Estimation of Electrochlorination By-Products Through Machine Learning

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Prospective start: Fall 2021
Duration: 4 – 6 months
Location: Wetsus Research Institute, Leeuwarden, the Netherlands

Project description

Electrochlorination is an increasingly important means of disinfecting water. In this process, salty water is electrolized to produce hypochlorite, an effective disinfectant. However, some byproducts, specifically chlorate and perchlorate, have been found to be detrimental to human and animal health and need to be monitored.
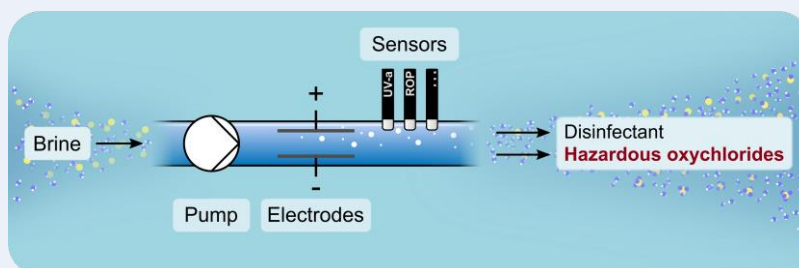
The monitoring of these by-products is challenging as the species are difficult to detect. A promising alternative is to equip the system basic sensors and process readings (such as voltage, electrode temperature and product redox potential), and use this information to predict the by-product formation using machine learning.

Challenge

It will be your task to research whether this approach can successfully be applied to electrochlorination. Your tasks will include:

- Gathering the required data using the electrochlorination setup in our lab
- Fit a machine learning model to the data using Python or Matlab
- Verify the model using newly gathered data

Your profile

- Experienced with laboratory work, capable of safely handling corrosive materials and able to perform precise measurements
- Experienced with programming in Python or Matlab
- Experienced with statistical analysis
- Currently enrolled in a master's study in chemical science or related field
- Proficient in written and spoken English
- EU citizen or non-EU citizen already enrolled in a Dutch university and living in the Netherlands

Benefits

- Gain relevant experience with machine learning
- Deepen your understanding of electrochemistry
- Contribute to reducing health risks related to the disinfection of water
- Work in an advanced laboratory with colleagues from around the world
- If you don't have an Erasmus grant, you will receive a €175 monthly allowance

How to apply

Interested? Send an email to edwin.ross@wetsus.nl to get in touch. Please supply an up-to-date CV that clearly demonstrates how you fit the above profile, and provide a short letter explaining your interest in this specific project.