
Research Associate - PhD student QENS (f/m/d)

Surface diffusion processes on magnetic nanoparticles via neutron scattering

Contact

Name

Mirijam Zobel

Telephone

+49 241 8096916

E-MailSend Email [<mailto:zobel@ifk.rwth-aachen.de>]

Institution

Lehrstuhl und Institut für Kristallographie

Our Profile

The Institute of Crystallography at RWTH Aachen University is placed in the interdisciplinary field of physics, chemistry, geo- and material sciences. Our research aims at a better understanding of the structure and dynamics of nanoscale solid-liquid and solid-gas interfaces, because of their importance in catalysis, for energy materials, geoscience and nanomaterials. To achieve these goals, we employ modern X-ray and neutron scattering techniques, both in the laboratory and at large scale research facilities.

Project description. Diffusion processes heavily impact materials properties, for instance lithium ion diffusion in battery materials or interfacial diffusion of reactants in heterogeneous catalysts. In order to investigate the type of diffusion dynamics (rotation vs. translation) involving activation energies, quasielastic neutron scattering (QENS) is a highly sensitive technique. It allows us to gain insight into confined diffusion processes of hydrogen-containing species, which can often not be addressed with other techniques. In this project, we use this QENS technique to investigate how water and small organic molecules diffuse on the surface of iron oxide nanoparticles, which are of applicational relevance to photo- and heterogeneous catalysis. Iron oxide is an abundant material and hence of increasing interest in light of sustainability.

Application. Applications shall be submitted in English or German as one PDF file electronically and include

- Letter motivating the application and background for this position
- CV
- BSc and MSc diploma, transcripts of records.

Your Profile

- University degree (M.Sc. or equivalent) in physics, chemistry, materials science, geoscience or related field.
- Experience in neutron and / or X-ray scattering and data fitting / scientific programming (e.g. Igor Pro, Python)
- Experience in (nanoparticle) synthesis and physicochemical characterization (e.g. TGA, CHN, DLS)
- Knowledge about magnetism is welcome.

- High motivation for further training, independent and goal-oriented way of working.
- Good communication skills in English and possibly German.

Your Duties and Responsibilities

- QENS experiments at neutron research reactors or spallation sources (national and international)
- Data analysis and interpretation of quasielastic neutron scattering data (e.g. in Igor Pro)
- Synthesis of iron oxide nanoparticles, sample preparation for QENS experiments and characterization involving e.g. vapor sorption, XRD, TGA, CHN, IR.
- Publication of results in peer-reviewed scientific journals and presentation at conferences.

What We Offer

The successful candidate will be employed under a regular employment contract.

The position is to be filled at the earliest possible date and offered for a fixed term of three years.

The fixed-term employment is possible as it constitutes one of the fixed-term options of the Wissenschaftszeitvertragsgesetz (German Act on Fixed-term Scientific Contracts).

This is a part-time contract position.

The standard weekly hours will be 26,55 hours.

The successful candidate has the opportunity to pursue a doctoral degree in this position.

The salary is based on the German public service salary scale (TV-L).

The position corresponds to a pay grade of EG 13 TV-L.

About us

RWTH is a certified family-friendly University. We support our employees in maintaining a good work-life balance with a wide range of health, advising, and prevention services, for example university sports. We also offer a comprehensive continuing education scheme and a public transportation ticket available at a significantly reduced price.

RWTH is an equal opportunities employer. We therefore welcome and encourage applications from all suitably qualified candidates, particularly from groups that are underrepresented at the University. All qualified applicants will receive consideration for employment and will not be discriminated against on the basis of national or ethnic origin, sex, sexual orientation, gender identity, religion, disability or age. RWTH is strongly committed to encouraging women in their careers. Female applicants are given preference if they are equally suitable, competent, and professionally qualified, unless a fellow candidate is favored for a specific reason.

As RWTH is committed to equality of opportunity, we ask you not to include a photo in your application.

You can find information on the personal data we collect from applicants in accordance with Articles 13 and 14 of the European Union's General Data Protection Regulation (GDPR) at <http://www.rwth-aachen.de/dsgvo-information-bewerbung> [<http://www.rwth-aachen.de/dsgvo-information-bewerbung>]

Application

Number:	V000002665
Application deadline:	09/05/2022
Mailing Address:	RWTH Aachen University Lehrstuhl und Institut für Kristallographie, RWTH Aachen University Prof. Mirijam Zobel Jägerstraße 17-19 52066 Aachen

Email:

Send Email [\[mailto:zobel@ifk.rwth-aachen.de\]](mailto:zobel@ifk.rwth-aachen.de)

Applicants are invited to submit their applications via email. For data protection reasons, however, we recommend sending applications via mail.