Electronic Supplementary Information for Dalton Transactions

Ligand Effect on the Kinetics of Hydroperoxochromium(III) - Oxochromium(V) Transformation and the Lifetime of Chromium(V)

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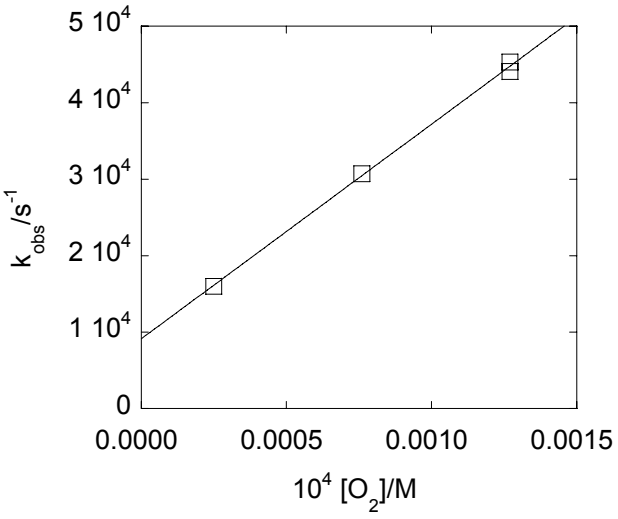
Figure S1. Plot of k_{obs} vs $[O_2]$ for O_2 binding to $L^2Cr(H_2O)_2^{2+}$. The intercept is the sum of all the first- or pseudo-first-order rate constants for disappearance of $L^2Cr(H_2O)_2^{2+}$ except for the reaction with O_2.

Figure S2. Plot of ln (k_1/T) *vs* 1/T for the formation of $L^2Cr(V)$.

Figure S3. Plots of ln (k_2/T) *vs* 1/T for the decay of $L^2Cr(V)$.

Figure S4. Plot of k_{obs} *vs* $[ABTS^{2-}]$ for the reaction between $L^2(H_2O)CrOO^{2+}$ and $ABTS^{2-}$ at $[H^+]$ = 20 mM. Traces were exponential at low (<0.04 mM) and high (>0.15 mM) concentrations of $ABTS^{2-}$, but exhibited approximately biphasic behavior in the intermediate regime. The rate constants k_{obs} shown for the intermediate regime are approximate values obtained from single-exponential fits. The rate constants for the initial redox step between $L^2(H_2O)CrOO^{2+}$ and $ABTS^{2-}$, and k_1, were obtained from the data in the limits of low and high $[ABTS^{2-}]$, respectively.

Figure S5. Plot of $k_{obs}/[I^-]$ vs. $[H^+]$ for the reaction of $L^2(H_2O)CrOO^{2+}$ with I^-.



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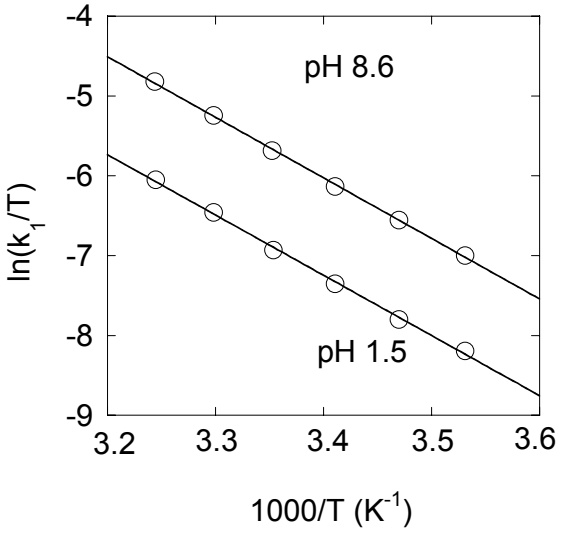

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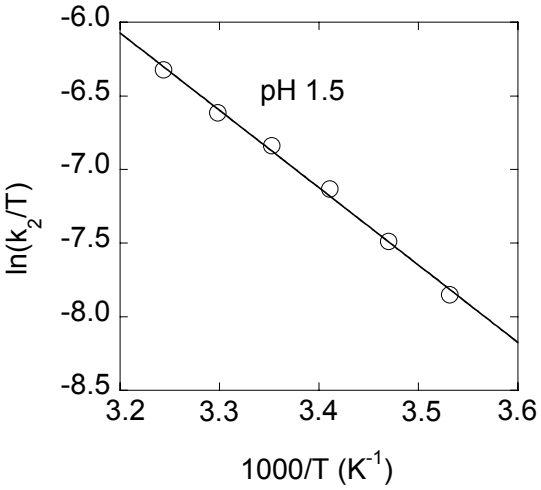

Figure S3. Plots of ln (k_2/T) *vs* 1/T for the decay of $L^2Cr(V)$.

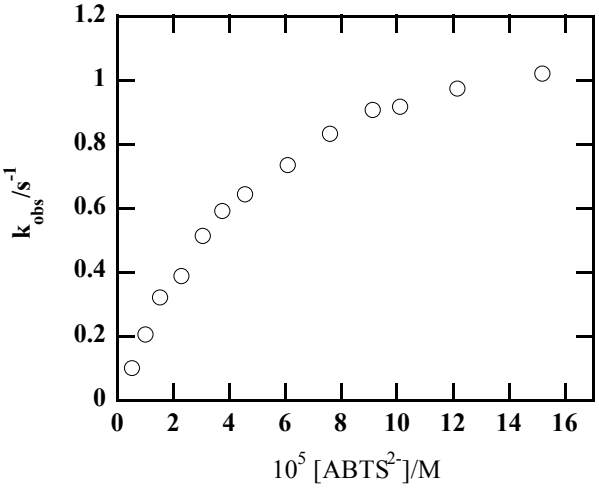

Figure S4. Plot of k_{obs} *vs* [$ABTS^{2-}$] for the reaction between $L^2(H_2O)CrOO^{2+}$ and $ABTS^{2-}$ at [H^+] = 20 mM. Traces were exponential at low (<0.04 mM) and high (>0.15 mM) concentrations of $ABTS^{2-}$, but exhibited approximately biphasic behavior in the intermediate

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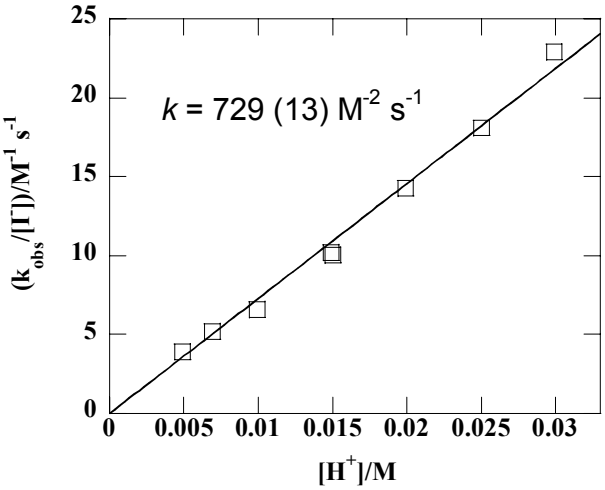

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