

Post-doc position in separation processes of lignin oligomers

(18 months)

URD ABI (Industrial Agro-Biotechnologies), AgroParisTech
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URD ABI, located at the heart of the Pomacle-Bazancourt biorefinery, is a research and development unit dedicated to valorization of agrosources and biorefinery by-products. With expertise in white biotechnologies, green chemistry, and process engineering, the team works on multi-disciplinary research projects aiming at the development of new industrial processes allowing integrating the transformation of by-products of agriculture into high value-added chemicals such as polymers, fine chemicals, functional additives or cosmetics.

The ANR Biopoliol project aims to produce bio-based molecules for the manufacture of insulating materials. These molecules will be generated indirectly from the depolymerized lignin. The medium obtained after depolymerization being complex, a fractionation will be necessary to recover the target oligomers. The objective of the proposed subject is to implement two separation technologies to purify depolymerized lignin into oligomers. Membrane processes (ultrafiltration and nanofiltration) are the conventional processes used. This will involve (i) the screening of the membranes needed to obtain a fraction concentrated in oligomers and (ii) the determination of the architecture of the separation process. The second technology is innovative since it is not widely applied in this field: it is liquid-liquid extraction assisted by membrane contactor. The work will consist in mastering this technology and determining compatible solvents for purification. An optimization of these two technologies will then be considered. The most efficient of the technologies will then be selected for a scale-up. The analytical means used to check the nature of the purified fractions will be GPC (Gel Permeation Chromatography) and phosphorus NMR.

The recruited candidate will be in charge of:

- Suggesting the appropriate experiments to meet the objectives according to the bibliography
- Carrying out experiments, analyzing the results and comparing them with those of the literature
- Valorizing the results in the form of publications
- Presenting the results at national or international congresses.

The candidate will be integrated into the Process Engineering team of URD ABI as a researcher. He (She) will work in collaboration with another researcher and the two engineers of the team under the supervision of the head of the department.

The expected profile for this position includes:

- PhD in process engineering with an experience on separation processes
- Knowledge on membrane filtration and lignin chemistry would be appreciated.
- The candidate should be rigorous, autonomous and knowing produce a quality writing

Send your application, until the 15th December, to Pr Irina IOANNOU (head of the department) irina.ioannou@agroparitech.fr and Dr. Morad CHADNI (process engineering researcher) morad.chadni@agroparitech.fr