

# Quantification of Perchlorate Anions in Water Using a Bambusuril Macrocycle

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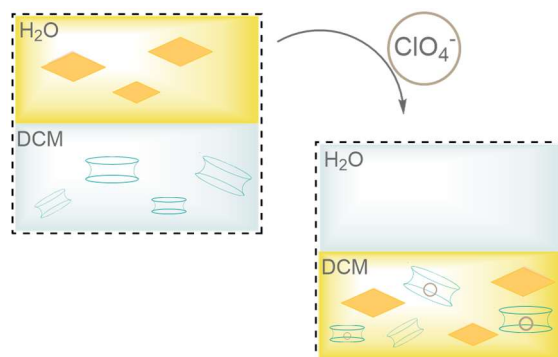
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## Abstract

The presence of perchlorate anion ( $\text{ClO}_4^-$ ) in drinking water is a matter of concern due to its poisoning effects and its challenging detection.<sup>1,2</sup> Bambusuril macrocycles can selectively bind  $\text{ClO}_4^-$  over other anionic species and separate it from the matrix prior the analysis.

Bambusurils have already shown potential applications for determination of anions in solution by NMR spectroscopy.<sup>3</sup> Other macrocyclic compounds such as crown ethers, calixarenes or cryptands have been used as carriers for *phase-transfer* catalysis, where the inclusion of macrocyclic receptors increases drastically the reaction rate, as they carry the ionic reactant from aqueous into organic phase.<sup>4,5</sup> Herein, a Bambusuril derivative has been used for the quantification of  $\text{ClO}_4^-$  in water based on a *phase-transfer* extraction and detected via UV/Vis spectroscopy.



**Figure 1.** Schematic representation of the *phase-transfer* extraction process of  $\text{ClO}_4^-$  due to its complexation within the receptor in the organic phase.

## References

- [1] R. Calderón, F. Godoy, M. Escudey, P. Palma, *Environmental Monitoring and Assessment*, **2017**, *189*, 82; [2] M. L. Magnuson, E. T. Urbansky, C. A. Kelty, *Anal. Chem.*, **2000**, *72*, 25-29; [3] V. Havel, V. Sindelar, *ChemPlusChem*, **2015**, *80*, 1601-1606; [4] C. M. Starks, *J. Am. Chem. Soc.*, **1971**, *93*, 195-199; [5] D. Landini, A. Maia and F. Montanari, *Chemical Communications*, **1977**, *0*, 112-113