Supporting Information to:

Cooperative effects in homogenous water oxidation catalysis by mononuclear ruthenium complexes

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Figure S1. $^1$H NMR spectrum of [Ru(terpy)(bipy)Cl]Cl (1) in D$_2$O, showing the aquation of the complex to form [Ru(terpy)(bipy)(OD$_2$)]Cl$_2$; a = C6 proton of bipy in [Ru(terpy)(bipy)Cl]Cl (1); b = C6 proton of bipy in [Ru(terpy)(bipy)(OD$_2$)]Cl$_2$; c = other aromatic protons. Integration of the two C6 proton peaks indicates that the [Ru(terpy)(bipy)Cl]$^+$/[Ru(terpy)(bipy)(OD$_2$)]$^{2+}$ ratio was 2:1.
Figure S2. $^1$H NMR spectrum of [Ru(terpy)(Me$_2$bipy)Cl]Cl (2) in CD$_3$CN; a = C6 proton of Me$_2$bipy; b = other aromatic protons; c = methyl protons.
Figure S3. $^1$H NMR spectrum of [Ru(phen)$_2$(Me$_2$bipy)]Cl$_2$ (4) in CD$_3$CN; a = aromatic protons; b = methyl protons.
**Figure S4.** $^1$H NMR spectrum of 2/4 mixture in CD$_3$CN:HCIO$_4$ 0.1 M in D$_2$O (1:4); a = C6 proton of Me$_2$bipy in [Ru(terpy)(Me$_2$bipy)Cl]$^+$ with an apparent shoulder at 9.4 ppm due to the C6 proton of Me$_2$bipy of the aquation product [Ru(terpy)(Me$_2$bipy)(OD$_2$)]$^{2+}$; b = other aromatic protons; c = methyl protons.
Figure S5. $^1$H NMR spectrum of 2/4 mixture in CD$_3$CN:HClO$_4$ 0.1 M in D$_2$O (1:4) measured 10 minutes after four equivalent Ce$^{4+}$ was added showing the disappearance of the C6 proton.
Figure S6. $^1$H NMR spectrum of 2/4 mixture in CD$_3$CN:HCIO$_4$ 0.1 M in D$_2$O (1:4) measured 180 minutes after four equivalent Ce$^{4+}$ was added; a = C6 proton of Me$_2$bipy in the regenerated [Ru(terpy)(Me$_2$bipy)(OD$_2$)]$^{2+}$; b = other aromatic protons; c = methyl protons.