



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 Jülich Centre for Neutron Science – Quantum Materials and Collective Phenomena (JCNS-2), we develop and use scattering methods to determine structural and magnetic order and excitations in novel quantum, nano and functional materials in order to achieve an understanding of macroscopic properties and functionalities. In the field of “Complex Oxides”, we are investigating how novel materials can be made usable for information technology.

We are now offering a project for an exciting

Master thesis – Synthesis and Characterization of binary and ternary vanadates

Your Job:

Mixed-valence vanadium oxides express a variety of divergent magnetic, electronic and catalytic properties that make them attractive for numerous applications thanks in large part to the ability of vanadium to assume different oxidation states. This project will explore the feasibility of novel binary and ternary vanadates and also explore their behavior under extremes of pressure and temperature. This will be achieved using a variety of solid-state, high-pressure and solvothermal synthesis techniques, and the resultant products will be characterized through X-ray and neutron diffraction as well as spectroscopic methods to determine their composition, structure, and oxidation-state distribution. In addition, variable temperature and pressure studies will be carried out to probe their structural stability, phase transitions, and emergent functional properties. Become part of our team and contribute to groundbreaking discoveries!

Your specific tasks will include:

- Preparation of mixed valence oxides via ceramic and hydrothermal synthesis techniques
- Structural characterization using powder and single crystal X-ray diffraction
- Characterization of the properties using magnetometry and conductivity

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

measurements

- Opportunity to participate in experiments at large-scale facilities (synchrotron and neutron)

Your Profile:

- You are studying chemistry, crystallography, materials science, applied geoscience and engineering or a related subject
- Knowledge of crystallography
- Interested in interdisciplinary research
- Independent and responsible way of working, commitment, high degree of teamwork, as well as enjoyment of cooperative collaboration
- You have a very good command of written and spoken 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 support you in your work with:

Our work is at the forefront of cutting-edge, innovative issues, offering you the opportunity to actively help in shaping change! We support you in your research with:

- **CAMPUS EXPERIENCE:** Our research campus in the countryside creates ideal conditions for collegial exchange and sporting activities right on site. Our cafeteria offers a wide range of options—you can enjoy a relaxing lunch break with a lake view
- **MEANINGFUL TASKS:** Your thesis deals with a future-oriented, socially relevant topic with direct practical relevance in an international environment
- **PRACTICAL RELEVANCE:** With us, you will gain valuable practical experience alongside your studies and actively participate in interdisciplinary projects
- **SCIENTIFIC ENVIRONMENT:** You can expect excellent scientific equipment, modern technologies, and qualified support from experienced colleagues
- **PERSONAL RESPONSIBILITY:** You organize your tasks independently—from preparation to implementation
- **WORK-LIFE BALANCE:** We offer flexible working hours to help you balance your professional and personal life. You also have the option of flexible working (in terms of location), which is generally possible after consultation and in line with upcoming tasks and (on-site) appointments
- **FLEXIBILITY:** Flexible working hours make it easier for you to balance work and study

In addition to exciting tasks and a collegial working environment, we offer you much more: <https://go.fzj.de/benefits>

We welcome applications from people of diverse backgrounds, in terms of age, gender, disability, sexual orientation/identity as well as of disparate social, ethnic and religious origin. An equal-opportunity, diverse and inclusive working environment in which everyone can realise 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:

<https://go.fzj.de/womens-job-journey>