PhD Position

(Physics, Biology, Chemistry, or similar)

Metabolic and Molecular Magnetic Resonance Imaging, Oncology Research, and Parahydrogen-Based Hyperpolarization

Medical Physics, Department of Radiology, University Medical Center Freiburg

Who we are:
Hyperpolarization group Freiburg within the small animal research center (AMIR) at the Medical Physics, Dept. of Radiology (≈60 scientists)
Department Head:
Prof. Dr. Maxim Zaitsev

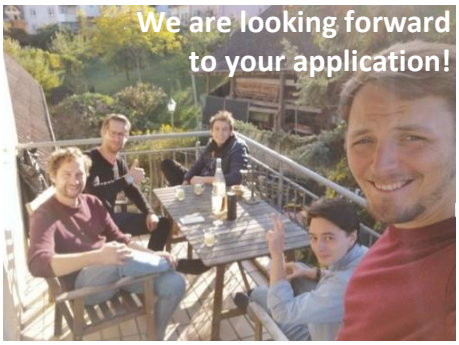
Current Hyperpolarization Team:
1 PostDoc, 2 PhD Students
(+ 3 open PhD/PostDoc positions)

Visit our Website:

www.uniklinik-freiburg.de/hyperpolarization

More Information:
Opening date: July 21, 2022
Anticipated Start: Sep 2022 – Jan. 2023
Planned PhD duration: 3 years
Location: Freiburg, Germany

Application and Contact:
Please send your application (CV incl. publications & short cover letter) to Dr. Andreas Schmidt (andreas.schmidt@uniklinik-freiburg.de) or Prof. Maxim Zaitsev (maxim.zaitsev@uniklinik-freiburg.de). Feel free to get in touch with questions!



Background:
Many diseases – including cancer, ischemia, and neurodegenerative diseases – are associated with characteristic alterations in metabolism. Hyperpolarized MRI enables mapping metabolic pathways in living organisms by enhancing the MRI signal by several orders of magnitude. Bridging the gap between nuclear spin physics and medical diagnostics, hyperpolarization is a truly interdisciplinary research. The Freiburg group focuses on the investigation and development of new hyperpolarization methods and bringing these advances to biomedical application with an ultimate goal of clinical translation.

We have several open PhD / PostDoc positions in this emerging field of research, such that your individual project can be adapted to your skills with topics ranging from Simulations of the Hyperpolarization, Hardware Development, NMR and MRI Sequence Development (Bruker / Siemens), to Molecular Imaging in Cancer cell and animal models.

What we offer:
- Physics with application aiming at improving diagnostics and monitoring of cancer for personalized therapy
- High-impact emerging field of research
- Part of the German Cancer Consortium (DKTK)
- National and international cooperation (visits supported)
- State of the art equipment and infrastructure
- Competitive salary (fully funded 65 % TV-L E13 position)

What you will be doing:
- Developing and installing hardware, automating setup (fluidics of gases and liquids ; reactor design ; prototyping)
- Developing and programming tailored NMR / MRI sequences
- Investigating polarization transfer theoretically and experimentally
- Researching the hyperpolarization of new agents
- Applying new methods to investigate and image cancer

What we expect: ***(M – must ; S – should ; N – nice to have)***
- Master in Physics, Biology, Chemistry, Engineering or similar (M)
- Fluent English (M)
- Good scientific presenting and writing skills (M)
- Solid background in quantum mechanics and molecular physics (S)
- Work experience (e.g. from B.Sc./M.Sc. thesis) with
  - simulations, hardware design, experimenting, programming, data analysis, scientific publishing (S)
  - NMR and / or MRI (N)

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