

## Electronic Supplementary Information

### **Tunable multiple light emissions of core-shell structures based on rare earth ions doped on the surfaces of organic cocrystals**

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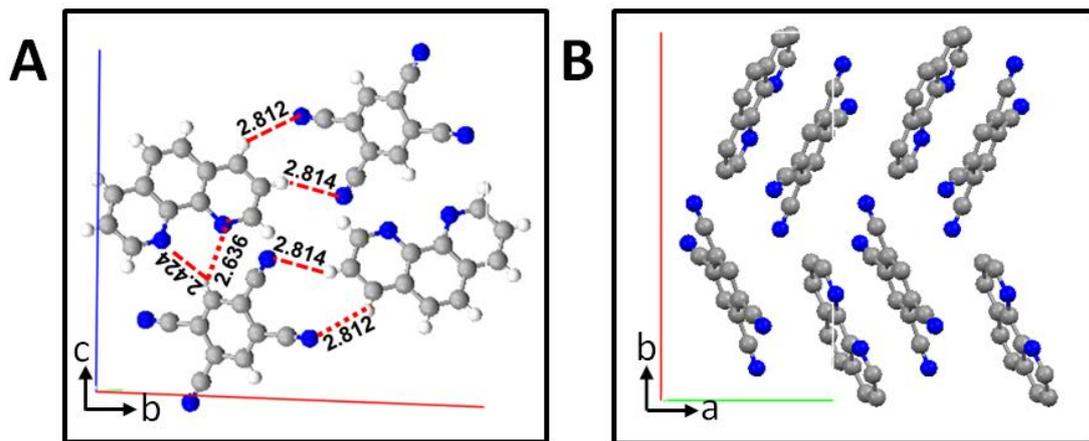
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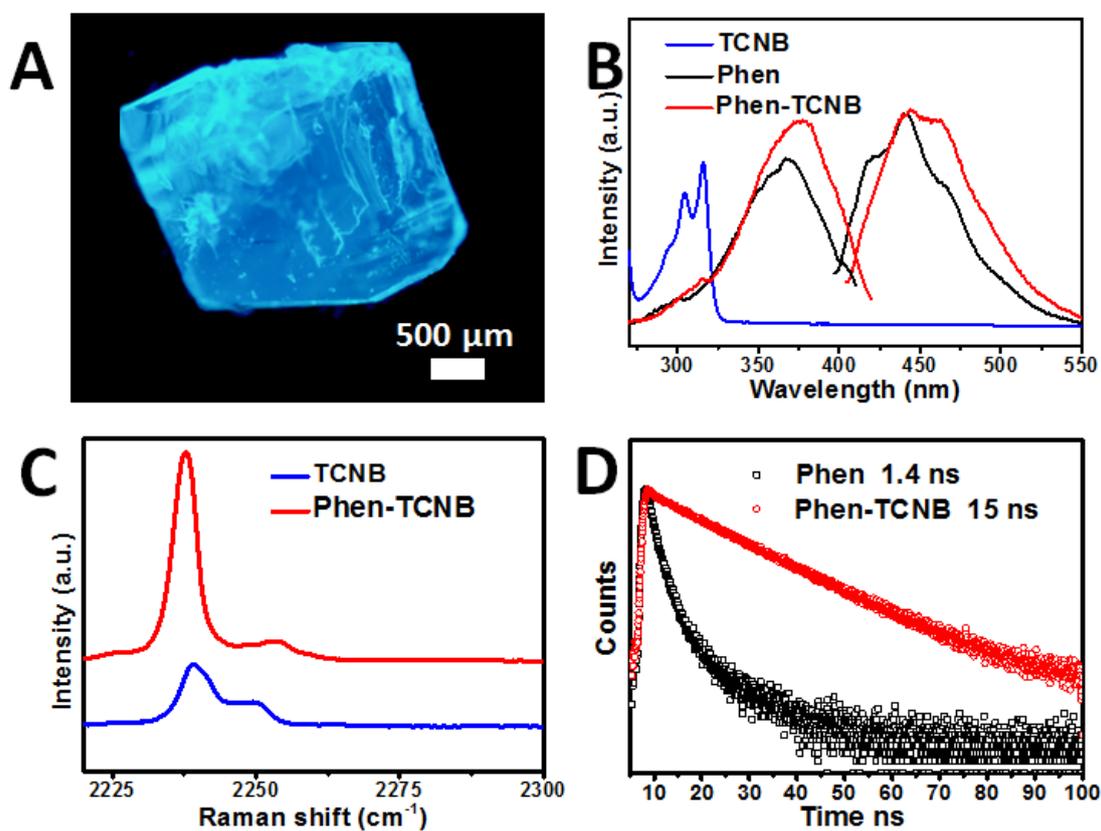
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**Table S1.** The crystallographic data of Phen-TCNB cocrystal derived from the single-crystal X-ray diffraction measurements.

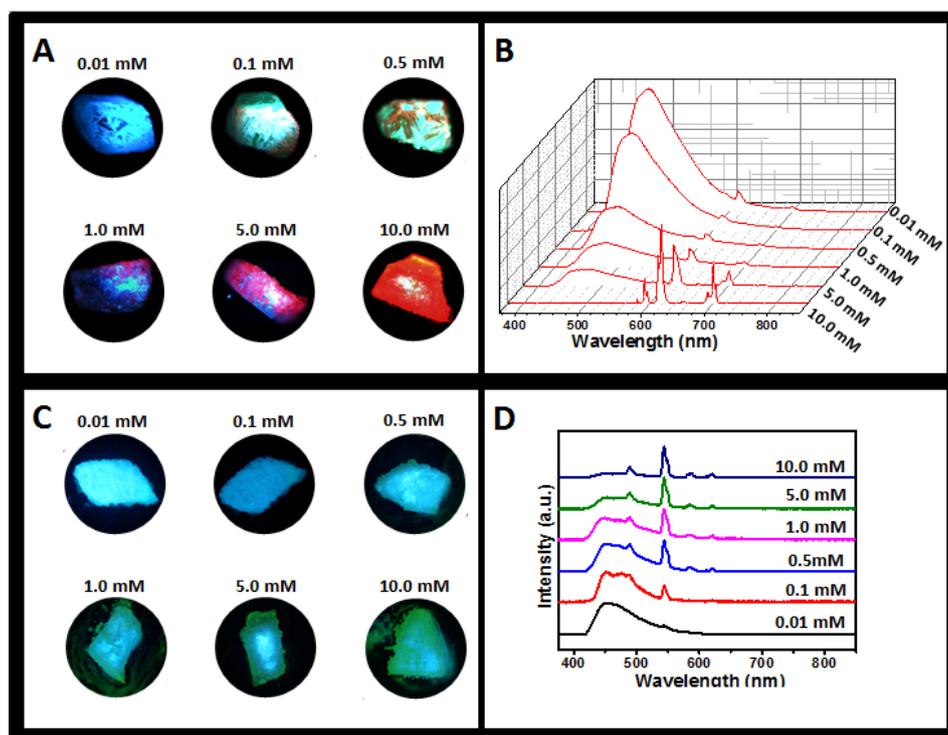
<b>Compound</b>	<b>Phen-TCNB</b>
<b>CCDC No</b>	2160259
<b>Formula</b>	C <sub>22</sub> H <sub>10</sub> N <sub>6</sub>
<b>Weight (g/mol)</b>	358.36
<b>Crystal system</b>	monoclinic
<b>Space-group</b>	P21/c
<b>Temperature</b>	297 K
<b>Lattice parameter a (Å)</b>	16.5206(5)
<b>Lattice parameter b (Å)</b>	7.6490(3)
<b>Lattice parameter c (Å)</b>	14.4843(5)
<b>Cell parameter <math>\alpha</math>(°)</b>	90
<b>Lattice parameter <math>\beta</math>(°)</b>	91.550(1)
<b>Lattice parameter <math>\gamma</math>(°)</b>	90
<b>Cell volume (Å<sup>3</sup>)</b>	1829.65(11)
<b>Formula units per cell Z</b>	4
<b>Calculated density (g•cm<sup>-3</sup>)</b>	1.301
<b>Mu(mm<sup>-1</sup>)</b>	0.082
<b>F(000)</b>	736.0
<b>F(000)'</b>	736.23
<b>h,k,l,(max)</b>	20,9,18
<b>Nref</b>	3766
<b>R reflections</b>	0.0473
<b>wR2</b>	0.1426



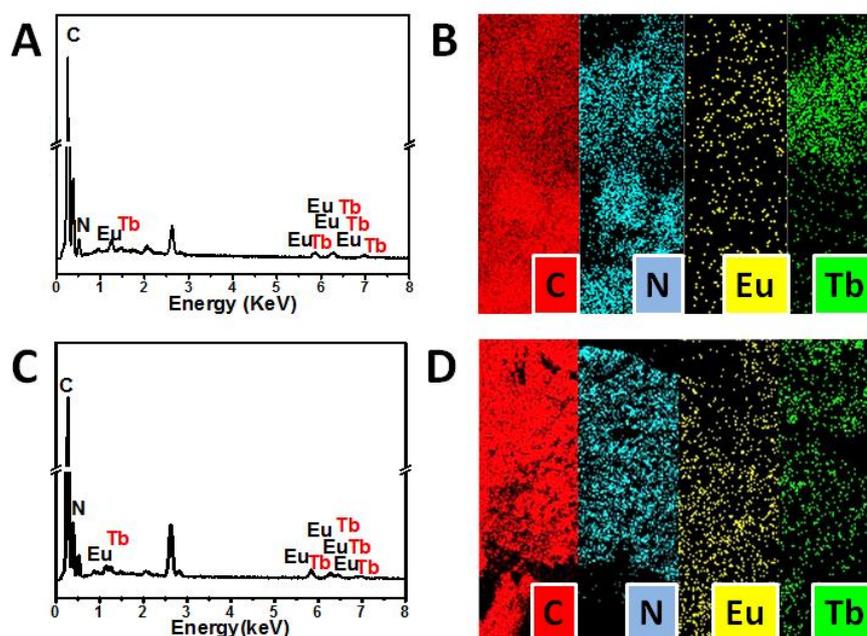
**Fig S1.** (A) Hydrogen-bond interactions and (B) The close-packed structures of Phen and TCNB along *a* axis.



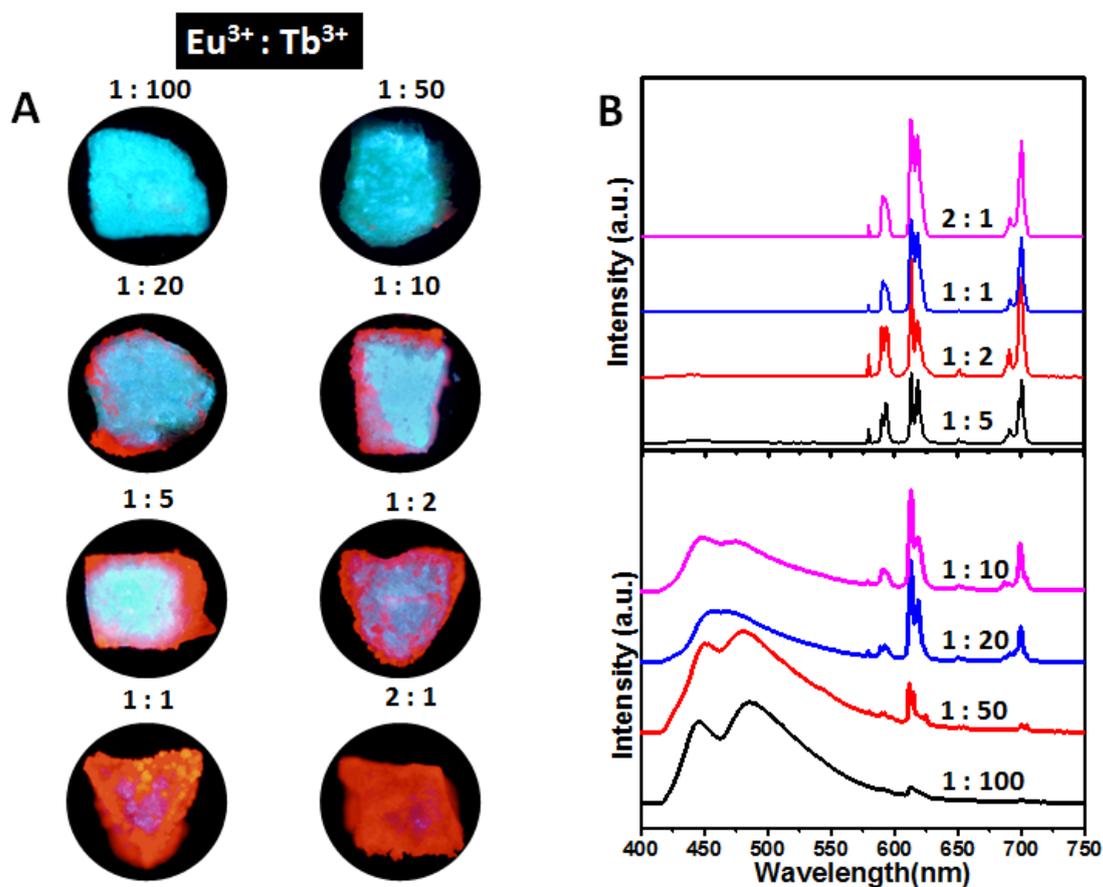
**Fig S2.** (A) Fluorescent images, (B) emission/excitation spectra, and (C) Raman spectra of Phn-TCNB cocystal and TCNB power. (D) The fluorescent lifetimes of Phn-TCNB cocystal and Phn crystal, respectively.



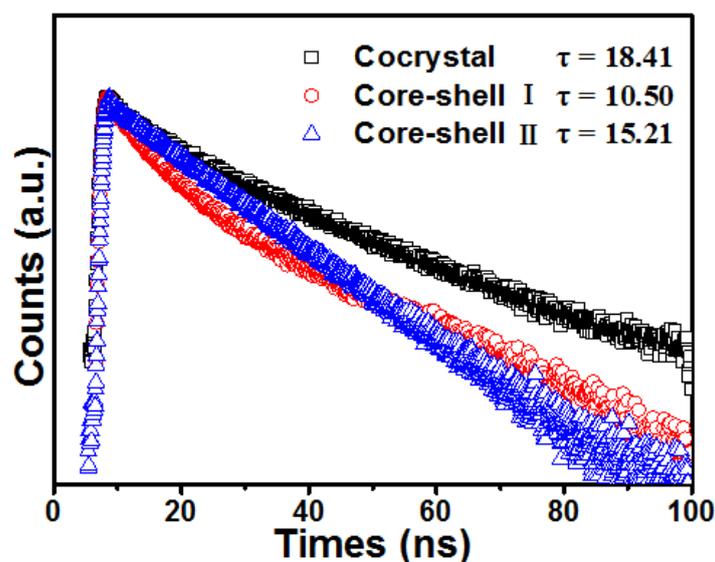
**Fig S3.** The micro-imagings and fluorescent spectra of the core-shell I (A and B) and core-shell II (C and D) which were prepared by using increasing concentrations of RE ions ethanol solutions via epitaxial growth method.



**Fig S4.** (A, C) EDX spectrum and (B, D) EDX elemental mapping profile of the core-shell III and IV.



**Fig S5.** (A) Fluorescent images and (B) fluorescent spectra of core-shell III, prepared by dripping different  $\text{Eu}^{3+}/\text{Tb}^{3+}$  mixed solutions (different molar ratios of  $\text{Eu}^{3+}/\text{Tb}^{3+}$ ) on the Phen-TCNB cocrystals.



**Fig S6.** The fluorescence decay curves of cocrystal and core-shell I and II were collected upon the emission peaks of 435 nm, respectively