Professur Partikel- und Fasertechnologie für biobasierte Materialien
TUM Campus Straubing für Biotechnologie und Nachhaltigkeit
Technische Universität München

The newly established research group in Particle and Fiber Technology for bio-based Materials, led by Prof. Dr. Wenwen Fang, is seeking a highly motivated

Postdoc in Laser Assisted Biopolymer Processing (f/m/d)

to join the **ERC StG project "Unleashing Cellulose Potential: Laser-Driven Structural Modulation"**

This exciting opportunity is based at the Technical University of Munich, Campus Straubing for Biotechnology and Sustainability (TUMCS). The position is part of an ERC-funded project, offering outstanding opportunities for research advancement and career development.

About the Research Group

Our research focuses on extracting and isolating bio-based polymers such as cellulose and proteins from renewable feedstocks and waste streams. We aim to develop sustainable processes to convert these materials into high-performance fibers and functional materials. By manipulating molecular interactions through chemical and physical methods, we tailor the structural and mechanical properties of bio-based materials to advance the potential of biopolymers in various applications.

About the Project

This is an exciting and highly innovative interdisciplinary project combining laser technology, material science, and polymer physics. It represents a pioneering approach to sustainable biopolymer processing, a field that holds tremendous potential for advancing the circular economy and reducing the environmental footprint of plastic materials. The successful execution of this project will directly contribute to significant breakthroughs in biopolymer processing, opening up new possibilities for the production of bio-based materials with enhanced properties and processing efficiencies. By joining this project, you will be at the forefront of an emerging field with the potential to make a real-world impact on sustainable materials processing.

Key Responsibilities

- Laser system setup: Although a laser will be purchased from a manufacture, you will be responsible for configuring optics to control the beam and integrating the system into the experimental setup.
- Supervision: Guide and support students during their thesis work and project assignments.
- Research: Conduct cutting-edge experiments to investigate the effects of laser-induced changes on the molecular and macroscopic properties of biopolymers. Work on the development of novel, sustainable processing techniques for bio-based polymers and materials, with a focus on advancing both fundamental understanding and practical applications.
- Project management: Take an active role in managing project deliverables and ensuring that work packages are completed on time and within budget. Ensure compliance with EU reporting standards, and contribute to the preparation of Project Reports for the ERC.
- Publications: Prepare and publish research findings in high-impact, peer-reviewed journals.

Qualification

We are looking for a candidate with the following qualifications:

- PhD in Physics, Photonics, Polymer Science, or a related field.
- Strong expertise in laser optics, with hands-on experience in setting up, operating, and optimizing laser systems
- Expertise with Infrared (IR) and Raman spectroscopy is highly advantageous.
- Good problem-solving skills and a creative mindset for developing innovative solutions to experimental challenges, including adapting or improving existing equipment to meet specific research objectives.
- Hands-on experience in designing and building custom experimental setups, demonstrating the ability to tackle technical challenges and create solutions in the lab.
- Excellent communication skills, both written and spoken, with proficiency in English for preparing reports, writing scientific papers, and collaborating with the team.

What We Offer

- Career Development: Opportunity to contribute to the establishment of a new research laboratory and develop leadership skills
- Teaching Experience: Gain valuable teaching experience at one of Germany's leading technical universities
- Collaborative Environment: Work in a highly interdisciplinary and dynamic environment at the TUM Straubing Campus, focused on sustainability and renewable resources
- Salary: In accordance with the TV-L E13 pay scale. The initial contract is for 1 year, with the possibility of extension to four years.
- As an equal opportunity and affirmative action employer, TUM explicitly encourages applications from women as well as from all others who would bring additional diversity dimensions to the university's research and teaching strategies. Preference will be given to disabled candidates with essentially the same qualifications

Join us!

To apply this position, please submit your application including the attachments mentioned below as **one single PDF** document in English via email to applications.pft@cs.tum.de

CV including publications
Motivation letter (Max. 1 page)
Degree certificates and academic transcripts

The deadline for applications is **February 10th, 2025**. However, interviews will begin as soon as suitable candidates are identified, so we encourage early applications.

For additional information, kindly contact Prof. Wenwen Fang, Email: applications.pft@cs.tum.de