



## REMOVAL OF MICROPOLLUTANTS - INTERNSHIP



### GOAL AND ACTIVITIES

The objective of this internship is to test and explore an electrochemical system for degradation of pharmaceuticals in water and the regeneration of activated carbon. During this period several lab experiments will be performed using different model compounds and water matrices (Pure water- real effluent / spiked water). Moreover, the effect of some experimental parameters on the process efficiency will be studied for optimization and up scaling purposes.

### BACKGROUND

One of the principal goals of the industries and water companies is to eliminate micropollutants such as pharmaceuticals and pesticides from water. Due to their low concentration and persistent character, it is challenging to find a cost-effective process to remove these substances.

In many industries the adsorption on activated carbon is used to eliminate the residual compounds. However, this technique allows only the separation of the pollutants from water. Furthermore, the adsorbent material requires a regeneration / treatment after a certain period of use. The most commonly used method for the regeneration of activated carbon is the thermal process. This method is expensive because of the energy that it requires, beside the fact that it is not performed in situ.

Electro- advanced oxidation processes (eAOPs) showed very promising efficiencies for the removal of micropollutants in water, due to the generation of powerful radicals in-situ. Nonetheless, the cost-effectiveness of the eAOPs is negatively affected by the mass transport limitation during the treatment of low concentrations of the pollutants such as pharmaceuticals. Hence, the combination of the adsorption on activated carbon for the removal of the compounds from water and an electro regeneration of the adsorbent material in-situ is an interesting alternative to explore.

### WHO ARE WE

Nijhuis Industries delivers 'solid solutions in a fluid world' as a response towards a greener economy. Nijhuis is aiming to turn cost centres into profit centres with solutions for sustainable water use and resource recovery. To accommodate the customer requirements, Nijhuis offers Design, Build, Finance, Operate and Maintain (DBFMO) installations to meet today's challenges, as well those of the future, across a wide range of industries and municipalities in today's 'fluid' world. With more than 2400 references sites and activities in over 110 countries around the globe, it is our ambition to help customers and deliver solutions to:

- Reduce the amount of (waste)water and effluent charges;
- Reuse treated effluent or process water;
- Recover water and resources from your waste and (waste) water.

### INTERNSHIP SPECIFICATIONS

**Type of education:** MSc Chemical, Process or Environmental Engineering with familiarity on electrochemistry and fundamental chemistry

**Location:** Nijhuis Water Technology, Doetinchem

**Duration:** 4 – 6 months

**Start:** February/September 2022

### MORE INFORMATION AND APPLICATION

If you are interested in an internship at Nijhuis Water Technology please send the following to Internship. [NWT@nijhuisindustries.com](mailto:NWT@nijhuisindustries.com):

- your motivation
- CV
- the period and duration of your internship