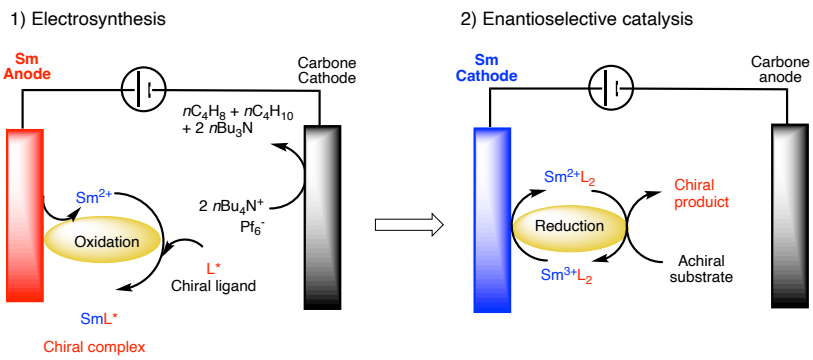
## 12 Months postdoctoral position: Electrosynthesis of Chiral Samarium (II) Complexes for Asymmetric Catalytic Applications

A postdoctoral position is available in Chemistry in the framework of a collaboration between the University Paris Saclay (ICMMO) & Ecole Polytechnique (LCM) for motivated applicants interested in interdisciplinary research at the interface between chemistry, coordination chemistry, and electrochemistry. The selected candidate will implement electrochemical conditions for the electrosynthesis of low-valent lanthanide complexes and for their application in enantioselective transformations.

In this project, we want to set up the electrosynthesic conditions to make enantioselective catalytic reactions mediated by divalent samarium as the chemical reductant. To meet this particularly ambitious challenge, the main objectives of this project are to:
**1)** Implement the conditions for the electrosynthesis of chiral Sm(II) complexes by simple oxidation of a Sm anode (Scheme 1) as we have otherwise demonstrated for the production of Sm(II) halide and other complexes.
**2)** Evaluate the stability of these chiral complexes in the +2 and +3 oxidation states and study the evolution of the coordination sphere during the redox processes.
**3)** Establish the enantioselective electrocatalytic conditions (Scheme 1).
To do so, a perfect knowledge of the nature of the electronic transfer processes and of the possible modifications of the coordination sphere around the samarium atom will be explored by an in-depth study of the structure of chiral samarium complexes in the divalent and trivalent states.
All this work, including the progressive determination of the electroreduction sequence, will feed into the design of suitable catalysts and their application in synthesis.

Scheme 1




**Keywords:** Organic synthesis, Electrochemistry, catalysis, chirality, coordinating chemistry.

**Required skills**: The candidate must have a PhD in organic synthesis including an excellent practical and theoretical background in organic and organometallic chemistry. He/she should be highly motivated. The candidate must be familiar with traditional organic chemistry tools as well as analytical techniques. An experience in electrochemistry would be appreciated but is not mandatory.
A detailed CV including names and contact of previous supervisors as references should be sent by email to Dr. Mohamed Mellah Mohamed.mellah@universite-paris-saclay.fr and Dr. Grégory Nocton gregory.nocton@polytechnique.edu