
Fate of Extracellular Polymeric Substances (EPS) and Polyhydroxyalkanoates (PHAs) under Anaerobic Conditions

Field: Biotechnology and Environmental Sciences

Duration: at least 6 months

Starting Date: September 2019 with flexibility

Location: Wetsus, European Centre of Excellence for Sustainable Water Technology, Leeuwarden (The Netherlands)

Allowance: 350 €/month

1. Project description

Aerobic biological processes are widely applied for wastewater treatment. The principle of this process is improved water quality and a (waste) surplus activated sludge. In the surplus activated sludge, Extracellular Polymeric Substances (EPS) are one of the most important components. Moreover, surplus activated sludge may comprise significant amounts of other carbon storage elements including Polyhydroxyalkanoates (PHAs). The objective of this project is to gain deepened insight into the fate and kinetics of EPS and PHA in activated sludge under anaerobic conditions. The initial steps of the work will be to characterize these components in surplus activated sludge and then study the rates of conversion under prescribed fermentation conditions. The effects on process kinetics due to pH, temperature, inoculum, and product formation are to be evaluated. This project is embedded in the theme 'Biopolymers from water' (<https://www.wetsus.nl/biopolymers-from-water>) in collaboration with Delft University and industrial partners.

2. Your tasks

- Conduct batch experiments to assess EPS and PHAs degradation at different conditions
- Assess the enzyme activity
- Interaction and collaboration within a dynamic multidisciplinary and multinational research team

3. Your profile

- Specializing in biotechnology, environmental engineering or related fields
- Preferably an EU citizen or an international MSc student actively enrolled in a Dutch university
- An aptitude and interest for practical laboratory experience and analytical work
- Fluent in English language (spoken, written and communication skills)
- Highly motivated, enthusiastic and independent thinker and doer who also like to work in a team

4. How to apply

Interested students are invited to send a motivation letter (max. 1 page) and a CV (max. 2 pages) to Ruizhe Pei (ruizhe.pei@wetsus.nl).