

PhD position

at Ludwig Maximilians University, Munich

Rational design and structural characterization of bioinspired silk-based nanomaterials

Project description

Synthetic, bioinspired silk-based biopolymers, or bioplastics, represent excellent sustainable and biodegradable alternatives for the traditional, unsustainable and non-degradable petrochemical plastics. Bioplastics made from bio-mimicking materials will redefine the plastic-manufacturing of the 21st century.

The PhD project will focus on the fundamental understanding of the hierarchical organization of naturally occurring silk proteins from amino acid building blocks to nanoscale crystallites and further to functional structural materials. The designed sequences will be produced using recombinant DNA techniques and characterized by FTIR, Raman, CD, and solution/solid-state NMR spectroscopy. In addition to spectroscopic techniques, the project has collaborators in computer modelling and bioinformatics, which provides excellent opportunity to interact with other research groups in Europe and in the USA.

Our research group has dedicated access to well-equipped biochemistry lab and to state-of-the-art solution and solid-state NMR spectrometers. In addition, the Department provides an excellent cross-disciplinary environment with modern research facilities to carry out collaborative research.

Requirements

We are looking highly motivated candidates with a background in bioengineering and/or structural biology. The ideal candidate will already have a background in cloning, protein expression, purification, and isotope labeling of proteins. Previous experience in NMR and/or computer modelling would be advantageous but not a must. Candidates should be open to innovative approaches and techniques and be able to tackle demanding challenges.

Application details

Starting date for the position is flexible. Interested candidates should send their CV, motivation letter including at least two contacts as references together with the copies of all university degrees to Petra Rovó to petra.rovo@lmu.de.