

Supporting Information

The wide angle XRD patterns of MNT-1/5 and MNT-1/5 after phosphate adsorption were showed in fig. S1. The well defined crystal structure of magnetite was evidenced by the diffraction peaks. In the XRD patterns of MNT-1/5, peaks for $44.85^\circ(110)$, $38.06^\circ(10-2)$ and $50.01^\circ(10-3)$ appeared, which are the typical XRD pattern of La_2O_3 (JCPDS 40-1279). The Fe_3O_4 nanoparticles exhibited well-resolved peaks at 35.4° , 57.0° , and 62.7° , which are attributed to (311), (422) and (440) reflections of Fe_3O_4 , respectively.¹After phosphate adsorption, the major peaks represent for crystalline LaPO_4 occur at 2θ values of (in decreasing order of intensity) 29.36° , 41.58° and 14.56° . And peaks for $26.267^\circ(100)$ and $9.89^\circ(64)$ appeared, which are the XRD pattern of $\text{Fe}(\text{H}_2\text{PO}_4)_3$ (JCPDS 43-0106).

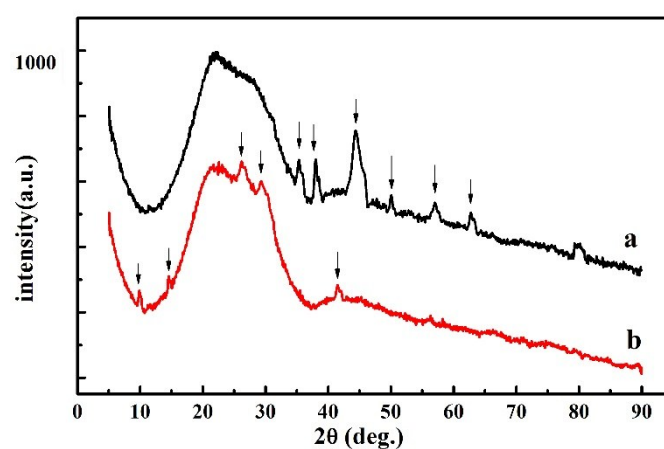


Fig.S1. The wide angle XRD patterns of MNT-1/5 (a) and MNT-1/5 after phosphate adsorption (b).

The MNT's dosage added into the adsorption isothermal experiment was 2 g L^{-1} . Then the centrifuge tubes were placed in a thermostatic shaker bath at 25°C for certain time. Then the solution was filtrated by using $0.45 \mu\text{m}$ membrane syringe filter, and the filtrate was detected by ICP-OES. While the data showed the MNT basically have no adsorptive action for phosphate, showed in following fig. S2.

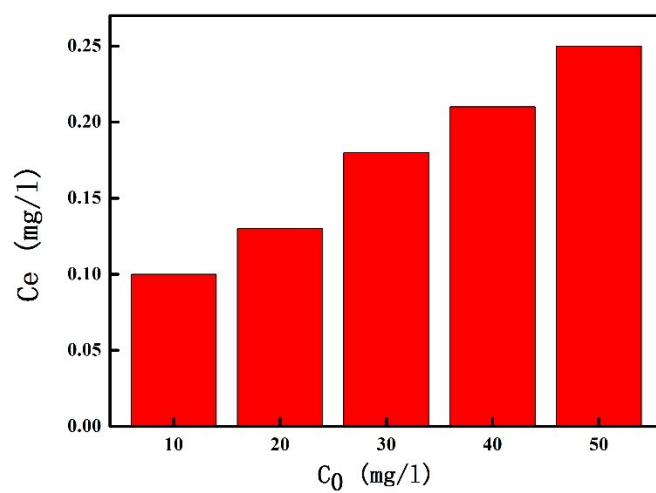


Fig. S2. The adsorb capacity of the blank MNT

1. S. Shin and J. Jang, *Chemical Communications*, 2007, DOI: 10.1039/B707706H, 4230-4232.