

Supporting Information

Ru (II) Sensitized Lanthanide Luminescence: Synthesis, Photophysical Properties, and Near-Infrared Luminescent Determination of Alpha-Fetal Protein (AFP)

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Solution Behavior of Ru-Ln Complexes: UV-Vis Titrations Spectra, Luminescence Titrations, and Association Constants.

UV-Vis Titrations Spectra

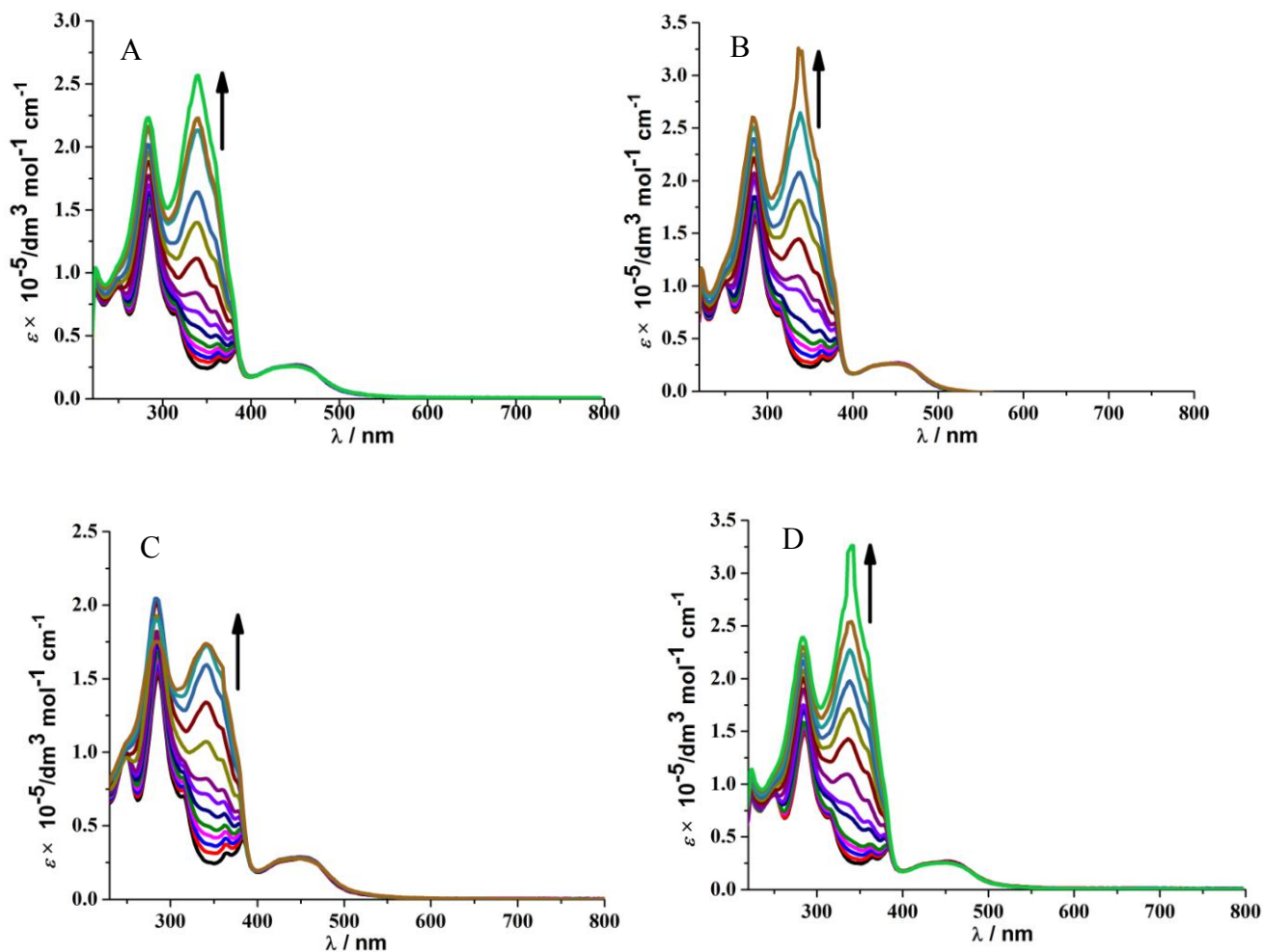


Fig. S1 Changes in UV-Vis absorption spectra of $[\text{Ru}(\text{bpy})_2(\text{tpphz})](\text{PF}_6)_2$ in CH_2Cl_2 on titration with $[\text{Ln}(\text{TTA})_3(\text{H}_2\text{O})_2]$ ($\text{Ln} = \text{Gd (III)}$ (A); Er (III) (B); Nd (III) (C), and Yb (III) (D)).

Luminescence Titrations

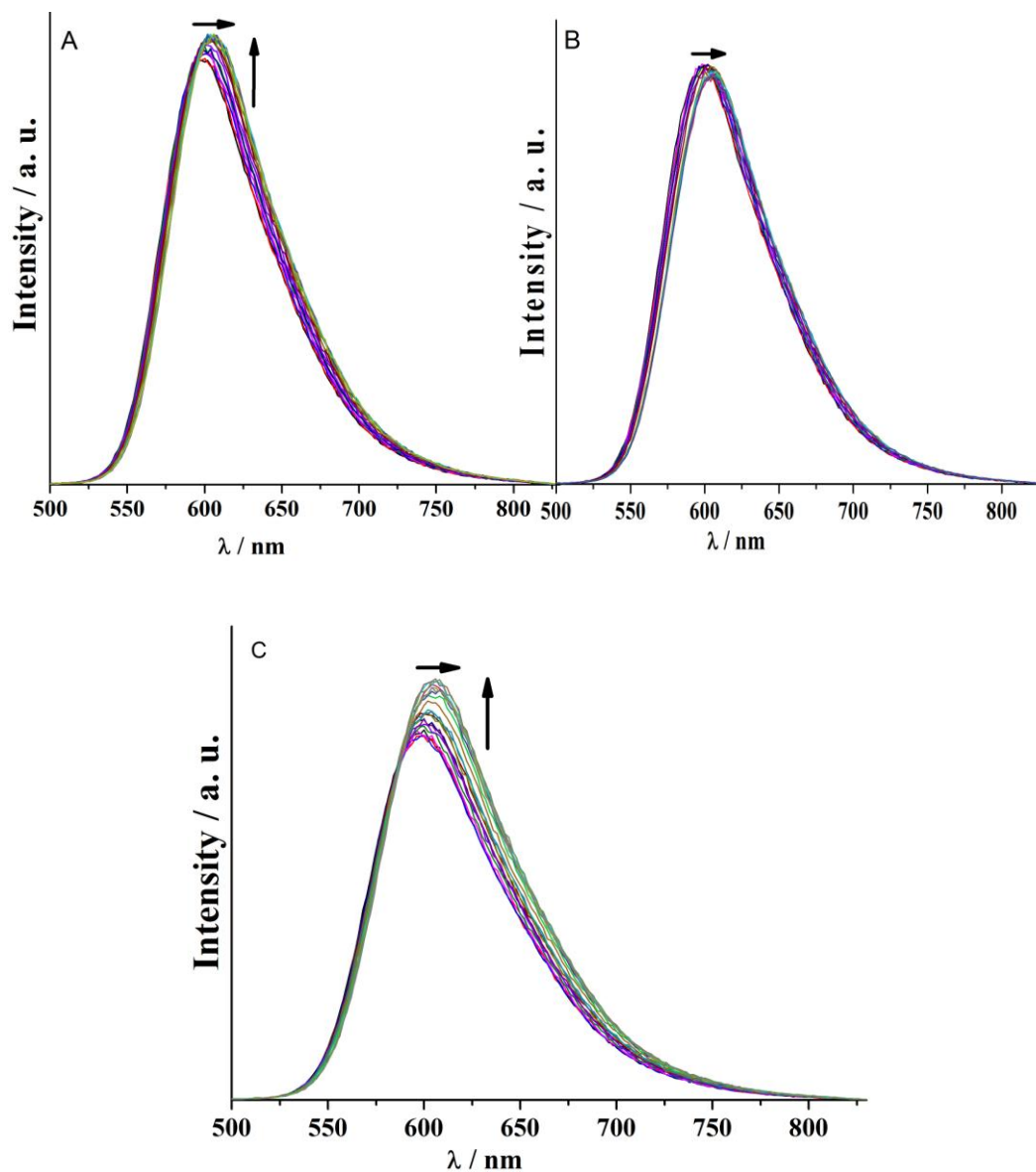


Fig. S2 Changes in the ³MLCT luminescence spectra of [Ru(bpy)₂(tpphz)](PF₆)₂ in CH₂Cl₂ on titration with [Ln(TTA)₃(H₂O)₂] (Ln = Gd (III) (A); Er (III) (B); and Yb (III) (C)).

Photophysical Properties

UV-Vis Absorption Spectra

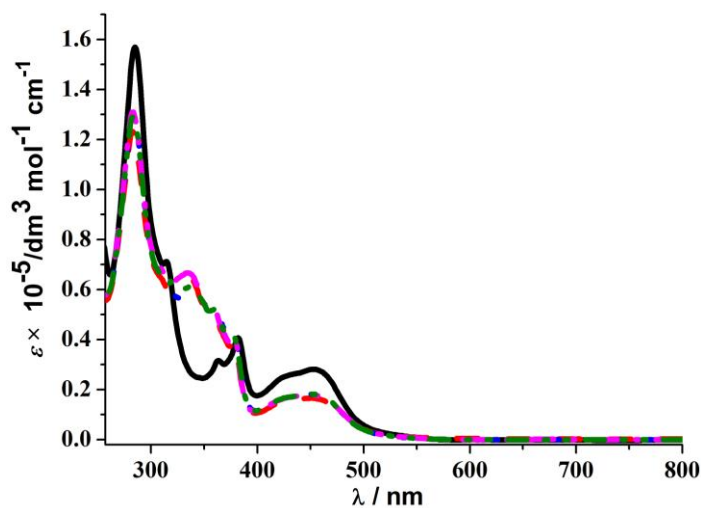


Fig. S3 UV-Vis absorption spectra of $[\text{Ru}(\text{bpy})_2(\text{tpphz})](\text{PF}_6)_2$ (black solid), **Ru-Er** (red dash), **Ru-Nd** (blue dot), **Ru-Yb** (magenta dash dot), and **Ru-Gd** (olive dash dot dot) in CH_2Cl_2 solution at room temperature. The **Ru-Ln** complexes undergo partial dissociation; therefore, the spectra reflect a mixture of dissociated and undissociated sample.

³MLCT Emission Spectra

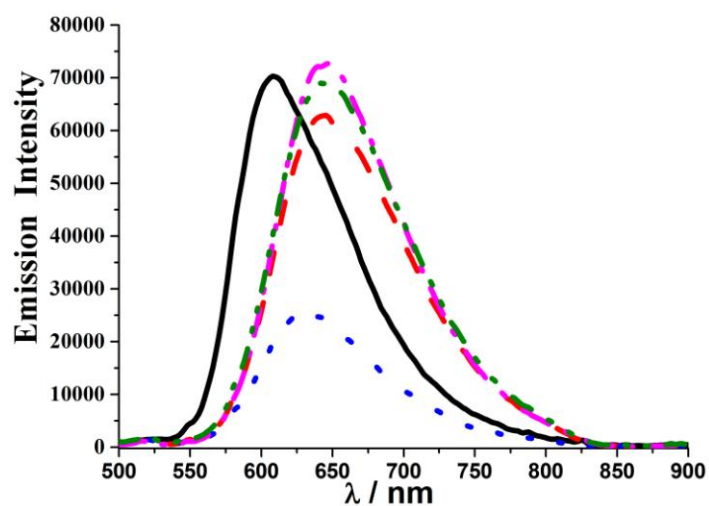


Fig. S4 The ³MLCT emission spectra of [Ru(bpy)₂(tpphz)](PF₆)₂ (black solid), **Ru-Er** (red dash), **Ru-Nd** (blue dot), **Ru-Yb** (magenta dash dot) and **Ru-Gd** (olive dash dot dot) in solid state at 298K, λ_{ex} = 468 nm.

Near-infrared Emission Spectra

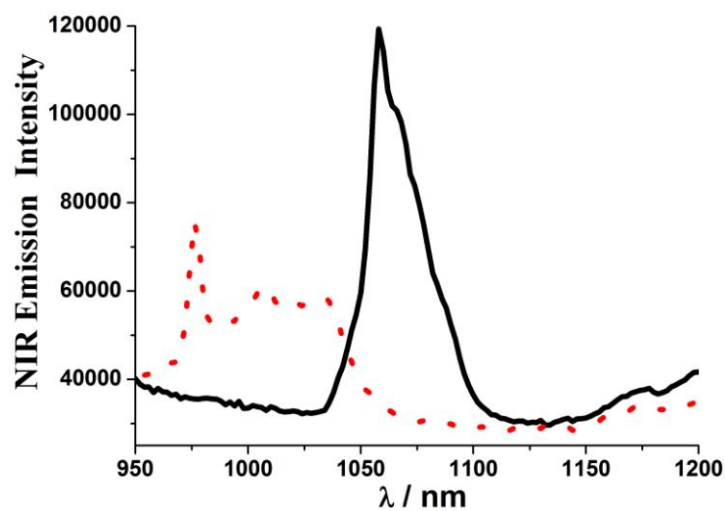


Fig. S5 The NIR luminescence of **Ru-Nd** (black solid), and **Ru-Yb** (red dot) in CH_2Cl_2 solution at 298K, $\lambda_{\text{ex}} = 468$ nm.

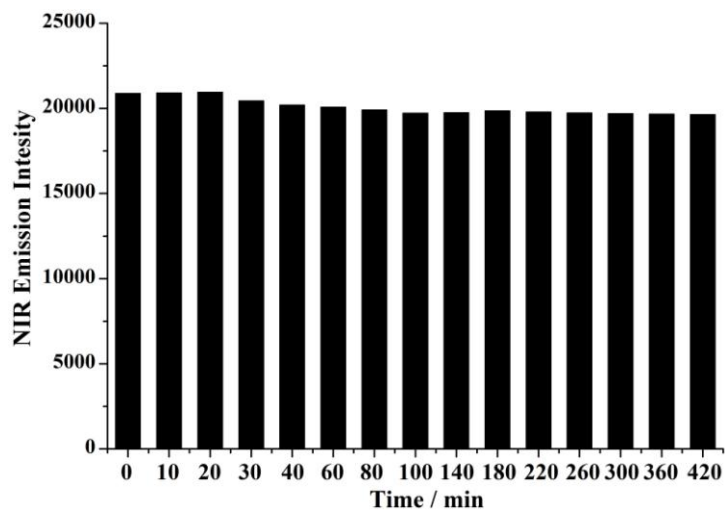


Fig. S6 The NIR luminescence of **Ru-Nd** complex in Tris-HCl buffer solution (pH 6.8) over 7 hours.