

Synthesis of redox-active ligands and related earth-abundant metal complexes as promising electrode material for metal-ion battery

Postdoctoral position

Project. Coordination complexes made of redox-active ligands and earth-abundant metals are known for their reversible multi-electron transfers. Nature uses these species as powerful catalysts to perform highly selective chemical reactions. Catalysis is not the only field where such species could be exploited. Indeed, the ability to exchange several electrons is particularly seducing when thinking of energy and especially metal-ion batteries. We are convinced that the combination of non-innocent ligands and earth-abundant metals will lead to highly active electrode materials for batteries, while reducing eco-compatible issues. Considering specifications inherent to such a field, we plan to design earth-abundant metal complexes from original redox-active ligands. As such, tetradentate ligands will be targeted with a special focus on *o*-phenylenediamine derivative. Once the electrochemical properties are evaluated (collaboration), the newly synthesized complexes will be immobilized or polymerized as electrode materials.

Additional info. The current project is funded by the Labex CEMAM and was born from the collaboration between 3 research labs: DCM (Dr N. Leconte - Synthesis of complexes), LEPMI (Prof J.-C. Leprêtre, Dr L. Lecarme - Electrochemical characterization) and SIMAP (Dr O. Le Bacq - Theoretical investigations).

Related articles. *Inorg. Chem.* **2016**, *55*, 649-665; *Phys. Chem. Chem. Phys.* **2020**, *22*, 24077-24085; *Electrochem. Commun.* **2021**, *125*, 106990.

Position. Postdoctoral internship.

Duration. 12 months.

Gross salary. 2600 - 3000 €, depending on experience.

Starting date. Asap (a preliminary 1-month administrative procedure is required).

Location. Department of Molecular Chemistry, Univ. Grenoble Alpes, Grenoble, France

Candidate profile. The researcher is a synthetic chemist (PhD in organic chemistry) with a strong expertise in multi-step organic synthesis, synthetic methodology and organometallic chemistry. An additional experience in coordination chemistry and/or polymer chemistry will be appreciated (not mandatory). Rigorous, meticulous, curious and independent, the candidate is able to adapt to a multi-disciplinary environment and has good communication skills (writing and speaking) to interact with scientists from different fields (organic and physical chemistry, electrochemistry, theoretical chemistry).

Further information and application (including cover letter + CV + references) at nicolas.leconte@univ-grenoble-alpes.fr, laureline.lecarne@univ-grenoble-alpes.fr and jean-claude.lepretre@univ-grenoble-alpes.fr

Websites. <https://dcm.univ-grenoble-alpes.fr>, <https://lepmi.grenoble-inp.fr>