

Bambusuril Recognition of $[\text{Au}(\text{CN})_2]^-$ in Water

Carola Rando, Julián Vázquez, Jan Sokolov, Zoran Kokan, Marek Nečas, Vladimír Šindelář*

*Department of Chemistry and RECETOX, Faculty of Science, Masaryk University,
Kamenice 5, 625 00 Brno, Czech Republic
e-mail: 503709@mail.muni.cz*

Bambusurils are macrocyclic compounds that can strongly bind anions in water. Until now, bambusuril has been investigated as a receptor of different anions including halides, carboxylates, and other biologically relevant oxoanions such as phosphate, sulfate, and nitrate. Herein, we decided to study supramolecular complexes between bambusurils and $\text{Au}(\text{CN})_2^-$ in water. $\text{Au}(\text{CN})_2^-$ has attracted our attention for its unique photochemical properties and its employment in the gold mining industry. Among all bambusurils, we selected PEG-BU¹ (Fig. 1) for its good solubility in water. The formation of the complex between PEG-BU and $\text{Au}(\text{CN})_2^-$ was investigated not only by means of ¹H NMR and ITC methods but also, through UV-Vis spectroscopy. The high stability of the complex and the photochemical properties of $\text{Au}(\text{CN})_2^-$ gave rise to a novel and accurate assay. Furthermore, the exceptional features of this new complex make bambusurils promising candidates with the application in the gold mining industry.

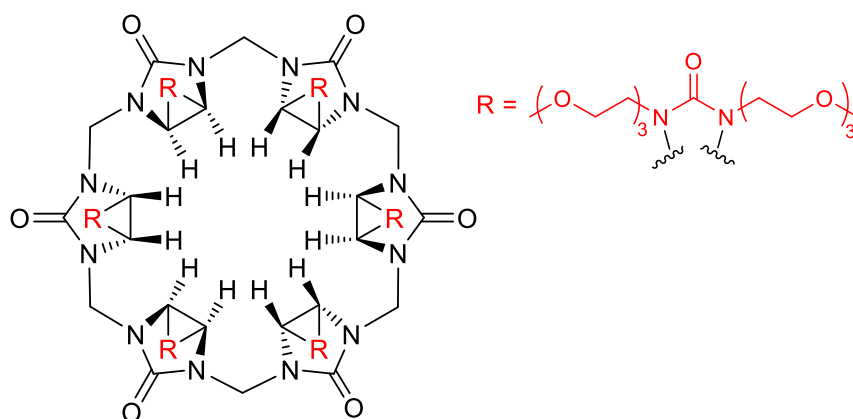


Fig.1 Schematic representation of bambusuril macrocycle PEG-BU.

This work was supported by the Czech Science Foundation (No. GA20-13922S).

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