Electronic Supplementary Material (ESI) for Photochemical & Photobiological Sciences.

Ambient-temperature near-IR phosphorescence and potential applications of rhenium-oxo corroles[1]

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[1] Electronic supplementary information (ESI) available

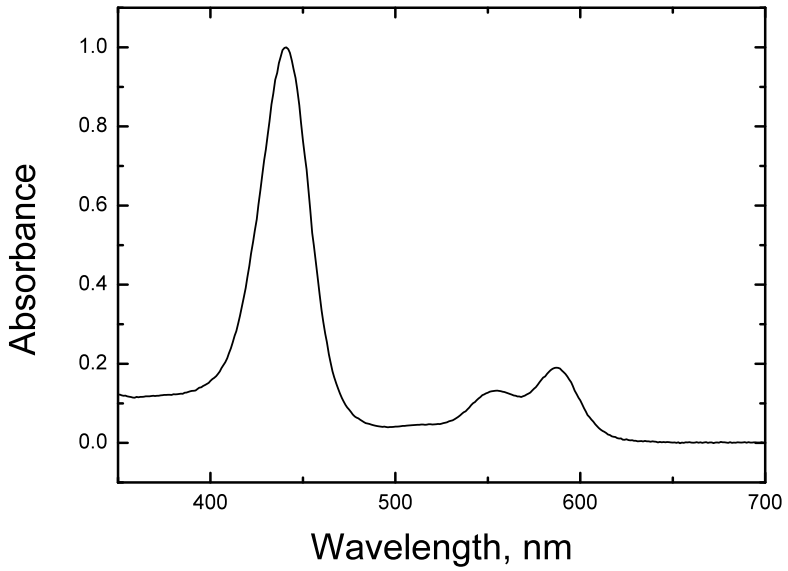

Figure S1. Absorption spectrum of Re[TPC](O) in toluene.

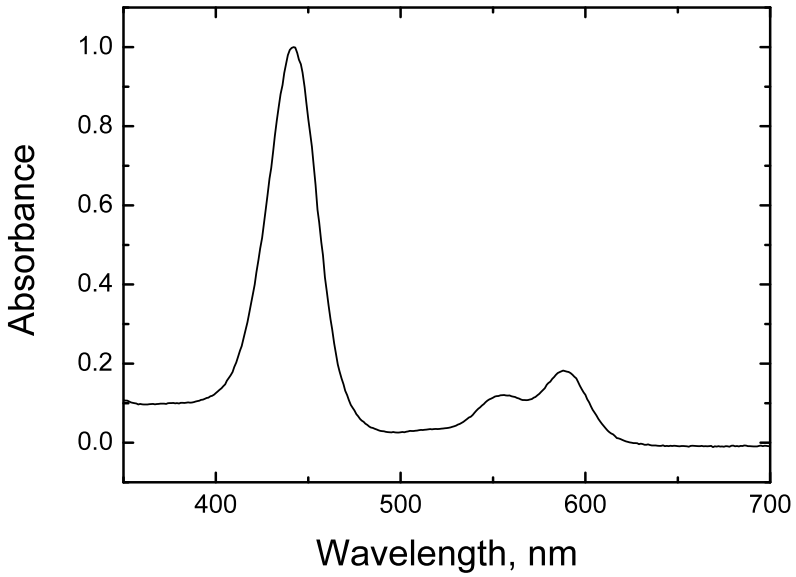

Figure S2. Absorption spectrum of Re[T*p*MePC](O) in toluene.

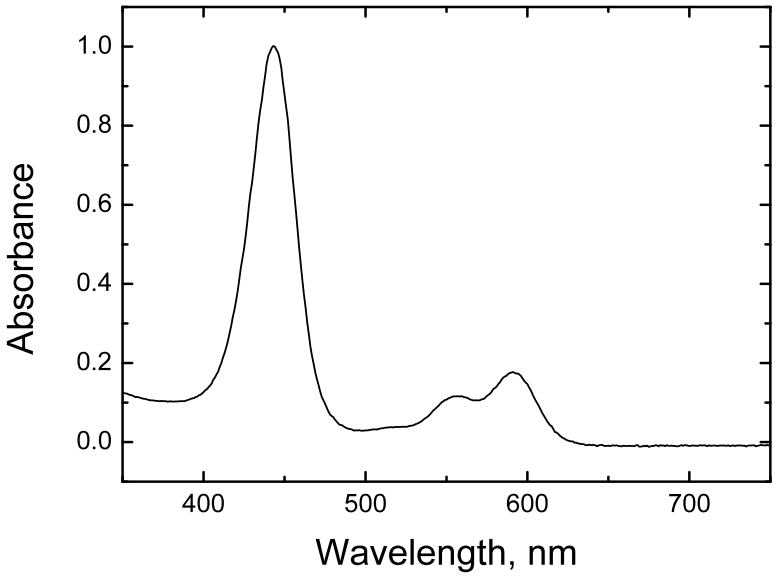

Figure S3. Absorption spectrum of Re[T*p*OMePC](O) in toluene.

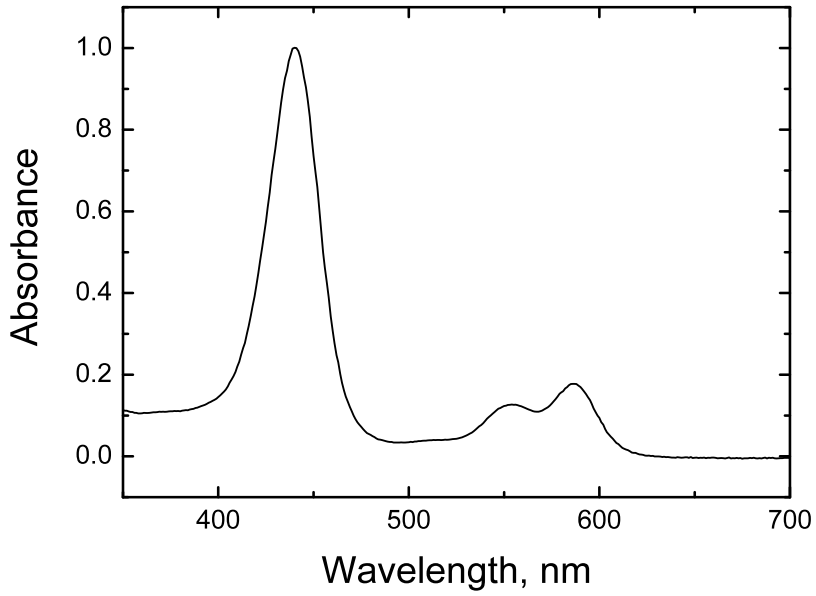

Figure S4. Absorption spectrum of Re[T*p*FPC](O) in toluene.

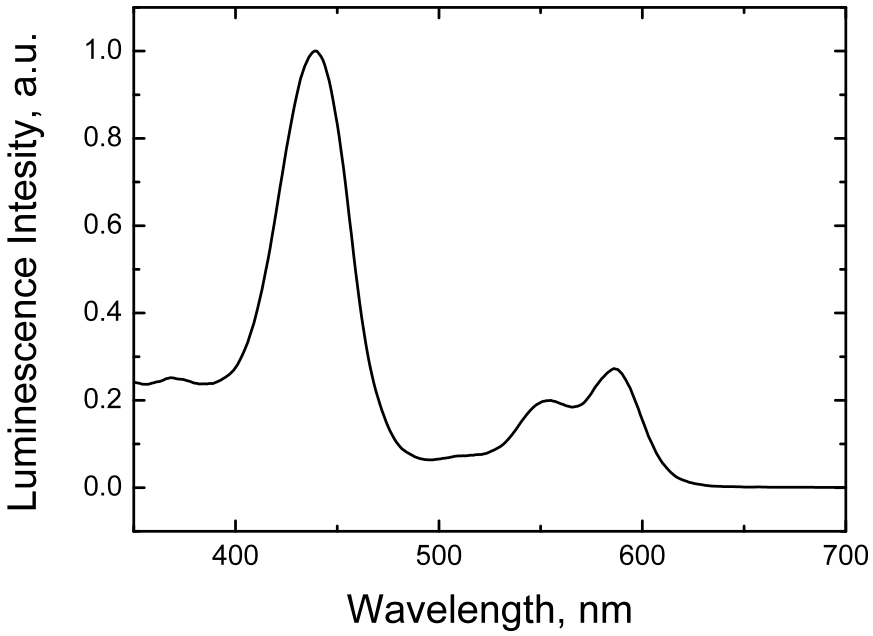

Figure S5. Excitation spectrum of Re[TPC](O) in anoxic toluene (λ_{em} = 770 nm).

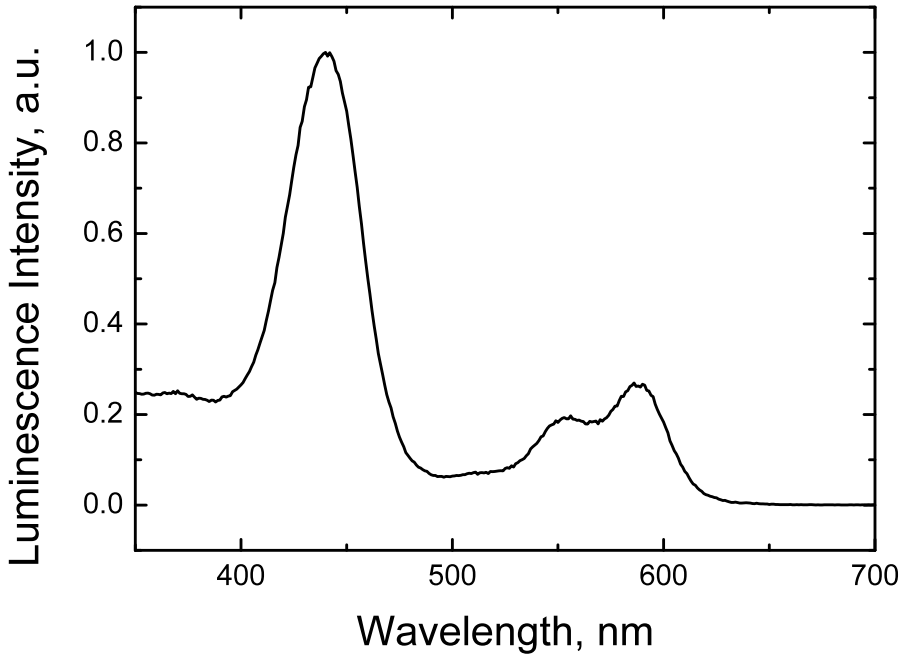

Figure S6. Excitation spectrum of Re[T*p*MePC](O) in anoxic toluene (λ_{em} = 770 nm).

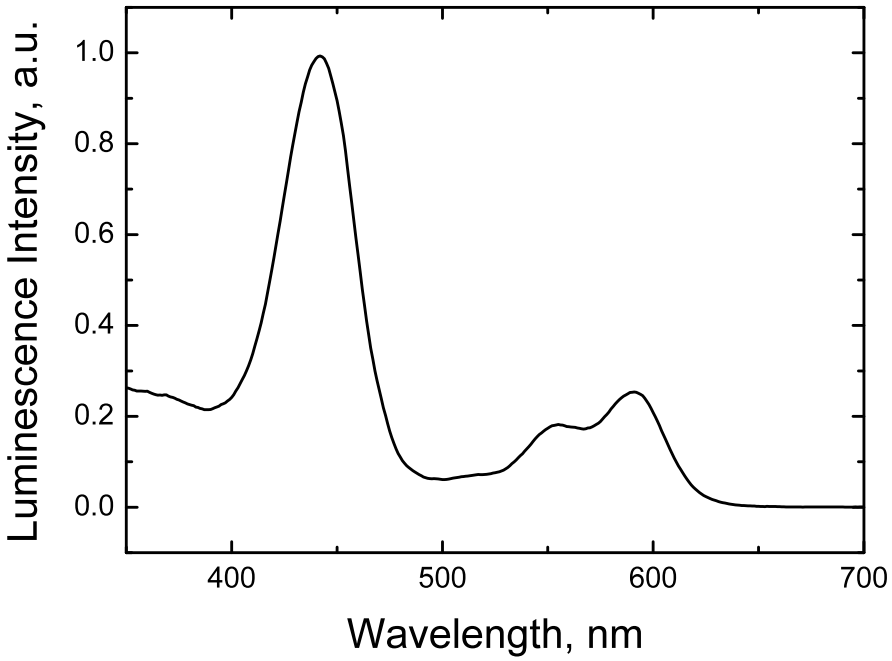

Figure S7. Excitation spectrum of Re[T*p*OMePC](O) in anoxic toluene (λ_{em} = 770 nm).

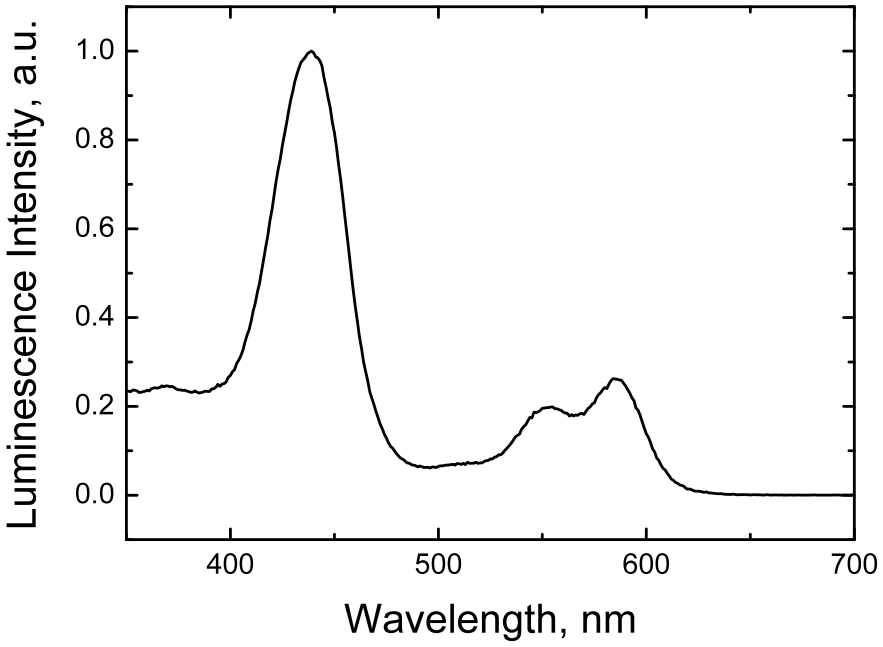

Figure S8. Excitation spectrum of Re[T*p*FPC](O) in anoxic toluene (λ_{em} = 770 nm).

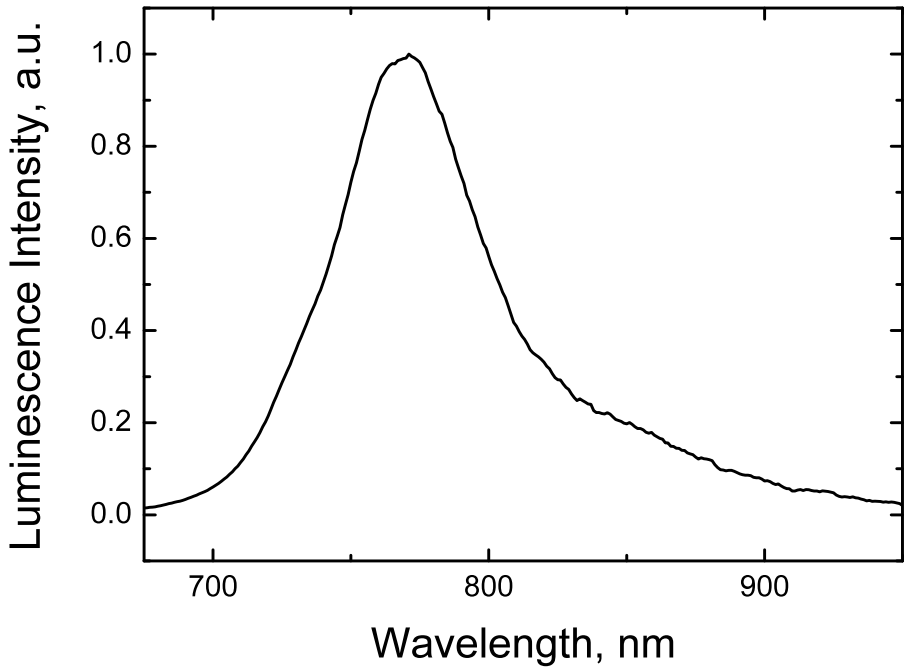

Figure S9. Emission spectrum of Re[TPC](O) in anoxic toluene (λ_{exc} = 590 nm).

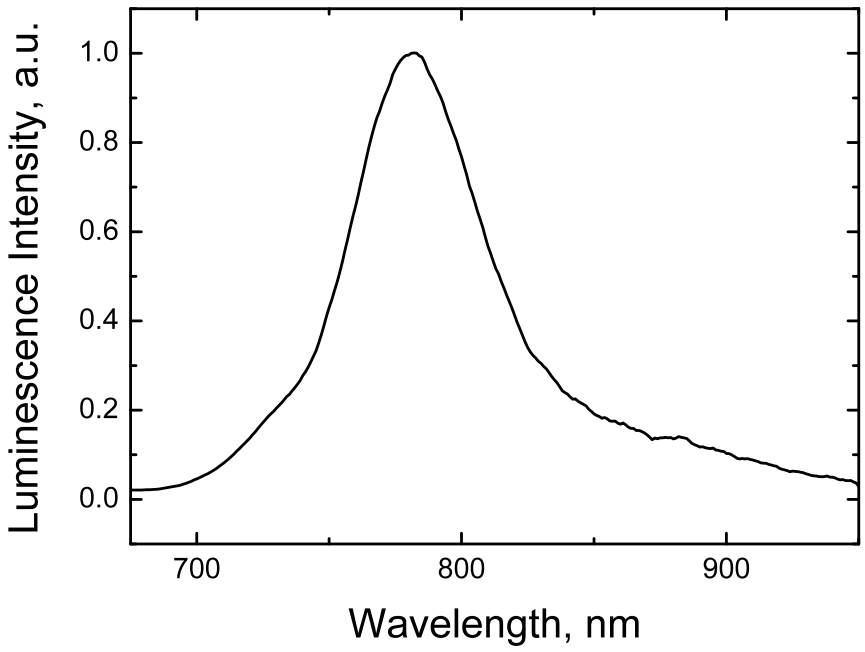

Figure S10. Emission spectrum of Re[T*p*MePC](O) in anoxic toluene (λ_{exc} = 590 nm).

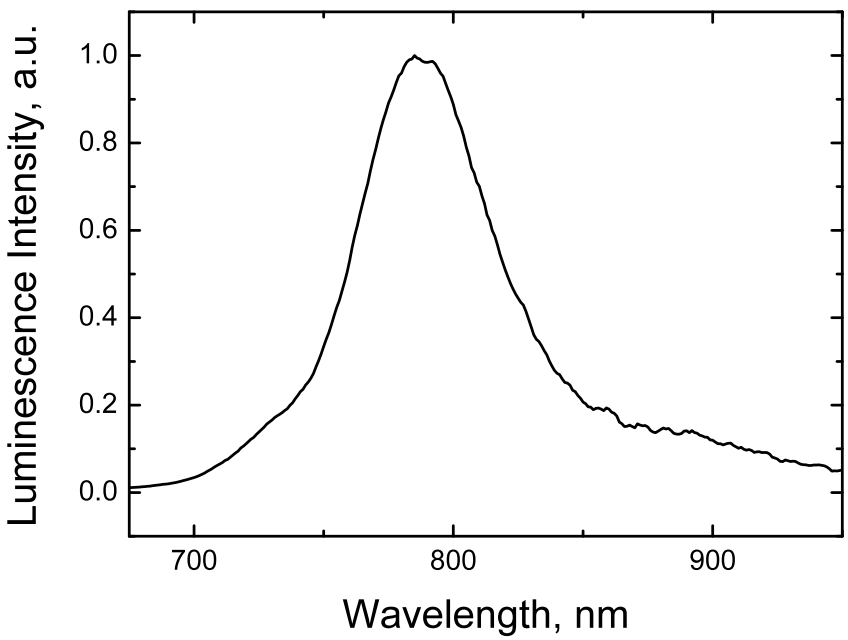

Figure S11. Emission spectrum of Re[T*p*OMePC](O) in anoxic toluene (λ_{exc} = 590 nm).

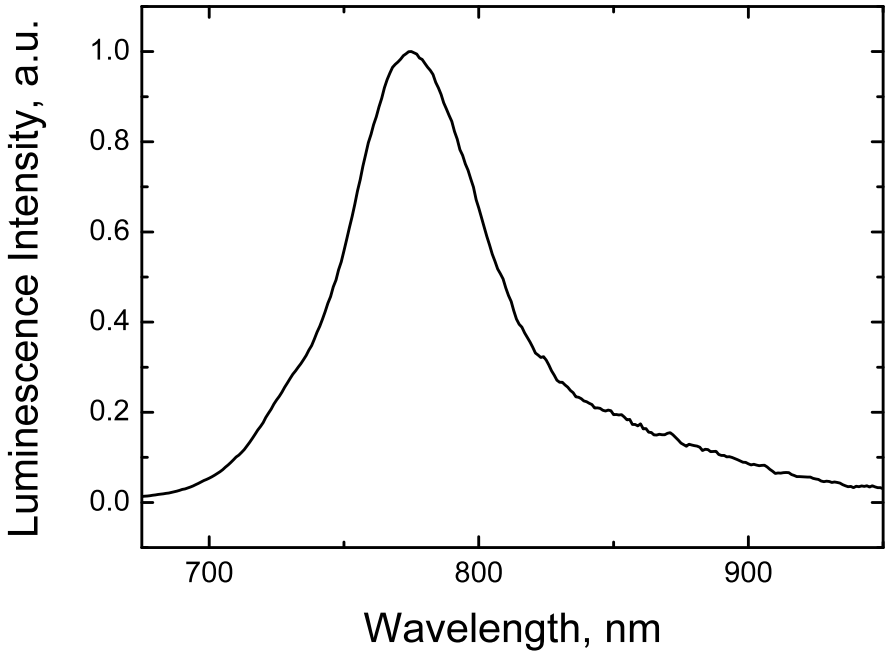

Figure S12. Emission spectrum of Re[T*p*FPC](O) in anoxic toluene (λ_{exc} = 590 nm).

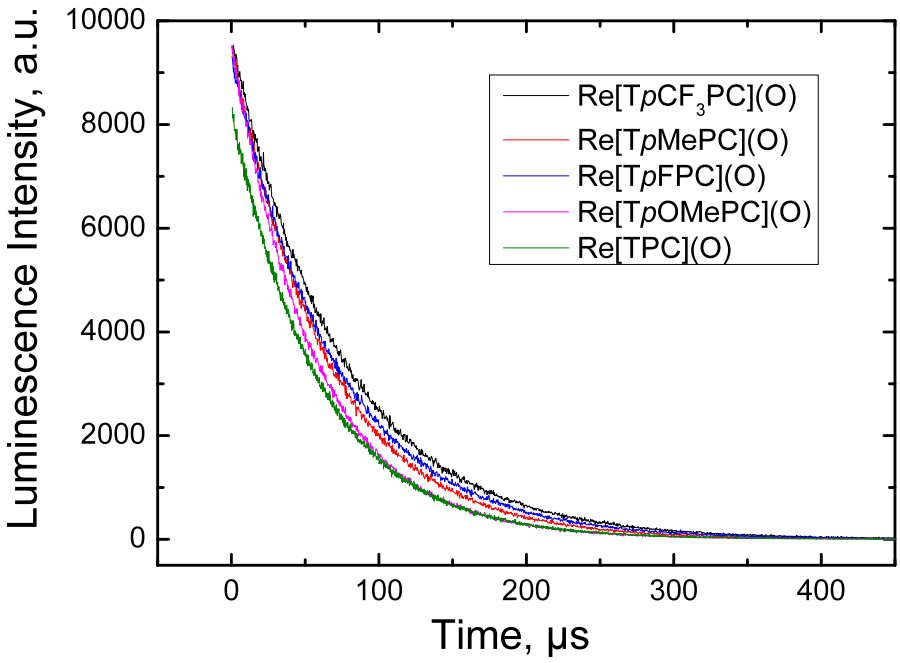

Figure S13. Phosphorescence decay of Rhenium-Oxo Corroles in anoxic toluene (λ_{exc} = 455 nm).

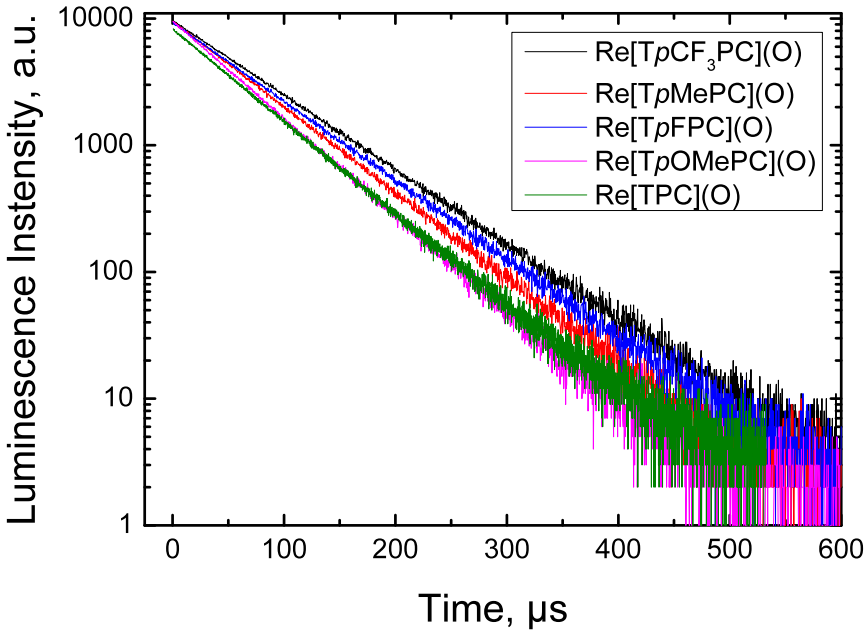

Figure S14. Phosphorescence decay of Rhenium-Oxo Corroles in anoxic toluene (λ_{exc} = 455 nm).

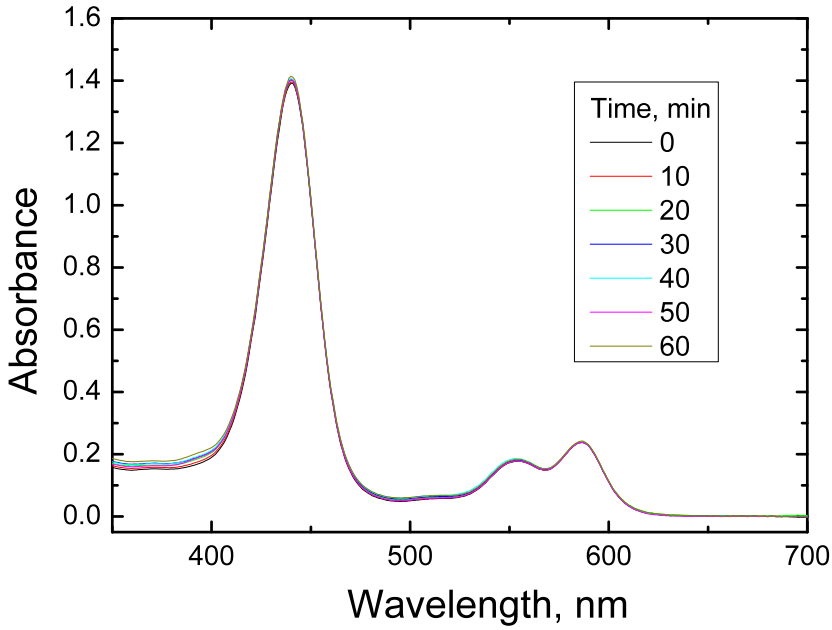

Figure S15. Absorption spectra of Re[T*p*CF$_3$PC](O) in air-saturated toluene solution during irradiation with a high power 590-nm LED array.

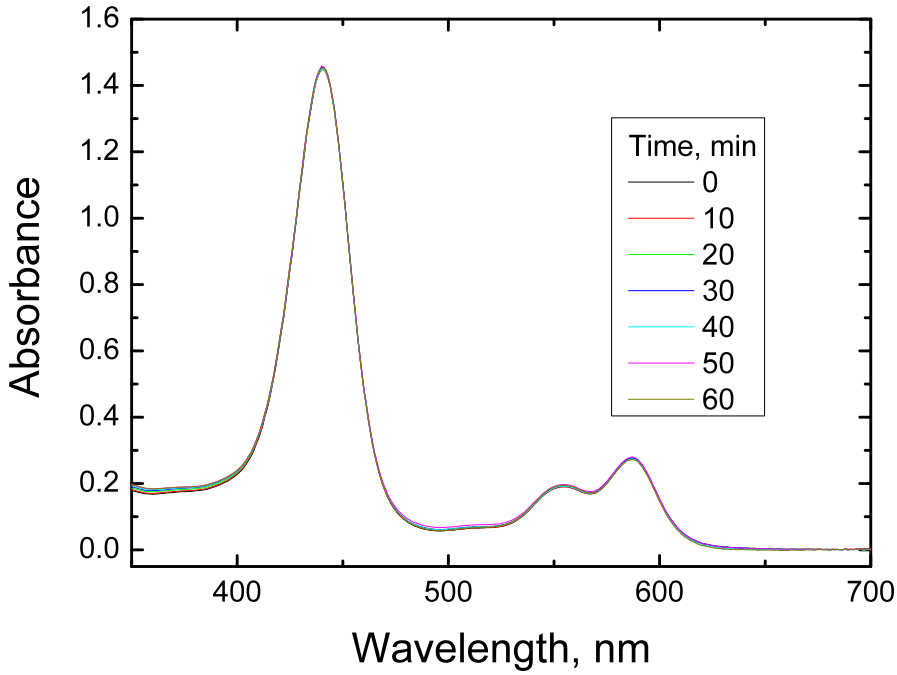

Figure S16. Absorption spectra of Re[TPC](O) in air-saturated toluene solution during irradiation with a high power 590-nm LED array.

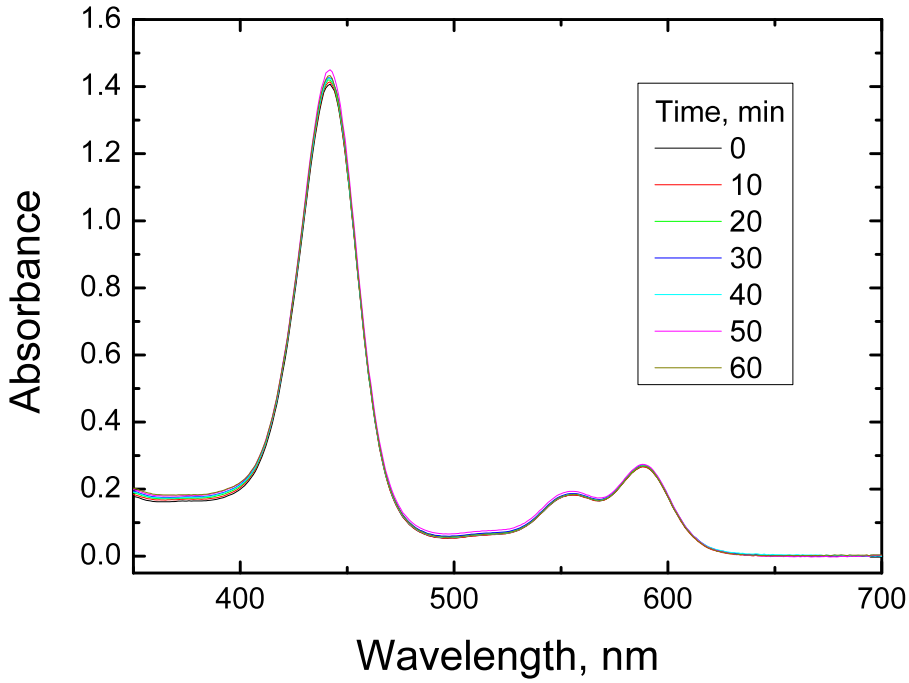

Figure S17. Absorption spectra of Re[T*p*MePC](O) in air-saturated toluene solution during irradiation with a high power 590-nm LED array.

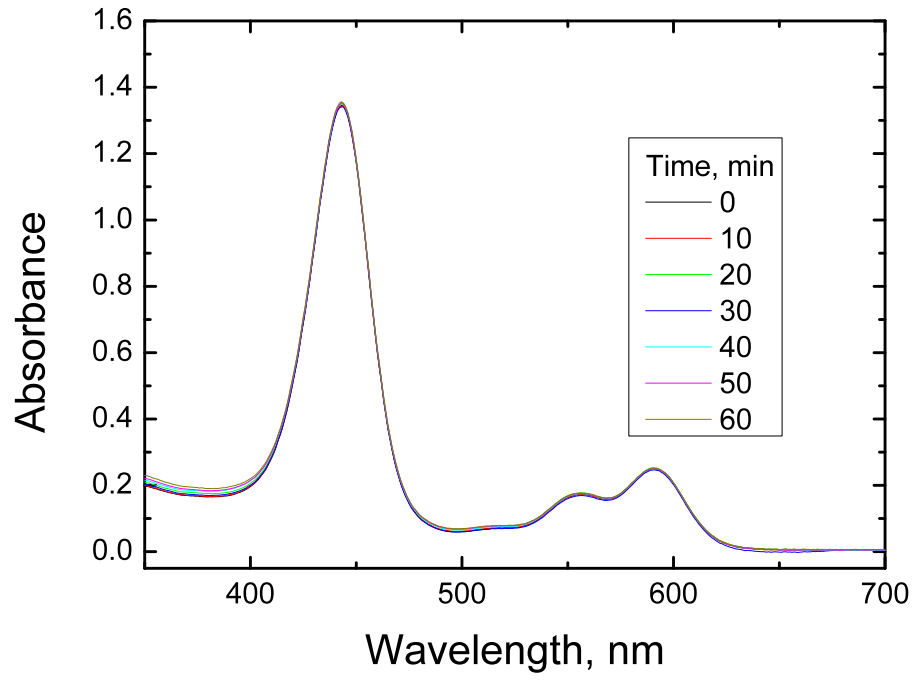

Figure S18. Absorption spectra of Re[T*p*OMePC](O) in air-saturated toluene solution during irradiation with a high power 590-nm LED array.

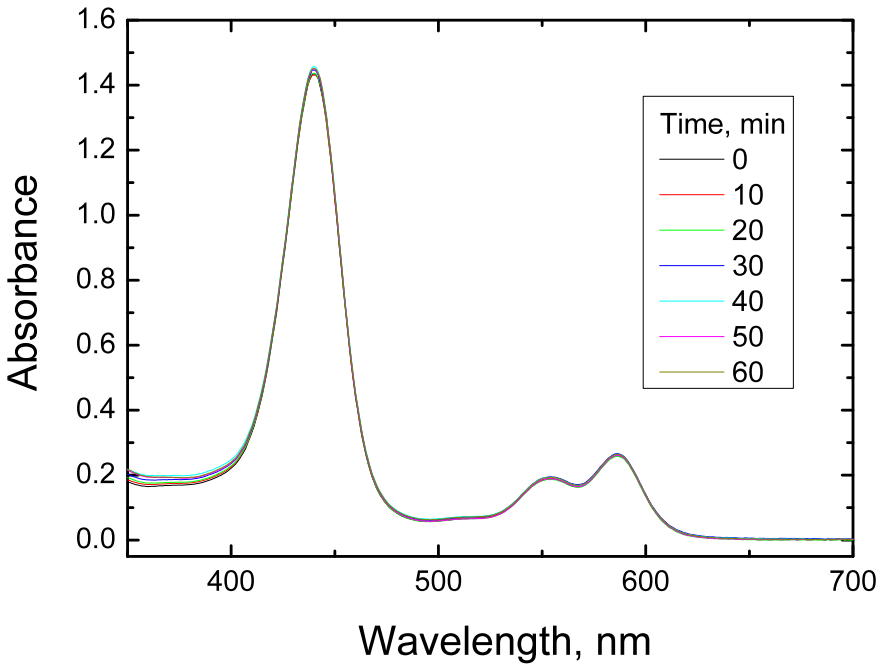

Figure S19. Absorption spectra of Re[T*p*FPC](O) in air-saturated toluene solution during irradiation with a high power 590-nm LED array.

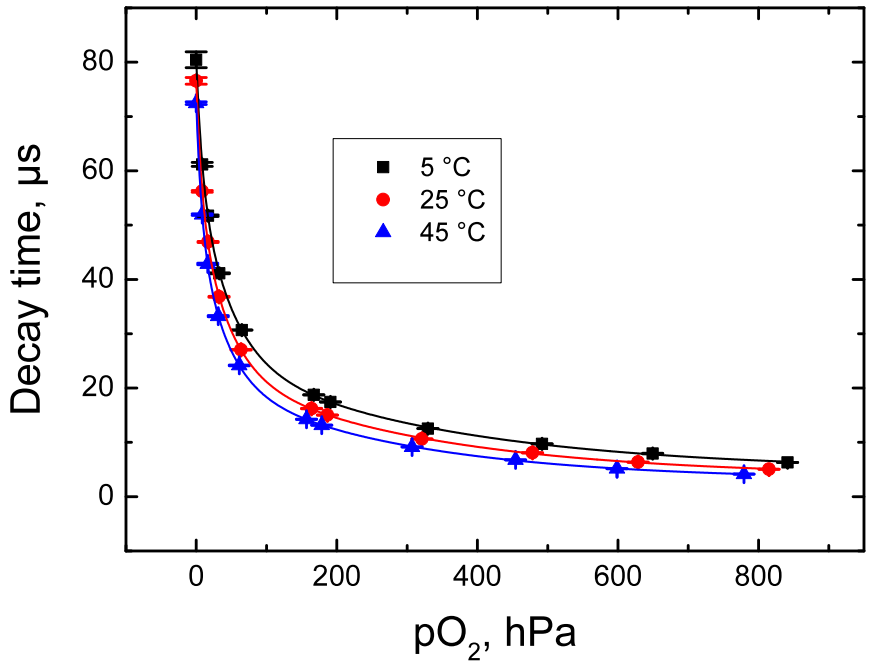

Figure S20. Decay time plots for the oxygen sensor based on Re[T*p*CF_3PC](O) embedded into polystyrene.

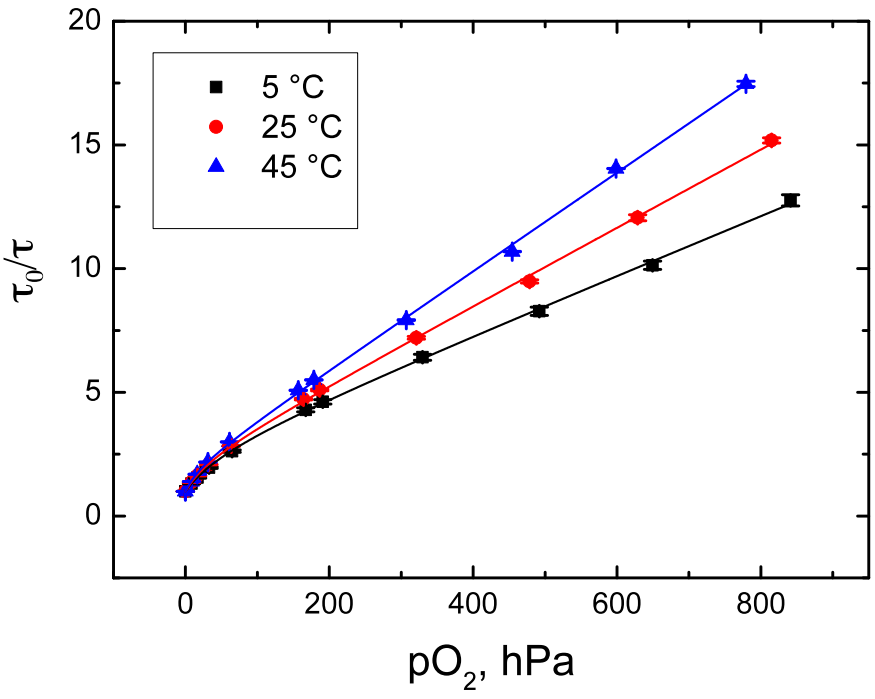

Figure S21. Stern-Volmer plots for the oxygen sensor based on Re[T*p*CF$_3$PC](O) embedded into polystyrene.

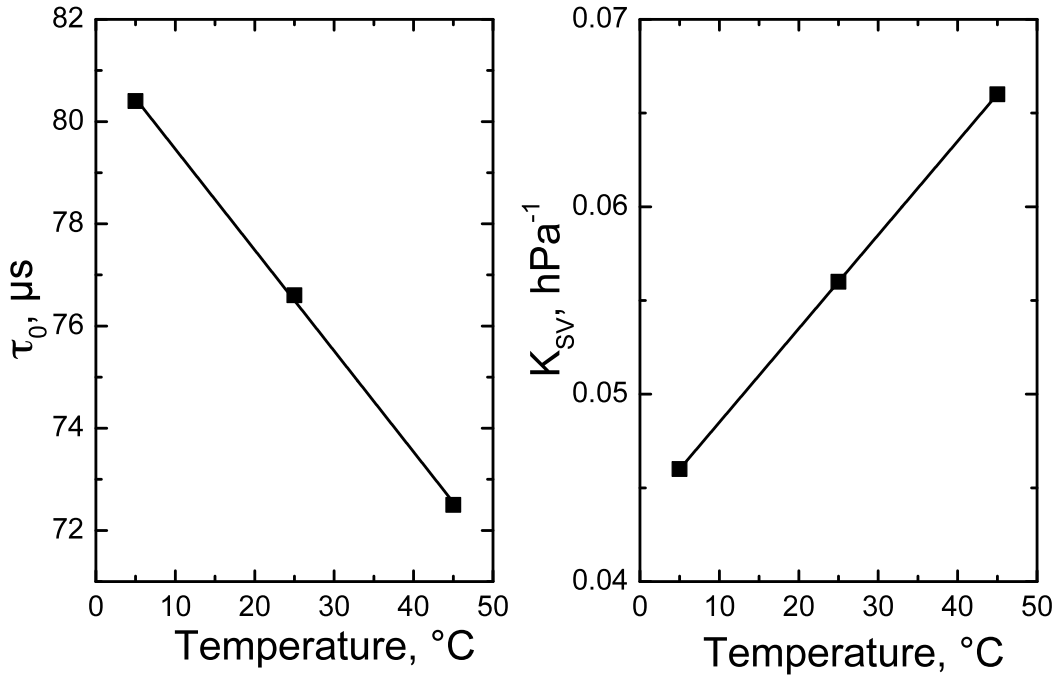

Figure S22. Temperature dependence of the phosphorescence decay time in the absence of oxygen τ_0 (left) and Stern-Volmer constant K_{SV} (right). The lines represent linear fit.

Table S1. Oxygen sensing properties of the sensor based on Re[T*p*CF_3PC](O) embedded into polystyrene.[(a)]

τ_0 at 5 °C, µs	τ_0 at 25 °C, µs	τ_0 at 45 °C, µs	$d\tau_0/dT$ at 25 °C, %/K	K_{SV}^1 at 5 °C, hPa^{-1}	K_{SV}^1 at 25 °C, hPa^{-1}	K_{SV}^1 at 45 °C hPa^{-1}	dK_{SV}^1/dT at 25 °C, %/K
80.4	76.6	72.5	-0.26	0.046	0.056	0.066	0.89

(a) Non-linear fit according to two site model, eq. 1. Constant fit parameters: m = 0.076; f = 0.77 for all temperatures.

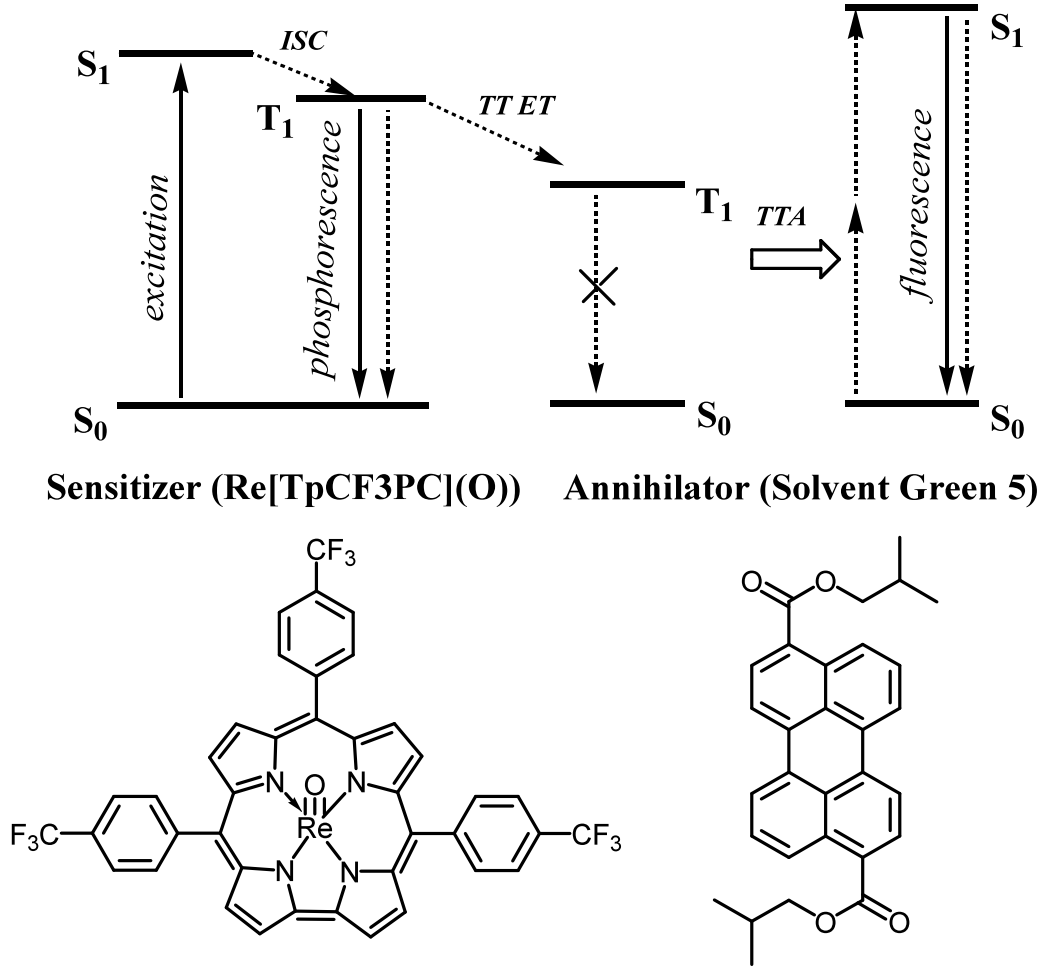

Figure S23. Schematic representation of the mechanism of upconversion based on triplet-triplet annihilation.

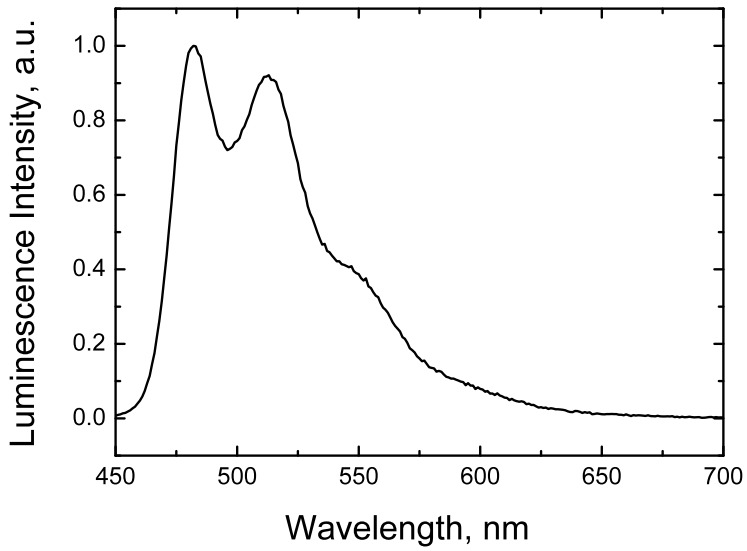

Figure S24. Emission spectrum of Solvent green 5 in toluene (λ_{exc} = 400 nm).

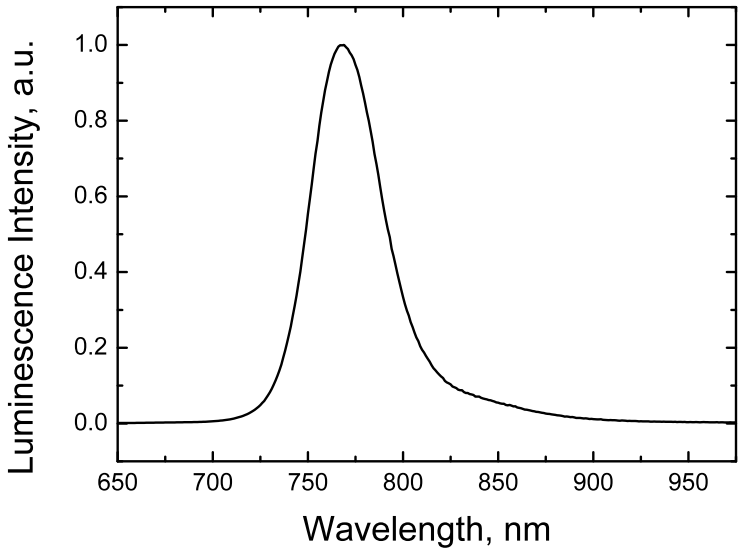

Figure S25. Emission spectrum of Pt[TPTBP] in anoxic toluene (λ_{exc} = 585 nm).