

PhD-(or postdoc) Position in the Department for Flow and Material Simulation at Fraunhofer Institute for Industrial Mathematics, ITWM, Kaiserslautern, Germany

The department for flow and material simulation at Fraunhofer ITWM is looking for a highly motivated PhD-Student (or for a postdoc) in the field of reactive flow simulation. The project, starting in September, will be dealing with the modeling and upscaling of crystal dissolution in heterogeneous porous media across different scales. The project is embedded in an interdisciplinary research team combining mathematical modeling with imaging and experimental work.

The research will be mainly concerned with 3D pore scale simulation and modeling of reactive flow in porous media, including the geometry changes due to dissolution. Methods employed will include direct numerical simulation on the pore-scale, as well as upscaling to the plug scale by homogenization. Model order reduction techniques will be investigated, to reduce the computational load. The thesis will be written in English.

Possible topics for the PhD-project include:

- direct numerical simulation of reactive flow in porous media,
- multiscale modeling of reactive flow in porous media,
- model order reduction techniques for reactive flow problems in porous media.

A successful candidate should have:

- an outstanding Master degree in Mathematics, Physics or Earth Science or a related field,
- advanced programming skills (preferably in C++), as well interest in implementing models and algorithms into new and existing software,
- ability to work independently and present the results of his/her work in English, and desirably, in German.
- Desire and capability for team work

What you can expect:

- an exciting, challenging and innovative working environment,
- possibilities for international exchange,
- courses for your personal and scientific development, for instance in scientific writing.

A research fellowship will be granted according to DFG guidelines for three years, with a possible extension.

Applicants with disabilities will receive preferred consideration at the same qualifications; also Fraunhofer Society is committed gender equality.

Applications for a postdoc position on the same topic will be also considered.

To apply please contact:

Prof. Oleg Iliev or Dr. Torben Prill

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