PhD topic in:

Supra- and Macro-molecular materials for organic battery

General context

Over the last decade, the rapid development of Li-ion batteries came with the risk of supply for inorganic raw materials. Organic materials are good alternatives for making cost-effective electrode for batteries for few reasons such as a low-cost energy process and versatile reactions tailoring desired organic materials. Despite this tremendous advantage, organic materials are facing few issues like solubility in carbonate-based electrolyte and low conductivity inducing the use of a large part of black Carbone in the electrode. Macromolecular scaffolds holding electroactive functions can be an answer to overcome those drawbacks. This thesis project aims to synthetize new advanced macromolecular materials and to achieve a complete integration and characterization into a complete battery and optimizing its performances.

Objective of the PhD project

In this context, we are looking for a highly motivated candidate for a thesis dedicated to the synthesis and characterization of new macromolecular materials as electrodes in organic batteries with a view to integrating them into complete systems. The thesis project consists of two parts: the synthesis and characterization of the new materials (organic synthesis, NMR, XRD…), and the formulation and electrochemical testing of the newly composite electrodes obtained.

Skills of the applicant

For this project, you should have a strong experience in organic chemistry and electrochemistry. Prior experience in polymer characterization, supramolecular interactions, polymer electrolyte engineering, electrode formulation and cell assembly would be highly beneficial. You should also be able to communicate results clearly and succinctly, and work as a team member and independently. An excellent level in English (written and spoken) is requested.

Contact information: sebastien.gottis@u-picardie.fr (LRCS) & matthieu.becuwe@u-picardie.fr (LRCS)

List of documents to provide: Detailed CV, motivation letter specific to this project, names and contact details of 2 references persons (ideally from 2 different institutions).

Deadline for application Offer: open until end of May.

Date of start of the Project: October 1st 2023. The position is for 3 years

For more information about the hosting laboratory: https://www.lrcs.u-picardie.fr/