



PhD project

Development of biobased and biodegradable compounds from oligosaccharides

Dr Caroline Nugier-Chauvin <Caroline.Nugier@ensc-rennes.fr>

Ecole Nationale Supérieure de Chimie de Rennes, Equipe CORINT, UMR CNRS 6226 *Sciences Chimiques de Rennes*

Project: The project consists in the modification of polysaccharides to safely and eco-compatible production of new active and biodegradable molecules for dermocosmetic applications. This research work involves a company specialized in the development of marine active ingredients in cosmetics and established in Saint-Malo. Particular attention will be paid to the biobased nature of all raw materials entering the process. The bioconversion process will be subject to a demanding optimization because of the complex nature of the reaction media used. Questions about mass transfers in such environments for optimal input responsiveness and adapted reactor geometry will be important points of vigilance in optimizing the process. The advanced characterization of these modified polysaccharides will require particular attention because of the nature of the inputs. It will require fine analysis by IR and NMR spectroscopy to determine the regioselectivities of the reactions involved, as well as a detailed physicochemical analysis. The targeted compounds will have to meet high biodegradability requirements. The challenge will also be to find an optimal combination of biological efficiency with an environmentally friendly process.

Candidate: With an engineer or master's degree, the candidate must have fundamental knowledge and skills:

- in the areas of synthetic chemistry, the main methods of purification and analysis of organic products (NMR, LC-MS), evaluation of physicochemical properties, biological properties (with the industrial partner),
- in the field of biotechnology: enzymology, biocatalysis.

He will also be able to ensure a technological and a bibliographic follow-up. The candidate will have a real appeal for studies at the interface of chemistry and biochemistry and physicochemistry. Finally, communication skills will be appreciated because it will be brought to communicate its results to its academic and industrial supervisors.

Starting in: october 2018

Funding: ARED/industrial

Gross salary: around 22 k € annual

To apply, please send your resume and cover letter to Caroline Nugier (Caroline.Nugier@ensc-rennes.fr).