**ESR 5: Encapsulation of synthetic metal complexes for catalytic carbon dioxide reduction in nanostructured electrodes**

**Objectives**
The PhD project will focus on the synthesis of metal complexes, such as diphosphine cyclopentadienyl cobalt complexes, all with a variety of substituents to prepare their grafting at the surface of electrode materials. The encapsulation of synthetized metal complexes into synthetic nanoporous materials (SiO₂, TiO₂ and SiO₂-TiO₂) with well-controlled nanopore size and conductive additives will be realized. The evaluation of the solid hybrid materials as catalysts for electroreduction of CO₂ to formic acid will be performed. Finally, large surface electrodes using screen printing techniques will be prepared and tested.

**Host Institutions and Secondments**
This project will be developed under a co-tutelle agreement and the applicant will obtain a double degree from Sorbonne University (France) and University of Namur (Belgium).
The work will take place at 5 international partners:
- Collège de France (France) for 15 months
- University of Namur (Belgium) for 12 months
- Solaronix (Switzerland) for 4 months.
- 3 months at University of de Pau et des Pays de l’Adour (France) - secondments
- 2 months secondments University of Uppsala (Sweden) - secondments
- 1 to 12 additional months in Namur.

PhD supervisors are Pr. Bao-Lian Su (Namur University, [www.unamur.be](http://www.unamur.be)) and Pr. Marc Fontecave (College de France, Sorbonne University, [www.college-de-france.fr](http://www.college-de-france.fr)). The expected time for a PhD degree in Belgium is between 3 and 4 years, and the last 1 to 12 months of the position will be in Namur, under the employment rules for Belgium doctoral students.

**Qualifications**
- Master’s degree in chemistry, with skills in inorganic and organic chemistry as well as characterization techniques for inorganic/organic materials.
- Strong interest in interdisciplinary scientific work
- Strong motivation to pursue a PhD degree and to develop a cross-disciplinary cutting-edge project
- Excellent communication skills and willingness to work in collaborative projects with multiple partners
- Very good English language skills
- Self-motivation and the ability to achieve goals independently as well as to contribute effectively to the team
- Willing to travel within the EU and spend extended periods of time in various EU countries.
- Familiarity with environmental, health and safety (EHS) requirements

**Recruitment conditions**
ESR5 will be employed by the Sorbonne University (France), University of Namur (Belgium) and SOLARONIX (Switzerland) on a standard MSCA salary base (including mobility and family allowance) during 3 years and 1 to 12 additional months under Belgian standards.

Successful applicants will be required to start latest 1 October 2018 for a period of 4 years maximum. Candidates are required to meet the Marie Sklodowska-Curie Early Stage Researcher eligibility criteria ([https://ec.europa.eu/research/mariecurieactions/sites/mariecurie2/files/msca-itn-fellows-note_en_0.pdf](https://ec.europa.eu/research/mariecurieactions/sites/mariecurie2/files/msca-itn-fellows-note_en_0.pdf)). At the time of the appointment candidates must have had less than four years full-time equivalent research experience.
and must not have already obtained a PhD. Additionally, they must not have resided or carried out their main activity (work, studies, etc.) in France for more than 12 months in the last 3 years immediately prior to the starting date.

Any appointment will be conditional upon satisfactory references, the fulfilment of any conditions specified in the offer of a place on a PhD programme, and confirmation of the right to work in the EU and ability to secure a valid visa.

Selections will be made regardless of gender, nationality, religion, ethnicity and cultural background, but aiming for a good balance among the group.

Selection process
A first selection process will consist of a screening of the curriculum vitae, academic course transcripts, a motivation letter and 2 recommendation letters. The short-listed candidates will be interviewed by teleconference/skype by the selection committee. The selected candidate will be approved by the selection committee.

Apply for this job
Send your application (CV, motivation letter, 2 recommendation letters together with academic course transcripts, all documents should be in English) to the following address:

esr5-application@escaled-project.eu

Please put in the object of your email that you are applying for the ESR5 position within the eSCALED project.

Please check that you meet all eligibility criteria

The closing date for receipt of applications is 20 May 2018, 18:00 Brussels Time (CET or GMT+1)