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 Ernst Ruska-Centre (ER-C) for microscopy and spectroscopy with electrons is a center of excellence in advanced transmission electron microscopy (TEM) and spectroscopy for addressing topical problems in materials science, solid-state physics and chemistry, biology and soft matter. It comprises three divisions which each have a different focus.
At ER-C-1 Physics of Nanoscale Systems) we carry out systematic characterizations using various complementary techniques, including the latest TEM based techniques, such as electron holography, HR-(S)TEM, high energy resolution spectroscopy, 4D-STEM, and ptychography. This enables the measurement of, e.g., electrical potentials and magnetic fields, polarization fields, built-in potentials, strain, and carrier dynamics on nanometer scales with high temporal resolution.

Join our team to the next possible date as

PhD Position - Quantitative Analysis of Carrier Dynamics in Operando Photovoltaic Devices Using Analytical Electron Microscopy

Your Job:
This PhD thesis aims to quantitatively study the initial stages of light conversion into electrical signals in Si-based photovoltaic devices. The research will employ off-axis electron holography, combined with ultra-fast laser excitation and ultra-short electron pulses, to monitor carrier dynamics. The goal is to identify and map regions of high quantum efficiency as well as recombination centers, thereby contributing to the development of improved photovoltaic designs.

Your tasks in detail:

- Preparation of electron transparent TEM lamellas
- Installation and alignment of optical equipment, operation and optimization of fs to ps

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

laser sources
- Characterization of electrostatic potentials and excited carrier concentrations using off-axis electron holography
- Mapping of charge carrier lifetimes by synchronizing ultra-short laser pulses with ultra-fast beam blanker and detectors
- Analyzing the interaction of excited carriers with shallow and deep defects by measuring charge transition levels
- Investigation of carrier generation and recombination with different laser pulse specifications
- Evaluation, documentation and publication of the data obtained in the form of reports, manuscripts and presentations in English
- Collaboration with and co-supervision of research interns and students

Your Profile:
- Excellently completed master`s degree in physics, chemistry, material sciences, engineering, or a related field.
- Solid knowledge of semiconductor physics, lasers, and optics. Ideally, experience in the field of transmission electron microscopy.
- High level of self-motivation, as well as enjoyment and skill in practical work.
- Willingness to take on responsibility for the laboratory and equipment.
- A high level of teamwork and enjoyment of cooperative collaboration.
- Furthermore, you can quickly familiarize yourself with new methods and techniques.
- Ability to work cooperatively with internal and external project partners.
- Very good written and spoken English skills.

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:
- Interdisciplinary collaboration on projects in an international, committed and collegial team
- Excellent scientific equipment and the latest technology
- Qualified supervision by scientific colleagues
- A large research campus in the countryside, which offers the best opportunities for networking with colleagues and for sporting activities alongside work
- Flexible working hours and appropriate remuneration
- The opportunity to work flexibly (in terms of location), e.g. partly from home
- 30 days of annual leave (depending on agreed working time arrangements) and provision for days off between public holidays and weekends (e.g. between Christmas and New Year)
- 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

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. Pay is 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“). Pay higher than the basic pay may be possible. The monthly salaries in euros can be found on page 66 of the PDF download: https://go.fzj.de/bmi.tvoed Further information on doctoral degrees at Forschungszentrum Jülich including our other locations is available at: https://www.fz-juelich.de/gp/Careers_Docs

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