Electronic Supplementary Material (ESI) for Dalton Transactions

SUPPORTING INFORMATION

Photofunctional host-guest hybrid materials and their thin films of lanthanide complexes covalently linked to functionalized Zeolite A

Ji-Na Hao, Bing Yan*

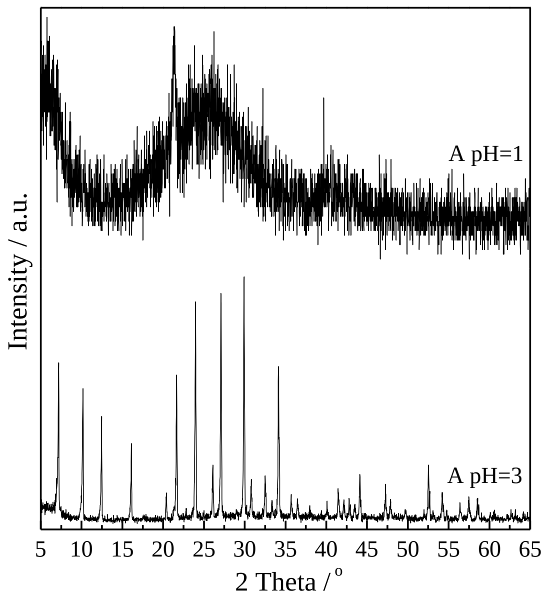

Figure S1 X-ray diffraction pattern: zeolite A was immersed in distilled water with different pH.

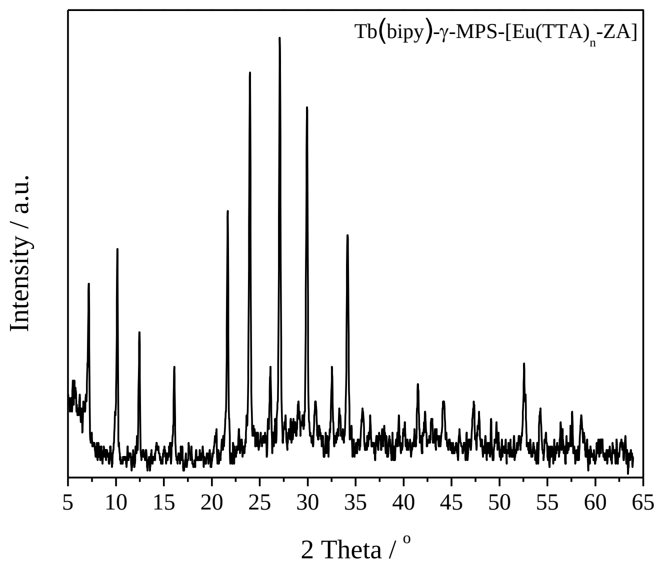

Figure S2 X-ray diffraction pattern of the final hybrid material of Tb(bipy)-γ-MPS-[Eu(TTA)$_n$-ZA].

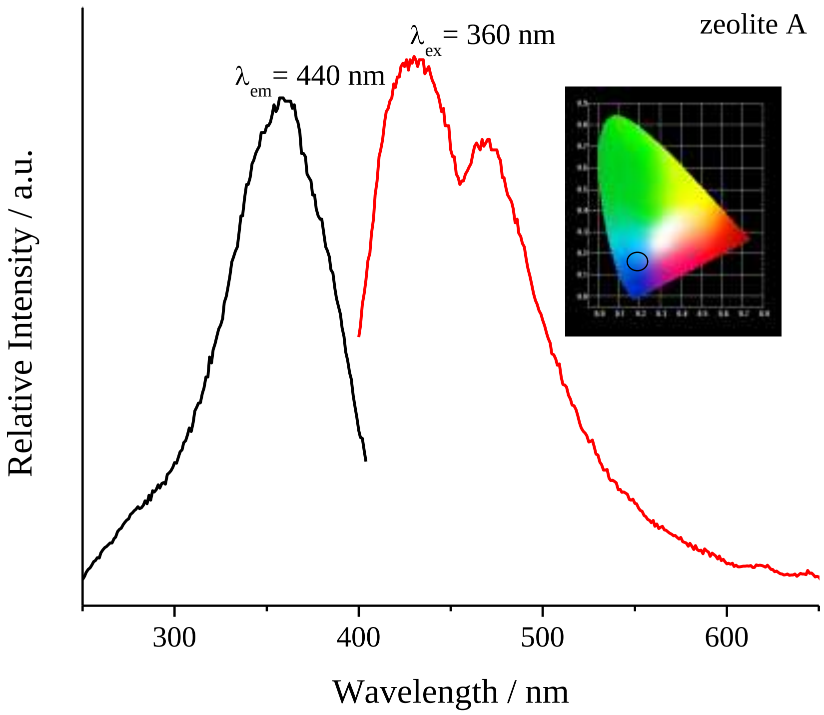

Figure S3 The excitation (black line) and emission spectra (red line) of zeolite A. The point of emission spectra in CIE chromaticity diagram is in the area of blue (CIE x: 0.1748; CIE y: 0.1597).

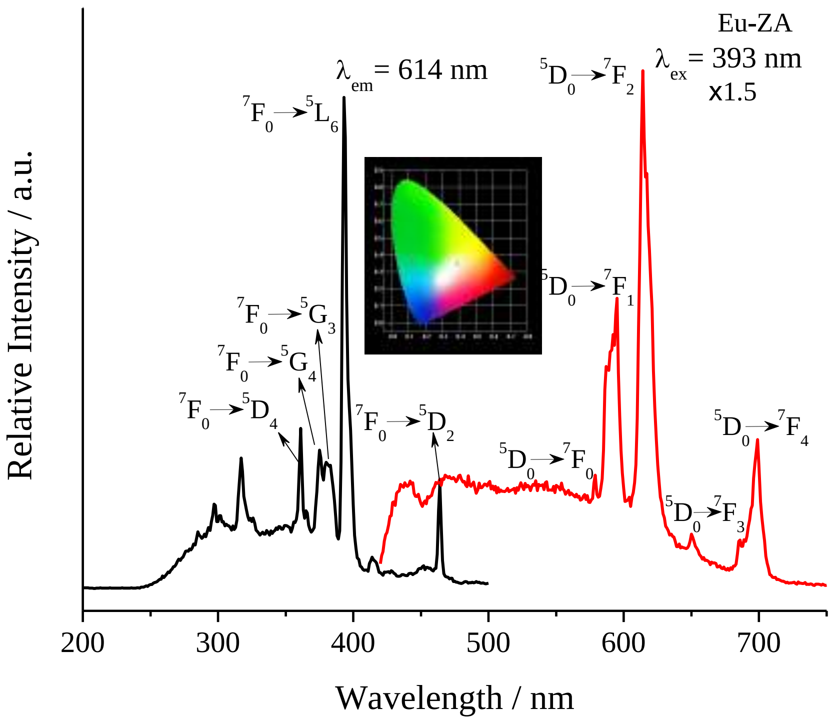

Figure S4 The excitation (black line) and emission spectra (red line) of Eu-ZA. The point of emission spectra in CIE chromaticity diagram is in the area of white (CIE x: 0.3872; CIE y: 0.3489).

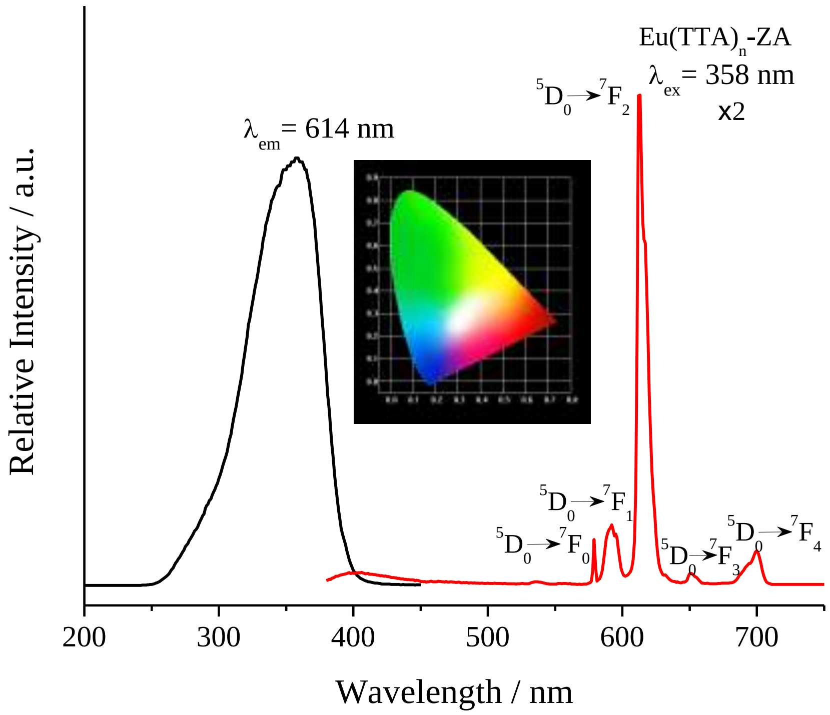

Figure S5 The excitation (black line) and emission spectra (red line) of Eu(TTA)$_n$-ZA. The point of emission spectra in CIE chromaticity diagram is in the area of red (CIE x: 0.6114; CIE y: 0.3213).

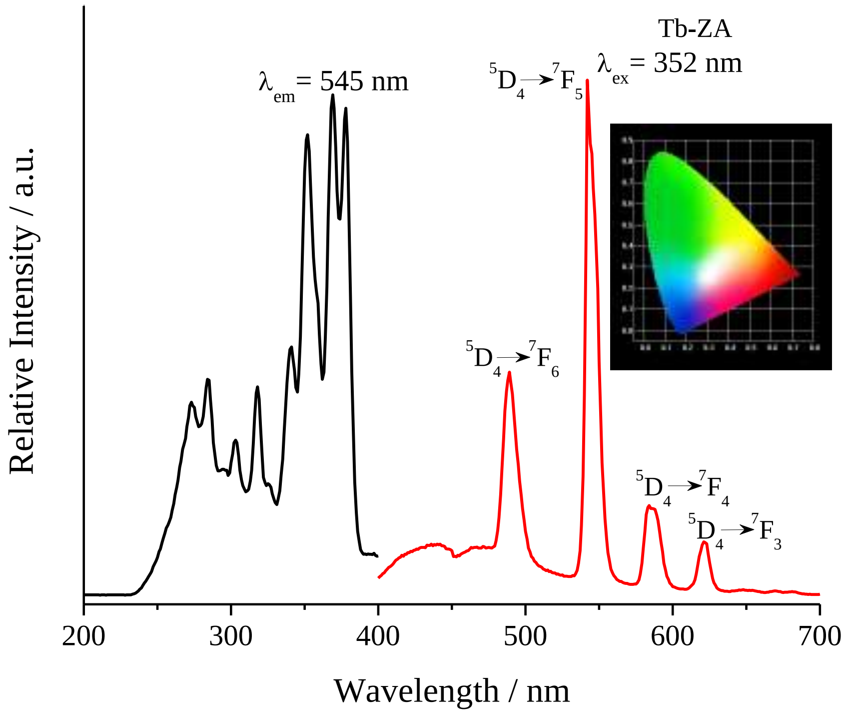

Figure S6 The excitation (black line) and emission spectra (red line) of Tb-ZA. The point of emission spectra in CIE chromaticity diagram is in the area of green (CIE x: 0.2605; CIE y: 0.4217).

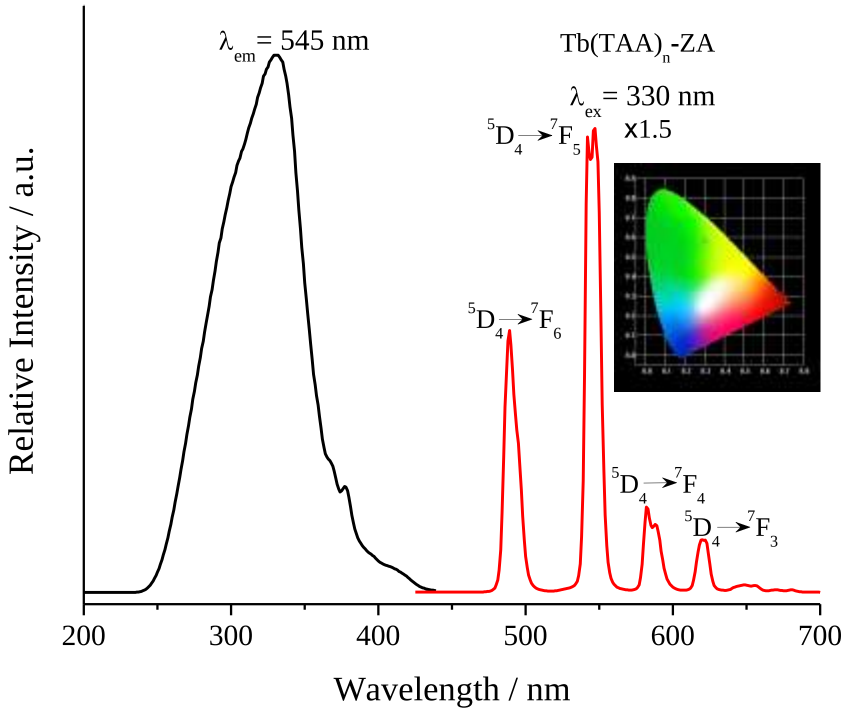

Figure S7 The excitation (black line) and emission spectra (red line) of Tb(TAA)$_n$-ZA. The point of emission spectra in CIE chromaticity diagram is in the area of green (CIE x: 0.3032; CIE y: 0.5823).

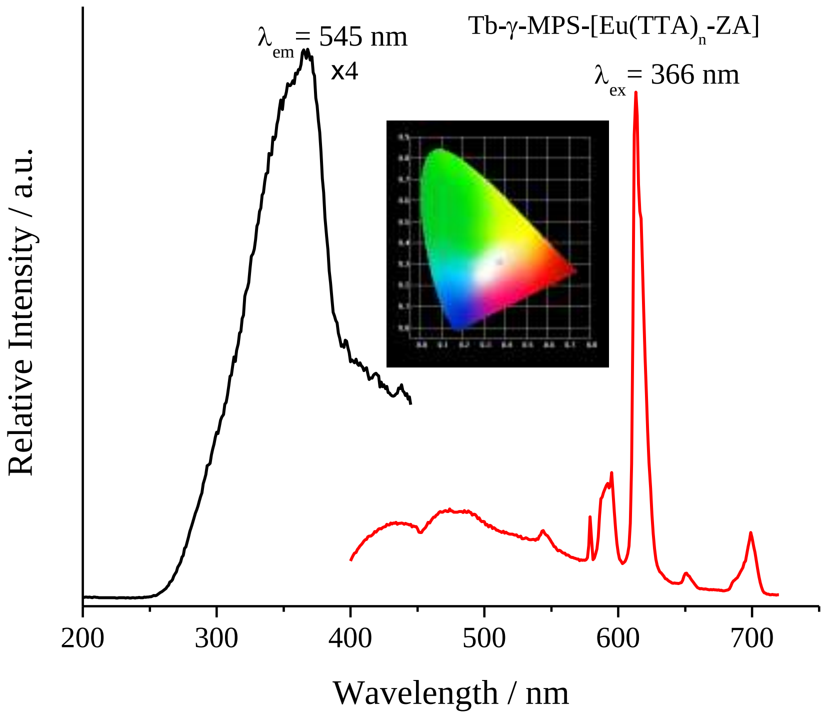

Figure S8 The excitation (black line) and emission spectra (red line) of Tb-γ-MPS-[Eu(TTA)$_n$-ZA]. Before introducing phen or bipy ligands, the band at 550 nm which is the emission of Tb^{3+} is rather weak. And the point of emission spectra in CIE chromaticity diagram is in the area of white (CIE x: 0.3727; CIE y: 0.3094).

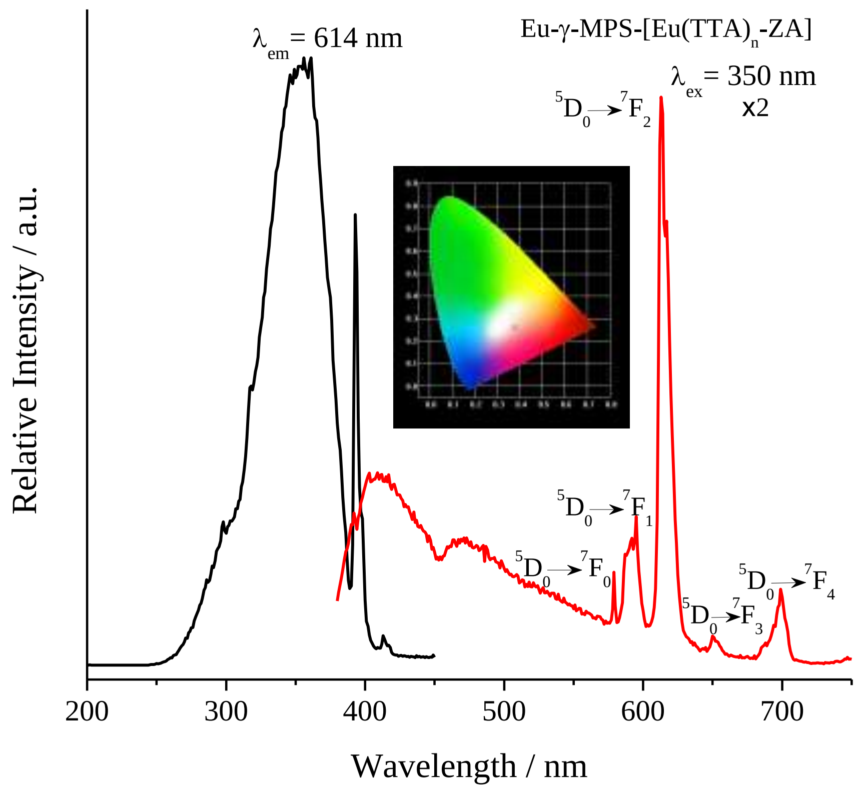

Figure S9 The excitation (black line) and emission spectra (red line) of Eu-γ-MPS-[Eu(TTA)$_n$-ZA]. The point of emission spectra in CIE chromaticity diagram is in the area of green (CIE x: 0.3333; CIE y: 0.2633).

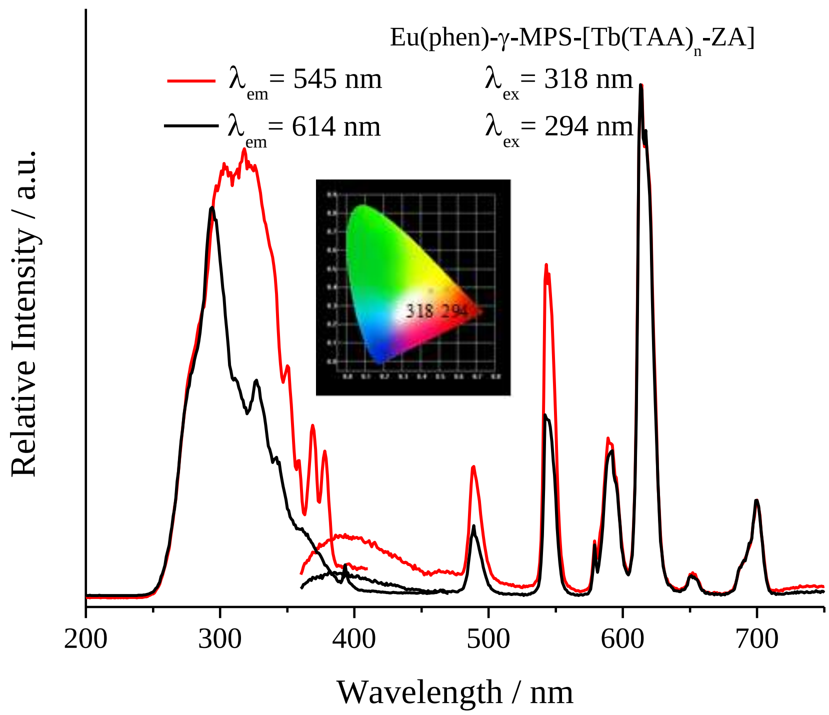

Figure S10 The excitation (black line 614 nm and red line 545 nm) and emission spectra (black line 294 nm and red line 318 nm) of Eu(phen)-γ-MPS-[Tb(TAA)$_n$-ZA].

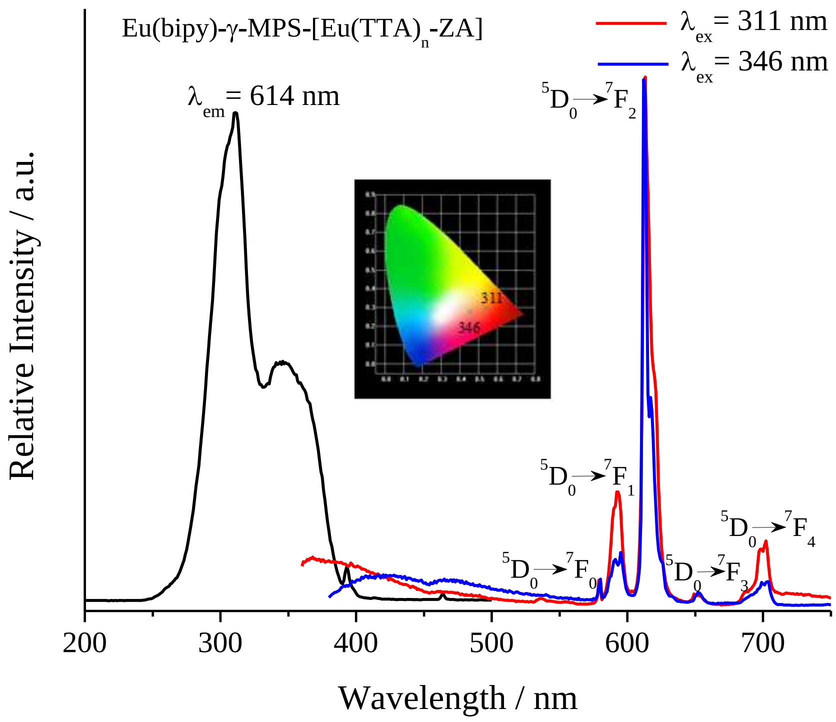

Figure S11 The excitation (black line) and emission spectra (red line 311 nm and blue line 346 nm) of Eu(bipy)-γ-MPS-[Eu(TTA)$_n$-ZA].

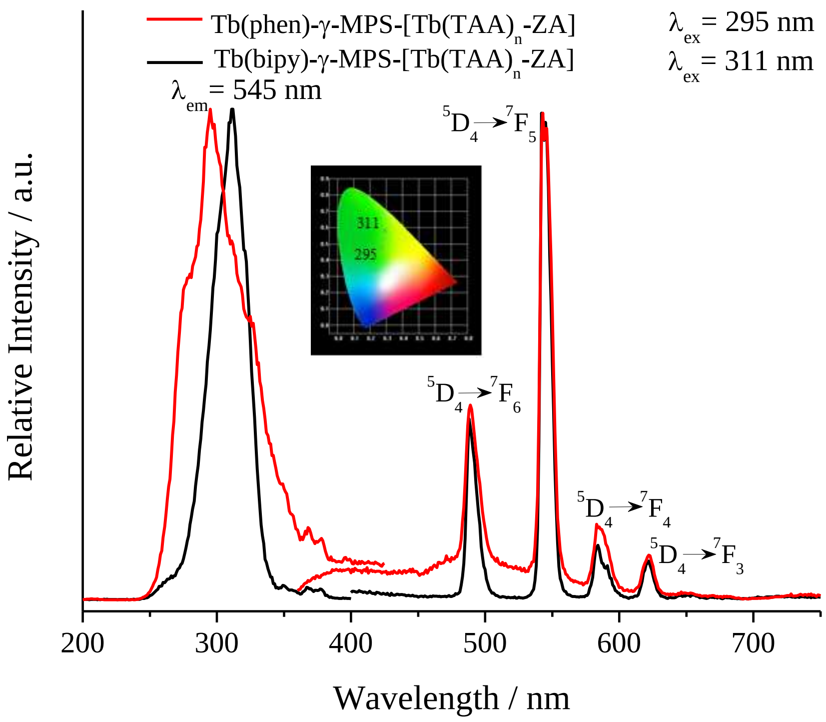

Figure S12 The excitation and emission spectra of Tb(phen)-γ-MPS-[Tb(TAA)$_n$-ZA] (red line) and Tb(bipy)-γ-MPS-[Tb(TAA)$_n$-ZA] (black line) .

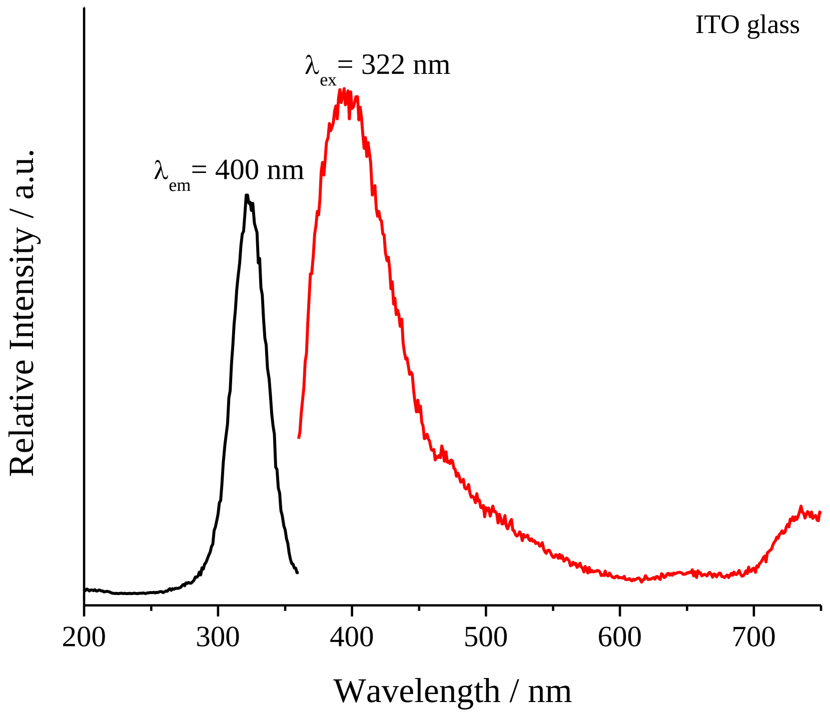

Figure S13 The excitation (black line) and emission spectra (red line) of pure ITO glass which is the substrate of the film.

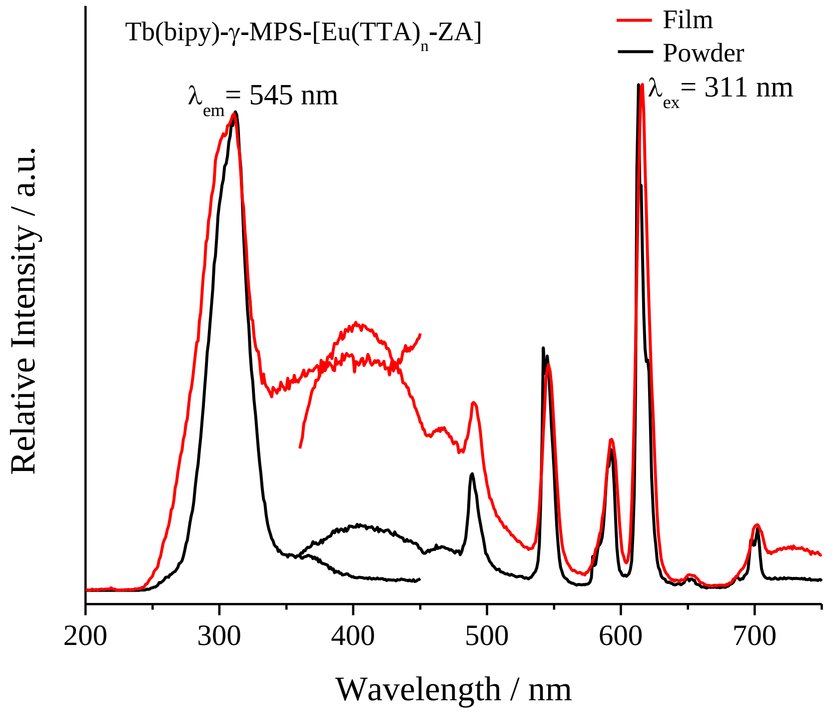

Figure S14 The excitation and emission spectra of Tb(bipy)-γ-MPS-[Eu(TTA)$_n$-ZA] (red line: film, black line : powder).

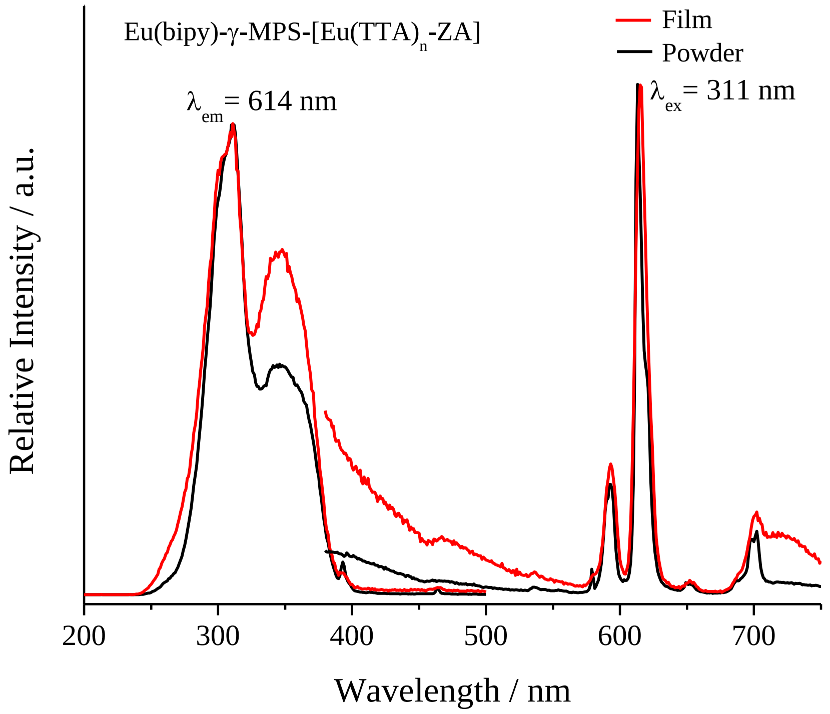

Figure S15 The excitation and emission spectra of Eu(bipy)-γ-MPS-[Eu(TTA)$_n$-ZA] (red line: film, black line : powder).

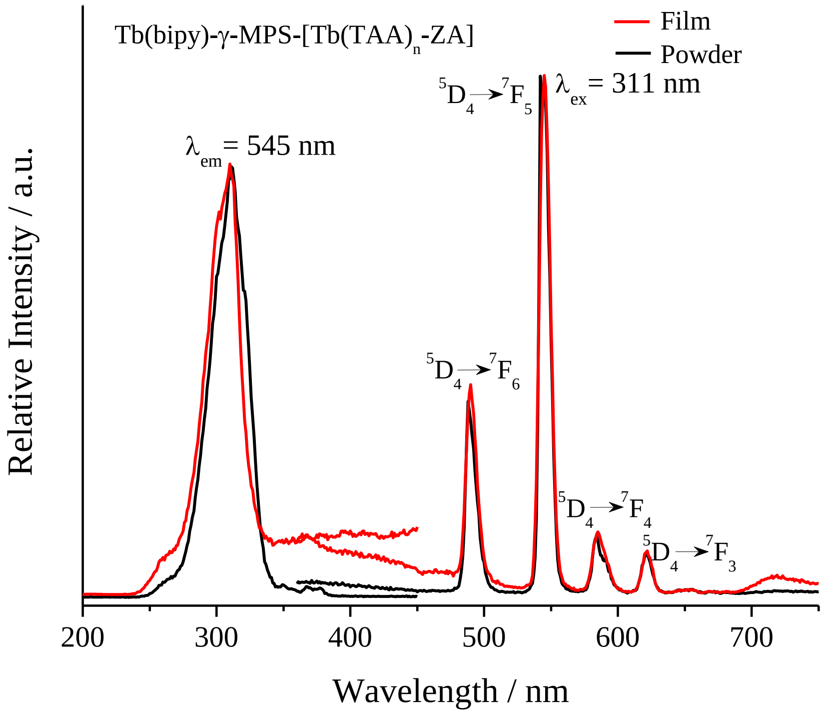

Figure S16 The excitation and emission spectra of Tb(bipy)-γ-MPS-[Tb(TAA)$_n$–ZA] (red line: film, black line : powder).

Table S1 The (x, y) color coordinates in CIE chromaticity diagram

Materials	λ_{ex} (nm)	x	y
Tb(phen)-γ-MPS-Eu(TTA)$_n$-ZA	294	0.4019	0.4563
	320	0.3703	0.3952
Tb(bipy)-γ-MPS-Eu(TTA)$_n$-ZA	312	0.3849	0.3327
Eu(phen)-γ-MPS-Tb(TAA)$_n$-ZA	294	0.539	0.3875
	318	0.4561	0.3795
Eu(bipy)-γ-MPS-Tb(TAA)$_n$-ZA	354	0.3934	0.2989
Eu(phen)-γ-MPS-Eu(TTA)$_n$-ZA	299	0.5718	0.3141
	350	0.4579	0.2816
Eu(bipy)-γ-MPS-Eu(TTA)$_n$-ZA	311	0.5355	0.2948
	346	0.4561	0.2776
Tb(phen)-γ-MPS-Tb(TAA)$_n$-ZA	295	0.2703	0.4786
Tb(bipy)-γ-MPS-Tb(TAA)$_n$-ZA	311	0.2918	0.5805