Electronic Supplementary Material (ESI) for Chemical Communications

Supporting Information

A ratiometric and colorimetric luminescent thermometer over a wide temperature range based on lanthanide coordination polymer

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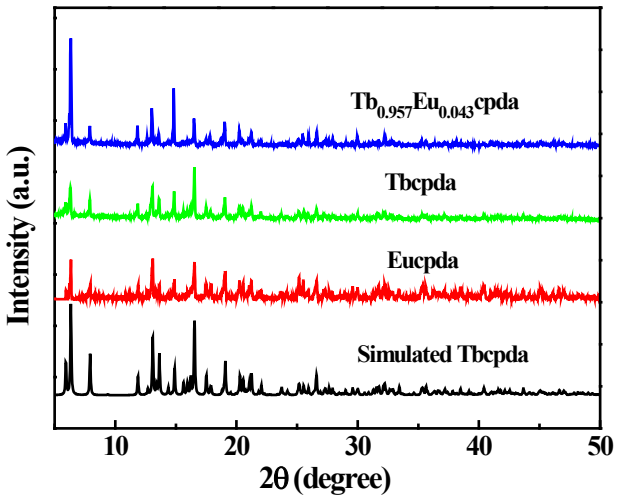


Fig. S1 PXRD patterns of the coordination polymers **Tbcpda**, **Eucpda** and **$Tb_{0.957}Eu_{0.043}$cpda**.

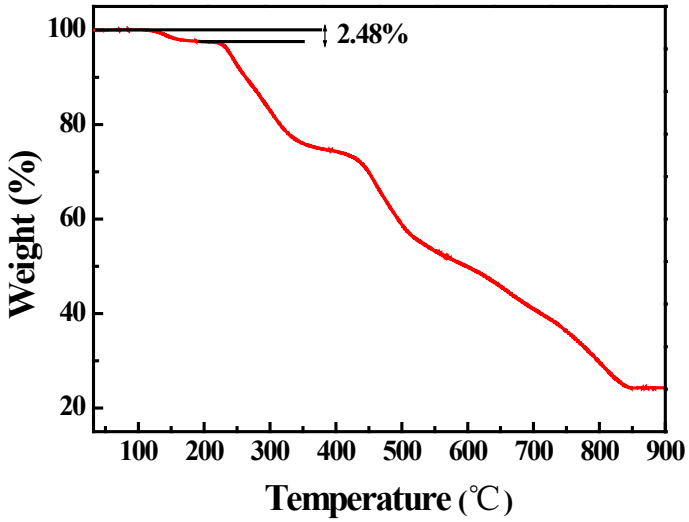


Fig. S2 TGA curve of **Tbcpda.**

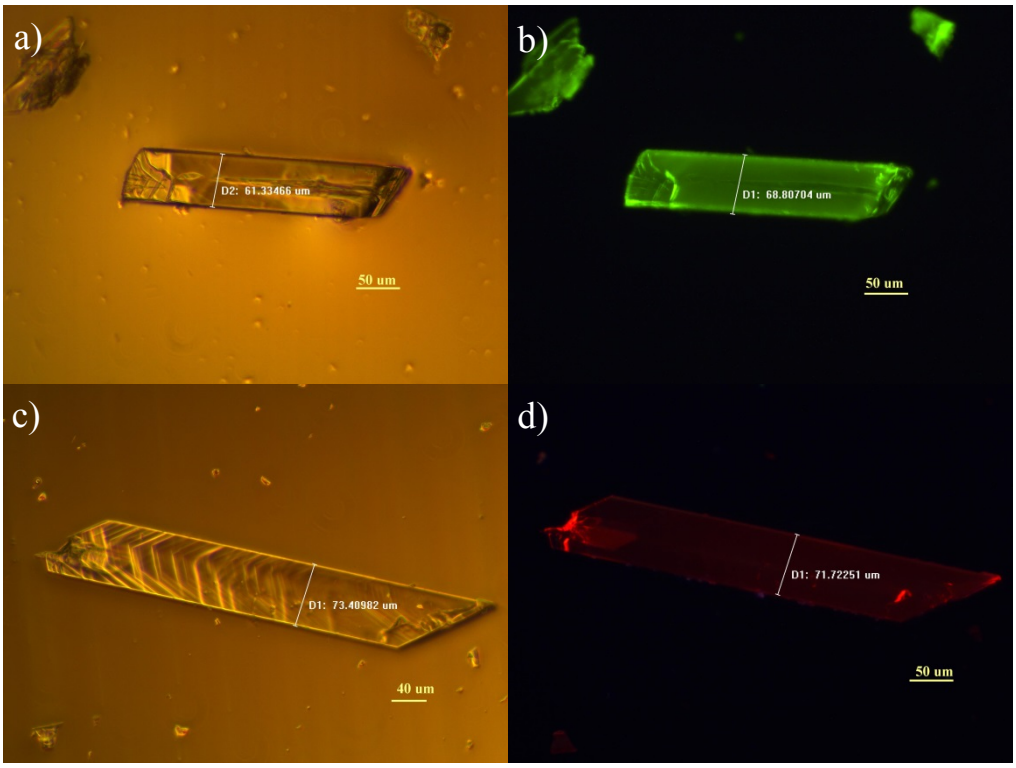


Fig. S3 Fluorescent microscope images of **Tbcpda** illuminated with mercury lamp (a) and 365nm UV light (b) and **$Tb_{0.957}Eu_{0.043}$cpda** illuminated with mercury lamp (c) and 365nm UV light (d).

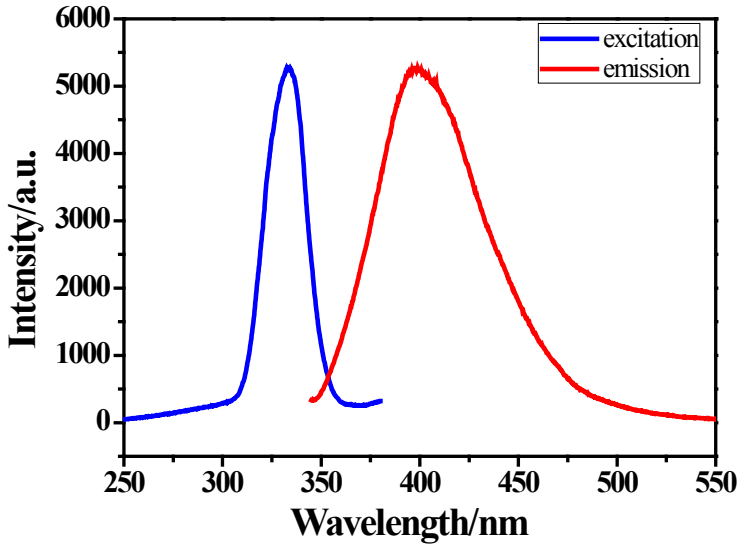


Fig. S4. Room temperature excitation and emission spectra of the ligand H_3cpda.

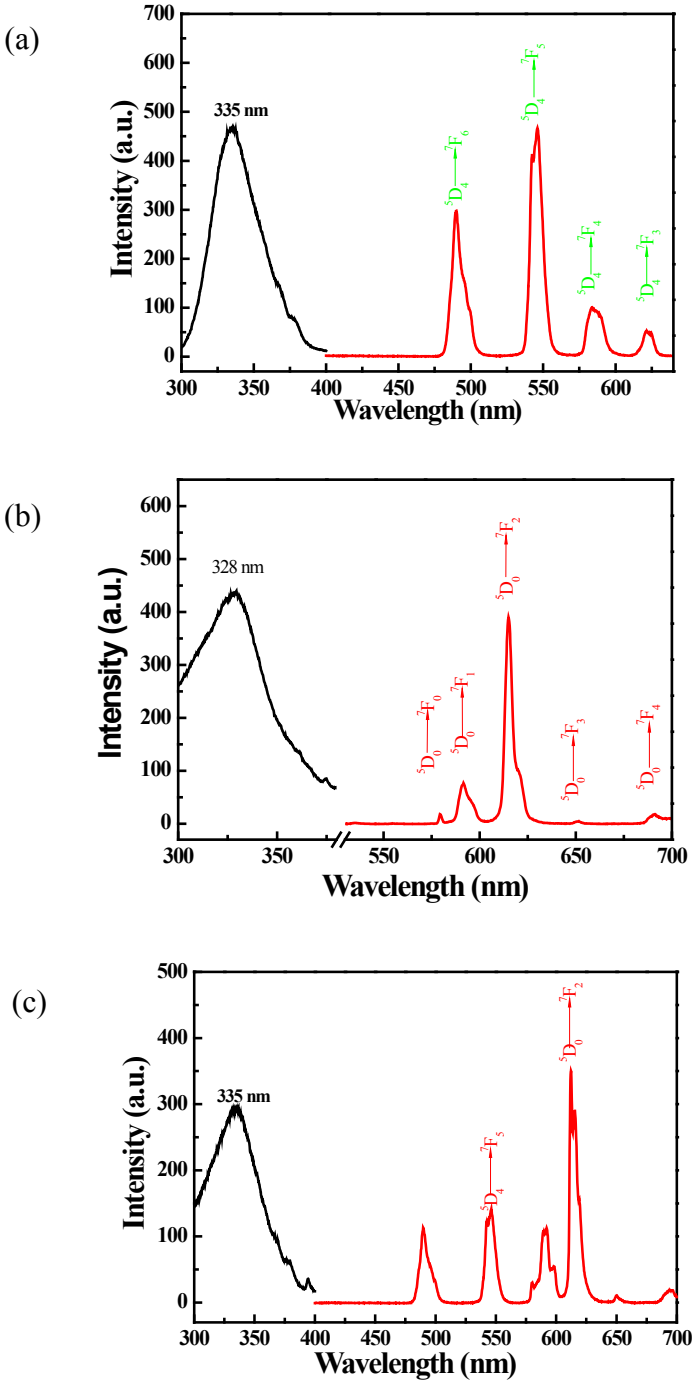


Fig. S5 Excitation (black) and emission (red) spectra of **Tbcpda** (a), **Eucpda** (b) and **$Tb_{0.957}Eu_{0.043}$cpda** (c) at room temperature.

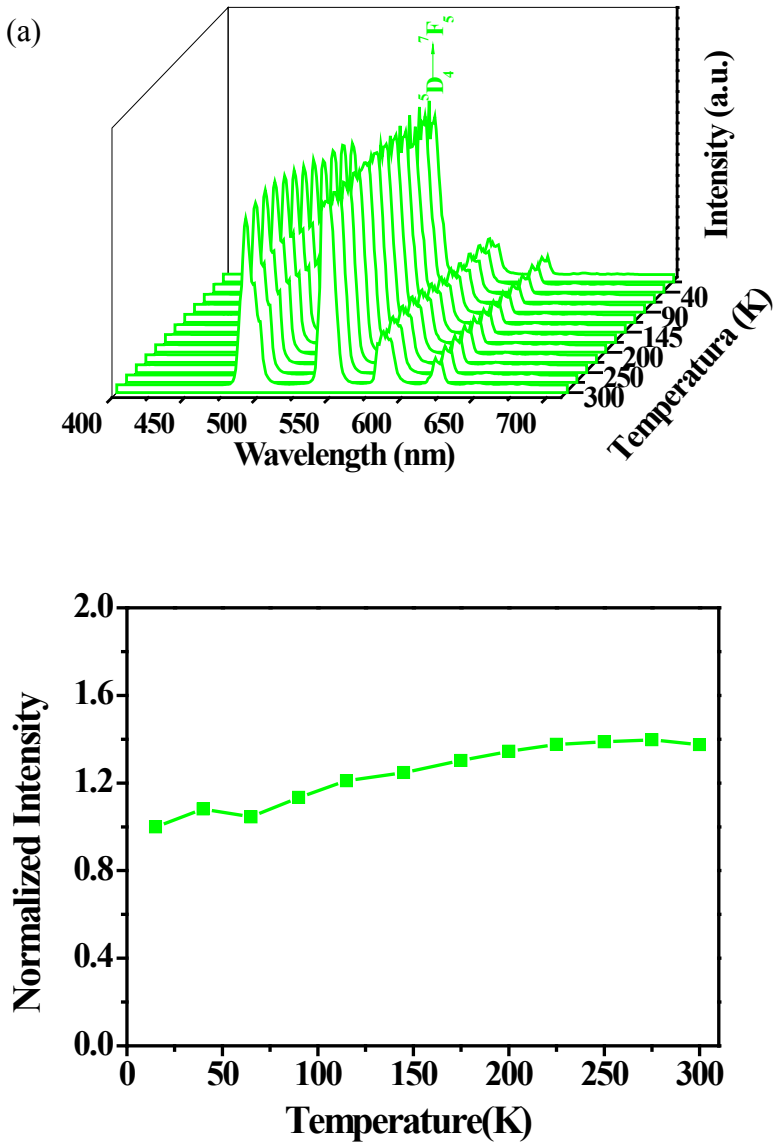
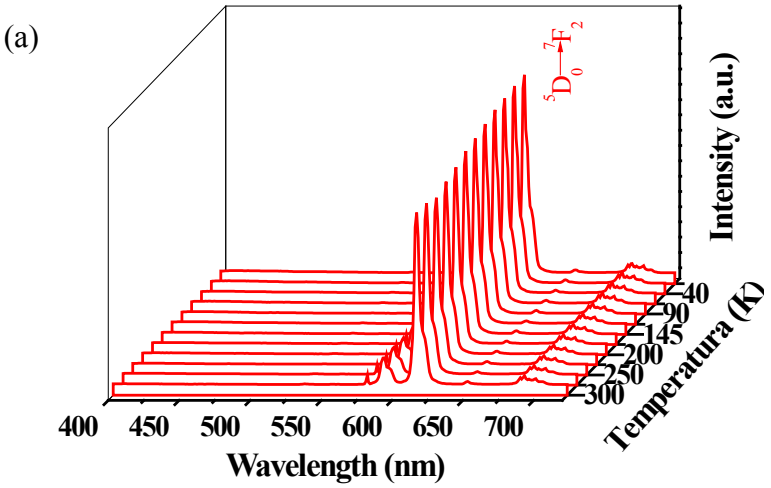


Fig. S6 (a) Emission spectra of **Tbcpda** recorded between 15 and 300 K excited at 335 nm; (b) Temperature-dependent intensity of the $^5D_4 \rightarrow {}^7F_5$ transition of **Tbcpda.**



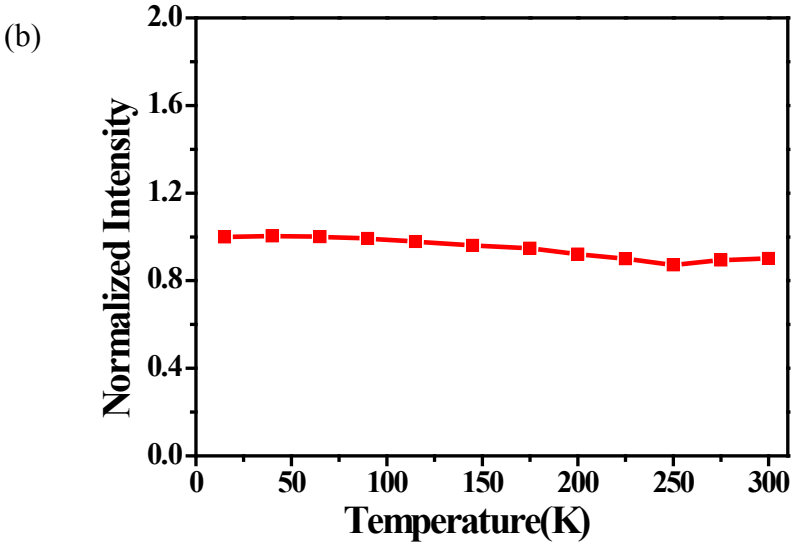


Fig. S7 (a) Emission spectra of **Eucpda** recorded between 15 and 300 K excited at 328 nm; (b) Temperature-dependent intensity of the $^5D_0 \rightarrow {}^7F_2$ transition of **Eucpda.**

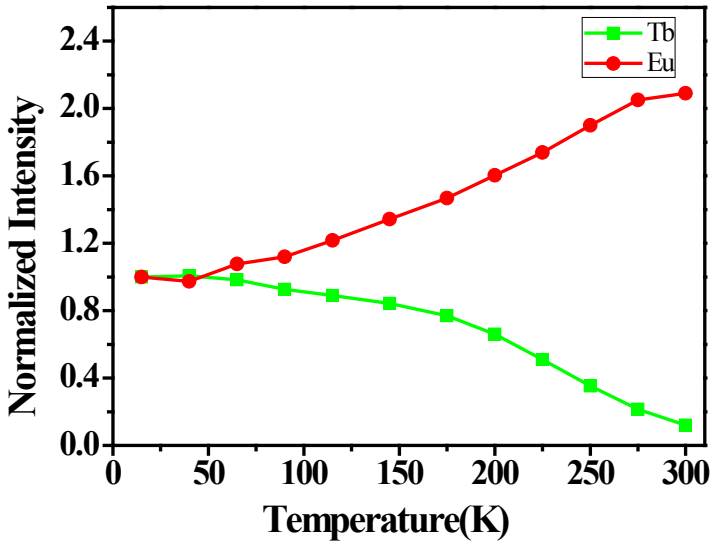


Fig. S8 Normalized intensities of $^5D_4 \rightarrow {}^7F_5$ (Tb^{3+}) and $^5D_0 \rightarrow {}^7F_2$ (Eu^{3+}) transitions in **$Tb_{0.957}Eu_{0.043}$cpda** from 15K to 300K.

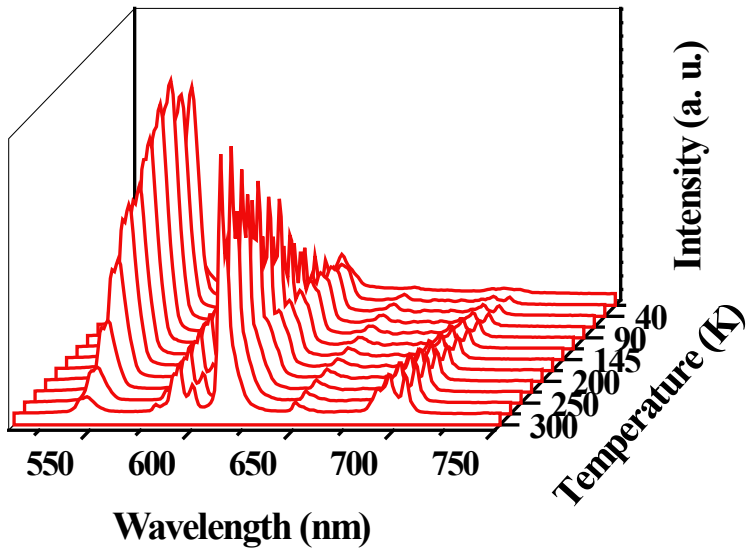


Fig. S9 Emission spectra of **$Tb_{0.957}Eu_{0.043}$cpda** recorded from 15K to 300K, excited at 488 nm.

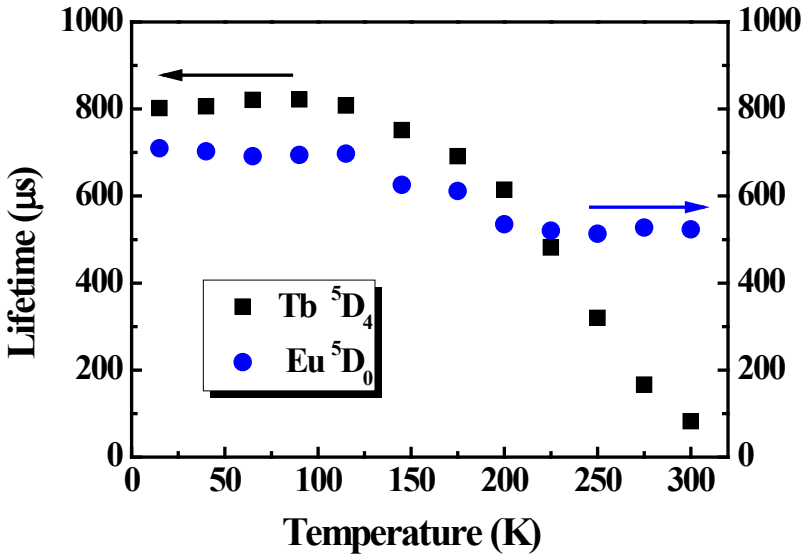


Fig. S10 Temperature dependence of the $^5D_4$ and $^5D_0$ lifetime (15-300 K) for **$Tb_{0.957}Eu_{0.043}$cpda**.

The decay curves are monitored at 546 and 615 nm, respectively, and excited at 335 nm.

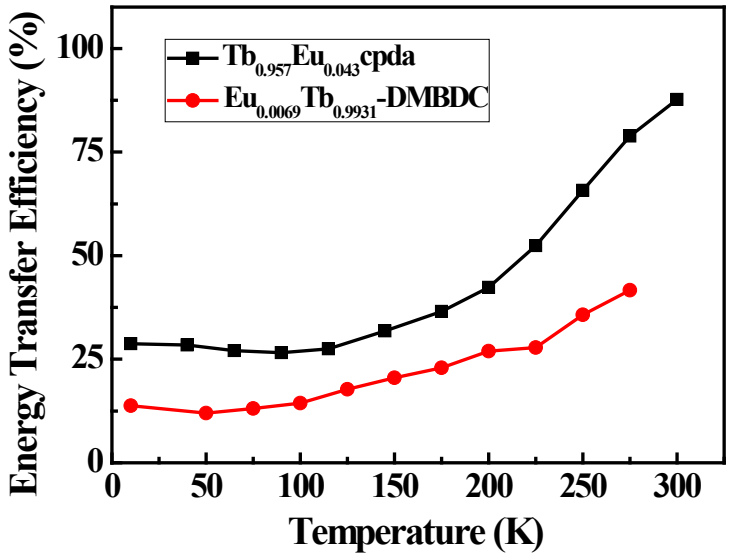


Fig. S11 Temperature dependence of the Tb^{3+}-to-Eu^{3+} energy transfer efficiency in

$Tb_{0.957}Eu_{0.043}$cpda and **$Eu_{0.0069}Tb_{0.9931}$-DMBDC.**

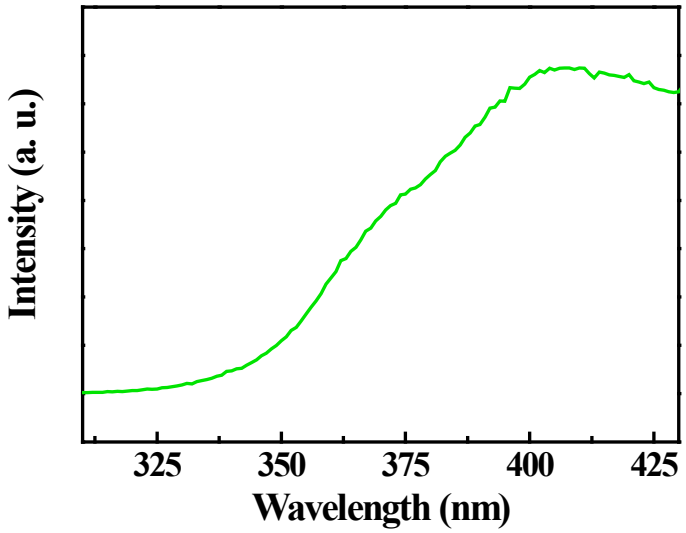


Fig. S12 Phosphorescence spectra of Gd^{3+} complex of ligand H_3cpda at 77 K.

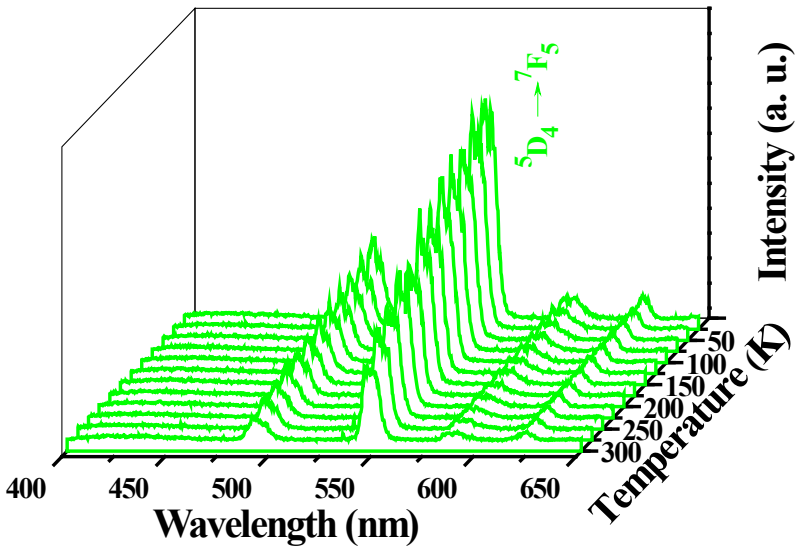


Fig. S13 Emission spectra of **TbDMBDC** recorded between 15 and 300 K excited at 355 nm.

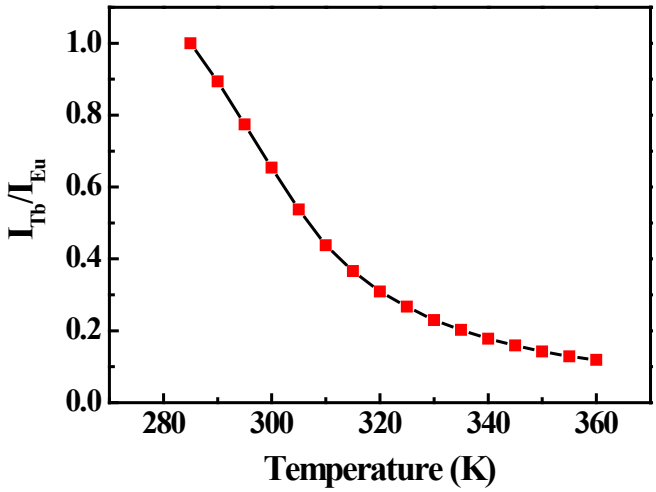


Fig S14. Temperature dependence of the intensity ratio of Tb^{3+} (546 nm) to Eu^{3+} (615 nm) for **$Tb_{0.957}Eu_{0.043}$cpda** from 280 to 360 K.