Electronic Supplementary Information
Deposition of luminescence $\text{Y}_2\text{O}_3:\text{Eu}^{3+}$ on ferromagnetic mesoporous $\text{CoFe}_2\text{O}_4@m\text{SiO}_2$ nanocomposites

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Fig. S1 XPS analysis of $\text{CoFe}_2\text{O}_4@m\text{SiO}_2@\text{Y}_2\text{O}_3:\text{Eu}^{3+}$ composites

The binding energy of Fe, Co, and Si can't be detected in the XPS.
Fig. S2 The emission spectra of the composites (A) with different mass ratio of CoFe\textsubscript{2}O\textsubscript{4}@mSiO\textsubscript{2} over Y\textsubscript{2}O\textsubscript{3}:Eu\textsuperscript{3+} in composites and (B) with different volume of TEOS and (C, D) the corresponding strongest emission peaks curve.

Fig. S2A and C revealed that the luminescent intensities declined with increasing mass ratio of CoFe\textsubscript{2}O\textsubscript{4}@mSiO\textsubscript{2} over Y\textsubscript{2}O\textsubscript{3}:Eu\textsuperscript{3+} in composites, which can be explained that more surface of Y\textsubscript{2}O\textsubscript{3}:Eu\textsuperscript{3+} will be contacted with the ferromagnetic CoFe\textsubscript{2}O\textsubscript{4}@mSiO\textsubscript{2}. When the ratio is 0.65:1, weak luminescent intensity is observed. Fig. S2B and D indicate that the luminescent intensities of the composites decreased dramatically with the decrease of the volume of TEOS.