

Supplementary information

Solution-processible erbium-ytterbium complex for potential planar optical amplifier application

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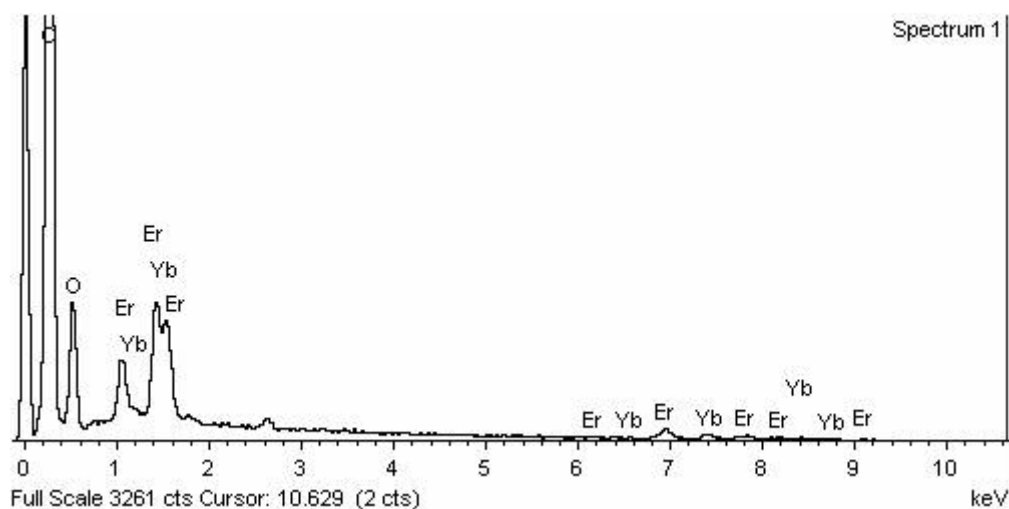


Figure 1S X-ray energy dispersive spectrum from the complex $\text{Er}_{1.2}\text{Yb}_{0.8}(\text{PBA})_6(\text{Phen})_2$.

Table 1S EDS analysis results for the complex $\text{Er}_{1.2}\text{Yb}_{0.8}(\text{PBA})_6(\text{Phen})_2$.

Element	Weight%	Atomic%
C K	9.86	66.29
O K	5.43	27.43
Er M	7.73	3.73
Yb M	5.46	2.55
Totals	28.47	

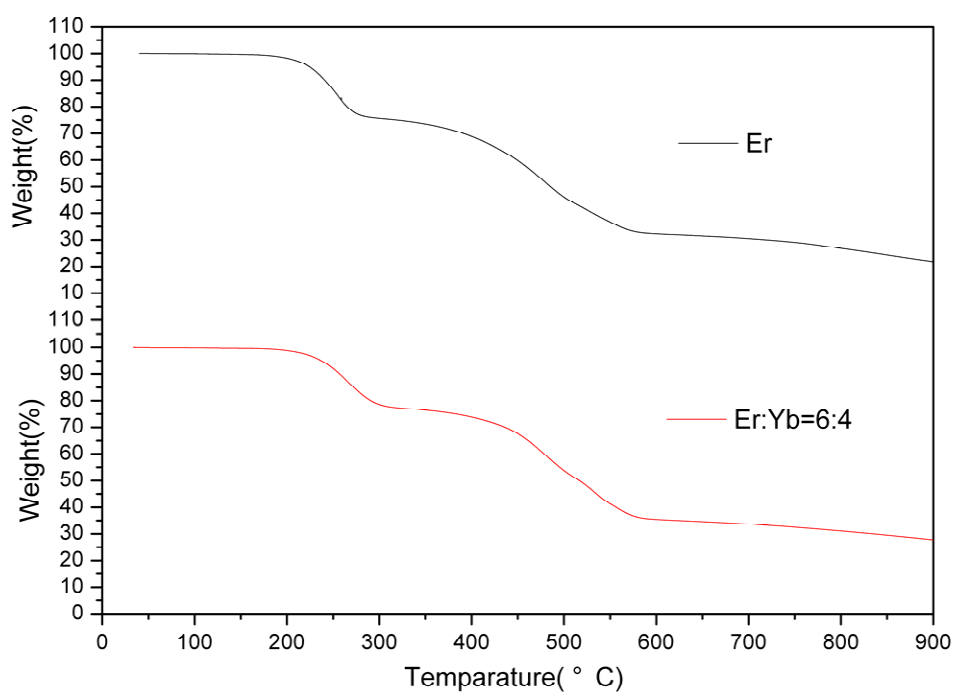


Figure 2S The TGA diagrams of $\text{Er}_2(\text{PBa})_6(\text{Phen})_2$ and $\text{Er}_{1.2}\text{Yb}_{0.8}(\text{PBa})_6(\text{Phen})_2$ complexes.

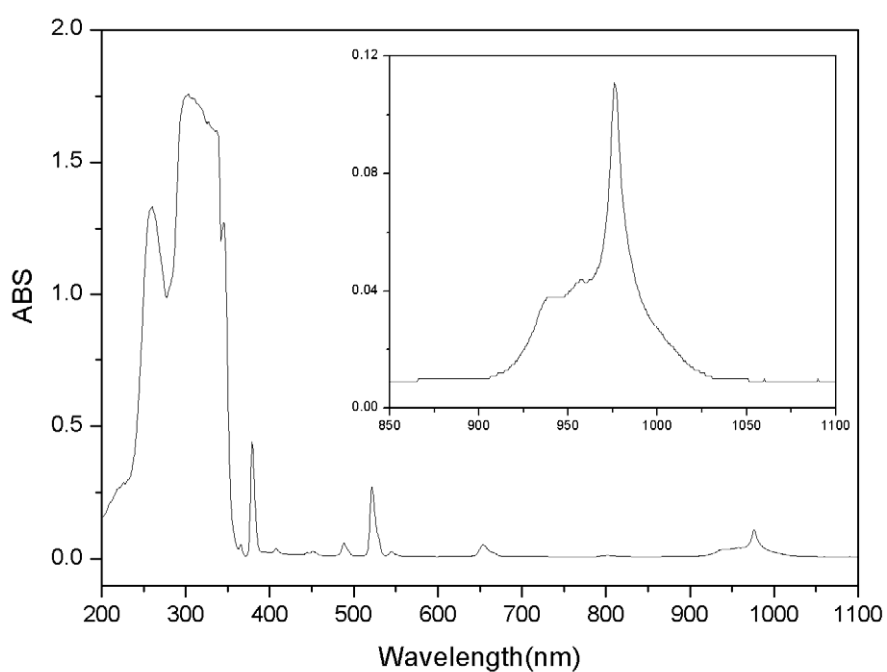


Figure 3S The UV-Vis absorption spectrum of $\text{Er}_{1.2}\text{Yb}_{0.8}(\text{PBa})_6(\text{Phen})_2$ complex in THF. The inset is its absorption around 980nm.

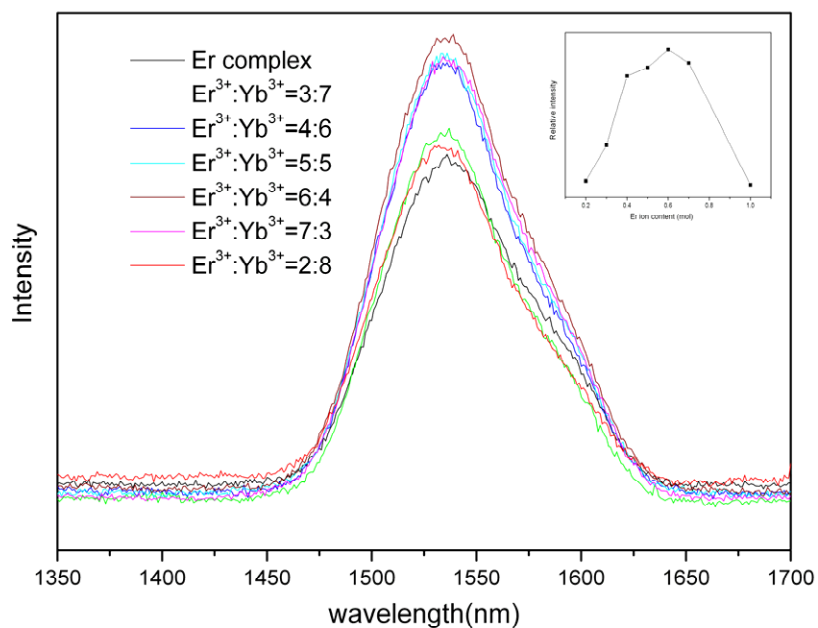


Figure 4S The NIR PL spectra of Er_xYb_{2-x}(PBA)₆(Phen)₂ (x = 0.4, 0.6, 0.8, 1.0, 1.2, 1.4, 2) complexes in THF at a complex concentration of 0.0543 M excited at 975 nm.

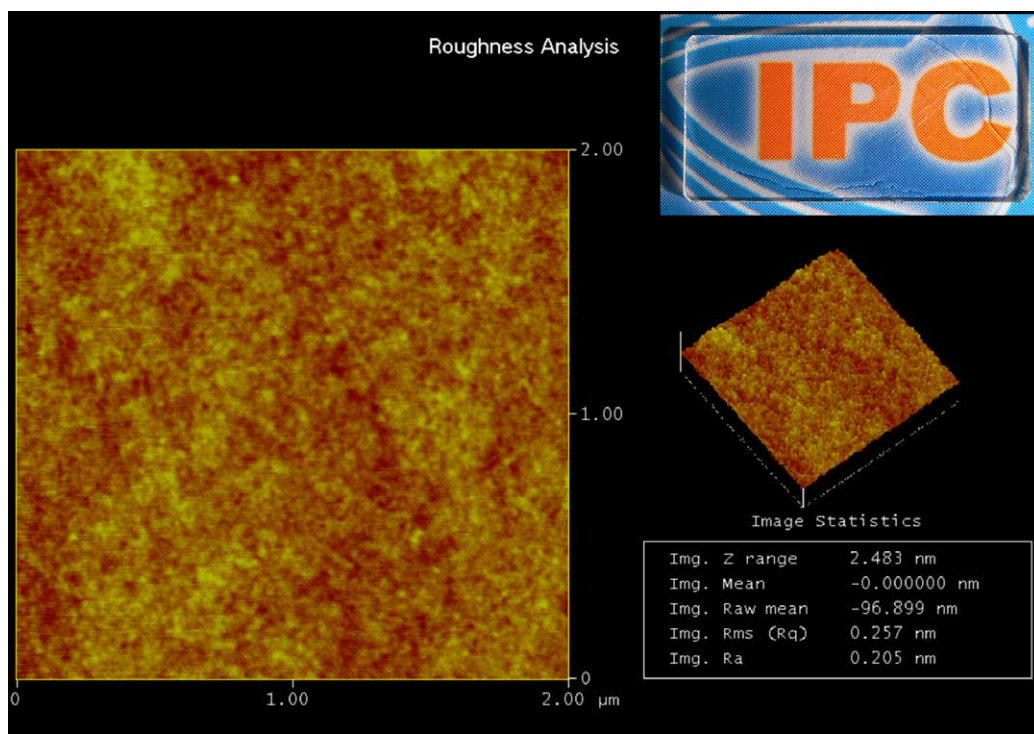


Figure 5S AFM image and photograph of Er_{1.2}Yb_{0.8}(PBA)₆(Phen)₂ thin film. The right top-corner is the photograph.

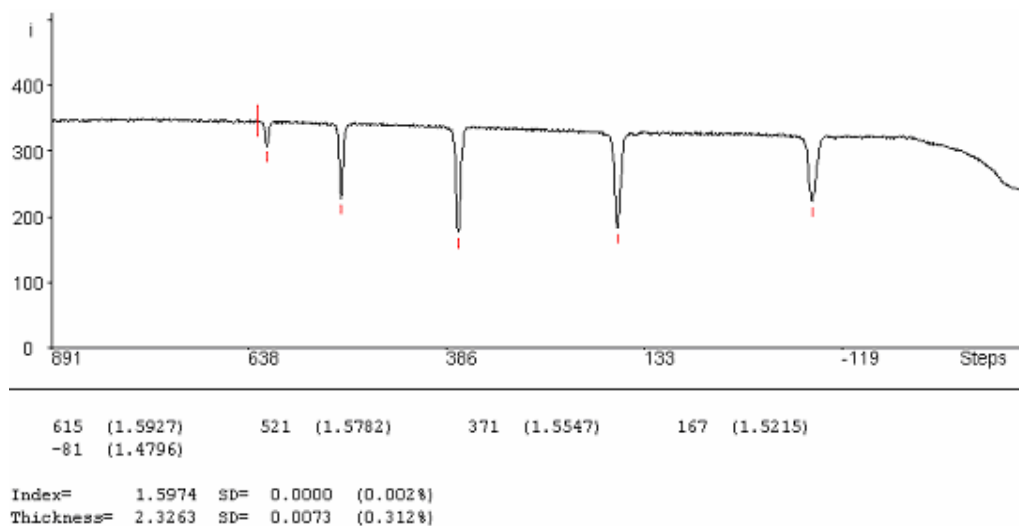
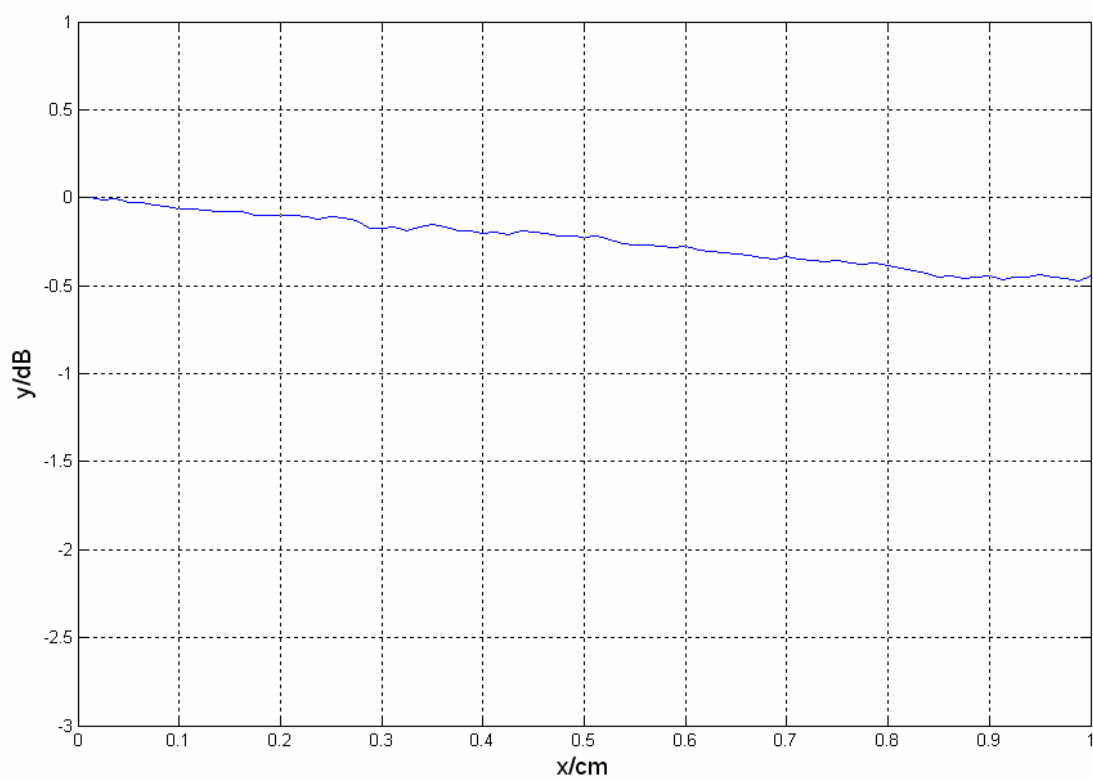
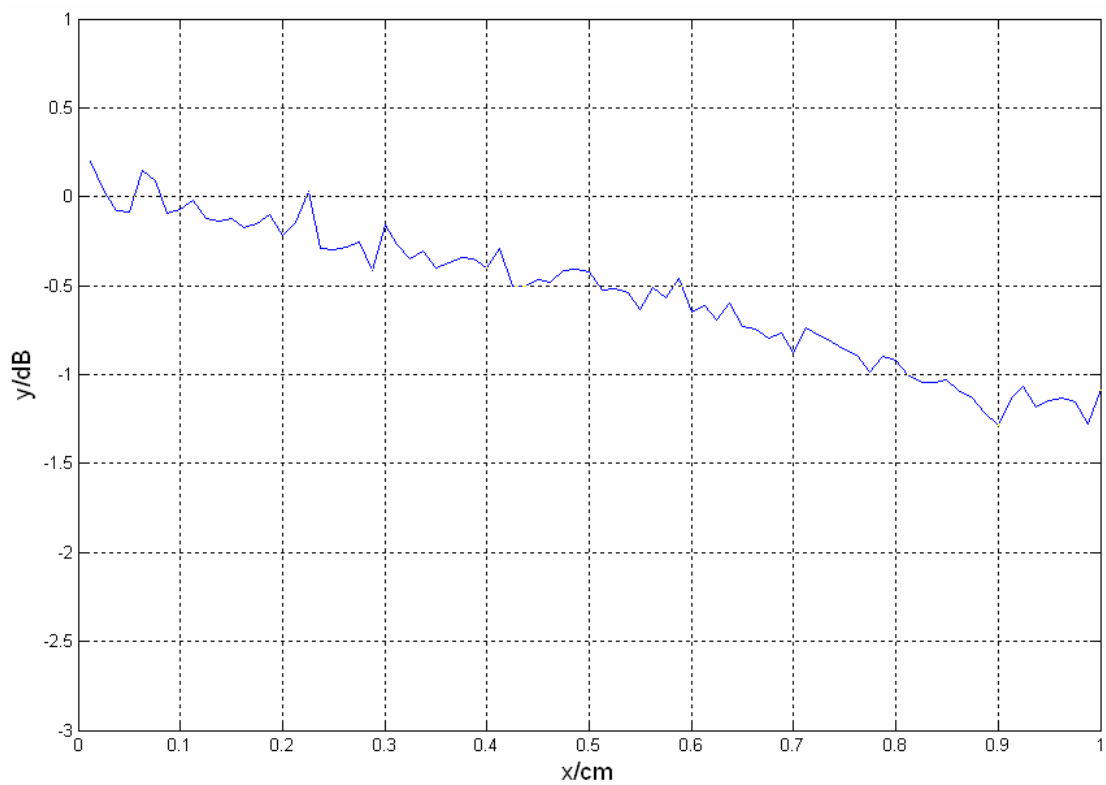


Figure 6S The refractive index at 633 nm and thickness of $\text{Er}_{1.2}\text{Yb}_{0.8}(\text{PBa})_6(\text{Phen})_2$ complex film.





(b)

Figure 7S The optical loss diagrams of planar waveguides at 633 nm. (a)

$\text{Er}_{1.2}\text{Yb}_{0.8}(\text{PBA})_6(\text{Phen})_2$ complex film; (b) the PC polymer film.