



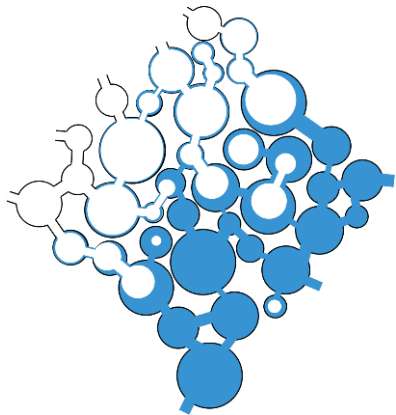
SFB1313

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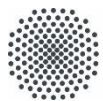
DFG

Deutsche  
Forschungsgemeinschaft  
German Research Foundation

# PNM (Pore Network Modelling) Workshop 2022



26<sup>th</sup> – 28<sup>th</sup> September  
Stuttgart



Universität Stuttgart

## 26<sup>th</sup> September: Afternoon

- 13:30 Arrival and registration
- 13:45 Kick-off: Welcome  
**Rainer Helmig**, University of Stuttgart
- 14:00 **Session 1** Fundamentals of pore network modelling
- 14:00 Single- and multi-phase pore network modelling and constitutive laws  
**Amir Raouf**, Multiscale Porous Media Lab
- 14:45 Static and dynamic pore network models, IMPES scheme in dynamic pore network models  
**Vahid Niasar** ...
- 15:30 Coffee break
- 16:00 Fully implicit pore network model, coupling of free flow and pore network: multiphase, multicomponent, nonisothermal systems  
**K. Weishaupt**, **M. Veyskarami**, **H. Wu**, **M. Schneider**, **Rainer Helmig**
- 16:45 Pore structures and interface behaviour under wettability change  
**Lifei Yan**, **Hamed Aslannejad**, **A. Raouf**, **M. Hassanizadeh**
- 17:30 Closure of the first day

## 27<sup>th</sup> September:

- 08:45 Arrival and registration
- 09:00 Introductory remarks  
**Majid Hassanizadeh**, Utrecht University
- 09:15 **Session 1** Pore network modelling: Challenges and improvements
- 09:15 Efficient and robust fully-implicit pore-network model  
**Hanchuan Wu**, **Martin Schneider**, **M. Veyskarami**, **S. Chen**, **R. Helmig**.
- 10:00 Visualization of pore morphology  
**Alexander Straub** ...
- 10:30 **Session 2** Special applications
- 10:30 The role of disconnected phases and interfacial area in drainage / imbibition processes - a microfluidic approach  
**S. Vahid Dastjerdi**, **Nikolaos Karadimitriou**, **H. Steeb**
- 11:00 Coffee break
- 11:30 Salt precipitation in pore-network models: Investigation of throat concepts for saturated porous media  
**Theresa Schollenberger**, **L. von Wolff**, **C. Bringedal**, **S. Pop**, **R. Helmig**
- 12:00 Designing and performing micromodel experiments for evaporation in porous media  
**Enno de Vries**, **Matthijs de Winter**, PNM team from University of Stuttgart

## 27<sup>th</sup> September:

12:30	Coupled free flow and porous medium systems: Formation, growth and detachment of droplets at the interface <b>Maziar Veyskarami</b> , R. Helmig, C. Bringedal
13:00	Lunch break
14:15	Dispersion and mixing in porous media <b>Vahid Niasar</b> ...
14:45	Pore scale modelling and experiments of reactive/dissolution processes in porous media <b>Amir Raof</b> , T. Wolterbeek, P. Agrawal, M. Wolthers
15:30	Identifying pore-scale mechanisms of porosity-permeability altering biomineralization processes with microfluidics <b>Holger Class</b> , F. Weinhardt, J. Hommel, H. Steeb, N. Karadimitriou, S. Vahid Dastjerdi, D. Lee
16:00	Coffee break
16:30	The influence of wall wettability on the breakthrough phenomena canthotaxis during two-phase pore filling events <b>Johannes Müller</b> , L. Yan, A. Raof, H. Wu, M. Schneider, R. Helmig, B. Weigand
17:00	Modelling evaporation from leaves <b>Sina Ackermann</b> , S. Jansen, L. Kaack, R. Helmig
17:30	Closure of the second day
19:30	Dinner

## 28<sup>th</sup> September:

08:45	Arrival and registration
09:00	Introductory remarks <b>Rainer Helmig</b> , University of Stuttgart
09:15	<b>Session 1</b> Special applications
09:15	Transport of particles and micro-organisms in porous media under saturated and unsaturated conditions <b>Mandana Samari</b> , <b>Vahid Nikpeyman</b> , A. Raof, J. Schijven, M. Hassanizadeh
09:45	<b>Session 2</b> Overview
09:45	Pore network modelling: Overview <b>Rainer Helmig</b>
10:15	Overview of microfluidic experiments <b>Enno de Vries</b> , <b>Qianjing Tang</b> , <b>Amir Raof</b> , Multiscale Porous media Lab
10:45	Coffee break
11:15	<b>Session 3</b> Discussion
11:15	Bridging the gap between model and experiment
12:45	Lunch break
14:00	Collaboration strategies and roadmap
14:45	Outlook
15:15	Closure of the workshop <b>Rainer Helmig</b> , University of Stuttgart

**SFB 1313:** is an interdisciplinary Collaborative Research Centre of the University of Stuttgart which aims to research the interfaces in multi-field processes (flow, transport and deformation) in porous-media systems and to gain a fundamental understanding how they affect multi-field processes.

**DROPIT:** the International Research Training Group (IRTG) DROPIT is a collaboration between the universities of Stuttgart, Bergamo (Italy) and Trento (Italy) which focuses on the study of droplet interaction phenomena in three thematic research areas: drop-gas, drop-wall and drop-liquid interactions.

### Dates and location:

**Date:** 26 to 28 September 2022

**Location:** Multi Media Lab (MML), Pfaffenwaldring 61, 70569 Stuttgart, Campus Vaihingen of the University of Stuttgart

### How to reach there:

<https://www.iws.uni-stuttgart.de/en/lh2/directions/>

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