

UniCat Colloquium

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Lecturer: **Prof. Sylviane Sabo-Etienne,**
Department of Chemistry, Centre National de la
Recherche Scientifique (CNRS), Toulouse, France

Title: **Hydrogen and Boranes at Ruthenium:
Bonding and Catalysis**

Abstract: Catalytic functionalization of a variety of substrates may involve the intermediacy of a σ -complex which incorporates a ligand in which a σ H-E bond (E = H, B, C, Si) acts as a two electron donor to the metal, resulting in a three centre bond.[1] Dihydrogen complexes represent the most important class of compounds but recently, access to σ -borane complexes has become easier.[2] It is now interesting to combine the chemistry of these two classes of σ -compounds for catalytic applications and, in the context of hydrogen storage, important results emerge from current research on ammonia borane systems. During this lecture I will present the most recent results we have obtained, with a specific focus on:

- The properties of new ruthenium complexes incorporating tricyclopentylphosphine ligands which allow very facile hydrogenation/dehydrogenation processes. [3]
- The design of unusual bifunctional borane compounds and their coordination to a metal centre *via* combined X-ray and solution/solid state NMR studies. [4]
- Strategies allowing the stabilisation of σ -borane complexes displaying new coordination modes and the links to dehydrogenation processes. [5]

[1] Perutz, R. N. and Sabo-Etienne, S., *Angew. Chem. Int. Ed.* 46 (2007) 2578.

[2] Alcaraz G. and Sabo-Etienne, S., *Coord. Chem. Rev.* 252 (2008) 2395.

[3] Grellier, M. and Sabo-Etienne, S., *Chem. Commun.* (2011) in press and Reguillo, R., Grellier, M., Vautravers, N., Vendier, L. and Sabo-Etienne, S., *J. Am. Chem. Soc.* 132 (2010) 7854.

[4] Gloaguen, Y., Alcaraz G., Pécharman, A.-F., Clot, E., Vendier, L. and Sabo-Etienne, S., *Angew. Chem. Int. Ed.*, 48 (2009) 2964 and Gloaguen, Y., Alcaraz G., Petit, A. S., Clot, E., Coppel, Y., Vendier, L. and Sabo-Etienne, S., *J. Am. Chem. Soc.* 133 (2011) in press.

[5] Alcaraz G., Vendier, L., Clot, E. and Sabo-Etienne, S., *Angew. Chem. Int. Ed.*, 49 (2010) 918. Alcaraz G. and Sabo-Etienne, S., *Angew. Chem. Int. Ed.*, 49 (2010) 7170.

Date: **Wednesday, 25 January 2012**

Time: **5:15 pm - around 6:45 pm**

Location: **Humboldt-Universität zu Berlin, Dep. of Chemistry,
Walter-Nernst-Haus, Marie-Curie Lecture Hall 0'06
Brook-Taylor-Str. 2, 12489 Berlin-Adlershof**

Organiser: **Prof. Thomas Braun (HUB)**

Coffee and tea will be served at 4:30 pm in
room 0.138 at Emil-Fischer-Haus, Newtonstr. 14, 12489 Berlin

Guests are cordially invited to attend!

Prof. Dr. Matthias Driess, Chair of the Cluster of Excellence UniCat