UMR CNRS 6226 ***« Institut des Sciences Chimiques de Rennes »***

Postdoc: Fabrication of biopolymeric membranes

At the Institut des Sciences Chimiques de Rennes (ISCR, UMR CNRS 6226) a position related to the fabrication of biopolymeric filtration membranes for liquid phase separations is open for appointment from 01 April 2023 within the team Chemistry and Process Engineering (Head: Pr. Anthony Szymczyk). The postdoc will be recruited for 18 months. This Institute gathers all the academic forces in Chemistry at the Rennes site leading to an overall workforce of more than 500 people including more than 280 permanent researchers/professors. The institute conducts internationally competitive research related to (a) Molecules and Materials for Health, (b) Molecules and Materials for Optics and Electronics, (c) Chemistry and Engineering for Sustainable Development. The workplace is Rennes.

Job description

Membrane techniques are widely used in the biomedical field. For example, 300 million dialyzers are used each year for patients suffering from kidney disease and microfiltration and ultrafiltration are used in more than 70% of biopharmaceutical processes (e.g. vaccine production). For these 2 applications, single-use membranes are used for only a few hours and then replaced, generating a large amount of waste that is usually incinerated or landfilled. Thus, the main idea of this project is to address the issue of the end-of-life of membranes, from their manufacture, by designing, for the first time, biobased membranes that are compostable after use in the framework of a circular economy approach. The success of the project will lie in the ability to develop efficient additives allowing to fabricate membranes having the requested morphological and interfacial properties.

The postdoc recruited will be in charge of the experimental part of the project.

The tasks of the postdoc will be:

- to carry out literature review related to the topic
- to synthetize amphiphilic block copolymers from biobased polymers and polyols as additive to improve the membrane properties.
- to fabricate micro- and ultrafiltration membranes using biobased polymers and the amphiphilic block copolymers by the phase inversion technique
- to characterize the membrane properties (morphology, surface properties, mechanical properties)
- to evaluate the filtration performance
- to evaluate membrane biodegradability
- to disseminate the results through written and oral communications
- to supervise undergraduate/master students

Competences of the ideal applicant:

- Hold a PhD degree in polymer science/chemistry or in a related field
- Experience in (bio)polymers synthesis and/or modification
- Experience in membrane fabrication and characterization
- Ability to work interdisciplinary and in cooperation (good communication and interpersonal skills)
- Ability to conduct work in a structured and systematic manner and with a sufficient degree of freedom
- Fluent in English (oral + written) or Fluent in French (+ written English)

Context

The postdoc position is part of the Bio-PHArMem project (PI: Dr Patrick Loulergue) recently granted from the Emergence@INC call from the CNRS. Most of the work (membrane fabrication, characterization, performance evaluation) will be carried out in the Chemistry and Process Engineering team but also in collaboration with the Organic Chemistry and Interfaces (Dr Loïc Lemiègre) for the amphiphilic block copolymers synthesis. The two teams are located on the same campus (Beaulieu campus, Rennes - France). The work will also require international cooperation (ITM-CNR, Italy, Alberto Figoli's group). The postdoc will start no later than April 1st, 2023
Dead-line for application: January 5th, 2023.

You may obtain further information about the project from associate professor Patrick LOULERGUE: patrick.loulergue.1@univ-rennes1.fr.

Applications

NO APPLICATION CAN BE RECEIVED BY E-MAIL.

All applications must be submitted on-line:
https://emploi.cnrs.fr/Offres/CDD/UMR6226-PATLOU-001/Default.aspx?lang=EN