

## THREE 2-YEAR POSTDOCTORAL POSITIONS IN CHEMISTRY AT THE UNIVERSITY GRENOBLE ALPES

Three 2-year postdoctoral positions in chemistry are available at Grenoble. These projects concern the development of molecular catalysts for multi-electron reduction of small earth-abundant molecules ( $H^+$ ,  $CO_2$ ,  $N_2$ ).

**Project 1:** This project aims at developing catalytic systems for  $CO_2$  chemical valorization, based on non-noble metals, through the development of molecular complexes inspired from the biological Ni(Fe)-based catalysts present in CODH and ACS that catalyze  $CO_2$  reduction and carbonylation reactions, respectively. The objectives are to develop structural and functional mimics of these enzymes and to understand their catalytic mechanism to highlight the key elements required for an optimal reactivity.

**Project 2:** The objective is to develop molecular materials for mild electrocatalytic  $N_2$  reduction to ammonia, by incorporating well-known molybdenum-PNP complexes in electrode-supported mesoporous materials, such as multiwall carbon-nanotubes mesh and metal/porous organic frameworks. Confinement is expected to be beneficial for both stability and reactivity of the catalysts.

**Project 3:** It aims at developing bio-inspired  $H_2$  evolution catalysts, with two major objectives (i) contributing to the full understanding of the catalytic mechanism of the [NiFe] hydrogenase and (ii) developing efficient mimics of this enzyme that model not only the structure and function of the active site but also its impressive reactivity. More specifically we will focus on the synthesis of series of dithiolato-bridged heterobimetallic NiFe complexes to determine structure/reactivity correlation and on the characterization of intermediate species.

**Profiles:** PhD in inorganic chemistry with a good experience in organic synthesis and coordination/organometallic chemistry (synthesis under inert atmosphere, characterization of metal complexes with different spectroscopic techniques, reactivity studies). Knowledge in electrochemistry will be appreciated. Experience in catalysis and/or electrocatalysis is welcome. For project 2, knowledge in solid-state characterization techniques will be also appreciated.

### Contacts:

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**Duration:** 2 years (1+1), starting as soon as possible

### Websites:

<http://dcm.ujf-grenoble.fr/DCM-SITE/CIRE/index.php?page=/DCM-SITE/CIRE/metal-sulfur>  
<http://www.solhycat.com/>

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