Shaping change: this is what drives us at Forschungszentrum Jülich. As a member of the Helmholtz Association with some 7,600 employees, we conduct interdisciplinary research into a digitalized society, a climate-friendly energy system, and a sustainable economy. We focus on the natural, life, and engineering sciences in the fields of information, energy, and bioeconomy. We combine this with expertise in high-performance computing and artificial intelligence using unique scientific infrastructures.

Participate in the European research project DECODE with academic and industrial partners to advance research in hydrogen synthesis. The aim of the project is to gain new insights by combining the results from experimental and simulation methods of the various partners. An important area of research at the Institute of Energy Technologies - Electrochemical Process Engineering (IET-4) is the influence of the structure and composition of the catalyst layers. As part of this Master`s thesis, a set of representative catalyst layers in PEM water electrolysis cells will be investigated using electrochemical diagnostic methods such as electrochemical impedance spectroscopy, cyclovoltammetry, recording of polarisation curves and, if necessary, other methods. Furthermore, a data pipeline will be developed in accordance with current FAIR standards. The aim is to use the developed processes to obtain information about the influence of structural parameters on the electrochemical reaction.

Join our team to the next possible date as

Master Thesis - Development of electrochemical characterisation methods for catalyst layers for PEM water electrolysis

Your Job:

- Experimental investigation of the PEMWE cell
- Development of the cell assembly and measurement protocols with systematic variation of material combinations and operating conditions
- Performance of electrochemical diagnostics (polarisation curves, electrochemical impedance spectroscopy (EIS), cyclovoltammetry (CV), and, if necessary, ex-situ measurements
- Analysis of the collected data to evaluate cell performance and characterise internal cell processes in order to link electrochemical parameters with materials, operating

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

conditions and ageing processes
- Creation of a data pipeline to prepare the collected data in accordance with FAIR standards for collaborative use within the Decode project and for machine learning applications
- Presentation of results in team meetings and preparation of a comprehensive master`s thesis

Your Profile:
- Currently enrolled in a Master`s program in Chemistry, Physics, Materials Science, Process Engineering, or a comparable field of study
- Interest in the research field of electrolysis
- Prior knowledge of electrochemistry desirable
- Willingness to learn additional electrochemical methods
- Good analytical and data processing skills with open source software, e.g. Python
- High degree of independence, motivation and reliability
- Systematic, structured and problem-solving approach to experimental work
- Fluent English and good German skills, both spoken and written

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:
- MEANINGFUL TASKS: Your thesis deals with a future-oriented, socially relevant topic with direct practical relevance in an international environment
- PRACTICAL RELEVANCE: With us, you will gain valuable practical experience alongside you will have direct involvement in experimental research and development and use of practical diagnostic technology
- SCIENTIFIC ENVIRONMENT: You can expect excellent scientific equipment, modern technologies, and qualified support from experienced colleagues
- PERSONAL RESPONSIBILITY: You organize your tasks independently—from preparation to implementation
- ONBOARDING & TEAMWORK: You can look forward to working in a dedicated, international, and collegial team. It is important to us that you quickly settle into the team and are given structured training for your tasks. We also support you from the very beginning and make your start easier with our Welcome Days and Welcome Guide: https://go.fzj.de/welcome
- WORK-LIFE BALANCE: We offer flexible working hours to help you balance your professional and personal life. You also have the option of flexible working (in terms of location), which is generally possible after consultation and in line with upcoming tasks and (on-site) appointments
- FLEXIBILITY: Flexible working hours make it easier for you to balance work and study
- FAIR REMUNERATION: We will pay you a reasonable remuneration for your thesis
- FIXED-TERM: The position is limited to 6 months
- PERSPECTIVE: If you have the appropriate qualifications and funding is available, the institute offers the opportunity to do your PhD after completing your master`s thesis

In addition to exciting tasks and a collegial working environment, we offer you much more: 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.

The following links provide further information on diversity and equal opportunities:
https://go.fzj.de/equality and on specific support options:
https://go.fzj.de/womens-job-journey