Conducting research for a changing society: This is what drives us at Forschungszentrum Jülich. As a member of the Helmholtz Association, we aim to tackle the grand societal challenges of our time and conduct research into the possibilities of a digitized society, a climate-friendly energy system, and a resource-efficient economy. Work together with around 7,400 employees in one of Europe's biggest research centres and help us to shape change!

The current projections of the Intergovernmental Panel on Climate Change (IPCC) emphasize the necessity of negative emissions to meet the 1.5-degree target. A promising method for achieving negative emissions is the capture of CO2 from the air, also known as Direct Air Capture (DAC). In this process, CO2 is initially captured through adsorption and later collected in concentrated form with the input of energy. The concentrated CO2 can subsequently be sequestered underground or used as a carbon-neutral source for fuel synthesis. At the Institute for Energy Technologies - Electrochemical Process Engineering (IET-4), we have been working for years on innovative approaches to mitigate anthropogenic climate change, and we possess extensive expertise and experience in this field. The process development of direct air capture of CO2, along with subsequent technical and economic evaluation, represents another key component in this context.

We offer you to the next possible date an exiting

Master Thesis - Modeling and Optimization of a Direct Air Capture Plant

Your Job:

The adsorption process of a Direct Air Capture (DAC) plant is typically operated cyclically, which complicates energy supply and downstream process steps. Through a thought-out configuration or rotation of the adsorption columns, this cyclical process can be transformed into a continuous process. The goal of this simulation-based work is to model a large-scale DAC plant that produces CO2 continuously. Specifically, this master`s thesis includes the following work packages:

- Literature review on process modeling of DAC systems
- Familiarization with the simulation software Aspen Adsorption
- Development of a large-scale DAC process that operates continuously
- Techno-economic evaluation of the developed model
- Thesis writing and preparation of a presentation for the colloquium

The job will be advertised until the position has been successfully filled. You should therefore submit your application as soon as possible. We look forward to receiving your application via our **Online-Recruitment-System!**

Questions about the vacancy?

Get in touch with us by using **our contact form.**

Please note that for technical reasons we cannot accept applications via email.

www.fz-juelich.de

Your Profile:

- Strong academic performance in your ongoing Master`s studies in (environmental) process engineering, energy engineering, mechanical engineering, or a comparable field of study
- Enthusiasm for the subject area of negative emissions
- Interest in process simulations and the economic evaluation of processes
- High level of independence and a structured working style
- Prior knowledge in process simulation with Aspen Plus or Aspen Adsorption can be helpful for onboarding but is explicitly not required
- Fluent German or English language skills, both written and spoken

Our Offer:

We work on the very latest issues that impact our society and are offering you the chance to actively help in shaping the change! We support you in your work with:

- A diverse, highly motivated team within one of the largest research institutions in Europe
- Intensive supervision of your work, both on-site and online
- The option to complete significant parts of your work from home
- The opportunity to learn relevant software such as Aspen Plus and Aspen Adsorption, providing valuable qualifications for your future career
- Insights into the future-critical field of negative emissions
- Flexible working hours and appropriate remuneration
- The possibility of pursuing a PhD at IET-4 after your master's thesis, depending on your abilities and available funding for a position
- The position is initially for a fixed term of 6 months

Further information about the project is available via the following link: https://www.dacstore-project.com/en

In addition to exciting tasks and a collaborative working atmosphere in Jülich, we have a lot more to offer: https://go.fzj.de/benefits

We welcome applications from people with diverse backgrounds, e.g. in terms of age, gender, disability, sexual orientation / identity, and social, ethnic and religious origin. A diverse and inclusive working environment with equal opportunities in which everyone can realize their potential is important to us.