

Postdoctoral Position (or PhD Student Position) in Computational Rheology

The research group “Fluid Dynamics of Complex Biosystems” headed by Prof. Dr. Natalie Germann has an open position in the field of computational rheology.

Area of research

The research of Professor Germann’s fluid dynamics group focuses on the rheology of viscoelastic fluids that are of industrial relevance (e.g. wormlike micelles, polymeric solutions). The reason for the unusual rheological properties of viscoelastic fluids is their microstructural dynamics. To establish a more fundamental understanding of viscoelastic fluids, her research group investigates the relationship between their rheology and their microstructure. The research approach combines thermodynamic modeling and numerical simulation with laboratory experiments. More information about Professor Germann’s fluid dynamics group can be found at <http://germann.wzw.tum.de/>.

Your project

You will be working on the collaborative project “Freispülen von Spiralwickelmembran-Modulen” (AiF 6472/15 N) carried out together with Prof. U. Kulozick. This project focuses on the rinsing of ultrafiltration spiral wound membranes (SWMs) following milk concentration. In the food industry hygienic conditions are to be maintained by frequent CIP cleaning. Therefore, product losses and water consumption add up to considerable amounts, since SWMs are difficult to rinse and clean. The aim of this project is to assess the impact of the rheological properties of the rinsing fluid, the processing conditions, and the technical characteristics of the SWM on the rinsing performance. To guide the experimental investigation carried out by the project partner and to complement their experimental data, a theoretical model for the prediction of mixing phase generation will be developed using fluid mechanical arguments. Experimental data will be used to validate the newly developed model.

Your profile

We are looking for a talented individual who is excited about research and interested in pursuing an academic career. He/she should be able to work independently as well as to cooperate in an interdisciplinary team of researchers. Applicants should hold a PhD degree (postdoctoral position) or a Master degree (graduate student position) in computational engineering, applied mathematics, or a closely related field. The project will involve the numerical solution and analysis of viscoelastic fluid models using the software package OpenFoam. He/she should have a solid background in fluid mechanics and computational rheology. Previous experience with OpenFoam is required. Good communication skills and fluency in both written and spoken English are required. German language skills are desirable.

Our offer

The Technische Universität von München (TUM) is one of the most renowned universities in Europe. We are offering excellent working conditions in a highly international research environment.

The salary is in accordance to the Public Sector Collective Agreement on Länder (TV-L). The wage classification will be carried out after presenting the personal requirements as pay grade TV-L E 13. This salary is awarded as the candidate will also have some teaching and administrative duties. The position can be filled from February 2016 and is initially limited to two years, the second year being contingent on satisfactory progress.

Your application

Please send your application by electronic mail and preferably in one single pdf-document to natalie.germann@tum.de. For full consideration, the application should include a cover letter, a detailed CV, a list of publications, copies of all educational certificates and transcripts of records, a summary of past research activities, evidence of teaching interest and abilities, and three letters of recommendation. The deadline for application is January 31, 2015. Early applications are encouraged; applications may be processed as soon as they are received. TUM is an equal opportunity employer. Qualified women are therefore particularly encouraged to apply. Applicants with disabilities are treated with preference given comparable qualification.

Prof. Dr. Natalie Germann
Assistant Professor for Fluid Dynamics of Complex Biosystems
School of Life Sciences Weihenstephan
Technische Universität München
Maximus-von-Imhof-Forum 2
Room O49
85354 Freising / Germany
Phone: +49.8161.71.3785
Email: natalie.germann@tum.de
Website: <http://germann.wzw.tum.de/>