

Supporting Information

For

Design of A New Nanostructure Comprising Mesoporous ZrO_2 Shell and Magnetite Core ($\text{Fe}_3\text{O}_4@\text{mZrO}_2$) and Study of Its Phosphate Ion Separation Efficiency

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Fig. S1 shows the FTIR spectra of the surfactant (CTAB) and the $\text{Fe}_3\text{O}_4@\text{mZrO}_2$ core/shell material. Absence of any peak corresponds to the surfactant in the FTIR spectrum of $\text{Fe}_3\text{O}_4@\text{mZrO}_2$ exhibits that refluxing with acetone removes all the surfactant molecules from the as-synthesized material to give the desired $\text{Fe}_3\text{O}_4@\text{mZrO}_2$ core/shell compound.

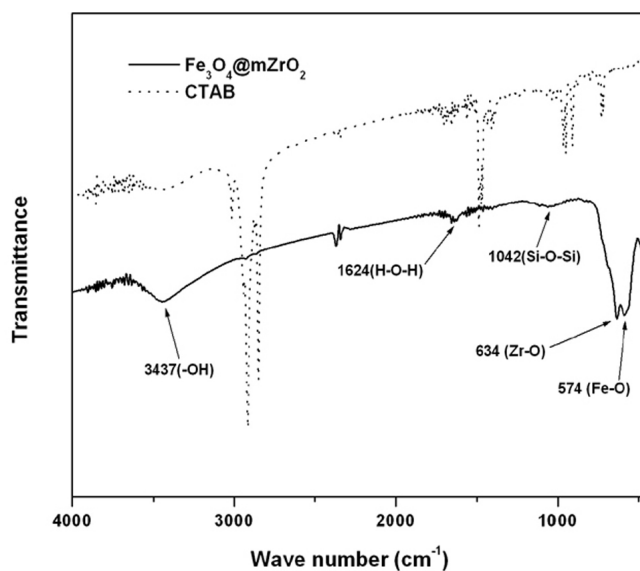


Fig. S1 FTIR spectra of the surfactant (CTAB) and the $\text{Fe}_3\text{O}_4@\text{mZrO}_2$ after surfactant removal.

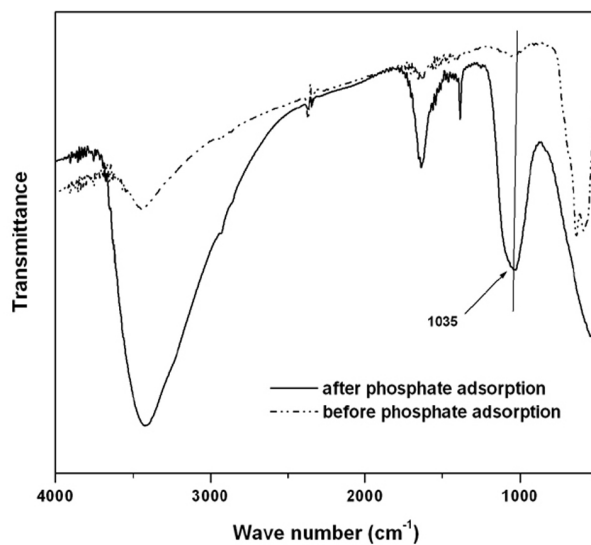


Fig. S2 FTIR spectra of the $\text{Fe}_3\text{O}_4@\text{mZrO}_2$ before and after phosphate adsorption.

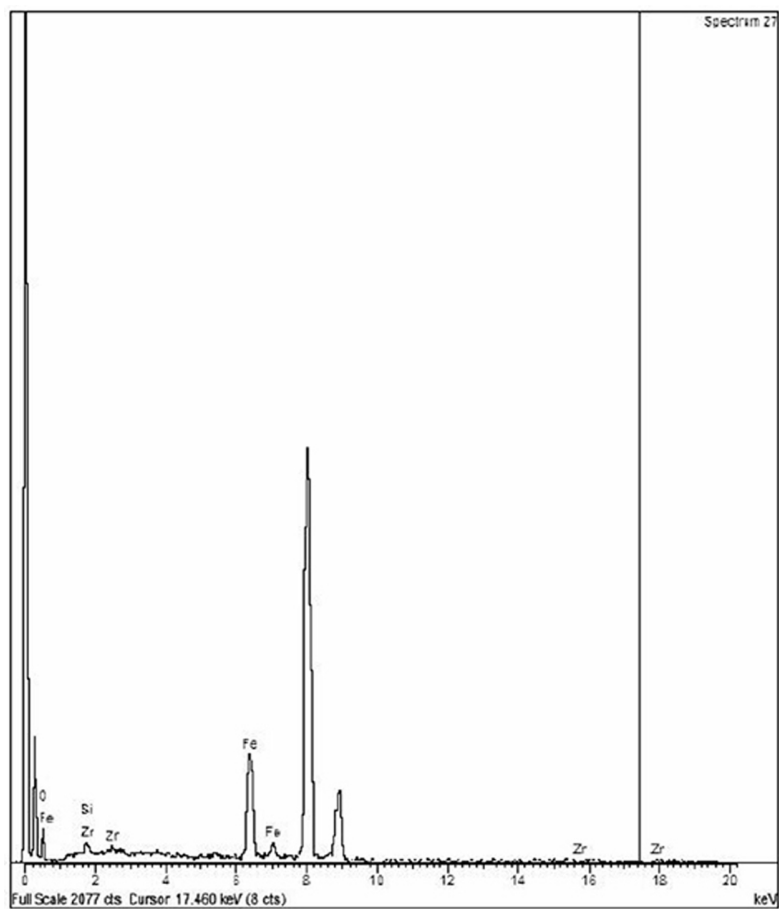


Fig. S3 EDX pattern of the $\text{Fe}_3\text{O}_4@\text{mZrO}_2$.