

# Fluorescent Calix[4]arene- Oxacyclophane Sensor for Transition Metal Cations

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# Summary

- Calix[4]areneoxacyclophane molecular receptors were recently described as excellent platforms for the recognition of Cu(II) which, combined with highly responsive fluorophore units as transduction sites, led as a whole to an outstanding sensitivity and selectivity for copper(II).
- Herein we explore the chemosensing ability of bicyclic calix[4]arene-carbazole probe (**Calix-OCP-2-CBZ**) toward other metal cations (Cu(I) and Fe(III) as acetate/iodide and perchlorate salts, respectively) in fluid phase.

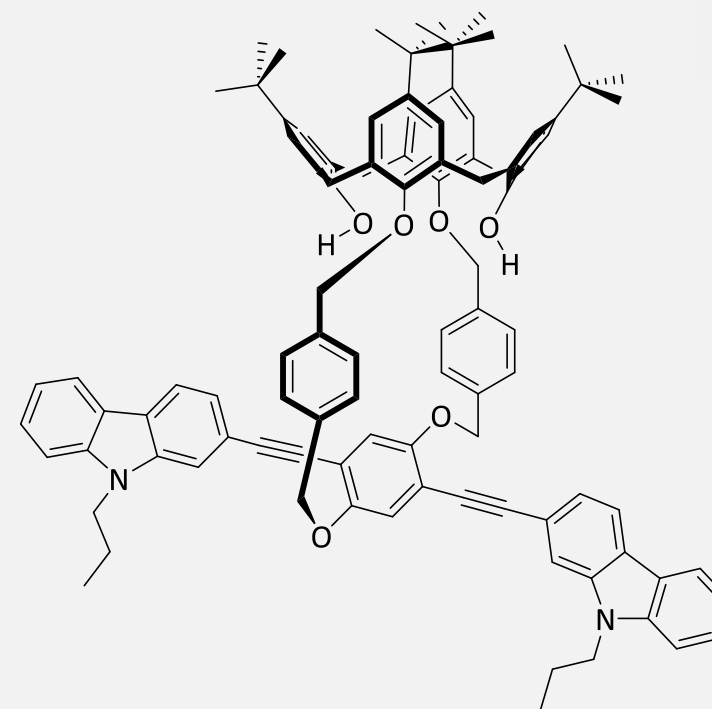


Chart 1. Chemical structure of Calix-OCP-2-CBZ

# Results



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## ➤ INCLUSION COMPLEXES AND SENSING OF METAL CATIONS

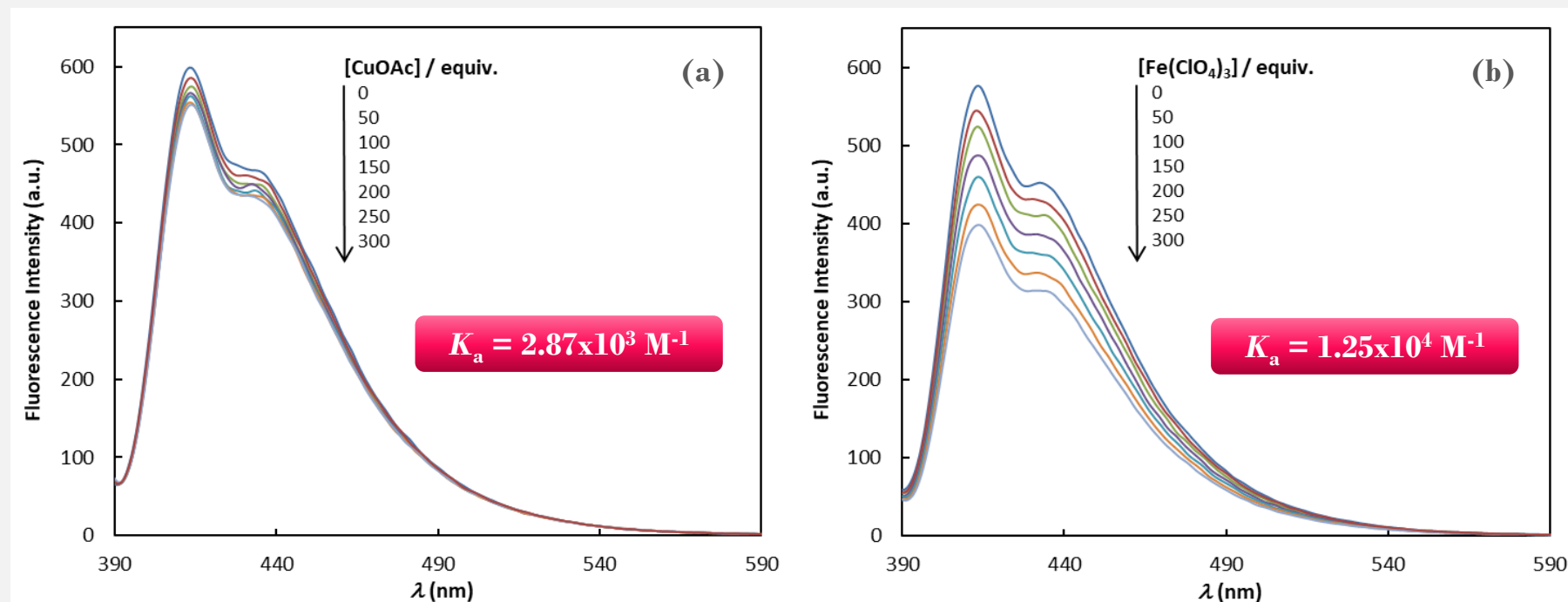


Figure 1. Emission spectra of Calix-OCP-2-CBZ ( $1.0 \times 10^{-7} \text{ M}$  in  $\text{CH}_3\text{CN}:\text{CHCl}_3$  (1:1)) upon addition of increasing amounts (up to 300 equiv.) of CuOAc (a) and  $\text{Fe}(\text{ClO}_4)_3$  (b) ( $\lambda_{\text{exc}} = 380 \text{ nm}$ ).

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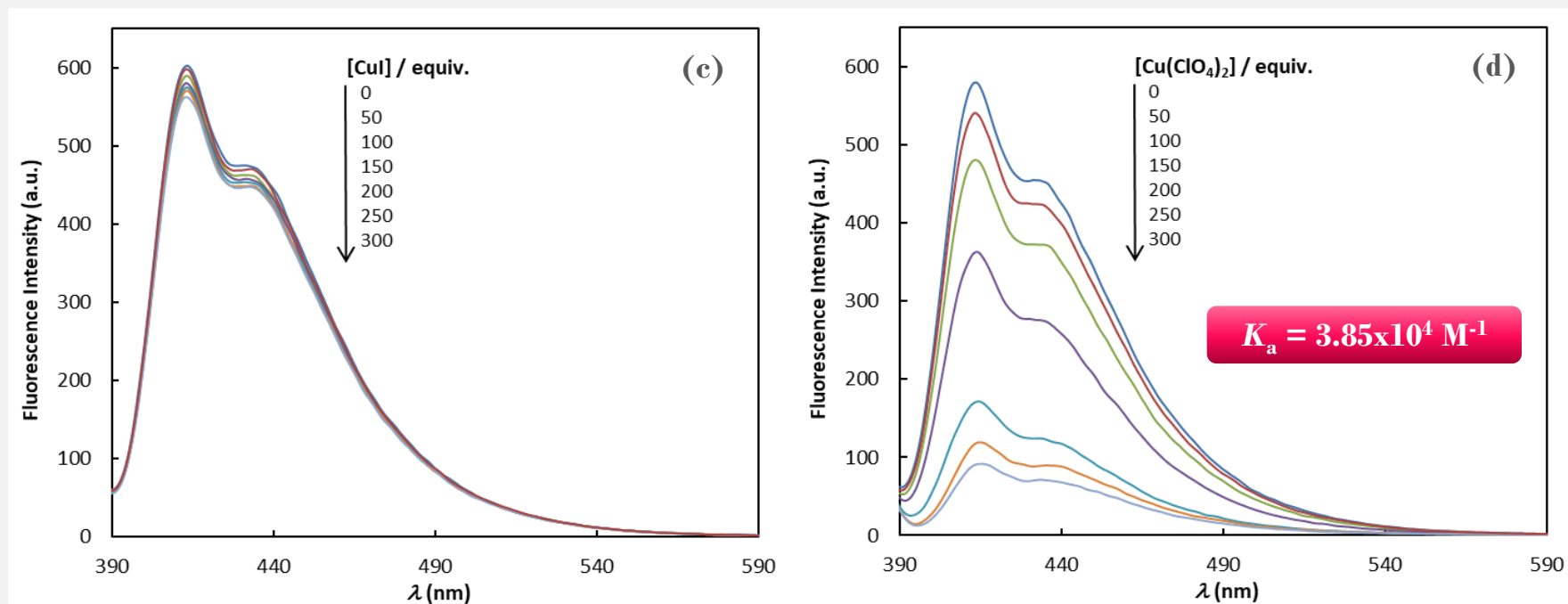


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**Figure 2.** Emission spectra of **Calix-OCP-2-CBZ** ( $1.0 \times 10^{-7} \text{ M}$  in  $\text{CH}_3\text{CN}:\text{CHCl}_3$  (1:1)) upon addition of increasing amounts (up to 300 equiv.) of **CuI** (c) and  **$\text{Cu}(\text{ClO}_4)_2$**  (d) ( $\lambda_{\text{exc}} = 380 \text{ nm}$ ).



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# Conclusions

- Lower sensibility of **Calix-OCP-2-CBZ** for CuI in solvent matrix;
- Selectivity ratio  $\text{Cu(II)/Cu(I)} = 13$ ;
- **Calix-OCP-2-CBZ** showed lower binding affinity for Fe(III) as compared to Cu(II);
- Other relevant transition metal cations are currently understudy.

# Acknowledgements

- Fundação para a Ciência e a Tecnologia/Ministério da Ciência, Tecnologia e Ensino Superior (FCT/MCTES) for financial support (UIDB/00616/2020 and UIDP/00616/2020).

