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 Institute of Biological Information Processing - Structural Biochemistry (IBI-7) focuses on understanding dynamic interactions between biological macromolecules and their structure, which is crucial to the function of every cell and organism. Central to this goal is nuclear magnetic resonance spectroscopy (NMR), which provides detailed information about the microscopic structure and function of molecules. But NMR is an intrinsically insensitive technique, often requiring many hours or days of data acquisition to yield high-resolution structure maps. The Hyperpolarization Methods lab develops chemical and physical approaches to hyperpolarize atoms and molecules, enhancing their NMR signals by orders of magnitude. This opens entirely new possibilities for spectroscopy and imaging in chemistry, biology, and in vivo MRI.

If you are interested in creative problem solving at the interface between chemistry and physics, this opportunity may be for you!

We are looking to recruit a

Master Thesis - Magnetic Resonance

Your Job:
The Hyperpolarization Methods research group at the Institute for Structural Biochemistry is looking for promising young scientists to carry out research for a Masters thesis, in the field of catalytic chemistry.We use a method called parahydrogen-induced polarization, which is a hyperpolarization technique to enhance the NMR/MRI signals of small molecules, to enable exciting new applications. We use specific inorganic catalysts to do solution-state hydrogenation reactions to produce hyperpolarized molecules, and we are looking for a Masters student to investigate these catalysts and their mechanism of action using NMR. This is a uniquely interdisciplinary topic, that combines various research areas, such as:

- Synthetic chemistry for synthesizing new molecular targets
- Physical chemistry and spectroscopy for developing new NMR experiments
- Theoretical chemistry for simulating the nuclear spin dynamics in molecules
- Experimental physics for building electromagnetic spectrometer equipment to control

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

the molecular quantum states

This project will involve hands-on experimental work to test different reaction conditions to develop an understanding of a ruthenium catalyst, as well as the option to do some theory+simulations to simulate the NMR spectra and guide experiments. It may also involve simple syntheses of ruthenium catalysts, to do e.g., ligand exchange.

Your Profile:

- Current master studies in chemistry, physics, biochemistry, materials science, or similar
- Basic experience with NMR and wet-lab chemistry
- Willing to work within a multidisciplinary and collaborative research environment
- Curiosity and excitement to learn
- Good knowledge of spoken English

In the research group you will work in an environment that combines the best parts of modern science with traditional academic values. You will carry out fast-paced research on societally-relevant topics, with individual support (especially for your personal well-being) so you can grow as an individual. At the same time, you will have ample opportunity for acquiring knowledge, discussing science, and thinking creatively.

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:

- Initial discussion to find a research project that interests you
- Clearly defined goals, leading to results for a thesis
- Potential to publish project results in a peer-reviewed journal
- Work in a high-impact research field linking quantum technologies and biomedicine
- International and interdisciplinary working environment
- Specific services for international employees if needed, 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

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.