

**LIPASE-CATALYZED SYNTHESIS OF HEMIFLUORINATED
GLYCOSURFACTANTS FOR WATER/SUPERCRITICAL CO₂ EMULSIONS**
**Audrey Favrelle,¹ Cédric Boyère,¹ Magali Deleu,² Guy Broze,¹ Christophe Blecker,³ Michel
Paquot,² Christine Jérôme,¹ Antoine Debuigne^{1*}**

[*adebuigne@ulg.ac.be](mailto:adebuigne@ulg.ac.be)

¹ Center for Education and Research on Macromolecules, University of Liège. Chemistry Institute, Sart-Tilman (B6a) 4000 Liège, Belgium; ² Laboratory of Industrial Biological Chemistry, University of Liège, Gembloux Agro-Bio Tech (GxABT), 5030 Gembloux, Belgium; ³ Laboratory of Food Technology, University of Liège, Gembloux Agro-Bio Tech (GxABT), 5030 Gembloux, Belgium

Carbohydrates esters, with lipidic moiety, are non-ionic surfactants that have a wide range of commercial applications in cosmetic, food and pharmaceutical industry. They are produced from renewable and inexpensive raw materials, are biodegradable and non-toxic. Chemical synthesis of sugar esters is generally performed at high temperatures in the presence of an alkaline catalyst and leads to a mixture of products. In this respect, the corresponding lipase-catalyzed processes in non-conventional media are more selective.[1]

Hemifluorinated glycosurfactants are materials with potential interest in the field of supercritical carbon dioxide (scCO₂) for stabilizing water/scCO₂ emulsion, for example in chemical transformations and polymerization reaction. Moreover, scCO₂ constitutes an interesting alternative to the traditional organic solvents used in the domain as it is considered to be inexpensive, non-toxic, environmentally friendlier and safer.[2] Until now, limited number of papers deals with the synthesis of hemifluorinated glycosurfactants and their preparation by enzymatic way has never been reported. In this context, our work consists of developing the lipase-catalyzed synthesis of such compounds and studying in a first step their surfactant properties at the air/water interface. The influence of various experimental parameters on the sugar esterification reaction will be discussed.

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[1] P.Degn *et al.*, *Biotechnology Letters*, **1999**, 21, 275-280

[2] C.Wood *et al.*, *Thermodynamics, Solubility and Environmental Issues*, **2007**, Chap. 21, 383-396