University of Stuttgart
Germany

Institute for Computational Physics

Director
Prof. Dr. Christian Holm

Institute for Computational Physics, Allmandring 3, 70569 Stuttgart, Germany

Contact
Allmandring 3
70569 Stuttgart • Germany
T +49 711 685-63701
F +49 711 685-63658
e-mail:
holm@icp.uni-stuttgart.de

www.icp.uni-stuttgart.de

6 November 2020

Call for a postdoctoral research associate on atomistic and coarse-grained modeling of salt precipitation and biofilm growth in porous materials.

The Institute for Computational Physics at the University of Stuttgart is seeking a highly motivated Postdoctoral Research associate to work on atomistic and coarse-grained simulations of salt precipitation and biofilm growth in porous materials. The research shall be carried out within the framework of the collaborative research center 1313 "Interface-Driven Multi-Field Processes in Porous Media – Flow, Transport and Deformation" under joint supervision of Dr. Alexander Schlaich and Prof. Dr. Christian Holm and in close contact with experimental measurements.

Background

A detailed molecular model of the governing interfacial processes at the water/salt and air/salt interfaces is fundamental for successful application of continuum models at the pore scale and subsequent up-scaling. We will apply atomistic molecular simulations of disordered, quenched salt structures in contact with water and silica surfaces to estimate the resulting transport coefficients (diffusivity, permeance, …). The goal of this project is a combined in-situ and in-silico study of precipitation in porous materials. To this end NMR spectra in model geometries as well as subsequent up-scaling using tomographic data shall be performed in close collaboration with experiments.
Depending on personal interest and project progress the successful applicant will also be involved in Lattice-Boltzmann modeling of multiphase-flow, electrokinetic phenomena and precipitation effects as well as numerical models for biofilm formation using our in-house developed bacterial model.

What we are looking for

Applicants should have a PhD in Physics, Physical Chemistry or related areas. A strong background in Statistical Physics as well as willingness for close collaborations with experimental and theoretical groups is expected. Ideally, the applicant should have already gained experience in atomistic and/or coarse-grained simulations. A solid background on basic programming for the simulation analysis (mainly Python but also C/C++ or Fortran) is advantageous.

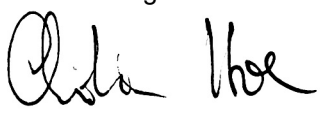
What we are offering

- Full-time position in TVL-E13 remuneration of the German state employees initially limited until 31.12.2021 with the possibility of extension.
- The opportunity to get to know a broad variety of simulation approaches.
- Close interaction with other groups on theoretical modeling and experiments.
- An interdisciplinary and flexible research environment where we also encourage the contribution of new research ideas and directions.

The position is available starting from January 1st, 2021. The deadline for application is December 15, 2020 or until the position is filled. Please send your application as a PDF file to: application@icp.uni-stuttgart.de

In an effort to strengthen the presence of female workers in scientific areas, the University of Stuttgart invites women to apply for this job opening. Disabled people will have priority as long as equally qualified.

With kind regards



Christian Holm