Electronic Supplementary Information (ESI)

An investigation of ligand effect on visible light-induced formation of porphyrin-iron(IV)-oxo intermediates

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**Figure S1.** UV-visible spectra of $[\text{Fe}^{\text{III}}(\text{TMP})(\text{BrO}_3)]$ (2a, solid lines) and $[\text{Fe}^{\text{III}}(\text{TMP})(\text{ClO}_3)]$ (dashed lines) and $[\text{Fe}^{\text{III}}(\text{TMP})\text{Cl}]$ (1a, dotted line) in CH$_3$CN.

**Fig. S2.** Kinetic traces monitored at 656 nm of 3a with different power of visible lights.
**Fig. S3.** Time-resolved spectra of 3a (1.0 × 10⁻⁵ M) in the presence of cis-cyclooctene (1 mM) over 50 s.

**Fig. S4.** Time-resolved spectra of 4e (1.0 × 10⁻⁵ M) in the presence of cis-stilbene (25 mM) over 5 min.