional graphene-based aerogels prepared by a self-assembly  
process and its excellent catalytic and absorbing performance**

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**Preparation of GO**

Graphene oxide was prepared from natural graphite by a modified Hummer's method.<sup>1-3</sup> Briefly, concentrated H<sub>2</sub>SO<sub>4</sub> was added to a 250-mL flask filled with graphite. Next NaNO<sub>3</sub> was added and then solid KMnO<sub>4</sub> was gradually added with stirring while the temperature of the mixture was kept below 20 °C. Next the temperature was increased to 30 °C and excess distilled water was added to the mixture and then the temperature was increased to 80 °C. Finally, 30% H<sub>2</sub>O<sub>2</sub> was added until the color of mixture changed to brilliant yellow. The mixture was filtered and washed several times with 5% aqueous HCl to remove metal ions and then washed with distilled water to remove the acid. The resulting filter cake was dried in air and then re-dispersed into water. Suspended GO sheets were obtained after ultrasonic treatment.

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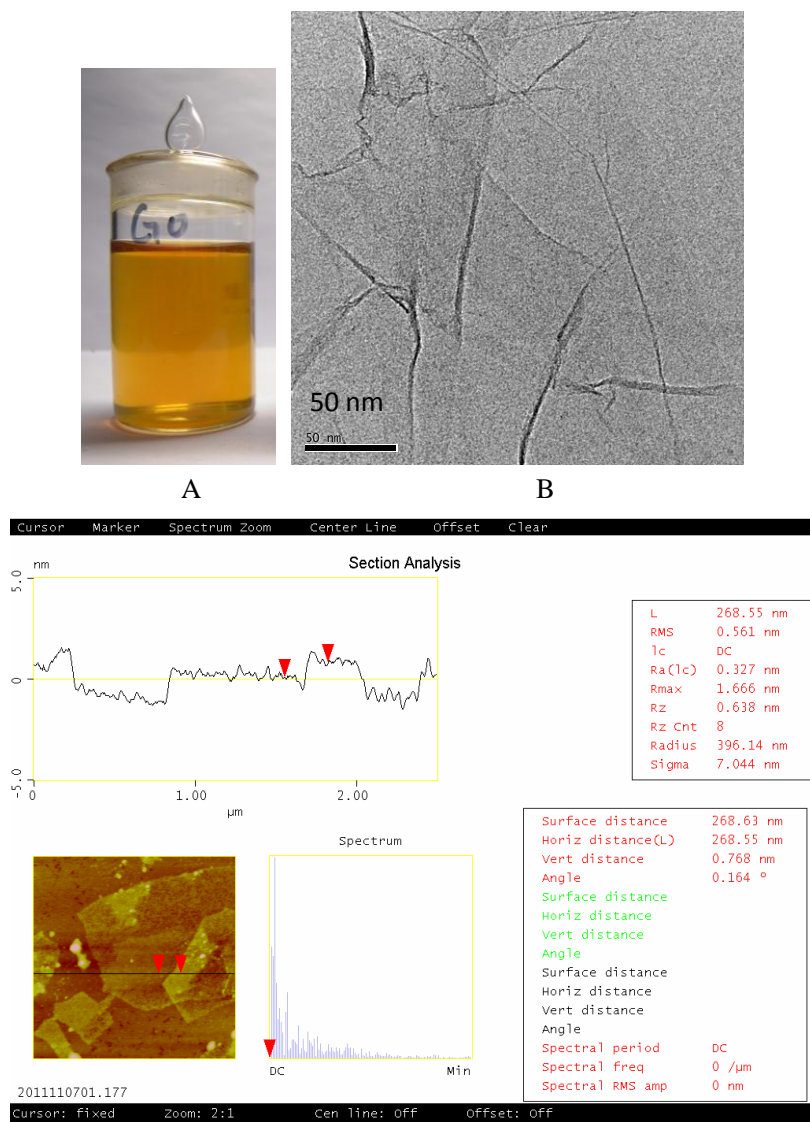


Fig. S1 (A) Optical photos of stable GO suspension; (B) the TEM and (C) AFM image of GO nanosheets

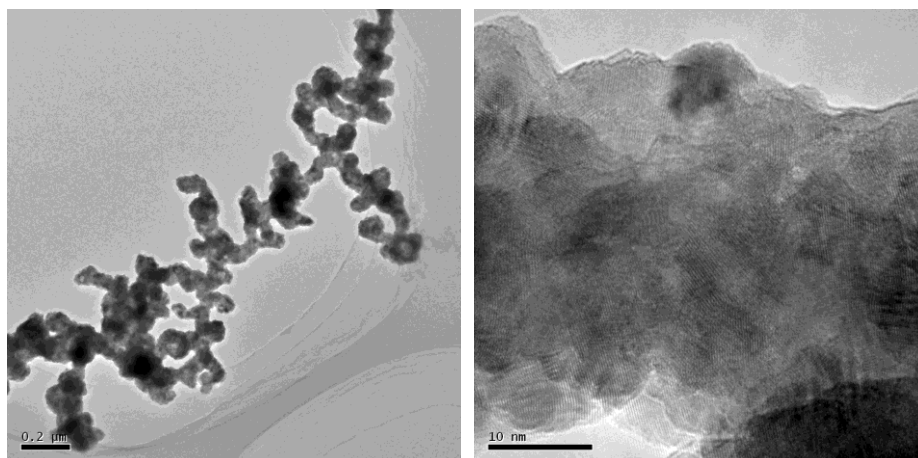


Fig. S2 The TEM images of Cu nanoparticles

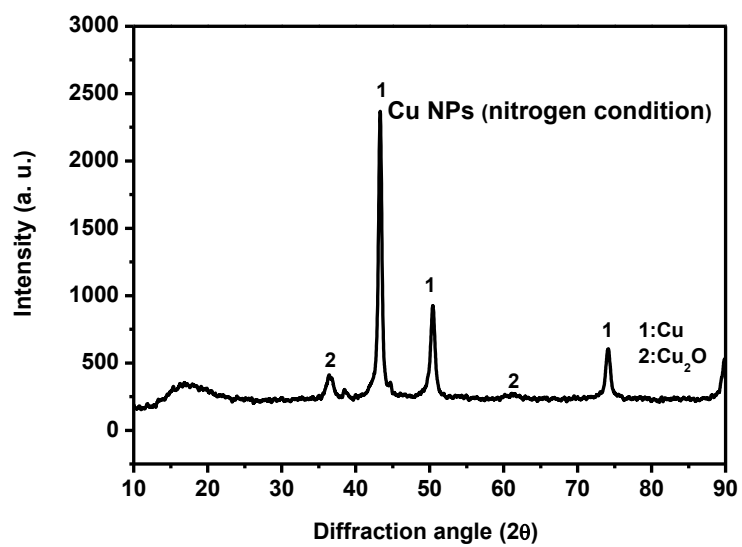


Fig. S3 XRD pattern of pure Cu nanoparticles

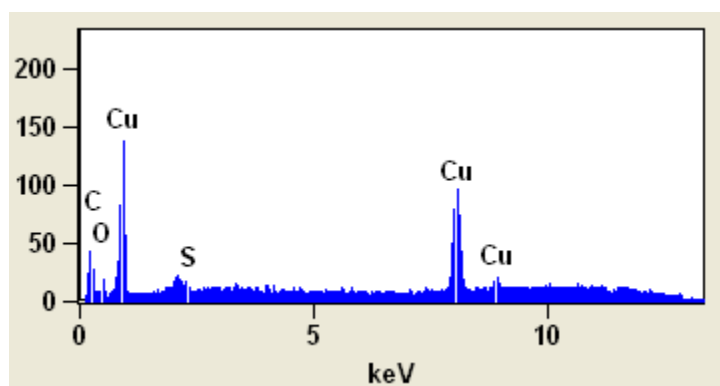


Fig. S4 EDS analysis of particles enwrapped in the GA

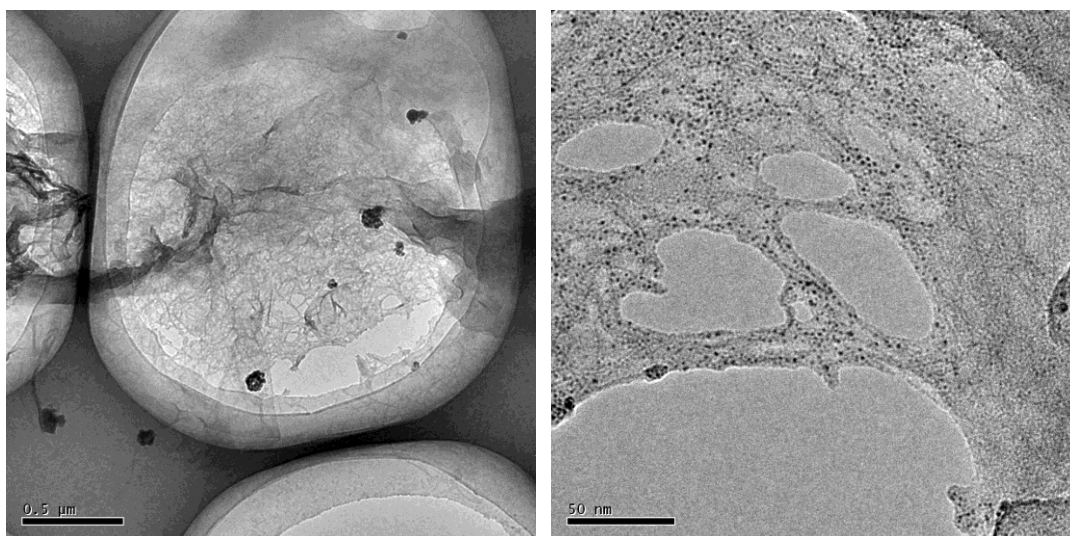


Fig. S5 TEM images of GH after three cycles

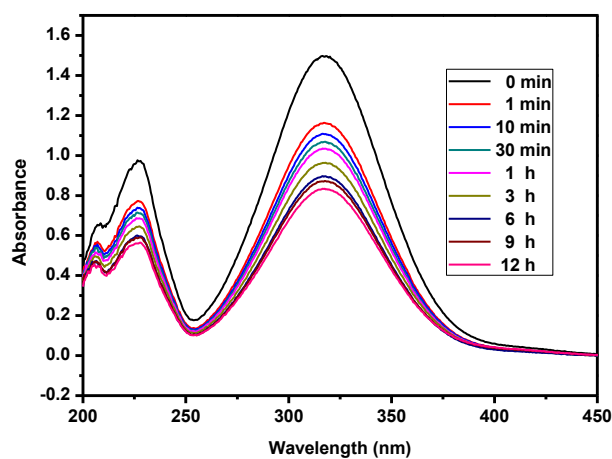


Fig. S6 Time-dependent UV-vis absorption spectra of the adsorption of 4-NP by GA

#### References

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