

Electronic Supplementary Information (ESI)
Facile fabrication of Fe₃O₄@PS/PGMA magnetic Janus particles via organic-inorganic dual phase separation

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1. Characterizations of Fe₃O₄ particles modified with OA

Fe₃O₄ particles modified with OA were studied by XRD, TEM and VSM. XRD pattern was shown in figure S1A. Peak position datas in the pattern matched with standard spectral data of spinel structure of Fe₃O₄ on the PDF card. Fe₃O₄ nanoparticles in the oil phase were provided with favorable dispersibility (figure S1B), since oleic acid on the surface of Fe₃O₄ NPs not only improved the hydrophobicity, but also acted as a release agent between the particles to reduce agglomeration. Magnetic response curve of Oleic acid modified Fe₃O₄ magnetic nanoparticles was shown in Figure S1C, the maximum saturation magnetization was 50.9 emu/g. Its hysteresis loop which completely overlapped results Fe₃O₄ nanoparticles demonstrate superparamagnetic. The amount of oleic acid modified on the surface of Fe₃O₄ nanoparticles was analysed by TGA, as shown in figure S1D. The weight loss was completed at 400°C, and the amount of oleic acid modified was 20%.

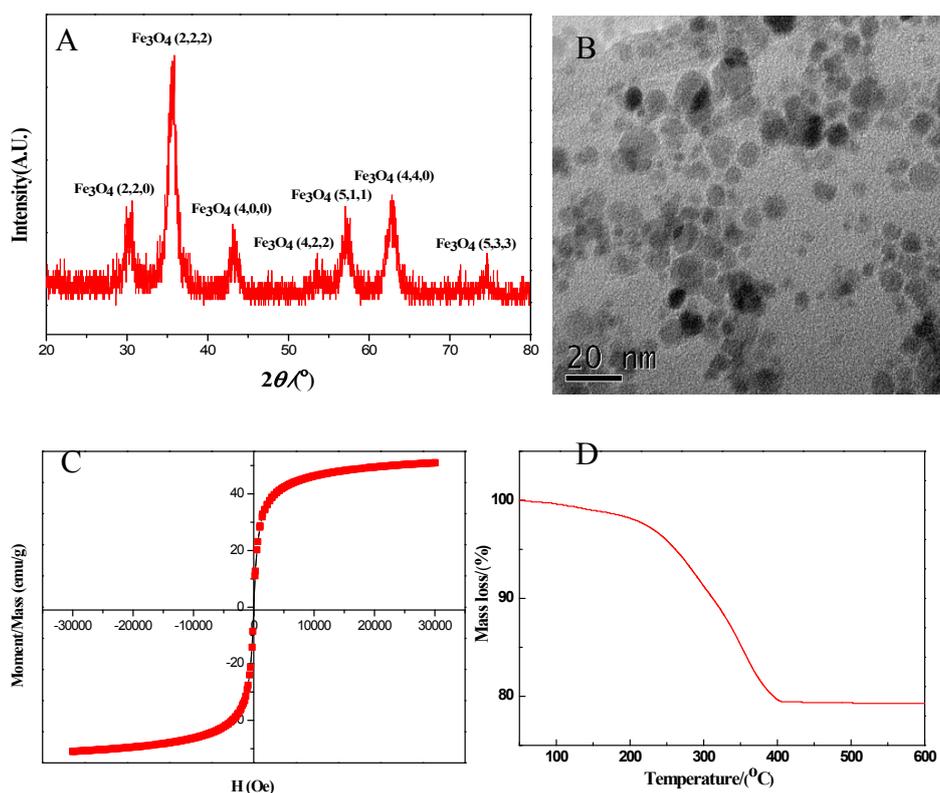


Fig. S1 Characterizations of Fe₃O₄ particles modified with OA: XRD (A), TEM (B), VSM (C) and TGA (D).

2. The TGA curves of Fe₃O₄@PS/PGMA magnetic Janus particles.

Figure S2 provided TGA curves of obtained magnetic Janus particles prepared

under the condition of different dosages of Fe_3O_4 nanoparticles. When mass ratios of Fe_3O_4 nanoparticles and polymer precursors were 3:20, 1.5:20 and 1:20, respectively, magnetic contents of $\text{Fe}_3\text{O}_4@\text{PS/PGMA}$ MJPs were successively 8.9%, 5.4% and 3.6%.

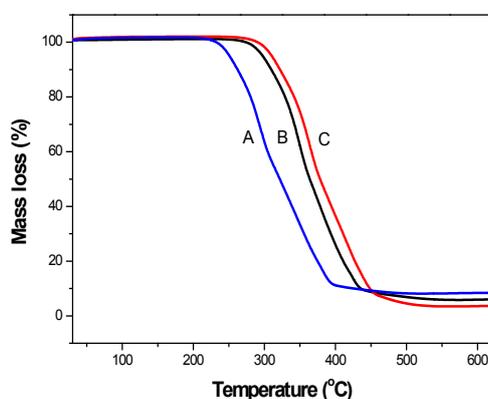


Fig. S2 The TGA curves of $\text{Fe}_3\text{O}_4@\text{PS/PGMA}$ magnetic Janus particles, the ratios of Fe_3O_4 nanoparticles and polymer precursors were 3:20 (A); 1.5:20 (B); 1:20 (C).

3. Optical micrographs of $\text{Fe}_3\text{O}_4@\text{PS/PGMA}$ magnetic Janus particles fabricated by different ratios of PS and PGMA.

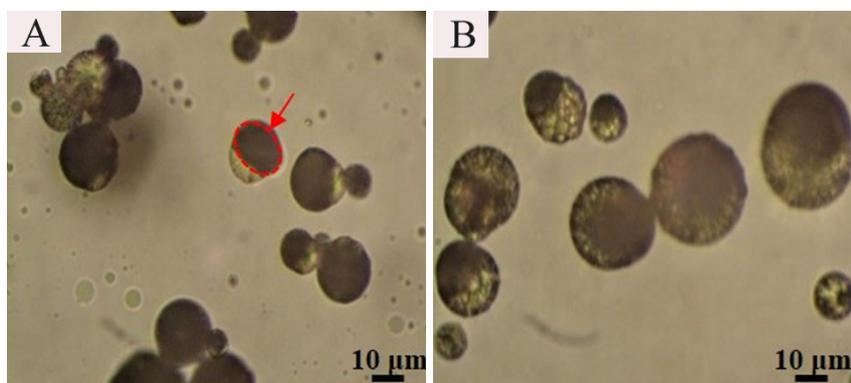


Fig. S3 Optical micrographs of $\text{Fe}_3\text{O}_4@\text{PS/PGMA}$ magnetic Janus particles, the ratios of PS and PGMA were 3:2 (A) and 2:3 (B).

4. Optical micrographs and size distribution of $\text{Fe}_3\text{O}_4@\text{PS/PGMA}$ magnetic Janus particles prepared by different amount of SDBS.

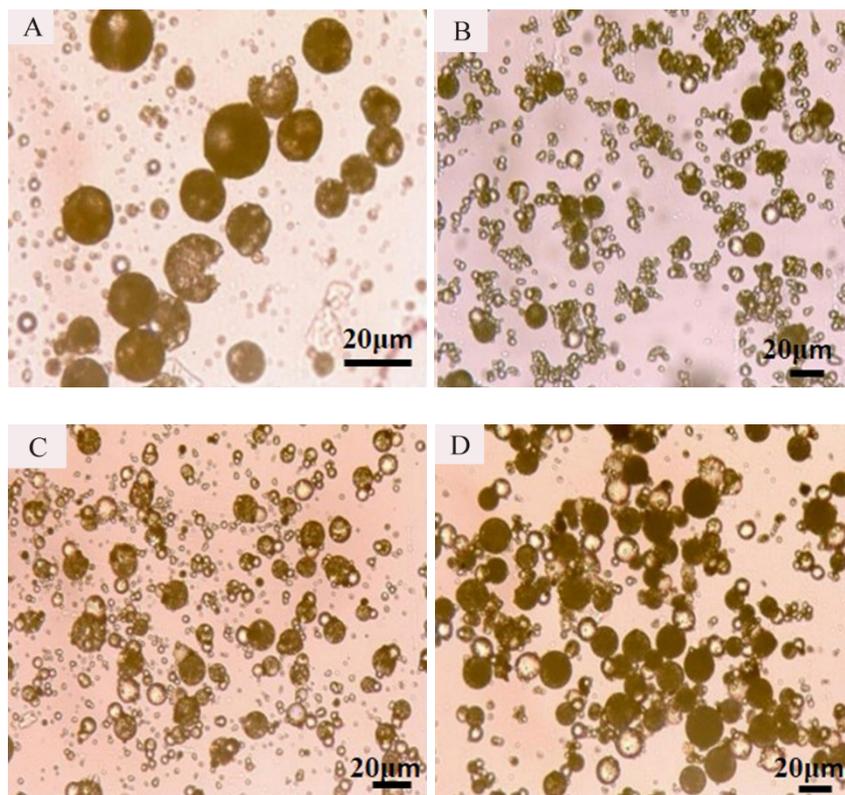


Fig. S4 Optical micrographs of $\text{Fe}_3\text{O}_4@PS/PGMA$ magnetic Janus particles, the amount of SDBS was 0.15% (A); 0.20% (B); 0.25% (C); 0.30% (D)

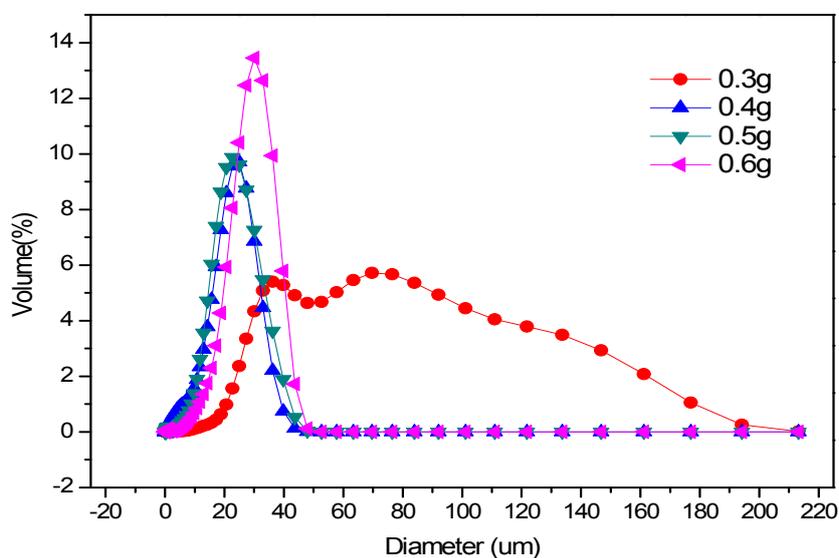


Fig. S5 particle size distribution of $\text{Fe}_3\text{O}_4@PS/PGMA$ magnetic Janus particles prepared with different amount of SDBS.

5. Particle size distribution of $\text{Fe}_3\text{O}_4@PS/PGMA$ magnetic Janus particles prepared by different stirring speed.

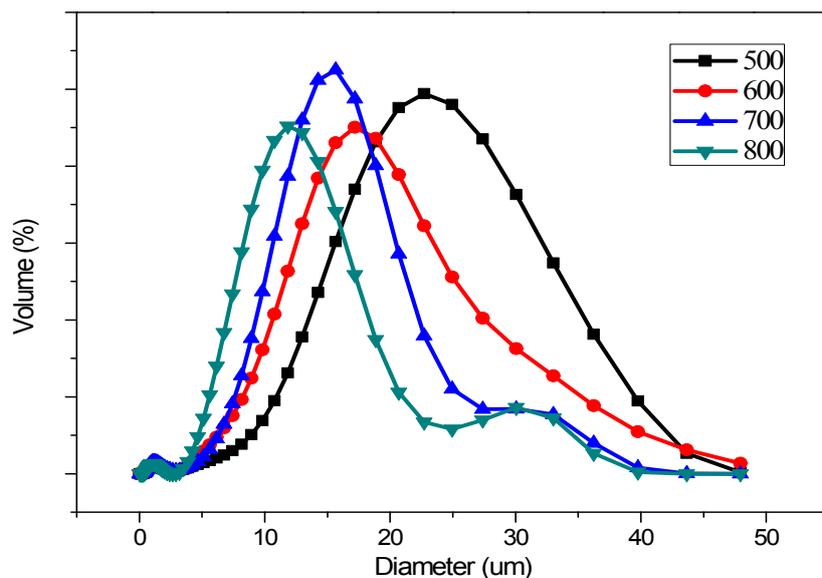


Fig. S6 Particle size distribution of $\text{Fe}_3\text{O}_4@\text{PS}/\text{PGMA}$ magnetic Janus particles prepared by different stirring speed.

6. SEM images of $\text{Fe}_3\text{O}_4@\text{PS}/\text{PGMA}$ magnetic Janus particles fabricated by different amount of solvent.

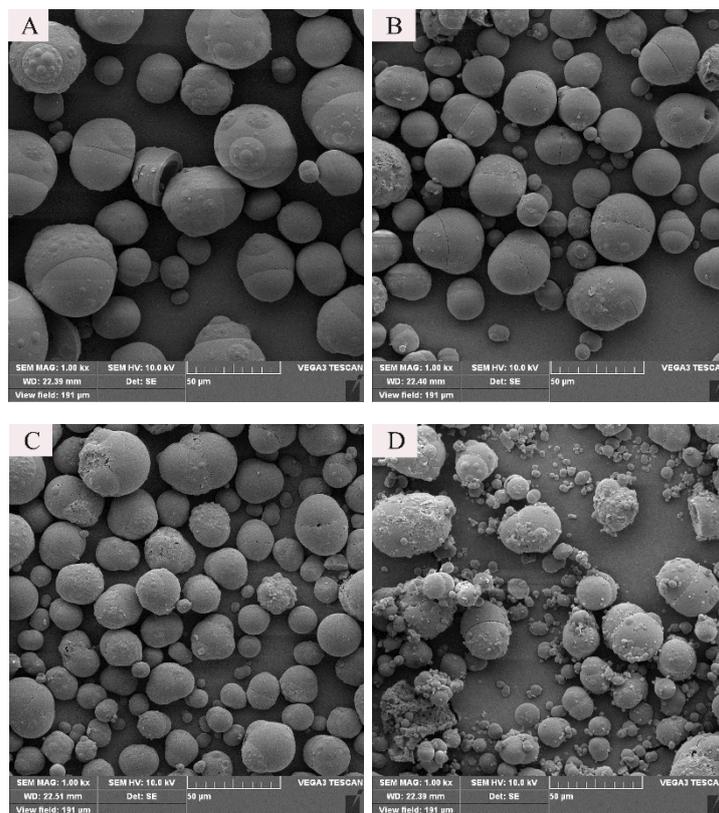


Fig. S7 SEM images of $\text{Fe}_3\text{O}_4@\text{PS}/\text{PGMA}$ magnetic Janus particles, the amount of solvent was 30 mL (A); 40 mL (B); 50 mL (C); 60 mL (D)