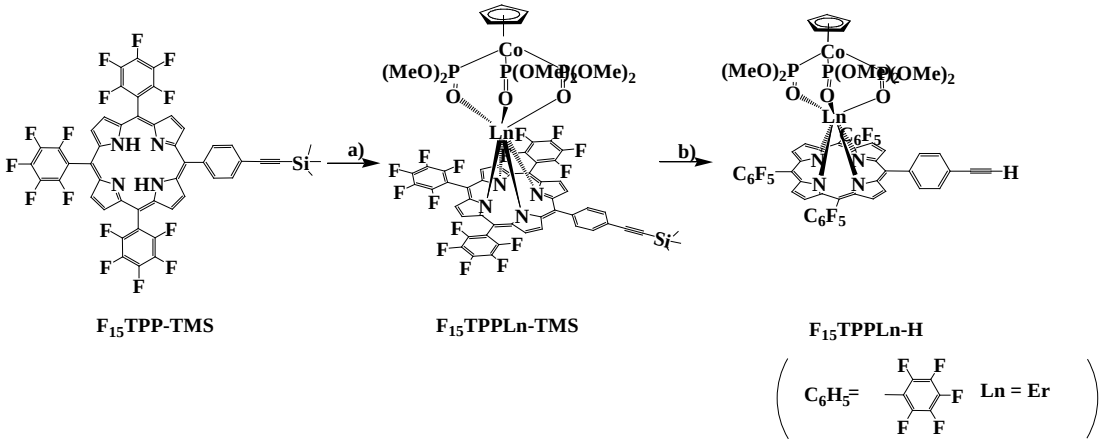
Supporting Information

Experimental



a) (i) $Ln[N(SiMe_3)_2]_3{\cdot}[LiCl(THF)_3]_x$, Toluene, reflux, 12h; (ii) $Na\{(\eta^5\text{-}C_5H_5)Co[P(=O)(OMe)_2]_3\}$, Toluene, rt, 12h;
b) TBAF(THF, 1M), CH_2Cl_2, rt, 30min

Figure S1. The synthetic routes of intermediate F15TPPLn-H. (Ln = Er)

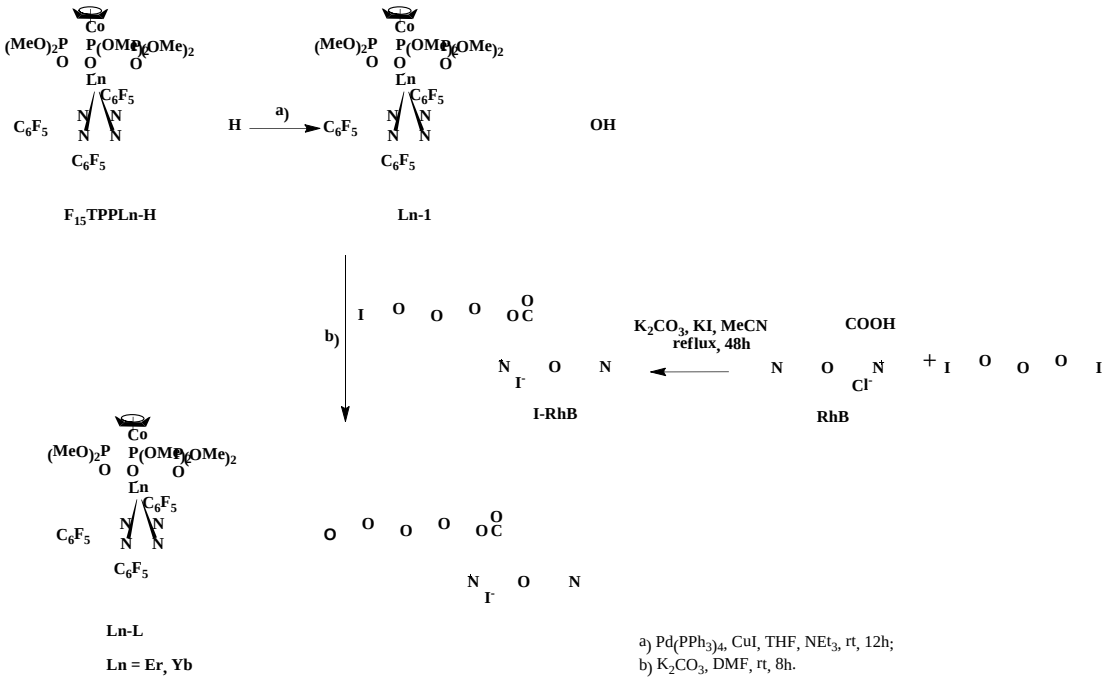


Figure S2. The synthetic routes of Er-L. (Ln = Er, Yb)

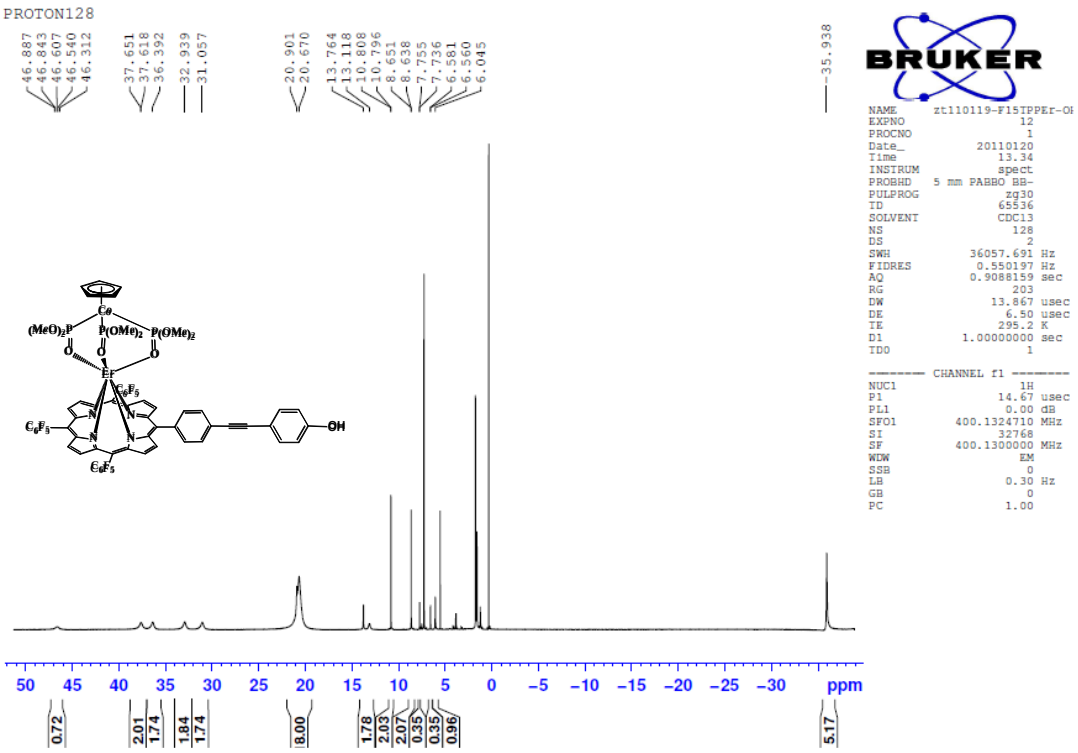


Figure S3. 400 MHz-H-NMR ($CDCl_3$) spectra of Er-**1**

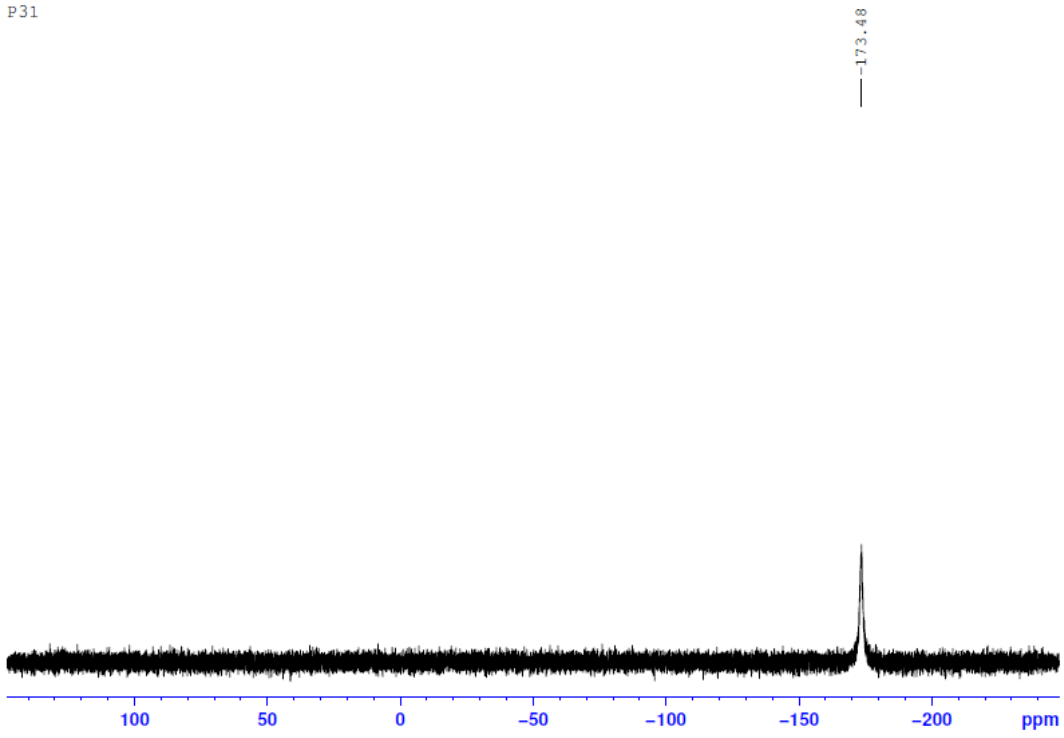


Figure S4. 400 MHz-^{31}P-NMR ($CDCl_3$) spectra of Er-**1**

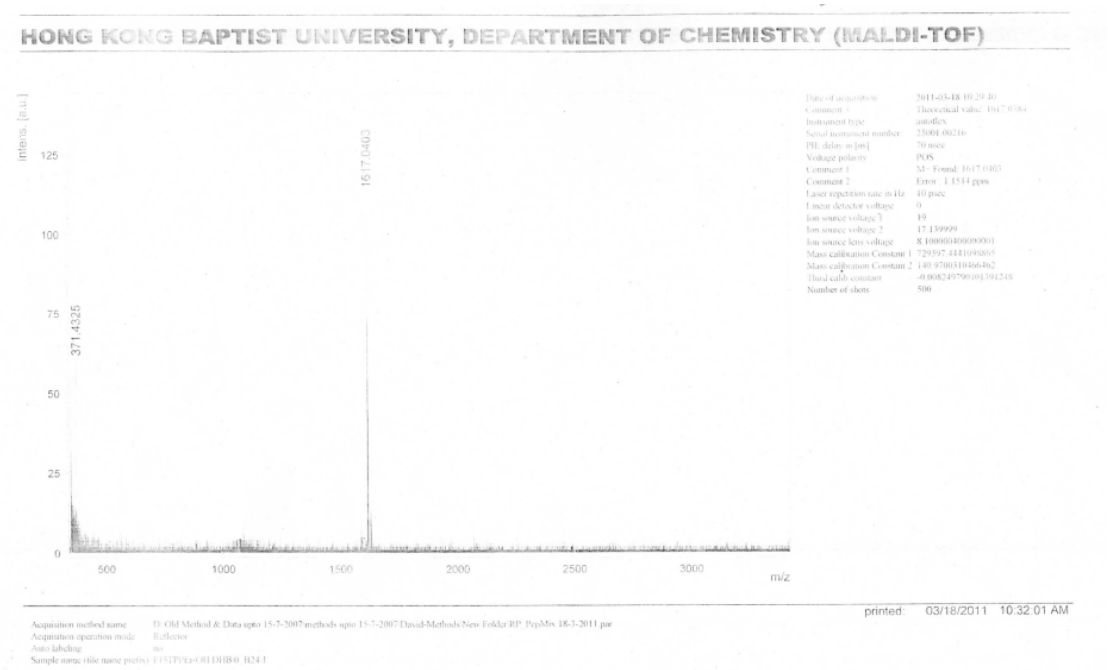


Figure S5. MALDI-TOF spectra of Er-**1**

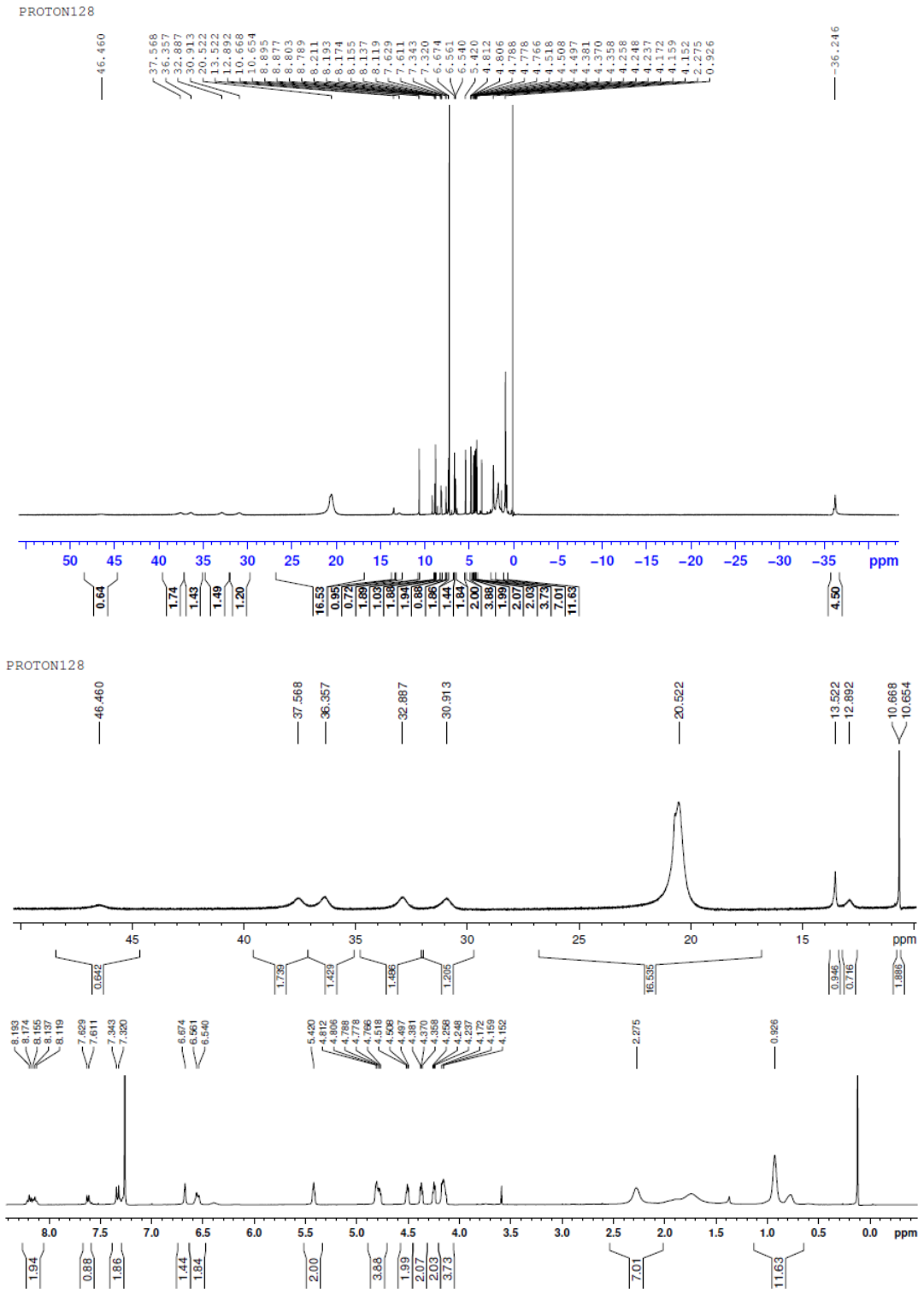


Figure S6. 400 MHz-^{1}H-NMR ($CDCl_3$) spectra of Er-**L**

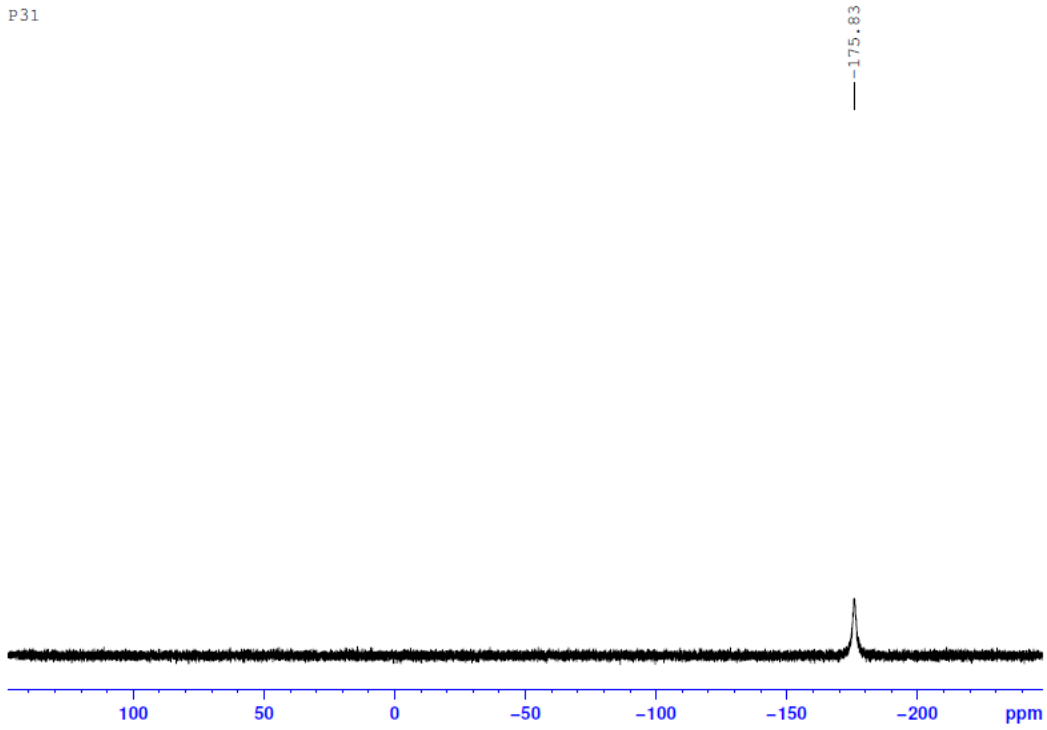


Figure S7. 400 MHz-^{31}P-NMR ($CDCl_3$) spectra of Er-**L**

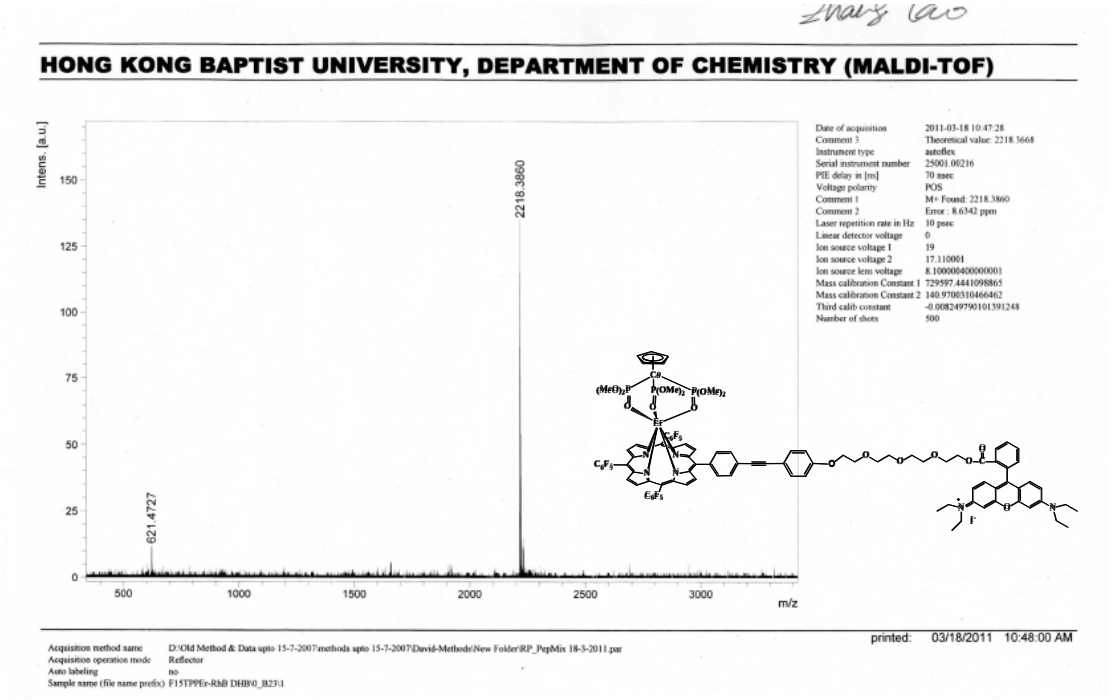


Figure S8. MALDI-TOF spectra of Er-**L**

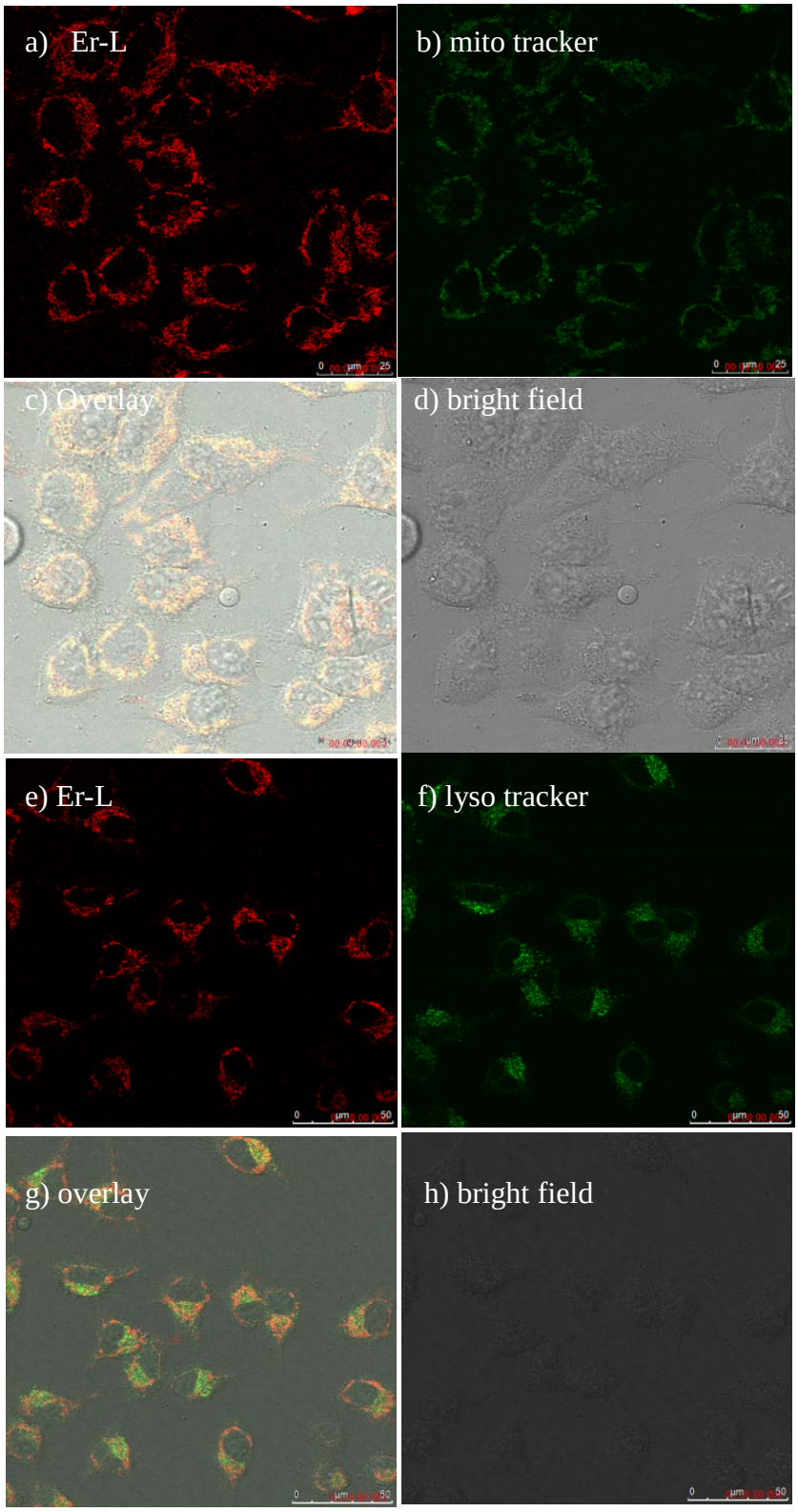


Figure S9 *Confocal microscopic analysis of subcellular localization of Er-**L*** with commercial mitochondria (positive control) and lysosome (negative control) specific marker. Positive control: (a) Linear confocal microscopy images of the red in-vitro emission from Er-**L** (10 μM, λ_{ex} = 430 nm), 30 min exposure in HeLa cells; (b) Green mitochondria marker – Invitrogen M7514 (1 μM, λ_{ex}= 430 nm, 3 min exposure) in HeLa cells; (c) Merged image; (d) Bright-field image. Negative control: (e) Linear confocal microscopy images of the red in-vitro emission from Er-**L** (10 μM, λ_{ex} = 430 nm), 30 min exposure in HeLa cells; (f) Green lysosome-specific probe Lyso-Tracker Green DND-26L7526 (negative control) (g) Merged image; (h) Bright-field image.

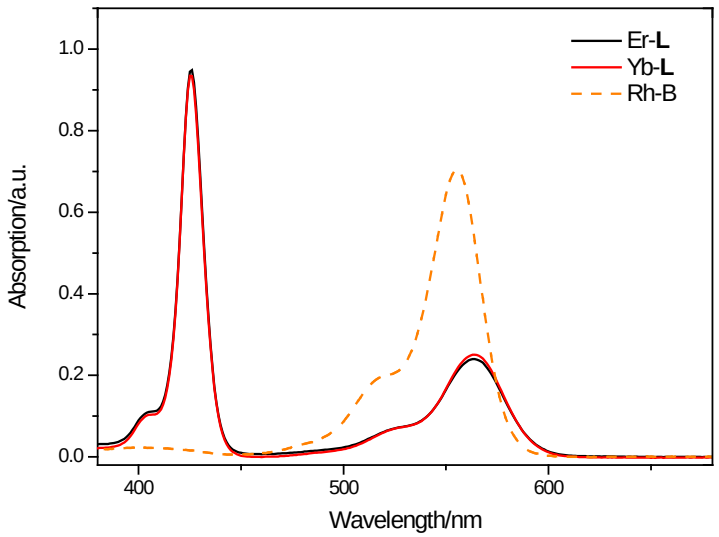


Figure S10 The absorption spectraof Er-**L,** Yb-**L** and Rh-B in aqueous solutions. (1 μM)

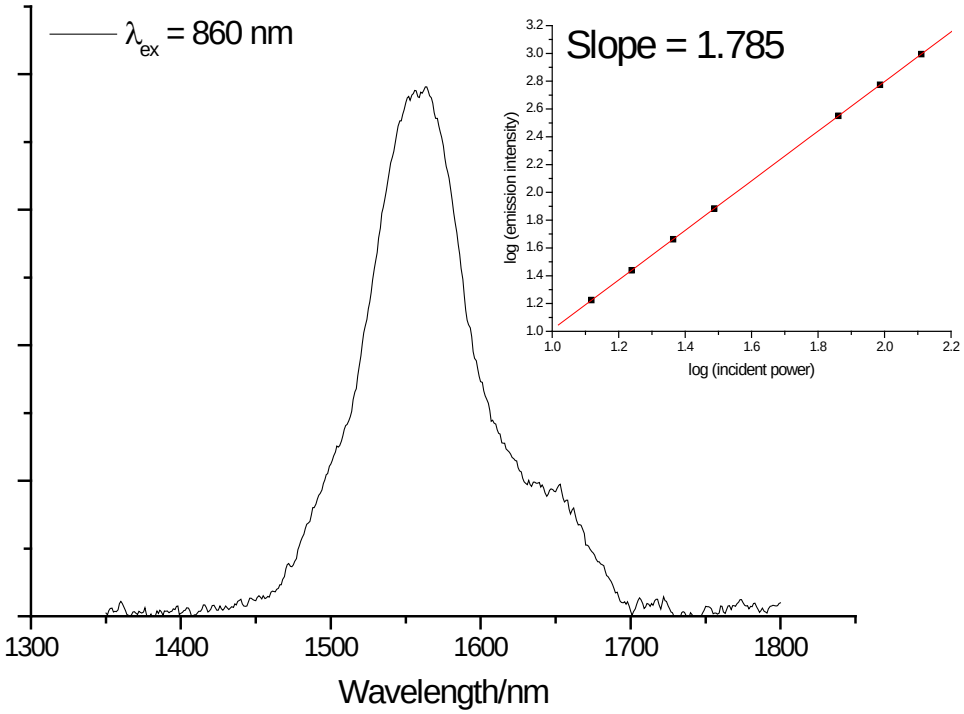


Figure S11. The two-photon induced f-f emission and its power dependence experiment. (λ_{ex} = 860 nm)