

# Optimization of BES by unravelling the storing mechanisms of electro-active bacteria

**Starting from:** February 2021

**Duration:** 6-8 months

**Allowance** – 175€/month

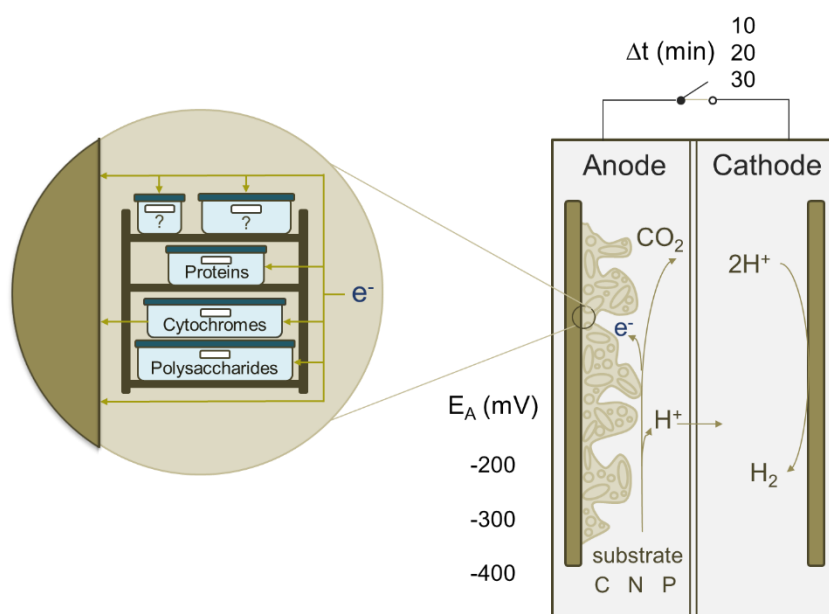
**Location:** Wetsus – European centre of excellence for sustainable water technology (Leeuwarden, Netherlands)

## Project description:

Bio-electrochemical systems (BESs) have been referred as a new technology for chemicals productions, bioremediation and power generation. The role of electro-active microorganisms in these systems is crucial. However, their performance in terms of current output is not competitive for practical application. Recently, higher current outputs have been reported for electro-active bacteria (EAB) controlled under intermittent polarization. Using this regime, biofilm morphology also differed from the structure typically observed under continuous polarization. However, the underlying mechanisms are still to be studied. In this project we propose the study of charge storage capabilities of electro-active bacteria by integrating optical techniques, electrochemical analysis and chemical methods (e.g. Optical Coherence Tomography, Electrochemical Impedance Spectroscopy and Inductively Coupled Plasma Optical Emission Spectroscopy, respectively) to understand biofilm growth kinetics and biochemical composition. The influence of different anode potentials and intermittent times in the biomass will be assessed aiming at controlling and optimizing biofilms performances in BES.

## Your profile:

- Background in Bioengineering, Biotechnology, Environmental engineering or related fields;
- Currently enrolled in Bachelor or Master's studies;
- Experience with laboratorial work;
- Good English communication skills both writing and spoken;



## Contact details:

Please send your CV and motivation letter to [joao.pereira@wetsus.nl](mailto:joao.pereira@wetsus.nl). Do not hesitate to contact in case you have any further question or if you need more information.

## About us:

Wetsus, European centre of excellence 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 state of the art 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.