

Supporting information for

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

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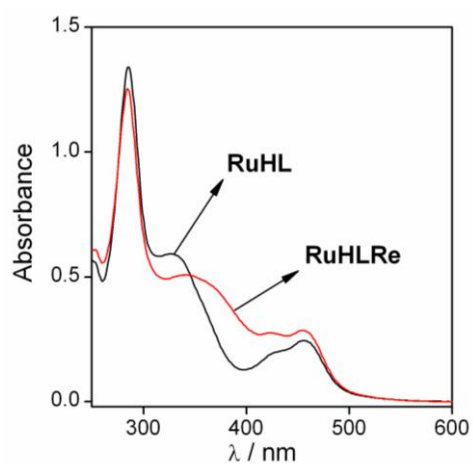
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**Table S1.** Equilibrium/Binding Constants <sup>a</sup> ( $K/M^{-n}$ ) for **RuHLRe** Toward Various Anions in CH<sub>3</sub>CN at 298 K.

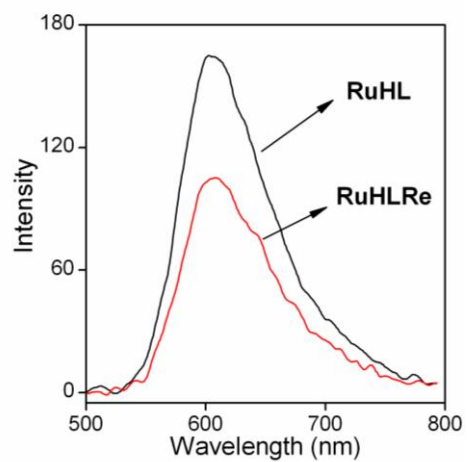
anions	solvent	<b>RuHLRe</b> to anion stoichiometry	<i>K</i> from absorption spectra	<i>K</i> from emission spectra
		1: <i>n</i>		
F <sup>-</sup>	CH <sub>3</sub> CN	1:1	1.78×10 <sup>4</sup>	5.5×10 <sup>4</sup>
OAc <sup>-</sup>	CH <sub>3</sub> CN	1:1	NA	1.25×10 <sup>5</sup>
H <sub>2</sub> PO <sub>4</sub>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

<sup>a</sup> Estimated errors were <15%. NA = not applicable

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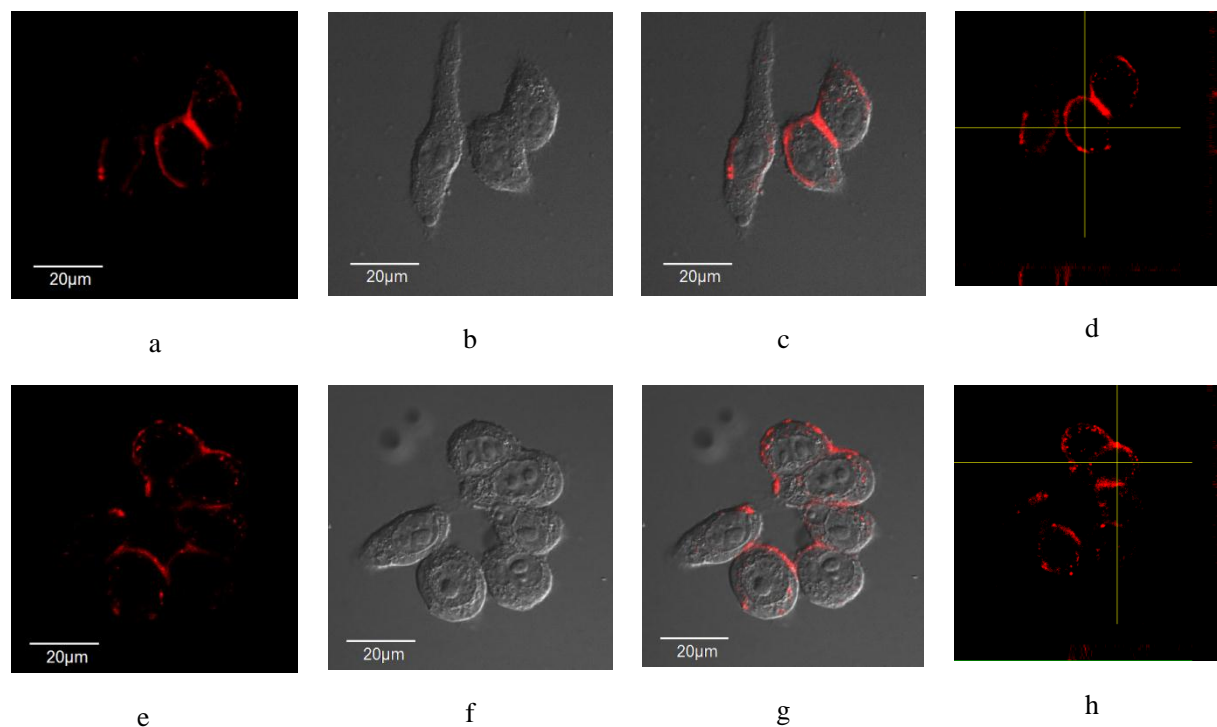


(a)

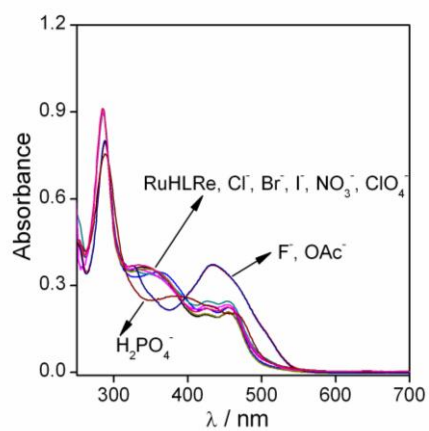


(b)

**Figure S2.** Absorption (a) and emission (b) spectra for **RuHL** and **RuHLRe** in CH<sub>3</sub>CN.



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

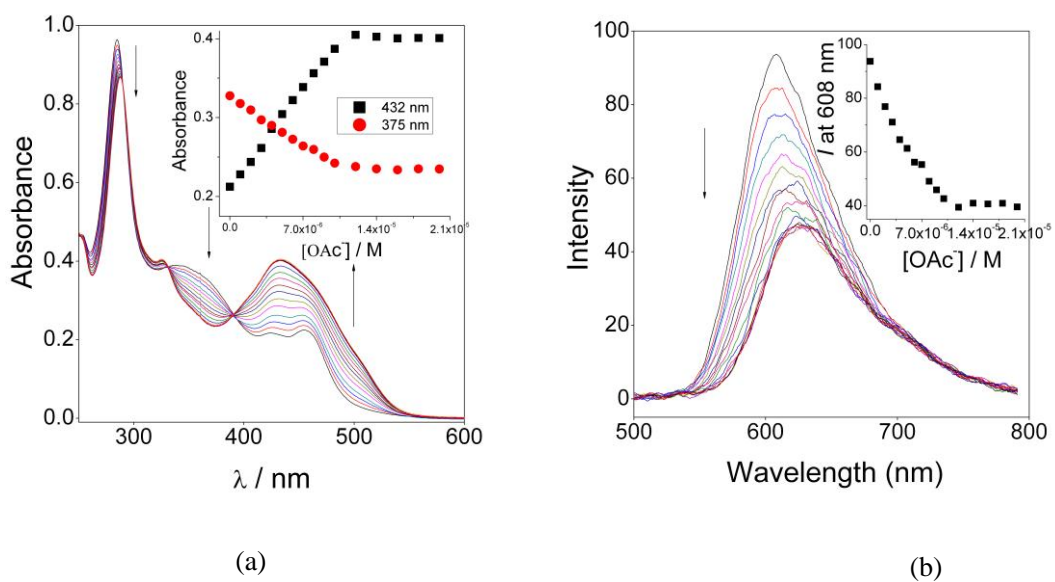


(a)

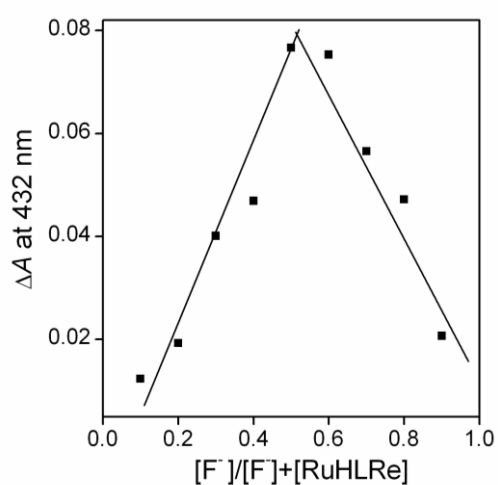


(b)

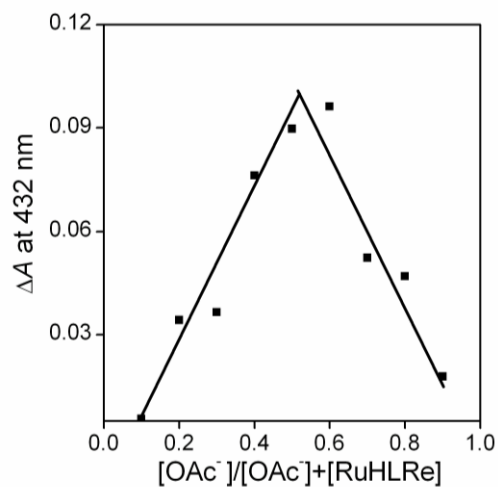
**Figure S4.** UV-Vis absorption spectra (a) of **RuHLRe** (1.0 × 10<sup>-5</sup> M) in CH<sub>3</sub>CN in the absence and the presence of 10 equiv of anions as TBA salt and corresponding color changes (b).



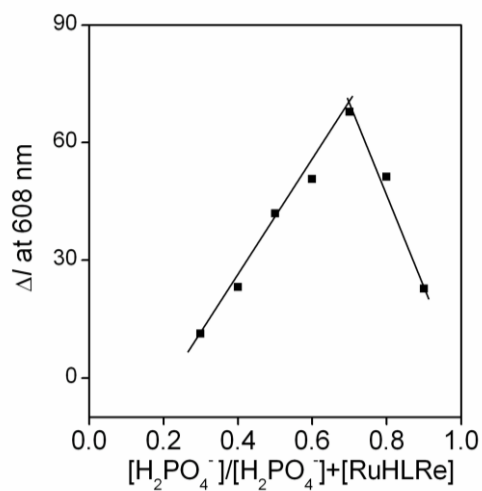
**Figure S5.** Changes in UV-vis absorption spectra (a) and emission spectra (b) of **RuHLRe** ( $1.0 \times 10^{-5} \text{ M}$ ) in  $\text{CH}_3\text{CN}$  upon successive additions of  $\text{OAc}^-$  (0-2.0 equiv). The insets show changes in absorbance at 375 and 432 nm, and in emission intensity ( $\lambda_{\text{ex}} = 460 \text{ nm}$ ) versus  $\text{OAc}^-$  concentrations



(a)



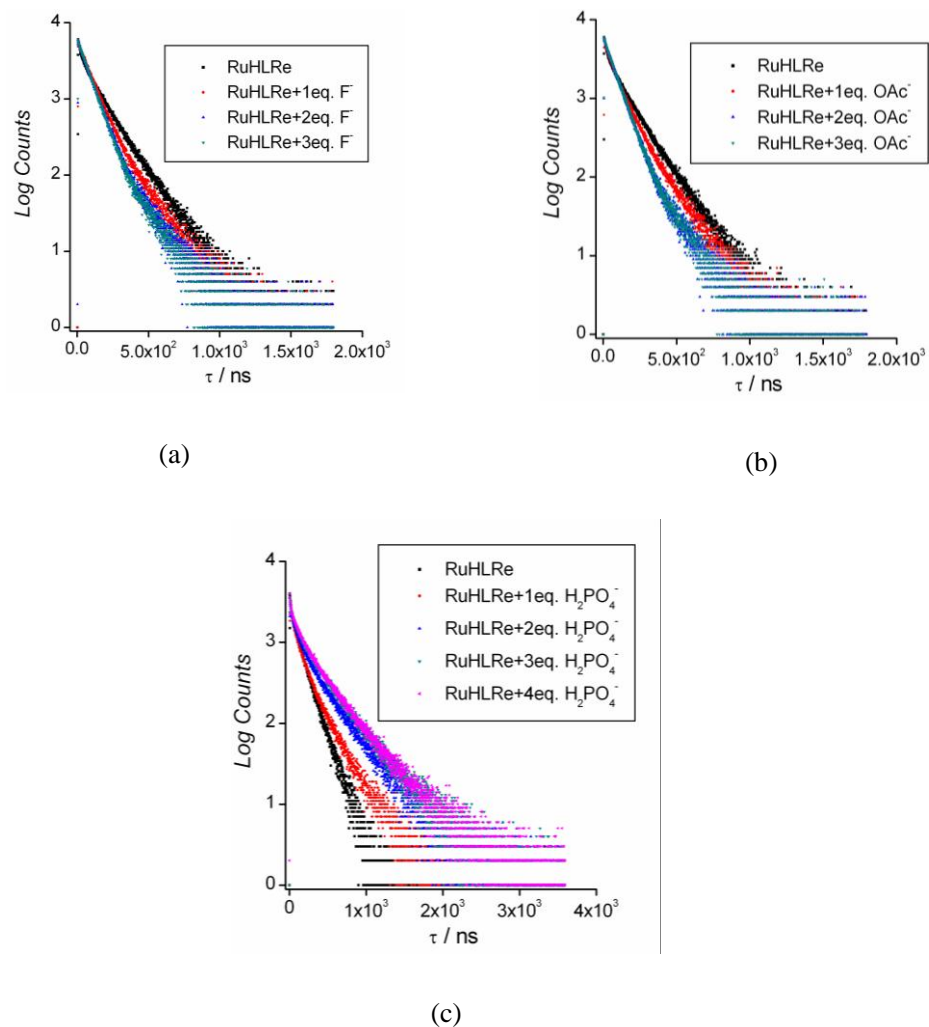
(b)



(c)

**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  $H_2PO_4^-$  (c).