Supporting Information

Design Strategies of Rare-Earth Luminescent Complexes with Zero-Thermal-Quenching Protected by Wire-in-Tube and the Construction of W-WLED with Highly Stable Illumination and Colour Reproduction

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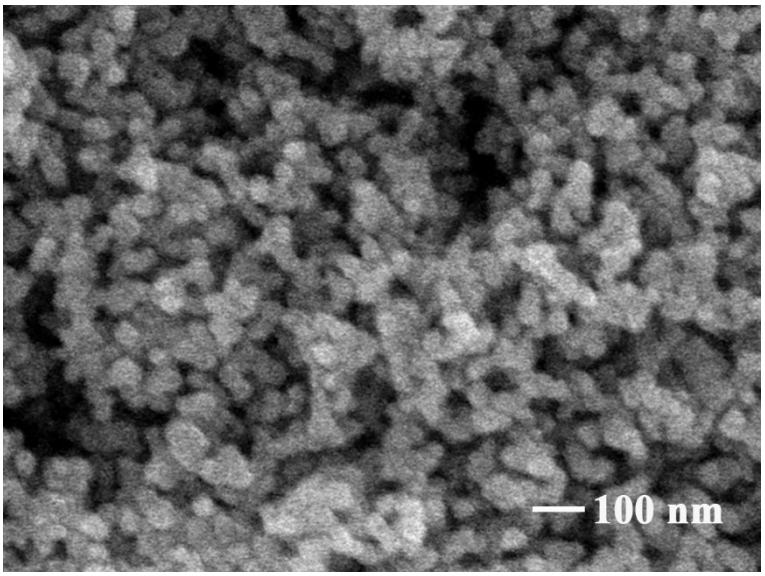

Fig. S1 The SEM image of Z_1S_1 precursor.

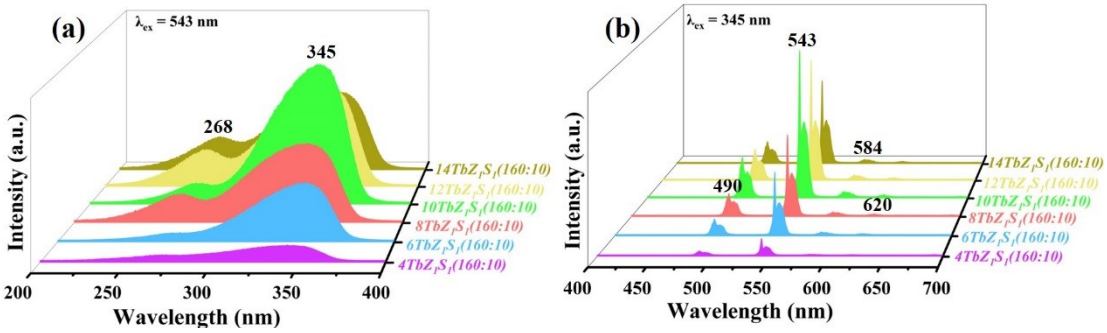

Fig. S2 The excitation spectrum (a) and emission spectrum (b) of $mTbZ_1S_1$(160-10), m=4-14.

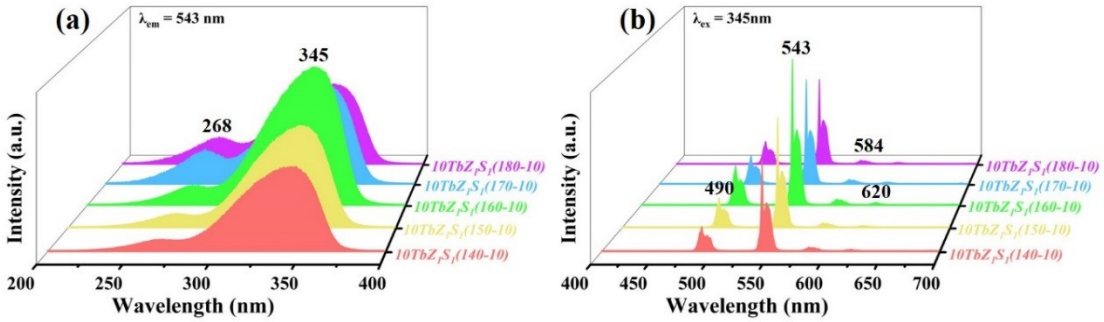

Fig. S3 The excitation spectrum (a) and emission spectrum (b) of $10TbZ_1S_1$(T-10), T=140-180.

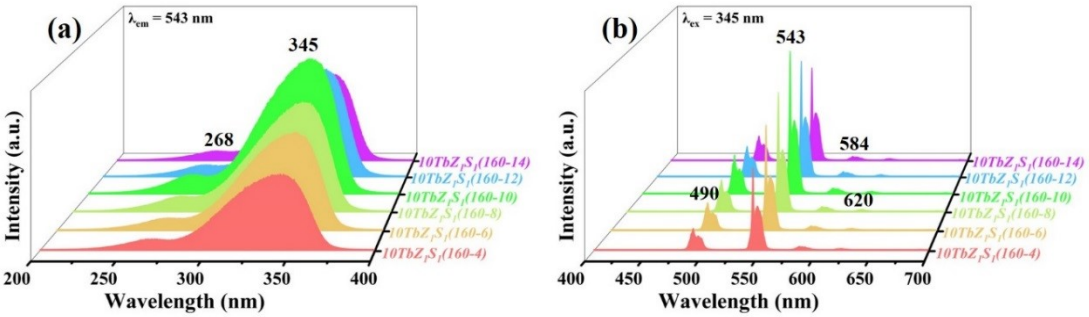

Fig. S4 The excitation spectrum (a) and emission spectrum (b) of $10TbZ_1S_1$(160-t), t=4-14.

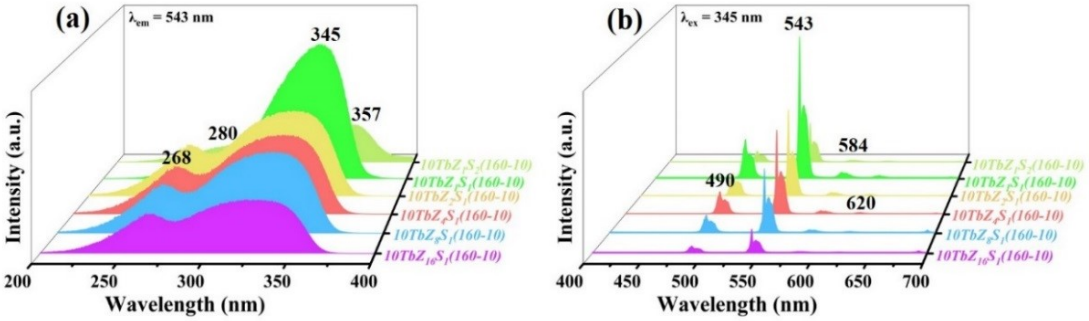

Fig. S5 The excitation spectrum (a) and emission spectrum (b) of $10TbZ_xS_y$(160-10), x=1-16, y=1-2.

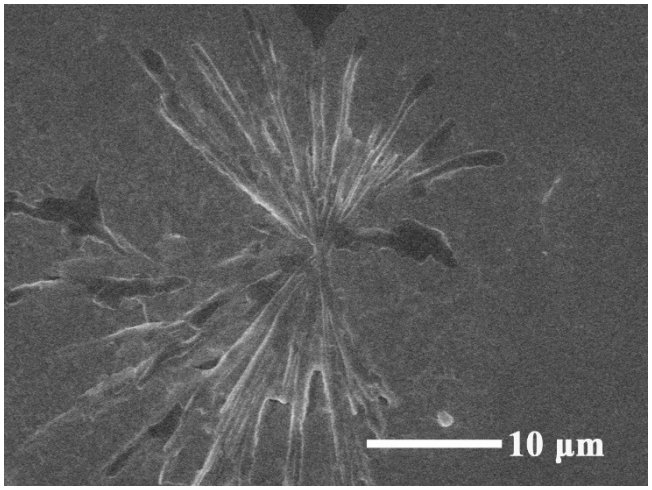

Fig. S6 The SEM images of Tb complex.

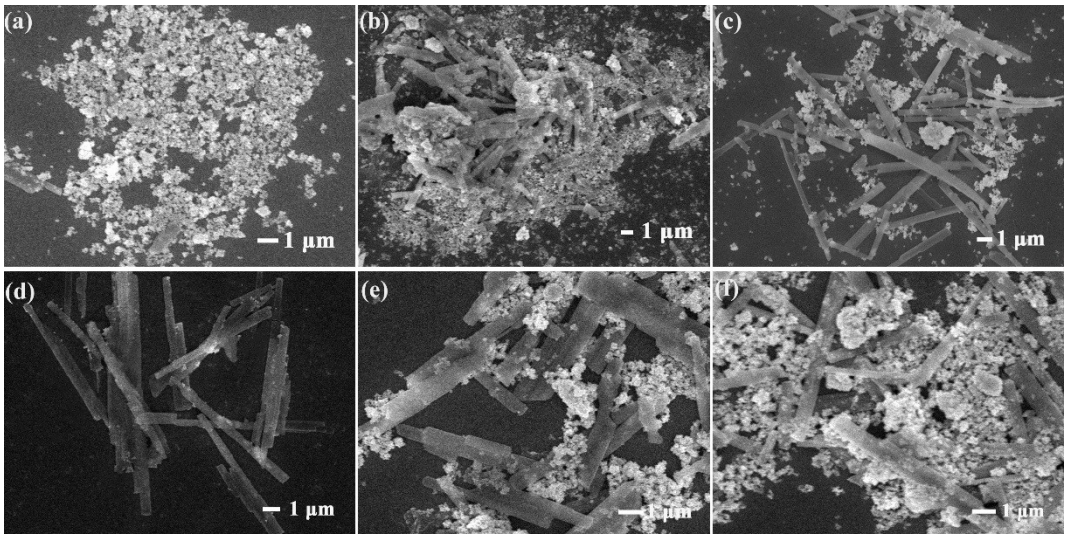

Fig. S7 The SEM images of $mTbZ_1S_1$(160-10), (a) m=4; (b) m=6; (c) m=8; (d) m=10; (e) m=12; (f) m=14.

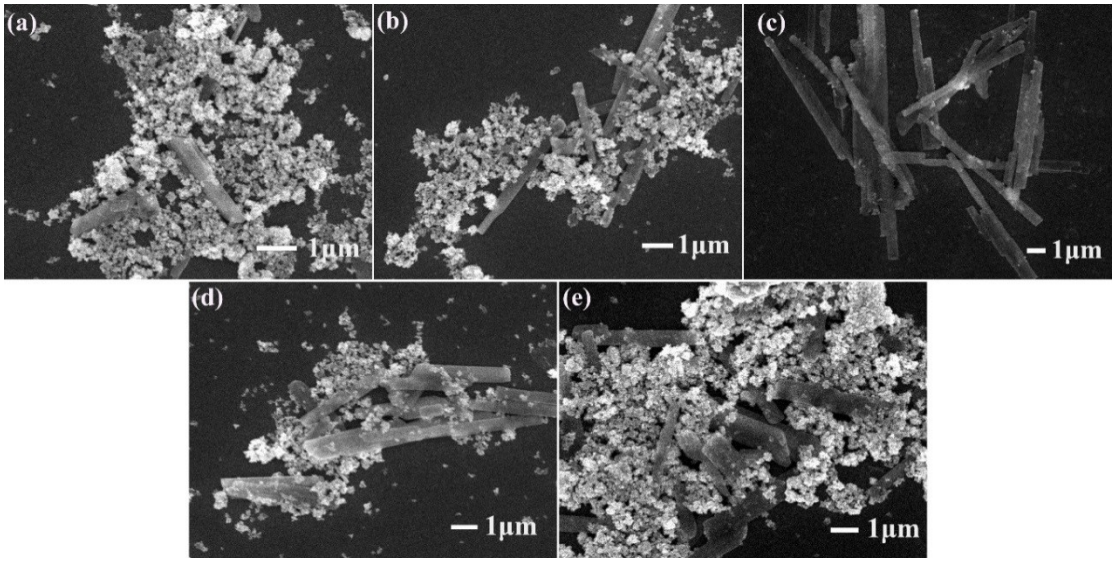

Fig. S8 The SEM images of $10TbZ_1S_1$(T-10), (a) T=14°C; (b) T=150°C; (c) T=160°C; (d) T=170°C; (e) T=180°C.

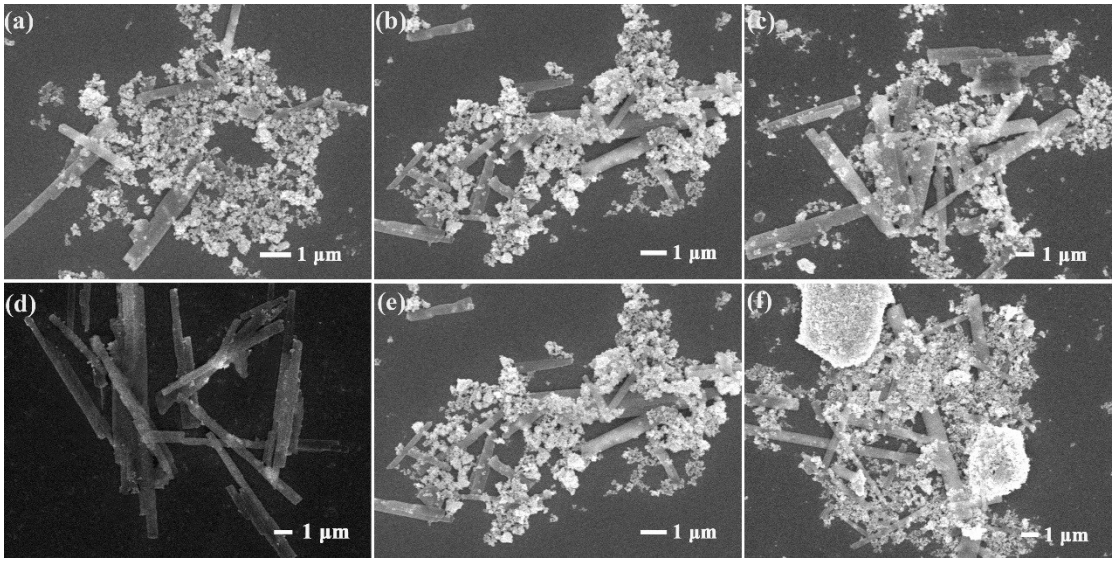

Fig. S9 The SEM images of $10TbZ_1S_1(160\text{-}t)$, (a) t =4 h; (b) t =6 h; (c) t =8 h; (d) t =10 h; (e) t =12 h; (f) t =14 h.

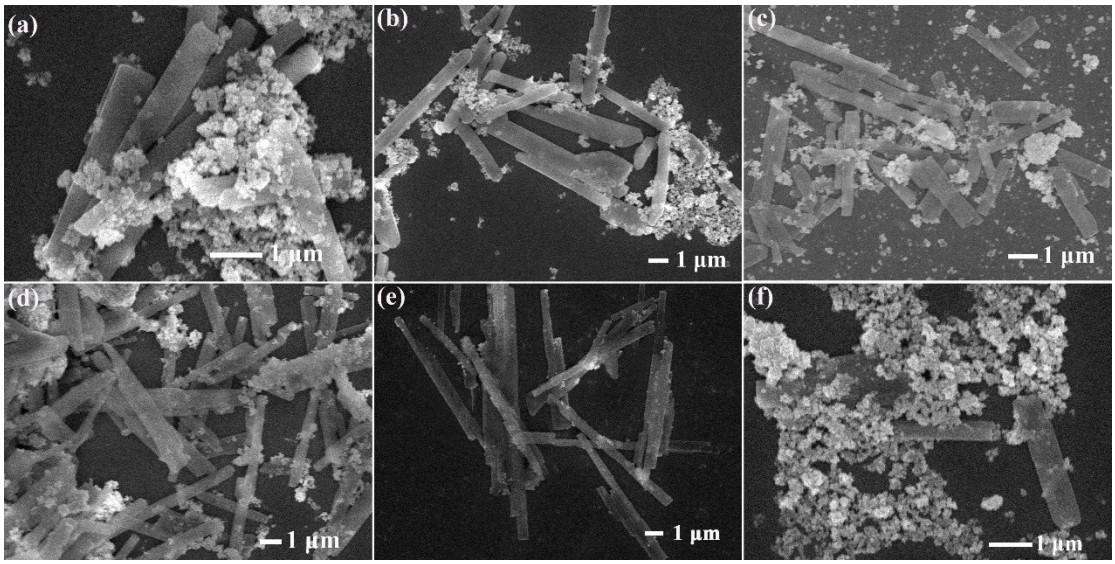

Fig. S10 The SEM images of $10TbZ_xS_y(160\text{-}10)$, (a) x:y = 16:1, (b) x:y = 8 :1, (c) x:y = 4:1, (d) x:y = 2:1, (e) x:y = 1:1, (f) x:y = 1:2.

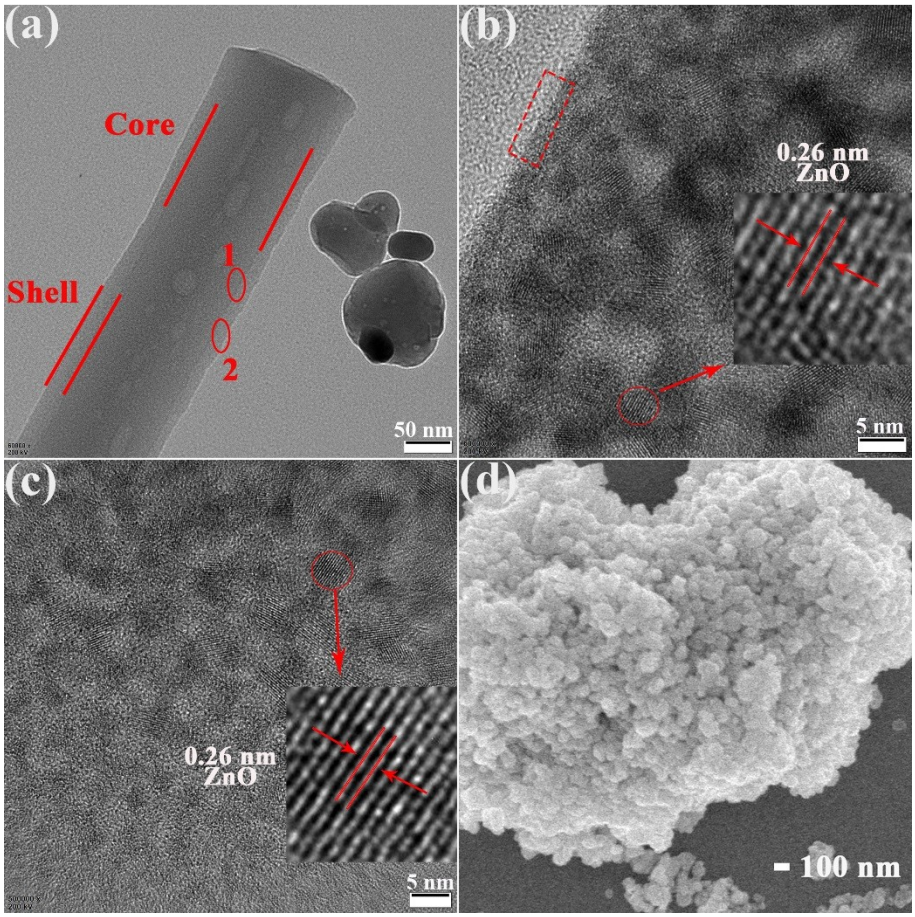

Fig. S11 The TEM image (a) and HRTEM (b: region 1, c: region 2) of 10TbZ(160-10), the SEM image of 10TbS(160-10).

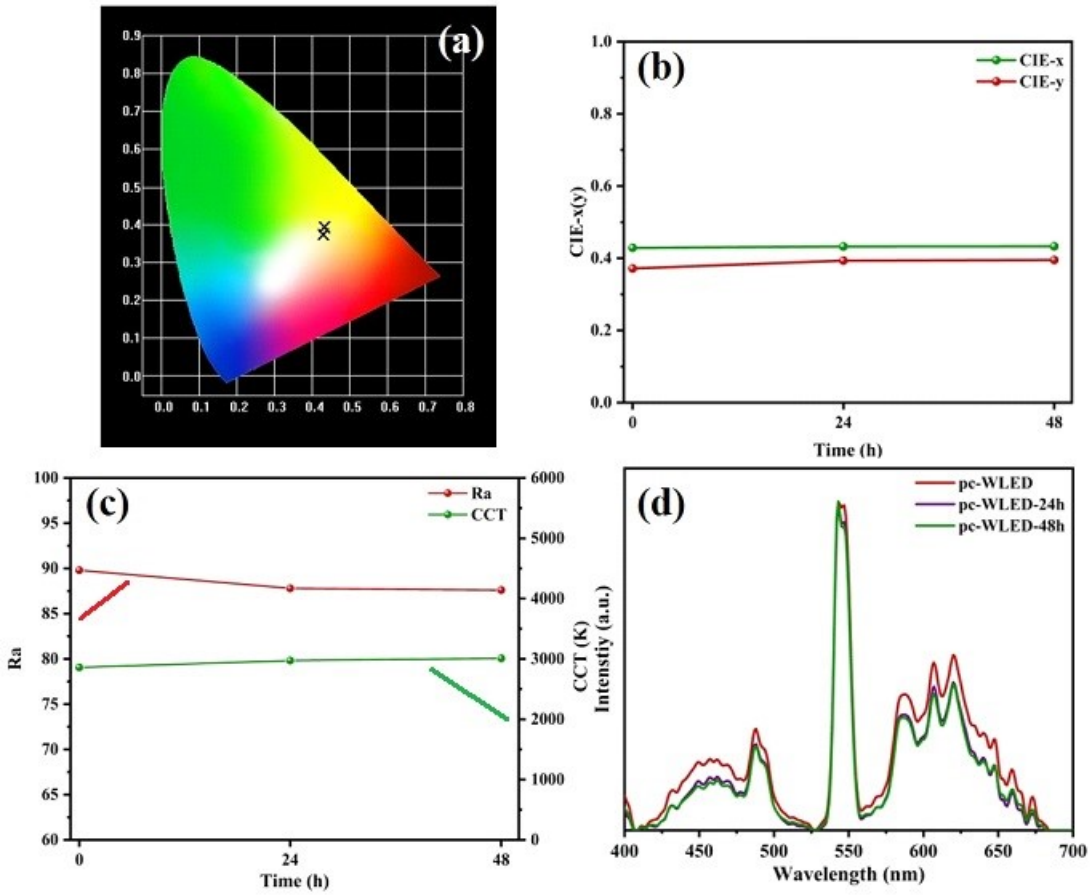

Fig. S12 CIE diagram (a), Line chart of CIE-x and CIE-y (b), Line chart of correlation color temperature (CCT) and color purity (Ra) (c) and Emission spectrum (d) of the pc-WLED illuminated for different times under a continuous driving current of 20 mA.