

In the field of CO₂ capture and electrolysis

Work title:

“Investigation of Co-Electrolysis technologies”

Background:

This thesis is associated with the DirectCCE project, which aims to investigate a system for capturing CO₂ and utilizing it to produce value-added products, including methanol. To utilize CO₂, an electrolyzer is employed to convert a CO₂-based stream into valuable products. One promising method involves using co-electrolysis to yield methanol. Co-electrolysis of water and CO₂ is an advanced electrochemical process that enables achieving valuable chemicals. This process can take place in both low- and high-temperature electrolyzers. Overall, co-electrolysis offers a sustainable approach to produce energy-dense fuels and chemicals from two abundant feedstocks, using renewable electricity. This method not only helps reduce atmospheric CO₂ levels but also contributes to the development of a circular carbon economy by enabling the production of carbon-neutral fuels and chemicals.

Achieving cost-effective and efficient production of valuable chemicals requires process data for system simulation, which necessitates a thorough literature review. Therefore, the primary objective of this bachelor’s thesis is to conduct a literature review and gather data for investigating co-electrolysis system.

Outline of the content:

- Literature review to enhance academic background
- Gathering data for the system
- Evaluate required data for system simulation
- Comparison of technologies (low- and high-temperature electrolyzers)

Requirements:

- Background in Chemical Engineering
- Programming and data analysis skills
- Motivation to Solve Complex Problems

