

Role of the polymeric pipe materials in the process of biofilm formation in drinking water distribution systems

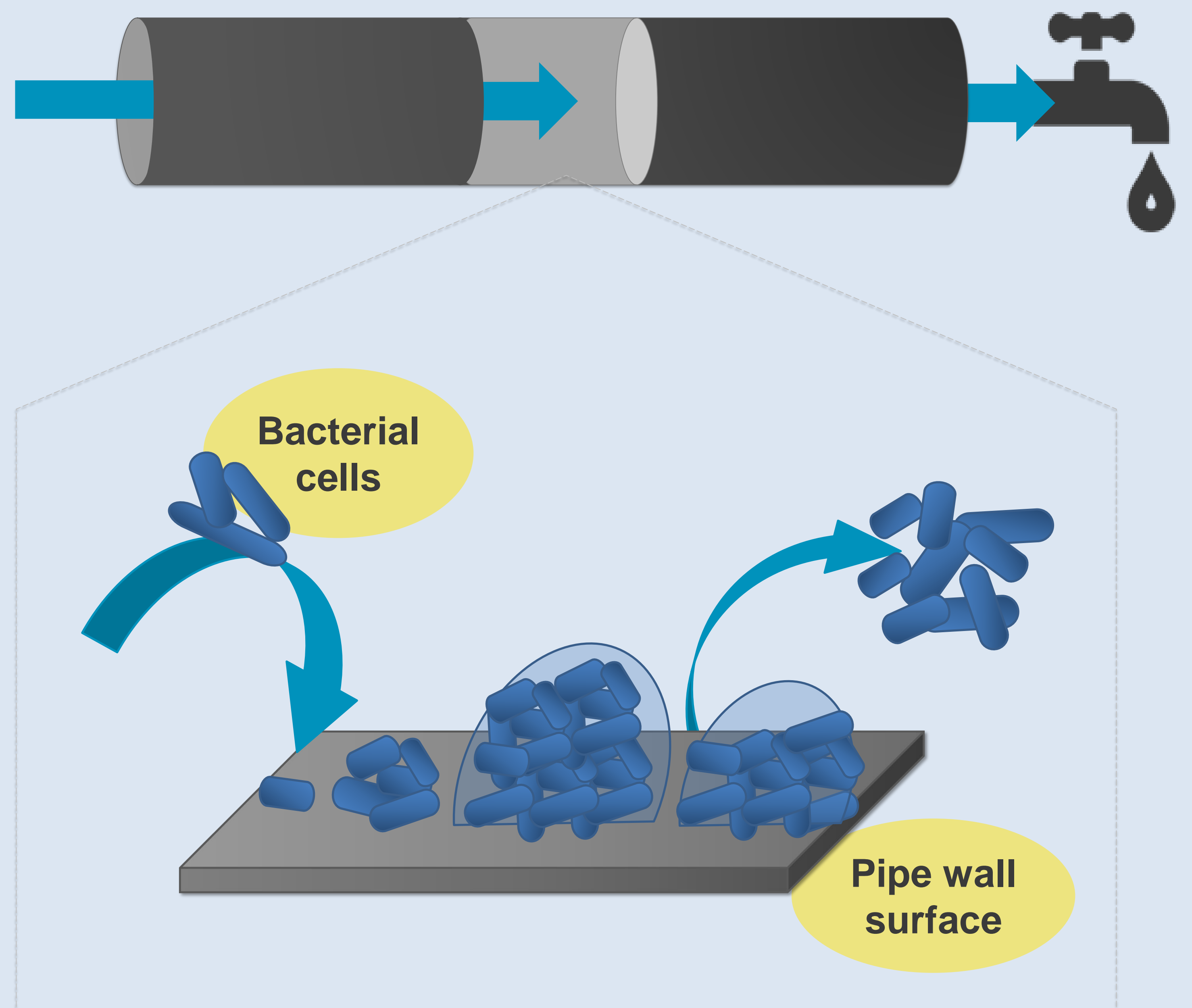


Type of project: Internship
Starting date: May / June 2020
Duration: Min. 4 months
Location: Wetsus, Leeuwarden, the Netherlands

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 biological safety and aesthetics but also, by increasing the flow resistance, the distribution process itself. One of the parameters representing a strong influence on biofilm formation is a pipe material. However, the fundamentals of this dependence are not yet fully understood.

Offered internship will focus on in-depth characterization of biofilm formed on polyvinyl chloride (PVC) and polyethylene (PE), the two most common materials applied in construction of new DWDS. The comparison between the biofilms will be done by means of various optical imaging (fluorescent microscopy, Confocal Laser Scanning Microscopy, Scanning, Electron Microscopy, Optical Coherence Tomography, etc.), and microbiological and molecular techniques. As a result, it is expected to gain more insight into the fundamentals of biofilm formation on polymeric pipe materials.



Tasks

- Cultivation and characterization of biofilm grown on PVC and PE surfaces using various laboratory techniques
- Studying the fundamentals of bacterial (initial) adhesion on those surfaces

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.



References:

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