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UNIVERSITÄT LEIPZIG

Fakultät für Chemie und Mineralogie
Institut für Anorganische Chemie

Einladung zum GDCh–Kolloquium

Am Donnerstag, dem 05.01.2023, 17.00 Uhr s. t., spricht

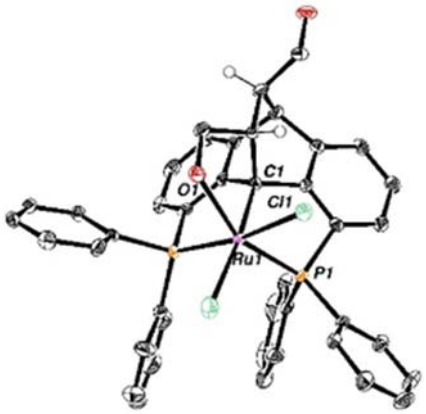
Prof. Dr. Dmitri Gelman

Institute of Chemistry, Edmond J. Safra Campus, The Hebrew University of Jerusalem, Jerusalem, 9190401 Israel

zum Thema

High-valent versus Low-valent Pincer Catalysts for Hydrogenation of Carbonyl, Carboxyl and carbonate Compounds

Low-valent metals traditionally dominate the domain of catalytic hydrogenation. However, metal-ligand co-operating (MLC) catalytic systems,[1-2] operating via heterolytic H-H bond splitting by a Lewis acidic metal and a basic ligand site, do not require an electron-rich metal. On the contrary, high-valent metals that induce weaker back donation facilitate heterolytic bond activation. Recently, we reported, for the first time, on the efficient hydrogenation of carbonyl and carboxyl compounds under molecular hydrogen catalyzed by a structurally well-defined Ru^{IV} catalyst bearing a bifunctional PCP pincer ligand (Figure 1). The catalyst exhibited superior reactivity toward molecular hydrogen than the low-valent analog and allowed hydrogen activation even at room temperature. Even more importantly, we demonstrated that despite a widely accepted concept, high-valent metals are viable candidates not only for designing oxidation but also as hydrogenation catalysts, especially those operating via nonoxidative bond activation/formation mechanisms.
In this talk, I will discuss different aspects of (de)hydrogenative transformations catalyzed by high-valent and low-valent metal-ligand cooperating catalysts.[3,4]



References:
[1] Musa, S.; Shaposhnikov, I.; Cohen, S.; Gelman, D., *Angew.Chem., Int. Ed*. **2011**, 50, 3533.
[2] Cohen, S.; Borin, V.; Schapiro, I.; Musa, S.; De-Button, S.; Belkova, N.V., Gelman, D. *ACS Catal.* **2017**, 7, 8139.
[3] Mujahed, S.; Hey-Hawkins, E.; Gelman, D. Chem. – Eur. J. **2022**, e202201098.
[4] Mujahed, S.; Hey-Hawkins, E.; Gelman, D. in preparation.

Ort: Großer Hörsaal der Fakultät für Chemie und Mineralogie,
Johannisallee 29, 04103 Leipzig

Alle Interessenten sind dazu herzlich eingeladen.

Vor dem Vortrag findet um 16:15 Uhr eine Kaffeerunde in Raum 153 statt.

Prof. Dr. O. Oeckler
GDCh-Ortsverband

Prof. Dr. Ch. Schneider
Dekan

Die Professoren des Institutes
für Anorganische Chemie

Nähere Informationen erhalten Sie bei Frau Prof. Dr. Dr. h.c. mult. Evamarie Hey-Hawkins,
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