Electronic Supplementary Material (ESI) for New Journal of Chemistry.

Fabrication of magnetic Fe_3O_4@P(DVB-co-MAA) microspheres using hollow microspheres as templates for protein separation

Fengjie Bu [a], Qianrui Xu [a], Wenjie Jiang [a], Yingying Wei [a], Zhifei Wang [a], Yong Jiang*[a]

[a] Jiangsu Province Hi-Tech Key Laboratory for Biomedical Research, School of Chemistry and Chemical Engineering, Southeast University, China

*Corresponding authors: Yong Jiang, Email address: yj@seu.edu.cn

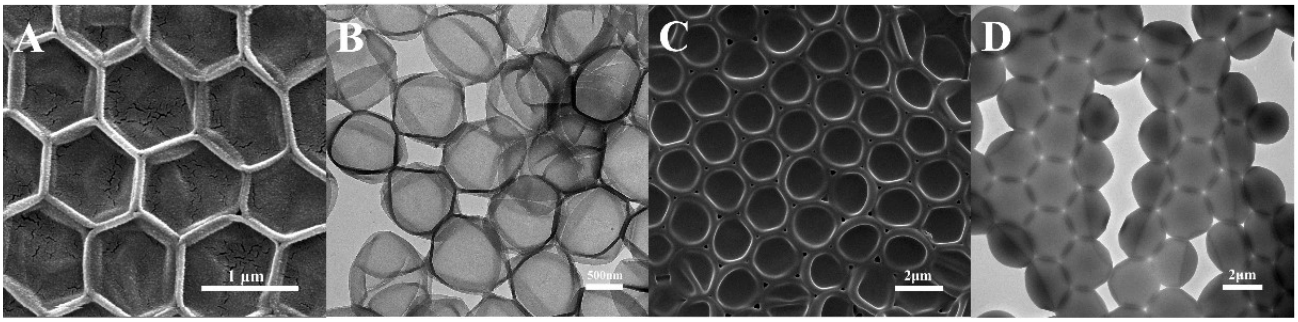

Fig. S1. (A and B) SEM images and TEM images of DVB cross-linked hollow P (DVB-co-MAA) microspheres; (C and D) SEM images and TEM images of MBA cross-linked hollow P (MBA-co-MAA) microspheres.

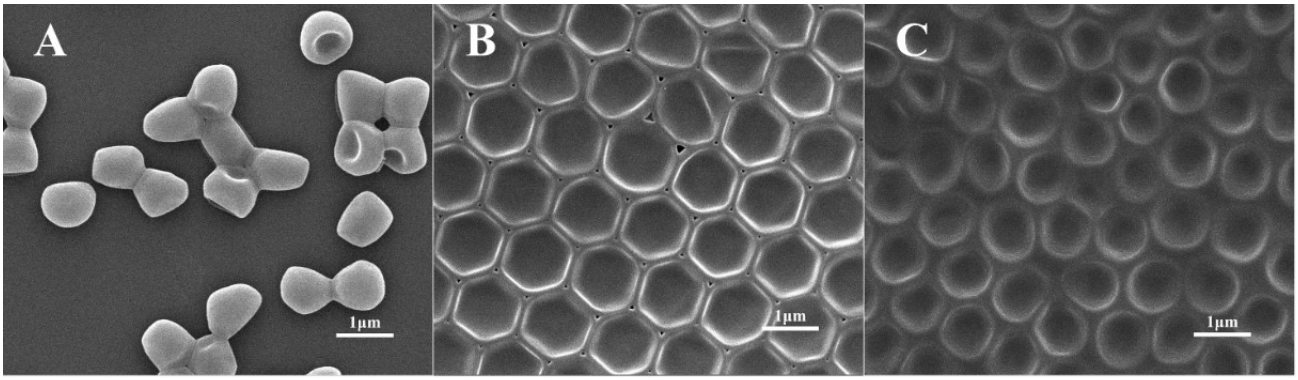

Fig. S2. (A) SEM images of P(DVB-co-MAA) hollow microspheres (B) P(HEMA-DVB-MAA) (HEMA:MAA=1:1) hollow microspheres, (C) P(HEMA-DVB-MAA) (HEMA:MAA=6:1) hollow microspheres.

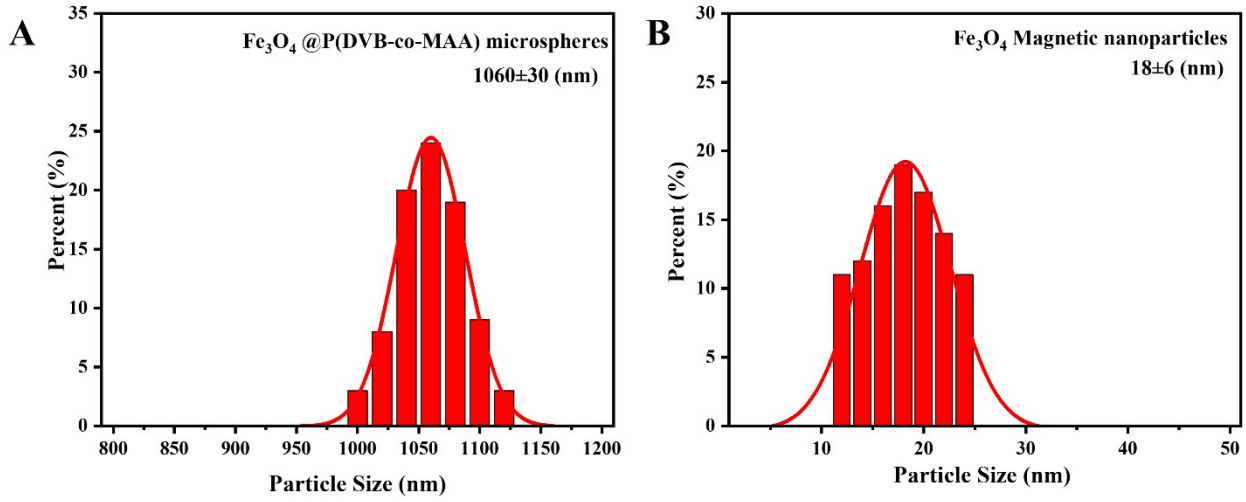

Fig. S3 (A) Particle size distribution of Fe_3O_4@P(DVB-co-MAA) microspheres; (B) Particle size distribution of Fe_3O_4 magnetic nanoparticles.

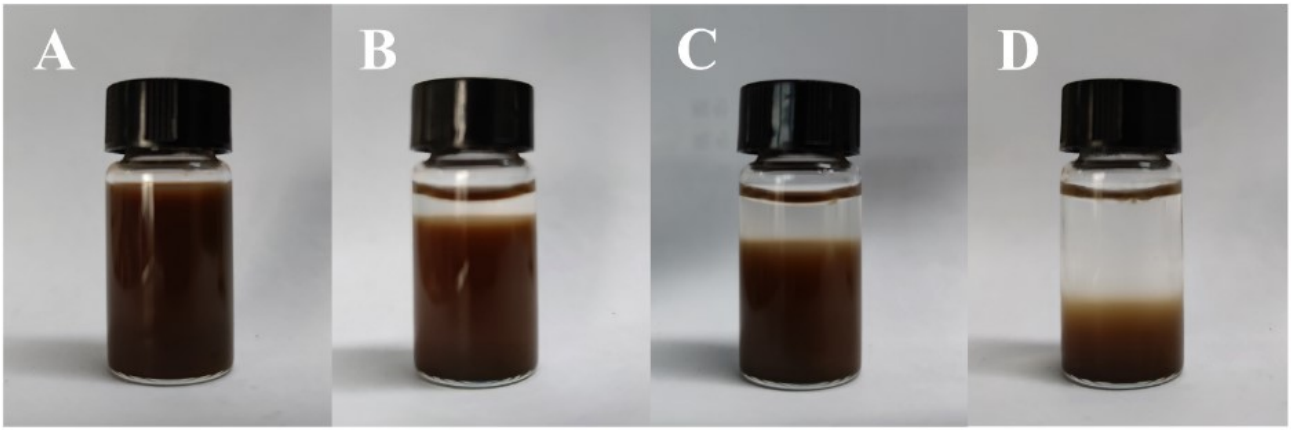

Fig. S4. (A-D) The photos of Fe_3O_4@P(DVB-co-MAA) microspheres suspended in water, after standing for 0h, 4h, 8h, and 12h, respectively.

Table 1. Carboxyl content and zeta potential of Fe_3O_4@P(DVB-co-MAA) microspheres, Fe_3O_4@P(HEMA-DVB-MAA)(HEMA:MAA=1:1) microspheres and Fe_3O_4@P(HEMA-DVB-MAA) (HEMA:MAA=6:1)microspheres

Microsphere	1	2	3
Carboxyl content (mmol/g)	0.9005	0.4565	0.3412
Zeta potential (mv)	-47.87	-26.55	-13.32

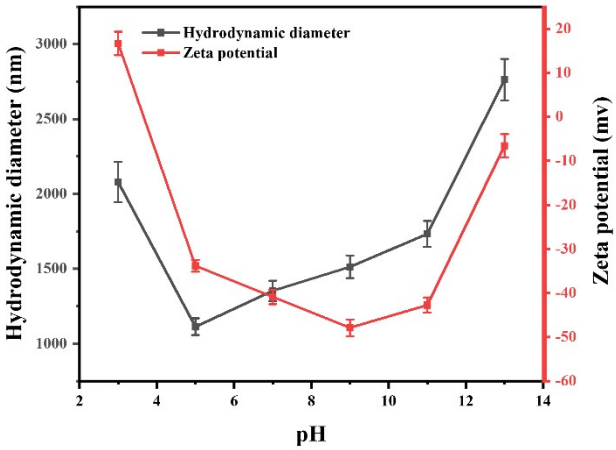

Fig. S5. The hydrodynamic diameter and zeta potential of Fe_3O_4@P(DVB-co-MAA) microspheres. The test was repeated three times.

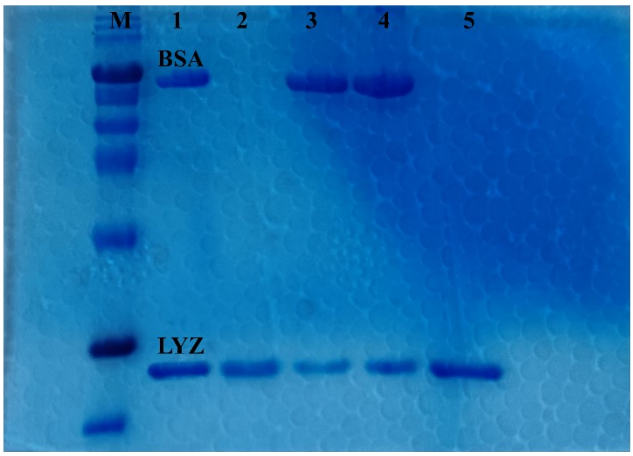

Fig. S6. SDS-PAGE analysis of magnetic Fe_3O_4@P (DVB-co-MAA) microspheres' protein separation. (Separation results of BSA and LYZ solutions. Lane M: protein molecular weight marker; lane 1: original solution before separation; lanes 2 and 3: supernatant and eluted protein after separation at pH = 4.7, respectively. Lanes 4 and 5: supernatant and eluted protein after separation at pH=9, respectively.)

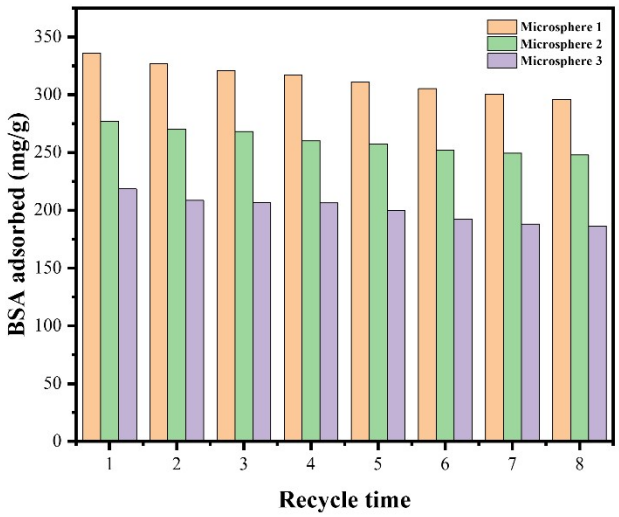

Fig. S7. Reuse of Microsphere 1 (Fe_3O_4@P(DVB-co-MAA)), Microsphere 2 (Fe_3O_4@P(HEMA-DVB-MAA) (HEMA : MAA=1:1)), and Microsphere 3 (Fe_3O_4@P(HEMA-DVB-MAA) (HEMA : MAA=6:1)).