Supporting Information

Transition Metal Ion-Assisted Photochemical Generation of Alkyl Halides and Hydrocarbons from Carboxylic Acids

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Fig. S1. Plot of product ratios $[ROOH]_{tot}$ - $\Delta[Fe^{2+}]$ / $\Delta[Fe^{2+}]$ vs. $[FeBr^{2+}]$ / $[(NH_3)_5CoBr^{2+}]$ according to eq 15 for the $^{\bullet}CH_3$/ $FeBr^{2+}$.reaction

Fig. S2. UV-vis absorption spectra of $Fe^{3+}/C_2H_5CO_2H/Br^-$

Fig. S3. UV-vis absorption spectra of $Fe^{3+}/C_2H_5CO_2H/Cl^-$

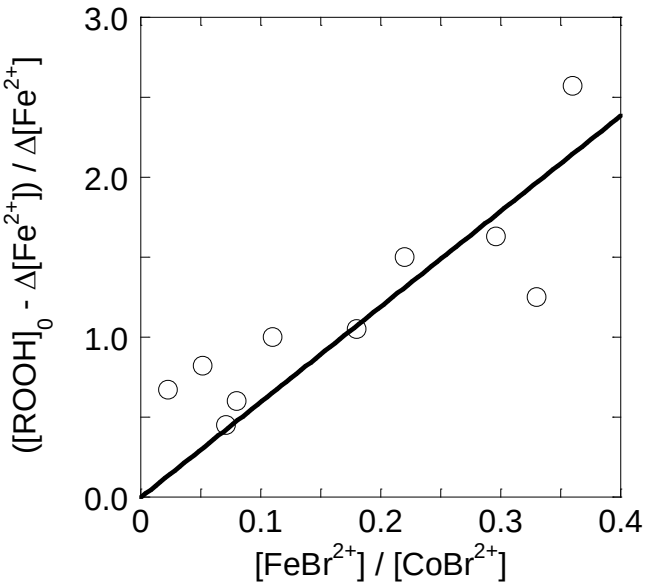

Figure S1. Plot of product ratios $[ROOH]_0$ - $\Delta[Fe^{2+}]$ / $\Delta[Fe^{2+}]$ vs. $[FeBr^{2+}]$ / $[(NH_3)_5CoBr^{2+}]$ according to eq 15. R = $(CH_3)_3C$. Concentrations: 0.57 – 0.62 mM Fe^{2+}, 0.47 – 0.50 mM $(CH_3)_3COOH$, 0.10 – 0.23 mM $FeBr^{2+}$, and 0.5 – 2.2 mM $(NH_3)_5CoBr^{2+}$. The plotted concentrations of $FeBr^{2+}$ and $(NH_3)_5CoBr^{2+}$ are the averages for each run.

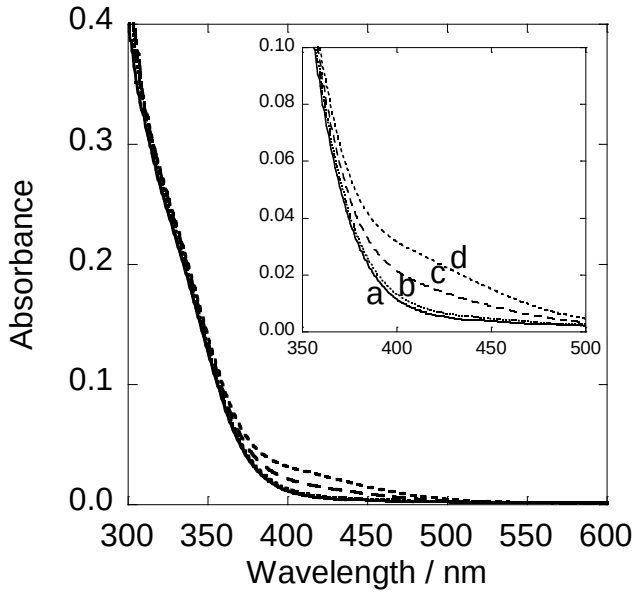

Figure S2. UV-vis absorption spectra (0.1 cm path length) of 7.1 mM Fe^{3+} + 55 mM propionic acid + 5 mM Br^- (a), + 10 mM Br^- (b), + 50 mM Br^- (c), 100 mM Br^- (d). pH = 1.85 at pH = 1.85 and μ = 0.2 M.

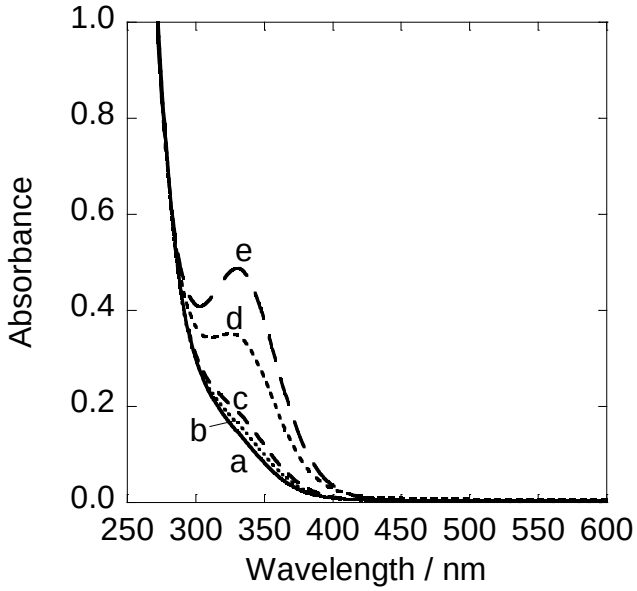

Figure S3. UV-vis absorption spectra (0.1 cm path length) of 7.1 mM Fe^{3+} + 55 mM propionic acid (a), + 5 mM Cl^- (b), + 10 mM Cl^- (c), + 50 mM Cl^- (d), and 100 mM Cl^- (e) at pH = 1.85 and μ = 0.2 M.