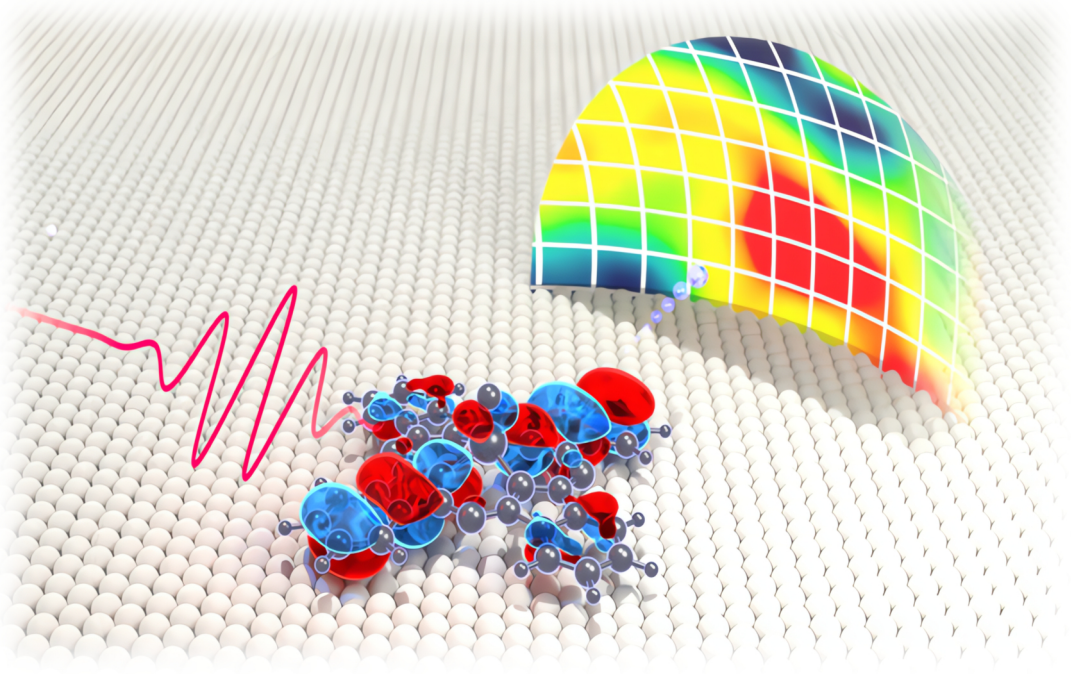

Conducting research for a changing society: This is what drives us at Forschungszentrum Jülich. As a member of the Helmholtz Association, we aim to tackle the grand societal challenges of our time and conduct research into the possibilities of a digitized society, a climate-friendly energy system, and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

At the Institute of Energy Technologies - Theory and Computation of Energy Materials (IET-3), we use theoretical-mathematical methods, physical modeling, and computer simulations to create fundamental understanding of electrochemical phenomena that govern the performance and durability of energy materials. We thereby contribute to the development of tailored materials solutions and the optimization of electrochemical devices with the ambition to accelerate the energy transition. In our research, we use cutting-edge infrastructure and methodologies of high-performance computing, including exascale supercomputing and emerging quantum computing technologies. More information is available here: https://www.fz-juelich.de/en/iet/iet-3

**We are offering from the next possible date an interesting**

# Postdoc Position - Quantum Computing for the Simulation of Reactive Processes in Battery Materials

**Your Job:**
This postdoc position at IET-3, Forschungszentrum Jülich is part of the new multidisciplinary consortium QT-Batt gathering experts from 4 different Helmholtz Centers to implement and deploy integrated methodologies at the cross-section of battery and quantum technologies.
Quantum computing bears tremendous potential in the simulation of interactions and reactive processes in materials with multicomponent composition. You will play a pivotal role in this undertaking, developing core quantum-computing methods and methodical interfaces for integration into a larger framework of quantum technologies for batteries.

Your tasks in detail:

- Develop innovative quantum computing approaches for the simulation of electrochemical processes in complex electrode materials
- Connect quantum-enabled models of reactive phenomena to multiscale battery descriptions within the interdisciplinary consortium

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

- Validate computational predictions against experimental results to address topical questions for battery materials in collaboration with project partners
- Publish results in impactful journals and present on international conferences
- Contribute to project management activities and the supervision and teaching of students

You will collaborate closely with experimental and theoretical partners in computational materials science, battery research, and quantum software and hardware, forging connections within a dynamic network of experts from across various research centers in Germany. Forschungszentrum Jülich will thereby provide you with unique access to quantum computing hardware—directly on campus!

This job offer is closely linked to a related opening at IMD-1 at Forschungszentrum Jülich within the same project consortium: https://www.fz-juelich.de/en/careers/jobs/2025-361 Please feel free to apply for both available positions within this project.

**Your Profile:**

- MSc degree with subsequent PhD (or equivalent) in physics, chemistry, materials science, or a related discipline
- Strong background in one or more of the following areas:
- + Quantum computing and quantum algorithms
- + Solid-state physics, computational materials science, or quantum chemistry
- + Battery materials modeling
- Excellent programming skills (e.g., Python) and familiarity with high-performance computing environments
- Experience with quantum programming (e.g., Quantum annealing, Qiskit, etc.)
- Strong motivation for interdisciplinary research and teamwork
- Pronounced organizational and communication skills, and a self-organized and independent work style
- Very good written and spoken English language skills and, ideally, proficiency in German language

**Our Offer:**

We offer an exciting employment in an international and interdisciplinary work environment and a dynamic technology sector.

You will benefit from:

- Collaboration with leading academic and industrial partners and opportunity to participate in national and international project meetings, workshops, and conferences
- Access to first-class supercomputing and quantum computing facilities
- Professional support and training in classical and quantum modeling, quantum algorithms and computation, and battery materials and technology
- Further development of your personal and interdisciplinary strengths through a range of training courses offered at Forschungszentrum Jülich
- Support for international employees through our International Advisory Service
- Possibility of time- and location-flexible working models (after consultation and in accordance with upcoming tasks and (on-site) appointments)
- Optimal conditions for balancing work and private life, as well as a family-friendly company policy.
- 30 days of annual leave plus additional days off (e.g. between Christmas and New Year`s)
- Fully funded position, limited until 31.12.2028 (full-time with the option of slightly

reduced working hours)
- Exploration and preparation of next career opportunities supported by our Career Center & Postdoc Office ( https://www.fz-juelich.de/careercenter )

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

We offer you an exciting and varied role in an international and interdisciplinary working environment. The position is limited until 31.12.2028. Salary and social benefits will conform to the provisions of the Collective Agreement for the Public Service (TVöD-Bund), remuneration group EG 13, depending on the applicant's qualifications and the precise nature of the tasks assigned. All information about the Collective Agreement for the Public Service (TVöD-Bund) can be found on the BMI website: https://go.fzj.de/bmi.tvoed. The monthly salaries in euro can be found here: https://go.fzj.de/bmi.tvoed.entgelt

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 for women: https://go.fzj.de/womens-job-journey