

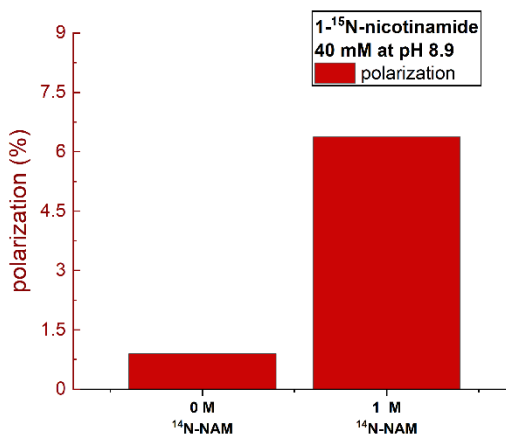
Vacancy: Doctoral candidate or PostDoc in chemical physics for hyperpolarized molecular imaging

Project description

Several hyperpolarization techniques were developed to enhance the intrinsic low signal of Nuclear Magnetic Resonance (NMR) and Magnetic Resonance Imaging (MRI) to observe real-time and in vivo metabolic processes. We are developing parahydrogen-induced polarization (PHIP) and dissolution dynamic nuclear polarization (dDNP). The primary focus of this project is to polarize novel tracers for molecular MRI.

Within the scope of this R&D project, we will investigate experimentally and theoretically the mechanisms of nuclear spin relaxation of hyperpolarized molecules. When ready, the hyperpolarization technique could be translated and tested in vitro and in vivo. The project continues our preliminary studies:

- Peters et al., Sci Adv. 2023
<https://www.science.org/doi/10.1126/sciadv.add3643>
- Peters et al. preprint, 2024:
<https://www.researchsquare.com/article/rs-4668036/v1>.



Position:

This Ph.D. (or PostDoc) aims to study the relaxation phenomena of hyperpolarized tracers.

This is a 3-year TVL-13 (German income class; the fraction is applied depending on qualification) starting as soon as possible (e.g., February 2025).

Your scope of tasks will cover some of the following aspects of the project:

- Study nuclear spin relaxation (experimentally and theoretically);
- Perform dDNP experiments;
- Presenting the results at international conferences and writing papers;

Your profile:

- You have completed your university studies (master's degree or German Diploma) in physics, chemical physics, biomedical technology, or a comparable engineering field.
- You have knowledge, practical experience, and abilities in the fields of magnetic resonance or magnetic sensors.
- Experience in programming, modeling, and analyzing data would be an advantage.
- You have a good command of spoken and written English.

We offer:

- A position at the second-largest University Hospital in Germany with access to state-of-the-art magnetic resonance equipment;
- Access to imaging, chemical, and RF-electronics facilities of the section biomedical imaging of Kiel University (PI Prof. Jan-Bernd Hövener);
- An intensive Ph.D. supervision in an interdisciplinary team
- An excellent public transportation and bicycle highway directly to your workplace

Apply:

- Send your CV, recommendation letter, motivation letter, and relevant diploma to the project PI (andrey.pravdivtsev@rad.uni-kiel.de) as a single file.

PI of the project and contact person

Dr. Andrey Pravdivtsev,

BMBF hyperpolarization group leader,

Section Biomedical Imaging, Dept. for Radiology and Neuroradiology, UKSH and Kiel University