

## **Specific depletion of protein using polydopamine imprinting shells modified amino-functionalized magnetic nanoparticles**

Ruixia Gao,<sup>\*a</sup> Lili Zhang,<sup>b</sup> Yi Hao,<sup>b</sup> Xihui Cui,<sup>b</sup> Yuhai Tang<sup>\*a,b</sup>

<sup>a</sup> Institute of Analytical Science, School of Science, Xi'an Jiaotong University, Xi'an 710049, P. R. China. E-mail: [ruixiagao@mail.xjtu.edu.cn](mailto:ruixiagao@mail.xjtu.edu.cn); [tyh57@mail.xjtu.edu.cn](mailto:tyh57@mail.xjtu.edu.cn).  
Tel./Fax: +86 029 8265 5399.

<sup>b</sup> College of Pharmacy, Xi'an Jiaotong University, Xi'an 710061, P. R. China.

**Table S1** Effect of  $Q_{AD}$  on the immobilization of BSA.

$Q_{AD}^a$ (mg)	10	20	30	40	50
$Q_{IM}^b$ (mg)	9.15	18.34	25.13	25.08	24.96

<sup>a</sup>  $Q_{AD}$  (mg) is the mass of the added BSA when polymerization.

<sup>b</sup>  $Q_{IM}$  (mg) is the mass of the immobilized BSA onto  $Fe_3O_4@NH_2$ . (Each polymerization adopted 200 mg of  $Fe_3O_4@NH_2$ .)

**Table S2** Effect of time on the immobilization of BSA.

Time (min)	10	20	30	40	50
$Q_{AD}^a$ (mg)	30	30	30	30	30
$Q_{IM}^b$ (mg)	4.68	14.95	25.13	24.98	25.24

<sup>a</sup>  $Q_{AD}$  (mg) is the mass of the added BSA when polymerization.

<sup>b</sup>  $Q_{IM}$  (mg) is the mass of the immobilized BSA onto  $Fe_3O_4@NH_2$ . (Each polymerization adopted 200 mg of  $Fe_3O_4@NH_2$ .)

**Table S3** The adsorption capacity, imprinting factors, and selectivity coefficients of BSA, BHb, transferrin, and IgG for  $Fe_3O_4@BSA$ -MIPs and  $Fe_3O_4@NIPs$ .<sup>a</sup>

Proteins	$Q_{MIPs}$ (mg g <sup>-1</sup> )	$Q_{NIPs}$ (mg g <sup>-1</sup> )	$IF$	$SC$
BSA	107.8	32.15	3.35	—
BHb	72.13	36.54	1.97	1.70
Transferrin	35.41	29.38	1.21	2.77
IgG	40.15	33.67	1.19	2.82

<sup>a</sup> In these experiments, 10 mg of  $Fe_3O_4@BSA$ -MIPs and  $Fe_3O_4@NIPs$  were incubated in 3 mL of Tris-HCl (10 mM, pH = 7.0) solution of BSA, BHb, transferrin, and IgG at a concentration of 0.30 mg mL<sup>-1</sup> respectively at room temperature for 20 min. (n = 5)