



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 Materials and Devices - Structure and Function of Materials (IMD-1) at Forschungszentrum Jülich, we advance material design for energy applications by leveraging microstructure-property-processing correlations and mechanism-based descriptions of materials behavior. We apply high-resolution microscopy, automation, data-driven approaches, and close collaboration across experimentation and simulation to achieve our goals. The understanding and development of innovative battery materials for next generation energy storage is a central mission of our research activities, using in particular modeling and simulations on all relevant scales. Please find more information here: <https://www.fz-juelich.de/en/imd/imd-1>

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

## **Postdoc Position - Quantum Computing for Multiscale Mechanics Modeling of Battery Materials**

### **Your Job:**

This postdoc position with a duration of up to three years is available at the IMD-1, at Forschungszentrum Jülich as 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. QT-Batt is a pioneering initiative with the ambition to leverage quantum computing and quantum sensing technologies for the development and optimization of next-generation batteries.

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 quantum computing approaches for mechanical properties of battery

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)

material

- Incorporate inhomogeneous stress effects on the particle and sub-particle level into hierarchical pseudo-2D descriptions of batteries
- Link continuum descriptions to quantum computing accelerated atomistic approaches in an interdisciplinary environment and benchmark against experimental investigations
- 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 IET-3 at Forschungszentrum Jülich within the same project consortium: <https://www.fz-juelich.de/en/careers/jobs/2025-362>  
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.tvloed>. The monthly salaries in euro can be found here: <https://go.fzj.de/bmi.tvloed.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>