

Two PhD fellowships in the field of homogeneous redox coordination chemistry and molecular engineering for energy storage at the University of Strasbourg

Two PhD fellowships are available in the framework of a project targeting multiple electron transfer and adjustable redox properties of molecular assemblies for energy storage devices. Using bioinspired design principles and molecular engineering, new organic redox-active units will be combined with transition metals to achieve highly tuneable and versatile redox systems. These redox species will form the basis of a new class of robust multi-electron transfer materials and be incorporated in batteries. This multi-scale and multidisciplinary project brings together molecular design and synthesis, electrochemical studies, coordination networks and redox-flow and ions-based batteries.

The candidate should demonstrate the ability to work in cooperative environments as well as autonomously, be open to the multi-disciplinary aspects of his/her research and have excellent communication skills to interact with two partners for electrochemical measurements through short-term missions. The excellence of the candidate will be a key point.

Project 1

Missions

The first project will focus on the design and synthesis of the redox-active units and the study of their coordination and electronic properties. The resulting ligands and small-molecule coordination complexes will be evaluated in homogeneous electron transfer and as soluble species in redox-flow batteries.

Candidate profile

The candidate should have experience in multi-step organic and organometallic synthesis, coordination chemistry and in classical characterisation methods. Experience in electrochemistry will be appreciated but is not mandatory.

Project 2

Missions

The second project deals with the synthesis of new MOFs to be used as electrode material for cation-ion batteries. The redox behaviour of the coordination polymers will be studied under various conditions and the potential of these redox assemblies as basis for a new class of robust multi-electron transfer materials will be assessed. This multi-scale and multidisciplinary approach gather molecular design, coordination networks, electrochemical studies and Na-ion or Li-ion type batteries.

Candidate profile

The candidate should have interdisciplinary skills such as coordination chemistry, classical characterization methods of coordination polymers. The candidate will also perform electrochemical measurements on the obtained compounds.

To apply, send a cover letter, CV, grades obtained in maters degree and three contact names to BOTH contacts:

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