Lehrstuhl für Carbon Composites
School of Engineering and Design
Technische Universität München

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

Research Associate (m/f/d) in the field of Process Technology for UV-curing Towpregs in the Automated Fiber Placement (AFP)-Process

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. of fiber-reinforced composite materials and their applications. This includes the development of new manufacturing methods, new approaches for process and structural simulation, as well as research in the field of material characterization and testing.

We are currently looking for a new, motivated colleague (m/f/d) for a research project with industrial partners aimed at the development of a UV-curing and thixotropic resin system with impregnation process for glass fiber tows. The resin will be processed in an Automated Fiber Placement (AFP) process for fiber reinforcement and component production with in-line UV curing within seconds.

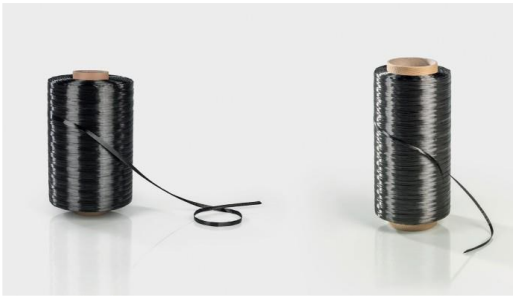

Figure 2: Wound, pre-impregnated carbon fiber Towpreg coils[1]

Figure 2 Towpreg laying process in the production of fiber-reinforced components using an AFP system [2]

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

- Development of a towpreg manufacturing process for glass fiber tows and a primarily UV-curing, thixotropic resin system
  - Test campaign to impregnate the glass fiber tows using various impregnation techniques
  - Development of an ultrasonic treatment via a calender on the impregnated glass fibers to control viscosity and wetting in further impregnation steps
- Process development for rapid curing of glass fiber towpregs on 2D AFP process
  - Development of a combination and synchronization of thermal and UV curing elements for complete in-line curing
  - Development of tape processes for the directional reinforcement of plastic components via laying strategies of the glass fiber towpregs through test series and load tests

Requirements

1 *https://media.springernature.com/lw685/springer-static/image/art%3A10.1007%2Fs41777-017-0040-2/Me-diaObjects/41777_2017_40_Fig1_HTML.jpg*

2 *https://www.trelleborg.com/seals/-/media/tss-media-repository/tss_website/products/advanced-composi-tes/ad_afp-torch.jpg?h=450&iar=0&w=800&rev=7475083fa5724183881be9bdffe4dddf&hash=9D78920D2742CC4A6228205C2122EE59*

- 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

If you are interested in working in our team, please send your complete application to personal_24_01.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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