



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 7,500 employees in one of Europe's biggest research centres and help us to shape change!

The Institute of Energy Technologies - Fundamental Electrochemistry (IET-1) focuses on the development of performance oriented and sustainable materials and components for the electrochemical energy storage and conversion. Aiming to develop sustainable and cost-effective batteries, fuel cells and electrolyzers with improved energy and power density, longer lifetime at maximal safety is the challenge of the projects. These key technologies drive forward the energy transition and structural change in the Rhineland region. Further info on our exciting projects: <https://go.fzj.de/IET-1>

**Join our team to the next possible date as**

## **Postdoc - Design of Experiment and Digital Process Optimization for CO<sub>2</sub> Electrolysis**

### **Your Job:**

At IET-1, we are studying the CO<sub>2</sub> electrolysis for the sustainable conversion of green energy into chemical energy carriers in order to defossilize the chemical industry. The process control and optimization of electrolysis from the cell to the stack requires automated monitoring, analysis, and control of the operating parameters and processes. As part of this project, the potential of high-throughput systems is maximized using design of experiment (DoE) approaches in order to efficiently explore the high-dimensional parameter space of the electrolysis processes. DoE is required for data-efficient exploration and optimization within the process parameter space as well as for adaptive, data-driven machine learning to map the electrolysis process to a digital twin. Data workflows and interfaces (application programming interface, API) for system control are being developed in order to automate both process monitoring and process control. The API-based integration of the digital twin into the process control of the CO<sub>2</sub> electrolysis enables autonomous operation of the system, which can differentiate between market-, system- or network-based operating modes depending on requirements. Your tasks in detail:

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](http://www.fz-juelich.de)

- Development of APIs for electrolysis systems and analysis devices
- Implementation of autonomous process control
- Conceptualization and implementation of degradation models for electrolysis
- Studying performance and degradation of electrolysis in dependence on different operating modes

**Your Profile:**

- Completed Master's degree in chemical engineering, computational engineering, computational mathematics, data sciences / analysis, system or process engineering, or related fields with a subsequent doctorate
- Excellent knowledge of API programming and automation engineering such as LabVIEW and/or EPICS
- Advanced programming skills with python
- Comprehensive knowledge of data science, data analysis, data management as well as machine learning
- Experience with data-driven machine learning (SINDY, LASSO, SISSO packages)
- Basic knowledge of electrochemistry desirable
- Interest in interdisciplinary research projects and excellent cooperation and communication skills as well as teamworking skills
- Very good command of written and spoken English

**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 large research campus with green spaces, offering the best possible means for networking with colleagues and pursuing sports alongside work
- Comprehensive training courses and individual opportunities for personal and professional further development
- Extensive company health management
- Ideal conditions for balancing work and private life, as well as a family-friendly corporate policy
- Flexible work (location) arrangements, e.g. remote work
- Flexible working hours in a full-time position with the option of slightly reduced working hours ( <https://go.fzj.de/near-full-time> )
- 30 days of annual leave and provision for days off between public holidays and weekends (e.g. between Christmas and New Year)
- Targeted services for international employees, e.g. through our International Advisory Service

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

The position is initially for a fixed term of 1 year. In case of successful teamwork, the position can be extended to up to 3 years. Salary and social benefits will conform to the provisions of the Collective Agreement for the Public Service (TVöD-Bund), pay group 13, depending on the applicant's qualifications and the precise nature of the tasks assigned to them. All information about the Collective Agreement for the Public Service (TVöD-Bund) can be found on the BMI website: <https://go.fzj.de/bmi.tvloed> . The monthly salaries in euros can be found on page 66 of the PDF download.

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.