Stable cyclometallated catalysts for hydrogenation and directed C-H borylation

T. Smejkal[1], J. Zakis[1]

[1]Syngenta Crop Protection AG, Schaffhauserstrasse, CH-4332 Stein, Switzerland

Cyclometallated complexes of transition metals have received considerable attention since 1960s, in particular as the reactive intermediates of catalytic C-H functionalizations. However, only recently the unique catalytic properties of few bench stable complexes bearing anionic “carboligands” has been discovered. This presentation will discuss the rational design of anionic C,N-ligands allowing for novel catalytic transformations. Our recent applications of iridium – ketimine catalysts towards acid-assisted ionic hydrogenation of oximes to hydroxylamines, anhydride-assisted amide hydrogenation and regioselective C-H-borylation will be highlighted.

[1] J. Mas-Rosello, T. Smejkal, N. Cramer, *Science* **2020**, *368*, 1098-1102.
[2] J. Mas-Rosello, J. C. Cope, E. Tan, B. Pinson, A. Robinson, T. Smejkal, N. Cramer, *Angew. Chem. Int. Ed.* **2021**, *60*, 15524-15532.
[3] J. M. Zakis, T. Smejkal, J. Wencel-Delord, *Chem. Commun.* **2022**, *58*, 483-490.