



Post-doctoral position



Design of functional polysaccharide-based biohybrids using green processes

Location	IMP UMR5223 Site INSA de Lyon 17 avenue Jean Capelle 69621 Villeurbanne CEDEX
Supervisors	Julien BERNARD/Aurélia CHARLOT/Etienne FLEURY

Project description

In the global context of sustainable development, chemical modification of biomass shows great prospects in different fields of application and synthetic approaches combining high chemical efficiency, reduced environmental impact and resulting in the production of high-value or high-performance materials are highly desired. In this framework, this post-doctoral project aims at designing water-soluble biodegradable bio-hybrids made of polysaccharidic and synthetic macromolecular building blocks that could serve as platform chemicals for various industrial applications including municipal and industrial water treatment, mining, paper, construction and civil engineering or home and personal care. To achieve these objectives, the project will investigate different synthetic pathways with an emphasis on the use of green approaches and mild conditions (aqueous medium, low temperatures...). The project will rely on a multidisciplinary research team gathering scientists from an industrial partner and IMP laboratory team (INSA-Lyon, France).

Missions

The objectives of the post-doctoral candidate will be to:

- develop green processes promoting the incorporation of synthetic macromolecular blocks onto polysaccharide backbones through radical polymerizations.
- characterize in depth the intermediates and final products using different characterization techniques (NMR, FTIR, SEC, DLS, SLS...)
- evaluate the physico-chemical properties of the bio-hybrids (water solubility at various pH and salts concentrations, viscosity, stability toward hydrolysis and temperature, biodegradability...).

All of these studies will be carried out in close collaboration with the laboratory of the international industrial company.

Skill set required

The ideal candidate looks forward to working in a collaborative and multicultural team and holds a PhD in macromolecular chemistry. She/he is fully autonomous, has a strong expertise in areas such as polysaccharides and/or radical polymerizations and is familiar with NMR, IR, size-exclusion chromatography and light scattering techniques. An excellent level of English would be an advantage.

Gross salary: 2 840 €/month.

Contact: Applicants are asked to submit a CV and cover letter by electronic mail to: aurelia.charlot@insa-lyon.fr, julien.bernard@insa-lyon.fr & etienne.fleury@insa-lyon.fr