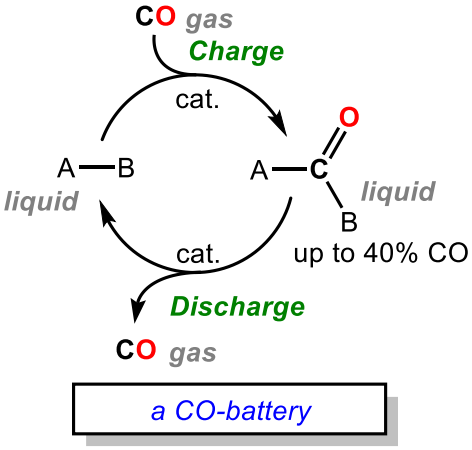
POSTDOCTORAL POSITION

MAIN GROUP ELEMENTS CHEMISTRY, ORGANOMETALLIC CHEMISTRY AND CATALYSIS

A CO-battery for the reversible storage of carbon monoxide

The reduction of CO_2, by hydrogenation or electroreduction, is an appealing method to store renewable energies, in the form of a chemical, such as carbon monoxide (CO), formic acid, methanol or methane. Direct electrochemical methods are essentially limited to the formation of formic acid and CO. The latter is a key reagent in the production of liquid fuels through the Fischer Tropsch process. Given the intermittent nature of renewable energies, the reversible storage of CO is necessary to facilitate its distribution and further utilization.

The present position aims at developing the first reversible storage method for CO. The concept is to design a CO-battery able to fixate CO at a low pressure, by catalytic carbonylation of a liquid vector (AB). Using an energy efficient stimulus, the controlled catalytic decarbonylation of the CO-rich molecule (A-CO-B) will afford a stream of pure CO gas, for further transformation. The work will involve the design of organic and organometallic catalysts, their synthesis, and the testing of their performance. Mechanistic studies will guide the synthetic efforts.



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

1 year, 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 under the DRF-Impulsion program
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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