

To extend our team, we are looking for a full time

Research Associate (m/f/d) in the field of material and process development of MOF-functionalized CF towpregs for hydrogen high-pressure storage systems

About us

The Chair of Carbon Composites (LCC) at the Technical University of Munich pursues an interdisciplinary research approach from raw materials to production engineering up to complete composite components and their applications. This includes the development of new manufacturing methods, novel approaches to process and structural simulation, as well as research in material characterization and testing technologies.

We are currently looking for a new, motivated colleague (m/f/d) to join a research project with industrial partners aimed at the development and integration of metal-organic framework (MOF)-functionalized carbon fibers (CF) into towpreg manufacturing for technologically advanced hydrogen high-pressure buffer tanks, using energy-efficient, optimized, and robust manufacturing processes.

At LCC, we are focusing on the following research areas:

- **Development and characterization of MOF-modified carbon fibers** to specifically improve the fiber-matrix interface and interlaminar composite properties
- **Manufacturing and optimization of towpregs** from unsized and MOF-functionalized carbon fibers, including analysis of process parameters and fiber damage
- **Mechanical characterization at coupon level** (e.g. tensile, shear, and fatigue testing) to evaluate the material performance of the developed MOF-towpreg composites
- **Process development, including MOF-towpreg manufacturing and filament winding**, as well as modification of towpreg equipment and implementation of quality assurance systems
- **Validation of the developed materials and components** through evaluation of burst tests and cyclic pressure tests

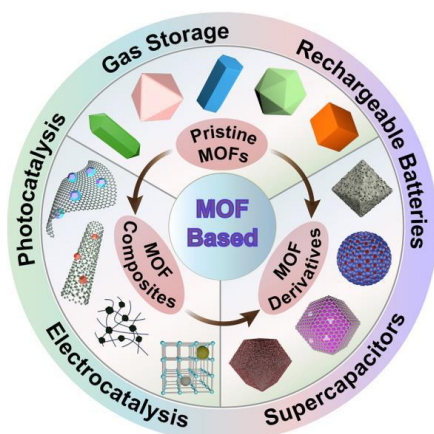


Fig.: 1: MOF Applications¹

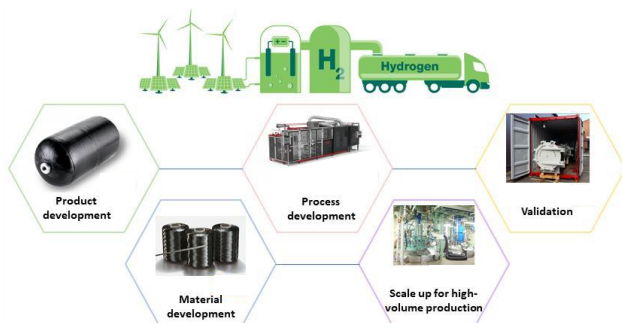


Fig. 2: Overview research aspects

¹ Wang, W., Chen, D., Li, F., Xiao, X. & Xu, Q. Metal-organic-framework-based materials as platforms for energy applications. *Chem* 10, 86–133 (2024).

Requirements

- Above-average university degree (Diploma or Master's degree) in the fields of materials science, composite materials, plastics engineering, manufacturing technology, or similar
- General interest in manufacturing processes and characterization of composite structures
- Enjoyment of experimental work and digitalization methods
- Determination, independent and structured working style and pronounced teamwork and communication skills
- Proficiency in writing longer texts with complex content in German and English

Tasks

- Independent handling of various tasks in a research project with partners from industry and science
- Participation in the preparation of research proposals
- Supervision and guidance of student theses
- Involvement in teaching in the field of materials science/composite materials
- Supervision of scientific equipment

We offer

- Exciting research and working environment within a young, committed team
- Opportunity for a doctorate for professional and personal development
- Remuneration according to the collective agreement (TV-L)

Application

- The position is initially limited to two years
- TUM does not cover any costs associated with attending interviews

The university aims to increase the proportion of women. Qualified women are therefore strongly encouraged to apply. The position is suitable for employment of persons with severe disabilities. Applicants with severe disabilities will be given preferential consideration in the case of essentially equal qualifications, aptitude, and professional performance.

If you are interested in working in our team, please send your complete application to bewerbungen.lcc@ed.tum.de. In the case of a written application, we kindly ask you to submit only copies, as we cannot return your application documents after the procedure is completed.

Data Protection Notice:

As part of your application, you provide personal data to the Technical University of Munich (TUM). Please view our privacy policy on collecting and processing personal data in the course of the application process pursuant to Art. 13 of the General Data Protection Regulation of the European Union (GDPR) at <https://portal.mytum.de/kompass/datenschutz/Bewerbung/>. By submitting your application, you confirm to have read and understood the data protection information provided by TUM.

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