

Supplementary material

Photofunctional hybrids of TiO₂ and titanium metal-organic frameworks for dye degradation and lanthanide ions tuned multi- color luminescence

Shu-Yin Zhu, Bing Yan*

School of Chemical Science and Engineering, Tongji University, Shanghai 200092, China

* Corresponding author: Email address: byan@tongji.edu.cn (Bing Yan)

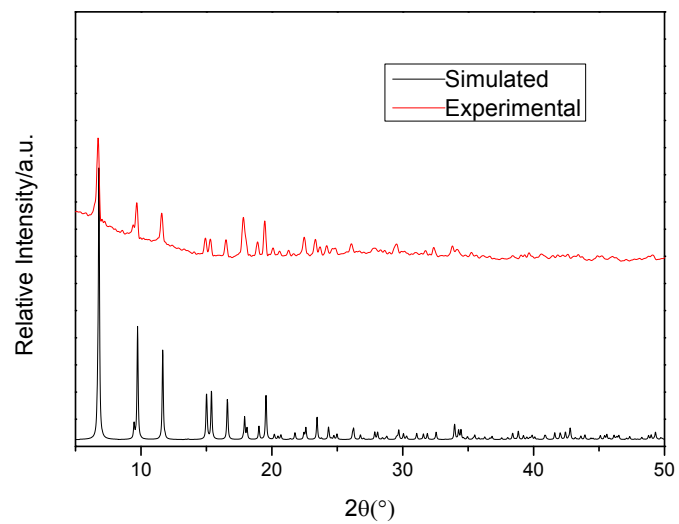


Figure S1 Powder X-ray diffraction (PXRD) patterns of the experimental and simulated MIL-125(Ti).

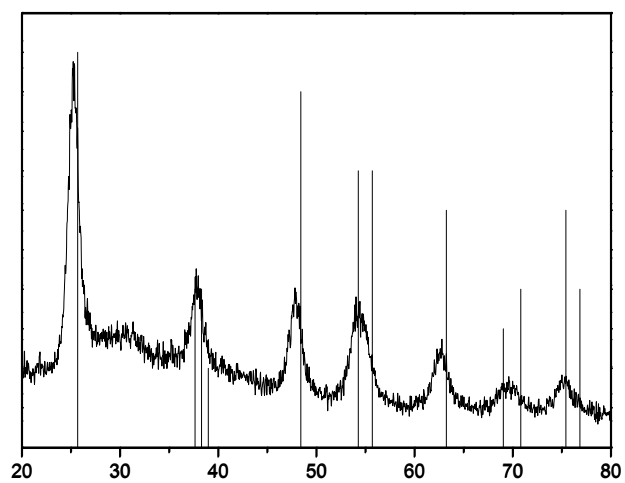


Figure S2 Powder X-ray diffraction (PXRD) patterns of the experimental and simulated TiO₂.

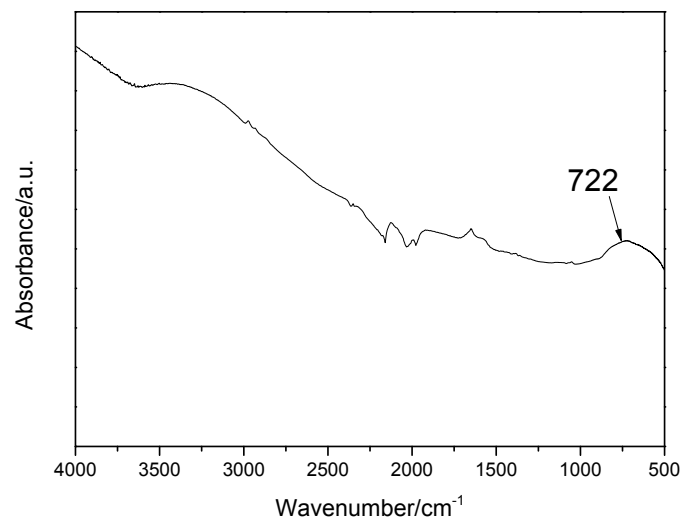


Figure S3 TEM image of the as-prepared MIL-125(Ti)@TiO₂

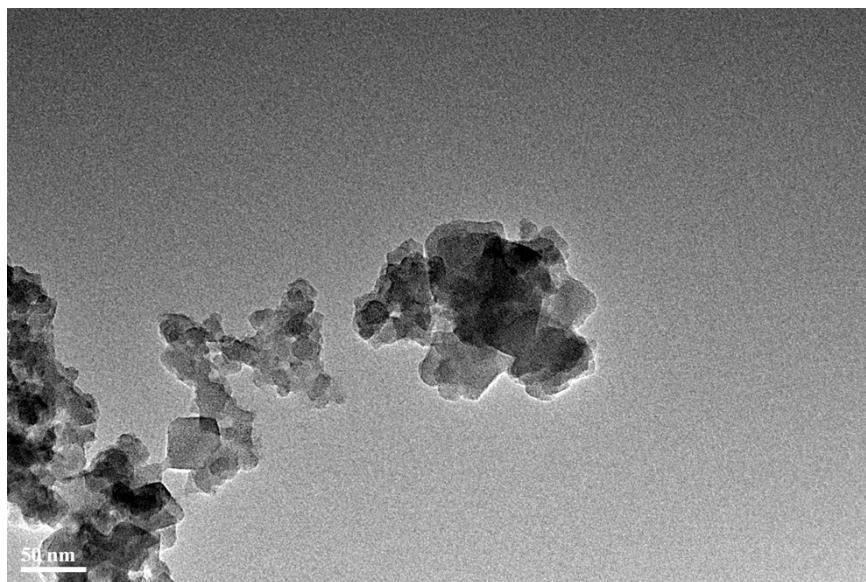


Figure S4 TEM image of the as-prepared MIL-125(Ti)@TiO₂

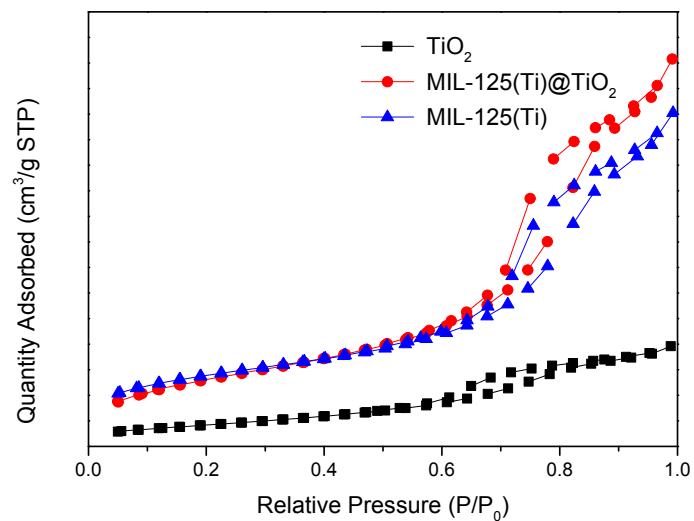


Figure S5 N₂ adsorption–desorption isotherms of the as-synthesized TiO₂, MIL-125(Ti) and MIL-125(Ti)@TiO₂

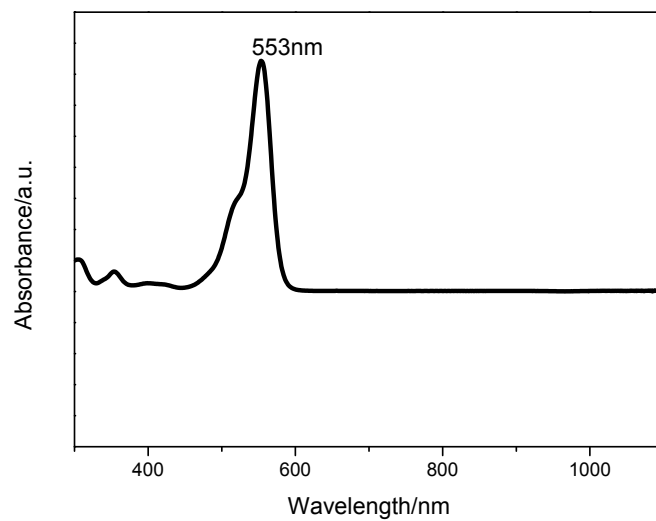


Figure S6 UV–vis absorption spectrum of Rh B.

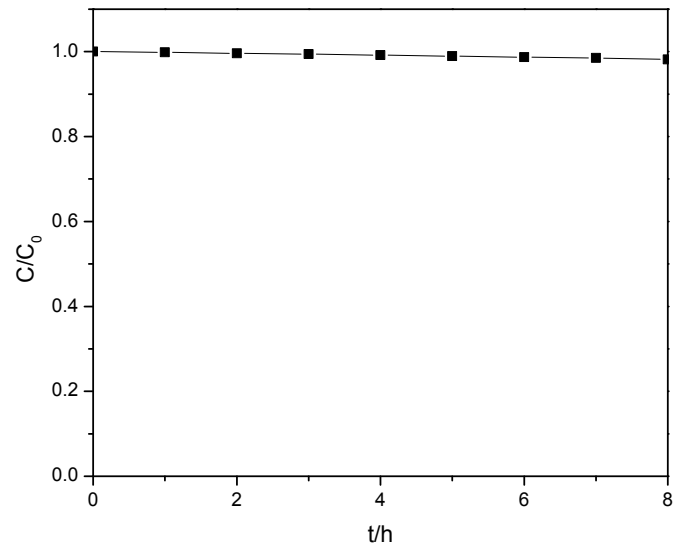


Figure S7 the removal of Rh B during blank experiment

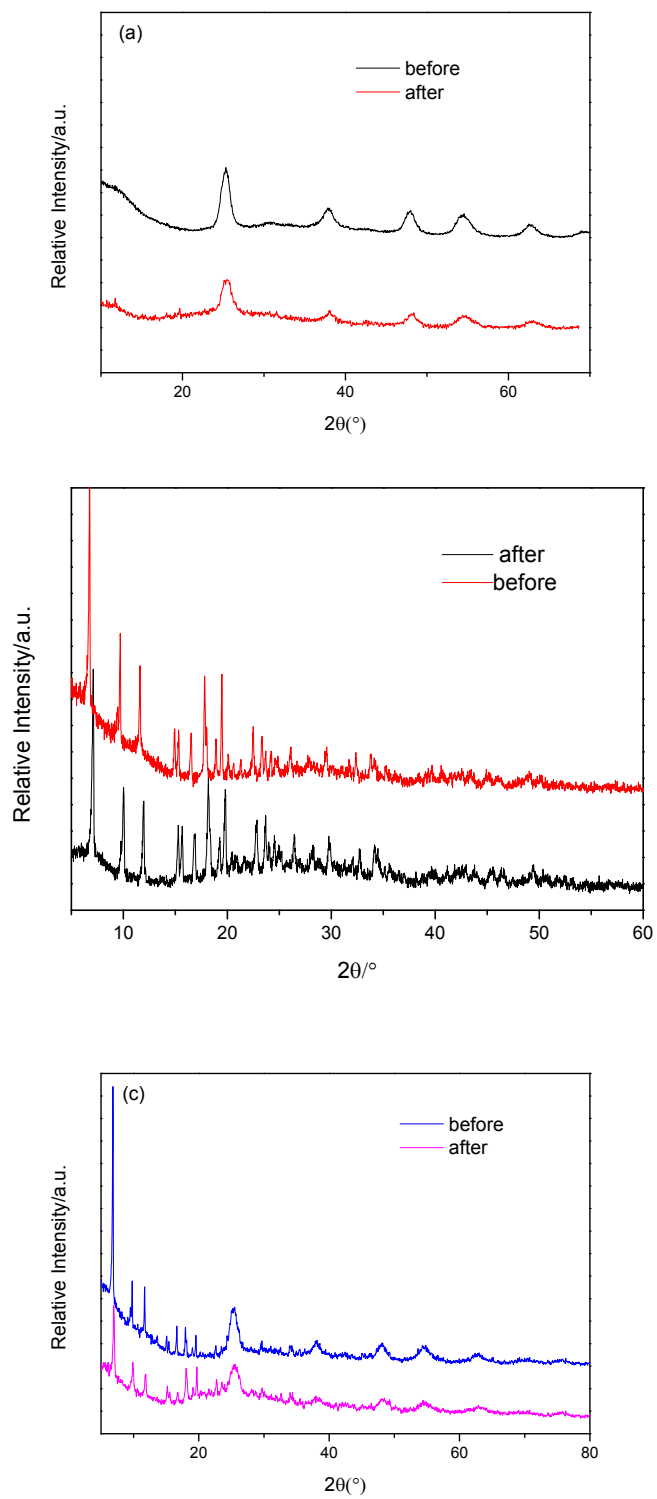


Figure S8 The powder X-ray diffraction (PXRD) patterns of TiO_2 (a), MIL-125(Ti) (b) and hybrid MIL-125(Ti)@ TiO_2 (c) before and after the photocatalytic process.

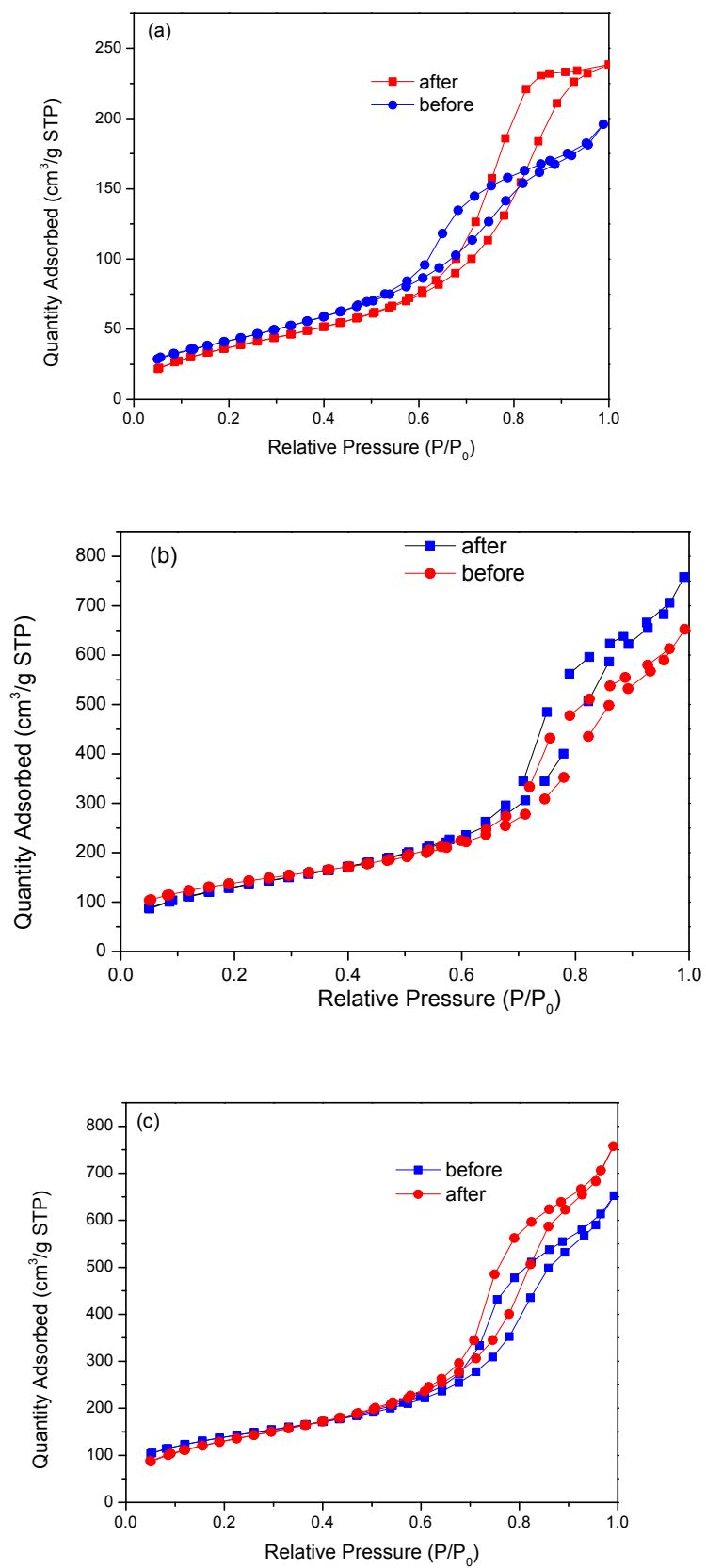


Figure S9 N₂ adsorption–desorption isotherms of TiO₂ (a), MIL-125(Ti) (b), MIL-125(Ti)@TiO₂ (c) before and after the photocatalytic process

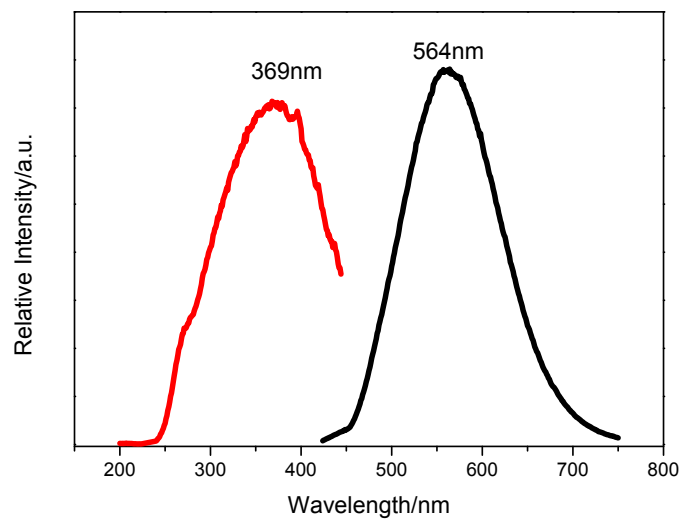


Figure S10 Room temperature excitation and emission spectra of ligand H₂BDC-NH₂

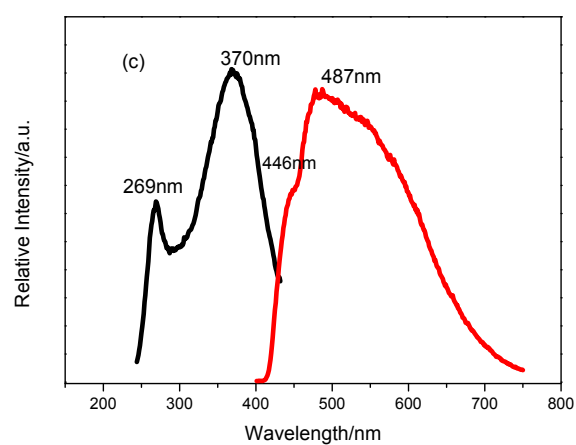
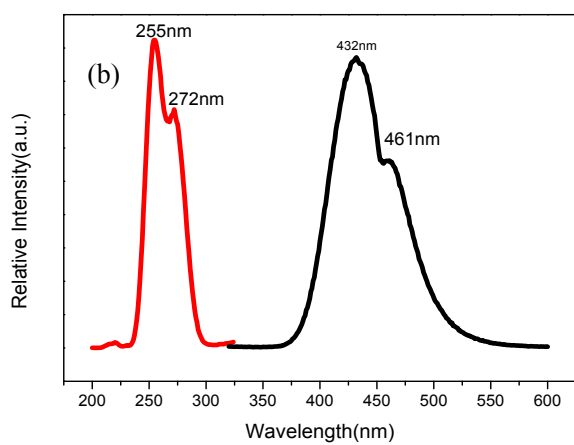
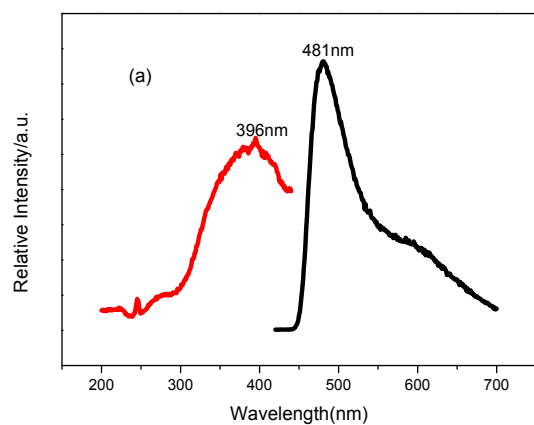


Figure S11 Room temperature excitation and emission spectra of MIL-125(Ti) (a), TiO₂ (b) and hybrid MIL-125(Ti)@TiO₂.

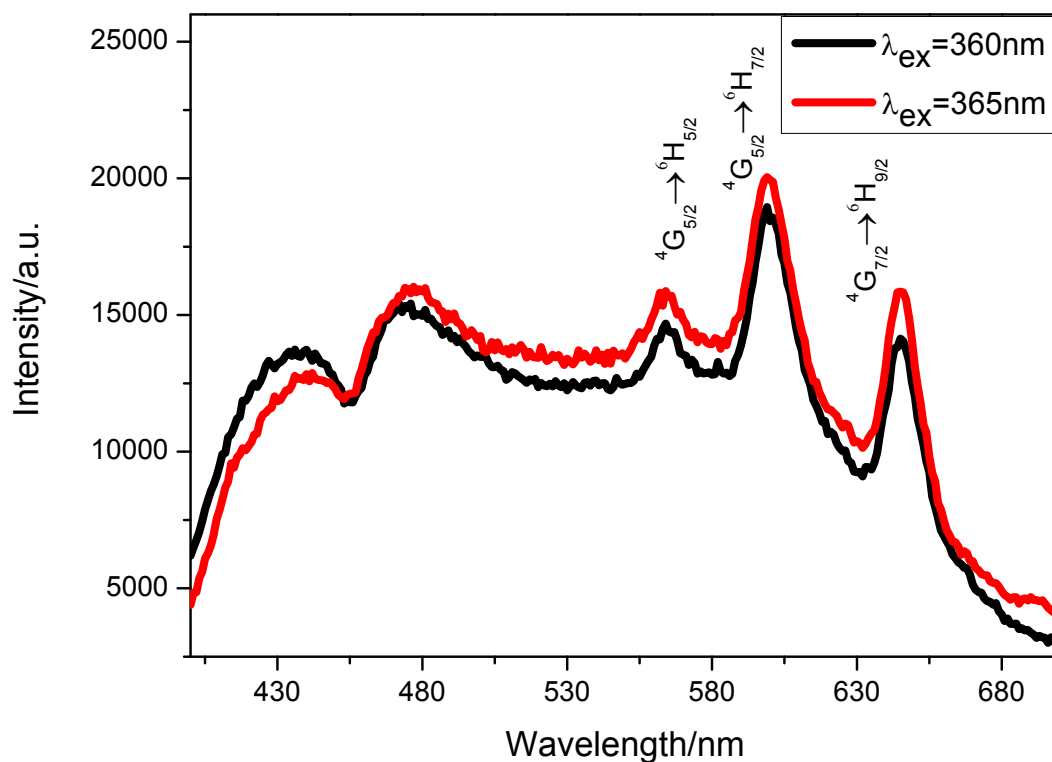


Figure S12 Emission spectra of Sm@MIL-125(Ti)@TiO₂ at different excitation wavelengths (360 and 365nm).

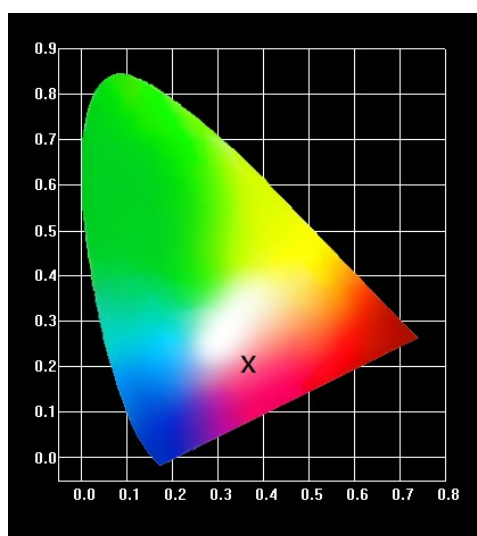


Figure S13 CIE chromaticity coordinates of the initial Eu@MIL-125(Ti)@TiO₂

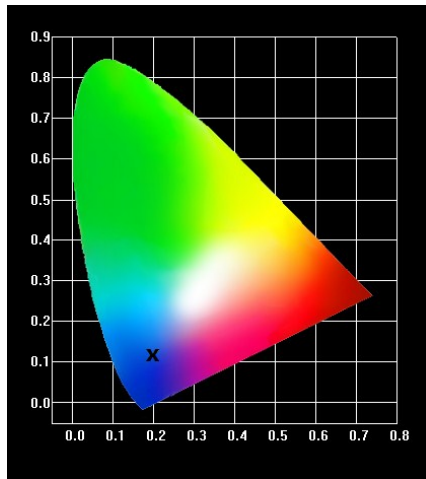
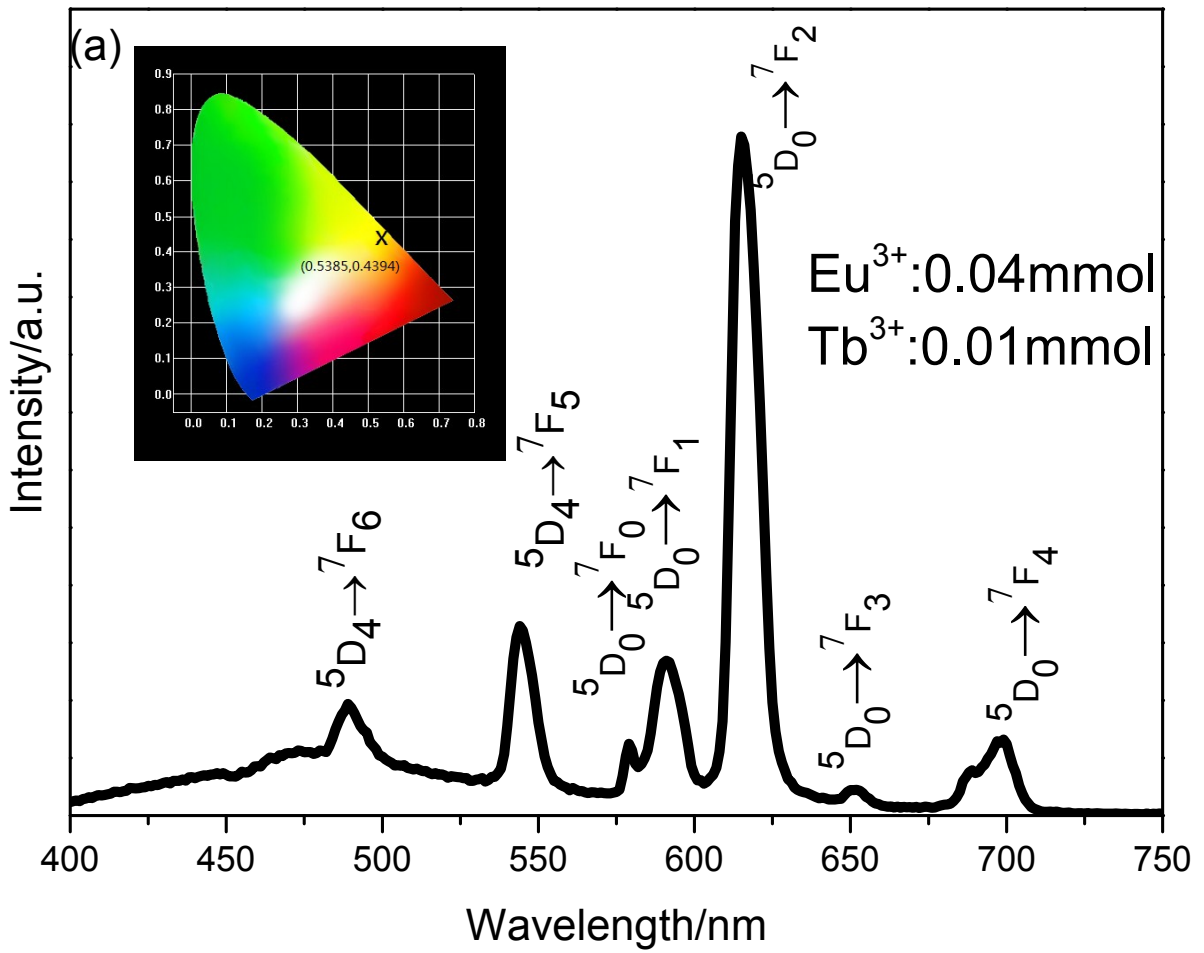


Figure S14 CIE chromaticity coordinates of the hybrid MIL-125(Ti)@TiO₂



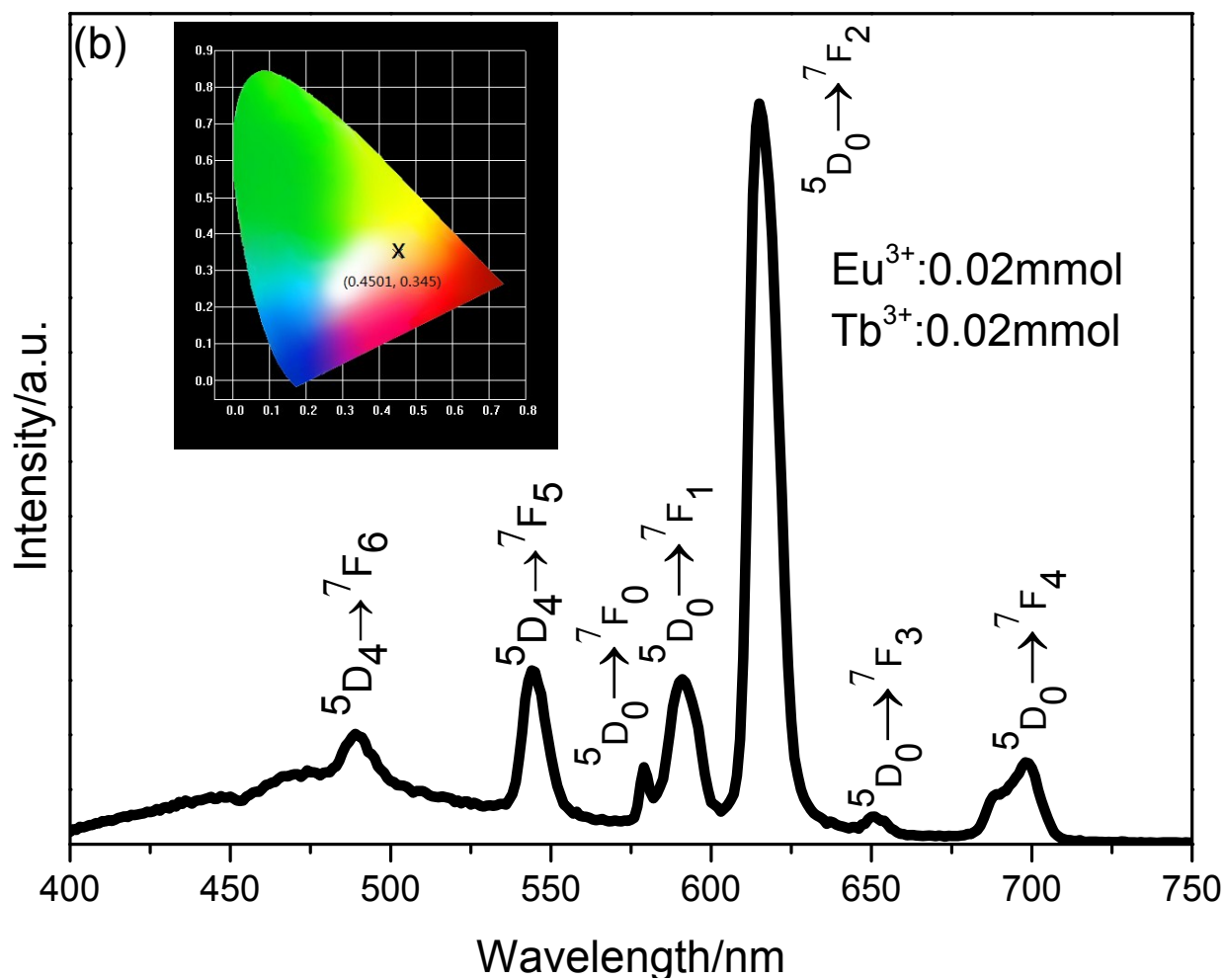


Figure S15 Different doping ratios of Eu³⁺ and Tb³⁺ to get the white light integration of the Eu/Tb@ MIL-125(Ti)@TiO₂

Table S1 the BET surface area of catalysts before and after the photocatalytic process

Catalyst Sample	Before the photocatalytic process/m ² g ⁻¹	After the photocatalytic process/m ² g ⁻¹
TiO ₂	158.3238	145.7157
MIL-125(Ti)	572.0271	562.8334
MIL-125(Ti)@TiO ₂	483.7462	482.1198