



At the Peter Grünberg Institute - Electronic Materials (PGI-7) our research, undertaken in close cooperation with our partner institute at RWTH Aachen University, focuses on the nanoelectronics of the future. To this end, we investigate electronic phenomena in oxides and electronically-active organic molecules.

Neuromorphic computing has established itself as an important approach for artificial intelligence. However, training AIs requires large amounts of energy. Here, memristive devices are promising candidates for future energy-efficient hardware implementations of neuromorphic systems. In the Neurotec II project, together with various partners from the high-tech sector, we are investigating new memristive materials, components, integration concepts, modeling and circuit designs for neuro-inspired systems consisting of hardware and software.

We are looking to recruit a

PhD Position - Modeling and simulation of memristive devices for application in neuromorphic systems

Your Job:

The aim of this doctoral project is to develop physical simulation models for memristive devices. In particular, a compact model that describes the switching behavior of gradual switching VCM cells has to be developed. Based on the models, design rules for the usage of memristive components shall be concluded. Various commercial simulation tools and self developed environments are available at the institute for this purpose. The work is being done as a part of a team of PhD students covering the range from atomistic calculations and modeling of compact models to circuit design.

Your tasks will include:

- Development and implementation of physic inspired compact models for gradual switching VCM memristive devices

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 7,400 employees in one of Europe's biggest research centres and help us to shape change!

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

- Performance of parameter studies for a better understanding of the influence of different materials
- Close interaction with experimental colleagues to evaluate the simulation results.
- Development of design rules for efficient memristive switching cells

Your Profile:

- Master degree in physics, electrical engineering or in a related subject
- Interest in theoretical and interdisciplinary work
- Experience in device physics and numerical simulations is desirable
- Fluent in 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 offer ideal conditions for you to complete your doctoral degree:

- A highly motivated working group as well as an international and interdisciplinary working environment at one of Europe's largest research establishments
- Outstanding scientific and technical infrastructure
- Opportunity to participate in (international) conferences and project meetings
- Continuous scientific mentoring by your scientific advisor
- Flexible work (location) arrangements, e.g. remote work
- A large research campus with green spaces, offering the best possible means for networking with colleagues and pursuing sports alongside work
- Further development of your personal strengths, e.g. through an extensive range of training courses; a structured program of continuing education and networking opportunities specifically for doctoral researchers via JuDocS, the Jülich Center for Doctoral Researchers and Supervisors: <https://www.fz-juelich.de/en/judocs>
- Targeted services for international employees, e.g. through our International Advisory Service

The employment of doctoral researchers at Jülich is governed by a doctoral contract, which usually has a term of three years. Attractive pay in line with 75% of pay group 13 of the Collective Agreement for the Public Service (TVöD-Bund) and additionally 60 % of a monthly salary as special payment („Christmas bonus“). Further information on doctoral degrees at Forschungszentrum Jülich including our other locations is available at: https://www.fz-juelich.de/gp/Careers_Docs

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 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.