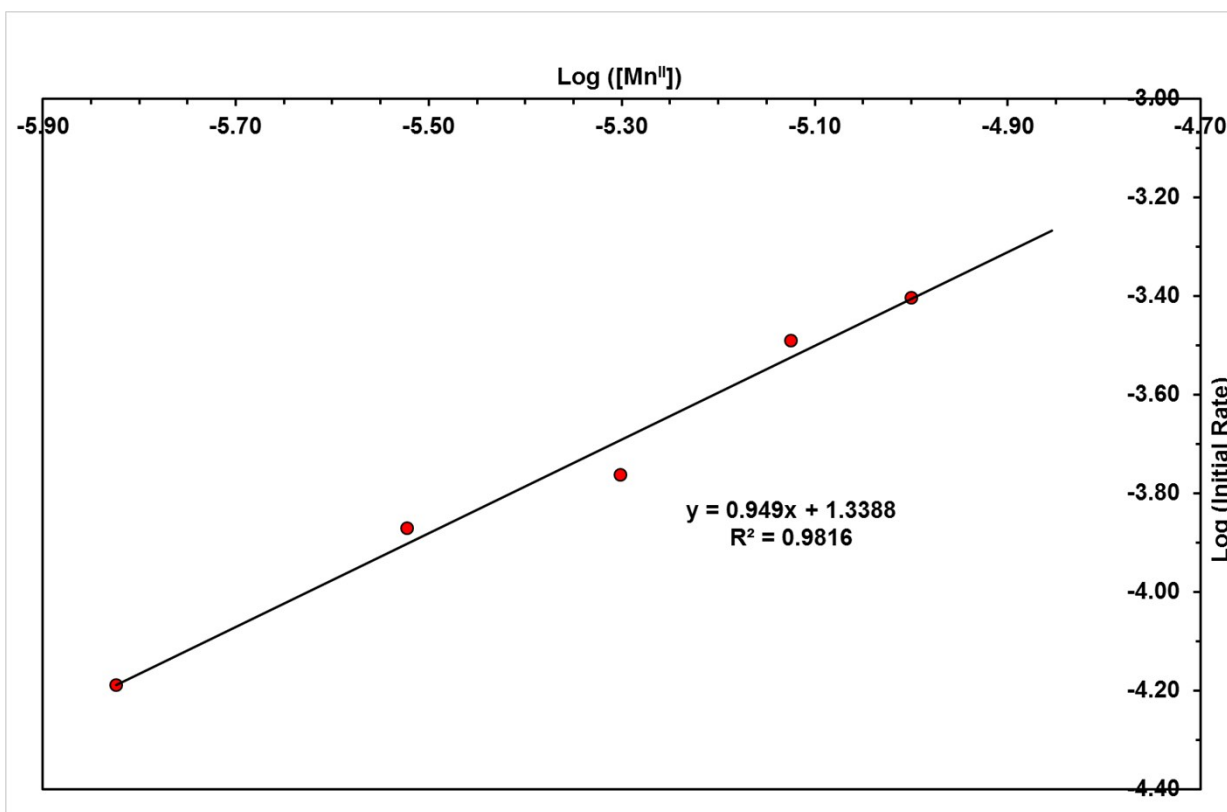
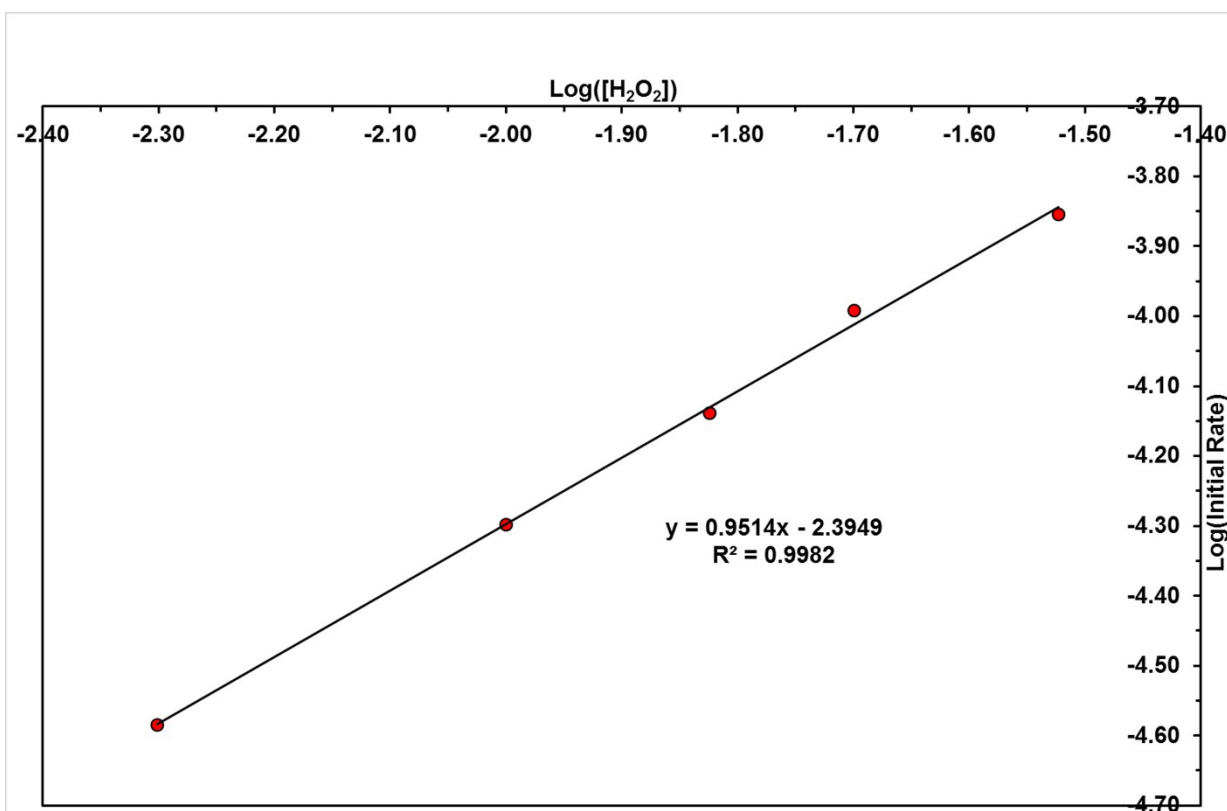


Electronic Supplementary Information

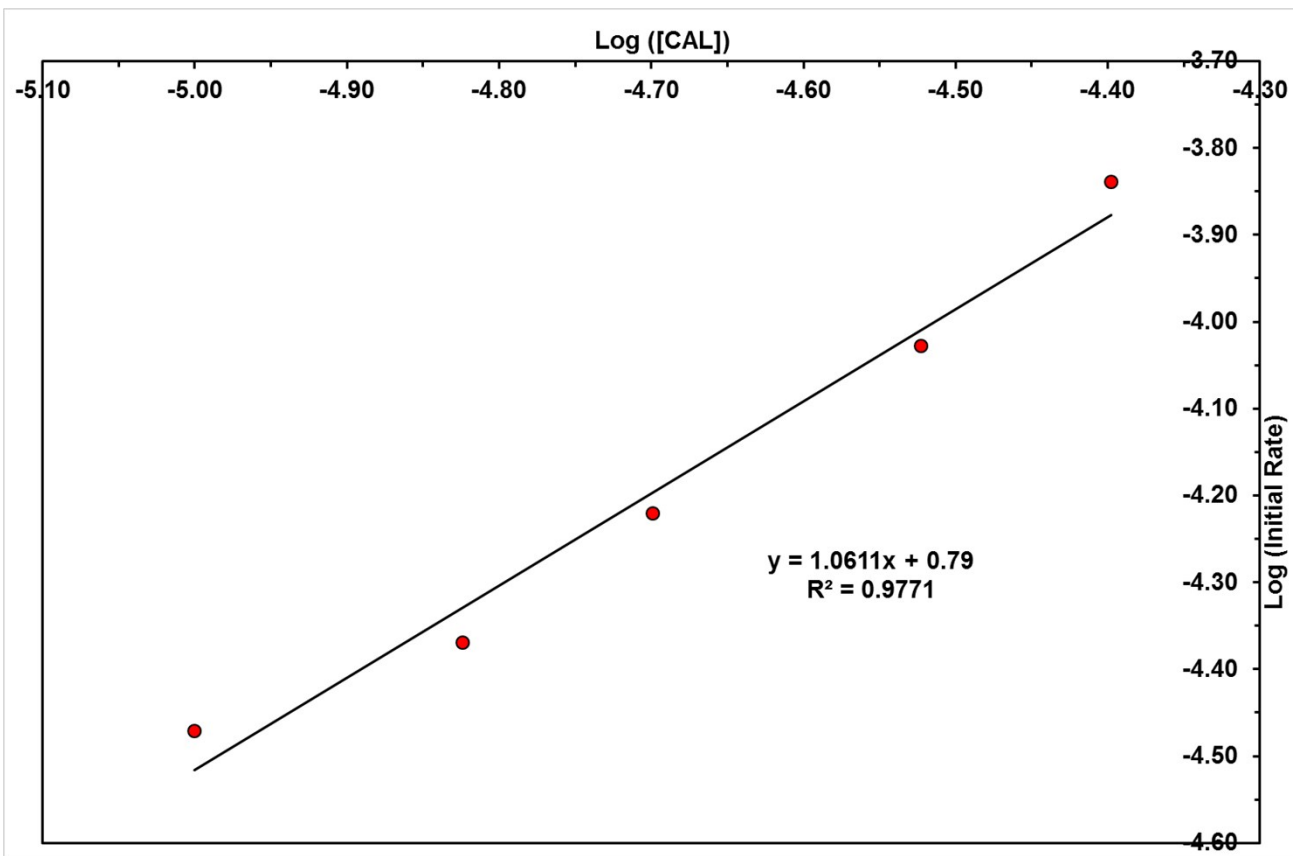
Figures and Legends



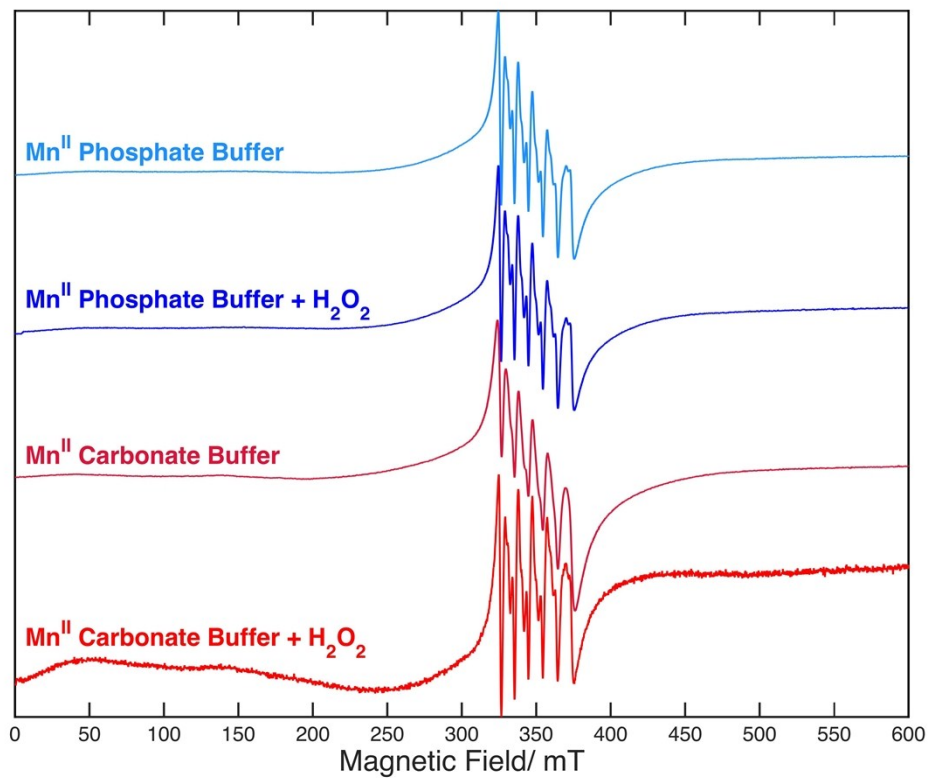
ESI1 Log – log lot of initial rate of CAL bleaching vs $[Mn^{II}]$. All conditions as for Fig. 2.



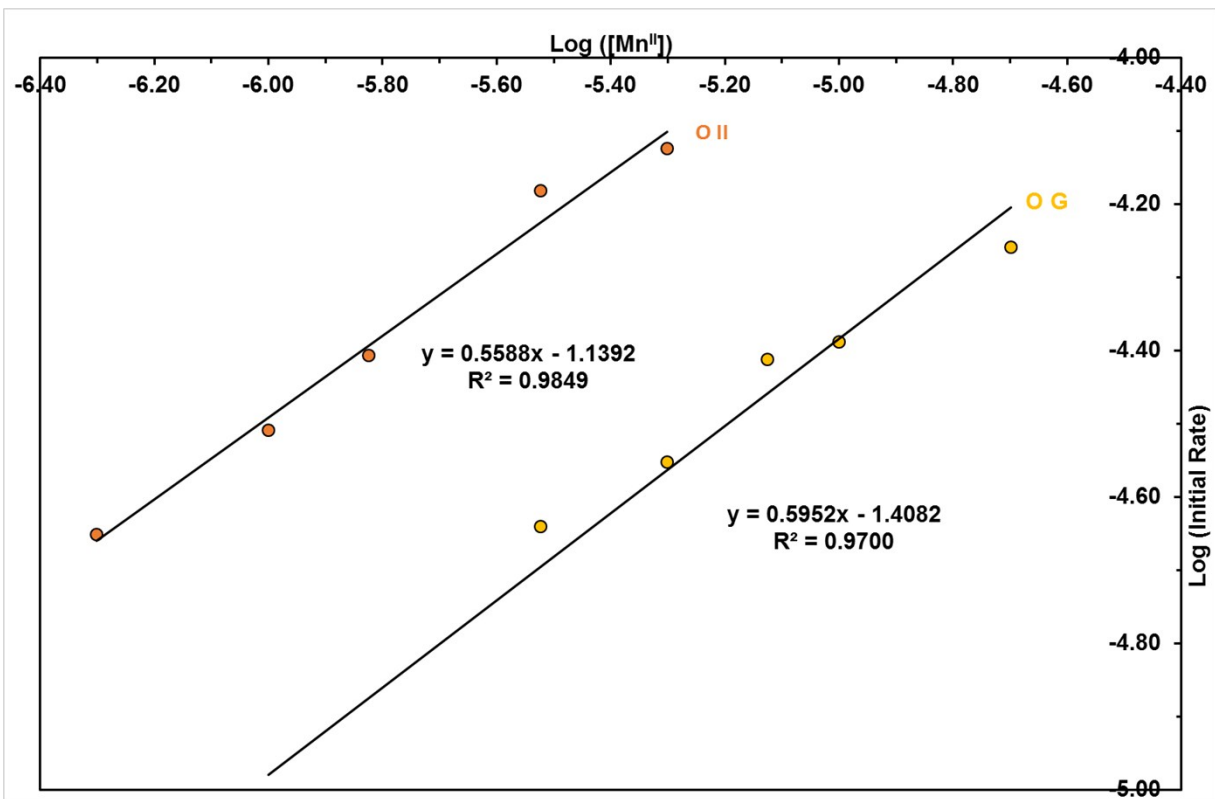
ESI2 Log – log plot of initial rate of CAL bleaching vs $[H_2O_2]$. All conditions as for Fig. 2.



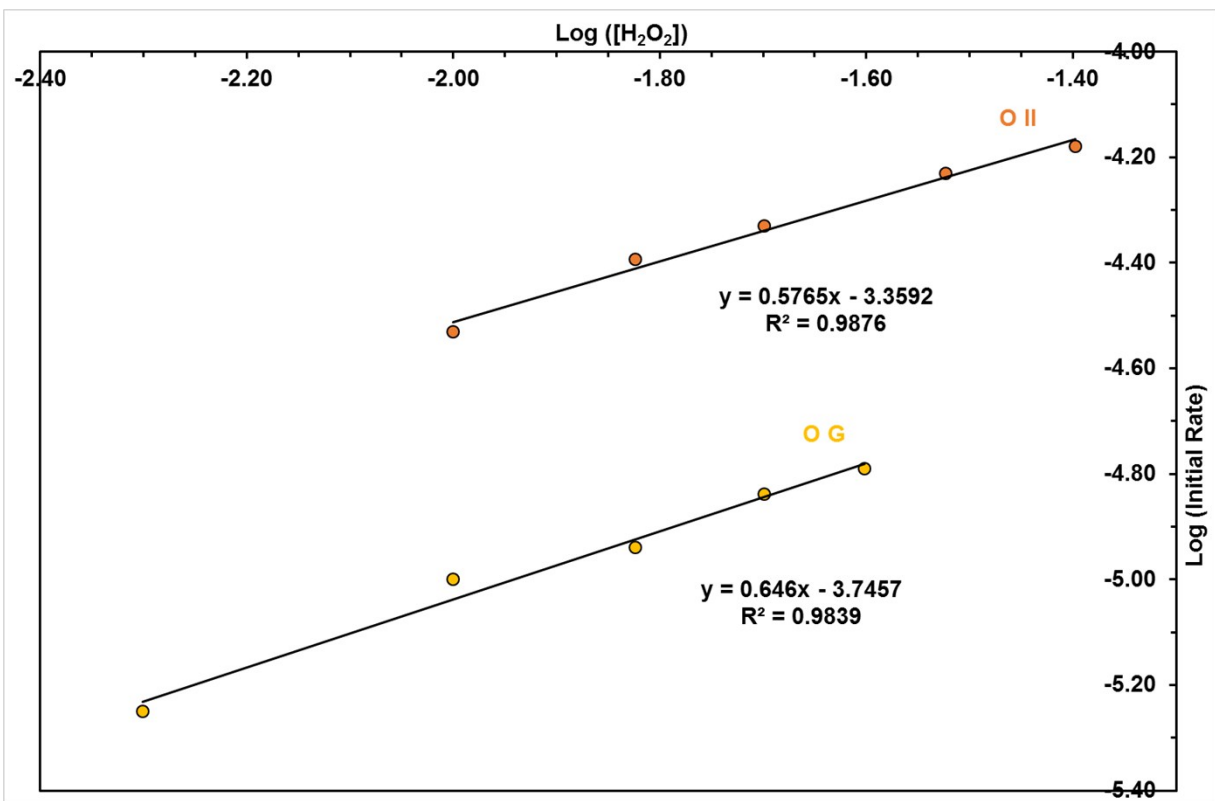
ES13 Log – log lot of initial rate of CAL bleaching vs [CAL]. All conditions as for Fig. 2.



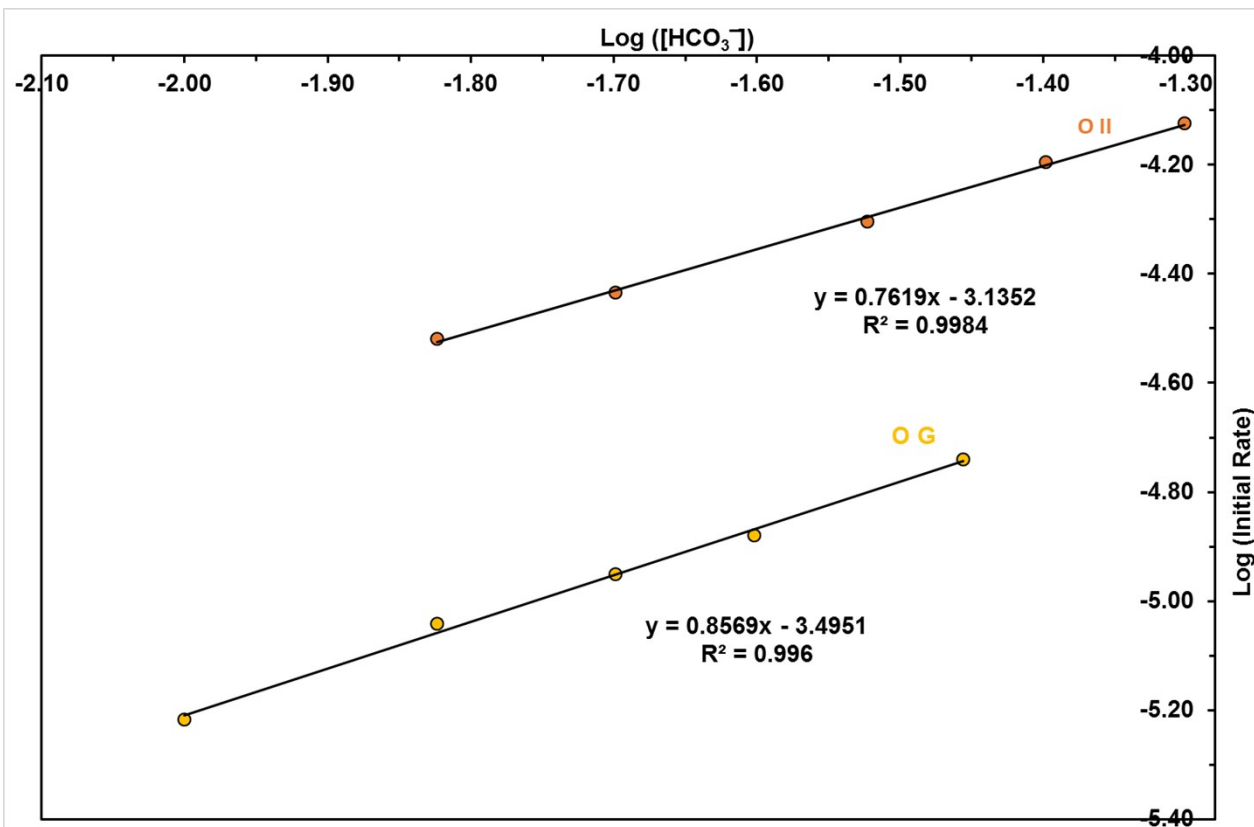
ES14 X-band EPR spectra of MnCl₂·4H₂O (100 μM) at pH 8.0 (50 mM, phosphate buffer) or pH 9.0 (50 mM, carbonate buffer) and after the addition of H₂O₂ (50.0 mM). EPR conditions: Perpendicular mode, 9.65 GHz, 10 K, 1 mW microwave power, modulation amplitude 20 mT.



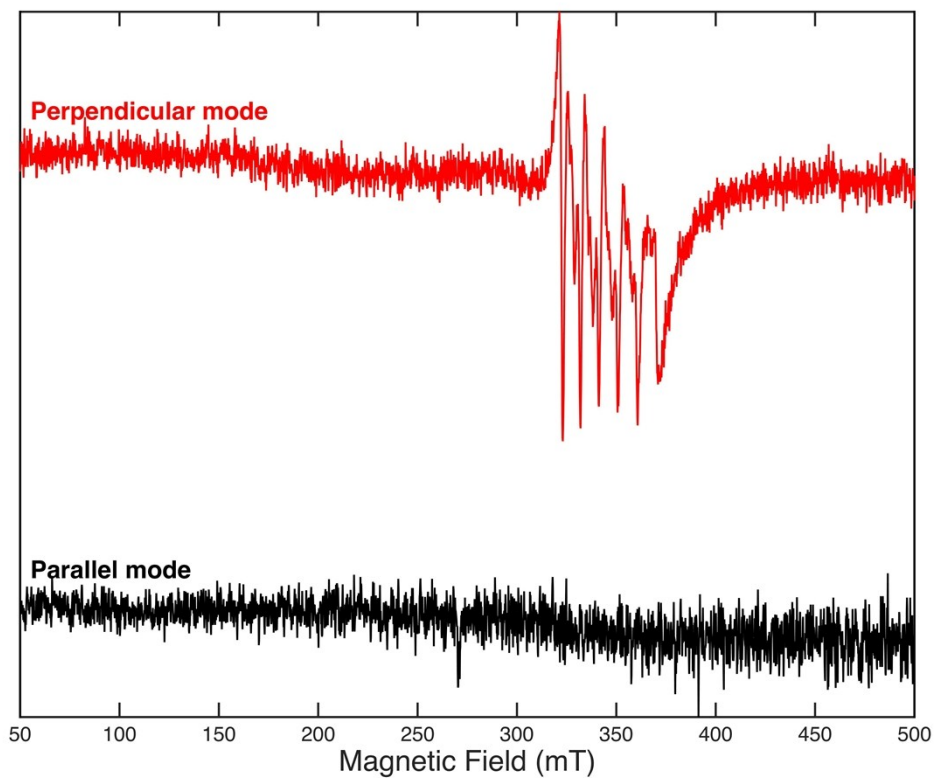
ESI5 Log – log plot of initial rate of O II and O G bleaching vs [Mn^{II}]. All conditions as for Fig. 12 and Fig. 13 respectively.



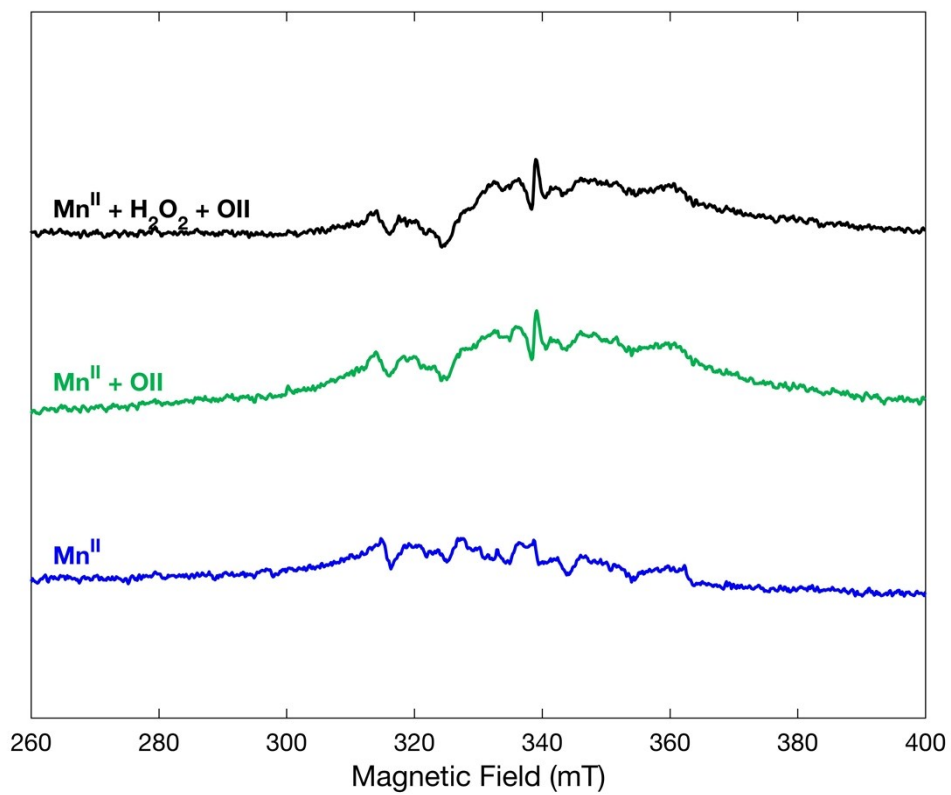
ESI6 Log – log plot of initial rate of O II and O G bleaching vs [H₂O₂]. All conditions as for Fig. 12 and Fig. 13 respectively.



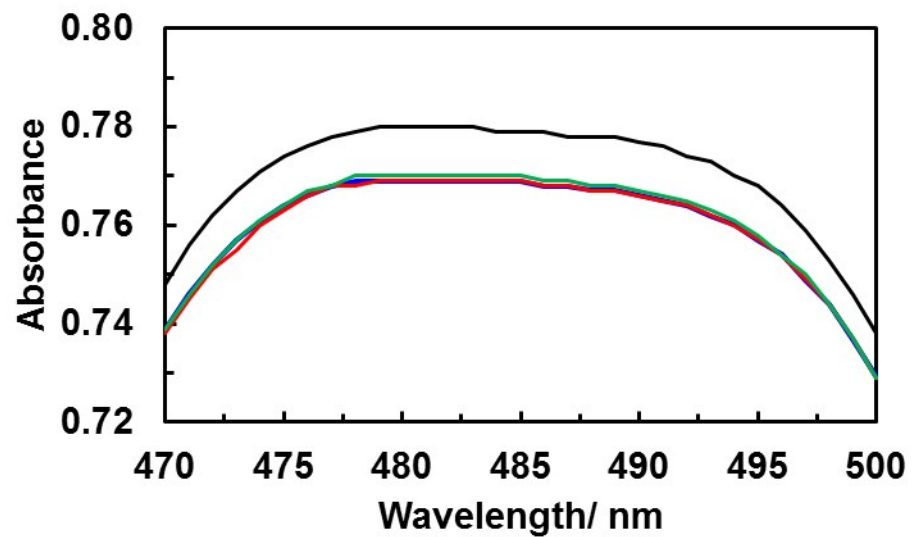
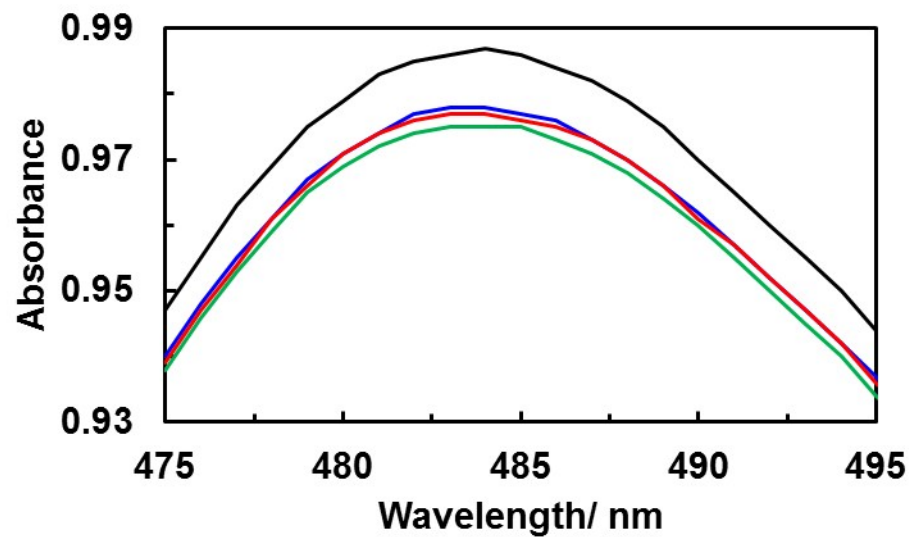
ESI7 Log – log plot of initial rate of O II and O G bleaching vs [HCO₃⁻]. All conditions as for Fig. 12 and Fig. 13 respectively.



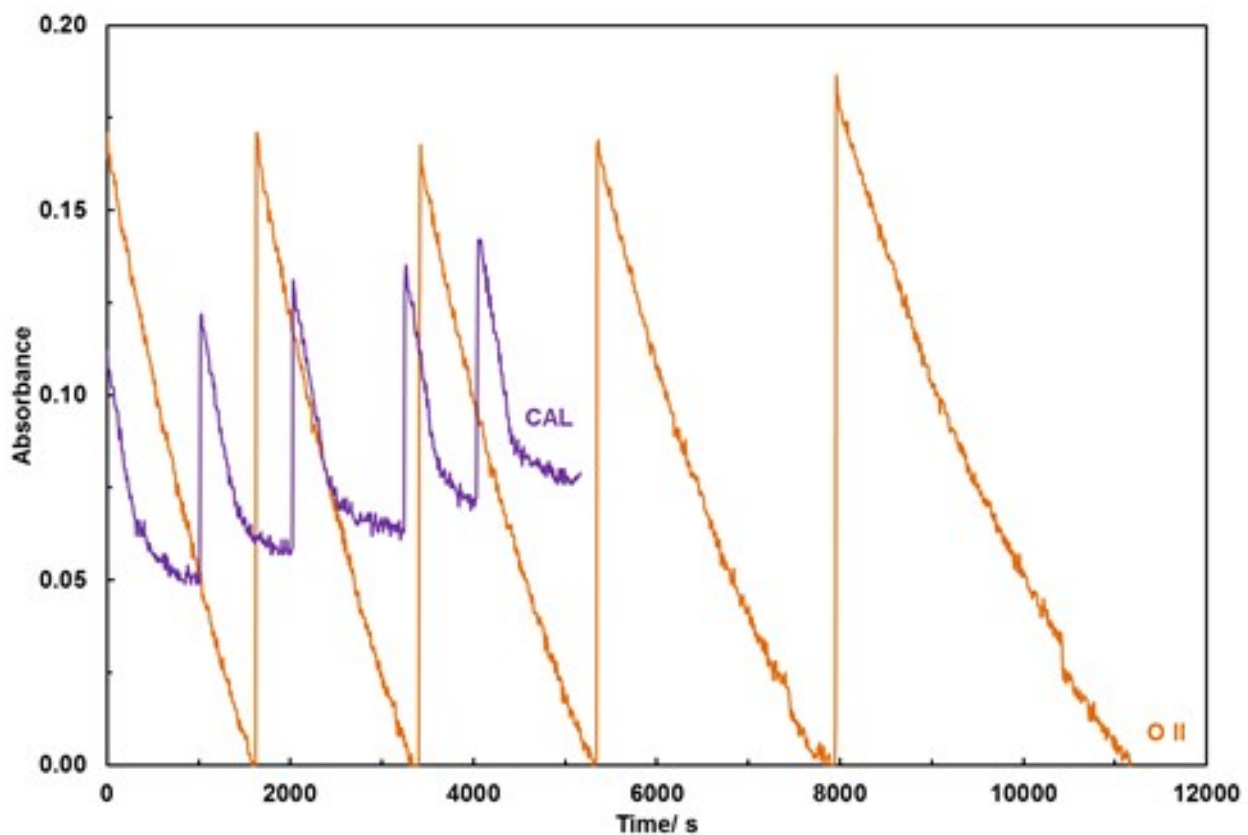
ESI8 X-band EPR spectra of MnCl₂·4H₂O (100 μM), H₂O₂ (50.0 mM) and O II (0.100 mM) at pH 9.0 (50 mM, carbonate buffer). EPR conditions: Perpendicular and parallel modes, 9.65 and 9.41 GHz, 10 K, 2 mW microwave power, modulation amplitude 0.5 mT.



ES19 X-band EPR spectra of MnCl₂·4H₂O (100 μM) and in the presence of H₂O₂ (50.0 mM) or O II (0.100 mM) or both H₂O₂ (50.0 mM) and O II (0.100 mM) at pH 9.0 (50 mM, carbonate buffer) in perpendicular (9.5 GHz) mode. EPR conditions: 10 K, 0.2 mW microwave power, modulation amplitude 0.7 mT.



ESI10 Change in absorbance maxima of O II (top) and (bottom) O G (black lines) on addition of 10.0-60.0 μM $\text{MnCl}_2 \cdot 4\text{H}_2\text{O}$ to 0.0500 mM dye at $20 \pm 1^\circ\text{C}$. The pH was 9.0 ± 0.1 (50 mM, carbonate buffer).



ESI11 The change in absorbance of CAL at pH 8.0 ± 0.1 (50 mM, phosphate buffer) and O II at pH 9.0 ± 0.1 (50 mM, carbonate buffer) with time monitored at 540 nm and 484 nm respectively and at $20 \pm 1^\circ\text{C}$ after successive additions of dye (0.100 mM) with $[\text{MnCl}_2 \cdot 4\text{H}_2\text{O}]$ at $5.00 \mu\text{M}$. Initial [dye] and $[\text{H}_2\text{O}_2]$ were 0.100 mM and 50.0 mM respectively.