



**Figure S10.** XPS spectra of  $\text{Fe}_2\text{O}_3/\text{B. megaterium}$  (a) O 1s spectra (b) N 1s spectra (c) C 1s spectra (d) P 2p spectra. Compared with  $\text{Fe}_2\text{O}_3$ , there are new peaks of hydroxyl-oxygen (b),  $\text{PO}_4^{2-}$  (c), amino acids -N, Fe-N (d), and C-N (e) in the hybrid film.