Synthesis and Catalytic Behavior of a New Family of Dinuclear Iridium Carbene Complexes

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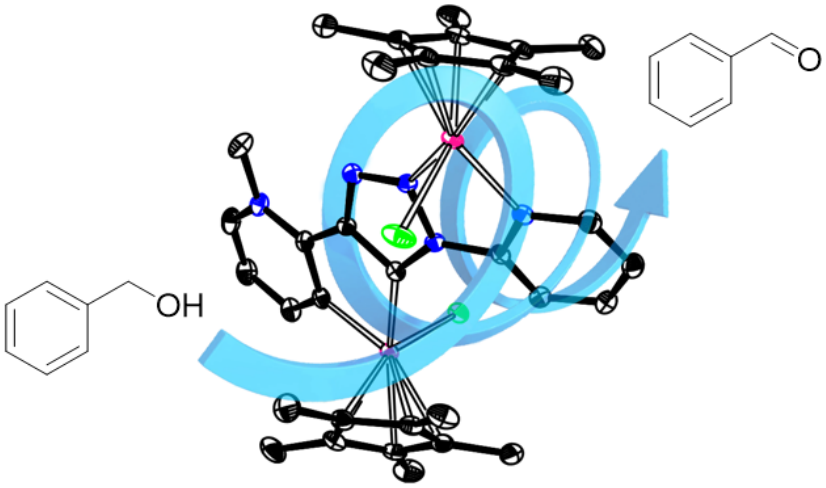
Iridium Cp* complexes containing mesoionic carbene ligands have shown high activity in a variety of catalytic applications such as water oxidation, transfer hydrogenation or amine dehydrogenation.[1] In extension of this work, we have now synthesized a set of mono- and bimetallic complexes featuring a functional pyridine-containing triazolylidene ligand, and have characterized the new complexes by NMR spectroscopy, microanalysis, and by X-ray diffraction. These complexes have been evaluated as potential alcohol oxidation catalysts without the need of an oxidant or base as additive as well as in the hydrosilylation of carbonyl substrates.[2] Comparison of those bimetallic systems with monometallic analogues reveals a strongly enhanced selectivity of the bimetallic complexes.

We will discuss the spectroscopic and electrochemical similarities and differences of mono and di-iridium systems to rationalize the synergy between the two iridium centers.



[1] a) James A. Woods, Ralte Lalrempuia, Ana Petronilho, Neal D. McDaniel, Helge Müller-Bunz, Martin Albrecht, Stefan Bernhard, *Energy Environ. Sci.* **2014,** 7, 2316-2328. b) Marta Valencia, Ana Pereira, Helge Müller-Bunz, Tomas R. Belderrain, Pedro Pérez, Martin Albrecht, DOI: 10.1002/chem.201700676.
[2] a) Marta Valencia, Helge Müller-Bunz, Robert A. Gossage, Martin Albrecht, *Chem. Commun.* **2016**, 52, 3344-3347. b) Yingfei Wei, Shi-Xia Liu, Helge Müller-Bunz, Martin Albrecht, *ACS Catal.* **2016**, 6. 8192-8200.