

Supporting information for

pH luminescence switching, dihydrogen phosphate sensing, and cellular uptake of a heterobimetallic
ruthenium(II)–rhenium(I) complex

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Table S1. Equilibrium/Binding Constants ^a (K/M⁻ⁿ) for **RuHLRe** Toward Various Anions in CH₃CN at 298 K.

anions	solvent	RuHLRe to anion	<i>K</i> from absorption spectra	<i>K</i> from emission spectra
stoichiometry				
1: <i>n</i>				
F ⁻	CH ₃ CN	1:1	1.78×10 ⁴	5.5×10 ⁴
OAc ⁻	CH ₃ CN	1:1	NA	1.25×10 ⁵
H ₂ PO ₄ ⁻	CH ₃ CN	1:2	NA	1.51×10 ¹⁰

^a Estimated errors were <15%. NA = not applicable

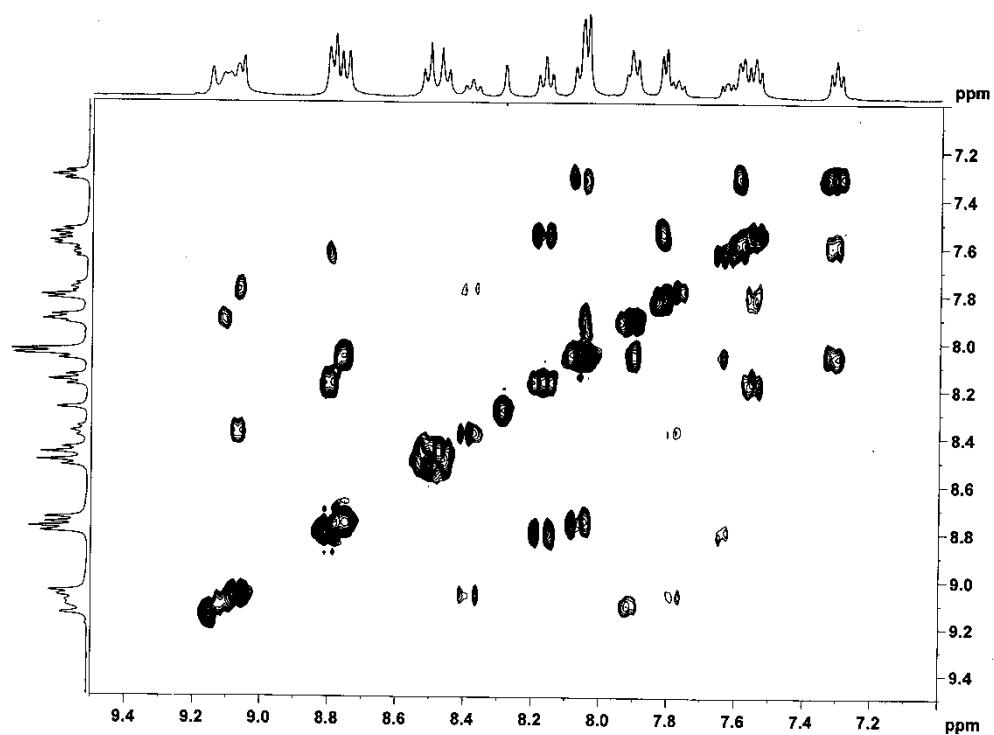


Figure S1. ^1H - ^1H COSY spectrum of **RuHLRe** in $\text{DMSO-}d_6$.

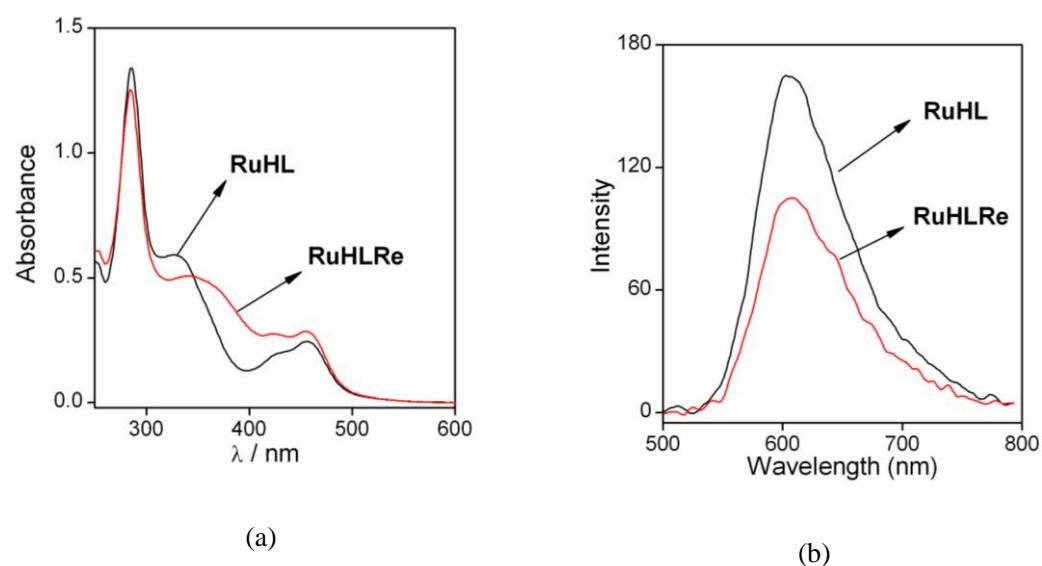


Figure S2. Absorption (a) and emission (b) spectra for **RuHL** and **RuHLRe** in CH_3CN .

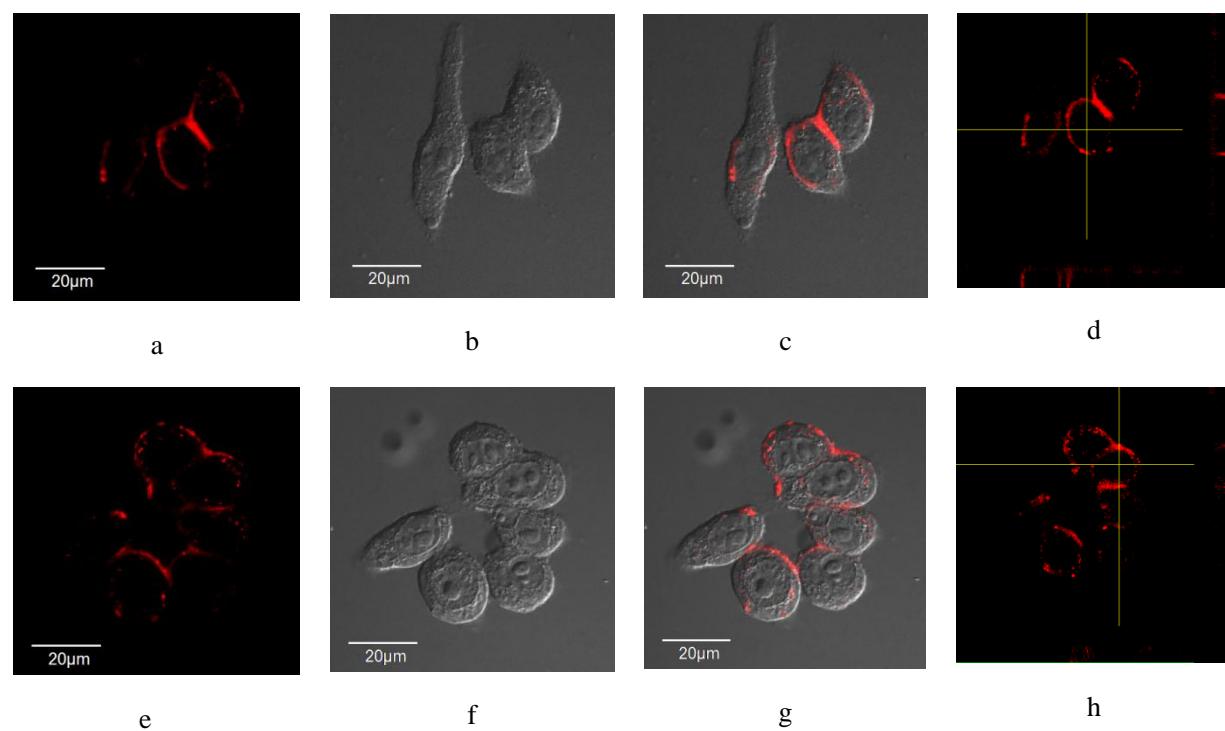
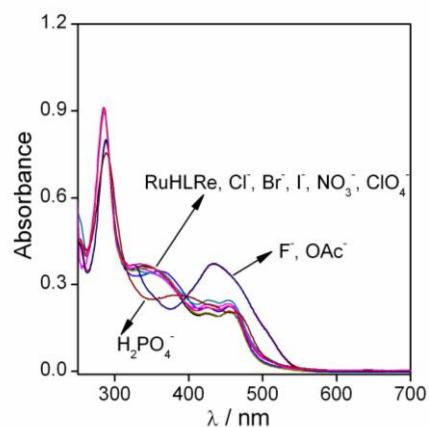


Figure S3. Confocal luminescence (a, e), bright-field (b, f), and overlay (c, g) images of living HeLa cells incubated with **RuHL** (10 μ M) in DMSO/PBS (pH = 7.0, 1:99, V/V) for 15 min(a-d) and 1 h(e-h) at 37 °C (λ_{ex} = 405 nm). (d, h) Overlap Z-scan confocal images of the living HeLa cells incubated with **RuHL** (10 μ M).



(a)



(b)

Figure S4. UV-Vis absorption spectra (a) of **RuHLRe** (1.0×10^{-5} M) in CH_3CN in the absence and the presence of 10 equiv of anions as TBA salt and corresponding color changes (b).

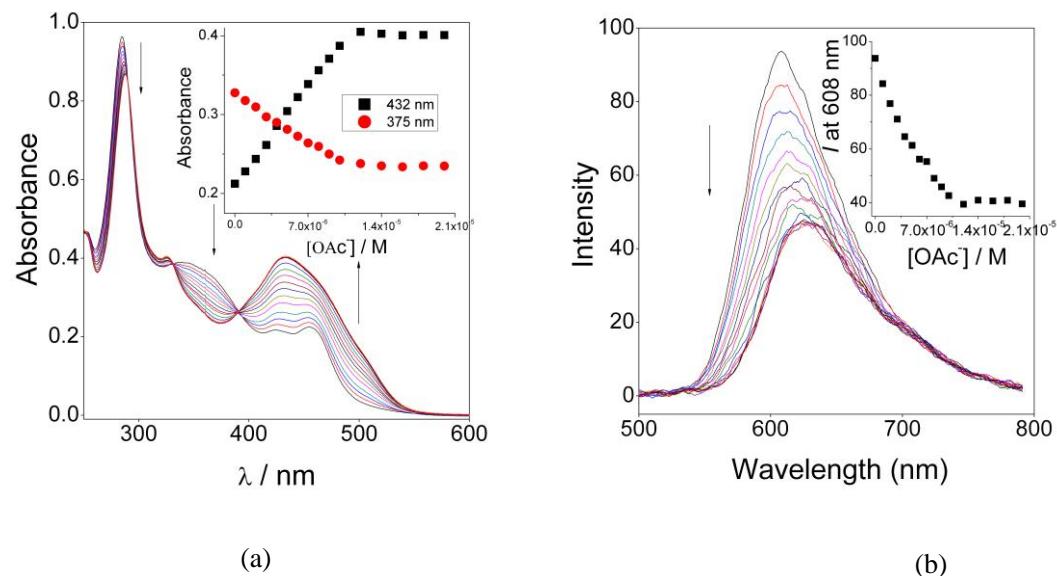


Figure S5. Changes in UV-vis absorption spectra (a) and emission spectra (b) of **RuHLRe** (1.0×10^{-5} M) in CH_3CN upon successive additions of OAc^- (0-2.0 equiv). The insets show changes in absorbance at 375 and 432 nm, and in emission intensity ($\lambda_{\text{ex}} = 460$ nm) versus OAc^- concentrations

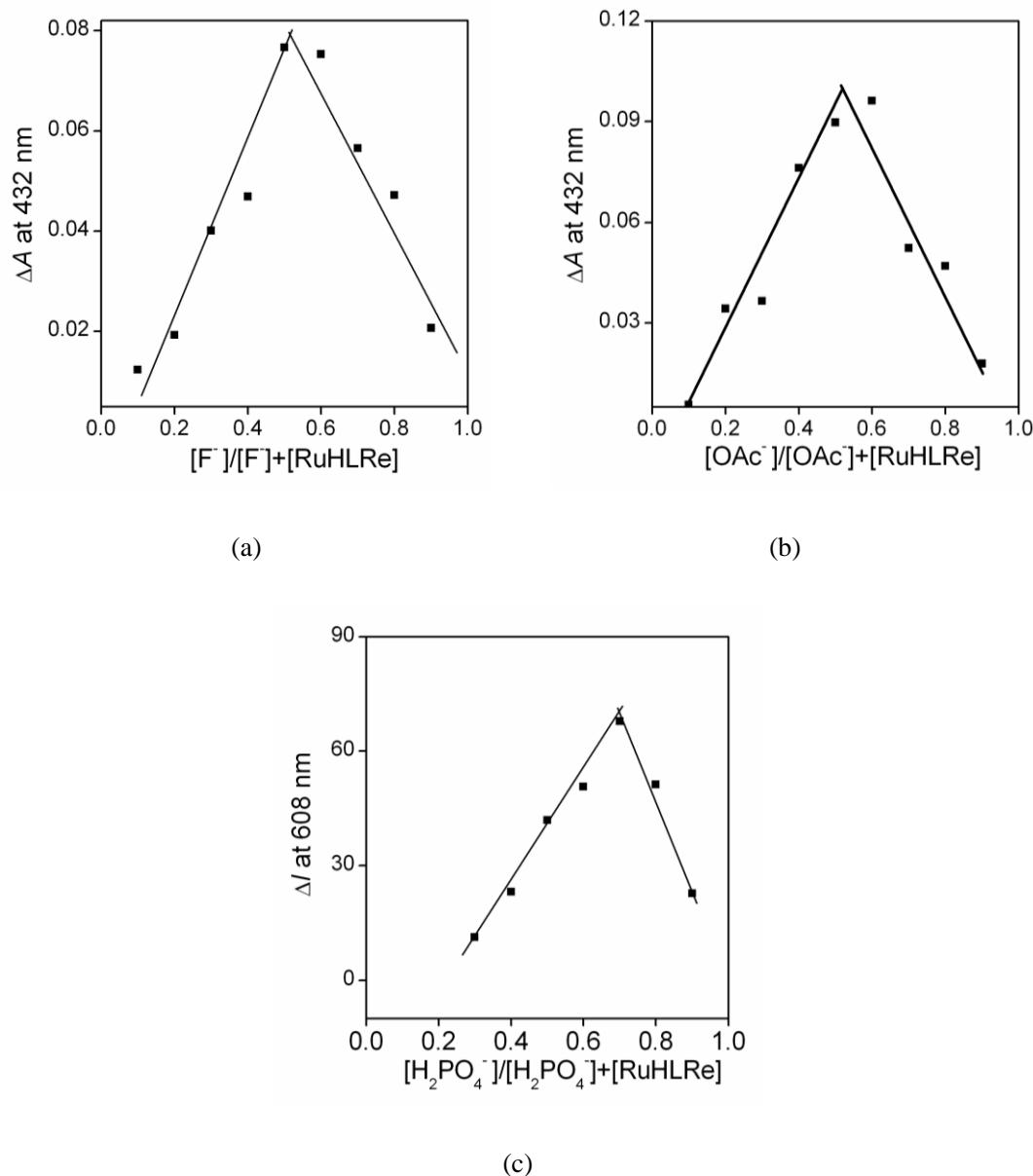


Figure S6. The Job plots of **RuHLRe** with F^- (a), OAc^- (b) and $H_2PO_4^-$ (c) in CH_3CN . $[RuHLRe] + [anion] = 1.0 \times 10^{-5} M$.

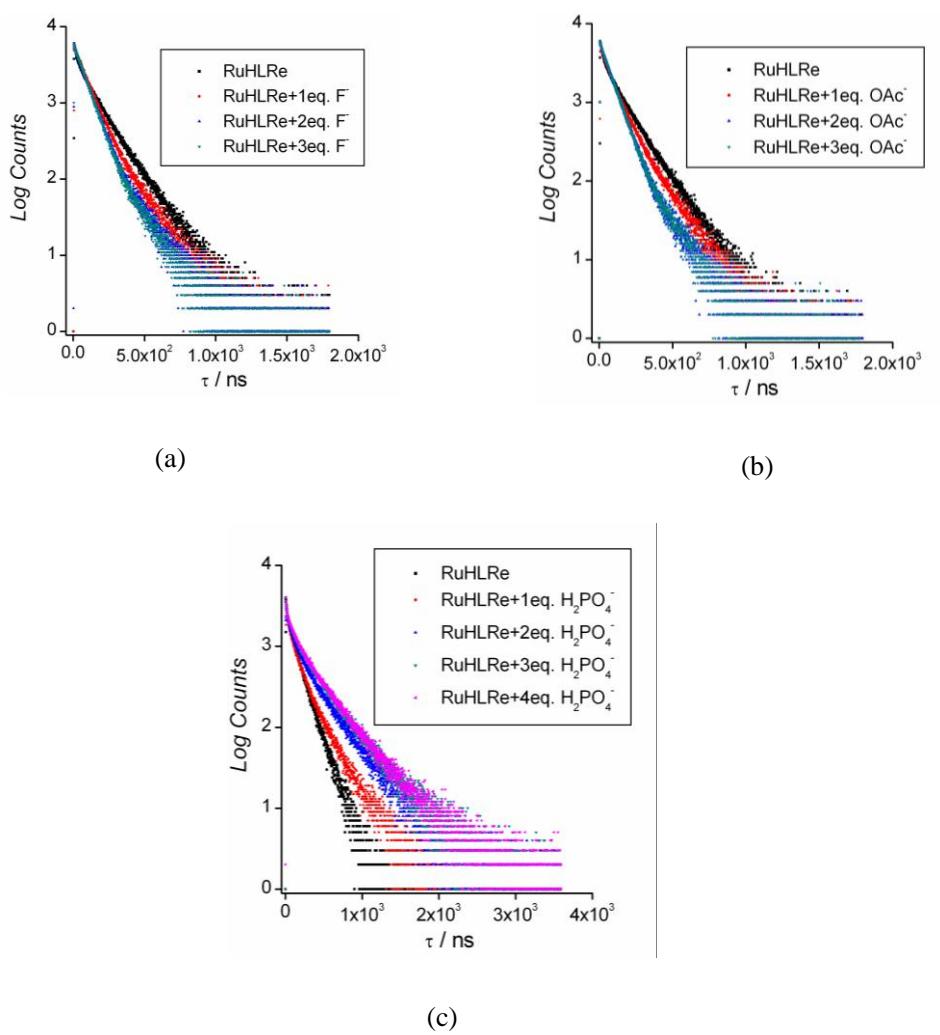


Figure S7. Time-resolved luminescence decay profiles of **RuHLRe** in acetonitrile in the presence of 0, 1.0, 2.0 and 3.0 equiv of F⁻ (a); 0, 1.0, 2.0 and 3.0 equiv of OAc⁻ (b); and 0, 1.0, 2.0, 3.0 and 4.0 equiv of H₂PO₄⁻ (c).