

INTERNSHIP OFFER

Electrically-driven desalination technologies

Overview

Are you familiar with electrically-driven desalination technologies?

In general, the aim of any desalination technology is to remove salts and other minerals from water. Technologies like electro dialysis (ED) and capacitive deionization (CDI) remove these compounds by applying an electrical potential difference between electrodes. In ED, ion exchange membranes (IEMs) are the main components of the system allowing the transport of ions from the feed stream (diluate) to a concentrate stream. In CDI, porous carbon electrodes are the main components. On the electrode surface ions are temporarily adsorbed. IEMs can be placed in front of the electrodes. In that case, the system is called membrane capacitive deionization (MCDI). An important fact about these electrically-driven processes is that under conventional operation the selective removal of ions from multi-component streams is not possible. Often, it is required either to vary operation modes, or modify specific components of the system to achieve ion selectivity.

We are aiming to achieve selective ion removal by fabricating selective IEMs. We synthesize the membranes using different polymers and also inorganic compounds that contain diverse functional groups. Once the membrane is fabricated, we analyse its morphology, electrochemical properties, and selectivity towards different ions.

Internship responsibilities

- Characterize the properties of the membranes.
- Conduct selectivity studies of the fabricated membranes in ED and MCDI.
- Characterize carbon electrodes and analyse their chemistry.

Requirements and Skills

- Education
Chemical engineering, process technology or similar background with good understanding of chemistry.
- Experience
Any practical and academic experience on electrochemistry is desirable.
Previous lab experience.
Can work independently.
Have good analytical skills.
- Communication
Speak and write clearly and effectively.
Ask questions to clarify.
Open to sharing information and keeping people informed.

Additional information

- Starting date: As soon as possible
- Duration: Minimum 5 months
- The internship includes a reimbursement for living expenses of 350 euro per month.
- **To apply to this internship please send your CV to: Tania.Mubita@wetsus.nl**