Electronic Supplementary Material (ESI) for Dalton Transactions
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Influence of ancillary ligands on the electronic structure and anion sensing features of ligand bridged diruthenium complexes

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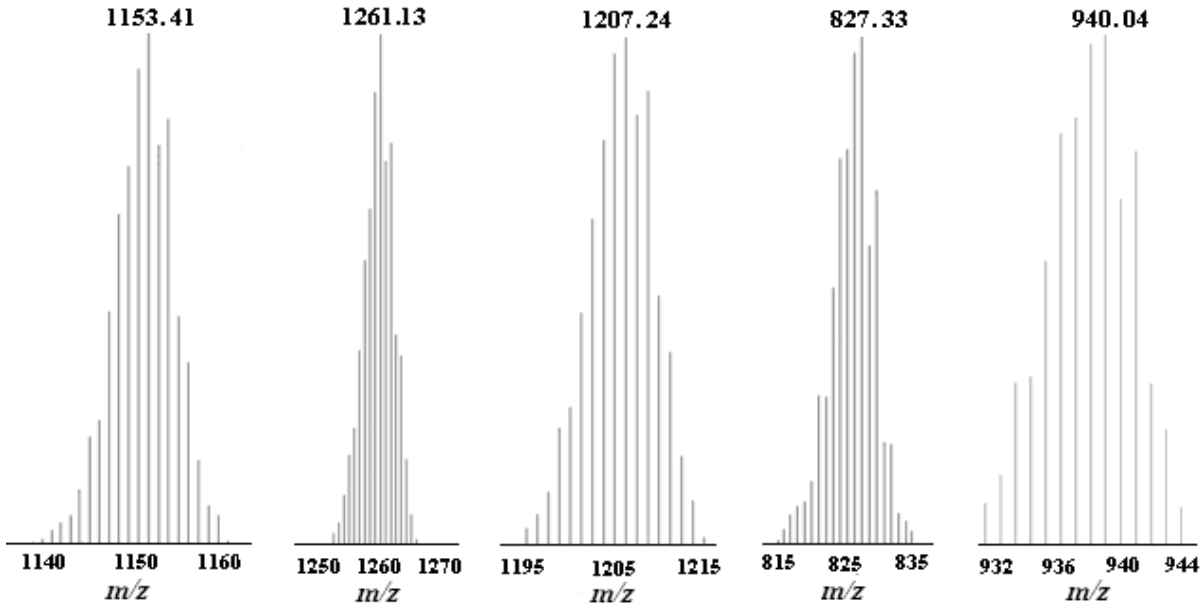


[**1**]$(ClO_4)_2$ [**2**]$(ClO_4)_2$ [**3**]$(ClO_4)_2$ **4** [**5**]$(ClO_4)_2$

Fig. S1. ESI-MS for diruthenium complexes in CH_3CN.

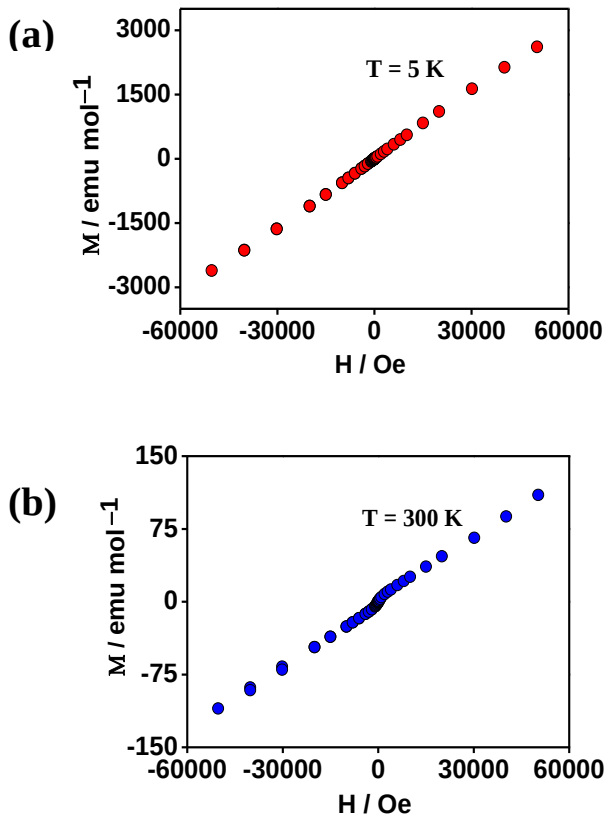


Fig. S2. Magnetisation towards magnetic field from –5 to 5 T for **4**, measured at (a) 5 K and (b) at 300 K.

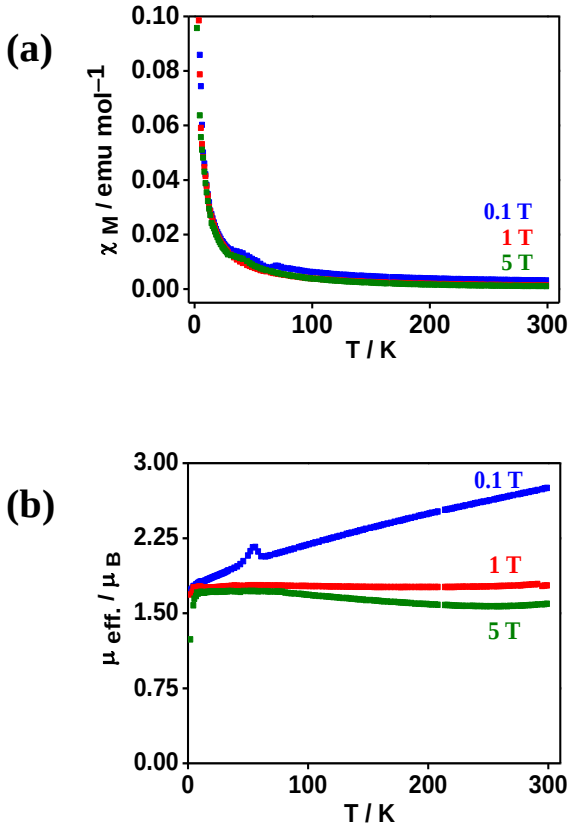
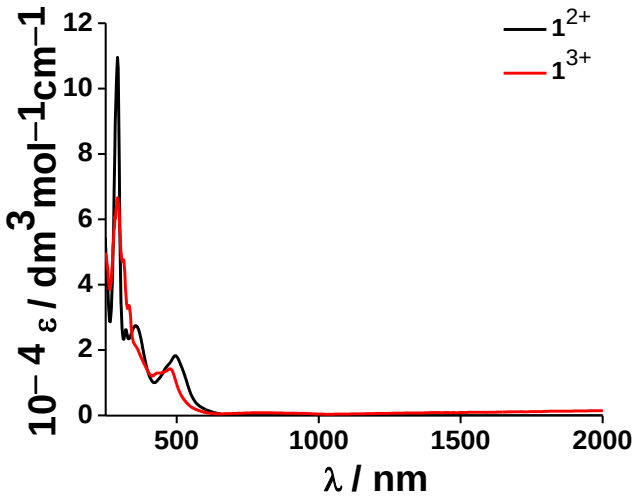


Fig. S3. Temperature dependence of (a) magnetic susceptibility and (b) magnetic moment of [**5**]ClO_4, measured under magnetic fields of 0.1 T (blue), 1 T (red), and 5 T (green).



Compound	λ/nm (ε/dm^3 mol^{-1} cm^{-1})
1^{3+}	1600(910), 795(780), 476(14230), 430(sh), 359(20820), 332 (33630), 312(47650), 292(66590)
1^{2+}	495(18350), 462(sh), 355(27200), 320(26210), 292(109580)

Fig. S4. UV-vis-NIR spectra of **1**$^{2+}$ and **1**$^{3+}$ in CH_3CN/ 0.1 mol dm^{-3} Et_4NPF_6.

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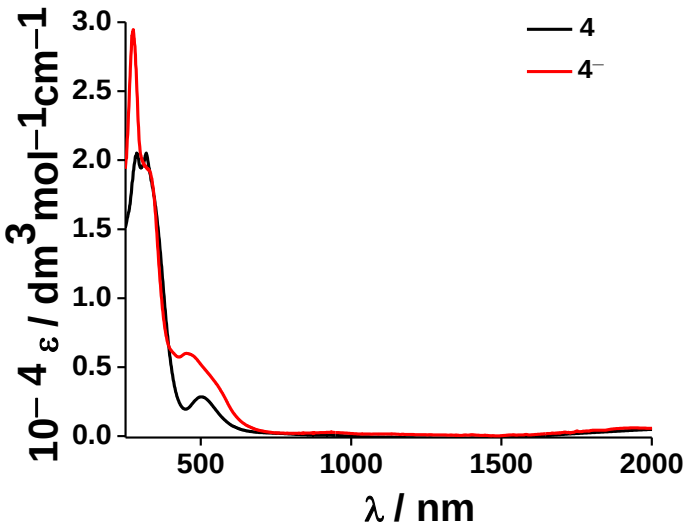

Compound	λ/nm (ε/dm^3 mol^{-1} cm^{-1})
4	502(2850), 360(14700), 318(20490), 287(20490)
4$^-$	558(3577), 452(6010), 333(19050), 276(29470)

Fig. S5. UV-vis-NIR spectra of **4** and **4**$^-$ in CH_3CN/ 0.1 mol dm^{-3} Et_4NPF_6.

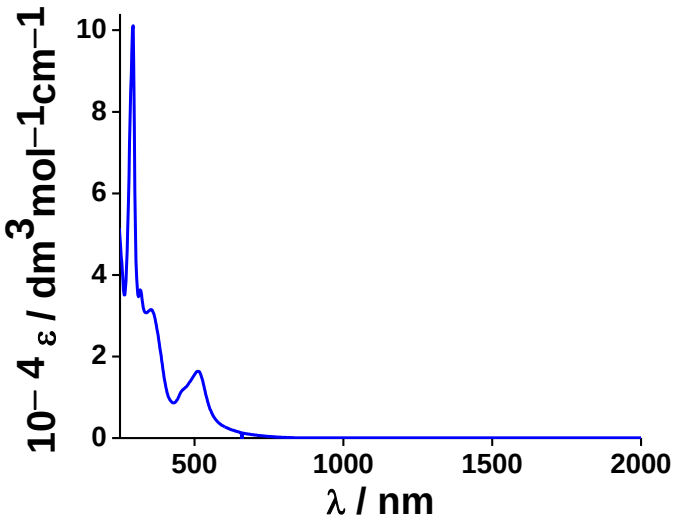

Fig. S6. UV-vis-NIR spectrum of $\mathbf{5}^+$ in CH_3CN.

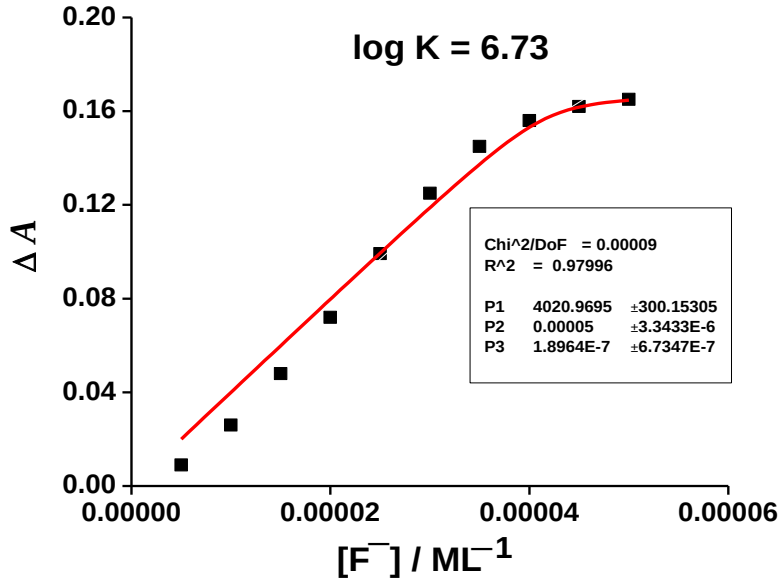

Fig. S7. Plot of the change in absorbance (ΔA) with respect to the initial absorbance of $\mathbf{1}^{2+}$ at 495 nm in CH_3CN on each addition of F^- *versus* the concentration of F^-.

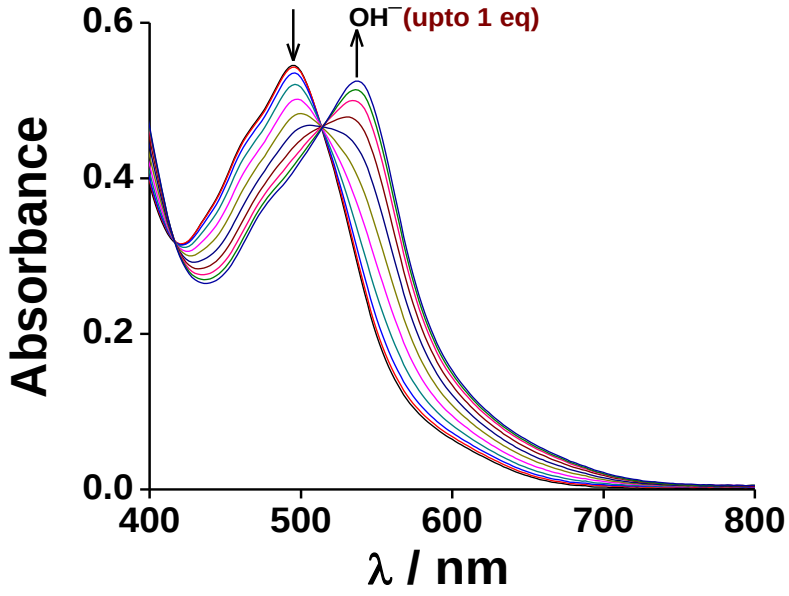

Fig. S8. UV-vis spectral changes of **1**$^{2+}$ ($5x10^{-5}$ M) in CH_3CN on gradual additions of up to one equivalent of [TBA][OH].

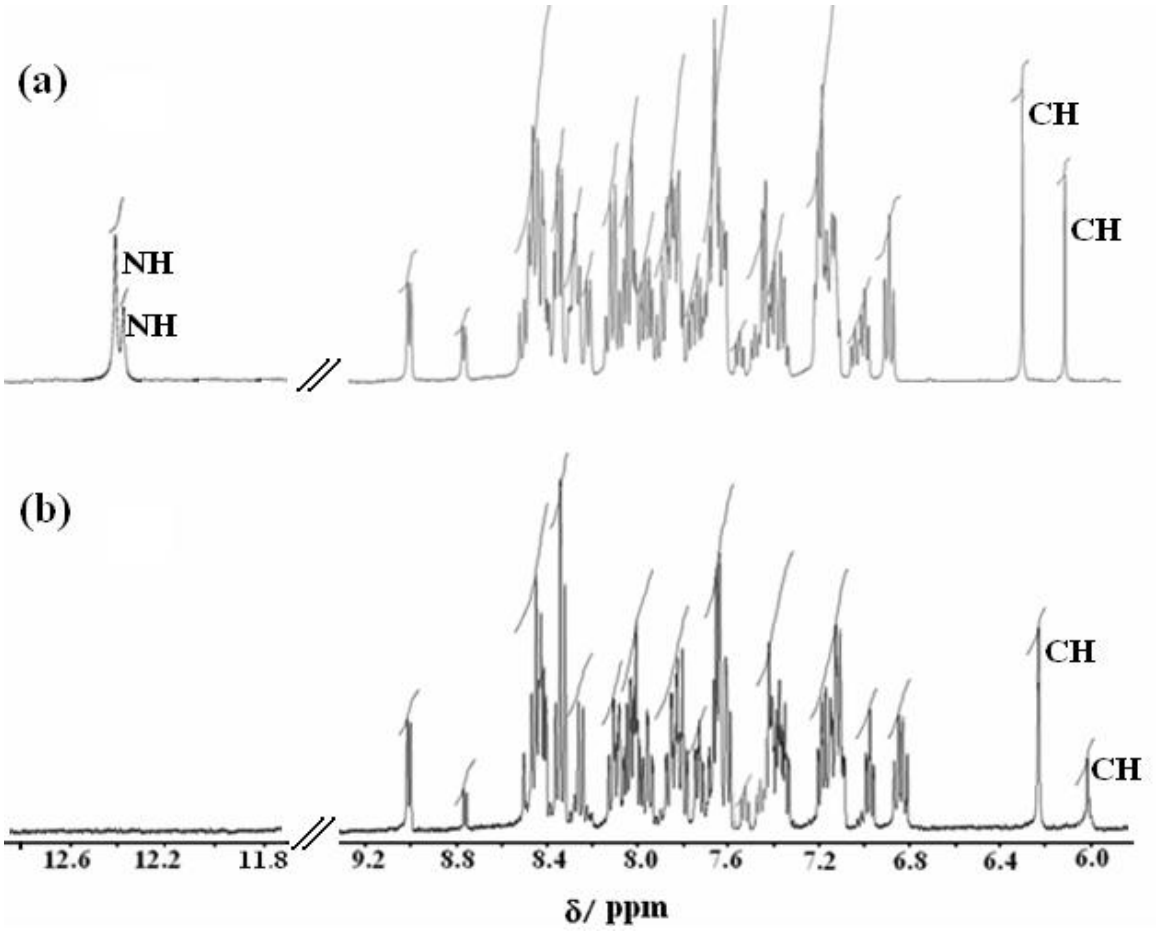

Fig. S9. ^{1}H NMR spectra in CD_3CN of (a) $\mathbf{1}^{2+}$ and (b) $\mathbf{1}^{2+}$ in presence of one equivalent of [TBA][F].

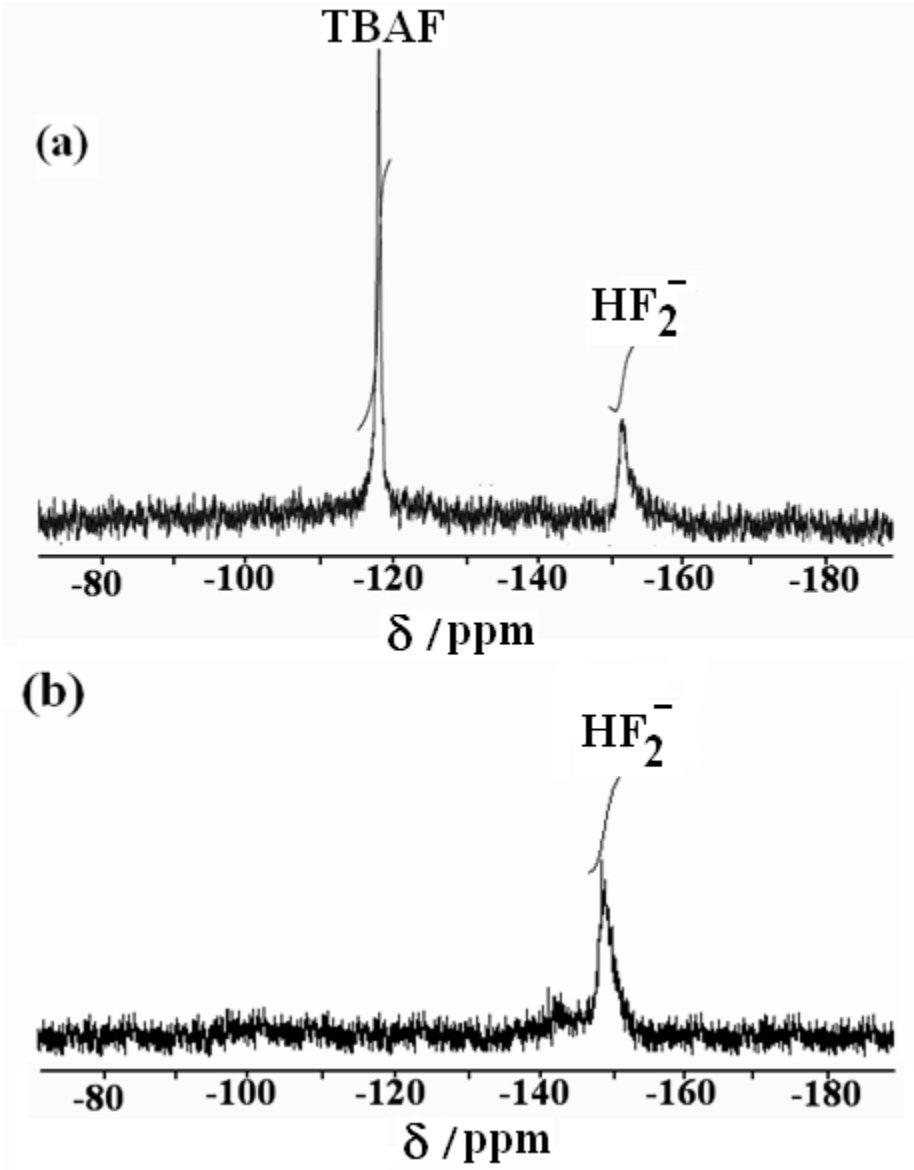

Fig. S10. ^{19}F NMR spectra in CD_3CN of (a) TBAF and (b) TBAF in presence of one equivalent of $\mathbf{1}^{2+}$. Trifluoro-toluene is used as an internal standard ($\delta = -62.23$) at 298 K.

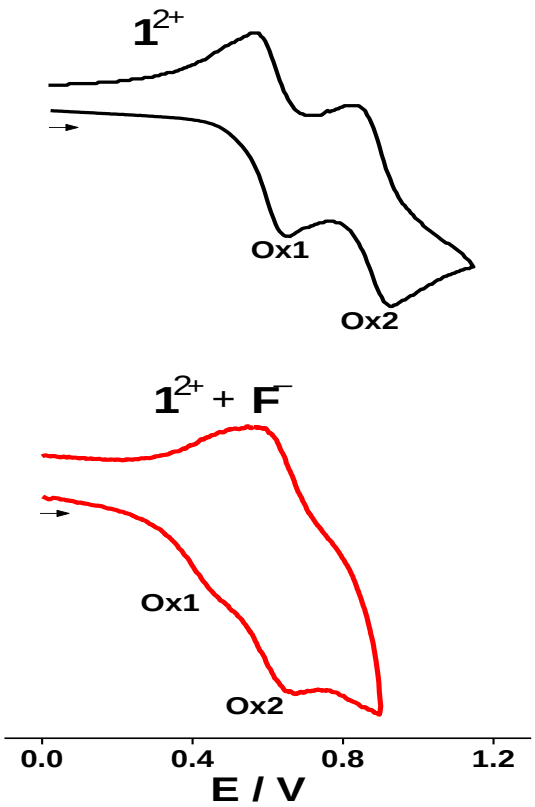

Fig. S11. Cyclic voltammograms of $\mathbf{1}^{2+}$ (10^{-3} mol dm^{-3}) in CH_3CN (top) and in presence of one equivalent of TBAF (bottom).

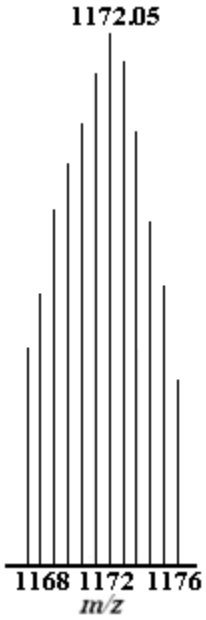

Fig. S12. ESI-MS peak in CH_3CN of [$\mathbf{1}^{2+} \cdot F^-$], in situ generated by the addition of one equivalent of [TBA][F] in the solution of $\mathbf{1}^{2+}$.