

Open PhD position in the Nanoparticles Self-Assembly Group

The newly founded Nanoparticles Self-Assembly Group at the Adolphe Merkel Institute, University of Fribourg (Switzerland), is searching for outstanding, highly motivated, energetic PhD candidates, starting from January 1st, 2012.

There is currently one available position.

1) Modeling of nanoparticles self-assembly in the presence of external field, and in particular of flow fields

Job description. Suspensions of spherical nanoparticles find a variety of applications in the preparation and processing of polymeric and ceramic materials. Exploiting their self-assembly in order to generate structures and materials with controlled features is one of the challenges of nanotechnology. The use of external force fields is a powerful tool to control the mechanism and structure of nanoparticles assemblies. In particular, flow fields have attracted the interest of scientists, and are commonly used in industrial applications. Nevertheless, understanding the interactions of concentrated dispersion of particles with the flow field has proved to be challenging.

The objective of the work is to perform detailed simulations of self-assembly of particles at high concentrations in the presence of flow fields as well as other force field, in order to gain a deep understanding of the dynamics of the assembly process.

Qualifications. The ideal candidate should have a Master or equivalent degree in physics, chemical physics, (chemical) engineering, or material science, should possess excellent computer programming skills, a deep knowledge in numerical methods, and should be fluent in English, both written and spoken.

Applications, including a CV, and the contact information of at least two references should be sent electronically to Prof. Dr. Marco Lattuada (current E-mail address: marco.lattuada@chem.ethz.ch).