Identification of Polyhydroxyalkanoates (PHAs) Accumulation Microorganisms and Visualization of Intracellular PHA Granular

Field: Biotechnology, Microbiology and Molecular Microbiology

Duration: 6 to 9 months, preferably 9 months

Starting Date: July 2020 with flexibility

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

Allowance: 175 €/month

1. Project description

Aerobic biological processes are widely applied for wastewater treatment. During the process, while improving the water quality, a (waste) surplus activated sludge is produced. It has been demonstrated in the pilot-scale that surplus activated sludge could accumulate carbon storage elements Polyhydroxyalkanoates (PHAs) up to 40%/ VSS. Surplus activated sludge is a complex mixed culture biomass. In surplus activated sludge, only limited information about the PHA accumulation microorganisms is known. The objective of this project is to gain a deepened insight into the identification of the PHA accumulators and understand the distribution of intracellular PHA granular among different microorganisms. The techniques such as Next Generation Sequencing, Fluorescence *In-situ* Hybridization, and PHA granular staining would be investigated and applied. 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. What you can learn

- DNA extraction, Next Generation Sequencing (NGS), basic bioinformatics and statistic;
- Perform Fluorescence *In-situ* Hybridization (FISH) and design FISH probes;
- Visualization of the intracellular PHA granular;
- Interaction and collaboration within a dynamic multidisciplinary and multinational research team.

3. Your profile

- Specializing in biotechnology, microbiology, molecular microbiology 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).