Untangling interactions of a Zinc(II) complex containing a coumarin-porphyrin unit with alkaloids in water solutions: A Photophysical study

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Determination of the detection (LOD) limit. Ten different measurements of a solution containing the selected probe were collected, without addition of any alkaloid. For these values, the LOD was determined by the formula:

\[ Y_{\text{dl}} = Y_{\text{blank}} + 3\text{std} \]

where \( Y_{\text{dl}} \) = signal detection limit and std = standard deviation

Additionally to a solution containing complex 1, small amounts of the alkaloids were added in order to determine the minimal detectable amount out of the LOD value.

Determination of the amount detectable in real samples by the Standard Addition Method. In the standard addition method, known quantities of the alkaloid are added to a solution of dam water containing the complex 1. This method requires a linear response to analyte. A linear regression is plotted, and when \( y = 0 \), the value of the unknown concentration of the alkaloid is obtained.
Figure SI1 – Job’s plot of complex 1 upon addition of cotinine and caffeine in EtOH:H₂O (50:50), ($\lambda_{exc} = 608$ nm).

Figure SI2 – Standard addition method by emission of complex 1 upon the increasing addition of cotinine in dam water from the Vigia Dam located in the region of Montoito village, Alentejo district, Portugal ($[1] = 5 \times 10^{-6}$M, $\lambda_{exc}= 555$ nm, T=298 K). Relative standard deviation (RSD) of the values was below 15 %, n=3.