ELECTRONIC SUPPORTING INFORMATION (ESI)

Highly sensitive mass spectrometric detection of flunitrazepam using magnetic graphene framework enrichment

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Preparation of G-Fe₃O₄

The normal two dimension magnetic graphene (G-Fe$_3$O$_4$) was synthesized by the *in situ* chemical coprecipitation method.

In detail, the magnetic composite was prepared by suspending 0.5 g G in 200 mL of solution containing 1.7 g (4.33 mmol) $(NH_4)_2Fe(SO_4)\cdot6H_2O$ and 2.51 g (8.66 mmol) $NH_4Fe(SO_4)_2\cdot12H_2O$ at 50°C under N$_2$ atmosphere. After the solution was sonicated (200 W, 40 kHz) for 10 min, 10 mL of 8 mol L^{-1} NH$_4$OH aqueous solution was added dropwise to precipitate the iron oxides while the mixture solution was sonicated. The pH of the final mixture should be in the range of 11–12. To promote the complete growth of the nanoparticle crystals, the reaction was carried out at 50 °C for 60 min under constant mechanical stirring. The precipitate was isolated in the magnetic field, and the supernatant was separated from the precipitate by decantation. Impurities (such as sulfate and ammonia) in the G-Fe$_3$O$_4$ were removed by washing with double-distilled water and the precipitate was isolated by a permanent magnet. The obtained G-Fe$_3$O$_4$ nanocomposite was then washed with 10 mL of absolute alcohol for three times. Subsequently, the composite was dried under vacuum.
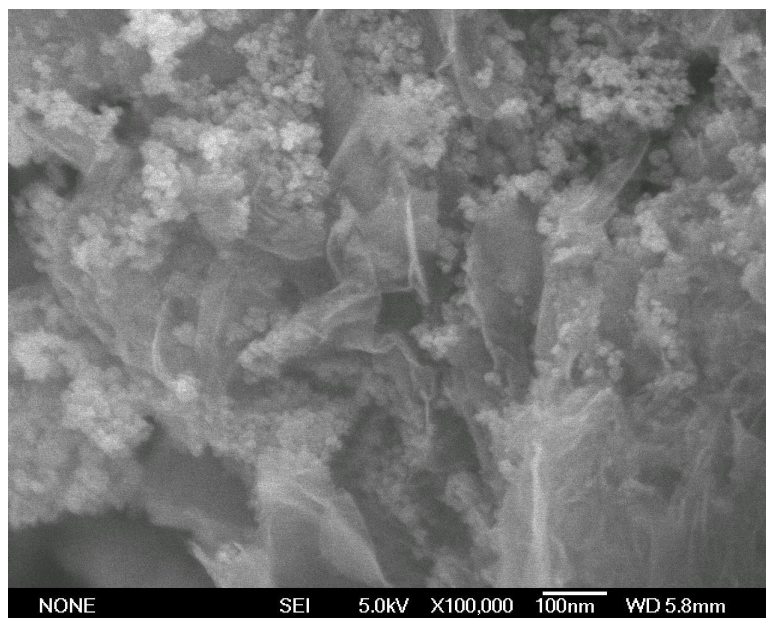

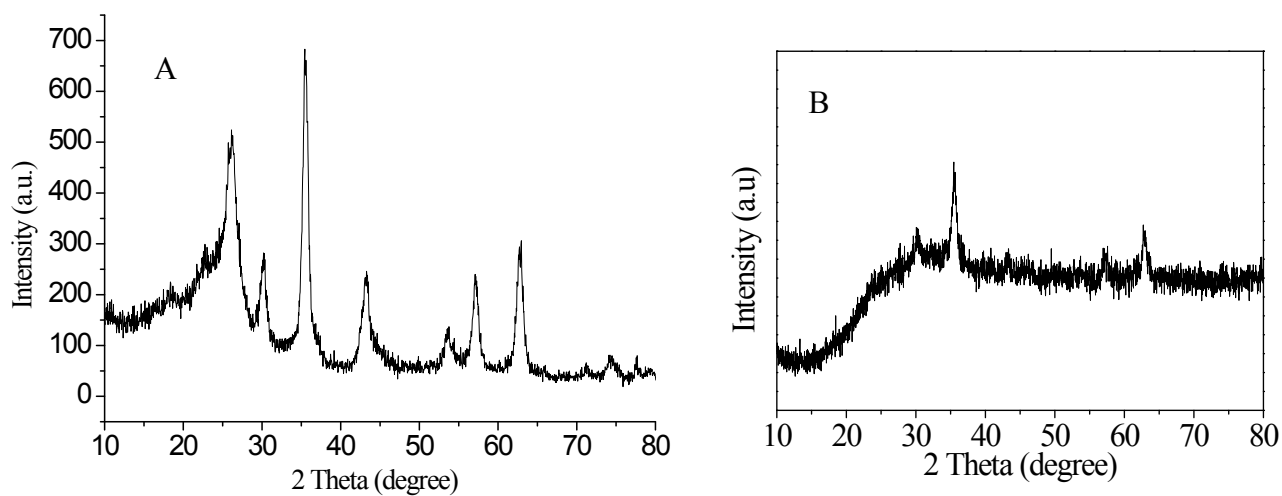**Fig. S1** The SEM image of G-Fe$_3$O$_4$.

Fig. S2 Powder X-ray diffraction patterns of G-Fe$_3$O$_4$ (A) and MGF (B)
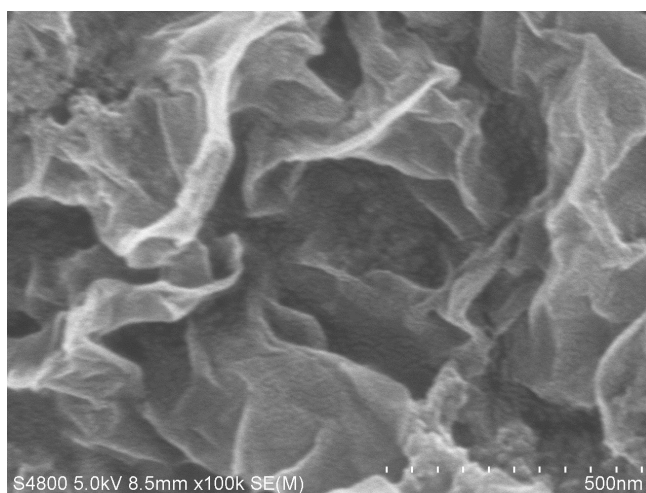

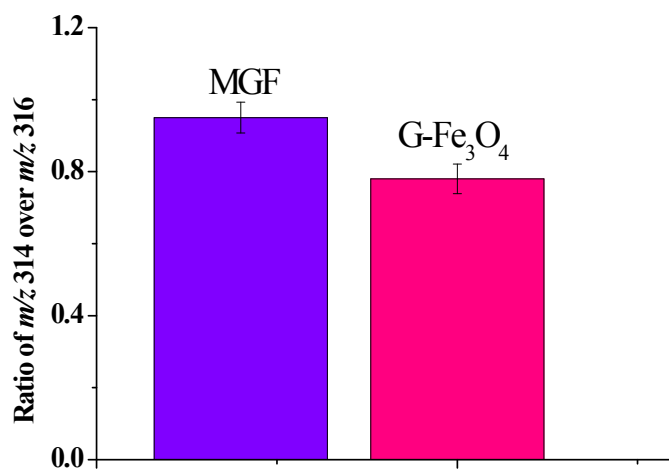
Fig. S3 The SEM image of the used MGF.

Fig. S4 The adsorption capability of MGF and G-Fe$_3$O$_4$. The error bars represent the standard deviation of the mean ($n = 5$).