

One Erasmus+ Internships in field of Bioprocess engineering

Academic year 2022/23

About the project

Our society has to use natural resources more efficiently, as we are facing the challenges of plant pollution, fossil fuel depletion and increasing human population. To that end, the concept of circular bio-economy has been established, which aims at converting biological waste streams into bio-based products, such as volatile fatty acids. This conversion can be carried out by microorganisms in a bioprocess where microbial cells self-arrange in granular biofilms.

Recently, a novel type of granular biofilm-based fermentation process has been developed at Center for Microbial Ecology and Technology (<u>https://www.cmet.ugent.be/</u>), Ghent University. This promising fermentation process has the potential to be used in a production of bio-based chemicals and bio-polymers from wastewater (Carvajal-Arroyo et al., 2019). Although the newly developed process shows great capacity for the future industrial application, little is known about the impact of main operational parameters or reactor design characteristics on the bioprocess performance.

The overall objective of the internship position is to further engineer and optimize granular biofilm fermentation processes and to understand how operational parameters or different novel reactor technologies influence the volatile fatty acid production.

Techniques and methods

Reactor engineering (design, building, operation and optimization); biochemistry, biokinetics and biothermodynamics; analytical methods (HPLC, GC, IC); etc.

General information

Supervisor: prof. dr. Ramon Ganigué

Tutor: Dr. Alberte Regueira (link to personal webpage)

Duration: 5 - 6 months, with some flexibility with the start and end date

a) Academic year 2022/23: from the beginning of February 2023 until the end of August 2023

If you are enthusiastic about this subject, willing to learn and open to new experience, please contact Alberte Regueira (alberte.regueiralopez@ugent.be) by December 16th, 2022 the latest.

Reference

Carvajal-Arroyo, J.M.; Candry, P.; Andersen, S.J.; Props, R.; Seviour, T.; Ganigué, R.; Rabaey, K. *Granular fermentation enables high rate caproic acid production from solid-free thin stillage.* Green Chem. 2019, 21, 1330–1339