Eidgenössische Technische Hochschule Zürich
Swiss Federal Institute of Technology Zurich

Institut für Energietechnik: Prof. R.S. Abhari (LEC), Prof. K. Boulouchos (LAV)
Prof. Ch. Müller (ESE), Prof. H.G. Park (NETS), Prof. D. Poulikakos (LTNT)
Prof. H.-M. Prasser (LKE), Prof. A. Steinfeld (PRE)
Institut für Fluiddynamik: Prof. P. Jenny, Prof. T. Rösgen
Computational Science & Engineering Laboratory: Prof. P. Koumoutsakos

11/01/2017

E I N L A D U N G

zu einem Vortrag im Rahmen des

Kolloquiums Thermo- und Fluiddynamik

Datum: ***>> Montag, 23. Januar 2017 <<***

Zeit: **16:15 Uhr**

Ort: Maschinenlaboratorium ETH Zürich
Hörsaal ML H 44

Referent: **Dr. Branko Bijeljic**
Department of Earth Science and Engineering, Imperial College London, UK

Titel: **Pore-scale Imaging and Modelling of Flow, Transport and Reaction in Porous Media**

Recent advances in both X-ray imaging and pore-scale modelling enabled us to transform our understanding of flow, transport and reaction processes in the subsurface. More accurate experimental description of solid and fluid(s) distributions in the pore space and the ability to study dynamics of multiphase flow and reactive transport has helped better understand fundamental physics of these processes, and sparked the creation of new concepts for validation of theoretical models at the pore scale and using them for predictive purposes.

In this talk, I will address a digital rock analysis methodology based on probability distribution functions (PDFs) used for determining signatures of flow, transport and reaction in subsurface rock. The key challenge is to quantify how pore structure affects flow, which in turn defines transport characteristics that may also be coupled with reaction. An advantage offered by employing the concept of PDFs is in characterizing heterogeneity for each scale of interest, so that an upscaling methodology can be applied from pore scale upwards.

Furthermore, the static and dynamic imaging of reactive transport and multiphase flow will be presented, with some examples of model validation, and the potential of new methodologies for upscaling without loss of information through averaging. Exemplar applications are measurements of capillary trapping, contact angle and curvature measurements in multi-phase flow and fluid/fluid and fluid/solid reactive transport. Dynamic imaging using synchrotron sources can considerably improve time resolution to the order of 10s, making it possible to study fast reaction and the physics of multiphase flow events during drainage and imbibition. This is a rapidly developing field that can offer considerable insights into the physics of pore-scale phenomena.

Host: PD Dr. D. Meyer-Massetti, Prof. P. Jenny

Gäste sind willkommen!

Weitere Informationen: http://www.ifd.mavt.ethz.ch/events/ktf/ktf-records.html
www.lec.ethz.ch, www.lav.ethz.ch, www.ese.mavt.ethz.ch, www.nets.ethz.ch, www.ltnt.ethz.ch,
www.lke.mavt.ethz.ch, www.pre.ethz.ch, www.ifd.mavt.ethz.ch, www.cse-lab.ethz.ch/index.php/frontpage