

PROCESSES IN NATURAL AND TECHNICAL PARTICLE-FLUID-SYSTEMS

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ABSTRACT

Soils are natural particle-fluid systems (PFS), in which complex physical, chemical and biological processes, interfacial processes, and phase transitions occur, that are not sufficiently investigated experimentally, well-understood, and that cannot be simulated numerically with sufficient accuracy yet. In technical PFS certain properties of particles are generated by means of controlled physical, chemical and biological processes, interfacial processes, and phase transitions (e.g. functionalized particles). Technical PFS also require further research regarding understanding, modelling and process optimization. The problems in natural and technical PFS are partly analogous. Therefore, it is obvious, to investigate processes in natural and technical PFS interdisciplinary in order to reach a benefit of scientific findings.

The Invited Session is dedicated to the ongoing Research Training Group *Processes in natural and technical Particle-Fluid-Systems (PintPFS)* [1] which was established at the Hamburg University of Technology (TUHH) in 2019 to promote early career researchers. They are funded by the Deutsche Forschungsgemeinschaft (self-governing organisation for science and research in Germany) for a period of up to nine years. Scientists of the disciplines civil engineering, mechanical engineering, material sciences and process engineering will present their research within the guiding topic of the Research Training Group. Existing competences and resources of the involved scientists regarding experimental investigations, modelling and simulation of PFS enable an interdisciplinary research approach that raises expectation of innovations in the following fields: progress in modelling of PFS, better understanding of capillary effects, modelling of erosion, transport and sedimentation processes, development of functionalized particles, as well as development of numerical experiments for PFS. It is planned to have a presentation of each of the nine researchers of the Research Training Group.

REFERENCES

- [1] <https://www.tuhh.de/grk2462/startseite.html>