Electronic Supplementary Material (ESI) for RSC Advances.

Supplementary Information

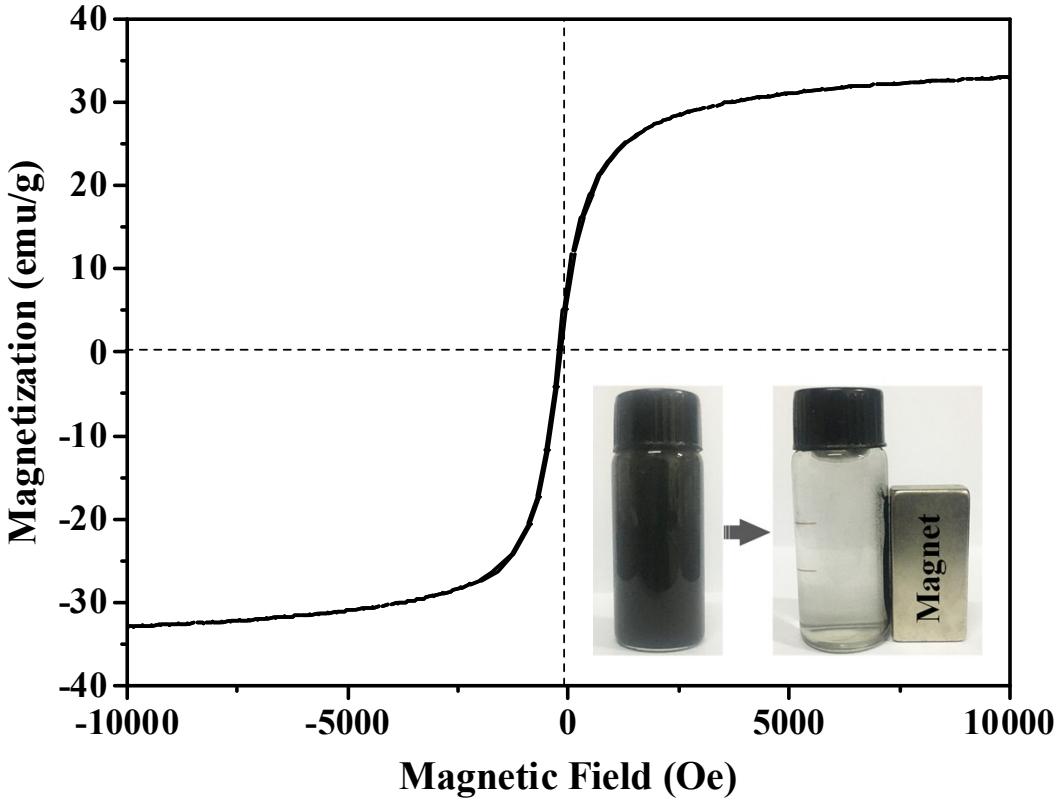

Fig. S1. Magnetization curve of FCB/MAC. Digital image (inset) shows before (right) and after (left) magnetic separation by an ordinary magnet.

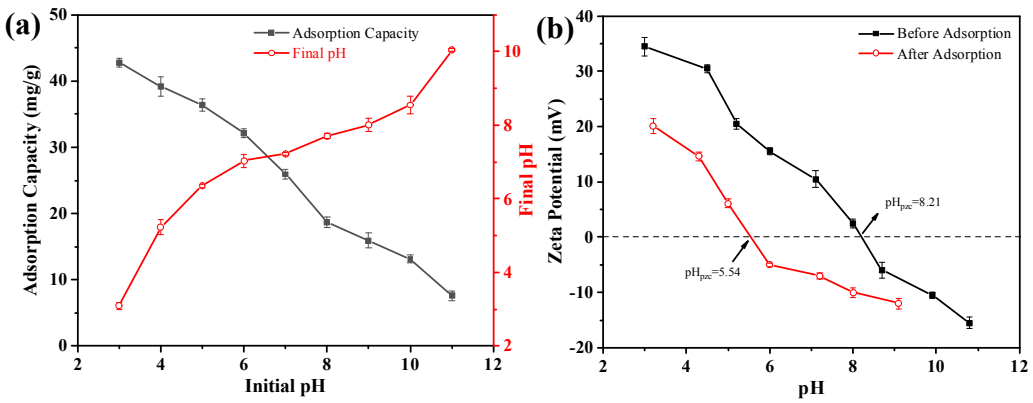

Fig. S2. (a) Effect of initial pH on phosphate adsorption capacities of FCB/MAC and final pH (the pH of the solution after adsorption equilibrium) variation of solution, (b) Zeta potential of the FCB/MAC before and after phosphate sorption at different pH values. Adsorption conditions: initial phosphate concentration, 50 mg P L^{-1}; pH range, 3.0–11.0; temperature, 25 ℃; FCB/MAC dosage, 0.05 g; working volume, 50 mL; contact time, 12 h.

Table S1.

List of kinetic and isotherm models.

Modles	Expression	Parameters
Pseudo-first-order	$q_t = q_e(1-e^{-k_1 t})$	q_e, k_1
Pseudo-second-order	$q_t = \frac{k_2 q_e t^2}{1+k_2 q_e t}$	q_e, k_2
Intraparticle diffusion	$q_t = k_{id} t^{1/2} + C$	C, k_{id}
Langmuir	$q_e = \frac{Q_m K_L C_e}{1+K_L C_e}$	Q_m, K_L
Freundlich	$q_e = K_F C_e^{1/n}$	K_F, $1/n$
Langmuir-Freundlich	$q_e = \frac{Q_m K_{LF} C_e^{1/n}}{1+K_{LF} C_e^{1/n}}$	Q_m, K_{LF}, $1/n$
Redlich-Peterson	$q_e = \frac{K_R C_e}{1+a C_e^{1/n}}$	K_R, a, $1/n$
Temkin	$q_e = \frac{RT}{b}\ln(AC_e)$	A, b

Where q_t and q_e are the adsorbed amount (mg g^{-1}) at an equilibrium concentration (C_e, mg g^{-1}) and a given time of phosphate in solution, respectively. k_1, k_2, and k_{id} are rate constants for the pseudo-first-order (h^{-1}) and pseudo-second-order (g $mg^{-1}\cdot h^{-1}$), and the intraparticle diffusion (mg $g^{-1}\cdot h^{-1/2}$) rate constant, respectively. Q_m denotes the maximum adsorption capacity. K_L, K_F, K_{LF}, and K_R are the Langmuir (L mg^{-1}), Freundlich (mg g^{-1}), Langmuir-Freundlich (L mg^{-1}), and Redlich-Peterson (L mg^{-1}) constants, respectively. $1/n$ is the heterogeneity factor. a (L mg^{-1}) is the Redlich-Peterson isotherm constant, and b (J·g mg^{-1}) and A (L mg^{-1}) are the Temkin isotherm

constant.