REACTIVITY AND CATALYTIC EVALUATION OF RUTHENIUM-ONO COMPLEXES FEATURING C-, N-, AND P-BASED LIGANDS

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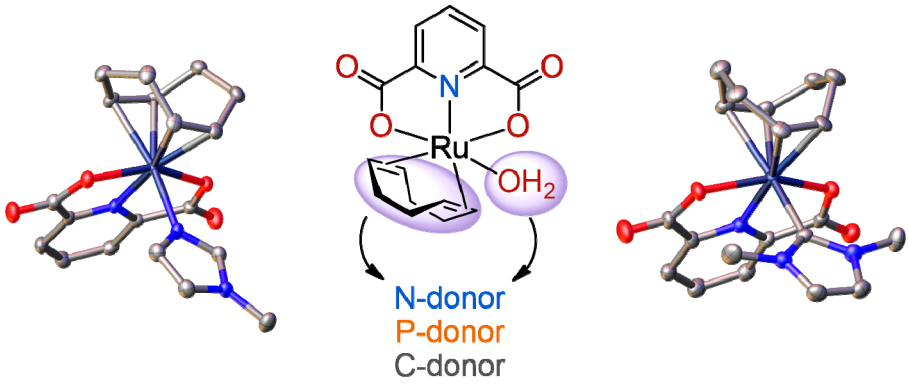
Ruthenium complexes exhibit a range of physical and chemical properties that allow for the successful application in among other synthetic, photophysical, magnetic, biological, and catalytic applications.[1-3] The latter two applications are the most investigated where a plethora of mainly Ru(II) complexes have been employed as pre-catalysts in different chemical transformations including hydrogenation, cross-coupling and oxidation reactions.[3] The complexes have also found relevance in the field of drug discovery as they have the potential to serve as chemotherapy agents for treating cancer.[1] Pincer-containing complexes are known to be versatile, robust, and catalytically active - especially when combined with (non-innocent) stabilizing ligands such as N-heterocyclic carbene ligands. The project focuses on the use of the electron-donating ONO pincer ligand framework, in combination with C-, N-, and P-based ancillary ligands that help to not only stabilize sensitive catalytic intermediates, but also help mediate the catalytic transformation reaction by means of some ligand-assisted pathway. This is done in a stepwise fashion where the different classes of ancillary ligands are ligated either as mono-, bi- or tridentate congeners. The systematic synthesis of a series of [Ru(ONO)(cod)(L)] and [Ru(ONO)(L)(L')] complexes, the investigation of their electrochemical properties, as well as results from a preliminary catalytic study will be presented.



Stepwise substitution towards multi-functional Ru(II) complexes

[1] Pragti, B. K. Kundu, S. Mukhopadhyay, *Coord. Chem. Rev.* 2021, **448**, 214169.

[2] M. T. Rupp, N. Shevchenko, G. S. Hanan, D. G. Kurth, *Coord. Chem. Rev.* 2021, **446**, 214127.

[3] A. Singh, P. Barman, Top. Curr. Chem. 2021, 379, 29.