

Thesis/Internship Project

Biofilm control in drinking water distribution systems using magnetic field

Motivation:

Biofilm formation in drinking water distribution (DWD) pipes is responsible for a wide range of water quality and operational problems. In the water industry, it has been frequently observed that magnetic fields, as a sustainable and additive-free technology, can greatly preserve drinking water quality and reduce the fouling tendency. However, despite the numerous field observations, there is lack of solid explanation of the mechanism on how magnetic field can affect biofilm growth in DWD. This project aims to study the effect of magnetic field on drinking water biofilms and its interaction with calcium ions. Basic physiological properties of drinking water bacteria will be characterized under the influence of magnetic treatment.

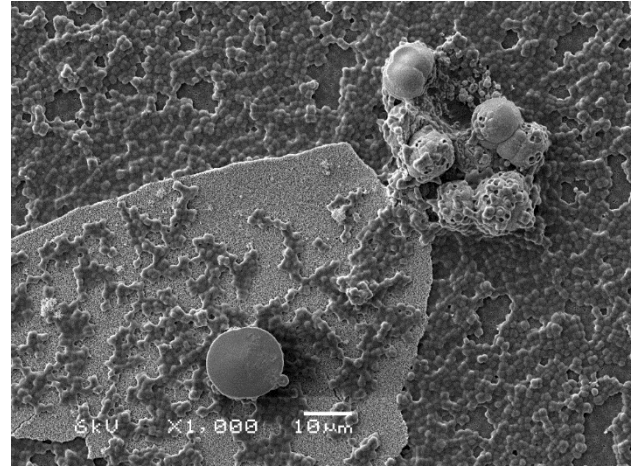


Figure 1, Calcium precipitation mediated by drinking water bacteria biofilm by Scanning electron microscopy

Research Challenge:

Pure culture of bacteria isolated from drinking water will be used to assess the effect of magnetic fields on the physiology of microorganisms. The development of drinking water biofilm treated with magnetic field will be characterized with different methods (OCT, Scanning electron microscopy, fluorescent microscopy) and compared with non-treated biofilm.

Requirements:

- Field: Microbiology /molecular biology/ biochemistry (lab experience will be appreciated)
- Degree: BSc or MSc students
- Duration: 4-6 month.
- Starting date: preferably in February.

If you are interested in the project, please contact the PhD researcher Xiaoxia Liu (xiaoxia.liu@wetsus.nl) for more information or directly apply by sending your CV to the same email address. The internship includes a monthly allowance of 175 euro per month. The project can only be offered to EU students or foreign students studying in Dutch Universities.