

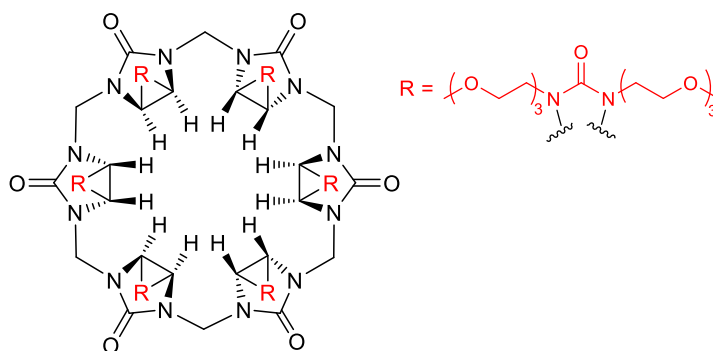
Selective Recognition of Dicyanoaurate(I) by a Bambus[n]uril Macrocycle in Water

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

¹Department of Chemistry and RECETOX, Faculty of Science, Masaryk University, Kamenice 5, 625 00 Brno, Czech Republic
e-mail: 503709@mail.muni.cz

Bambus[n]urils are powerful macrocycles that are able to bind anions in water.¹ Most of the investigations on anion recognition deal with halides, carboxylates, and other biologically relevant oxoanions such as: phosphate, sulfate, and nitrate. Herein, we decided to investigate, for the first time in the Bambus[n]urils scenario, the complexation of metal transition anions. More specifically, $[\text{Au}(\text{CN})_2]^-$ has attracted our attention for its unique properties and its use in the gold industry.² Among all Bambus[n]urils we decided to make use of the water soluble properties of PEG-BU.³ The formation of the complex was studied not only by means ¹H NMR and ITC methods but also, through UV-Vis spectroscopy. The stability of the complex and the photochemical properties of gold anion led to a novel and accurate assay. Furthermore, the outstanding characteristics of this new complex make Bambus[n]urils ideal green candidates for the gold mining industry.

Scheme 1 Schematic representation of Bambus[n]uril macrocycle derived with polyethylene glycol chains (PEG-BU)



1 V. Havel, J. Svec, M. Wimmerova, M. Dusek, M. Pojarova and V. Sindelar, *Org. Lett.*, 2011, **13**, 4000–4003.

2 Gold Ore Processing: Project Development and Operations; Adams, M. D., Ed.; Elsevier: Singapore, 2016

3 T. Fiala, K. Sleziakova, K. Marsalek, K. Salvadori and V. Sindelar, *J. Org. Chem.*, 2018, **83**, 1903–1912.