# *Supporting Information*

## Formation of stoichiometrically $^{18}$O-labelled oxygen from the oxidation of $H_2{}^{18}O$ mediated by a dinuclear manganese complex – a mass spectrometry and EPR study

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**Figure S1.** EPR spectrum of **1** (1 mM, in $H_2O$ : MeCN = 3 : 1) 1 min after the addition of $KHSO_4$ (10 eq. per Mn centre ). EPR measurement conditions: temperature: 5 K; microwave frequency: 9.58 GHz; modulation amplitude: 10 G; microwave power: 200 µW.

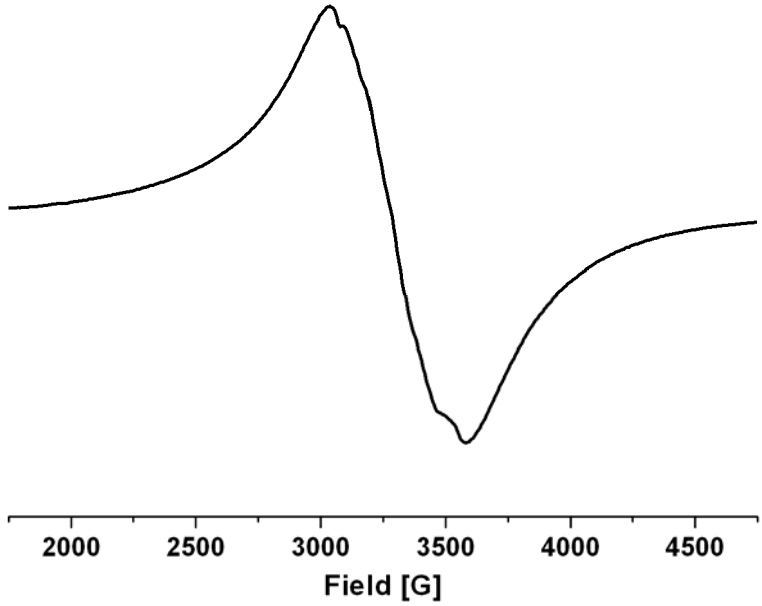


**Figure S2.** Oxygen evolution trace detected by MIMS for the reaction of $Mn_2O_3$ (2 mM Mn suspended in $H_2O$) with oxone. Injection of 10 eq. $HSO_5^-$ per Mn centre at t = 0 min, water 8% enriched in $H_2{}^{18}O$. Due to the suspended manganese oxide the traces show increased measurement noise.

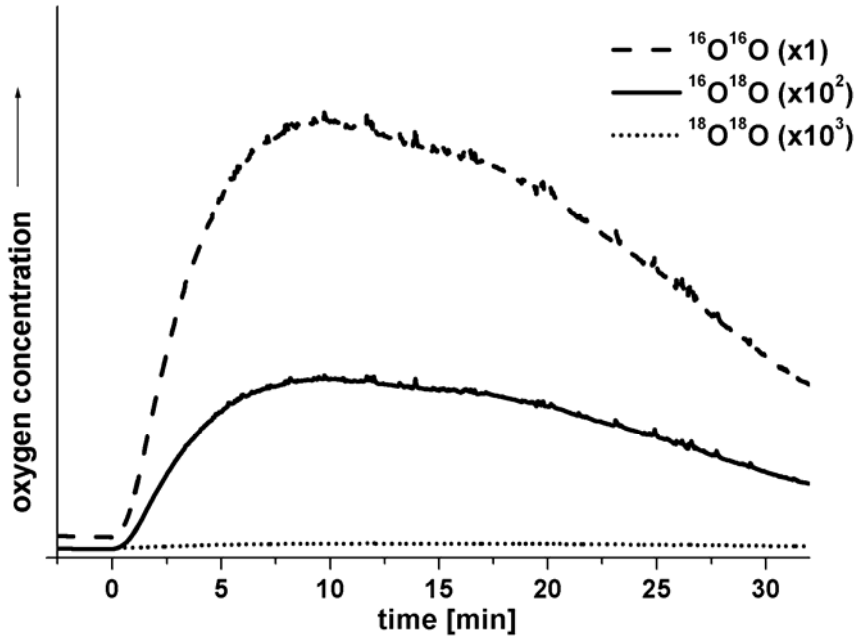

**Figure S3.** Oxygen consumption detected by Clark electrode for the reaction of Hbpmp (2 mM in $H_2O$: MeCN = 3 :1) with oxone. The solution was equilibrated with air at ambient pressure, before 10 eq. $HSO_5^-$ per Hbpmp were injected at t = 0 min.