PostDoc position, 18 months

Work places: Université de Pau et des Pays de l'Adour, Pau, Nouvelle-Aquitaine, France and Arkema France Groupement de Recherches de Lacq, Lacq, France, Nouvelle Aquitaine Region.
Keywords: all-solid-state battery, polymer electrolytes, organic/inorganic hybride electrolytes, electrochemistry, structure and properties characterizations.
Occupation: Research and teaching

Context

The position is part of the "**RAISE 2024**" (towaRd All solId State battery in 2024), a five years project funded by the E2S (Energy Environment Solutions) Initiative (https://e2s-uppa.eu/en/index.html). The RAISE2024 project aims at **developing polymer based solid-state batteries** up to a Technology Readiness Level 6 in close partnership with three academic laboratories, IPREM (Institute of Analytical Sciences and Physical Chemistry for the Environment and Materials - https://iprem.univ-pau.fr/en/home.html), IPRA-DMEX (Multidisciplinary Institute for Applied Research) and PDP (research center Pau Public Law) as well as two major international companies, Arkema France and SAFT. The main objective of the project is to develop an advanced battery system based on solid electrolytes, which represents a *new field in the rechargeable battery domain. Electric vehicles and renewable energy storage are the applications targeted, with s*afety, high energy density, no self-discharge, a long stability/cycle life, easily scalable, low cost as main requirements.

Objectives

The postdoc candidate will be in charge of the development and evaluation of polyelectrolyte films used in solid-state batteries. The work will be performed in close collaboration between Arkema France (Lacq) and IPREM (Pau). Specific polymeric architectures, so as organic-inorganic hybrids solid electrolytes will be prepared to control the morphologies and macroscopic properties of materials targeting the best compromise between mechanical and electrochemical properties (ionic conductivity, electrochemical stability, dendrite mitigation, etc.). To do so, a specific films preparations will considered partly in gloveboxes. Morphologies will be assessed by AFM, SEM, SAXS&SANS on large instruments. The structural and physico-chemical characterizations will be performed by SEM, Auger Electron Spectroscopy, XPS. The specific film properties will be assessed by rheology, impedance spectroscopy, cyclic voltammetry, etc. Ultimately, coin-cells will be mounted with selected polyelectrolytes to determine the intrinsic performances in terms of cyclability.

Position and assignments

The Postdoc position also include teaching duty at UPPA (64 h per year).

- 18 months, available from October 2022
- Gross salary: 2970 €/month

Profile request:

The candidate has the following skills and expertise:

- A PhD in hybrid materials and/or polymer physical-chemistry and/or electrochemistry
- Knowledge in processing and synthesis will be highly appreciated
- A strong experience in surface and bulk analysis techniques and/or batteries
- Autonomy, dynamism, creativity, good communication skills.

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Secretary: estelle.camborde@univ-pau.fr

Have we piqued your interest? Then please submit your application including the following documents (as a single .pdf file) until 29/08/2022 by email to the contact advisors.

- Motivation letter
- Curriculum vitae of at most 3 pages.
- Transcripts and certifications from university:
    - Master degree (or equivalent), including class ranking if possible,
    - Phd degree.
- Names of at least two references who are willing to write a letter of recommendation on the candidate's behalf (they may be contacted by us).
- Any other relevant documents.