

Supporting Information

for the manuscript entitled

**Transition metal induced switch of fluorescence and  
absorption responses of Zn(II)porphyrin-DNA conjugate  
to cysteine derivatives**

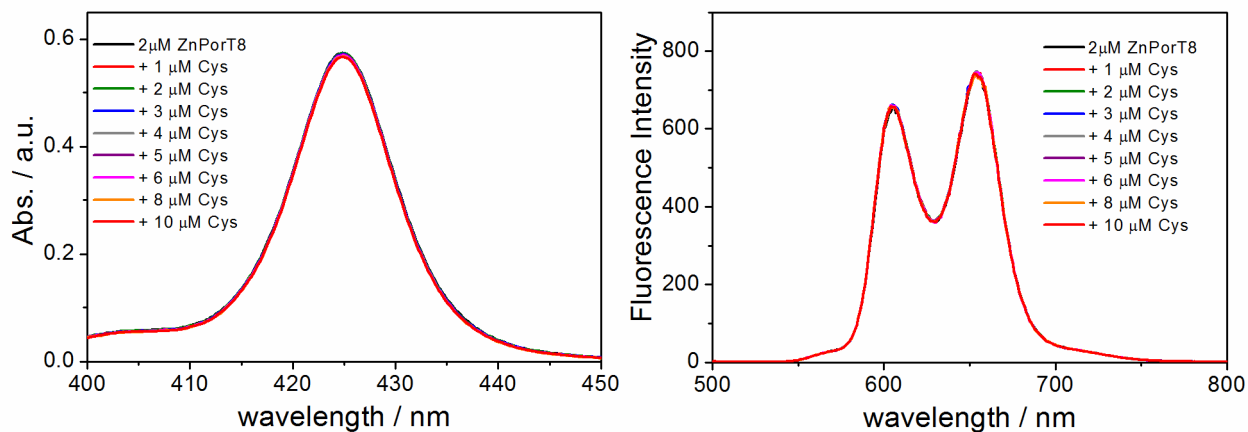
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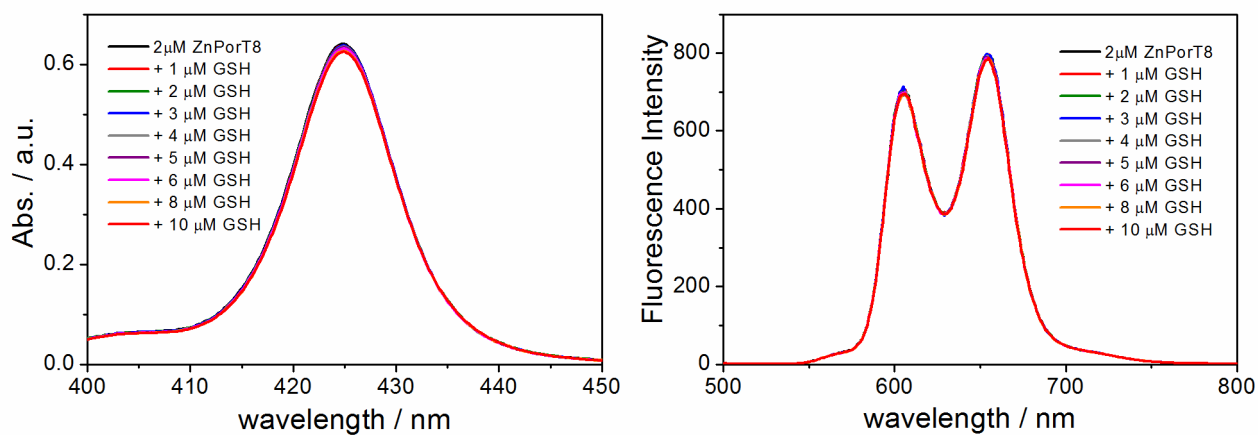
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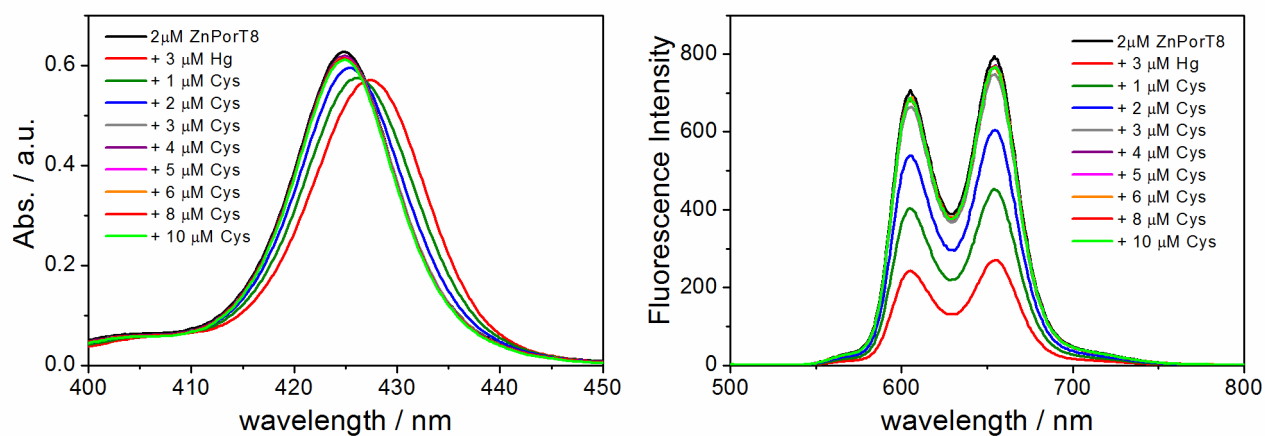
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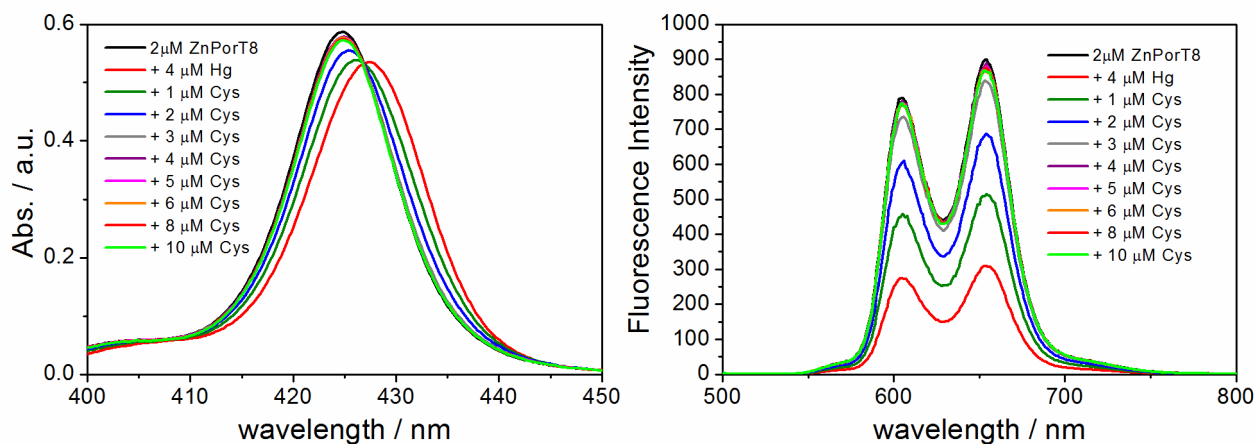
**Figure S1.** UV-vis absorption (left) and emission (right) spectra of the **ZnPorT8** (2 $\mu$ M) upon stepwise addition of the cysteine (Cys) from 1 to 10  $\mu$ M in Na-cacodylate buffer (1 mM, pH = 7.0, 20  $^{\circ}$ C).



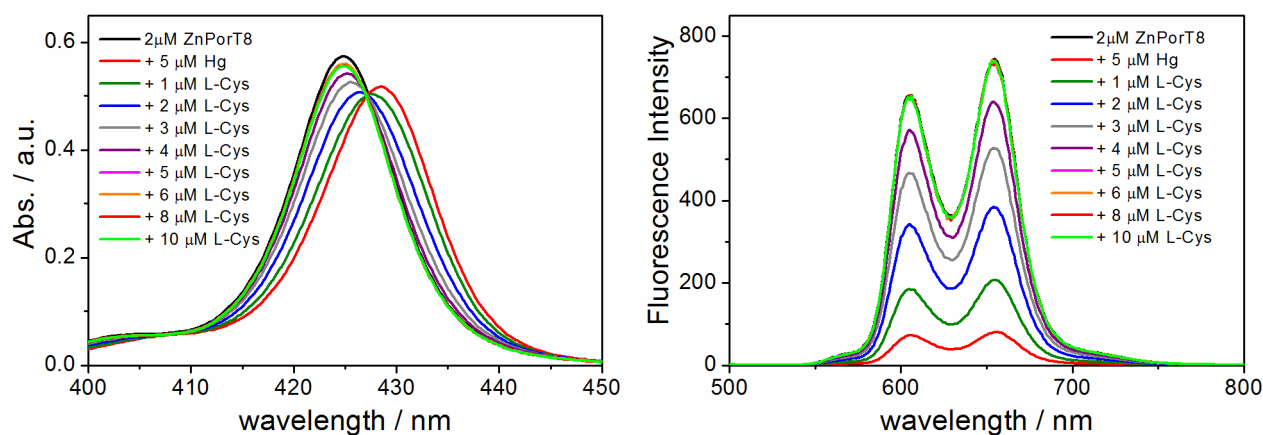
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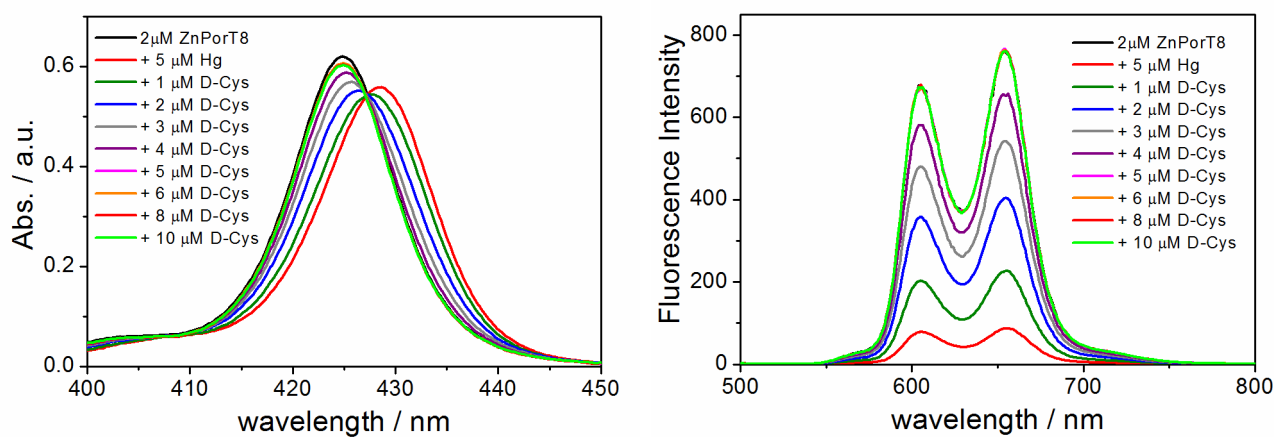
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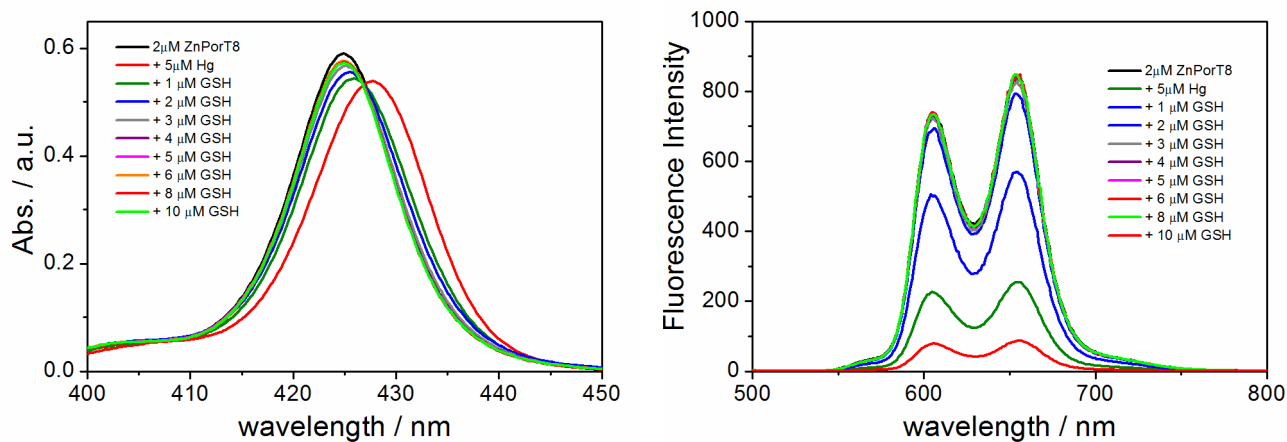
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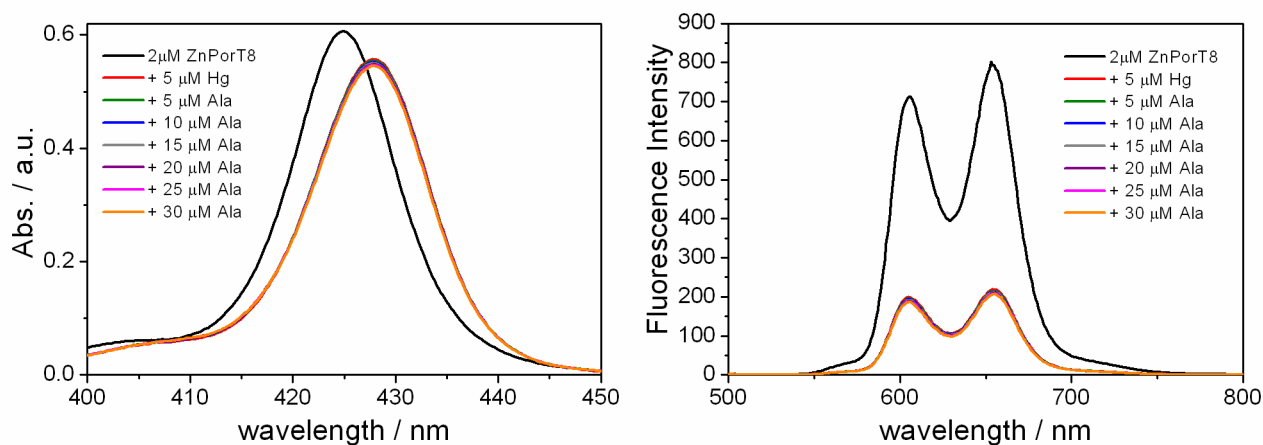
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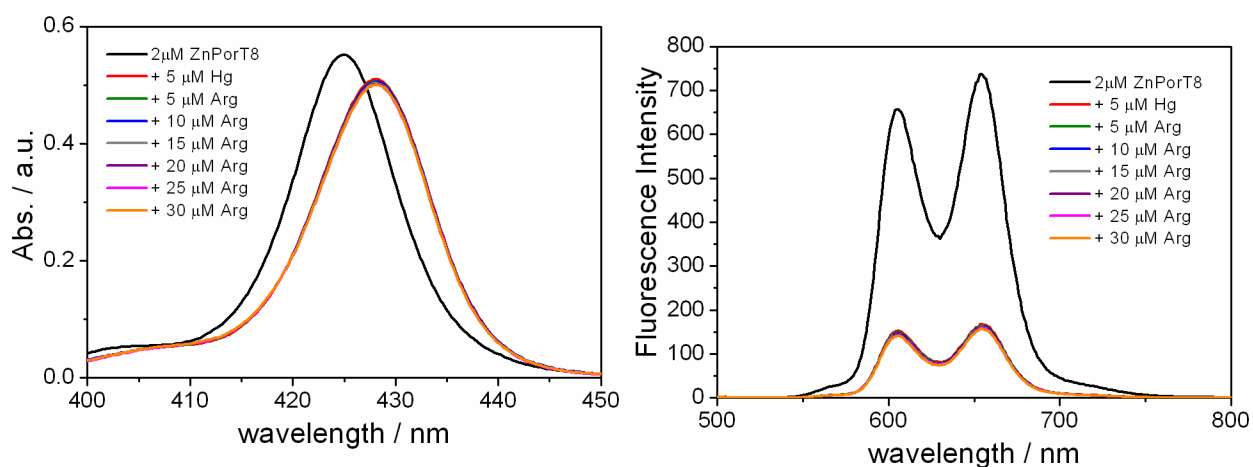
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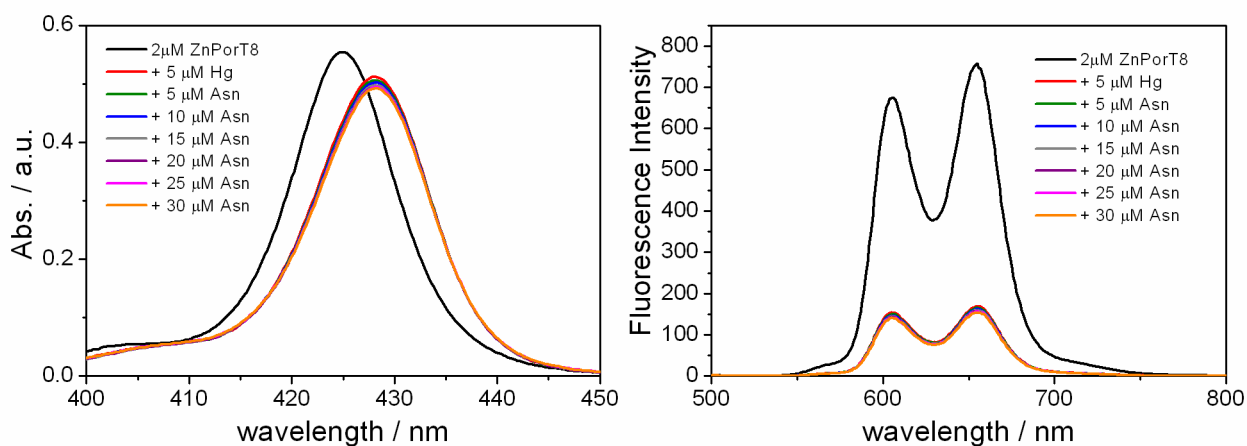
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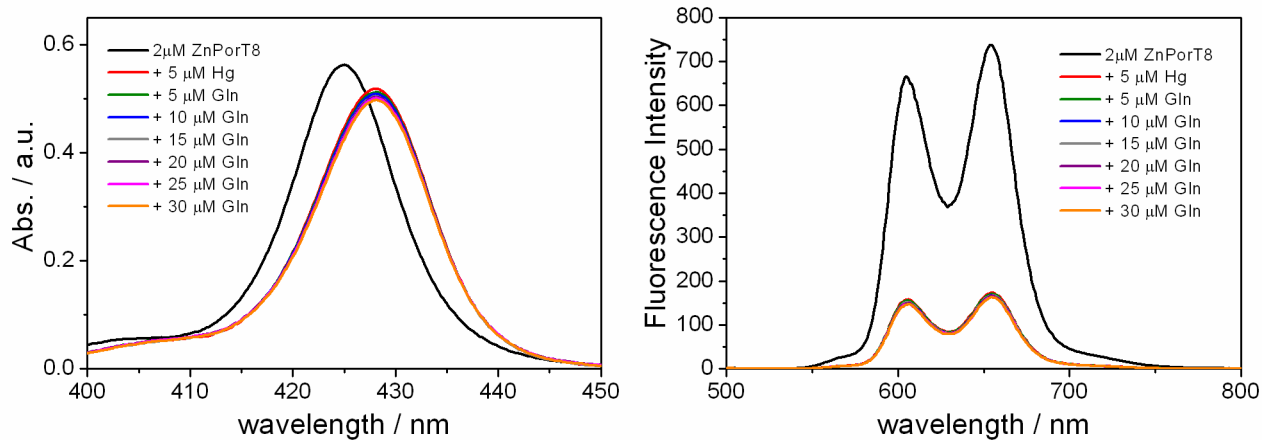
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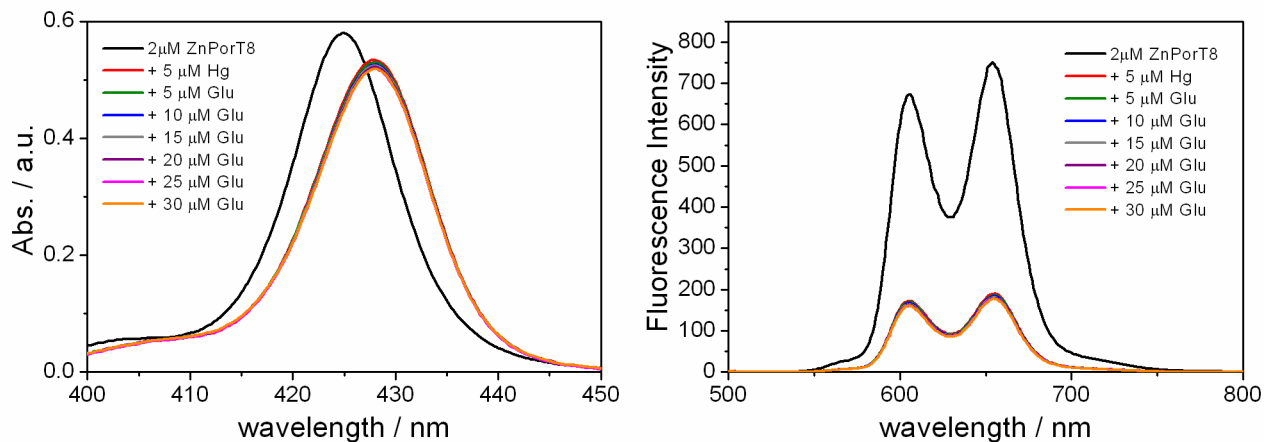
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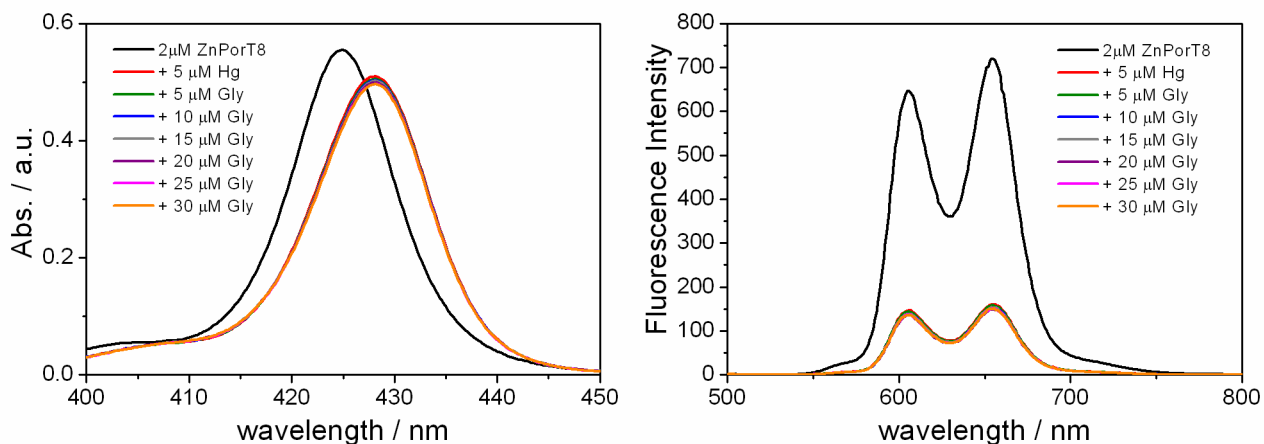


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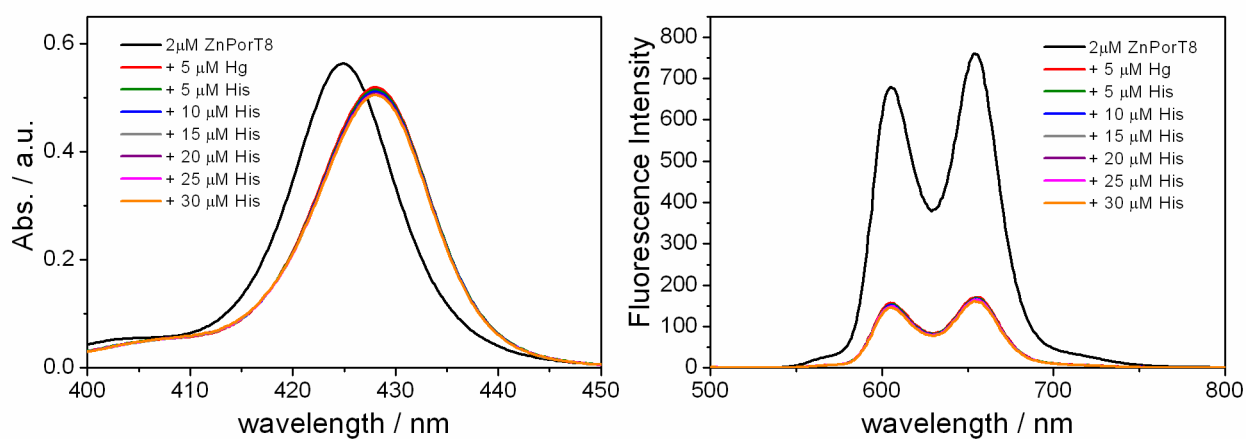


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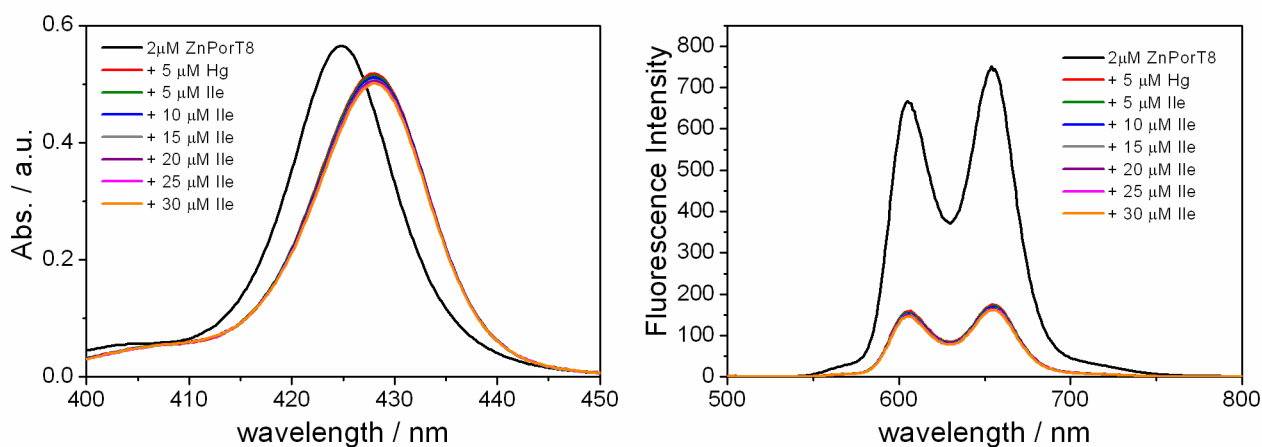




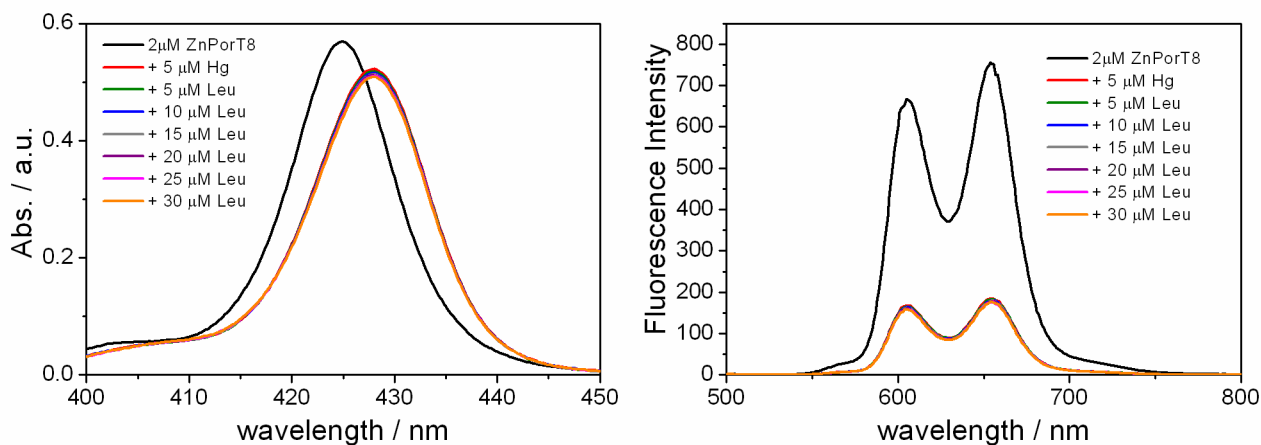
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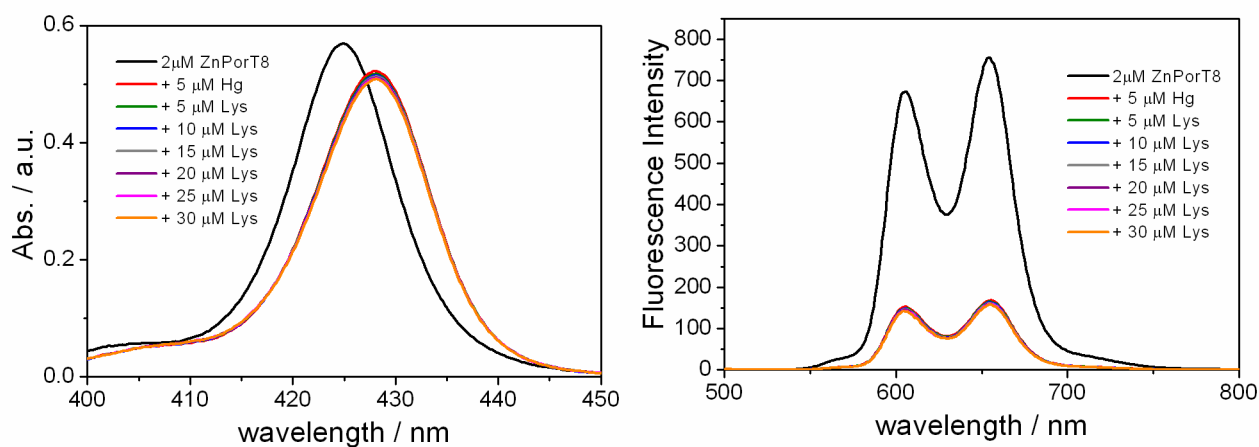
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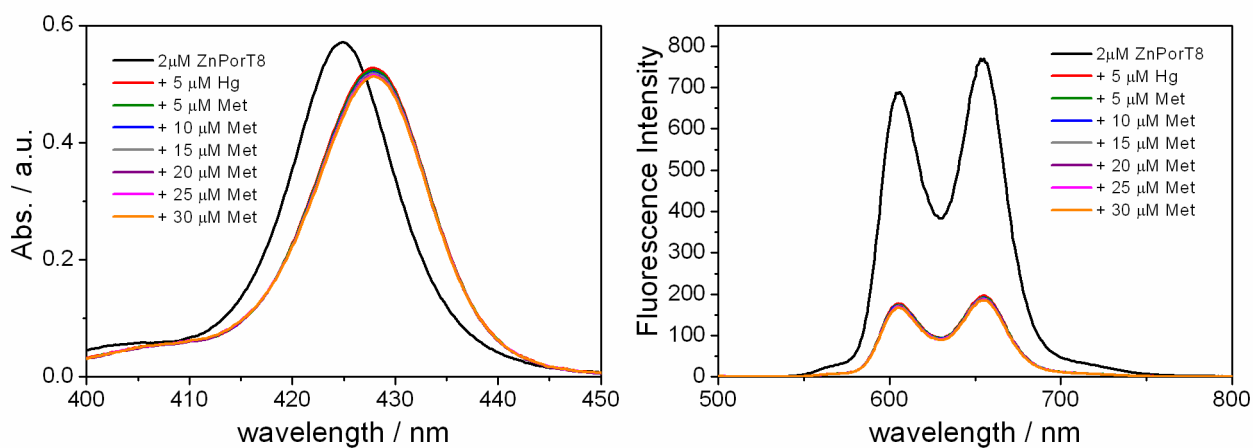
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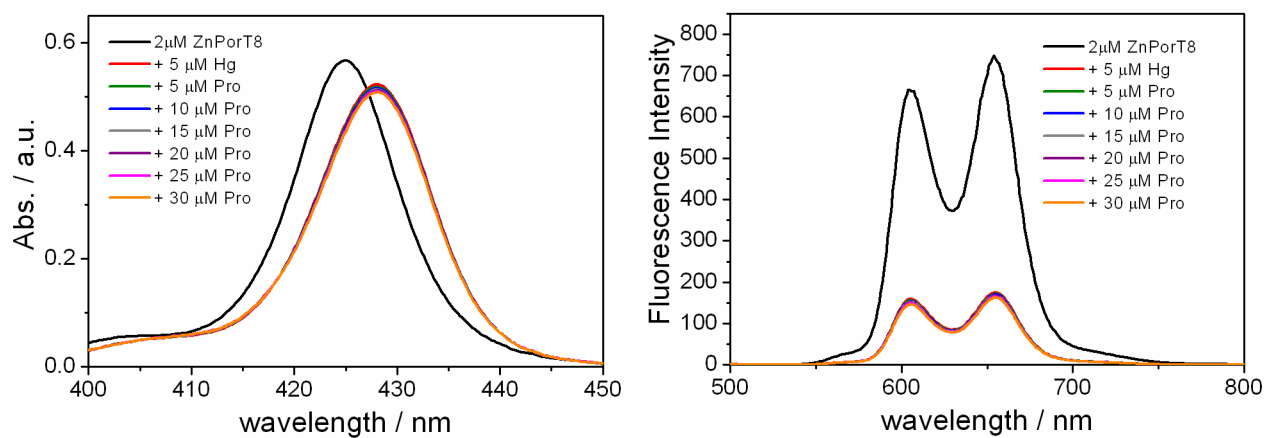
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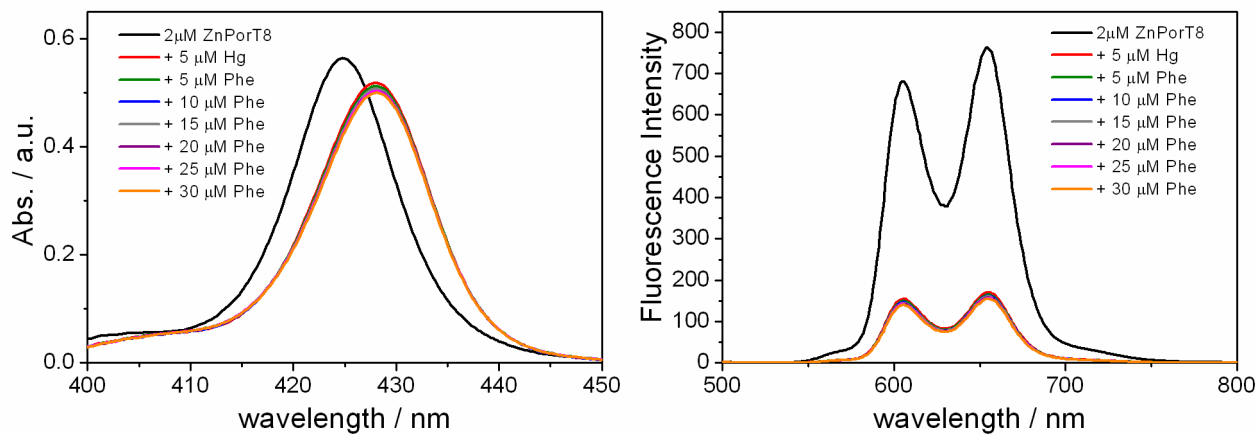
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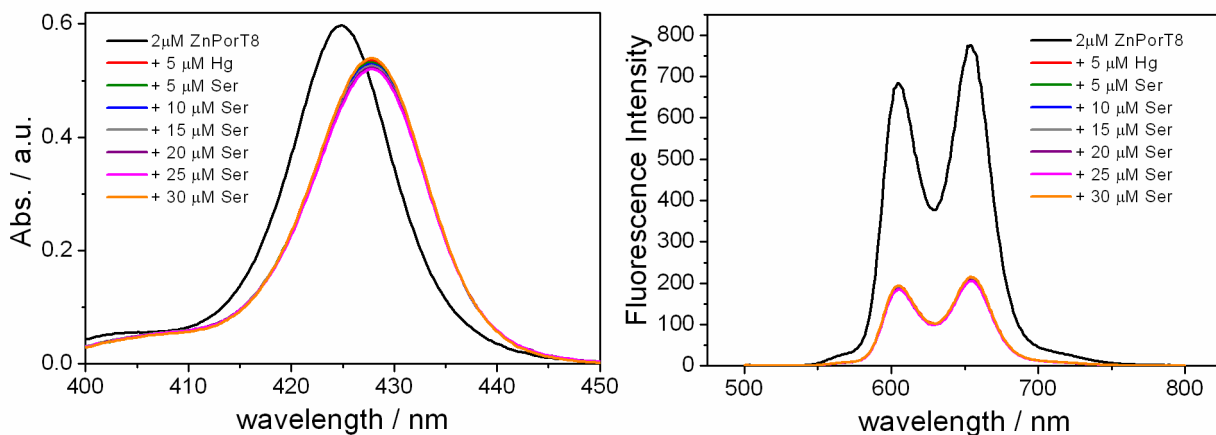
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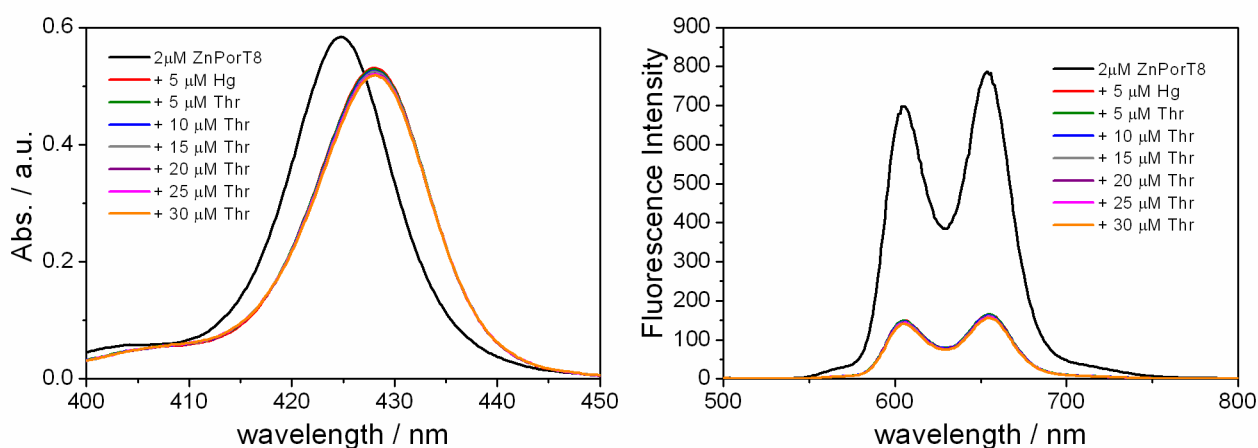
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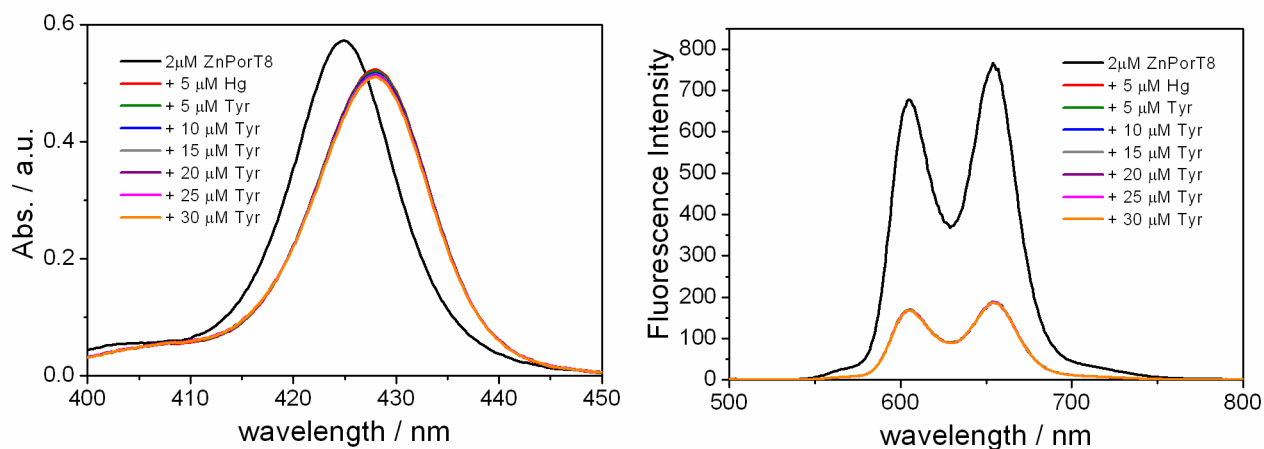
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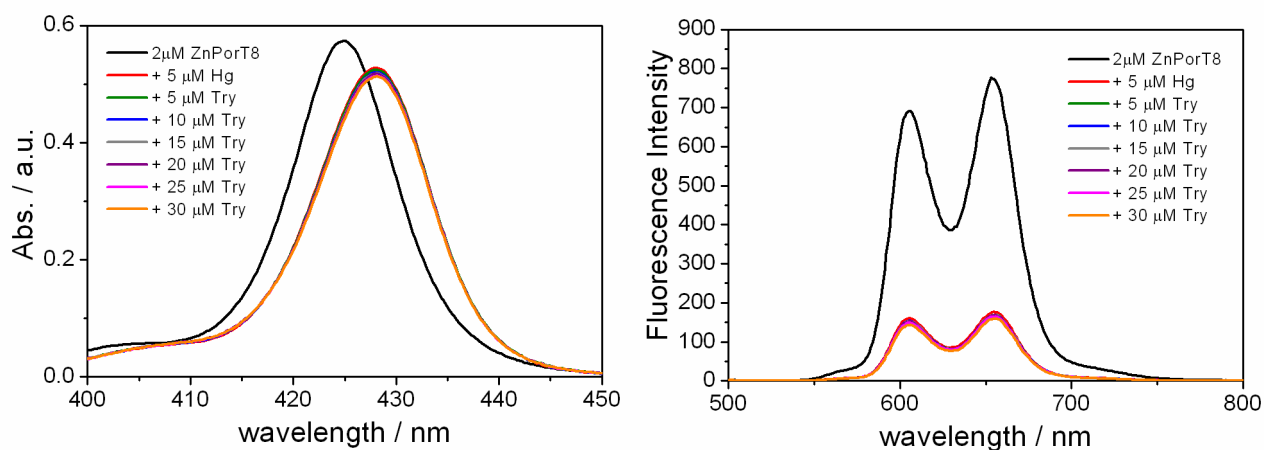
**Figure S21.** UV-vis absorption (left) and emission (right) spectra of the **ZnPorT8/Hg<sup>2+</sup>** complex (2.0 μM of **ZnPorT8** and 5.0 μM of Hg<sup>2+</sup> ion) upon stepwise addition of the serine (Ser) from 5 to 30 μM in Na-cacodylate buffer (1 mM, pH = 7.0, 20 °C).



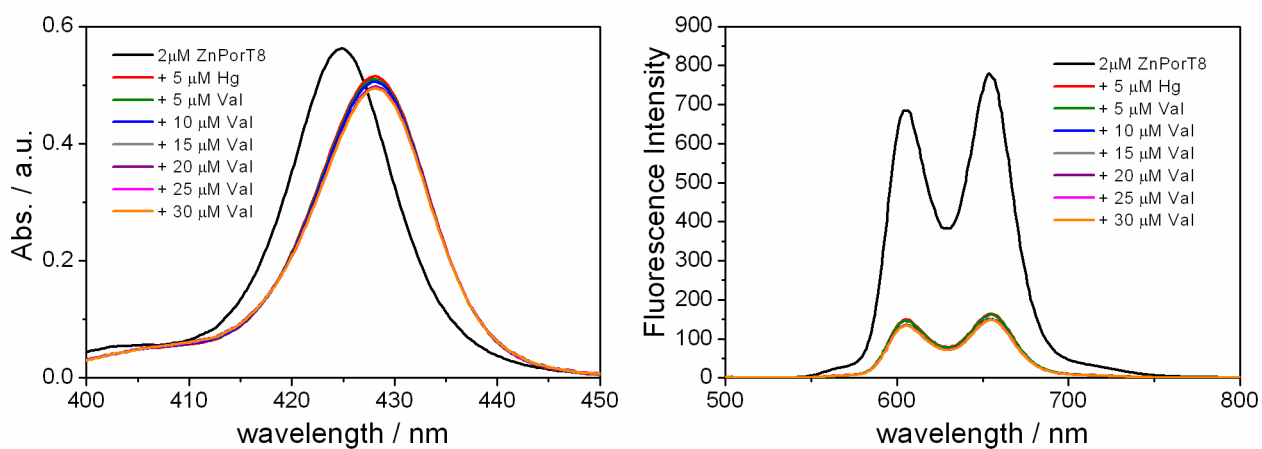
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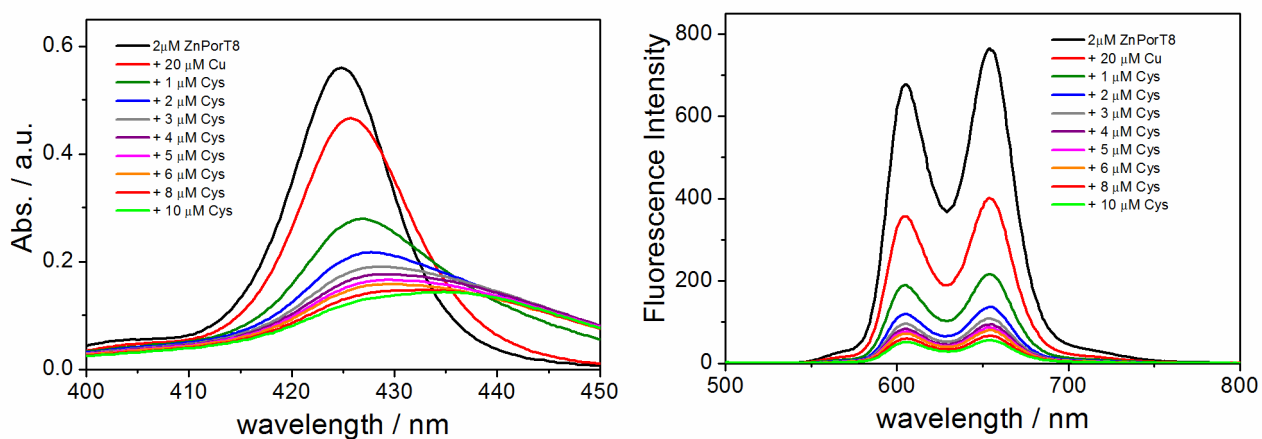
**Figure S23.** UV-vis absorption (left) and emission (right) spectra of the **ZnPorT8/Hg<sup>2+</sup>** complex (2.0 μM of **ZnPorT8** and 5.0 μM of **Hg<sup>2+</sup>** ion) upon stepwise addition of the tyrosine (Tyr) from 5 to 30 μM in Na-cacodylate buffer (1 mM, pH = 7.0, 20 °C).



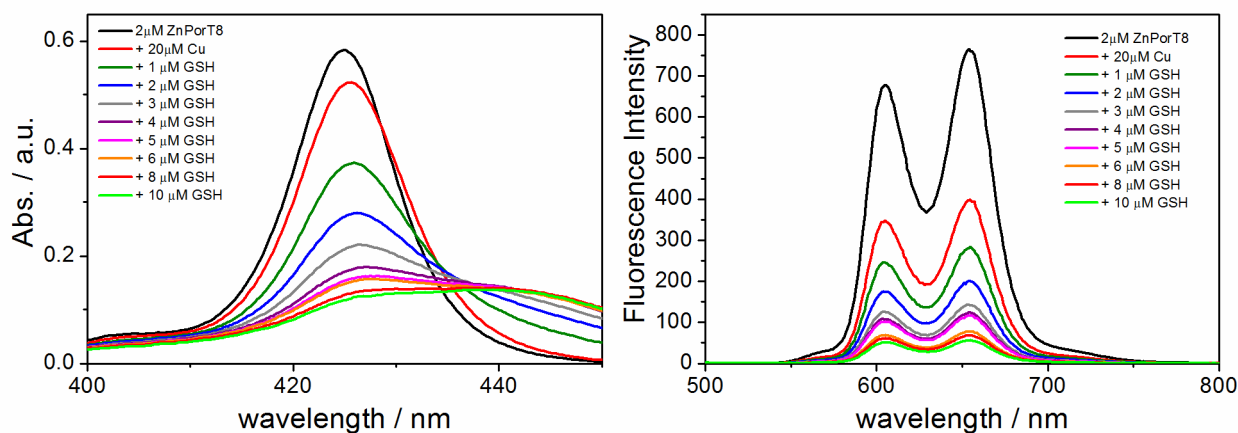
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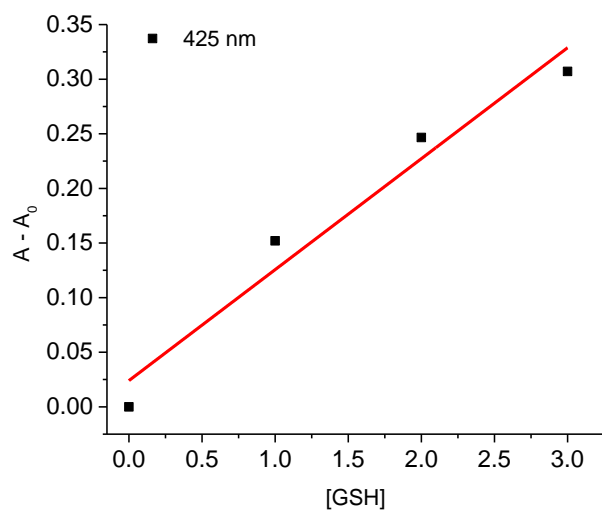
**Figure S25.** UV-vis absorption (left) and emission (right) spectra of the **ZnPorT8/Hg<sup>2+</sup>** complex (2.0 μM of **ZnPorT8** and 5.0 μM of Hg<sup>2+</sup> ion) upon stepwise addition of the valine (Val) from 5 to 30 μM in Na-cacodylate buffer (1 mM, pH = 7.0, 20 °C).



**Figure S26.** UV-vis absorption (left) and emission (right) spectra of the **ZnPorT8/Cu<sup>2+</sup>** complex (2.0 μM of **ZnPorT8** and 20.0 μM of Cu<sup>2+</sup> ion) upon stepwise addition of the cysteine (Cys) from 1 to 10 μM in Na-cacodylate buffer (1 mM, pH = 7.0, 20 °C).

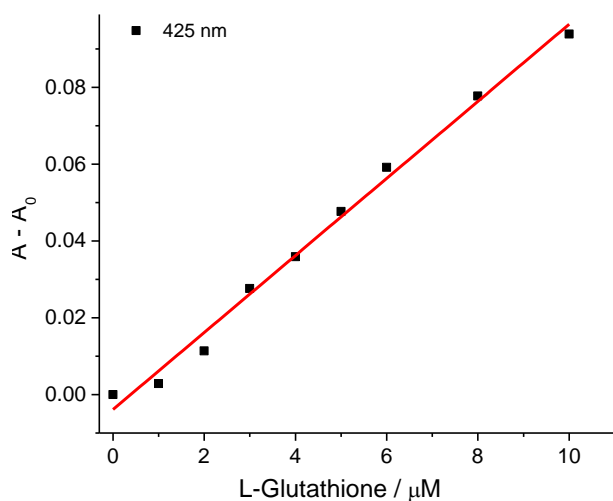


**Figure S27.** UV-vis absorption (left) and emission (right) spectra of the **ZnPorT8/Cu<sup>2+</sup>** complex (2.0 μM of **ZnPorT8** and 20.0 μM of **Cu<sup>2+</sup>** ion) upon stepwise addition of the Glutathione (GSH) from 1 to 10 μM in Na-cacodylate buffer (1 mM, pH = 7.0, 20 °C).

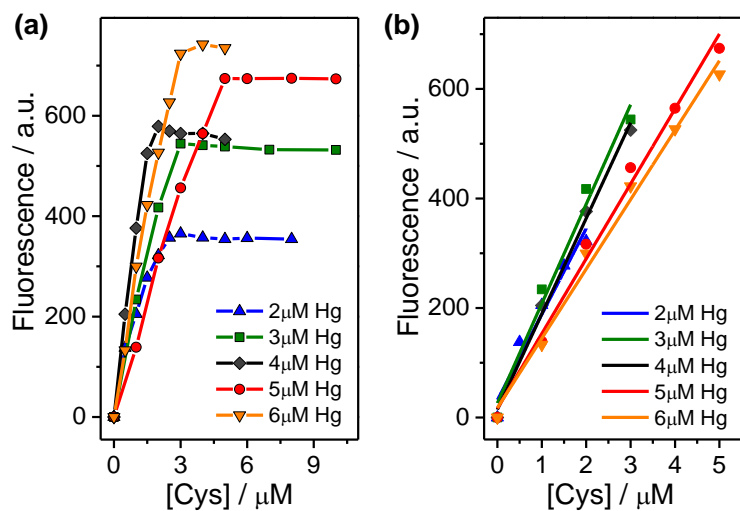


**Figure S28.** UV-vis absorption changes of the **ZnPorT8/Cu<sup>2+</sup>** complex at 425.0 nm as a function of the GSH concentration ( $A - A_0$ ,  $A_0$ : absorbance of **ZnPorT8/Cu<sup>2+</sup>**,  $A$ : absorbance of **ZnPorT8/Cu<sup>2+</sup>** after addition of GSH).

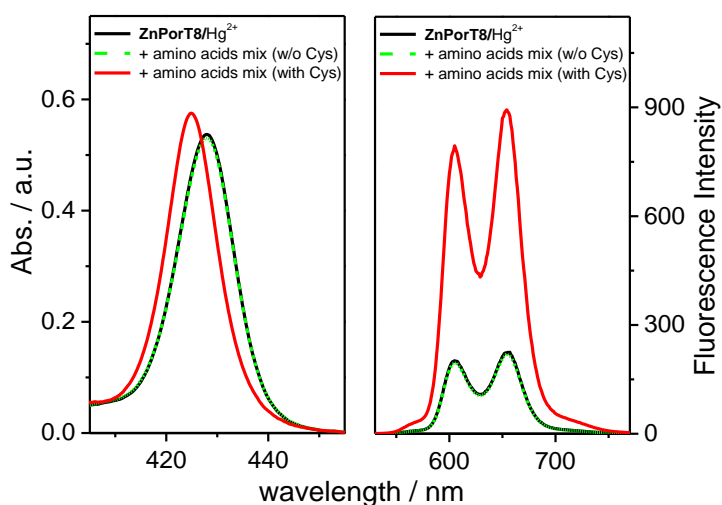




**Figure S29.** UV-vis absorption changes of the **ZnPorT8/Hg<sup>2+</sup>** complex at 425.0 nm as a function of the GSH concentration ( $A - A_0$ ,  $A_0$ : absorbance of **ZnPorT8/Hg<sup>2+</sup>**,  $A$ : absorbance of **ZnPorT8/Hg<sup>2+</sup>** after addition of GSH).



**Figure S30.** (a) Changes of fluorescence intensity of the **ZnPorT8/Hg<sup>2+</sup>** systems ( $[\text{ZnPorT8}] = 2.0 \mu\text{M}$ ,  $[\text{Hg}^{2+}] = 2.0 \mu\text{M}$ : blue line,  $3.0 \mu\text{M}$ : green line,  $4.0 \mu\text{M}$ : black line,  $5.0 \mu\text{M}$ : red line, and  $6.0 \mu\text{M}$ : orange line) at 654.0 nm as a function of the L-Cys concentration (0 to 10.0  $\mu\text{M}$  in 1.0  $\mu\text{M}$  addition steps). (b) Fluorescence intensity changes of the **ZnPorT8/Hg<sup>2+</sup>** systems as a function of the L-Cys concentration (0 to 5.0  $\mu\text{M}$ ) detected at 654.0 nm and their linear fits (colored lines,  $F - F_0$ ,  $F_0$ : fluorescence intensity of **ZnPorT8/Hg<sup>2+</sup>**,  $F$ : fluorescence intensity **ZnPorT8/Hg<sup>2+</sup>** after addition of L-Cys).



**Figure S31.** a) UV/Vis absorption and b) emission ( $\lambda_{\text{exc}} = 425 \text{ nm}$ ) spectra of the **ZnPorT8/Hg<sup>2+</sup>** complex (black curve, **[ZnPorT8]** = 2.0  $\mu\text{M}$ , **[Hg<sup>2+</sup>]** = 5.0  $\mu\text{M}$ ) in the presence of an amino acid mixture (Ala, Lys, Met, Pro and Trp; each 5.0  $\mu\text{M}$ ) with 5.0  $\mu\text{M}$  L-Cys (red curve) and without L-Cys (green dashed curve).

**Table S1.** Relative fluorescence quantum yields of **ZnPorT8**, **ZnPorT8/Hg(II)**, and **ZnPorT8/Cu(II)**.

system	[ZnPorT8]	[M(II)]	$\Phi F_{\text{rel}}$
<b>ZnPorT8</b>	2 $\mu\text{M}$	--	1.0
<b>ZnPorT8/Hg(II)</b>	2 $\mu\text{M}$	5 $\mu\text{M}$	0.06
<b>ZnPorT8/Cu(II)</b>	2 $\mu\text{M}$	5 $\mu\text{M}$	0.87
<b>ZnPorT8/Cu(II)</b>	2 $\mu\text{M}$	20 $\mu\text{M}$	0.59