InterPore German Chapter Meeting 2021
Monday, 1st February 2021

Time	Speaker	Title of the Talk
9:00-9:10	**Majid Hassanizadeh**	**Opening**
9:15-9:45	**Raphael Schulz**	**Beyond Kozeny-Carman: predicting the permeability in porous media**
Section 1: Multiscale modelling and analysis for porous media (Chair: Iryna Rybak)		
10:00-10:10	Nadja Ray	Derivation of an effective dispersion model for electroosmotic flow involving free boundaries in a thin strip
10:15-10:25	Stephan Lunowa	Asymptotic analysis of immiscible two-phase flow with moving contact line in a pore
10:30-10:40	Carina Bringedal	Multi-scale modeling of mineral precipitation and dissolution in porous media
10:45-10:55	Mathis Kelm	A two-scale phase-field model for dissolution and precipitation of two minerals
11:00-11:10	Stephan Gärttner	Efficiency and accuracy of micro-macro models for dissolution/precipitation in two-mineral system
11:15-11:25	Simon Zech	Modeling the effect of microscale heterogeneities on soil bacterial dynamics and the impact on soil functions
11:30-11:40	David Wiedemann	Coupled advection-reaction-diffusion processes on an evolving microstructure: analysis and homogenization
11:45-12:15		**Discussion**
12:15-12:45	**Steven Jansen**	**The role of porous media for water transport in plants**
13:00-14:00		**Lunch break**
Section 2: Numerical methods for porous media (Chair: Bernd Flemisch)		
14:00-14:10	Torben Prill	Simulation of thermochemical heat storage in the $CaO/Ca(OH)_2$-system on the micro-scale
14:15-14:25	Christoph Lohrmann	The influence of motility on bacterial accumulation in a microporous channel
14:30-14:40	Andreas Rupp	Some aspects of enriched Galerkin methods for the linear advection equation
14:45-14:55	Christian Hinz	Efficient simulation of reactive flow in reservoirs rocks at the pore scale
15:00-15:10	David Krach	An SPH approach for pore-scale resolved simulations of fluid flow through porous media
15:15-15:25	Alexander Jaust	Parallel partitioned coupling simulation of fractured porous media
15:30-15:40	Thorben Mager	Modelling heterogeneous wetting with Smoothed Particle Hydrodynamics to predict electrolyte distribution in Technical Gas Diffusion Electrodes
15:45-16:15		**Discussion**
Section 3: Experiments (Chair: Nikolaos Karadimitriou)		
16:15-16:25	Johannes Hommel	Enzymatically induced calcite precipitation: model development and experiments
16:30-16:40	Felix Weinhardt	Experimental methods and imaging for enzymatically induced calcite precipitation in microfluidic devices
16:45-16:55	Josef Katzmann	Dynamic mechanical analysis (DMA) for high performance concrete: a means for damage analysis
17:00-17:10	Henry Enninful	A kernel-based approach to NMR cryoporometry of porous solids
17:15-17:25	Ishani Banerjee	A new quantitative method to overcome the model-to-experimental data fit problem in multiphase flow in porous media
17:30-17:40	Bilal Zulfiqar	The impact of wettability on fluid displacement front and trapping efficiency in glass beads and natural sands: a micro-CT study

17:45-17:55	Kinanti Hantiyana Aliyah	Pore-specific wetting in PEFC catalyst layers elucidated by small angle X-ray scattering
18:00-18:30		**Discussion**
18:30-19:30		**Virtual get together meeting** ☺

Thuesday, 2nd February 2021

Time	Speaker	Title of the Talk
9:00-9:30	**Ralf Seemann**	**The role of local instabilities in fluid invasion into permeable media studied by in situ X-Ray microtomography**
Section 4: Pore-scale modelling and imaging (Chair: Johannes Hommel)		
9:45-9:55	Marcel Reinhardt	Conventional vs machine learning segmentation in digital rock analysis
10:00-10:10	Dongwon Lee	On the efficiency of the 2D U-net model in the identification of fractures in quenched samples by means of micro-XRCT
10:15-10:25	Lukas Maier	Effective transport parameters of porous media from microstructure images
10:30-10:40	Samaneh Vahid Dastjerdi	Image-based characterisation of the two-phase flow in porous media
10:45-10:55	Matthias Ruf	An open, modular and flexible micro X-Ray Computed Tomography system for porous media research
11:00-11:10	Alexander Schlaich	Wetting transition and freezing of ionic liquids in nano-confining conducting porous media: an effective Thomas-Fermi screening approach
11:15-11:25	Amir Golparvar	Direct numerical modelling of microbially-mediated degradation in soil under unsaturated conditions
11:30-12:00		**Discussion**
12:00-12:30	**Tim Ricken**	**The theory of porous media with applications in environmental engineering, biomechanics and materials science**
12:45-14:15		**Lunch break**
14:15-15:00	**Veerle Cnudde**	**Unravelling pore-scale processes in geomaterials** Holder of the Kimberly-Clark Distinguished Lectureship Award 2020
Section 5: Mathematical modelling and numerics for porous media (Chair: Arndt Wagner)		
15:00-15:10	Yousef Heider	Modeling of suction-induced fractures in multiphase porous media
15:15-15:25	Florian Zill	Modelling of fluid percolation in salt rock with quasi-isotropic permeability
15:30-15:40	Elissa Eggenweiler, Paula Strohbeck	Validation and calibration of coupling concepts for Stokes-Darcy problems
15:45-15:55	Katharina Heck	Influence of radiation on evaporation rates: a numerical analysis
16:00-16:10	Samuel Burbulla, Maximilian Hörl	A mixed-dimensional discontinuous Galerkin scheme for fluid flow through fractured porous media with fractures of non-constant aperture
16:15-16:25	Maurice Wolf	Data-driven homogenization based on neural networks for permeability estimation
16:30-16:40	Vanessa Montoya	Reactive transport modeling challenges in radioactive waste management in Germany
16:45-17:15		**Discussion**
Section 6: UQ and data-driven methods (Chair: Sergey Oladyshkin)		
17:15-17:25	Aqeel Afzal Chaudhry	Local and global sensitivity analysis of THM consolidation around a point heat source
17:30-17:40	Ilja Kröker	Arbitrary multi-resolution multi-wavelet-based polynomial chaos expansion for data-driven uncertainty quantification
17:45-17:55	Timothy Praditia	Physics Informed Neural Network for porous media modelling

18:00-18:10	Farid Mohammadi	An Uncertainty-Aware Bayesian Framework for Validation of Flow Models in Porous Media
18:15-18:25	Ilja Kröker	Uncertainty quantification and global sensitivity analysis for coupled porous-medium and free-flow problems
18:30-18:40	Marlon Suditsch	Towards data-integrated simulation of growth and regression of tumours in brain tissue
18:45-18:55	Jörg Buchwald	Application of experimental design-based assisted history matching for uncertainty quantification in radioactive waste repositories
19:00-19:30	**Concluding Discussion**	
19:30-19:40	**Closure**	