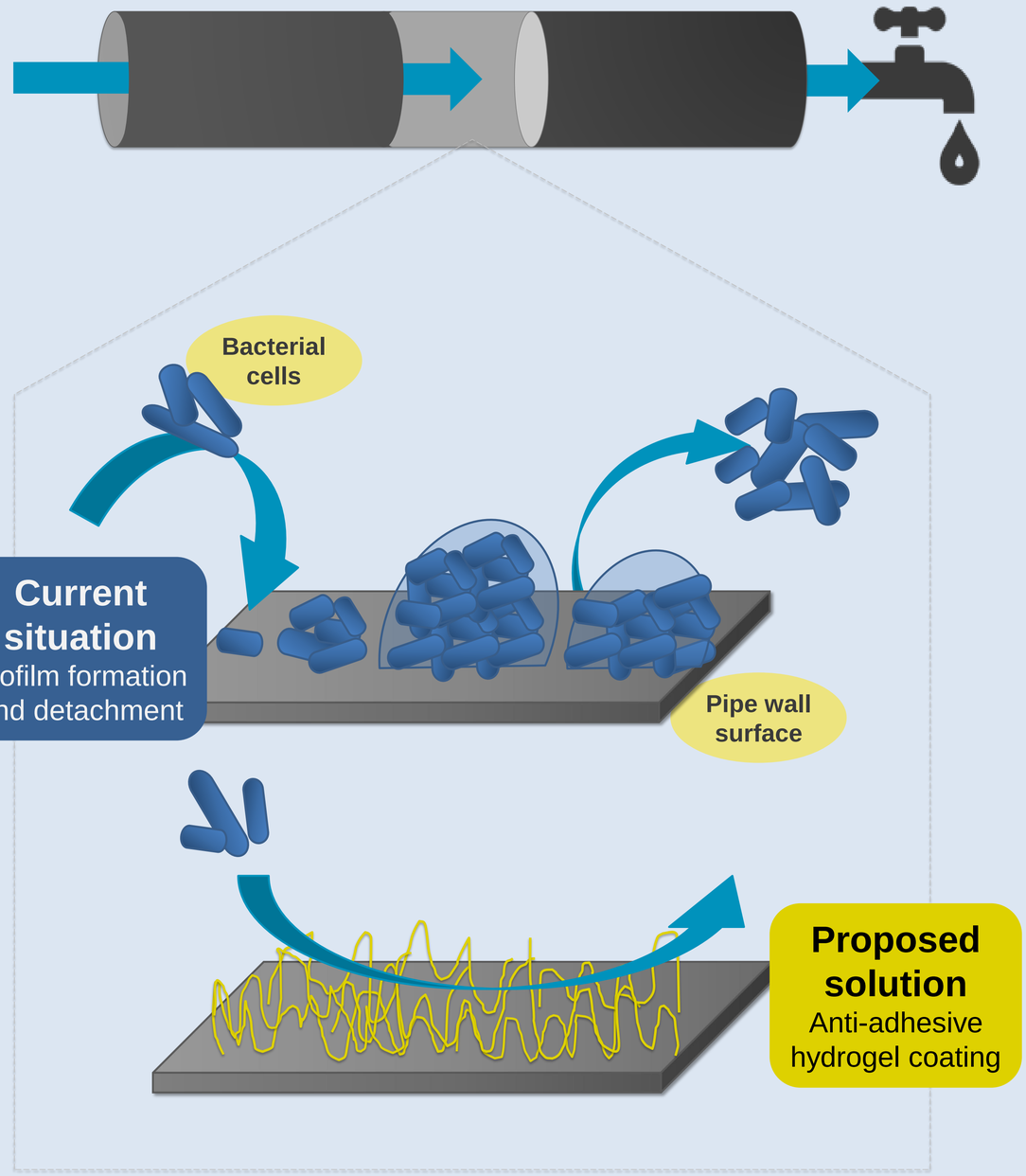
Monitoring of biofilm formation in the innovative flow cell system that mimics drinking water distribution system's conditions

Type of project: Internship
Starting date: April / May 2020
Duration: Min. 4 months
Location: Wetsus, Leeuwarden, the Netherlands



Project description

The purpose of the drinking water treatment facilities is to produce and to deliver high quality drinking water to the consumer. Water leaving the purification plant generally fulfils all the requirements for potable water, but it is often the case that during the distribution, its quality significantly deteriorates. One of the main causes is biofilm's growth on the pipe walls of drinking water distribution systems' (DWDS). The biofilms' presence significantly influences not only drinking water safety and aesthetics but also, by increasing the flow resistance, the distribution process itself [1]. One of the parameters representing a strong influence on biofilm formation is a pipe material. Until now, all the materials utilized in DWDS construction have been found to harbour biofilm to a greater or lesser extent and no effective preventive strategy has yet been provided.

Offered internship is a part of the project that focuses on development of a novel anti-adhesive hydrogel coating for materials commonly applied in the DWDS, such as PVC. The coatings' performance will be tested in a set-up equipped with a set of flow cells that mimics DWDS conditions. <u>The goal of the internship is to optimize the set-up and perform initial tests.</u> Biofilm will be grown on a PVC surface and analysed by means of various optical imaging (fluorescent microscopy, Confocal Laser Scanning Microscopy, Optical Coherence Tomography, etc.) and microbiological techniques.

Tasks

- Optimizing the performance of the already existing new flow cell set-up
- Running initial experiments
- Sampling and analysing biofilm formed in the flow-cell using optical and microbiological techniques

Requirements

- Background in environmental engineering, water technology, biotechnology or similar
- Actively enrolled as an undergraduate (BSc) or graduate (MSc) student
- Experience in laboratory work is preferred
- Good level English in communication and writing
- Enthusiasm, motivation and independence

Our offer

- Salary of € 175 / month (except for the Erasmus program participants)
- Working in a multidisciplinary international team on innovations in the field of water technology

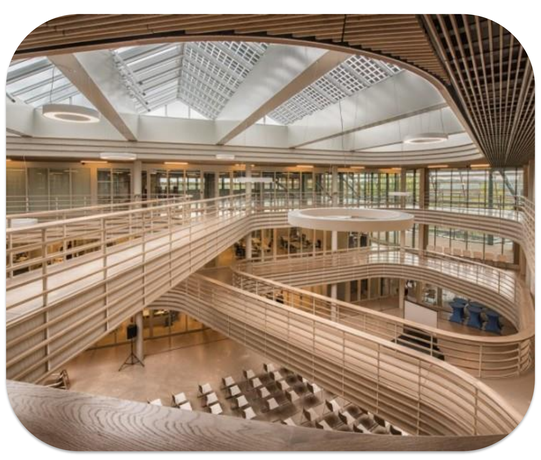
How to apply

Interested students are invited to send a motivation letter (max. 1 page) and a CV (max. 2 pages) to Olga Sójka (olga.sojka@wetsus.nl). In the e-mail, please, indicate when exactly you can start and what your preferred internship duration is.

Please note, that Non-EU citizens need to be enrolled at a Dutch university to be eligible for this project.

About Wetsus

Wetsus, the European research center for sustainable water technology is a facilitating intermediary for trendsetting know-how development. Wetsus creates a unique environment and strategic cooperation for development of profitable and sustainable water treatment technology. The inspiring and multidisciplinary collaboration between companies and research institutes from all over Europe in Wetsus results in innovations that contribute significantly to the solution of the global water problems.



[1] Liu, Sanly, et al. "Understanding, monitoring, and controlling biofilm growth in drinking water distribution systems." *Environmental science & technology* 50.17 (2016): 8954-8976.