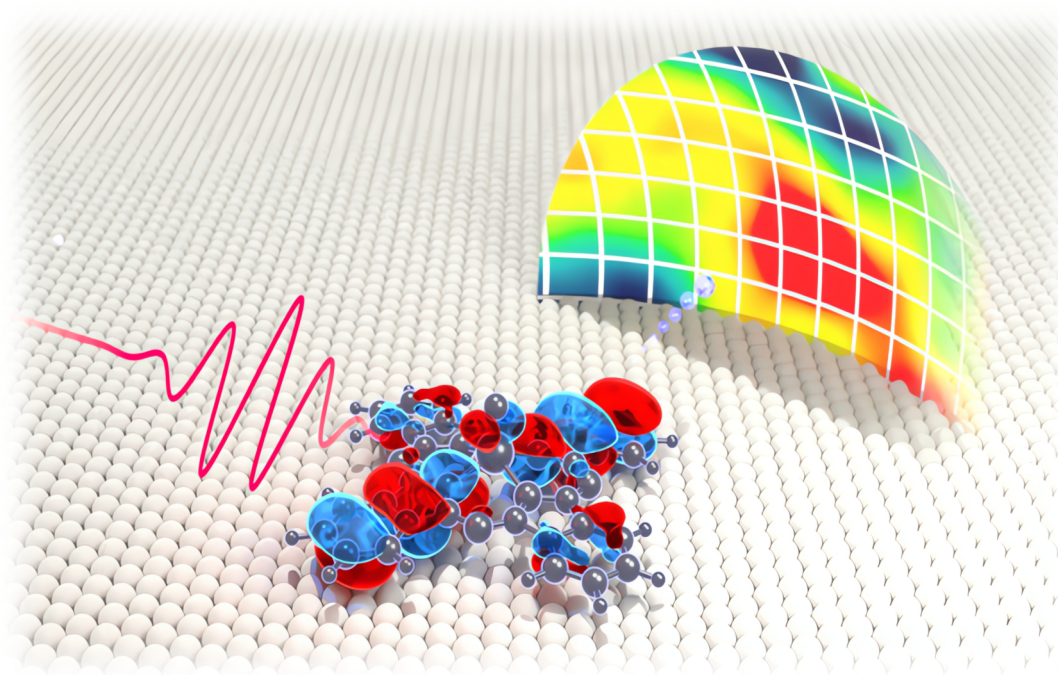




Conducting research for a changing society: This is what drives us at Forschungszentrum Jülich. As a member of the Helmholtz Association, we aim to tackle the grand societal challenges of our time and conduct research into the possibilities of a digitized society, a climate-friendly energy system, and 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!

Understanding the fundamental physical and chemical properties of energy materials and heterogeneous catalysts is crucial for realizing an environmentally friendly future. At the Jülich Centre for Neutron Science - Neutron Analytics for Energy Research (JCNS-3), we investigate the structure-property relationships of methanation catalysts. The methanation of CO₂ using H₂ produced via electrolysis of water is an approach for long-term storage of energy from renewable resources. In this project, we will study nickel catalysts on different Al₂O₃ supports with operando X-ray experiments, infrared and mass spectrometry. In particular, we explore intricate local structural changes such as restructuring at the interface of nanoparticle and support or the effect of gas adsorption onto the nanoparticle structure.

We are offering a

PhD Position – Structure-activity relationships of methanation catalysts from X-ray scattering

Your Job:

- Synthesis of heterogeneous catalysts (Ni on Al₂O₃) and characterization involving e.g. TGA, IR, TEM, MS, BET
- Implementation of a reaction chamber for catalytic measurements into a laboratory PDF diffractometer, including the optimization of measurement protocols and combined mass spectrometry
- Experiments at synchrotron radiation facilities
- Analysis of powder X-ray diffraction (PXRD) and pair distribution function (PDF) data for structure refinement and modelling of heterogeneous catalysts
- Publication of results in peer-reviewed scientific journals and presentation at conferences

Your Profile:

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

Required qualifications and skills:

- University degree (M.Sc. or equivalent) in chemistry, materials science, geoscience, physics or related field
- Experience in laboratory work, e.g. synthesis and/or physicochemical characterization such as IR, BET, TGA
- Knowledge of X-ray scattering, possibly pair distribution function (PDF) analysis
- High motivation for further training, independent and goal-oriented way of working

A distinct advantage would be:

- Experience with data analysis and scientific programming (e.g. Origin, Igor Pro, Python, Matlab, Mathematica)
- A good command of written and spoken English
- You are interested in further academic qualifications (doctorate)

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! This project involves close collaboration with our esteemed cooperation partners at the RWTH Aachen University, i.e. the Institute of Crystallography and the Institute of Technical and Macromolecular Chemistry as well as the Cluster of Excellence "The Integrated Fuel & Chemical Science Center". We support you in your work with:

- Access to a strong research network at the FZJ, such as transmission electron microscopy at the Ernst-Ruska-Zentrum, the Jülich Supercomputing Centre, the Neutron-SimLab or various physicochemical characterization methods and workshops
- Comprehensive training programs and individual opportunities for personal and professional development
- Comprehensive company health management
- Optimal conditions for balancing work and private life as well as a family-conscious company policy
- 30 days of annual leave and provision for days off between public holidays and weekends (e.g. between Christmas and New Year)
- The opportunity to work flexibly (in terms of location), e.g. partly remote work
- Targeted services for international employees, e.g. through our International Advisory Service

In addition to exciting tasks and a collegial working environment, we offer you much more: <https://go.fzj.de/Benefits>

The employment of doctoral researchers at Jülich is governed by a doctoral contract, which usually has a term of three years. In this position the first year though will serve as orientation and probation period and will then possibly transition in the full duration of the PhD contract. Pay in line with 67% of pay group 13 of the Collective Agreement for the Public Service (TVöD-Bund). In addition, an annual special payment is granted ("Christmas payment"), which amounts to 60 % of the monthly salary. Further information on doctoral degrees at Forschungszentrum Jülich (including its various branch offices) is available at <https://www.fz-juelich.de/en/careers/phd> All information about the Collective Agreement for the Public Service (TVöD-Bund) can be found on the BMI website: <https://go.fzj.de/bmi.tvued> 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.

Further information on diversity and equal opportunities: <https://go.fzj.de/equality>