

Supporting Information

Photocatalytic Oxygenation of 10-Methyl-9,10-dihydroacridine by O₂ with Manganese Porphyrins

Jieun Jung,[†] Kei Ohkubo,[†] David P. Goldberg,^{,‡} and Shunichi Fukuzumi^{*,†}*

[†]Department of Material and Life Science, Graduate School of Engineering, ALCA, Japan Science and Technology Agency, Osaka University, Suita, Osaka 565-0871, Japan

[‡]Department of Chemistry, The Johns Hopkins University, Baltimore, Maryland 21218, United States

E-mail: fukuzumi@chem.eng.osaka-u.ac.jp, dpg@jhu.edu

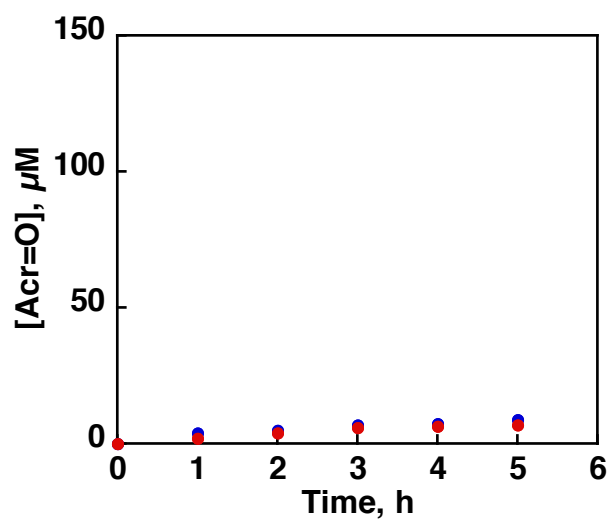


Figure S1. Time courses of formed Acr=O for the photocatalytic reaction under photoirradiation ($\lambda > 480$ nm) of an N_2 -saturated PhCN solution (2.0 mL) containing (TMP) $\text{Mn}^{\text{III}}(\text{OH})$ (blue, 1.0×10^{-5} M) or (TPFPP) $\text{Mn}^{\text{III}}(\text{CH}_3\text{COO})$ (red, 1.0×10^{-5} M) and AcrH₂ (0.02 M) at room temperature.

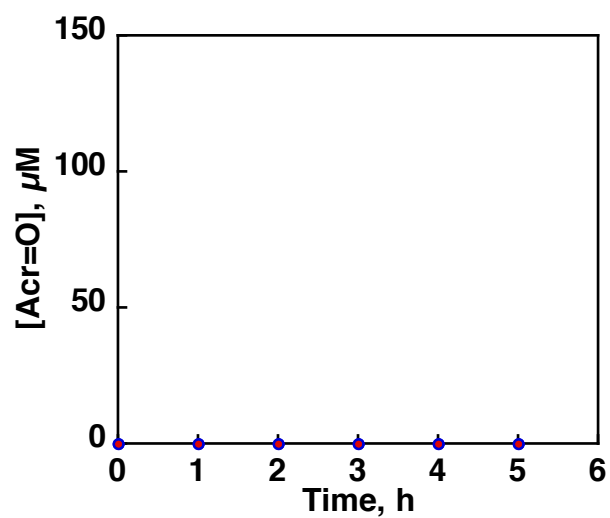


Figure S2. Time courses of formed Acr=O without photoirradiation of an O₂-saturated PhCN solution (2.0 mL) containing (TMP)Mn^{III}(OH) (blue, 1.0×10^{-5} M) or (TPFPP)Mn^{III}(CH₃COO) (red, 1.0×10^{-5} M) and AcrH₂ (0.02 M) at room temperature.

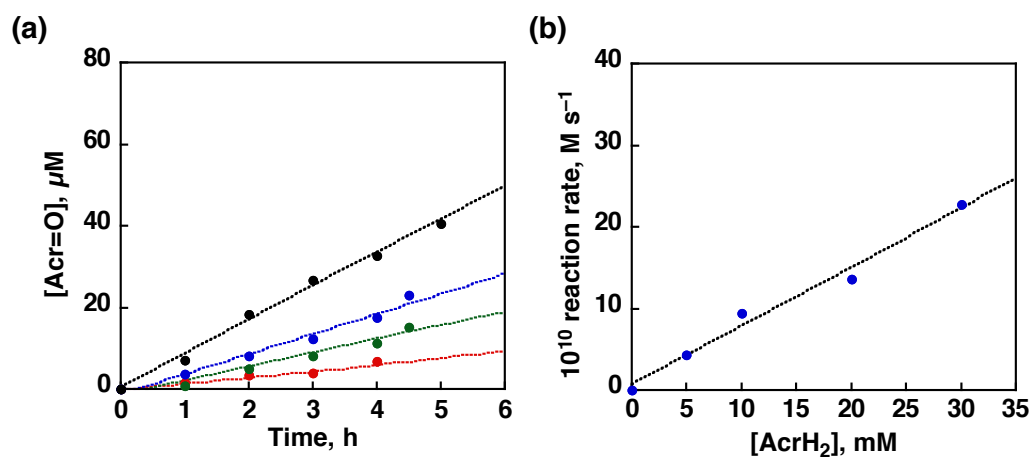


Figure S3. (a) Plots of the formation of Acr=O and (b) plot of the initial reaction rate of the photocatalytic oxygenation of AcrH₂ under irradiation ($\lambda > 480$ nm) of an O₂-saturated PhCN solution containing (TPFPP)Mn^{III}(CH₃COO) (1.0×10^{-5} M) in the presence of 5 mM (red), 10 mM (green), 20 mM (blue), or 30 mM (black) of AcrH₂ as a substrate at 298 K vs concentration of AcrH₂.

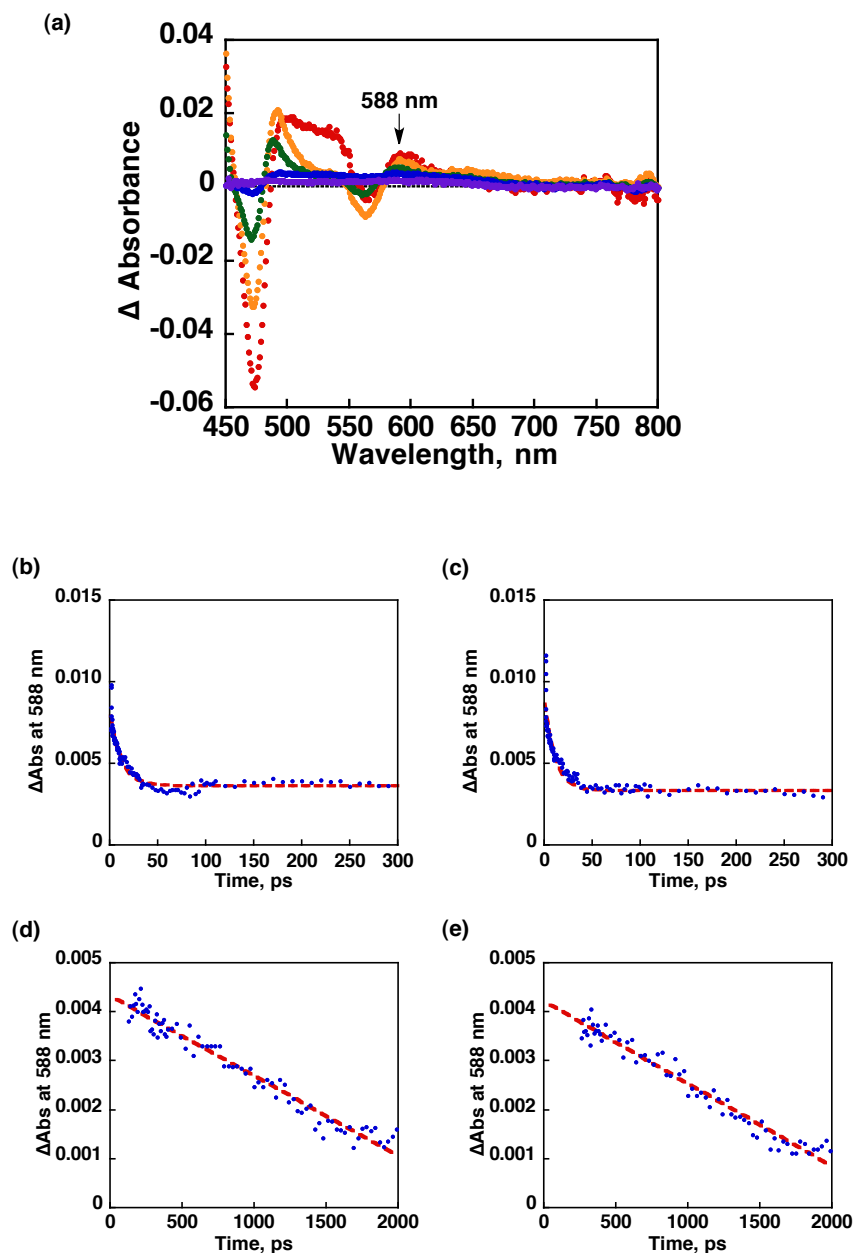


Figure S4. (a) Transient absorption spectral changes (red after 1 ps, orange after 2 ps, green after 10 ps, blue after 50 ps, and black after 2800 ps) after photoexcitation of (TPFPP)Mn^{III}(CH₃COO) in PhCN. Decay time profiles of absorbance at 588 nm due to [(TPFPP)Mn^{III}(CH₃COO)]* (⁵T₁) (b) in N₂-saturated PhCN and (c) in O₂-saturated PhCN. Time profiles of the decay of [(TPFPP)Mn^{III}(CH₃COO)]* (⁷T₁) at λ = 588 nm under (d) N₂ and (e) O₂.

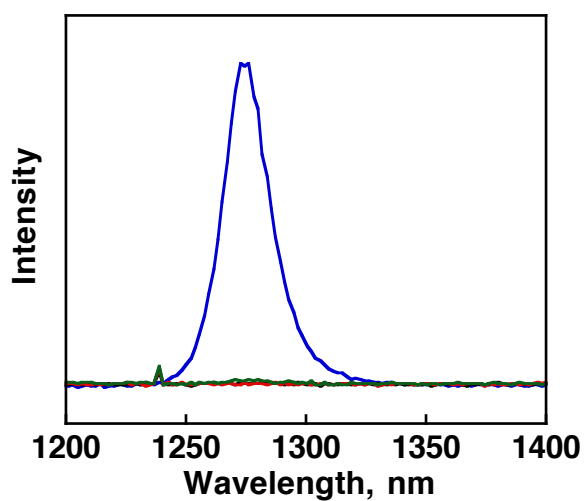


Figure S5. Phosphorescence spectra of singlet oxygen ($\lambda_{\text{max}} = 1270$ nm) obtained by photoexcitation of C₆₀ (blue), (TMP)Mn^{III} (green), (TPFPP)Mn^{III} (red), and only solvent (black) as a blank in O₂-saturated C₆D₆.

Ful Author List of ref 13:

(13) Company, A.; Sabenya, G.; González-Béjar, M.; Gómez, L.; Clémancey, M.; Blondin, G.; Jasniewski, A. J.; Puri, M.; Browne, W. R.; Latour, J.-M.; Que, Jr., L.; Costas, M.; Pérez-Prieto, J. Lloret-Fillol, J. Triggering the Generation of an Iron(IV)-Oxo Compound and Its Reactivity toward Sulfides by Ru^{II} Photocatalysis. *J. Am. Chem. Soc.* **2014**, *136*, 4624–4633.