

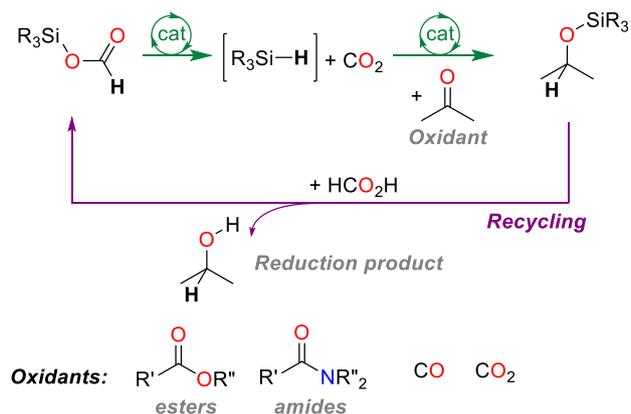
POSTDOCTORAL POSITION

MAIN GROUP ELEMENTS CHEMISTRY, ORGANOMETALLIC CHEMISTRY AND CATALYSIS

Silyl- and boryl-formates as new classes of reductants to mimic hydrosilylation and hydroboration chemistry

Although hydrosilanes and hydroboranes are mild and practical reducing agents, their preparation relies on energy-intensive processes. To circumvent this limitation, our group has developed new classes of reductants, silyl- and boryl-formates to mimic the behaviour of hydrosilylation and hydroboration reactions, with concomitant release of CO₂. These reductants have the advantage of utilizing formic acid as a renewable hydride donor and being recyclable, at the same time.

In this post-doctoral project, the reaction chemistry of novel formate derivatives, based on silicon and boron, will be explored and exploited in the reduction of a variety of C-O bonds, in CO₂, CO, esters and amides, for the first time. Structure-activity relationships will help better apprehend the reduction potential of these new types of reductants. Their utilization in reductive transformations will be achieved by the use of metal catalysts based on coordination complexes. Mechanistic studies will guide the design and synthesis of the catalysts.



Concept for the transfer hydrosilylation of C=O and C-O bonds using silylformates as recyclable surrogates of hydrosilanes

The postdoctoral fellow will be hosted in the [Cantat research group](#) at CEA. The group is fully equipped with state-of-the-art synthetic and spectroscopic equipments, including NMR and IR spectrometers, GC and GC-MS, X-ray diffractometers, gloveboxes, autoclaves and potentiostat.

Literature references from the host group:

- [1] E. Blondiaux, J. Pouessel, T. Cantat, *Angew. Chem. Int. Ed.* **2014**, 53, 12186-12190.
- [2] O. Jacquet, X. Frogneux, C. D. Gomes, T. Cantat, *Chem. Sci.* **2013**, 4, 2127-2131.
- [3] O. Jacquet, C. Das Neves Gomes, M. Ephritikhine, T. Cantat, *J. Am. Chem. Soc.* **2012**, 134, 2934-2937.
- [4] Savourey, S.; Lefèvre, G.; Berthet, J.-C.; Thuéry, P.; Genre, C.; Cantat, T. *Angew. Chem. Int. Ed.* **2014**, 53, 10466.
- [5] S. Savourey, G. Lefèvre, J.-C. Berthet, T. Cantat, *Chem. Commun.*, **2014**, 50, 14033-14036.

Position

2 years, available from February 2019

Gross salary: ca. 2850 €/month

Location: CEA Saclay – located 15 miles south of Paris, France

The position is funded by CEA

The applicant must hold a PhD in molecular chemistry with an experience in molecular chemistry and/or catalysis.

To apply, please contact:

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