



The Functional Materials Working Group under the leadership of Prof. O. Gutfleisch at the Department of Materials and Geosciences of TU Darmstadt offers a position as

Research Assistant / PhD Student (all genders) – Novel RE-3d and RE-free compounds for magnetocaloric hydrogen liquefaction technology – 75%

with a fixed-term contract of 3 years.

The position is within the framework of a bilateral German-Japanese project “Development of magnetic refrigeration materials for hydrogen liquefaction using combinatorial research approach“. The goal of this project is the development of a series of sustainable, meaning not resource-critical, materials with giant and reversible magnetocaloric effect at a wide temperature range of 80 to 10 K required for H₂ liquefaction.

The position is hosted by the internationally renowned Functional Materials group, which focusses on the development of resource-efficient functional materials. The group’s topics of interest range from permanent magnets over magnetocaloric materials and ferromagnetic shape-memory alloys to magnetic materials for biomedical application with focus on synthesis, characterization and modeling of the magnetic, thermal and (micro-)structural properties.

Your tasks:

You will be responsible for materials processing, advanced multi-scale microstructure characterizations, advanced characterizations of various physical properties including magnetocaloric ones, and she/he will take part in the mean-field simulations. The research will be assisted by machine learning by text mining of existing literature.

Your profile:

We expect you to integrate into our interdisciplinary team and contribute actively to the overall progress of the project’s objectives in close collaboration with your colleagues of the consortium while, at the same time, pursuing your own thesis highly motivated and self-reliantly. Requirements are an excellent scientific degree (master or comparable) in Materials Science, Physics or Chemistry, possibly with a focus on synthesis and characterization of magnetic materials as well as gas-solid reactions.

You are highly motivated to publish your results in high level refereed journals, present them at international conferences. You bring excellent communication skills, very good English competencies (fluent in spoken and written), and enjoy working in interdisciplinary and international teams.

We offer the opportunity to work towards a PhD degree on the cutting-edge research topic in the field of functional materials for energy conversion and the excellent working conditions in an international team with integration into a scientific network of well-renowned experts of the magnetic materials community. The Technical University of Darmstadt offers a varied, diverse working environment, independent work, demand-oriented training opportunities and individual personnel development. Company health management and the compatibility of family and career are a matter of course. In addition, you will receive free travel authorization for local and regional transport in the area of the state of Hesse (LandesTicket Hessen) according to the applicable regulations. All university employees can use the offer of deferred compensation in favor of a "Job Rad" leasing model.

Opportunity for further qualification (doctoral dissertation) is given. The fulfillment of the duties likewise enables the scientific qualifications of the candidate.

The Technische Universität Darmstadt intends to increase the number of female employees and encourages female candidates to apply. In case of equal qualifications applicants with a degree of disability of at least 50 or equal will be given preference. Wages and salaries are according to the collective agreements on salary scales, which apply to the Technische Universität Darmstadt (TV-TU Darmstadt).

Applications (all in a single PDF-file) should be sent including all usual documents, stating the above identification number, in the form of a pdf by e-mail to info@fm.tu-darmstadt.de.

If you have any questions, please contact Dr. Konstantin Skokov (konstantin.skokov@tu-darmstadt.de) or Prof. Oliver Gutfleisch (oliver.gutfleisch@tu-darmstadt.de).

For the website of the FM group, see → <https://www.mawi.tu-darmstadt.de/fm>.

By submitting your application, you agree that your data may be stored and processed for the purpose of filling the vacancy. You can find our → [privacy policy](#) on our webpage.

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Application deadline May 22, 2023