Electronic Supplementary Material (ESI) for Chemical Communications

Metal-free oxygenation of cyclohexane with oxygen catalyzed by 9-mesityl-10-methylacridinium and hydrogen chloride under visible light irradiation†

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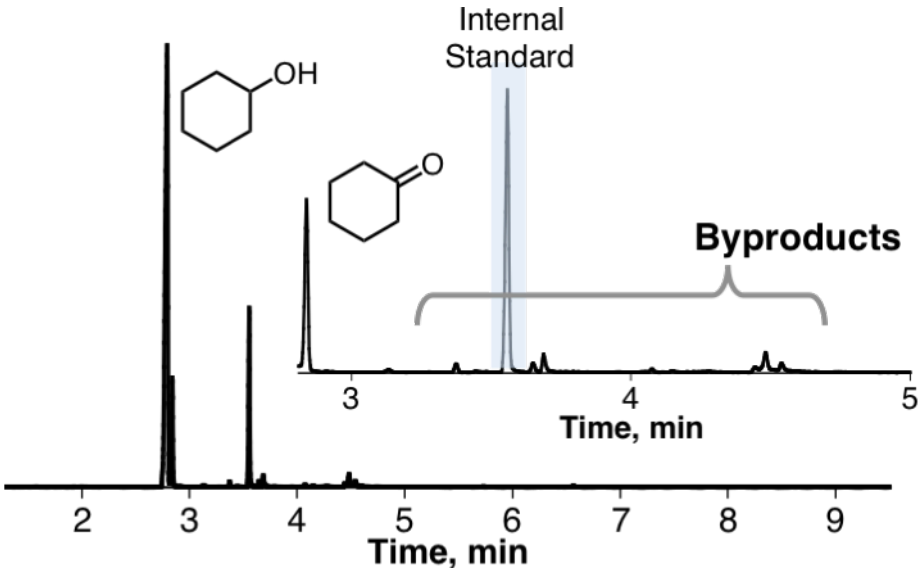

Fig. S1 GC mass chart of the reaction mixture after photooxygenation of an O_2-saturated MeCN solution containig cyclohexane (45 mM), HCl (2.0 mM) and Acr^+–Mes (1.0 mM) irradiated by a xenon lamp (500 W, $\lambda > 390$ nm) for 3h. Internal standard: benzonitrile.

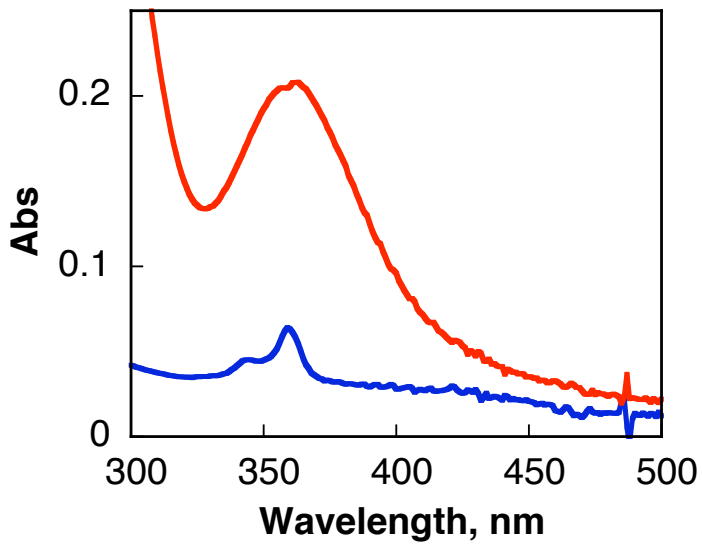

Fig. S2 UV-vis spectra of the reaction mixture after photooxygenation of cyclohexane (45 mM) with HCl (2.0 mM) and Acr^{+}–Mes (1.0 mM) for 3h photoirradiation by a xenon lamp (500 W, $\lambda > 390$ nm) in MeCN in the absence (blue) and presence of NaI (red).

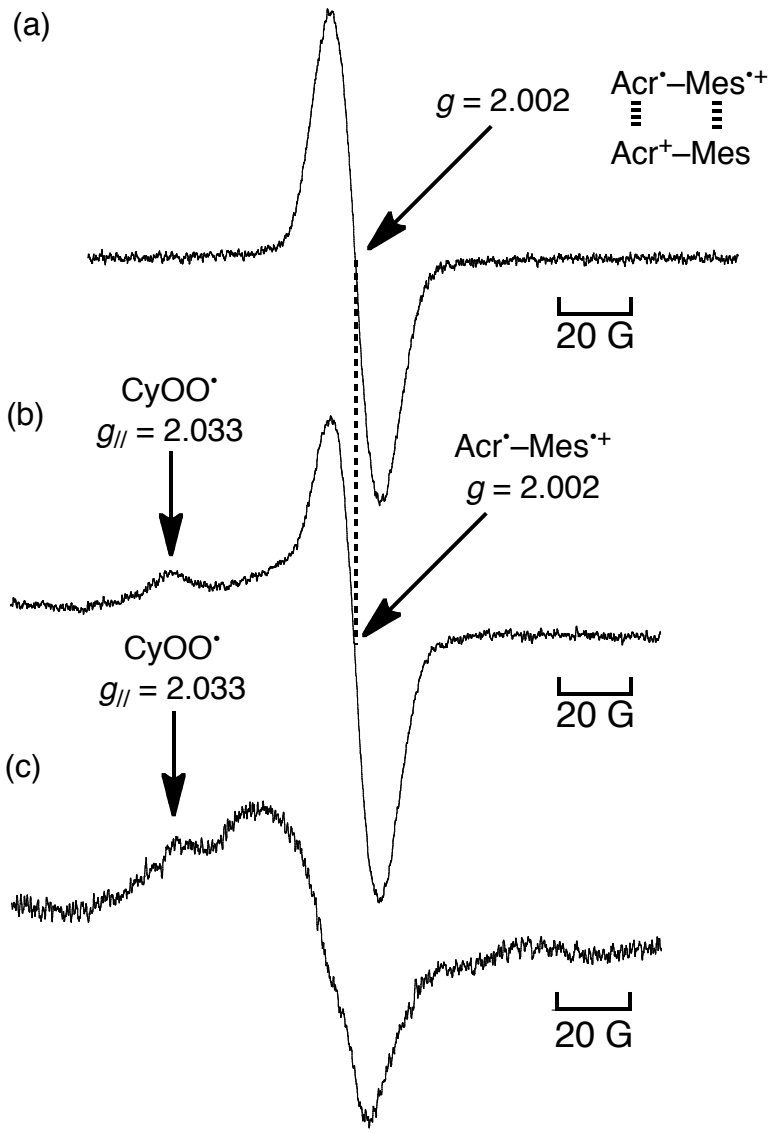

Fig. S3 ESR spectra of (a) ($Acr^{\bullet}$–$Mes^{\bullet+}$)(Acr^{+}–Mes) generated by photoirradiation (1000-W Hg lamp) of Acr^{+}–Mes (10 mM) in deaerated MeCN, (b) $Acr^{\bullet}$–Mes and cyclohexyl peroxyl radical genarated by photoirradiation of Acr^{+}–Mes (10 mM) with HCl (60 mM) and cyclohexane (1.0 M) in O_2-saturated MeCN, (c) cyclohexyl peroxyl radical generated by photorradiation of cyclohexane (1.0 M) with ^{t}BuOO^{t}Bu (0.50 M) in O_2-saturated MeCN. The measurements were carried out at 77 K.