Professorship for Electrobiotechnology
TUM Campus Straubing for Biotechnology and Sustainability
Technical University of Munich (TUM)

The Professorship for “Electrobiotechnology” is offering a position to pursue a

Ph.D. (f/m/d) in Polymer Chemistry for Bioelectrocatalysis

About us:

The Technical University of Munich is located in the south of Germany and is **one of the most renowned universities** of **technology** in **Germany** with top rankings in research and teaching. Our highly qualified students are responsible for our outstanding position as a **university** that is **recognized** in the areas of **science** and **engineering**.

Our Professorship for “Electrobiotechnology” (https://ebt.cs.tum.de/en/) concentrates on the development of polymers that serve as multifunctional matrices for redox-active enzymes in bioelectrocatalytic reactions. Our polymers and biocatalysts are at the heart of sustainable energy conversion processes such as in hydrogen fuel cells and electrolyzers. Electrochemistry forms the principal component of assessment of catalytic performance, in applications on sustainability. We work closely with various institutions and companies from all over the world, especially France, Denmark, the UK, and Germany.

Your Profile:

- Master degree in Chemistry
- You have experience in organic chemistry
- Knowledge/Interest in method development
- Knowledge/Interest in electrochemistry
- Excellent English speaking and writing skills
- No German language skills required, although will be beneficial
- Interdisciplinary team working skills with high independence and outstanding academic performance
- Hands-on mentality

Applicants should submit their CV including A-level (for German applicants), bachelor and master degrees, and a motivation letter detailing their interest and suitability for the position.

Tasks:

You will develop and test novel organic polymers that are compatible with natural enzymes that catalyzes CO_2 fixation or H_2 production (Check out these references: Nature Catalysis **2021**, Vol. 4, p 251-258; Angew. Chem. Int. Ed. **2021**, vol. 60, p. 21056). Such polymers are designed to be redox-active in order for them to act as mediators of electrons between the electrode and the enzymes. Since enzymes are often too fragile to sustain conditions of an operating electrolyzer, we design the polymeric electron mediators to protect the biocatalyst from oxidative stress and other deactivation processes. These enzyme-polymer systems will then be coupled to microbial organisms, in collaboration with academic and industrial partners in Europe, to achieve sustainable chemical transformations such as H_2 evolution and CO_2 reduction. The workflow for the project spans from synthetic organic chemistry to electrobiotechnology. Basic experimental skills in synthetic chemistry are mandatory for this position. There is no need for previous experience in polymer synthesis, electrochemistry, or handling of enzymes, but a strong motivation to learn and push the boundaries of our current knowledge further is required. Ability to work in a team is essential. We are looking for an individual with a high willingness to take initiatives and motivation to start their doctoral career at TUM. The PhD work will be conducted in the frame of the EIC Pathfinder project ECOMO.

We offer:

TUM offers a wide range of inspiring and challenging Ph.D. programs, which will supplement the research training with outstanding opportunities for career development, continued education, and life-long learning. We offer excellent working conditions in a young and interdisciplinary team. In an open environment, you will have the freedom to develop and realize your own ideas. TUM Campus Straubing for Biotechnology and Sustainability offers scientific and academic excellence in a student-friendly and fresh environment. The successful applicant will hold a **3-year contract**. We offer a competitive salary and benefits depending on work experience and seniority in accordance with the public service wage agreement of the Free State of Bavaria - **TV-L E13 (67%)**. As an equal opportunity and affirmative action employer, TUM explicitly encourages applications from women and 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.

As part of your application for a position at the Technical University of Munich (TUM), you transmit personal data. Please note our data protection information in accordance with Article 13 of the General Data Protection Regulation (GDPR) on the collection and processing of personal data as part of your application https://portal.mytum.de/kompass/datenschutz/Bewerbung/. By submitting your application, you confirm that you have read TUM's data protection information.

Interested?

We look forward to receiving your application *via* e-mail to **nicolas.plumere@tum.de (Prof. Nicolas Plumeré)** and **hemlata.agarwala@tum.de (Dr. Hemlata Agarwala)**. The position will remain open until we find a desirable candidate.

Technical University of Munich (TUM)
Electrobiotechnology
Group Director: Prof. Dr. Nicolas Plumeré
Group Leader: Dr. Hemlata Agarwala
Campus Straubing for Biotechnology and Sustainability
Uferstraße 53, 94315 Straubing, Bavaria, Germany
Email: nicolas.plumere@tum.de; hemlata.agarwala@tum.de
https://ebt.cs.tum.de/en/
www.tum.de