

Chiral Amines and Diamines from Monosaccharides as Ligands in Hydrogen-Transfer Catalysis

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Monosaccharides provide a lot of options for modification and are of high potential as ligands in stereoselective catalysis, since the stereochemistry of the different sugars is well defined. In addition the synthetic pathways to each monosaccharide are often well known.

Former studies in our group have shown that 2,3-diamino glucopyranoside is suitable for the chelating complexation of transition metals as chromium, molybdenum and tungsten.^[1]

Since chiral diamino ligands in coordination compounds of Ru, Rh and Ir have been demonstrated to provide enantioselective hydrogen-transfer reactions,^[2] we investigated the synthesis, structure and catalytic behaviour of 2,3-diamino glucopyranoside complexes of the late transition metals.

Herewith, we like to report results of our studies on the synthesis and the molecular structure of the first organometallic glucopyranoside iridium(III) complex (figure 1) as well as the catalytic property with regard to asymmetric hydrogen-transfer reactions.

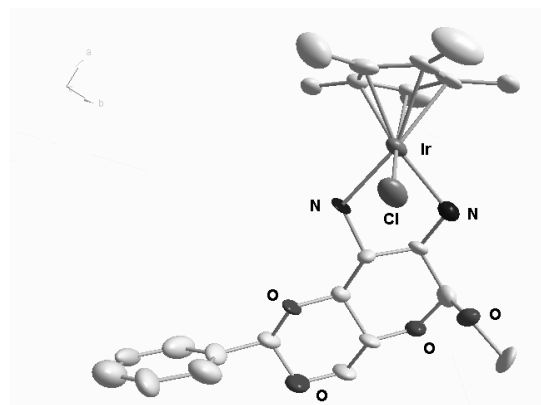


Figure 1: Molecular structure of chlorido-(methyl-4,6-O-benzylidene-2,3-diamino-2,3-dideoxy- α -D-glucopyranoside- $\kappa^2 N^{2,3}$)- η^5 -pentamethylcyclopentadienyl-iridium(III)-tetrafluoroborate. For clarity only the heteroatoms are labelled and the hydrogen atoms and the counter ion are omitted.

[1] C. Fowelin, A. Matyja, J. Heck, *Z. Anorg. Allg. Chem.*, **2007**, 633, 2395. [2] J. A. Fuentes, M. B. France, A. M. Z. Slawin, M. L. Clarke, *New. J. Chem.* **2009**, 33, 466; I. Yamada, R. Noyori, *Org. Lett.* **2000**, 2, 3425.