Supplementary Information for

Electrospinning Preparation and Properties of Magnetic-photoluminescent Bifunctional Coaxial Nanofibers

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1. Hysteresis loops of the Fe_3O_4/Eu(BA)$_3$phen/PVP composite nanofibers containing different mass ratios of Fe_3O_4 NPs

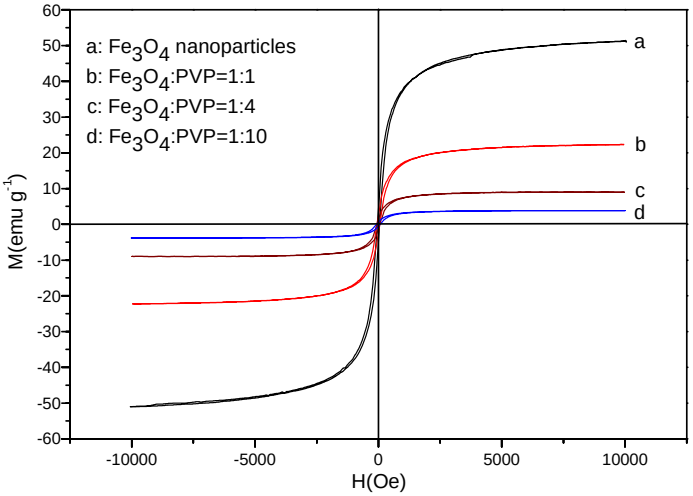

Fig. S1 Hysteresis loops of the (a) Fe_3O_4 nanoparticles and Fe_3O_4/Eu(BA)$_3$phen/PVP composite nanofibers containing different mass ratios of Fe_3O_4 to PVP as (b) 1:1, (c) 1:4, (d) 1:10

It was found from Fig. S1 that saturation magnetization of the Fe_3O_4/Eu(BA)$_3$phen/PVP composite nanofibers was decreased with the decrease of Fe_3O_4 nanoparticles content.

2. Preparation of the electrospinneret

The coaxial electrospinneret was composed of inner and outer injectors. A 5-ml syringe with a truncated 7 # stainless steel needle was adopted as the inner injector. A 10-ml syringe with a truncated 14 # stainless steel needle was used as outer injector. Then the inner injector was inserted into the outer one and ensures that the two needle tips were set on the same plane and adjusted to coaxial state. During the electrospinning process, it just depending on gravity and electric field force to maintain the precursor solution to flow out and no syringe pump was required.

A traditional single-electrospinneret was used when Eu(BA)$_3$phen/PVP nanofibers and Fe$_3$O$_4$/Eu(BA)$_3$phen/PVP composite nanofibers were prepared. It was consisted of a 5-ml syringe with a truncated 7 # stainless steel needle.

3. The effect of the introduction of Fe$_3$O$_4$ NPs into the composite nanofibers on the fluorescence spectra

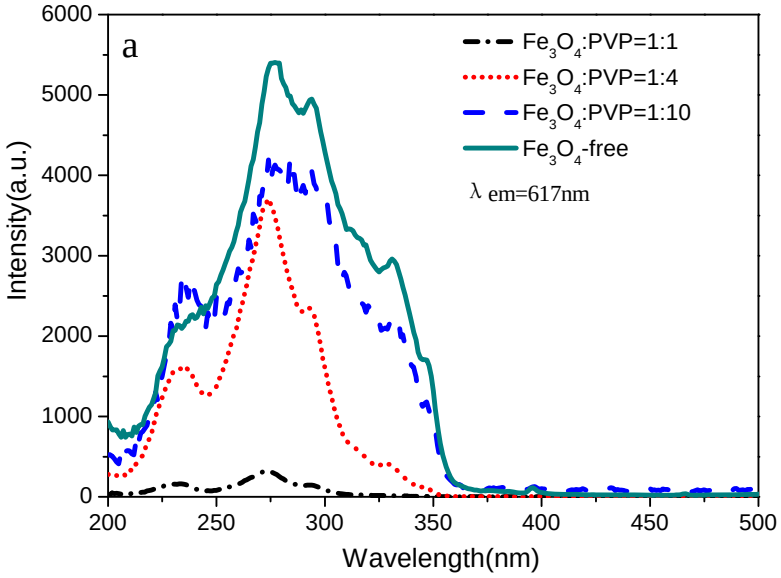

Fig. S2 Excitation spectra of Fe$_3$O$_4$/Eu(BA)$_3$phen/PVP composite nanofibers containing different mass ratios of Fe$_3$O$_4$ nanoparticles

Many complex factors affect excitation spectra, such as the absorption of ligands, the absorption of Eu^{3+} ion, other substances in the sample and the surface characteristics of sample, etc. Combined with analysis of Fig. 4a in the main text and Fig. S2, the excitation peak at 235 nm became apparent after Fe$_3$O$_4$ nanoparticles were added into the composite nanofibers. When a small amounts of Fe$_3$O$_4$ nanoparticles were introduced into the composite nanofibers (Fe$_3$O$_4$:PVP as 1:10), the excitation peak at 235 nm would enhance comparing with the Eu(BA)$_3$phen/PVP nanofibers. This phenomenon might cause by the absorption Fe$_3$O$_4$ nanoparticles. As for the breadth of excitation spectrum, many factors can influence the breadth, furthermore, it is not important to compare the breadth of excitation spectra.