Supplementary Material

for

Effect of ancillary ligand proton on the photophysical properties of some Ru$^{II}$N$_6$ cores. A proton valve

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Fig. S1. Electronic spectra of 1a (black) and 1b (blue) in acetonitrile.
Fig. S2. Cyclic voltammogram of 1a (black) and 1b (blue) in CH$_3$CN, 0.1 mol dm$^{-3}$ in TEAP at a GC electrode. Solute concentration is 1 mmol dm$^{-3}$. Scan rate: 100 mV s$^{-1}$. 
Fig. S3. Cyclic voltammogram of 2a (black) and 2b (blue) in CH$_3$CN, 0.1 mol dm$^{-3}$ in TEAP at a GC electrode. Solute concentration is 1 mmol dm$^{-3}$. Scan rate: 100 mV s$^{-1}$. 
**Fig. S4.** A portion of the cyclic voltammogram of 2b in CH$_3$CN, 0.1 mol dm$^{-3}$ in TEAP at a GC electrode. Solute concentration is 1 mmol dm$^{-3}$. Scan rate (mV s$^{-1}$): 50, black; 100, red; 200, green; 500, blue; 1000, magenta.
Fig. S5. Working relationship of $\Delta E_p$ vs $\ln \psi$; $r^2 = 0.992$. It has been created by using Nicholson’s data.$^{37}$
**Fig. S6.** Emission spectra of 1a (blue) and 2a (black) in deaerated CH$_2$Cl$_2$. The absorbance of both the solutions was 0.5 at 430 nm which was the $\lambda$ excitation. Quantum yields $\phi$ are $1.17 \times 10^{-4}$ and $6.13 \times 10^{-5}$ for 1a and 2a respectively.