ESR14: Integrating Multi-Junction Cells, Membranes and Molecular Catalysts into Devices

Objectives
The PhD project will focus in developing and demonstrating an integrated artificial leaf device based on organic or perovskite semiconductors for light absorption, catalysts-supported electrodes for solar fuel production, separated by a proton-conductive membrane. Activities will involve the design and definition of specifications (operation parameters, materials selection, elements and architecture, manufacturing processes) for an “artificial leaf” prototype. Subsequently the design will be implemented by combining membrane and electrodes into a membrane electrode assembly and its implementation into an electrolysis cell. The next step is to integrate this with thin film multi-junction, organic or perovskite photovoltaic cells to achieve efficient conversion of sunlight into solar fuels.

Host Institutions and Secondments
The student will complete a PhD with an inter-disciplinary supervisory team and benefit from a world-class training programme, including placements with 5 international partners in the following sequence:

- 6 months in Eurecat (Spain)
- 3 months in Riva (Germany) – secondment
- 8 months in University of Stuttgart (Germany)
- 12 months in Eindhoven University of Technology (The Netherlands)
- 3 month in UPPA (France) – secondment
- 3 month in in Eurecat (Spain) – secondment
- 12 months in Eindhoven University of Technology (The Netherlands), outside the project

PhD supervisors are Dr. Jochen Kerres (University of Stuttgart, www.uni-stuttgart.de) and Prof. René Janssen (TUE, www.tue.nl). The expected time for a PhD degree in the Netherlands is 4 years, and the last 12 months of the position will be in Eindhoven, under the employment rules for Dutch doctoral students.

Qualifications
- Master’s degree in engineering (chemical engineering, materials engineering).
- Strong interest in polymer chemistry, electrochemistry, and photovoltaics.
- Interested in implementation of novel scientific concepts into practical solutions.
- Strong interest in interdisciplinary scientific work, original thinker and able to solve problems.
- 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
The student will be employed by Eurecat (Spain), University of Stuttgart (Germany) and Eindhoven University of Technology (The Netherlands), on a standard MSCA salary base (including mobility and family allowance) during 3 years and 1 final year under Dutch standards.

Successful applicants will be required to start latest 1 October 2018 for a period of 4 years. Candidates are required to meet the Marie Skłodowska-Curie Early Stage Researcher eligibility criteria (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 Spain 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.

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:
esr14-application@escaled-project.eu
Please put in the object of your email that you are applying for the ESR14 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 CET.