PHD/Postdoc position available

Computational Biofluid Mechanics

The Institute of Aerodynamics at the Technical University Munich offers a PhD/Postdoc position within the Microfluidics group. The position will be supported by the German Science Foundation, via the DFG Project “Numerical investigation of leukocyte binding in the human vasculature”. The candidate is expected to conduct independent research in the area of computational biofluid mechanics with a particular focus on cardiovascular blood flow. This project is based around the theme of atherosclerosis, in particular how this disease initiates and progresses. This topic is of great interest the world over due to the significant pressure it puts on health and monetary systems. In this project we aim to build a framework for studying the initiation of this disease via a coupled particle-stochastic binding model. In particular we aim to model the transport of blood borne particles in realistic carotid bifurcation geometry utilizing Smoothed Particle Hydrodynamic (SPH) methods. This transport model for particles, in particular leukocytes, will be coupled to an endothelial cell receptor binding model in order to link the transport and surface biology. This investigation should allow advances in the understanding of leukocyte-receptor binding and potentially identify conditions which are adverse from a mechanobiological perspective. The project will benefit from close collaboration with Dr. Comerford at the Institute for Computational Mechanics, TUM.

The candidate should have an excellent knowledge of programming (especially Fortran) and a solid background in fluid dynamics and statistical physics. Previous experience with coding of particle-based algorithms (SPH, DPD etc.) and parallel programming would be beneficial. Interested candidates should submit a full curriculum vitae, covering letter together with academic records to the email address given below.

Dr. Marco Ellero
Lehrstuhl für Aerodynamik
Technische Universität München
Boltzmannstr.15, 85748
Garching (Munich)

Phone: +49-(0)89-28916148
Fax: +49-(0)89-28916139
Email: marco.ellero@aer.mw.tum.de
http://www.aer.mw.tum.de