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ABSTRACTS



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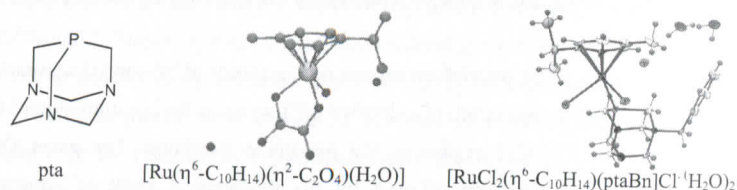
Neutral and cationic half-sandwich Ru(II)-complexes with water-soluble phosphine ligands

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Ru(II)-half-sandwich complexes containing 1,3,5-triaza-7-phosphaadamantane (pta) represent a promising group of anticancer compounds [1]. In vitro experiments suggest that binding of $[\text{RuCl}_2(\eta^6\text{-arene})(\text{pta})]$ complexes to various biomolecules, such as for example DNA, may be preceded by the lysis of the Ru-Cl bond.

We have already investigated the hydrolysis of $[\text{RuCl}_2(\eta^6\text{-C}_{10}\text{H}_{14})(\text{pta})]$ in water [2] and this was followed by the study of its oxalato-analog, $[\text{Ru}(\eta^6\text{-C}_{10}\text{H}_{14})(\eta^2\text{-C}_2\text{O}_4)(\text{pta})]$, knowingly less prone to hydrolysis. In addition to the literature procedure [3], we synthesized this latter compound also by substitution of $[\text{Ru}(\eta^6\text{-C}_{10}\text{H}_{14})(\eta^2\text{-C}_2\text{O}_4)(\text{H}_2\text{O})]$. The aqua-complex was first isolated by our group, and it was characterized both in solution and in solid state. Its structure was also supported by DFT calculations.



Several complexes of the formula $[\text{Ru}(\eta^6\text{-C}_{10}\text{H}_{14})(\eta^2\text{-C}_2\text{O}_4)\text{L}]$ were prepared via substitution of the labile H_2O ligand by alkylated pta-derivatives (L). $[\text{RuCl}_2(\eta^6\text{-C}_{10}\text{H}_{14})\text{L}]$ and $[\text{Ru}(\eta^6\text{-C}_{10}\text{H}_{14})(\eta^2\text{-C}_2\text{O}_4)\text{L}]$ (L = pta, benzylated pta: pta-Bn) were applied as catalysts in the hydrogenation/redox isomerization of allylic alcohols.

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Synthesis of fluorescent ligands and organometallic complexes for catalytic hydrogenation of cell membranes

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Synthesis of water-soluble catalysts which are active in the hydrogenation of polar lipids of cell membranes, have been in the focus of interest for a long time [1,2]. The ratio of the unsaturated and saturated lipids found in the cell membrane has an important effect on certain properties of the cell. The more saturated lipids the membrane consists of, the more compact it is, because of the close packing of the molecules.

The lipid composition of cell membranes can be altered artificially for example by catalytic hydrogenation, leading to changes in the membrane properties, too. The hydrogenation of lipids can effect various transport processes, physiological functions of the cells, and in extreme cases their viability.

Making an organometallic catalyst fluorescent allows monitoring the location of the catalyst and its concentration within the cell (membrane) during the process of hydrogenation. With this aim in mind we have synthesized *N*-dansylpiperazine according to the literature [3] and coupled this fluorescent label to ligands which can coordinate to the metal centres commonly used in homogeneous hydrogenation. This way, Rh(I)- and Ir(I)- complexes were prepared and investigated in the hydrogenation of lipids.

Molecular structures of the new complexes were determined by NMR spectroscopy and the catalytic processes were followed by gas chromatography.

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