

2018 Program

InterPore 10th Annual Meeting and Jubilee May 14-17 2018, New Orleans, USA interpore.org/neworleans









Program Committee

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Local Organizing Committee

Karsten Thompson (chair) Clint Willson Ipsita Gupta Kyriakos Papadopoulos

Dear InterPore 2018 Participants,

On behalf of the International Society for Porous Media (InterPore) and the Local Organizing Committee, I would like to welcome you to New Orleans for the 10th Annual Meeting and Jubilee. This meeting continues the phenomenal growth of this young organization, with over 1000 abstracts scheduled, and 800-900 attendees expected. To accommodate it, we have expanded to four full days with eight parallel topical tracks. At the same time, we expect to retain what has made InterPore meetings so successful – cutting edge science and cross-disciplinary research in a setting that encourages interaction with new and familiar colleagues alike.



In addition to the special Jubilee lecture on Monday evening, a few things are new for this year. To help navigate the expanding technical program, minisymposia are organized topically into eight parallel tracks (defined by the color coding in the program and the room assignments). InterPore is also working hard to promote the poster program. To this end you will notice that all poster titles and authors are printed in the program alongside the orals; in the main hall, posters are grouped by the MS or GS they are associated with (which in turn are grouped by parallel track), creating research themes as you walk down different aisles; also, you will notice that we have three very well-known invited poster presenters for the first time. We hope all of these changes improve on what was an already strong tradition of poster presentation at InterPore.

On the lighter side, please make note of the Jubilee Reception Monday evening (in the convention center) and the Wednesday-evening gala dinner at Mardi Gras World. The gala dinner is a casual affair this year – partly to help us keep registration costs the same even as we expand the conference length, but also to reflect the laid-back culture of New Orleans – Laissez les bons temps rouler! Feel free to change into something comfortable, wander through a unique float den (where Mardi Gras floats are made and stored), and then join us on the bank of the Mississippi river for food, drink, live jazz, socializing, and awards.

Finally, a few notes of thanks: thank you to our sponsors and exhibitors, whom you will find listed in this booklet and/or exhibiting in the main hall. Thank you to the session organizers and those who submitted abstracts and are presenting this week. And thank you from the LOC to all who helped us put this conference together. There are too many to list, but five people need to be singled out: Karolin Weber, German Abzaletdinov, Rafid Al-Khoury, Tissa Illangasekare, and of course Majid Hassanizadeh.

See you in the sessions, Karsten Thompson

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TRACK DESCRIPTIONS

Minisymposia and General Sessions are organized into topical tracks that run throughout the conference. On the detailed grid, each track can be identified by its room number and/or the color coding shown below.

	· · · · · · · · · · · · · · · · · · ·
Room A	Displacement, reactive transport, and CO2 processes
Room B	Non-geologic materials
Room C	Fractured media; oil & gas
Room D	Imaging, micromodels, & experimental studies
Room E	Shales; nanoporous materials; applications
Room F	Particles, interfaces, and multiphase
Room G	Theory, modeling, and computation
Room H	Pore-scale and multiscale

Invited talks are held in the largest four rooms, not necessarily corresponding to the track in that room.

Poster sessions are in Hall I-1. All posters are associated with a MS or GS, and are displayed together in the hall. The printed program lists all poster-board numbers arranged by MS/GS, on the day that the respective oral session was held, and poster presenters will be by their posters that day. (Printouts posted in the Hall will provide reverse lookup by author or title.)

Parallel Oral Sessions & Speaker Ready Room



8



New Orleans – InterPore 2018 Vicinity



Visit http://bit.ly/InterPore2018map For a Google Map of conference locations.

2018
14,
May
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5

Day 1

8:45	Opening Se	ssion: New C	Irleans Theat	er				
9:00	Plenary Spe	aker Chunsh	ian Song: Nev	v Orleans The	eater			
	Room A	Room B	Room C	Room D	Room E	Room F	Room G	Room H
9:45	MS 3.11	MS 4.03	MS 4.30	GS 3	MS 1.32	MS 1.19	MS 1.02	MS 2.01
10:39	Coffee Brea	k: Reception	area outside	parallel room	JS			
11:00	MS 3.11	MS 4.03	MS 4.30	GS 3	MS 1.32	MS 1.19	MS 1.02	MS 2.01
	(cont)	(cont)	MS 2.20	(cont)	(cont)	MS 4.14	(cont)	(cont)
12:30	Lunch provi	ided: Hall I-1						
13:30	Invited Spea	akers: Rooms	A – D					
	Takeshi Tsuj	i (A)	Hamdi Tche	lepi (B)	Leonhard G	anzer (C)	Ralf Seemar	าท (D)
14:00	MS 1.04	MS 4.09	MS 1.33	GS 3	MS 1.32	MS 1.26	MS 1.08	MS 1.16
		MS 4.08		(cont)	MS 4.25			
16:00	Poster Sessi	ion 1: Hall I-1						
	coffee, tea,	snacks						
17:30	Business M	eeting: New	Orleans Thea	ter				
18:00	Jubilee Spe	aker Albert S	acco Jr: New	Orleans Thea	ater			
19:00	Jubilee Rec	eption: Lobby	y outside Nev	v Orleans The	eater			





 $\mathbf{2}^{\mathrm{Day}}$



Tuesday, May 15, 2018

8:30	Plenary Spe	aker Sarah C	odd: New Or	leans Theate				
	Room A	Room B	Room C	Room D	Room E	Room F	Room G	Room H
9:30	MS 2.16	MS 2.26	MS 2.04	MS 2.17	MS 1.12	MS 1.01	MS 2.10	MS 2.23
10:42	Coffee Brea	k: Hall I-1						
11:15	MS 2.16	MS 4.28	MS 2.04	MS 2.17	MS 1.12	MS 2.21	MS 2.09	MS 4.18
	(cont)	MS 1.21	MS 1.28	(cont)	(cont)			
12:45	Lunch provi	ded: Hall I-1						
14:00	Invited Spea	akers: Rooms	A – D					
	Anne De Wi	t (A)	lan Griffiths	(B)	Mariela Ara	ujo (C)	Kamaljit Sin	gh (D)
14:35	MS 2.05	MS 1.15	MS 4.11	MS 2.06	MS 1.12	MS 4.13	MS 1.17	MS 1.27
			MS 1.06		(cont)			
17:15	Poster Sessi	ion 2: Hall I-1						
	coffee, tea,	beer, wine						

Wednesday, May 16, 2018

Dorthe Wildenschild (D) **MS 2.15 MS 2.15 MS 2.08** Room H (cont) Room G **MS 2.12** (cont) GS 1 GS 1 Room F **MS 4.22 MS 4.22** MS 1.25 MS 1.09 Géraldine Pichot (C) (cont) MS 1.14 **MS 1.24** MS 1.12 Room E (cont) Plenary Speaker Uwe Beuscher: New Orleans Theater MS 1.10 **MS 1.10** Room D MS 3.01 Mark Knackstedt (B) (cont) **MS 2.14 MS 4.23 MS 4.23** Room C **MS 2.13** (cont) Gala Dinner: Mardi Gras World Invited Speakers: Rooms A – D Poster Session 3: Hall I-1 Lunch provided: Hall I-1 MS 3.10 **MS 4.06 MS 2.07 MS 2.25** Room B Coffee Break: Hall I-1 Moran Wang (A) coffee, tea MS 1.11 MS 1.18 MS 4.10 **MS 4.05** Room A **MS 1.11** 11:15 12:45 14:00 14:35 17:15 19:00 10:42 8:30 9:30



 \mathcal{S} Day

Thursday, May 17, 2018

	Room A	Room B	Room C	Room D	Room E	Room F	Room G	Room H
8:30	MS 4.19	MS 3.02	MS 2.11	MS 3.08	GS 4	MS 1.05	MS 4.15	MS 2.02
		MS 4.16	MS 2.19					
10:18	Coffee Brea	ık: Hall I-1						
10:45	MS 1.07	MS 4.17	MS 2.03	MS 3.06	GS 4	MS 1.23	GS 2	MS 2.02
					(cont)			(cont)
12:15	Poster Sess	ion 4: Hall I-1						
	Lunch provi	ided						
13:45	Invited Spea	akers: Rooms	A – D					
	Florin Adria	n Radu (A)	Parisa Mirbo	(B) bc	Birol Dindor	uk (C)	Matthew Ba	alhoff (D)
14:20	MS 1.07	MS 4.04	MS 2.03	MS 3.04	MS 1.20	MS 1.23	GS 2	MS 2.02
	(cont)	MS 4.27	(cont)	MS 3.05		(cont)	(cont)	(cont)
15:50	Coffee Brea	l k: outside N€	ew Orleans Th	neatre				
16:10	Plenary Spe	aker Jens Bir	kholzer: New	/ Orleans The	eater			
17:00	Closing Ses	sion: New Or	leans Theatre					
	5							



 $\mathbf{4}^{\mathrm{Day}}$

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Our Promise:

P&G touches and improves the lives of billions of people around the world. And P&G people work to make sure those brands live up to their promise to make everyday life just a little bit better, now and for generations to come.

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- Countries of Operations: ~70
- Countries Where Our Brands Are Sold: 180+
- Sales: \$65.1 billion



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Consumer Understanding; Go-to-Market; Brand-Building; Scale; Innovation; Productivity

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- We invest more in innovation than any other company in our industry (\$1.9 billion)
- Over 7,000 R&D employees worldwide
- Over 36,000 granted patents
- Through innovation we fulfill our purpose to improve the consumers' lives, looking carefully for sustainability opportunities at every touch point along our products' development path. We do this by developing new materials, packaging innovations and alternative energy programs that allow us to deliver more sustainable products. Also, we leverage on cutting edge technologies such as virtual modeling and simulation tools to maximize our efficiency
- Innovation work covers product research, product development, process development and manufacturing capability, packaging development, analytical & microbiology, product safety & regulatory affairs, etc.
- If you are interested to career opportunities in P&G R&D, please visit <u>http://germany-austria.pgcareers.com/</u> for more information and online application.





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MONDAY, MAY 14, 2018

8:30	Opening Sesson
8:45	Plenary 1 - see facing page
	Parallel Session 1
1 0	MS 3.11: Fundamental aspects of geologic storage of CO2
1-A	Organizers: Auli Niemi, Mike Celia, Jan Nordbotten, Rafid al-Khoury
Room A	
9:47	Quanlin Zhou: Modeling CO2 Storage in Fractured Reservoirs: Fracture-Matrix Interactions of Supercritical and Dissolved CO2
10:05	Ioannis Zacharoudiou: The impact of drainage displacement patterns and Haines jumps on CO2 storage efficiency
10:23	Layachi Hadji: Modeling the dissolution-driven convection as a Rayleigh-Benard problem
10:39	Coffee break
11:00	Yiheng Tao: Vertically-Integrated Dual-Continuum Models for CO2 Injection in Frac- tured Saline Aquifers
11:18	Taehyung Park: Modification of wettability and interfacial tension by biosur- factant-producing bacteria for geologic carbon storage
11:36	Samuel Jackson: The impact of heterogeneity on the flow and trapping of CO2 in target UK aquifers
11:54	Tianyuan Zheng: Adaptive hybrid multilayer model coupling vertically-integrated and full multi-dimensional models for geological CO2 storage
12:12	Amir Ghaderi: Quantitative measurements of partial saturations in Brine-CO2 saturated Rocks at pore scale
4.0	MS 4.03: Applications of biochemical modification of porous media
I-B	Organizers: Leon van Paassen, Robin Gerlach, Akiko Nakano, Michael
Room B	Gomez, Jason DeJong
9:47	Emmanuel Salifu: Experimental Studies on the Hydraulic Effects of Fungal-Mycelia in Sandy Soil
10:05	Dong-Hwa Noh: Seismic monitoring of biopolymer accumulation and permeability reduction in sands
10:23	Alexandra C.M. San Pablo: Optimization of Treatment Techniques for Up-scal- ing of Stimulated Ureolytic Microbially-Induced Calcite Precipitation
10:39	Coffee break
11:00	James Minto: Optimizing field-scale MICP with multi-scale micro-continuum Open- FOAM modeling
11:18	Caitlyn Hall: Microbially Induced Desaturation and Precipitation (MIDP) via Denitrifi- cation during Centrifugal Loading

Prof. Chunshan Song

Energy Institute, Departments of Energy & Mineral Engineering and of Chemical Engineering The Pennsylvania State University



Novel Nano-porous Materials for

Energy and Environmental Applications

Significant advances have been made in our research over the past decade in designing novel nano-porous materials for energy and environmental applications including CO2 capture and conversion to chemicals and fuels as well as shapeselective synthesis of chemicals and catalytic decomposition of environmental pollutants. For CO2 capture, industrial processes use liquid amine solvents which are energy intensive and costly. We have developed the new concept of solid "molecular basket" sorbents (MBS) for CO2 capture which is more energy efficient. MBS consists of functional polymers immobilized in nano-porous materials (such as SBA-15. TUD-1, MCF, and Carbon). Nano-porous MBS materials have been successfully designed and applied in capture and separation of CO2 and H2S from various industrial gases [1,2]. The CO2 MBS has also been recently demonstrated successfully through pilot plant-scale tests. For CO2 conversion, new nano-structured materials have shown great potential. Examples are given for catalytic conversion of CO2 through dry reforming to syngas and for catalytic hydrogenation using nano-structured metal catalysts. More recently, we have shown that hollow nano-structured zeolite crystals have great potential as multi-functional catalysts and nano-confined materials for energy and environmental applications including CO2 conversion and pollutants decomposition [3,4]. Hollow Silicalite-1 and hollow ZSM-5 crystals with siliconrich exterior surface were prepared by a "dissolution-recrystallization" strategy in tetrapropylammonium hydroxide solution. More interestingly, hollow ZSM-5 single crystals with double shells were successfully prepared via layer-by-layer technique followed with dissolution - recrystallization strategy. Furthermore, hollow ZSM-5 encapsulating iron and carbon nanotubes were successfully synthesized. The hollow ZSM-5 exhibits excellent acid catalysis with enhanced shape selectivity.

Day 1

11.20	Nariman Mahabadi: Pore Scale Simulation of Biogenic Gas Formation and Migra-
11:30	tion in Porous Media
11:54	Rebecca Lunn: 'Microbial Mortar'- restoration of degraded marble structures with microbially induced carbonate precipitation
12:12	Charles M.R. Graddy: High Phylogenetic and Physiological Diversity of Ureolytic Bacteria in Native Soils Bio-stimulated for MICP
1-C	MS 4.30: Taming Leaky Wellbores - Plugging and Abandonment in Gulf of Mexico Wellbores
Room C	Organizers: Mileva Radonjic, Ipsita Gupta, Raissa Ferron, Andrew Bunger, Malin Torsater
	MS 2.20: Mathematical, physical and computational aspects of chemical enhanced oil recovery
	Organizer: Prabir Daripa, Texas A&M University
9:47	Andrew Bunger: Mechanisms Limiting Plugging of Near-Borehole Cracks with Bentonite
10:05	Andres Clarens: Novel bio-organoclay composites designed to seal leaking well- bores
10:23	Tatiana Pyatina: Self-healing cementitious blends with pozzolanic materials for subterranean applications
10:39	Coffee break
11:00	Malin Torsater: Lessons learned in the North Sea: Closing the gaps in permanent well plugging
11:18	Prabir Daripa: An overview of mathematical, physical and computational challenges in chemical enhanced oil recovery
11:36	Grigori Chapiro: EM heating stimulated water flooding for oil recovery
1-D	GS 3: Experimental achievements
	Organizers: Al Cunningham, Linda Abriola, Phil Vardon
Room D	
9:47	Nathaly Lopes Archilha: Mogno – a high-throughput micro and nanotomography beamline at Sirius, the new Brazilian Synchrotron Ligth Source
10:05	Sofia Larsson: Tomographic PIV of low to high Re flow through well-ordered porous media
10:23	Mohamed Azaroual: Modelling of advective and capillary flows in sandstone cores during the injection of supercritical $\rm CO_2$
10:39	Coffee break
11:00	Anaïs Cario: Investigating Underground ${\rm CO}_{_2}$ Storage in Porous Media Using Geological Labs on Chip
11:18	Ralf R. Haese: Determining the effective surface area of minerals in consolidated sediments

MONDAY, MAY 14, 2018

11:36	Minsu Cha: Effect of pore water in rock on cryogenic thermal-shock cracking behaviors
11:54	Weiwei Li: Morphological Evolution of Invading Fluids under Homogeneous and Heterogeneous Wetting Conditions
12:12	Joseph Fu: Particle size distribution match optimization by a superposition method for artificial core synthesis
1-E	MS 1.32: Sorption, Phase Behavior, and Fluid Transport in Fractured Black Shales
Room E	Organizers: Joachim Moortgat, Zhehui Jin, Qinjun Kang
9:47	Nicolas Sobecki: Use of molecular simulations to fit EOS in confined space in order to perform large scale tight oil and shale gas reservoir simulations
10:05	Rui Qiao: Storage and recovery of multi-component mixtures in single shale pores
10:23	Zheng Li: Molecular dynamics study of the occurrence states of gas-water mixtures near the organic solid in shale reservoirs
10:39	Coffee break
11:00	Bo Guo: An Image-based Micro-continuum Pore-scale Model for Gas Transport in Organic-rich Shale
11:18	Tianhao Wu: Efficient molecular simulations of binary gas mixture transport in slit nanopores
11:36	Fengyang Xiong: Effects of Composition on Canister Desorption Behavior of Upper Paleozoic Shales in the Ordos Basin, NW China
11:54	Stephane Tesson: Sorption of Methane and Carbon Dioxide in Type II-A Kerogen Rough Slit Nanopores by Molecular Simulations
12:12	Yueliang Liu: Determination of Absolute Adsorption Isotherms of C1/C2 Mixtures with the Simplified Local Density (SLD) Theory
1-F	MS 1.19: Interface driven processes in porous media
	Organizers: Kilian Weishaupt, Iryna Rybak, Rainer Helmig
Room F	MS 4.14: Wicking of Liquids in Porous Materials
	Organizers: Krishna Pillai, Ted Towers
9:47	Jiajun He: Modeling Wettability Alteration Induced by Asphaltene and Fluid Behav- iors at the Interface
10:05	Dominique Derome: Droplet impact and penetration on porous stones
10:23	Mikhail Panfilov: Surfaces of hyperbolic-parabolic transition in the problem of flow with variable number of phases through porous media
10:39	Coffee break
11:00	Ke Xu: Is Ostwald Ripening Important in CO2 Geological Sequestration? A Micro- model Study of Bubble Repining Dynamics

11:18	J. Alberto Ochoa-Tapia: Average velocity profile in a channel partially filled with a porous medium
11:36	Dawid Zimnik: Numerical simulation of wicking in porous media
11:54	Mohammad Amin Faghihi Zarandi: Application of Sharp- and Diffuse-Front Models for Predicting Mass Gain and Saturation in Fibrous Wicks
12:12	Staffan Lundström: Wicking in the porous pore doublet model
1-G	MS 1.02: Fractal Theory and its Applications to Flow and Transport Properties of Porous Media
Room G	Organizers: Boming Yu, Muhammad Sahimi
9:47	Boming Yu: Seepage properties of pore-fractured porous media by fractal analysis
10:05	Yixiang Gan: Pore-scale modelling of multiphase flow in porous media: considering wettability and disordered microstructure
10:23	Xiaofei Hu: Comparative Study on Nano-scale Pore Heterogeneities of Marine and Lacustrine Shales by Multifractal analysis
10:39	Coffee break
11:00	Junqiang Wang, Yuetian Liu, Rukuan Chai: Study on Percolation Model of Fractured Horizontal Wells in Fractal Tight Oil Reservoirs
1-H	MS 2.01: Pore-Scale Modeling and Experiments on Multiphase Flow
	in Porous Media
Room H	in Porous Media Organizers: Manuel Hopp-Hirschler, Bo Guo, Chaozhong Qin, Philip Kunz
Room H 9:47	 in Porous Media Organizers: Manuel Hopp-Hirschler, Bo Guo, Chaozhong Qin, Philip Kunz Yu Chen: Pore-scale Simulation of Residual Trapping of Supercritical CO2 via Cyclic Injections
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MONDAY, MAY 14, 2018

12:30	Lunch (Hall I-1)
13:30	Invited talks- see following page
	Parallel Session 2
2-A	MS 1.04: Upscaling of mixing, dispersion and reaction processes from pore to continuum scale
Room A	Organizers: Marco Dentz, Branko Bijeljic
14:07	Stefanie Van Offenwert: Visualisation of solute transport and determination of its transport properties in porous sintered glass
14:25	Masoud Arshadi: Transport with Bimolecular Reactions in Fracture-Matrix Systems: Analytical Solutions with Applications to Weathering Reactions and In-Situ Chemical Oxidation
14:43	Yves Méheust: Chaotic Fluid Advection in Crystalline Granular Media
15:01	Giovanni Porta: Mixing effects in agrochemical biodegradation networks in variably saturated soils
15:19	Daniel Meyer: Semi-Analytical Particle Tracking Scheme For Advective/Diffusive Transport in Porous Media
15:37	Auli Niemi: Analysis of CO2 residual trapping over the range of scales, from field to core to pore scales - Heletz, Israel, pilot injection site
15:40	Nick Engdahl: Direct simulation of hysteresis in upscaled reaction rates in a periodi- cally transient river corridor using complex reactions on particles
15:43	Harold Auradou: Influence of the motility of bacteria on their large scale transport
2-B	MS 4.09: Biofilm Processes in Porous Media
Room B	Gerlach, Fabrice Golfier
	MS 4.08: Life in porous media: a microbiological approach
	Organizers: Gastón L Miño, Harold Auradou, Pietro de Anna
14:07	Fabrice Golfier: An experimental and numerical pore-scale study of bio-enhanced NAPL dissolution in porous media
14:25	Hyun-Woo Joo: Monitoring of bacterial biofilm formation in sands using complex electrical conductivity
14:43	Birger Hagemann: A numerical model for reactive transport coupled with microbial growth on Darcy scale











INVITED SPEAKERS

Takeshi Tsuji Professor, Department of Earth Resources Engineering, Kyushu University

Multi-phase fluid behaviors with various capillary numbers, viscosity and wettability: Insight into effective and safe CO2 storage (Invited by MS 3.11) *Room A*

Hamdi Tchelepi Professor, Energy Resources Engineering, Stanford University

Level-set method for modeling pore-scale two-phase flow at small capillary numbers *Room B*

Leonhard Ganzer Professor, Institute of Petroleum Engineering, Clausthal University of Technology

Microvisual Studies of Fluid Flow in Enhanced Oil Recovery Processes (Invited by MS 1.33) *Room C*

Ralf Seemann Professor of Physics, Saarland University

The Role of Local Instabilities in Fluid Invasion into Permeable Media Studied by insitu X-Ray Microtomography *Room D*

INVITED POSTER

Martin J Blunt Shell Professor of Reservoir Engineering, Imperial College London

Pore-scale characterization of wettability (with A Alhammadi, Ahmed Alratrout, and B Bijeljic)

MONDAY, MAY 14, 2018

15:01	Verónica I. Marconi: Soil bacteria: searching for more efficient bio-fertilizers
15:19	Shakil Masum: Modelling coupled microbial processes under multiphase and mul- tichemical flow conditions
15:37	Yong-min Kim: Biofilms can retain sub-micron fine particles migrating in po- rous media: toward enhancing durability of bioclogging in soils
15:40	Devajani Borah: Use of Biogenic Gas Production as a Pre-Treatment to improve the Efficiency of Dynamic Compaction
15:43	Dong Zhang: Salinity-dependent transport of viruses in porous media
2-C	MS 1.33: Physico-Chemical Fluid Dynamics of Enhanced Oil Recovery
Room C	Organizers: Mikhail Panfilov, Igor Bogdanov, Igor Bondino
14:07	Lijuan Zhang: Mechanical Degradation of Polymer Solution in Micro Pore Throat
14:25	Stéphane Zaleski: Efficient VOF simulations of pore-scale multiphase flow
14:43	Alfredo Perez-Perez: Solvent Assisted Thermal Recovery of Viscous Oil: Analysis of Efficiency
15:01	Jose Torres: CO2 Storage and Enhanced Oil Recovery in Tight Oil Formations: Insights from Laboratory Investigations and Field-Scale Simulations
15:19	Noura Eddaoui: Microbiological underground methanation: principle, bio-chemical and hydrodynamic models, and self-organization phenomena
15:37	Rouzbeh Shahsavari: Biomimetic, programmable, and self-healing composite for mitigating gas/liquid leakage in wellbores
15:40	William Daniel: The solution to Leaky wellbores in the Gulf of Mexico: Gilsonite, a Crystalline Hydrocarbon
15:43	Florencia Vasquez: Impact of stacked geologic sequence on oil spill volumes
15:46	Pierre Cerasi: On using 3D-print technology to improve permanent cement plugs for P&A operations
15:49	El Houssaine Quenjel: Numerical analysis of a nonlinear CVFE scheme for the com- pressible two phase flow in heterogeneous and anisotropic porous media
15:52	Gonzalo Jayme-Torres: How does pore size distributions affect the accumulation and release rates of a PAH in porous media of sediments and soils?
2-D	GS 3 (Continued from morning): Experimental achievements
	Organizers: Al Cunningham, Linda Abriola, Phil Vardon
Room D	
14:07	Tanya Talreja-Muthreja: Deliquescence behavior of salts confined in small pores
14:25	Lionel Mercury: Quartz fracturing by in-pore water (negative) pressure
14:43	Ignacio Aguilar: Electrical resistivity in saturated synthetic porous media
15:01	Xiang'an Yue: Permeability and porosity modeling in artificial core

Day

15:37	Elena Skuratova: Phase transitions inside nano/micro-models and scale relationships
2-E	MS 1.32 (Continued from morning): Sorption, Phase Behavior, and Fluid Transport in Fractured Black Shales
Room E	Organizers: Joachim Moortgat, Zhehui Jin, Qinjun Kang
	MS 4.25: Transport Processes Controlling Unconventional Reservoir Pro- duction Performance
	Organizers: Mehdi Zeidouni, Hossein Hejazi, Roohollah (Radwin) Askari
14:07	Feng Yang: Supercritical Methane Sorption on Organic-Rich Shales from Sichuan Basin, China
14:25	Arnav Jatukaran: Direct observation of phase change in sub-10 nm porous media
14:43	Xiaofei Hu, Yuanyuan Tian: Molecular Simulation of Competitive Adsorption behav- iors of CO2/CH4 Mixtures on Shale Clay Minerals
15:01	Zhenzhen Wang: Production Data Analysis from Unconventional Reservoirs with a Novel Data-Driven Drainage Volume Approach
15:19	S. Hossein Hejazi: Microscale Modeling of the Effect of Silica nanoparticles and Sur- factants on Heavy Oil Displacements
15:37	Renyuan Sun: Experimental studies on CO2 Enhanced Shale Gas Recovery on the Basis of Competitive Adsorption
15:40	Nerine Joewondo: N2, CO2, and Ar adsorption to characterize micro- and mesopores of shales
15:43	Guoqing Xu: Theoretical foundation of fracture permeability to analyse the flow in channel fracturing based on Navier-Stokes equation
2-F	MS 1.26: Fundamentals and applications of foam in permeable media
Room F	Organizers: Valentina Prigiobbe, Martin Ferno, Anthony Kovscek
14:07	Christopher Yeates: Towards a bettter understanding of foam flow patterns in porous media
14:25	Chakib Ouali: Probing foam's texture in porous media with Neutron scattering and X-ray tomography
14:43	Jiakun Gong: Laboratory Investigation of Liquid Injectivity in Surfactant-Alternat- ing-Gas Foam Enhanced Oil Recovery
15:01	Steven Bryant: Evaluating the Potential of Nanoparticles for Foam Generation and Stability at High Temperatures: Steam Foam Application
15:19	Reza Amirmoshiri: Probing the Effect of Oil Type and Saturation on Foam Flow in Porous Media
15:37	Tjalfe Poulsen: Wind-induced soil-atmosphere gas exchange as related to near-sur- face wind speed characteristics and soil physical properties
15:40	Peter Frolkovic: Robust level set methods for moving interfaces

MONDAY, MAY 14, 2018

15:43	Jonghyun Lee: Enriched Galerkin approach for density-driven flow in unsaturated coastal aquifer
15:46	Kamal Singh Bisht: Phase separation in capillary channel flow using porous media
15:49	Shabina Ashraf: Wicking of a Wetting Fluid in a Layered Porous Medium Saturated with a Viscous Non-Wetting Fluid
15:52	Ahmed Kaffel, Krishna Pillai: Wicking as partially-saturated flow of a liquid in thin swelling porous media
15:55	Simon Ayache: Forecasting Oil Production and Economics of a Foam Pilot Including Quantitative Uncertainty Assessment
2-G	MS 1.08: Non-linear flows in porous media: impact of inertia and non-lin- ear rheologies on pore scale processes and applications
Room G	Organizers: Michel Quintard, Yves Méheust, Yohan Davit, Vittorio Di Federico
14:07	Brian Wood: Upscaling the Navier-Stokes Equation for Turbulent Flows in Porous Media Using a Volume Averaging Method
14:25	Yohan Davit: Macroscale modeling of immiscible two-phase flows in highly permeable porous media
14:43	Min Zhang: 3D simulation-based study of shear-thinning fluid flow in a sandstone fracture
15:37	Jianmeng Sun: Microscopic pore structure characterization of shale rock based on fractal theory and its application in the prediction of permeability
15:40	Jinsui Wu: A fractal analysis for Darcy and non-Darcy permeability in porous media
15:43	Yuxuan Xia: Calculating fractal dimensions of porous media based on pore size distribution
15:46	Yang Yang: Experimental Investigation of Non-linear Flows in Artificial Multi- scale Frac-vuggy Media
2-H	MS 1.16: Heterogeneity, uncertainty, and multiple scales in groundwater problems
Room H	Organizers: Graciela del Socorro Herrera, Eric Morales-Casique, Abel Felipe Hernández
14:07	Alberto Guadagnini: Moment Equations for Tracer Solute Transport in Composite Media with uncertain dispersivities.
14:25	Xin Su: Urban aquifer hydraulic conductivity estimation and uncertainty analysis
14:43	Francesca Boso: Information-theoretic approach to conductivity upscaling
15:01	Eric Morales-Casique: One-dimensional modeling, data assimilation and parameter estimation during nonlinear consolidation in randomly heterogeneous highly com- pressible aquitards

Day

1

15:37	Zheyu Liu: Pore-scale investigation of the effect of lithology on residual oil displace- ment in chemical flooding using nuclear magnetic resonance experiments
15:40	Javier E. Santos: Determining the Impact of Mineral Composition and Roughness in Multiphase Flow through Fractures
15:43	Aurélien Cherubini: Salinity and saturation dependence of the streaming potential coupling coefficient of porous carbonate rocks
15:46	Eric Morales-Casique: Parameter estimation and steady-state groundwater flow prediction via three stochastic approaches
15:49	Eric Morales-Casique: Application of Lattice Boltzmann Method to Model Flow Through Water Saturated Sandstone
15:52	Shuai Ma: Research on the Recovery Mechanism of the Coupling of Injection and Production Recovery Technology at High Water Cut Stage

Poster Presentations

Poster Number	MS/GS	Author/Title
9	3.11	Auli Niemi: Analysis of CO2 residual trapping over the range of scales, from field to core to pore scales - Heletz, Israel, pilot injection site
10	3.11	Yan Wang: Multi-scale CO2–Brine Core Flooding Under X-Ray CT In Sandstone From Ordos Basin
11	3.11	Xiangyang Wang: Optimization of key parameters of carbon dioxide huff-n-puff Process for geological storage
12	3.11	Mohamad Reza Soltanian: Impacts of Methane on Carbon Dioxide Storage in Brine Formations
13	3.11	Auli Niemi: Refractive-light-transmission measurements of density-driven convec- tion with application to solubility trapping of geologically sequestered CO2
14	3.11	Farzad Basirat: A coupled wellbore-reservoir model of CO2 flow and heat transfer during a push-pull experiment at Heletz, Israel
15	3.11	Dorthe Wildenschild: The Effect of Original and Initial Saturation on Residual Non- wetting Phase Capillary Trapping Efficiency
16	3.11	Ying Jia: Stress-sensitivity Modeling during CO2 Flooding and Storage in Tight Sand- stone Core
17	3.11	D. Nicolas Espinoza: CO2 Breakthrough Pressure in Resedimented Caprock Seals
18	3.11	Hoonyoung Jeong: Fast assessment of CO2 plume extent using a connectivity-based surrogate model
19	1.04	Nick Engdahl: Direct simulation of hysteresis in upscaled reaction rates in a periodi- cally transient river corridor using complex reactions on particles
20	1.04	Harold Auradou: Influence of the motility of bacteria on their large scale transport
21	1.04	Brian Wood: Mixing and reactions: The case of Taylor dispersion in a tube

22	1.04	Takeshi Kurotori: A digital rock workflow to quantify sub-core scale spreading and mixing in reservoir rocks
61	4.03	Yongmin Kim: Biofilms can retain sub-micron fine particles migrating in porous media: toward enhancing durability of bioclogging in soils
62	4.03	Devajani Borah : Use of Biogenic Gas Production as a Pre-Treatment to improve the Efficiency of Dynamic Compaction
63	4.03	Alexandra C.M. San Pablo: Optimization of Treatment Techniques for Up-scaling of Stimulated Ureolytic Microbially-Induced Calcite Precipitation
64	4.03	Akiko Nakano: Pore structure alteration of sands by microbially induced carbonate precipitation via denitrification
65	4.03	liang Cheng, Yang Yang: Biocement soil improvement using acidified all-in-one solution by acid buffer
66	4.03	Adrienne Phillips: Overview of Experimental Systems and Approaches Supporting In Situ Mineral Precipitation Research
67	4.03	Daehyun Kim: Experimental Study and Modeling of Biogas Formation in Homogene- ous Porous Media
68	4.03	Michael Gomez: Examining Nitrogen By-Product Management for Microbially-In- duced Calcite Precipitation via Stimulated Microbial Ureolysis
69	4.09	Dorothee Luise Kurz: Microbial life in unsaturated porous media: a microfluidic approach
70	4.08	Dong Zhang: Salinity-dependent transport of viruses in porous media
71	4.08	Xavier Sanchez-Vila: How biofilm growth affects hydraulic parameters: a reevalua- tion of the impact of partial in hydraulic conductivity and hydrodynamic dispersion
72	4.08	Xiaopu Wang : Dimensionless analysis applied to bacterial chemotaxis towards NAPL contaminants
116	4.30	mitigating gas/liquid leakage in wellbores
117	4.30	William Daniel: The solution to Leaky wellbores in the Gulf of Mexico: Gilsonite, a Crystalline Hydrocarbon
118	4.30	Florencia Vasquez: Impact of stacked geologic sequence on oil spill volumes
119	4.30	Pierre Cerasi : On using 3D-print technology to improve permanent cement plugs for P&A operations
120	4.30	Mary Tkach: An Assessment of Research Gaps Related to Deep Water Wellbore Integrity
121	4.30	Mileva Radonjic: Why fractures in Marcellus Shale might be plugged too soon: Case study comparing geochemical and geomechanical data obtained from outcrop vs reservoir cores
122	4.30	Barry Calnan : How 3D Printing maybe used to facilitate the design and testing of hydraulic barriers and establish bonds to formations and casing, as well as data gathering implementation and formation visualization
123	4.30	Edward Matteo : Experimental and Computational Tools to Assess Wellbore Integri- ty: Predicting Failure and Designing Next Generation Seal Repair Materials
124	4.30	Malin Torsæter: Electrophoresis to improve cement-steel bonding in well construc- tion

Day 1

125	2.20	EL Houssaine Quenjel: Numerical analysis of a nonlinear CVFE scheme for the com- pressible two phase flow in heterogeneous and anisotropic porous media
126	1.33	Gonzalo Jayme-Torres: How does pore size distributions affect the accumulation and release rates of a PAH in porous media of sediments and soils?
127	1.33	Hanxu Yang: Pore Scale Dynamics of Gravity-Stable Surfactant Flooding
128	1.33	Akerke Mukhamediarova: Mathematical model of microbiological oil recovery with wetting inversion by bio-surfactants
129	1.33	Marelys Mujica: Numerical analysis of viscous oil recovery using micromodel experiments on thermal solvent-based displacement
177	GS3	Elena Skuratova: Phase transitions inside nano/micro-models and scale relation- ships
178	GS3	Sofia Larsson: Tomographic PIV of low to high Re flow through well-ordered porous media
179	GS3	Minsu Cha: Effect of pore water in rock on cryogenic thermal-shock cracking behav- iors
180	GS3	ShuYao Sheng: Influence of rock micro-pore structure parameters on Remaining oil Distribution
181	GS3	Laura Dalton: Contact Angle Measurements of scCO2 and Brine in 3D Printed Models with Varying Surface Roughness
182	GS3	Holger Steeb: Experimental investigations of effective visco-elastic properties of sandstones
183	GS3	Leo Pel: Combined wicking and drying of a NaCl solution in porous media as studied by NMR
184	GS3	Mohamed Nidal Ben Abdelouahab: Efficient liquid transport induced by drying paste/substrate systems
185	GS3	Gonzalo Jayme-Torres: How does pore size distributions affect the accumulation and release rates of a PAH in porous media of sediments and soils?
186	GS3	Hailong Chen: Experimental investigation on self-generated heat foam system for offshore heavy oil reservoir
187	GS3	Thien Nguyen: Pressure drop and non-intrusive velocity measurements in packed beds
226	1.32	Renyuan Sun : Experimental studies on CO2 Enhanced Shale Gas Recovery on the Basis of Competitive Adsorption
227	1.32	Fengyang Xiong: Effects of Composition on Canister Desorption Behavior of Upper Paleozoic Shales in the Ordos Basin, NW China
228	1.32	Nerine Joewondo: N2, CO2, and Ar adsorption to characterize micro- and meso- pores of shales
229	1.32	Sen Wang: A Dual-site Simplified Local Density Model for Shale Gas Adsorption under Reservoir Conditions
230	1.32	Dustin Crandall: CO2 interaction with shale: Insights from experiments and litera- ture

231	1.32	Sarah Brown: Proppant embedment in shale during exposure to hydraulic fracturing fluids
232	1.32	Johnathan Moore: Laboratory investigations of geochemical evolution in unconven- tional reservoirs during hydraulic stimulation
233	1.32	Qinjun Kang: Lattice Boltzmann Simulation of Liquid Flow in Nanoporous Media
234	4.25	Guoqing Xu: Theoretical foundation of fracture permeability to analyse the flow in channel fracturing based on Navier-Stokes equation
235	4.25	Yilin Mao: Analytical Modeling of Stimulation Fluid Temperature for Hydraulic Fracturing Design
236	4.25	Fubo Wu: Experimental measurement of permeability in porous medium containing methane hydrate
237	4.25	Didi Wu: Energy exploitation analysis of natural gas hydrate depressurization disso- ciation in porous media
238	4.25	Mohammad Jamshid-Nezhad: Effect of Salt Dry-out on Shale Gas Reservoir Produc- tion Performance
239	4.25	Qiao Lingxi: Study on pressure propagation of methane hydrate decomposition by depressurization in porous medium
240	4.25	Muhammad Fowaz Ikram: Numerical study of effective thermal properties of granu- lar porous medium using Lattice Boltzmann methods
309	1.19	Tjalfe Poulsen: Wind-induced soil-atmosphere gas exchange as related to near-sur- face wind speed characteristics and soil physical properties
310	1.19	Peter Frolkovic: Robust level set methods for moving interfaces
311	1.19	Jonghyun Lee: Enriched Galerkin approach for density-driven flow in unsaturated coastal aquifer
312	1.19	Roland Masson : A domain decomposition method to couple nonisothermal compo- sitional gas liquid Darcy and free gas flows
313	4.14	Kamal Singh Bisht: Phase separation in capillary channel flow using porous media
314	4.14	Shabina Ashraf: Wicking of a Wetting Fluid in a Layered Porous Medium Saturated with a Viscous Non-Wetting Fluid
315	4.14	Ahmed Kaffel: Wicking as partially-saturated flow of a liquid in thin swelling porous media
316	1.26	Simon Ayache: Forecasting Oil Production and Economics of a Foam Pilot Including Quantitative Uncertainty Assessment
317	1.26	Rodrigo Orlando Salazar Castillo: Effect of Non-Newtonian Foam on SAG Foam EOR
318	1.26	Qingjian Li: Study of foam generation mechanism at the pore scale
319	1.26	Mohammad Izadi: How to Predict CO2 Foam Propagation Distance by Using Bubble Population Balance Model
375	1.02	Jianmeng Sun: Microscopic pore structure characterization of shale rock based on fractal theory and its application in the prediction of permeability
376	1.02	Jinsui Wu: A fractal analysis for Darcy and non-Darcy permeability in porous media
377	1.02	Yuxuan Xia: Calculating fractal dimensions of porous media based on pore size distribution

378	1.02	Qian Zheng: Fractal model of gas diffusion coefficient through porous nanofibers with rough surfaces
379	1.02	Tongjun Miao: A fractal model of permeability for shale gas in fractal fracture networks
380	1.02	Hangyu Liu: Quantitative evaluation of carbonate reservoir pore structure based on fractal characteristics
381	1.02	Yongfeng Zhang: Porosity Characteristics of Coal Reservoir in Daqing Exploration Area
382	1.02	Yi Jin: On modeling scale-invariant dual-porosity media based on general fractal topography
383	1.02	Yves Méheust: The Flow of a Shear-Thinning Fluid in a Geological Fracture
384	1.08	Yang Yang: Experimental Investigation of Non-linear Flows in Artificial Multiscale Frac-vuggy Media
385	1.08	Yi-Feng Chen: A universal visco-inertial flow model in geologic porous media
436	2.01	Zheyu Liu: Pore-scale investigation of the effect of lithology on residual oil displace- ment in chemical flooding using nuclear magnetic resonance experiments
437	2.01	Javier E. Santos: Determining the Impact of Mineral Composition and Roughness in Multiphase Flow through Fractures
438	2.01	Aurelien Cherubini: Salinity and saturation dependence of the streaming potential coupling coefficient of porous carbonate rocks
439	2.01	Yu Chen: Pore-scale Simulation of Residual Trapping of Supercritical CO2 via Cyclic Injections
440	2.01	Zhenglan Li: The Study of Solid Phase Particles Blocking Process based on CT scan- ning technology
441	2.01	Amir Kohanpur: Pore Network Stitching for Pore-to-Core Upscaling of Capil- lary-Dominated Two-Phase Flow in Heterogeneous Natural Reservoir Rocks
442	2.01	Chao-Zhong Qin: Image-based modeling of flow and transport in porous media
443	2.01	Gael Guedon: Effects of wettability on two-phase relative permeability estimates from direct pore-scale simulations
444	2.01	Ying Jia: Observation and Evaluation of Multiphase Flow in Heterogeneous Porous Media of Tight Gas Reservoir with Super-normally Saturated Water
445	1.16	Eric Morales-Casique: Application of Lattice Boltzmann Method to Model Flow through Water Saturated Sandstone
446	1.16	Shuai Ma: Research on the Recovery Mechanism of the Coupling of Injection and Production Recovery Technology at High Water Cut Stage
447	1.16	Eric Morales-Casique : Parameter estimation and steady-state groundwater flow pre- diction via three stochastic approaches
448	1.16	Tian Tang: Hybrid machine learning/adjoint sensitivity model for source zone sam- pling optimization
449	1.16	Monica Riva: Solute dispersion for stable density-driven flow in randomly heteroge- neous porous media
450	1.16	Liliana Guadalupe Salvador: Parameter Identification in Confined Aquifers using a Predictor-Corrector Scheme of the Differential System Method

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Jubilee Speaker



Albert Sacco, Jr.

Crystallizing Porous Materials in Low Earth Orbit: What Has Been Learned and Why It May Be of Interest to You

Porous materials are used both on earth as well as in space to purify gas and liquid streams, catalyze petrochemical reactions, produce natural quantum arrays and even to time release compounds such as fertilizers.



These materials can, within limits, be customized for a specific application. However, their performance and stability often correlate to their defect structure. Research was performed in low earth orbit to observe if defect structure could be substantially impacted in different zeolite and zeo-type materials through control of fluid motion during growth. Additionally, it was hypothesized that crystal size could be varied through simultaneously controlling the nucleation event. Results will be presented that illustrate how defect structure can be reduced or effectively eliminated, or conversely increased, by control of fluid motion around the growing crystal. Also, the crystal size can be varied substantially through control of the nucleation event in a quiescent environment. These results open up the possibility of the control of defects in nano crystals as well as the production of large crystalline materials that act simultaneously as both a reactor and separator, with the concomitant promise of improved process efficiency and lower overall costs.

Biography

Al Sacco Jr. is dean of the Edward E. Whitacre Jr. College of Engineering at Texas Tech University. Born in Boston, Mass., Sacco completed a bachelor's degree in chemical engineering from Northeastern University in Boston, and a doctorate in chemical engineering from the Massachusetts Institute of Technology. He flew as the payload specialist on the Space Shuttle Columbia on shuttle mission STS-73.

Since joining Texas Tech in January 2011, he has raised more than one hundred sixty million dollars for new buildings, renovations, scholarships and fellowships and has improved admission standards while seeing the college grow to more than 5,800 students in just 5 years. His program to require international experience for all undergraduates is the first of its kind for a state school in the nation.

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Time Capsule Award Prof. Steve Whitaker University of California, Davis



Honorary Lifetime Membership Award Prof. Martin Blunt Imperial College, London



Procter & Gamble Award for Porous Media Research Dr Nima Shokri University of Manchester



InterPore - PoreLab Award for Young Researchers Dr. Qingwang Yuan Stanford University

Procter & Gamble Student Awards Fouad Oulebsir (near right) University of Pau

Ioannis Zarikos (far right) Utrecht University



TUESDAY, MAY 15, 2018

0.50	Plenary 2 - See facing page
	Parallel Session 3
3-A	MS 2.16: Frontiers in Understanding of Gas Migration Processes in Porous Media
Room A	Organizers: Radek Fučík, Michael Plampin, Jiří Mikyška, Andres Clar- ens, Michal Sněhota
09:32	Joachim Moortgat: Methane Migration in Water Saturated Formations Applica- tions to CO2 Sequestration and Groundwater Contamination from Leaky Natural Gas Wells
09:50	Shuyu Sun: Robust algorithms for stability analysis and flash calculation of reservoir fluids at constant moles, volume and temperature
10:08	John Ortiz: Analysis of enhanced gas transport in fractured rock due to barometric pressure variations
10:26	Michael Plampin: Multiphase Flow and Underpressured Shale at the Bruce nuclear site, Ontario, Canada
3-В	MS 2.26: Modeling, Simulation and Validation of Filtration Problems Organizers: Galina Printsypar, Oleg Iliev, Gareth Morris
Room B	
09:32	Sven Linden: Filter media design for Dust Holding Capacity by computer simula- tions
09:32	Sven Linden: Filter media design for Dust Holding Capacity by computer simulations Bowen Ling: Membrane morphology and topology: Fouling control in filtration systems
09:32 09:50 10:08	Sven Linden: Filter media design for Dust Holding Capacity by computer simulations Bowen Ling: Membrane morphology and topology: Fouling control in filtration systems Oleg Illiev: Comparative simulation of reactive flow in catalytic filter using 3D porescale model on CT image and 1D effective model
09:32 09:50 10:08 10:26	Sven Linden: Filter media design for Dust Holding Capacity by computer simulations Bowen Ling: Membrane morphology and topology: Fouling control in filtration systems Oleg Illiev: Comparative simulation of reactive flow in catalytic filter using 3D porescale model on CT image and 1D effective model G. Printsypar: Influence of the microstructure of non-woven media on filtration performance at different operational regimes.
09:32 09:50 10:08 10:26 3-C	Sven Linden: Filter media design for Dust Holding Capacity by computer simulations Bowen Ling: Membrane morphology and topology: Fouling control in filtration systems Oleg Illiev: Comparative simulation of reactive flow in catalytic filter using 3D porescale model on CT image and 1D effective model G. Printsypar: Influence of the microstructure of non-woven media on filtration performance at different operational regimes. MS 2.04: Transport Phenomena in Solvent-Aided Thermal Recovery of Heavy Oil and Bitumen
09:32 09:50 10:08 10:26 3-C Room C	Sven Linden: Filter media design for Dust Holding Capacity by computer simulations Bowen Ling: Membrane morphology and topology: Fouling control in filtration systems Oleg Illiev: Comparative simulation of reactive flow in catalytic filter using 3D porescale model on CT image and 1D effective model G. Printsypar: Influence of the microstructure of non-woven media on filtration performance at different operational regimes. MS 2.04: Transport Phenomena in Solvent-Aided Thermal Recovery of Heavy Oil and Bitumen Organizers: Hassan Hassanzadeh, Mohsen Zirrahi
09:32 09:50 10:08 10:26 3-C Room C 09:32	Sven Linden: Filter media design for Dust Holding Capacity by computer simulations Bowen Ling: Membrane morphology and topology: Fouling control in filtration systems Oleg Illiev: Comparative simulation of reactive flow in catalytic filter using 3D porescale model on CT image and 1D effective model G. Printsypar: Influence of the microstructure of non-woven media on filtration performance at different operational regimes. MS 2.04: Transport Phenomena in Solvent-Aided Thermal Recovery of Heavy Oil and Bitumen Organizers: Hassan Hassanzadeh, Mohsen Zirrahi Juliana Leung: A Practical Scale-Up Workflow for Numerical Simulation of Post-CHOPS (Cold Heavy Oil Production with Sand) Solvent-Aided Processes
09:32 09:50 10:08 10:26 3-C Room C 09:32 09:50	Sven Linden: Filter media design for Dust Holding Capacity by computer simula- tionsBowen Ling: Membrane morphology and topology: Fouling control in filtration systemsOleg Illiev: Comparative simulation of reactive flow in catalytic filter using 3D pore- scale model on CT image and 1D effective modelG. Printsypar: Influence of the microstructure of non-woven media on filtration performance at different operational regimes.MS 2.04: Transport Phenomena in Solvent-Aided Thermal Recovery of Heavy Oil and BitumenOrganizers: Hassan Hassanzadeh, Mohsen ZirrahiJuliana Leung: A Practical Scale-Up Workflow for Numerical Simulation of Post- CHOPS (Cold Heavy Oil Production with Sand) Solvent-Aided ProcessesKai Sheng: Transport of Bitumen as Water-External Emulsion in Porous Media

Prof. Sarah Codd

Mechanical Engineering, Montana State University

Magnetic Resonance Studies of

Transport in Porous Media (with Prof.

Joseph D. Seymour)

Magnetic resonance (MR) techniques allow characterization of porous materials on the ~10 mm imaging scale. However, more importantly, within this spatial resolution molecular level properties such as nuclear magnetic relaxation and translational molecular diffusion can provide nanometer scale molecular dynamic information. This allows measurements in porous media over a hierarchy of length and times scales from the pore to the system scales. An introduction to the MR techniques and results from a range of porous systems with environmental, geophysical and industrial relevance will be presented.

The measurement of the interplay between scale dependent hydrodynamic dispersion and structure in model biofouled porous media - relevant to subsurface processes and bioreactors, and polymer foams – relevant for applications such as air filtration, will be overviewed. Recent data on the spatial mapping of scalar temperature and concentration fields transported by advection and diffusion in porous media provides the means to correlate scalar transport and the direct measurement of the velocity field. The MR approach can use both fluorine and hydrogen nuclei for independently measuring particle and pore space transport. Packed beds of phase change materials allow temperature mapping using the hydrogen signal of the particles and velocity mapping of fluorinated fluid dynamics. While novel gel particles containing fluorinated compounds allow oxygen concentration mapping in biofilm impacted porous media with pore fluid water velocity mapped from the hydrogen signal. Advances in low field MR tools have allowed the development of down-the-borehole tools for field studies. Growth of a biofilm or biomineralization by bacteria can impact the MR signal and theses low field MR tools can monitor these processes in the subsurface.





3-D	MS 2.17: Digital Imaging of Multi-Scale Porous Matierials, and Image-Based Simulation an Up-Scaling of Flow Properties
Room D	Organizers: Arash Aghaei, Arsalan Zolfaghari
09:32	Arash Aghaei: From Images to Rock Properties
09:50	Steven Claes: Multi-scale 3D pore network characterization of building materials
10:08	Seung-Hun Baek: X-ray microtomography imaging of abiotic carbonate precipita- tion in sands and its effect on permeability of sands
10:26	Rafael Salazar-Tio: Characterizing porous media using experiments and image analysis via maximal inscribed spheres maps
2 E	MS 1.12: Fluids in Nanoporous Media
3-E	Organizers: Gennady Gor, Patrick Huber
Room E	
09:32	Pierre Levitz: Respective contributions of adsorption, surface and bulk con- fined diffusion in molecular transport in nanoporous materials
09:50	Gerhard Findenegg: Structural Characterization of Complex Fluids in Nanopores by SANS: From Surfactant Solutions to Microemulsions
10:08	Michael Fröba: Properties of Water Confined in Periodic Mesoporous Orga- nosilicas: Nanoimprinting the Local Structure
10:26	Bogdan Kuchta: Adsorption induced transformations of methane adsorbed in MOF-5.
3-F	MS 1.01: Multi-Scale Particulates Transport through Porous Media Saturated with Multi-Phase Fluids
Room F	Organizers: Bin Yuan, Kai Wang, Wendong Wang
09:32	Wenhai Lei: Transport of deformable polymer particle gels in heterogeneous porous media by IB-LBM simulation
09:50	Rasoul Arabjamaloei: Numerical Simulation of Nanoparticle effects on Mul- ti-phase System Dynamics
10:08	Bin Yuan: Using Nanofluids to Control Fines Migration for Oil Recovery: Nanofluids Co-injection and Nanofluids Pre-flush
10:26	Yujing Du: Micromodel study of low salinity water flood and wettability alteration
3-G	MS 2.10: Advanced Finite-Volume Methods for Flow and Transport in Porous Media
Room G	Organizers: Matteo Susini, Martin Schneider, Hadi Hajibeygi, Rainer Helmig
09:32	Hamdi Tchelepi: Novel finite-volume methods for anisotropic linear elasticity and poromechanics problems with full tensors
09:50	Ivan Yotov: Higher order multipoint flux mixed finite element methods on

quadrilaterals and hexahedra
10:08	Martin A. Diaz-Viera: Modeling of Additional Oil Recovery Processes by Low Salinity Water Injection using the Open Source Software Platform DUNE-DU-MUX
10:26	Olav Møyner: Multiresolution Coupled Compositional Vertical Equilibrium Model for Fast Flexible Simulation of CO2 Storage
3-H	MS 2.23: Network Models Organized by Alex Hansen, NTNU
Room H	
09:32	Ronaldo Giro: Dynamical Capillary Network Model Built On Molecular Level Simulation at the Pore Scale
09:50	Bauyrzhan Primkulov: Wettability and Quasi-Static Fluid-Fluid Displacement in Micromodels
10:08	Zohaib Atiq Khan: Porous Media Investigation Using Dual Network Models
10:26	GPeter Matthews: Advances in the modelling of void clusters and transient wettability
10:45	Break
	Parallel Session 4
4-A	MS 2.16: Frontiers in Understanding of Gas Migrations Processes in Porous Media (Continued from P3)
Room A	Organizers: Radek Fučík, Michael Plampin, Jiří Mikyška, Andres Clarens, Michal Sněhota
11:17	Jakub Solovský: Mathematical model of kinetic mass transfer and transport of CO2 in shallow subsurface
11:35	Tissa Illangasekare: Sensitivity of bare non-vegetated soil moisture dynamic simulations to prescribed soil-atmosphere interface boundary condition forcings
11:53	Tomáš Smejkal: Unified presentation and comparison of various formula- tions of the phase stability and phase equilibrium calculation problems
4-B	MS 4.28: New Applications and Research Insights Related to Col- loids at Interfaces
Room B	Organizers: Scott Bradfor, Hyunjung Kim, Chongyang Shen
11:17	Chongyang Shen: DLVO Interaction Energies between Hollow Spherical Particles and Collector Surfaces
11:35	Yan Jin: Interfacial Processes Control Microbial Contamination and Cleaning of Fresh Produce
11:53	Michael Steiger: Melting temperatures and solubilities of congruently melt- ing salt hydrates confined in nanoporous materials
12:11	Michele Starnoni: On the macroscopic momentum balance equation for the fluid-fluid interfaces in two-phase porous media flows
12:29	Bruno Chareyre: Hydromechanical couplings in multiphase granular systems: recent advances and perspectives

4-C	MS 2.04: Transport Phenomena in Solvent-Aided Thermal Recovery of Heavy Oil and Bitumen (Continued P3)	
Room C	Organizers: Hassan Hassanzadeh, Mohsen Zirrahi	
11:17	Nasser Sabet: Estimation of the Diffusion Coefficient of Gaseous Solvents in Bitumen Based on a New Analytical Model: Effect of Swelling	
11:35	Ali Abedini: Microfluidics for Solvent-based Bitumen Recovery: Pore-Scale and Fluid Property Measurements	
11:53	Harihar Rajaram: Reactive Alteration of Rough-Walled Fractures in Gradient and Kinetic Regimes with Applications	
12:11	Kasparas Spokas: Collapse of chemically altered porous surface decreases fracture permeability, frictional strength and stability	
12:29	Lawrence Anovitz: The Effects of Chemomechanical Processes on Limestone Weathering Rates	
4-D	MS 2.17: Digital Imaging of Multi-Scale Porous Materials, and Im- age-Based Simulation and Upscaling of Flow Properties (continued from P3)	
Room D	Organizers: Arash Aghaei, Arsalan Zolfaghari	
11:17	Jiangjin Liu: Bridging Micro and Nano Scales in Fuel Cell Electrodes Using Multi-modal Imaging and Scale-Bridging Modeling	
11:35	Shereef Bankole: Maximising information on mudrock microstructure through high-resolution scanning electron microscopy	
11:53	Elsa Vennat: Correlative microscopy approach to mix different scales in the porous dentin material	
12:11	Di Chai: A Unified Viscous-Diffusion Layered Model of Non-ideal Rarefied Gas Flow in Micro- and Nanoscale Porous Media	
12:29	Laura Dalton: Manual and Automated In Situ Contact Angle Measurements of scCO2 and Brine in Sandstone Cores Using Micro-CT Imaging - A Correlation to Pore Connectivity	
	MS 1.12: Fluids in Nanopous Media (continued from P3)	
4-E	Organizers: Gennady Gor, Patrick Huber	
Room E		
11:17	Lucyna Firlej: Non-uniform density of gas confined in nanopores.	
11:35	Ronny Pini: Measuring and Modelling Supercritical Gas Adsorption in Clay Minerals and Shales	
11:53	Seunghwan Baek: Impact of CO2 Injection on Condensates Recovery from Shale Organic Nanostructures	
12:11	Laurent Brochard: Anomalous thermal expansion of water in clays	
12:29	Lining Xu: Enhanced Oil Recovery Strategies in nanofluidics Relevant to Tight Oil Reservoirs	

TUESDAY, MAY 15, 2018

4-F	MS 2.21: Advances in the Numerical Modelling of Multiphase Flow and Transport in Highly Heterogenious Porous Media
Room F	Organizers: Francois Hamon, Bradley Mallison, Hamdi Tchelepi
11:17	Konstantin Brenner: Numerical recipes for problems involving highly con- trasted capillary pressures
11:35	Benjamin Ganis: Adaptive Mesh Refinement with the Enhanced Velocity Mixed Finite Element Method for Multiphase Flow
11:53	Rami Younis: Nonlinear Safeguarding for Complex Physics; Search-less Line-search
12:11	Pablo Salinas: Vanishing artificial capillary pressure as a mechanism to accelerate convergence
12:29	Jiamin Jiang: Homotopy Continuation Method based on Dissipation Opera- tor for Coupled Multiphase Flow and Transport in Porous Media
4-G	MS 2.09: Fluid Flows and Transport Processes in the Porous Media Affected by Heterogeneities
Room G	Organizers: Jun Yao, Qingfu Zhang, Zhaoqin Huang
11:17	Qingfu Zhang: Multiresolution Operator Decomposition for Flow Simulation in Fractured Porous Media
11:35	Muhammad Zulqarnain: The influence of Capillary Trapping on Dynamic CO2 Storage Capacity and Long Term Storage Integrity
11:53	Krishna Nunna: A novel transient diffuse source algorithm for multiscale simulation in porous media
12:11	Yating Wang: Adaptive Online Multiscale Model Reduction for Heterogene- ous Problems in Perforated Domains
4-H	MS 4.18: Coupling Multi0Physic at the Pore-Scale: Experimental and Numerical Investigation
Room H	Organizers: Julien Maes, Florian Doster, Cyprien Soulaine, Vahid J. Niasar
11:17	Ruben Juanes: Wettability control on multiphase flow in porous media: A benchmark study on current pore-scale modeling approaches
11:35	Apoorv Jyoti: Dissolution patterns and rates in a heterogeneous limestone studied by using a multicomponent reactive transport model at the pore scale
11:53	Farrel Gray: Pore-Scale Simulation of Wormhole Formation in Carbonate Rocks
12:11	Zhiqiang Chen: Pore-scale modeling of hydraulic fracture

Z	
12:45	Lunch
14:00	Invited talks: see facing page
	Parallel Session 5

5-A	MS 2.05: Modeling and Controlling of Viscous Fingering in Miscible and Immiscible Displacements in Subsurface Porous Media
Room A	Organizers: Qingwant Yuan, Jinjie Wang
14:37	Bochao Zhao: Effects of Wettability and Permeability on Viscous Fingering during Unstable Immiscible Displacements
14:55	Qingwang Yuan: Reduction of Interfacial Instabilities in Miscible Displace- ments in Subsurface Porous Media
15:13	Mohammad Mirzadeh: Salinity Effects During Two-Phase Flow in Porous Media: Electrokinetic Control of Viscous Fingering
15:31	Short Break
15:40	Tapan Kumar Hota: Non-modal growth of perturbations in miscible displace- ments with non-monotonic viscosity profiles
15:58	Amir Riaz: The effect of pore scale disorder on unstable multiphase flow at the pore scale.
16:52	Tomas Princ: Hydraulic Conductivity of Coarse Sand Affected by Trapped Air Bubbles
16:55	Jinjie Wang: Stabilizing Effect of Inertia on Viscous Fingering in Miscible Displacements in Porous Media
	MS 1.15: Soft Porous Materials
5-B	Organizers: Benoit Coansne, Noushine Shahidzadeh, Jan Carmeliet
Room B	
14:37	Philippe Coussot: Capillary imbibition in wood governed by water adsorption in walls
14:55	Daniel Grande: Tuning Pore Morphololgy and Functionality in Soft Porous Materials
15:13	Mingyang Chen: Origin of sorption hysteresis of micro-porous polymers: an explanation based on hydrogen bonds
15:31	Short Break

INVITED SPEAKERS

Anne De Wit Professor and Director of the Nonlinear Physical Chemistry Unit, Université Libre de Bruxelles

Reactive fingering instabilities in CO2 sequestration (Invited by MS 2.05) *Room A*

lan Griffiths Senior Research Fellow, Mathematical Institute, University of Oxford

Leveraging mathematics for global filtration challenges (Invited by MS 2.26) *Room B*

Mariele Araujo Principal Reservoir Engineer, Shell International Exploration and Production

Challenges in Modelling Thermal-Conduction based Hydrocarbon Recovery Methods *Room C*

Kamaljit Singh Research Associate, Department of Earth Science & Engineering, Imperial College, London

Three-dimensional image processing and analysis: segmentation, contact angle and curvature mapping (Invited by MS 2.06) *Room D*

INVITED POSTER

Rainer Helmig Head, Department of Hydromechanics and Modelling of Hydrosystems, University of Stuttgart

Coupling free flow and flow in porous media in technical and environmental applications











16:16	Margarita Russina: Hydrogen storage, adsorption induced deformation and the role of confinement dimensionality in CAU metal organic frameworks
16:34	Nicolas Chanut: In-situ control of soft adsorbents pore size for optimal separation properties
16:52	lan Griffiths: Mitigation of arsenic mass poisoning
16:55	G. Printsypar: Optimal non-woven filter media using multiscale simulations
16:58	Allan Gomez-Flores: Effect of Wearing in Impeller Blades of a Denver Flota- tion Cell on Hydrophobic Silica Flotation at Laboratory Scale
17:01	Srutarshi Pradhan: Creep/swelling behavior of shale/clay: Discrete element modeling, based on Monte-Carlo technique
17:04	Dominique Derome: Moisture-induced swelling of oil-painted linen canvas: experiments and modeling
17:07	Hiram Arroyo Chávez: Hydro-mechanical coupling of deformable porous solids with two immiscible phases
17:10	Jacques Huyghe: Deforming unsaturated media: a unified approach
17:13	Farshid Vahedifard: Modeling Soil Water Retention Curve under Non-Iso- thermal Conditions
	MS 4.11: Multiphase Flow through Fractured/Fractured Karst
5-C	Carbonate Reservoirs
	Organizers: Zhaoqin Huang, Jun Yao
Room C	
14:37	Herwald Elder: Accurate Modelling of Counter-current Spontaneous Imbibition in 2D and 3D Geometries
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TUESDAY, MAY 15, 2018

5-D	MS 2.06: New Trends in Image Processing: From Discrete Tomography over Machine Learning to in-situ Contact Angle Measurement
Room D	Organizers: Steffen Berg, Nishank Saxena, Ryan Armstrong, Peyman Mo- staghimi, Andreas Wiegmann, Frieder Enzmann
14:37	Chaitanya Pradhan: Multi-Step Segmentation Protocol for Digital Rock Systems
14:55	Marjolein Heyndrickx: 4D-µCT analysis through piecewise linear fitting
15:13	Daniel O'Malley: Quantum-computational approach to discrete tomography for porous media
15:31	Short Break
15:40	Fabian Biebl: Shape analysis for grains and pores on 3d digital images
15:58	Maša Prodanović: A multiscale segmentation strategy for low-resolution, whole- core computerized tomography images of carbonates
16:16	Xiaolong Yin: Fast Evaluation of Rock Permeability from Images using Physics-Based Simulations and Machine Learning
16:52	Nicholas Skrivanos: Enhanced grain partitioning of microtomography segmented images
	MS 1.12: Fluids in Nanoporous Media
5-E	Organizers: Gennady Gor, Patrick Huber
Room E	
14:37	Yujie Yuan: Pore Structure Evaluation and Fluid Assessment for Permian Carynginia Shale
14:55	Jürgen Markmann: Changing mechanical properties of nanomaterials by surface modification and the impact of capillarity
15:13	Yidong Xia: Dissipative Particle Dynamics Based Mesoscale Modeling of Multiphase Flow in Reconstructed High-Resolution Nanoporous Shale Pore Networks
15:31	Short Break
15:40	Edmond Zhou: Capillary-condensation-induced stress in complex multi-scale porous materials
15:58	Dongliang Jin: Effects of Confinement and Surface Force on Methane Hydrate in Porous Media
16:16	Vasily Pisarev: Porosity effects on phase diagram of gas condensate mixture
16:34	Martin Steinhart: Imbibition on the single-pore level: what happens in the absence of cooperative phenomena?
16:52	Alina Emelianova: Predictions of Solvation Pressure in Mesopores Based on Saam-Cole Theory
16:55	Justyna Rogacka: Adsorption of small molecules in the intermediate structures of breathing MOF
16:58	Yun Jiang: Characteristics and New Scaling for Forced Imbibition Based on Low- Field Nuclear Magnetic Resonance Measurements
17:01	Marc Wagemann: Interaction of pentane and 2-pentanone with UiO-66(Zr) by solid-state NMR

17:04	Max Maximov: Monte Carlo simulation of argon adsorption in 3DOm carbon pores with potential based on spheres with openings
17:07	Ronghao Cui: Oil/water two-phase slip flow in a random pore network of shale
17:10	Hua-xun Liu: Flow Model and Flow Equation of Shale Gas Based on Micro Flow Mechanism
17:13	Elena Kirova: A Molecular Dynamics Approach for Predicting the Glass Transition in pores
5-F	MS 4.13: Natural and engineered nanoparticles in porous media: experimental findings and modeling approaches
Room F	Organizers: Tiziana Tosco, Thilo Hofmann, Nathalie Tufenkji
14:37	Janis Patino: Effect of retention sites toward silver nanoparticles immobilization in porous media
14:55	Bin Wang: A field-scale streamline-based simulation of nanoparticle transport in porous media
15:13	Tiziana Tosco: Tuned Nanoparticle Deposition In Porous Media To Improve Efficien- cy of Nanoremediation
15:31	Short Break
15:40	William Johnson: Why different transport behaviors emerge among identical nano- and micro-particles in porous media when repulsion exists
16:16	Scott Bradford: Comparison of Types of Nanoscale Heterogeneity on Colloid Retention and Release at Interfaces
16:34	Gaétan Gerber: Nanoparticle heterogeneous adsorption in porous media
16:52	Yijia Zhang: A Sorption Based Study on the Effect of Supercritical CO2 Interaction with Clay and Organic-Rich Shales
16:55	Jia Deng: Analysis of the pressure and productivity characteristics for horizontal fractured well in the tight reservoir based on the three-zones model
16:58	Hanxu Yang: Laboratory Evaluations of Fiber-Based Treatment for In-Depth Profile Control
17:01	Tatiana Reiche: Design Pattern Enabling the Flexible Integration of Effects into a Basis Flow Model
17:04	Bradley Mallison: Implicit Hybrid Upwinding for Multiphase Flow and Transport with Buoyancy and Capillary Pressure
5-G	MS 1·17: Flow of Non-Newtonian and Complex Fluids through Porous Media
Room G	Organizers: Soheil Saraji, Maysam Mousaviraad
14:37	Antonio Rodríguez de Castro: Flow of Yield Stress and Carreau fluids through Rough-Walled Rock Fractures and Packed Beads: prediction and experiments
14:55	Brayan F. Garcia: A new approach for linear rheological characterization and mode- ling of viscoelastic surfactant systems under shear components in porous media

15:13	Jorge Kurita: Non-Newtonian fluid apparent viscosity calculation, based on fluid thin porous media face velocity, an experimental correlation from transmission fluid filtration industry	
15:31	Short Break	
15:40	Ying Yu: Flow Behavior of Sheared Foam in Porous Media: An Experimental Investi- gation on the Effects of Stabilizing Agents and Oil Presence	
15:58	Abdelhalim Mohamed: Pore-scale Experimental Investigation of Displacement Mechanisms during Flow of Non-Newtonian Fluids in Natural Porous Media	
16:16	Matthew Balhoff: Oscillation of oil droplets at pore constrictions with viscoelastic polymers	
16:34	Kelly Meyers: Brine-Oil Interfacial Rheological Response to Adjusted Water Chemistry in Berea Sandstone at High Temperature	
16:52	Teresa Reilly: Effect of select naphthenic acids on oil-water interfacial dynamics	
16:55	Steffen Berg: The Formation of Microemulsion at Flow Conditions in Rock	
16:58	Dongxing Du: CO2 Foam Displacement Behavior in a Water/Oil Saturated Homogeneous Porous Media	
5-H	MS 1.27: Pore Scale Processes and Upscaling of Flow and (Reactive) Transport in Porous Media	
Room H	Organizers: Tom Bultreys, Amir Raoof, Veerle Cnudde, Stefanie Van Offenwert	
14:37	Joaquin Jimenez-Martinez: Fluid-solid reaction in single and multiphase flows by geo-material microfluidics	
14:55	Cornelius Fischer: Precipitation and dissolution of cement minerals in sandstone: Opportunities and limitations of pore and plug scale flow analysis for reactive transport modelling approaches	
15:13	Xiaobo Nie: Multiscale Calculation of Two-phase Flow in Digital Core Analysis	
15:31	Short Break	
15:40	Jeff Thomas Gostick: Studying the impact of electrode pore structure on redox flow battery performance with multiphysics pore network modeling	
15:58	Saied Afshari: Direct pore-scale modeling of thermal dispersion in granular porous media: the effect of medium heterogeneity	
16:16	Tien Dung Le: Multi-scale modeling of coupled diffusion-electrochemical reaction for porous micro-electrodes incorporating enzymatic catalysis	
16:52	Magnus Aa. Gjennestad: Stable and efficient time integration at low capillary num- bers of a dynamic pore network model for immiscible two-phase flow in porous media	
16:55	Santanu Sinha: Improving the Monte Carlo algorithm for pore-network simulations of immiscible two-phase flow in porous media	
16:58	Min Liu: Investigation of mineralogical heterogeneity in chemical dissolution of sandstones	
17:01	Pei Li: Tracer Transport Characterization of Interactions Between Resident and Infiltrating Water During Drainage-Imbibition Cycles	

Poster Presentations

Poster Number	MS/GS	Author/ Title
23	2.16	Tomas Princ: Hydraulic Conductivity of Coarse Sand Affected by Trapped Air Bubbles
24	2.16	Katharina Heck: Multi-component diffusion in a coupled free-flow porous-medi- um system
25	2.16	Jens T. Birkholzer: Comparison of Model Approaches for Gas Transport in Com- pacted Bentonite: A Current Task in the International DECOVALEX Project
26	2.16	Andres Clarens: Interfacial Impacts on Slickwater Imbibition and Gas Production in the Marcellus Shale
27	2.16	Tomas Princ: Slow Redistribution of Capillary Trapped Gas in Heterogeneous Porous Medium
28	2.05	Chaohua Guo : Study of Gas Production from Shale Reservoirs with Multi-stage Hydraulic Fracturing Horizontal Well considering Multiple Transport Mechanisms
29	2.05	Xiaojing Fu: Viscous fingering with partially miscible fluids
32	1.18	Jinjie Wang: Stabilizing Effect of Inertia on Viscous Fingering in Miscible Displacements in Porous Media
73	2.26	lan Griffiths: Mitigation of arsenic mass poisoning
74	2.26	Galina Printsypar: Optimal non-woven filter media using multiscale simulations
75	4.28	Allan Daniel Gomez Flores: Effect of Wearing in Impeller Blades of a Denver Flotation Cell on Hydrophobic Silica Flotation at Laboratory Scale
76	4.28	Tiziana Tosco : Field-scale modelling of nanoparticle injection and transport for nanoremediation design and particle fate assessment
77	1.15	Srutarshi Pradhan: Creep/swelling behavior of shale/clay: Discrete element modeling, based on Monte-Carlo technique
78	1.15	Dominique Derome : Moisture-induced swelling of oil-painted linen canvas: experiments and modeling
79	1.15	Hiram Arroyo Chavez: Hydro-mechanical coupling of deformable porous solids with two immiscible phases

80	1.15	Daniel Grande: Thermostable Nanoporous Cyanate Ester Resins Newly Designed by Using Ionic Liquids as Porogens
81	1.15	Yuelian Peng: PVDF hollow fiber membraneswith different morphologies in direct-contact membrane distillation
82	1.21	Jacques Huyghe: Deforming unsaturated media: a unified approach
83	1.21	Farshid Vahedifard: Modeling Soil Water Retention Curve under Non-Isothermal Conditions
84	1.21	Javier Rodrigo-Ilarri: Mathematical modeling of BTEX concentrations on the unsaturated zone using a simple finite differences model: evaluation of the mass distribution between phases
130	2.04	He Congge: An improved formation heating model for steam injection with horizontal well in thin reservoirs
131	2.04	Kyung Jae Lee : A comprehensive simulation model for solvent-aided thermal recovery of heavy oil and bitumen—Analyzing the impact of diverse factors on productivity and product selectivity
132	1.28	Hongkyu Yoon: Multiscale characterization of carbonate rock deformation induced by coupled chemo-mechanical processes during core flooding
133	1.28	Jonghyun Lee: Fast large-scale joint inversion for deep aquifer characterization using pressure and heat tracer measurements
134	4.11	Wenzheng Liu: A thermal-coupled model of hydraulic fracture propagation in deep reservoir
135	4.11	Yun Zhang: New numerical simulation method for fractured cavern carbonate reservoir
136	4.11	Yapu Zhang: Study on water flooding seepage regularity of low permeability carbonate reservoir — Taking Middle East H oilfield as an example
137	4.11	Xingwang Shi: NMR study on multi-layer waterflooding of middle-east low per- meability carbonate reservoirs
138	4.11	Shihan Song: Direction Dependency of Relative Permeability for Oil-Water Two Phase Flow in Vugular Porous Medium
139	4.11	Mingjing Lu: Influence on Oil-water Flow Mechanism with Hydraulic Fracture Existed in Low-permeability Reservoir
140	4.11	Mengyin Liang: Numerical Simulation of Shale gas reservoirs with embedded DFN model
141	4.11	Renjie Shao: Development of Embedded Discrete Multi-Fractures Model for Simulation of Fractured Reservoirs
142	4.11	Aleksei Tyrylgin: A multiscale method for poroelasticity problems in heterogene- ous porous media.
143	1.06	Ye Zhang: Direct inversion for joint parameter and boundary conditions estima- tion for fractured aquifer

144	1.06	Donald Matthew Reeves : Upscaling of mass transfer in field-scale discrete frac- ture networks using fractional-derivative models
145	1.06	Quanlin Zhou: Benchmark Analytical Solutions to Advection-Dispersion in Discrete Fractures Coupled with Multirate Diffusion in Matrix Blocks of Varying Shapes and Sizes
188	2.17	Seung-Hun Baek: X-ray microtomography imaging of abiotic carbonate precipita- tion in sands and its effect on permeability of sands
189	2.17	Yanlong Zhao: Multi-scale analysis on coal permeability using the Lattice Boltz- mann Method
190	2.17	Nijat Hakimov: Single-scale heterogeneous pore network modelling with micro- porosity upscaling.
191	2.17	Clément Varloteaux: Rock Absolute Permeability Analysis using Image-Based Direct Pore-Scale Simulations
192	2.17	Saurabh Shah: Multi-scale pore imaging techniques to characterise heterogene- ity effects on flow and transport in complex carbonate rock
193	2.06	Nicholas Skrivanos: Enhanced grain partitioning of microtomography segmented images
194	2.06	Willi Pabst: Microstructural characterization via Minkowski-functional-based global descriptors
195	2.06	Maša Prodanović: Digital Rocks Portal: Curation, Visualization and Analysis of Imaged Porous Materials
196	2.06	Carla Romano : Automated high accuracy, rapid beam hardening correction in X-Ray Computed Tomography of multi-mineral, heterogeneous core samples
241	1.12	Alina Emelianova: Predictions of Solvation Pressure in Mesopores Based on Saam-Cole Theory
242	1.12	Justyna Rogacka: Adsorption of small molecules in the intermediate structures of breathing MOF
243	1.12	Yun Jiang: Characteristics and New Scaling for Forced Imbibition Based on Low- Field Nuclear Magnetic Resonance Measurements
244	1.12	Marc Wagemann: Interaction of pentane and 2-pentanone with UiO-66(Zr) by solid-state NMR
245	1.12	Max Maximov: Monte Carlo simulation of argon adsorption in 3DOm carbon pores with potential based on spheres with openings
246	1.12	Ronghao Cui: Oil/water two-phase slip flow in a random pore network of shale
247	1.12	Liu Huaxun: Flow Model and Flow Equation of Shale Gas Based on Micro Flow Mechanism
248	1.12	Elena Kirova: A Molecular Dynamics Approach for Predicting the Glass Transition in pores
249	1.12	Philippe Leroy : Spectral induced polarization of concrete. Influence of the electrical double layer and pore size
250	1.12	Patrick Huber : A ferroelectric liquid crystal confined in cylindrical nanopores: Reversible smectic layer buckling, enhanced light rotation and extremely fast electro-optically active Goldstone excitations

251	1.12	Katarzyna Walczak: Synthesis and characterisation of B-substituted nanoporous carbons with high energy of hydrogen adsorption.
252	1.12	Shan Wang: A Model for Gas Transport in Inorganic Nanopores of Shale Gas Reservoirs
253	1.12	Patrick Huber: Soft fillings in nanoporous solids: Electro-polymerization and mechanical characterization of polypyrrole in nanoporous silicon
254	1.12	Bernd Crouse: Direct simulation of permeability including Klinkenberg effect
255	1.12	Gerhard Findenegg: Doping SBA-15 with Nickel Oxide by Freeze-Drying Impreg- nation
256	1.12	Tao Zhang : The transport behavior of the hydraulic fracturing fluid in organ- ic-rich nanoporous shale: A generalized lattice Boltzmann method
320	1.01	Yijia Zhang: A Sorption Based Study on the Effect of Supercritical CO2 Interaction with Clay and Organic-Rich Shales
321	1.01	Jia Deng: Analysis of the pressure and productivity characteristics for horizontal fractured well in the tight reservoir based on the three-zones model
322	1.01	Hanxu Yang: Laboratory Evaluations of Fiber-Based Treatment for In-Depth Profile Control
323	1.01	Lei Li: Microcosmic Visual Experimental Study of CO2 Huff-n-Puff injection to Enhance Oil Recovery in Liquid-Rich Shale Reservoirs
324	1.01	Mingyu Cai: Productivity forecast model of vertical hydraulic fracturing well with varying conductivity in tight oil reservoir
325	1.01	Qiang Wang : A numerical simulation study on the hydraulic fracture propagation in heavy oil reservoir with the THM coupling
326	1.01	Xieyang Pu: An analytical model of apparent permeability for shale gas reservoir considering characteristics of nanopore distribution
327	1.01	Mao Cui: Characteristic of Coal Pore Structure and Its Relationship with Sedi- mentary Environment in Hegang Basin
329	1.01	Yuqi Wu: 3D Reconstruction and permeability calculation from 2D thin sections
330	1.01	Xiangyang Wang: Physical simulation experiment of different injected media huff and puff for tight porous media
331	1.01	Shan Huang: One-Dimensional Transient Inter-Porosity Flow Model in Tight Porous Media with Consideration of Fracture Pressure Depletion
332	1.01	Guoqiang Sang: Characteristics of Remaining Oil Micro [®] Distribution in Laojun- miao Oilfield after Waterflooding
333	1.01	Taiyi Zheng: A New Method to Establish A Full Scale Diagram For Unconvention- al Oil Reservoir
334	1.01	Yuqiang Xu: Study on the Ultrasonic Propagation Law in Gas-Liquid Two-Phase Flow of Deep-Water Riser Annulus
335	1.01	Ma Yuandong: Numerical Modelling of Microbial Enhanced Oil Recovery under the Effect of Environment
336	1.01	Mengmeng Li: A Two-Phase Flow Model for Pressure Transient Analysis of a Wa- ter Injection Well Considering Water Imbibition in Natural Fractured Reservoirs

337	1.01	Shiyuan Zhan: A Novel Mehtod to Correct Steady-State Relative Permeability for Capillary End-Effects Based on Simulation Approach
338	1.01	Yuqi Wu: Petrographic characterization of low-permeable to tight turbidite sand- stone from Eocene Shahejie Formation using micro-CT.
339	1.01	Shouya Wu: Micro-scale effect of CO2 diffusion on two-phase flow in dual-po- rosity of tight oil reservoirs
340	1.01	Fanhui Zeng: A Transient Productivity Model of Multi-stage Fractured Horizontal Wells in Shale Gas Based on the Continuous Succession Pseudo-steady State Method
341	1.01	Fanhui Zeng: The gas mass transport model considering the dynamic change of micro-fracture width in shale
342	1.01	Steven Bryant: High-Resolution Monitoring of Nanoparticle Transport Behavior in Multi-Phase Saturated Porous Media: Experimental Study
343	1.01	Øystein Klemetsdal: Efficient Nonlinear Gauss-Seidel Type Solvers for Black-Oil Type Models
345	1.01	Lifei Dong: Modeling and Evaluation on particle transportation performance in the pore throat of reservoirs
347	2.21	Tatiana Reiche: Design Pattern Enabling the Flexible Integration of Effects into a Basis Flow Model
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348	2.21	with Buoyancy and Capillary Pressure
348	2.21	Bradiey Mailson: Implicit Hybrid Opwinding for Multiphase Flow and Transport with Buoyancy and Capillary Pressure Muhammad Zulqarnain: The influence of Capillary Trapping on Dynamic CO2 Storage Capacity and Long Term Storage Integrity
348 386 387	2.21 2.09 2.09	 Bradiey Mailson: Implicit Hybrid Opwinding for Multiphase Flow and Transport with Buoyancy and Capillary Pressure Muhammad Zulqarnain: The influence of Capillary Trapping on Dynamic CO2 Storage Capacity and Long Term Storage Integrity Guoqiang Xing: Analysis of flow behavior for a well with a vertical fracture at an arbitrary azimuth in a rectangular anisotropic reservoir
348 386 387 388	2.21 2.09 2.09 2.09	Bradley Mallson: Implicit Hybrid Opwinding for Multiphase Flow and Transport with Buoyancy and Capillary Pressure Muhammad Zulqarnain: The influence of Capillary Trapping on Dynamic CO2 Storage Capacity and Long Term Storage Integrity Guoqiang Xing: Analysis of flow behavior for a well with a vertical fracture at an arbitrary azimuth in a rectangular anisotropic reservoir Oliver Fu: Optimization Method Research of Multi-stage Polymer Flooding
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348 386 387 388 389 390 390 391 392 393 394	2.21 2.09 2.09 2.09 2.09 2.09 2.10 2.10 1.17 1.17	 Bradiey Mailson: Implicit Hybrid Opwinding for Multiphase Flow and Transport with Buoyancy and Capillary Pressure Muhammad Zulqarnain: The influence of Capillary Trapping on Dynamic CO2 Storage Capacity and Long Term Storage Integrity Guoqiang Xing: Analysis of flow behavior for a well with a vertical fracture at an arbitrary azimuth in a rectangular anisotropic reservoir Oliver Fu: Optimization Method Research of Multi-stage Polymer Flooding Gaétan Gerber: Nanoparticle heterogeneous adsorption in porous media Yichang Yu: Main controlling factors and development strategy of heterogeneity in platform carbonate reservoirs Martin Schneider: Nonlinear finite-volume schemes for complex flow processes and challenging grids Shuo Wen: Numerical Simulation Study on Pore Scale Seepage of Porous Media Based on Finite Volume Method Steffen Berg: The Formation of Microemulsion at Flow Conditions in Rock Dongxing Du: CO2 Foam Displacement Behavior in a Water/Oil Saturated Homogeneous Porous Media

396	1.17	Azita Ahmadi-Senichault: Semi-analytically derived flow-rate/pressure drop rela- tionships for the flow of yield stress fluids through rectilinear pipes of non-circu- lar cross-sections.
397	1.17	Brayan F. Garcia: A pore-scale study of viscoelastic surfactant flow through porous media
398	1.17	Hanxu Yang: Design of Large-Scale Physical Simulation Model for Alkaline-Sur- factant-Polymer Flooding
399	1.17	Weirong Li: Using Lattice Boltzmann Method to Study Polymer Viscoelasticity Effect for Polymer Flooding
451	2.23	Magnus Aa. Gjennestad: Stable and efficient time integration at low capillary numbers of a dynamic pore network model for immiscible two-phase flow in porous media
452	2.23	Santanu Sinha: Improving the Monte Carlo algorithm for pore-network simula- tions of immiscible two-phase flow in porous media
453	2.23	Morten Vassvik: A New Dynamic Single-Pressure Network Model: Experimental Comparisons and Calibrations.
454	2.23	Abhishek Agrawal: Pore scale modeling of acoustic events
455	4.18	Min Liu: Investigation of mineralogical heterogeneity in chemical dissolution of sandstones
456	4.18	Pei Li : Tracer Transport Characterization of Interactions Between Resident and Infiltrating Water During Drainage-Imbibition Cycles
457	4.18	Florian Doster: Droplet Flow Regimes in a T-Section Microchannel: Assessment of Volume of Fluid Formulations
458	4.18	Julien Maes: Toward direct pore-scale reactive modelling of low-salinity flooding in 2D/3D porous media images
459	4.18	Cyprien Soulaine: Multiphase micro-continuum models: an hybrid-scale ap- proach
460	1.27	Qian Zhang: Characterization of modified nanoscale zero-valent iron particles transport through sandstones by nuclear magnetic resonance
461	1.27	Enno de Vries: Quantifying Dual Porosity Flow and Contaminant Transport Pro- cesses Using an Integrated Pore-Scale Network Modeling Approach
462	1.27	Enno de Vries: Evaluation of a Proposed Workflow for Digital Petrophysics of Coquinas Involving Experimental Data and 3D Digital Models Using PNM- and FEM-Based Simulations
463	1.27	Alain Genty: Unsaturated porous medium effective diffusion coefficient calcula- tion through lattice Boltzmann method
464	1.27	Cornelius Fischer: Reactive Transport Modelling on the Drill Core Scale, Parameterized by GeoPET/ μ CT Process Tomography
465	1.27	Edgar G. Martínez-Mendoza: Fluid Flow Property Estimation Using a Pore Net- work Modeling Approach
466	1.27	Ana T. Mendoza-Rosas: A random connection model for pore network modeling

8:30	Plenary 3 - See facing page
	Parallel Session 6
6-A	MS 1.18: Pore scale formulations and upscaling of reactive transport problems in porous media
Room A	Organizers: Carina Bringedal, Jyoti Phirani, Kundan Kumar
	MS 1.11: Conservative and Reactive Transport of Charged Species in Permeable and Impermeable Porous Media
	Organizers: Massimo Rolle, Valentina Prigiobbe, Marc Hesse
9:32	Kundan Kumar: On an evolving non-isothermal reactive upscaled model in a porous medium
9:50	Sohely Sharmin: Upscaling of two-phase flow in porous media with free boundary at the pore scale
10:08	Mats Brun: Upscaling of coupled geomechanics, flow, and heat, in a poroelastic medium in the quasi-static situation
10:26	Carina Bringedal: Phase field formulations for reactive two-phase flow
	MS 3.10: From deformable porous media to frictional fluids
6-B	Organizers: Fredrik Kvalheim Eriksen, Guillaume Dumazer, Marcel Moura
Room B	
9:32	Knut Jørgen Måløy: Pattern formation of frictional fingers in a gravitational poten- tial
6.0	MS 4.23: Fluid flow-fracture phenomena in porous media
0-0	Organizers: Bill Carey, Catherine Peters
Room C	
9:32	Andrew Bunger: Impact of Fluid-Driven Subcritical Crack Growth on Hydraulic Fracture Initiation and Growth
9:50	Zhuang Sun: CFD-DEM Modeling of Fracture Initiation Induced by Fluid Injection
10:08	Louise Criscenti: Coupled chemo-mechanical fracture of silica in aqueous solutions
10:26	Guangyue Liang: Dilation by Polymer Injection Enhanced SAGD Start-up Process in Oil Sands Project: Pilot Test and Numerical Simulation

Dr. Uwe Beuscher

Global Modeling & Simulation Team Leader

W.L. Gore and Associates, Inc., Industrial Produces Division



Comparison of liquid particle filtration

performance to porous media characterization

This lecture will provide an introduction into liquid particle filtration with microporous media and the correlation between removal efficiency and measured porous media structural parameters. Actual filtration experiments are tedious, can take a long time, are destructive, and depend to a large extend on the application. A characterization technique, which should be simpler, faster, and non-destructive and that provides an estimate of the expected filtration behavior gives great benefits. One critical parameter that influences the various particle capture mechanisms and their effectiveness over the life of the filter is the effective pore size distribution of the filter medium. In the filtration industry, this pore size distribution is often determined using capillary flow porometry, in which a wetting fluid is expelled from the porous structure using increasing gas pressure. The resulting data is represented by a gas flow vs. pressure curve, which can easily be converted into a pore size distribution by assuming a simple morphology for the porous structure. The relationship of this pore size estimate to filtration observations is mostly qualitative but lacks a good quantitative correlation due to a variety of factors. Experimental observations and model calculations for both filtration and porometry experiments illustrate the difficulty for finding a quantitative correlation between these two observations and will present a challenge for future research.

6-D	MS 1.10: Conservative and Reactive Transport of Charged Species in Permeable and Impermeable Porous Media
Room D	Organizers: Massimo Rolle, Valentina Prigiobbe, Marc Hesse
9:32	Phong Nguyen: Multiphase flow in shale fracture networks applicable to hydrocarbon recovery processes: huff-and-puff, water displacement, and chemical additives using microfluidic experiments
9:50	Ayaz Mehmani: Impacts of Controlled Surface Roughness on Fluid Trapping in Glass Micromodels: Implications for Subsurface Multiphase Flow
10:08	Eric Vavra: Using Micromodels to Study Heavy Oil Displacement by Foam
6-E	MS 1.12: Fluids in Nanoporous Media
	Organizers: Gennady Gor, Patrick Huber
Room E	
9:32	Rolf Pelster: An ultrasonic study on density and elastic properties of nanoconfined argon
9:50	Francisco Gallego-Gómez: Colloidal Crystals for Photonic Detection of Fluid Phe- nomena in Nanoporous Systems
10:08	Ayaz Mehmani: Impacts of Controlled Surface Roughness on Fluid Trapping in Glass Micromodels: Implications for Subsurface Multiphase Flow
10:26	Gennady Gor: Gassmann Equation for Nanoporous Media
6-F	MS 4.22: Evolving porous media and coupled chemical and physical processes
Room F	Organizers: Hang Deng, Sergi Molins, Nikolaos Prasianakis, Qingyun Li
9:32	Andreas Rupp: Discrete-continuum multiscale model for evolving microaggregates in porous media
9:50	Philippe Poncet: New trends in Vortex Methods for reactive flows
10:08	Christian Hinz: Pore-scale simulation of kinetic calcite pore cement dissolution in a μCT sandstone sample
10:26	Zijun Feng: Permeability evolution of thermo-mechanically coupled granite
6-G	GS 1: Fundamental theories of porous media
Room G	Organizers: Steffen Berg, Michel Quintard, Hadi Hajibeygi
9:32	Mojdeh Rasoulzadeh: Effective Models of Flow in Vuggy Carbonate Reservoirs
9:50	Alex Hansen: Relations between seepage velocities in immiscible two-phase flow in porous media
10:08	Benoit Goyeau: A nonlinear asymptotic model for the inertial flow at the interface of a permeable medium
10:26	Pawan Singh Takhar: Challenges and Opportunities in Porous Media Modeling of Food Materials

WEDNESDAY, MAY 16, 2018

6-H	MS 2.15: Modelling and Simulation of Porous Media: From Microstruc- ture to Functionality
Room H	Organizers: Sarah Staub, Andreas Wiegmann
9:32	Willi Pabst: Effective elastic properties of porous media and metamaterials
9:50	Volker Schulz: Optimization of transport in the PEM-Fuel cells using 3D micro print method
10:08	Maria Osorno: High performance SPH implementations for pore scale direct nu- merical simulations
10:26	Agnese Piovesan: Pore network modelling of single phase flow in functionalized porous materials: permeability prediction and validation
10:45	Break
	Parallel Session 7
7-A	MS 1.11: Conservative and Reactive Transport of Charged Species in Permeable and Impermeable Porous Media
Room A	Organizers: Massimo Rolle, Valentina Prigiobbe, Marc Hesse
	MS 4.10: Evaluation and Optimization of Non-Conservative Transport in Porous Media
	Organizers: Xiaolong Yin, Chao Yang, Ning Wu
	Lucian Stalson Impact of surface complexation and electrostatic interactions during
11:17	pH fronts propagation in silica porous media: Experiments and model based inter- pretation
11:17	 Fabio Tatti: Effects of Groundwater Circulation Well to contaminant Back-Diffusion from low-permeability layers: investigation by laboratory test and numerical simulations.
11:17 11:35 11:53	 Fabio Tatti: Effects of Groundwater Circulation Well to contaminant Back-Diffusion from low-permeability layers: investigation by laboratory test and numerical simulations. Yang Guo: Colloidal transport in a microfluidic porous medium with surface charge heterogeneity
11:17 11:35 11:53 12:11	 Fabio Tatti: Effects of Groundwater Circulation Well to contaminant Back-Diffusion from low-permeability layers: investigation by laboratory test and numerical simulations. Yang Guo: Colloidal transport in a microfluidic porous medium with surface charge heterogeneity Bing Yuan: A New High-fidelity Mesh Model for Simulation of Transport Process in a Fixed Bed Reactor
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11:17 11:35 11:53 12:11 12:29 7-B	 Fabio Tatti: Effects of Groundwater Circulation Well to contaminant Back-Diffusion from low-permeability layers: investigation by laboratory test and numerical simulations. Yang Guo: Colloidal transport in a microfluidic porous medium with surface charge heterogeneity Bing Yuan: A New High-fidelity Mesh Model for Simulation of Transport Process in a Fixed Bed Reactor Hongtao Yang: Simulation of particle straining in porous media using a coupled pore-network and CFD-DEM model MS 2.07: Prediction of the thermal conductivity of porous materials
11:17 11:35 11:53 12:11 12:29 7-B Room B	 Bing Yuan: A New High-fidelity Mesh Model for Simulation of Transport Process in a Fixed Bed Reactor Hongtao Yang: Simulation of particle straining in porous media using a coupled pore-network and CFD-DEM model MS 2.07: Prediction of the thermal conductivity of porous materials Organizers: Hans Janssen, Dominique Baillis, Prabal Talukdar, Benoit Nait-Ali
11:17 11:35 11:53 12:11 12:29 7-B Room B 11:17	 Fabio Tatti: Effects of Groundwater Circulation Well to contaminant Back-Diffusion from low-permeability layers: investigation by laboratory test and numerical simulations. Yang Guo: Colloidal transport in a microfluidic porous medium with surface charge heterogeneity Bing Yuan: A New High-fidelity Mesh Model for Simulation of Transport Process in a Fixed Bed Reactor Hongtao Yang: Simulation of particle straining in porous media using a coupled pore-network and CFD-DEM model MS 2.07: Prediction of the thermal conductivity of porous materials Organizers: Hans Janssen, Dominique Baillis, Prabal Talukdar, Benoit Nait-Ali Sarah Staub: Microstructural Modeling and Simulation of Heat Transfer in Wood Fiber based Insulating Materials

11:53	Wouter Van De Walle: Prediction of the thermal conductivity of porous building materials with nanoscale pore size distributions
12:11	Anthony Straatman: Determination of solid-phase conduction shape factor for spherical-void-phase REVs generated by a random discrete element model
12:29	Eva Gregorová: Thermal conductivity predictions for porous materials via effective medium approximations and cross-property relations
	MS 4.23 (cont.): Fluid flow-fracture phenomena in porous media
7-C	Organizers: Bill Carey, Catherine Peters
Room C	
11:17	Rui Kou: A Discrete Element Approach in Modeling Proppant Transport in 3D Fracture Networks
11:35	J. William Carey: Fracture and fluid-flow in low permeability materials
11:53	David Uribe: Digital Material Laboratory: Determination of fractures and fracture networks from X-ray Computed Tomography
12:11	Meritxell Gran: Study of the multiple phase saturation distributions within a fracture
12:29	Zhenyu Xu: Buoyant Fluid Flow in Inclined Fractures
7-D	MS 1.10 (cont.): Evaluation and Optimization of Non-Conservative
Room D	Organizers: Xiaolong Yin, Chao Yang, Ning Wu
Room D	Organizers: Xiaolong Yin, Chao Yang, Ning Wu
Room D	Organizers: Xiaolong Yin, Chao Yang, Ning Wu Xuhui Zhou: The Control of Wettability for a Micror-Fluidic Channel using electrokinetic Technique and its Effect on Externally Measured Pressures
Room D 11:17 11:35	Virganizers: Xiaolong Yin, Chao Yang, Ning Wu Xuhui Zhou: The Control of Wettability for a Micror-Fluidic Channel using electrokinetic Technique and its Effect on Externally Measured Pressures Amir Pahlavan: Wetting, disorder, and pattern formation
Room D 11:17 11:35 11:53	Virganizers: Xiaolong Yin, Chao Yang, Ning Wu Xuhui Zhou: The Control of Wettability for a Micror-Fluidic Channel using electrokinetic Technique and its Effect on Externally Measured Pressures Amir Pahlavan: Wetting, disorder, and pattern formation ZhenBang Qi: Pore-scale Investigation of Solvent Based Bitumen Recovery
Room D 11:17 11:35 11:53 12:11	Variation View Portous Weeta Organizers: Xiaolong Yin, Chao Yang, Ning Wu Xuhui Zhou: The Control of Wettability for a Micror-Fluidic Channel using electrokinetic Technique and its Effect on Externally Measured Pressures Amir Pahlavan: Wetting, disorder, and pattern formation ZhenBang Qi: Pore-scale Investigation of Solvent Based Bitumen Recovery Min-Kyung Jeon: Connecting microfluidics experiments and pore network modeling in understanding multiphase flows in porous media
Room D 11:17 11:35 11:53 12:11 7-E	Virtual Sport III Porous Wethal Organizers: Xiaolong Yin, Chao Yang, Ning Wu Xuhui Zhou: The Control of Wettability for a Micror-Fluidic Channel using electrokinetic Technique and its Effect on Externally Measured Pressures Amir Pahlavan: Wetting, disorder, and pattern formation ZhenBang Qi: Pore-scale Investigation of Solvent Based Bitumen Recovery Min-Kyung Jeon: Connecting microfluidics experiments and pore network modeling in understanding multiphase flows in porous media MS 1.14: Transport in nanoporous materials. Theory and molecular dynamics simulations
Room D 11:17 11:35 11:53 12:11 7-E Room E	Organizers: Xiaolong Yin, Chao Yang, Ning Wu Xuhui Zhou: The Control of Wettability for a Micror-Fluidic Channel using electrokinetic Technique and its Effect on Externally Measured Pressures Amir Pahlavan: Wetting, disorder, and pattern formation ZhenBang Qi: Pore-scale Investigation of Solvent Based Bitumen Recovery Min-Kyung Jeon: Connecting microfluidics experiments and pore network modeling in understanding multiphase flows in porous media MS 1.14: Transport in nanoporous materials. Theory and molecular dynamics simulations Organizers: Signe Kjelstrup, Bjørn Hafskjold, Dick Bedaux, Guillaume Galliero
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12:11	Olav Galteland: Deviations from Darcy's law studied by non-equilibrium molecular dynamics simulations
12:29	Muhammad Sahimi: Influence of layer charge location and inter-layer cati- ons on swelling properties of mixed layer Illite-Montmorillonite
7-F	MS 4.22 (cont.): Evolving porous media and coupled chemical and phys- ical processes
Room F	Organizers: Hang Deng, Sergi Molins, Nikolaos Prasianakis, Qingyun Li
11:17	Sergi Molins: Mineralogical and transport controls on the evolution of porous media texture
11:35	Vitaliy Starchenko: Barite precipitation in porous media: from tomography experiment to simulations
11:53	Hang Jiang: Effects of coke formation on the pore structure and permeability during heavy oil in-situ combustion
12:11	Lauren Beckingham: Impact of pore and pore-throat distributions on porosity-permeability evolution in heterogeneous mineral dissolution and precipitation scenarios
12:29	Liwei Zhang: Porosity and permeability change of Lower Tuscaloosa and Marine Shale formations (Mississippi, USA) induced by CO2 injection: a numerical study
7-G	GS 1 (cont.): Fundamental theories of porous media Organizers: Steffen Berg, Michel Quintard, Hadi Hajibeygi
Room G	
11:17	Chen Li: Integration of Pressure Transient Data into Reservoir Models using the Fast Marching Method
11:35	Benoit Coasne: Adsorption and Transport in Multiscale Porous Media
11:53	Luis Lopez Pena: Conditions for upscalability of bioclogging in pore network models
12:11	Kosuke Noborio: Capillary force under microgravity estimated from Hagen-Poiseuille Equation
12:29	Natsumi Naganuma: Effects of Shapes of Pore Throat on Water Infiltration under Microgravity

7-H	MS 2.15 (cont.): Modelling and Simulation of Porous Media: From Micro- structure to Functionality
Room H	Organizers: Sarah Staub, Andreas Wiegmann
11:17	Rodrigo Neumann Barros Ferreira: Capillary network simulations based on the centreline representation
11:35	Andreas Grießer: Identification of individual fibers from 3d digital images
11:53	Mohmad Mohsin Thakur: Capillary Suction Response of Granular Materials from Computed Tomography and Direct Numerical Simulations
12:11	Laurent Lemmens: Image analysis, microstructure generation and effective property estimation of cement-based materials used as radioactive waste confinement barriers
12:29	Ben Paisley: Numerical Design of Porous Materials Using Adjustable Lev- el-Cut Poison Field Method
12:45	Lunch
14:00	Invited Talks- See facing page
	Parallel Session 8
	MS 4.05: Biochemical mineral precipitation for subsurface applications
8-7	
8-A	Organizers: Al Cunningham, Robin Gerlach, Adie Phillips, Leon van Paassen
8-A Room A	Organizers: Al Cunningham, Robin Gerlach, Adie Phillips, Leon van Paassen
8-A Room A ^{14:37}	Organizers: Al Cunningham, Robin Gerlach, Adie Phillips, Leon van Paassen Michael G. Gomez: Investigating Treatment Techniques for Stimulated Ureolytic Microbially-Induced Calcite Precipitation at Field Scale Treatment Depths
8-A Room A 14:37 14:55	Organizers: Al Cunningham, Robin Gerlach, Adie Phillips, Leon van Paassen Michael G. Gomez: Investigating Treatment Techniques for Stimulated Ureolytic Microbially-Induced Calcite Precipitation at Field Scale Treatment Depths Catherine M. Kirkland: MICP in the Field: Enhancement of Wellbore Cement Integrity and Permeability Modification
8-A Room A 14:37 14:55 15:13	Organizers: Al Cunningham, Robin Gerlach, Adie Phillips, Leon van Paassen Michael G. Gomez: Investigating Treatment Techniques for Stimulated Ureolytic Microbially-Induced Calcite Precipitation at Field Scale Treatment Depths Catherine M. Kirkland: MICP in the Field: Enhancement of Wellbore Cement Integrity and Permeability Modification Johannes Hommel: Modeling porous medium modification through induced calcium carbonate precipitation
8-A Room A 14:37 14:55 15:13 15:31	Organizers: Al Cunningham, Robin Gerlach, Adie Phillips, Leon van Paassen Michael G. Gomez: Investigating Treatment Techniques for Stimulated Ureolytic Microbially-Induced Calcite Precipitation at Field Scale Treatment Depths Catherine M. Kirkland: MICP in the Field: Enhancement of Wellbore Cement Integrity and Permeability Modification Johannes Hommel: Modeling porous medium modification through induced calcium carbonate precipitation Short Break
8-A Room A 14:37 14:55 15:13 15:31 15:31 15:40	Organizers: Al Cunningham, Robin Gerlach, Adie Phillips, Leon van Paassen Michael G. Gomez: Investigating Treatment Techniques for Stimulated Ureolytic Microbially-Induced Calcite Precipitation at Field Scale Treatment Depths Catherine M. Kirkland: MICP in the Field: Enhancement of Wellbore Cement Integrity and Permeability Modification Johannes Hommel: Modeling porous medium modification through induced calcium carbonate precipitation Short Break Neerja Zambare: Calcium carbonate precipitation and strontium co-precipitation in porous media flow reactors
8-A Room A 14:37 14:55 15:13 15:31 15:31 15:40 15:58	Organizers: Al Cunningham, Robin Gerlach, Adie Phillips, Leon van Paassen Michael G. Gomez: Investigating Treatment Techniques for Stimulated Ureolytic Microbially-Induced Calcite Precipitation at Field Scale Treatment Depths Catherine M. Kirkland: MICP in the Field: Enhancement of Wellbore Cement Integrity and Permeability Modification Johannes Hommel: Modeling porous medium modification through induced calcium carbonate precipitation Short Break Neerja Zambare: Calcium carbonate precipitation and strontium co-precipitation in porous media flow reactors Linn W. Thrane: Low Field Nuclear Magnetic Resonance to Monitor Bio Mineralization Processes in Porous Media
8-A Room A 14:37 14:55 15:13 15:31 15:40 15:58 16:16	Organizers: Al Cunningham, Robin Gerlach, Adie Phillips, Leon van Paassen Michael G. Gomez: Investigating Treatment Techniques for Stimulated Ureolytic Microbially-Induced Calcite Precipitation at Field Scale Treatment Depths Catherine M. Kirkland: MICP in the Field: Enhancement of Wellbore Cement Integrity and Permeability Modification Johannes Hommel: Modeling porous medium modification through induced calcium carbonate precipitation Short Break Neerja Zambare: Calcium carbonate precipitation and strontium co-precipitation in porous media flow reactors Linn W. Thrane: Low Field Nuclear Magnetic Resonance to Monitor Bio Mineralization Processes in Porous Media Daehyun Kim: Permeability Reduction Caused by Multiple Treatments of Biomineral Precipitation in Homogeneous Porous Media: Experimental Study and Pore Scale Modelling

INVITED SPEAKERS

Moran Wang Professor, Department of Engineering Mechanics, Tsinghua University

Electrokinetic Transport at Micro/Nanoscale Coupled with Surface Chemistry (Invited by MS 1.11) *Room A*

Mark Knackstedt Australian National University

Digital Materials Design Room B

Géraldine Pichot

Research Scientist, Inria (French National Institute for Computer Science and Applied Mathematics)

Simulation of flow properties in geological-based Discrete Fracture Networks *Room C*

Dorthe Wildenschild Professor, Environmental Engineering, Oregon State University

Using 3D Microimaging to Evaluate the Effect of Nutrient Flow Rate on Biofilm Growth in Porous media *Room D*

INVITED POSTER

J.M. Huyghe Bernal Chair of Biomedical Engineering, University of Limerick

Mechanotransduction of Hydrogels (with Eanna Fennell)











16:52	Ting Liu: Enhanced pH-dependent transport in porous media
16:55	Zi Ye: Effect of salinity on the transport of heavy metals and radionuclides in reactive porous media
16:58	Moran Wang: Electrokinetic Transport at Micro/Nanoscale Coupled with Surface Chemistry
17:01	Xiaolong Yin: Colloid-facilitated radionuclide transport through a bead- packed column and direct simulation using lattice-Boltzmann and random walk particle tracking
17:04	Kang Yu: Numerical simulation of flow and convection diffusion in porous media by the lattice Boltzmann method at REV-scale
17:07	Yujia Zhang: Efficient separation of allyl chloride from 1-chloropropane by one-dimensional zeolites
17:10	Anjun Liu: Unsteady Conjugate Mass Transfer between a Deformable Droplet and a Creeping Extensional Flow in a Cross-shaped Microchannel
17:13	Manuela Bastidas: Multiscale Hybrid Discontinuous Galerkin method applied to homogenization problems
0 D	MS 2.25: Hierarchical Flow Modelling in Biological Systems
о-в Room B	Organizers: Ingeborg Gåseby Gjerde, Cécile Daversin-Catty, Marie Elis- abeth Rognes, Jan Martin Nordbotten
	MS 4.06: Porous media flow in biological systems
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14:37	MS 4.06: Porous media flow in biological systems Organizers: Tobias Koeppl, Timo Koch, Rainer Helmig Wietse Boon: Flow and Mechanics in Fractured Media as Mixed-Dimensional PDEs
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WEDNESDAY, MAY 16, 2018

17:01	Hooman Farsani: Porous medium theory in patient pre-treatment planning
17:04	Jan Carmeliet: Conjugate soil-vegetation-air-radiation model for studying the environmental impact of porous media such as vegetation
17:07	Pauline Assemat: Homogenization of advection-diffusion and solid diffusion in poroelastic media for modelling transport of soluble factors in biological tissues
	MS 2.14: Numerical methods for processes in fractured media
8-C	
00	Organizers: Géraldine Pichot, Alessio Fumagalli, Elyes Ahmed
Room C	MS 2.13: Advances in numerical modelling of multiphase flow and transport in fractured porous media
	Organizer: Konstantin Brenner, Univercity Nice Sophia Antipolis
14:37	Markus Köppel: A nonconforming discrete fracture model of single-phase Darcy flow
14:55	Patrick Schmidt: Hydro-mechanical coupling strategies for fluid-filled fractures using a hybrid dimensional formulation
15:13	Sebastian Geiger: Hybrid Modelling of Fractured Reservoirs Using the Effective Medium Theory
15:31	Short Break
15:40	Chiara Facciolà: Discontinuous Galerkin approximation of flows in fractured porous media on polytopic grids
15:58	Jeffrey Hyman: System Reduction of Discrete Fracture Network Simulations Using Graph-Based Methods
16:16	Matteo Cusini: Algebraic Dynamic Multilevel (ADM) method for flow in heteroge- neous porous media with embedded discrete fractures
16:34	Guillaume Enchéry: An extension of the fault two-layer reduced model accounting for the flow properties of the core and damage zones
16:52	Jan Stebel: Reduced Models of Flow and Mechanics in Fractured Porous Media
16:55	Roland Masson: Hybrid-dimensional two-phase flow in fractured porous Media with interfacial pressure and saturation unknowns
16:58	Mohamad Jammoul: Modeling Energized Fluids Fracturing with Phase Field Meth- od
17:01	Elyes Ahmed: A multiscale flux basis for mortar mixed discretizations of reduced fracture models
17:04	Mohammad Mehdi Mollanouri Shamsi: Multiphase flow simulation of fractures filled with proppant
17:07	Enrique Peña De la Paz: Poroelastic properties on metal foams submitted to high pressure
17:10	Elsa De La Calleja: Structural stability in synthetic rocks and metallic foams under reservoir conditions

Day

8-D	MS 3.01: Application of NMR Methods to Porous Media
	Organizers: Andreas Pohlmeier, Christoph Arns, Matthias Appel
Room D	
14:37	Matthew Skuntz: Flow and Temperature Front Correlation in Phase Change Porous Media Measured by MRI
14:55	Madison L. Nelson: NMR Measurement of Pore Structure and Connectivity Induced by Water Ingress into Beeswax
15:13	Sabina Haber-Pohlmeier: 3D Imaging of flow pattern in natural porous media under low flow rate
15:31	Short Break
15:40	Jeffrey W. Simkins: Oxygen Profile Characterization in Packed Bed Biofilm Using 19F Nuclear Magnetic Resonance Oximetry
15:58	István Bányai: Parallel NMR cryoporometry, relaxometry and diffusiometry studies of porous carbon aerogels
16:16	Leo Pel: Binding of NaCL during hydration of cement as observed by NMR
16:52	Jiafeng Jin: The dynamic kinetic of the convex liquid bridge in a gas-wetting porous media
16:55	Leo Pel: Direct observation of the moisture distribution in castables at high temper- atures as studied by NMR
16:58	Heng Wang: Low-Field Nuclear magnetic resonance characterization of Carbonate and Sandstone Reservoirs
8-E	MS 1.24: Pore structure characterization and micro-scale effect on fluid flow in unconventional reservoir
8-E Room E	MS 1.24: Pore structure characterization and micro-scale effect on fluid flow in unconventional reservoir Organizers: Yongfei Yang, Jingsheng Ma, Jun Li
8-E Room E ^{14:37}	MS 1.24: Pore structure characterization and micro-scale effect on fluid flow in unconventional reservoir Organizers: Yongfei Yang, Jingsheng Ma, Jun Li Gerhard Zacher: Design of Pneumatic Fracturing Experiments for Rare Earth Elements Recovery by Support of X-ray Micro Computed Tomography Imaging
8-E Room E 14:37 14:55	MS 1.24: Pore structure characterization and micro-scale effect on fluid flow in unconventional reservoirOrganizers: Yongfei Yang, Jingsheng Ma, Jun LiGerhard Zacher: Design of Pneumatic Fracturing Experiments for Rare Earth Elements Recovery by Support of X-ray Micro Computed Tomography ImagingTong Liu: Multi-scale granular porous structure generation and its effect on permeability
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16:55	Dongying Wang: Numerical simulation of two-phase flow properties in rough fractures considering the normal deformation
16:58	Cunqi Jia: Pore Scale Simulation of Oil Transport of Kerogen in Shale: Coupling Molecular Dynamics And N-S Equation
17:01	Jianmeng Sun, Huaimin Dong: Study on the effect of natural gas hydrate cementation mode on the permeability property of rocks
17:04	Su Penghui: Fractal characteristics of oil shale reservoir based mercury intrusion experiment
17:07	Qi Zhang: A new upscaling method for simulating fluid flow in unconvention- al reservoir with strong heterogeneity
8-F	MS 1.25: Upscaling Porous Materials with Strong Solid-Fluid Interactions Organizers: Lynn Schreyer, Marcio Murad
Room F	
14:37	Lynn Schreyer: A Terzaghi-Like Principle for Swelling Porous Materials
14:55	Patricia Pereira: Upscaling Anomalous Gas Behavior in Nanopores in a Multi- porosity Shale Gas: Impact on Macroscopic Mass Transfer and Shape Factors
15:13	Malte Sauerwein: SAP-enhanced mortars: A multi-phase and multi-species modeling approach
15:31	Short Break
15:40	Chen Liu: Simulation of two-phase flow by diffuse interface methods
15:58	Marcel Moura: Direct experimental measurement of the pair correlation function during the slow drainage of a porous medium
16:16	Renaud Toussaint: Impact of disorder on pressure saturation curves, and graph theory shedding light on the life and death of capillary bridges and films pathways.
16:34	Ran Hu: Wettability and flow rate impacts on immiscible displacement: a theoretical model
16:52	Manuel Hopp-Hirschler: Mesoscopic simulation and characterization of the morphological evolution in phase separating fluid mixtures
16:55	Shubhangi Gupta: Thermo-Chemo-Hydro-Geomechanical Model and Nu- merical Solution Strategy for Marine Gas Hydrate Geosystems with a focus on Gas Production and related Geohazards
16:58	Naveen Kumar: Studying surfactant loss at rock-liquid interface using Quartz Crystal Microbalance
17:01	Xuhui Meng: Pore-scale study on density-driven flows with heterogeneous chemical reactions in porous media
17:04	Benoit Noetinger: About front dynamics and up-scaling multiphase flows in heterogeneous porous media

8-G	MS 2.12: High order schemes for simulation of flow and transport in porous media
Room G	Organizer: Todd Arbogast, University of Texas at Austin
14:37	Beatrice Riviere: High order methods for the simulation of viscous fingering
14:55	Mary Wheeler: Enriched Galerkin for Darcy flow, reactive transport and elastic wave propagation
15:13	Uwe Koecher: High-order space-time approximations of dynamic poroelasticity models
15:31	Short Break
15:40	Øystein Klemetsdal: Compositional Simulation using Fully Implicit High-Resolution WENO Schemes for Unstructured Grids
15:58	Iuliu Sorin Pop: Numerical methods for non-equilibrium porous media flow models
16:16	Todd Arbogast: A linearly stable, implicit WENO scheme applied to two-phase flow in porous media
16:34	Maicon Correa: A Higher-Order Central-Upwind Scheme for Multiphase Flow in Heterogeneous Porous Media
16:52	Naoto Sato: Challenges to understanding water imbibition under microgravity by numerical simulation
16:55	Mathias Winkler: Constitutive Relations for a New Theoretical Framework Describing 2-Phase-Flow in Porous Media
16:58	Chunyan Jiao: The influence of fracture on the gas reservoir development by the seepage experiment
17:01	Indika Udagedara: Instability Analysis of Poiseuille Flow of Suspensions Overlying Porous Media
17:04	Mario-Cesar Suarez-Arriaga: Quaternions Formulation of Linear Thermoporoelas- ticity
17:07	Zhen (Jane) Tao : Enriched Galerkin with Direct Serendipity Elements on Quadrilaterals for Two-Phase Flow in Porous Media
17:10	Xiu Ye: Weak Galerkin Method and Its Applications
17:13	Xikai Zhao: Accuracy of WENO and Adaptive Order WENO Reconstructions for Solving Conservation Laws
8-H	MS 2.08: Recent Advances in Multiscale Methods and Uncertainty Quantification
Room H	Organizers: Felipe pereira, Eduardo Abreu, Arunasalam Rahunanthan, Fabricio Sousa
14:37	Rafael Trevisanuto Guiraldello: A multiscale method with Robin boundary condi- tions for the porous media equations
14:55	Fabricio Sousa: A new iterative downscaling procedure for multiscale methods in porous media flows

WEDNESDAY, MAY 16, 2018

15:13	Paola Ferraz: Recursive Parallel Implementation of Multiscale Mixed Methods
15:31	Short Break
15:40	Arunasalam Rahunanthan: Convergence Analysis of McMC Methods for Subsurface Flow Problems
15:58	Rafael Moraes: Multiscale Data Assimilation of Spatially Distributed Information
16:16	Marcio Borges: Characterization of Rock Properties in Coupled Fluid Flow and Geomechanics Problems
16:34	Eduardo Abreu: Numerical modeling and simulation of two-phase flow problems in heterogeneous porous media with gravity and dynamic capillary pressure
16:52	Filip Formalik: Low Frequency Vibrations as the Indication of the Structural Trans- formations in Zeolitic Imidazole Frameworks – Density Functional Theory Study
16:55	Patrick Kurzeja: Harnessing highly non-linear structures for amplified attenuation by local flow
16:58	Andreas Wiegmann: Computer simulation of the geometric pore size and valida- tion with glass bead tests for metal wire meshes
17:01	Felipe Pereira: On the Reuse of Multiscale Basis Functions for the Approximation of Time-dependent Problems
17:04	Arthur Santo: A new coupled approach for numerically solving convection-diffusion problems with discontinuous capillary pressure
17:07	Luis Guilherme Cunha Santos: RBF-FD approximations based on polyharmonic splines basis with supplementary polynomials applied in a pore-scale problem
17:10	Junping Wang: High-Order Conservative Flux Optimization Finite Element Methods

Poster Presentations

Poster Number	MS/GS	Author/Title
30	1.18	Dongxing Du : A novel pore structure reconstruction procedure facilitating simulative analysis of multiphase displacement processes in porous media
32	1.18	Sorin Pop: A tri-phase phase-field model for precipitation and dissolution in partially saturated porous media
33	1.18	Manuela Bastidas: Multiscale Hybrid Discontinuous Galerkin method applied to homogenization problems.
34	1.18	Carina Bringedal: Phase field formulations for reactive two-phase flow
35	1.11	Ting Liu: Enhanced pH-dependent transport in porous media
36	1.11	Zi Ye: Effect of salinity on the transport of heavy metals and radionuclides in reactive porous media
37	1.11	Moran Wang: Electrokinetic Transport at Micro/Nanoscale Coupled with Surface Chemistry

38	1.11	Massimo Rolle: Modelling approach and benchmark experiments for Nernst- Plank based transport, Coulombic interactions and geochemical reactions in saturated porous media
39	1.11	Muhammad Muniruzzaman: Coulombic effects during conservative and reac- tive transport of charged solutes in homogeneous and heterogeneous porous media: Experiments and modeling
40	1.11	Marc Hesse: Chelation for filter regeneration: wave structures and process optimization
41	4.10	Xiaolong Yin: Colloid-facilitated radionuclide transport through a bead-packed column and direct simulation using lattice-Boltzmann and random walk parti- cle tracking
42	4.10	Kang Yu: Numerical simulation of flow and convection diffusion in porous media by the lattice Boltzmann method at REV-scale
43	4.10	Yujia Zhang: Efficient separation of allyl chloride from 1-chloropropane by one-dimensional zeolites
44	4.10	Anjun Liu: Unsteady Conjugate Mass Transfer between a Deformable Droplet and a Creeping Extensional Flow in a Cross-shaped Microchannel
45	4.10	Lucien Stolze: Surface complexation modeling of arsenic mobilization from goethite: Interpretation of in-situ experiments in a sedimentary basin of Inner Mongolia, China
46	4.05	Xiaohui Cheng: Experimental Study on Microbial Infiltration Stabilization of Degraded Sandstone in Yungang Grottoes
47	4.05	Fabian Steinacher: Impact of wellbore treatment fluids on calcium carbonate attachment in MICP grouted sands
48	4.05	Adrienne Phillips: Visualizing and Quantifying Biomineralization in a Wellbore Analog Reactor
49	4.05	Hongxian Guo: Experiments of Microbially Induced CarbonatePrecipitation in Calcareous Sand by Mixing Method
50	4.05	Nariman Mahabadi: The Impact of Precipitation Scenarios on the Characteris- tics of Porous Media: Numerical Simulation vs Experiments
85	3.10	Fredrik Kvalheim Eriksen: Flow patterns and rheology of confined granular media during fluid injection
86	3.10	Renaud Toussaint: Bubbles breaking the walls and granular-frictional fingering
87	3.10	Guillaume Dumazer: Porous media deformation and self-structuring under capillary bulldozing
88	3.10	Guillaume Dumazer: Diffusive processes across frictional patterns
89	3.10	Marcel Moura: Marangoni induced fracturing in two-dimensional frictional flows
90	3.10	Renaud Toussaint: How to sink: impact of fluids in soil liquefaction during earthquakes, computation of critical acceleration.
91	2.07	Sergei Stepanov: Multiscale model reduction of artificial ground freezing

92	2.07	Muhammad Sahimi: Surface roughness and deformation effects on the ther- mal characterization of granular porous media
93	2.25	Cécile Daversin-Catty: Mixed-dimensional models of the brain's waterscape with FEniCS
94	2.25	Ingeborg Gåseby Gjerde: Mixed methods for 1D-3D coupled flow models in porous media
95	2.25	Cécile Daversin-Catty: Mixed-dimensional modeling of the brain's waterscape
96	2.25	Ingeborg Gåseby Gjerde: Mixed methods for coupled 1D-3D flow models in porous media
97	4.06	Jan Carmeliet: Conjugate soil-vegetation-air-radiation model for studying the environmental impact of porous media such as vegetation
98	4.06	Pauline Assemat: Homogenization of advection-diffusion and solid diffusion in poroelastic media for modelling transport of soluble factors in biological tissues
99	4.06	Hooman Farsani: Porous medium theory in patient pre-treatment planning
100	4.06	Jacques Huyghe: Swelling and fracture of ionized, highly deformable hydro- gels.
101	4.06	Pawan Singh Takhar: Hybrid Mixture Theory Based Modeling of Ice-Recrystalli- zation in Frozen Biopolymers Subjected to Freeze-Thaw Cycles
146	4.23	Feifei Fang: Physical simulation experimental study on water invasion rules of fractured carbonate gas reservoirs
147	4.23	Dustin Crandall: Influence of micro-fabric heterogeneity on fracture alterations during shear
148	4.23	Qinjun Kang: Predicting fracture permeability through pore-scale simulations
149	4.23	Xin Cai: Coupled Fluid Flow and Geomechanics with Continuum Damage Me- chanics in Dual-Porosity Modeling of Fractured Reservoirs
150	4.23	Andres Clarens: Cementing pores and fractures using mineral silicate carbon- ation in situ
151	4.23	Malin Torsæter: Cement placement in damaged shale rocks: effect of shale properties
152	2.14	Jan Stebel: Reduced Models of Flow and Mechanics in Fractured Porous Media
153	2.14	Sebastian Geiger: Hybrid Modelling of Fractured Reservoirs Using the Effective Medium Theory
154	2.14	Mohamad Jammoul: Modeling Energized Fluids Fracturing with Phase Field Method
155	2.14	Elyes Ahmed: A multiscale flux basis for mortar mixed discretizations of reduced fracture models
156	2.14	Yanlong Zhao: Lattice Boltzmann simulation of gas flow and permeability prediction in coal fracture networks
157	2.13	Roland Masson : Hybrid-dimensional two-phase flow in fractured porous Media with interfacial pressure and saturation unknowns

158	2.13	Carlos Romano : Modeling of Low Salinity Waterflooding through Fractured Cores
159	2.13	Koondanibha Mitra: A Linear Domain Decomposition Method for Unsaturated Flow in Porous Media
175	2.13	Simon Legrand: GENFIELD: A Parallel Software for the Generation of Stationary Gaussian Random Fields
197	1.10	Jiafeng Jin: The dynamic kinetic of the convex liquid bridge in a gas-wetting porous media
198	1.10	Kelsey Bruning: Microfluidic Evaluation of the Effects of Wettability on Two-Fluid Flow in Porous Media
199	1.10	Amir Pahlavan: Forced wetting transition and bubble pinch-off in a capillary tube
200	1.10	Chike Ezeh: Visualizing and studying Multiphase flow in ITO coated microcap- illary.
201	1.10	Ioannis Zarikos : Flow field measurements of trapped and mobilised non-wet- ting phase in a microfluidic porous medium
202	3.01	Leo Pel: Direct observation of the moisture distribution in castables at high temperatures as studied by NMR
203	3.01	Heng Wang: Low-Field Nuclear magnetic resonance characterization of Car- bonate and Sandstone Reservoirs
205	3.01	Andreas Pohlmeier: Application of MRI T1 mapping on root soil interactions
206	3.01	Linn Winsnes Thrane: Nuclear Magnetic Resonance Relaxation and Diffusion Measurements to Monitor Phase Changes in Hydrates
207	3.01	Ting Chen: Researches on residual oil saturation and micro displacement mechanism after different oil displacement modes in tight oil reservoir
257	1.14	Olav Galteland: Deviations from Darcy's law studied by non-equilibrium mo- lecular dynamics simulations
258	1.14	Zheng Sun: Transport capacity of gas confined in nanoporous ultra-tight gas reservoirs with real gas effect and water storage mechanisms coupling
259	1.14	Rukuan Chai : Molecular Dynamics Simulation on the Adsorption and Transport of Oil-Water Two-Phase in the Nanochannel
260	1.14	Liyou Ye: Physical simulation experiment and numerical inversion of the full lifecycle development of shale gas well
261	1.14	Khizar Hayat: Theoretical Estimation of Intracrystalline Diffusivities of Olefins in MTO Catalysts
262	1.24	Dongying Wang : Numerical simulation of two-phase flow properties in rough fractures considering the normal deformation
263	1.24	Cunqi Jia : Pore Scale Simulation of Oil Transport of Kerogen in Shale: Coupling Molecular Dynamics And N-S Equation
264	1.24	Penghui Su: Fractal characteristics of oil shale reservoir based mercury intru- sion experiment
265	1.24	Qi Zhang : A new upscaling method for simulating fluid flow in unconventional reservoir with strong heterogeneity

266	1.24	Xin Wang: A new method based on high-resolution imaging of pore space for rock typing
267	1.24	Jianmeng Sun: Study on the effect of natural gas hydrate cementation mode on the permeability property of rocks
269	1.24	Mingqiang Chen: Pore-scale Simulation Coupling Boundary Layer Effect And Media Deformation In Tight Formation
270	1.24	Yuqi Wu: A reconstruction method for 3D porous media based on a 3D training image using multiple-point statistics and multiple-grid templates
271	1.24	Yongbin Niu: Characteristics of Biogenically enhanced Carbonate reservoirs and their governing-factors [®] the Ordovician carbonates of Tahe oilfield, Tarim basin, China
272	1.24	Haiyuan Yang: Experimental and simulation research on the influence of tem- perature on the porous and thermal properties of sandstone
273	1.24	Wencheng Han: Experimental Study on the Effect of Moisture on Adsorption and Diffusion of Coalbed Methane
274	1.24	Cuiping Yuan : Characteristics and mechanism analysis of gas-water two-phase flow in ultra-low permeability sandstone
275	1.24	Bingqing He: The influence of interfacial tension on spontaneous imbibition of low-permeability water-wet reservoir
276	1.24	Zhihui Liu: Research on stress sensitivity of fractured carbonate reservoir by CT Technology and pore-scale simulation
		Wenjie Zhang: A systematicstudy flow on microscopic pore structure and fluid
277	1.24	flow mechanism of tight gas reservoir
277	1.24	flow mechanism of tight gas reservoir Xianggang Duan: Experimental and modeling study of multi-scale gas flow in shale Micro-Nano pores
277 278 279	1.24 1.24 1.24	flow mechanism of tight gas reservoir Xianggang Duan: Experimental and modeling study of multi-scale gas flow in shale Micro-Nano pores Hai Sun: Numerical simulation of proppants transport and placement in fracture
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277 278 279 280 281 282 283 283 284 285 349	1.24 1.24 1.24 1.24 1.24 1.24 1.24 1.24	flow mechanism of tight gas reservoir Xianggang Duan: Experimental and modeling study of multi-scale gas flow in shale Micro-Nano pores Hai Sun: Numerical simulation of proppants transport and placement in fracture Rui Shen: Storage space and gas content of Changning Longmaxi shale gas in Sichuan basin, China Eric Guiltinan: The wettability of organic rich shales and its effect on transport properties in fractures as realized with the Lattice Boltzmann method Xiaolong Yin: Universal Scaling Relation for Kinkenberg Flows in Nanoporous Media Yuqi Wu: Characterization of minerals and pore space using the data-con- strained modeling in shale Jingsheng Ma: Connectivity-enhancing fracture segmentation from X-ray To- mography (XRT) images of reservoir core samples by machine learning-based method Manuel Hopp-Hirschler: Mesoscopic simulation and characterization of the morphological evolution in phase separating fluid mixtures

350	4.22	Shubhangi Gupta: Thermo-Chemo-Hydro-Geomechanical Model and Numer- ical Solution Strategy for Marine Gas Hydrate Geosystems with a focus on Gas Production and related Geohazards
351	1.25	Naveen Kumar: Studying surfactant loss at rock-liquid interface using Quartz Crystal Microbalance
352	1.09	Xuhui Meng: Pore-scale study on density-driven flows with heterogeneous chemical reactions in porous media
353	1.09	Benoit Noetinger: About front dynamics and up-scaling multiphase flows in heterogeneous porous media
354	1.09	Hongna Ding: Contact Angle Measurement and Molecular Dynamics Simula- tion of Wettability Alteration on Calcite Surface
400	GS1	Naoto Sato : Challenges to understanding water imbibition under microgravity by numerical simulation.
401	GS1	Mojdeh Rasoulzadeh: Effective Models of Flow in Vuggy Carbonate Reservoirs
402	GS1	Chunyan Jiao: The influence of fracture on the gas reservoir development by the seepage experiment
403	GS1	Benoit Goyeau : A nonlinear asymptotic model for the inertial flow at the interface of a permeable medium
404	GS1	Mario-Cesar Suarez-Arriaga: Quaternions Formulation of Linear Thermoporo- elasticity
405	GS1	Mathias Mathias: Constitutive Relations for a New Theoretical Framework Describing 2-Phase-Flow in Porous Media
406	GS1	Indika Udagedara: Instability Analysis of Poiseuille Flow of Suspensions Over- lying Porous Media
407	GS1	Abdullah Cihan: Capillary hysteresis and pore-scale heterogeneity limiting the migration of buoyant immiscible fluid in a porous medium
408	GS1	Babak Abbasi : Dynamic properties of nano-pore water in 2:1 clay minerals: Effects of interlayer cations and isomorphic substitutions
409	GS1	Huan Zhao: Research on the permeability model of fractal fractured media in 3D Coordinate System
410	GS1	An Fu: Investigation of Radial Capillary Penetration Kinetics in Virtual 3-D Po- rous Media Using Direct Numerical Simulations with Volume-Of-Fluid Method
411	GS1	Bailu Teng: A Semi-Analytical Model for Characterizing the Transient Flow Behavior of Reoriented Refractures Considering the Interference from the Initial Fractures
412	GS1	Max Endo Kokubun: Transport of polymer particles in an oil-water flow in porous medium: enhancing oil recovery
413	GS1	Zhiwen Cui: SH-TE acoustoelectric waves in double-cylindrical porous forma- tion
414	GS1	Kashif Nawaz: Pressure drop through regular vs. Irregular porous media
415	GS1	Kashif Nawaz: Determination of moisture mass diffusion coefficient for desic- cant materials

416	GS1	Kenneth Christensen: Turbulent boundary layer modifications caused by surface-subsurface flow interactions across a porous interface
417	GS1	Yaofa Li: Experimental study of turbulent flow over and within cubically packed walls of spheres: effects of permeability and wall thickness
418	GS1	Kosuke Noborio: Similarity of water movement in porous media under the conditions of microgravity and hydrophobicity
419	2.12	Xikai Zhao: Accuracy of WENO and Adaptive Order WENO Reconstructions for Solving Conservation Laws
420	2.12	Zhen (Jane) Tao: Enriched Galerkin with Direct Serendipity Elements on Quad- rilaterals for Two-Phase Flow in Porous Media
421	2.12	Junping Wang: High-Order Conservative Flux Optimization Finite Element Methods
422	2.12	Xiu Ye: Weak Galerkin Method and Its Applications
467	2.15	Filip Formalik: Low Frequency Vibrations as the Indication of the Structural Transformations in Zeolitic Imidazole Frameworks – Density Functional Theory Study
468	2.15	Patrick Kurzeja: Harnessing highly non-linear structures for amplified attenua- tion by local flow
469	2.15	Andreas Wiegmann: Computer simulation of the geometric pore size and validation with glass bead tests for metal wire meshes
470	2.15	Yuzhu Wang: Porous Structure Reconstruction Using Convolutional Neural Networks
471	2.15	Filip Formalik: Benchmarking of the Density Functional Theory Methods for Accurate Description of Structural Properties in Metal-Organic Frameworks
472	2.15	Laurent Lemmens: Direct sampling versus a new multiphase-multiresolution simulated annealing approach: Which porous media reconstruction algorithm performs best?
473	2.15	Weifeng Lyu: Non-Destructive Pore-Scale Approach to Evaluate Elastic Proper- ties of Shale Samples by Imaging, Modeling and Simulation
474	2.08	Felipe Pereira: On the Reuse of Multiscale Basis Functions for the Approxima- tion of Time-dependent Problems
475	2.08	Arthur Santo: A new coupled approach for numerically solving convection-dif- fusion problems with discontinuous capillary pressure
476	2.08	Luis Santos: RBF-FD approximations based on polyharmonic splines basis with supplementary polynomials applied in a pore-scale problem
477	2.08	Eduardo Abreu: Parallel implementation of a multiscale mixed finite method for waterflood displacement in five-spot patterns
478	2.08	Felipe Pereira: Markov chain Monte Carlo Methods for Seismic Inversion
479	2.08	Masoud Arshadi: Discriminative Random Field Models for Subsurface Source Zone Characterization and Uncertainty Quantification
480	2.08	Cui Likai: Numerical simulation of electrical properties of digital borehole based on multi-scale digital rock physics

Gala Dinner on Wednesday Evening

The 2018 Gala Dinner event will be held at Mardi Gras World and River City Venues – both immediately adjacent to the convention center. MGW houses Blaine Kern Studios, one of the design centers where artists and architects build the Mardi Gras Floats that are iconic to New Orleans.

The dinner at River City Venues will be casual, and weather permitting we will have the doors open to enjoy the outdoors and the river. But since it may well be warm and muggy in mid-May in New Orleans, feel free to dress comfortably for this event.

Schedule

19:00-20:00	MGW (float den and studios) open to InterPore
19:00-22:00	Live jazz, drinks, and dinner at River City Venues ballroom

Before and after dinner: InterPore Awardee Recognitions

Directions

Exit the Hall I-1 area of the convention center and walk south (away from the hotels) along Convention Center Blvd. Turn left at the end of the building on Henderson St. and Mardi Gras World is straight ahead. If you arrive after 20:00, go directly to River City Venues, immediately south of MGW. See the map on page 9 for details.





Photos courtesy of Mardi Gras World
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	Parallel Session 9
9-A	MS 4.19: Rock/fluid Interactions and Their Impact on Flow and Transport in Geologic Media
Room A	Organizers: Ipsita Gupta, I. Yucel Akkutlu
8:32	Ali Takbiri-Borujeni: Phase Equilibria in CO2-Multicomponent Hydrocarbon Systems in Shale Organic Nanopores: A Coarse Grained Molecular Simulation Study
8:50	Viktoria Savatorova: Gas transport in porous geological media with contract of properties, and irregular distribution of pores
9:08	Lichi Deng: Analytical Investigation of the Stability and Universal Scaling of the Tran- sition from Spontaneous to Forced Imbibition in Porous Media
9:26	D. Nicolas Espinoza: Sorption Stresses in Organic-Rich Rock Formations: Fundamen- tal Processes and Reservoir Scale Implications
9:44	Russell Detwiler: Mineral precipitation in fractures: The role of aperture and mineral heterogeneity on the evolution of transport properties
10:02	André Fourno: Sensitivity studies of different scenarios of polymer injection applied to Ainsa Quarry1 outcrop
0.0	MS 3.02: Fluid Interactions with Thin, Fibrous Porous Media
9-B	MS 3.02: Fluid Interactions with Thin, Fibrous Porous Media Organizers: Nicolae Tomozeiu, Andrew Baker, Hamed Aslannejad
9-B Room B	MS 3.02: Fluid Interactions with Thin, Fibrous Porous Media Organizers: Nicolae Tomozeiu, Andrew Baker, Hamed Aslannejad MS 4.16: Two-Phase Flow and Reactive Transport through Thin Porous Layers
9-B Room B	MS 3.02: Fluid Interactions with Thin, Fibrous Porous Media Organizers: Nicolae Tomozeiu, Andrew Baker, Hamed Aslannejad MS 4.16: Two-Phase Flow and Reactive Transport through Thin Porous Layers Organizers: Amir Hossein Tavangarrad, Chao-Zhong Qin, Andrea Peri, Ah- mad Kaffel, S.Majid Hassanizadeh
9-B Room B 8:32	 MS 3.02: Fluid Interactions with Thin, Fibrous Porous Media Organizers: Nicolae Tomozeiu, Andrew Baker, Hamed Aslannejad MS 4.16: Two-Phase Flow and Reactive Transport through Thin Porous Layers Organizers: Amir Hossein Tavangarrad, Chao-Zhong Qin, Andrea Peri, Ahmad Kaffel, S.Majid Hassanizadeh Hamed Aslannejad: Ink flow in fibrous layer: direct pore-scale modeling and experimental observation
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9-B Room B 8:32 8:50 9:08	MS 3.02: Fluid Interactions with Thin, Fibrous Porous Media Organizers: Nicolae Tomozeiu, Andrew Baker, Hamed Aslannejad MS 4.16: Two-Phase Flow and Reactive Transport through Thin Porous Layers Organizers: Amir Hossein Tavangarrad, Chao-Zhong Qin, Andrea Peri, Ahmad Kaffel, S.Majid Hassanizadeh Hamed Aslannejad: Ink flow in fibrous layer: direct pore-scale modeling and experimental observation Ulrich Hirn: Print curl of paper as a time-scale dependant process Thijs de Goede: Droplet Impact on Fabric
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9-B Room B 8:32 8:50 9:08 9:26 9:44	MS 3.02: Fluid Interactions with Thin, Fibrous Porous Media Organizers: Nicolae Tomozeiu, Andrew Baker, Hamed Aslannejad MS 4.16: Two-Phase Flow and Reactive Transport through Thin Porous Layers Organizers: Amir Hossein Tavangarrad, Chao-Zhong Qin, Andrea Peri, Ahmad Kaffel, S.Majid Hassanizadeh Hamed Aslannejad: Ink flow in fibrous layer: direct pore-scale modeling and experimental observation Ulrich Him: Print curl of paper as a time-scale dependant process Thijs de Goede: Droplet Impact on Fabric Nicolae Tomozeiu: Transport processes and water based ink – paper interactions Pablo Ángel García-Salaberri: Exploring the limits of macro-homogeneous models of carbon-fiber papers

THURSDAY, MAY 17, 2018

9-C	MS 2.11: Advances in coupled flow and geomechanical processes in frac- tured porous media
Room C	Organizers: Christine Maier, Inga Berre, Florian Doster, Sebastian Geiger
	ME 2.19: Advances in Observation and Modeling of Coupled Flow and Deformation in Fractured Rock
	Organizers: Harihar Rajaram, Satish Karra
8:32	Martin Beck: Comparison of sequential and fully-coupled approaches for flow and geomechanics
8:50	Ehsan Haghighat: Modeling hydraulic fracturing using a vectorized 3D implementa- tion of XFEM
9:08	Runar Berge: Modeling fracture reactivation in a mixed dimensional setting: Friction models and numerical challenges
9:26	Ryan Haagenson: Modeling nonlinear diffusion in fractured rock with deformable fractures and applications to injection induced seismicity
9:44	Jens T. Birkholzer: Lessons Learned from a Controlled-Injection Fault Reactivation Experiment at Mont Terri, Switzerland: Can Fault Leakage Occur, When, and For How Long?
10:02	Daniel Birdsell: Modeling induced seismicity with coupled poroelasticity on discrete fracture networks with evolving hydraulic diffusivity and Mohr-Coulomb failure
	MS 3.08: From microns to meters: Heterogeneity across laboratory scales
9-D	Organizers: Luca Trevisan, Ronny Pini
9-D Room D	Organizers: Luca Trevisan, Ronny Pini
9-D Room D 8:32	Organizers: Luca Trevisan, Ronny Pini Massimo Rolle: Imaging the spatial distribution of geochemical heterogeneities in porous media: multidimensional flow-through experiments and inverse modeling
9-D Room D 8:32 8:50	Organizers: Luca Trevisan, Ronny Pini Massimo Rolle: Imaging the spatial distribution of geochemical heterogeneities in porous media: multidimensional flow-through experiments and inverse modeling Takeshi Kurotori: Solute mixing during immiscible displacements in porous media
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9-D Room D 8:32 8:50 9:08 9:26	Organizers: Luca Trevisan, Ronny Pini Massimo Rolle: Imaging the spatial distribution of geochemical heterogeneities in porous media: multidimensional flow-through experiments and inverse modeling Takeshi Kurotori: Solute mixing during immiscible displacements in porous media Christopher Zahasky: Micro-Positron Emission Tomography for measuring sub-core scale permeability and relative permeability Maartje Boon: Effect of capillary induced flow on CO2 residual trapping
9-D Room D 8:32 8:50 9:08 9:26 9:44	Organizers: Luca Trevisan, Ronny Pini Massimo Rolle: Imaging the spatial distribution of geochemical heterogeneities in porous media: multidimensional flow-through experiments and inverse modeling Takeshi Kurotori: Solute mixing during immiscible displacements in porous media Christopher Zahasky: Micro-Positron Emission Tomography for measuring sub-core scale permeability and relative permeability Maartje Boon: Effect of capillary induced flow on CO2 residual trapping Luca Trevisan: Impact of 3D capillary heterogeneity and bedform architecture at the sub-meter scale on CO2 saturation
9-D Room D 8:32 8:50 9:08 9:26 9:24 10:02	Organizers: Luca Trevisan, Ronny Pini Massimo Rolle: Imaging the spatial distribution of geochemical heterogeneities in porous media: multidimensional flow-through experiments and inverse modeling Takeshi Kurotori: Solute mixing during immiscible displacements in porous media Christopher Zahasky: Micro-Positron Emission Tomography for measuring sub-core scale permeability and relative permeability Maartje Boon: Effect of capillary induced flow on CO2 residual trapping Luca Trevisan: Impact of 3D capillary heterogeneity and bedform architecture at the sub-meter scale on CO2 saturation Yuxuan Jing: Characterising multiphase flow functions with hysteresis from the mm to m scale in heterogeneous sandstones
9-D Room D 8:32 8:50 9:08 9:26 9:44 10:02 9-E	Organizers: Luca Trevisan, Ronny Pini Massimo Rolle: Imaging the spatial distribution of geochemical heterogeneities in porous media: multidimensional flow-through experiments and inverse modeling Takeshi Kurotori: Solute mixing during immiscible displacements in porous media Christopher Zahasky: Micro-Positron Emission Tomography for measuring sub-core scale permeability and relative permeability Maartje Boon: Effect of capillary induced flow on CO2 residual trapping Luca Trevisan: Impact of 3D capillary heterogeneity and bedform architecture at the sub-meter scale on CO2 saturation Yuxuan Jing: Characterising multiphase flow functions with hysteresis from the mm to m scale in heterogeneous sandstones GS 4: Porous media applications (renamed)
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9:08	Tianshen Huang : Reconstruction of complex 3D pore structure in carbonates from 2D images using global optimization
9:26	Luwen Zhuang: Experimental Studies of the Hydraulic Properties of Thin Porous Media
9:44	Pieter Verboven: A multiscale two-equation reaction-diffusion porous media model of gas exchange in apple fruit
10:02	Yuxuan Jing: A Computational Investigation of Seismic Wave Focusing as a Means to Fracture Shale
9-F	MS 1.05: Drying of porous media from pore to macro scale
Room F	Organizers: Rui Wu, Abdolreza Kharaghani, Marc Prat
8:32	Rui Wu: Pore scale study of drying in porous media
8:50	Mustafa Aboufoul: Water evaporation dynamics in 3D printed porous asphalt
9:08	Mohamed Nidal Ben Abdelouahab: Evaporation of bound and free water from drying cellulose fiber poultices
9:26	Abdolreza Kharaghani: A bottom-up approach to obtain continuum model parame- ters from pore network drying simulations
9:44	Yi-Syuan Guo: Evaluation of Microbial-mediated Moisture Retention in Emulated Soil Micromodels
10:02	Githin Tom Zachariah: Simulation of Isothermal Drying of Porous Media using Lattice Boltzmann Method
9-G	MS 4.15: Lagrangian methods for scalar transport in porous media
Room G	Organizers: Michel Speetjens, Sanjeeva Balasuriya
8:32	Guy Metcalfe: From Pore to Porous Media: A Connected Hierarchy of Chaos
8:50	Marco Dentz: The dynamics of fluid deformation in Darcy scale porous media and impact on mixing
9:08	Albert Valocchi: A Lagrangian scheme to model subgrid-scale mixing in heterogene- ous porous media
9:26	Sourabh Apte: Use of Lagrangian coherent structures and angular multiscale statis- tics to assess turbulence in porous media
9:44	Sanieeva Balasuriva: Methods for extracting Lagrangian coherent structures from
	unsteady velocity data
10:02	Michel Speetjens: Lagrangian transport and chaotic advection in a class of (aniso- tropic) subsurface reservoirs
10:02 О Ц	Wichel Speetjens: Lagrangian transport and chaotic advection in a class of (aniso-tropic) subsurface reservoirs MS 2.02: Modeling and simulation of subsurface flow at various scales
10:02 9-H	Sanjeeva balasariya. Methods for extracting Lagrangian concrete structures from unsteady velocity data Michel Speetjens: Lagrangian transport and chaotic advection in a class of (aniso- tropic) subsurface reservoirs MS 2.02: Modeling and simulation of subsurface flow at various scales Organizers: Organizers: Shuyu Sun, Jun Yao
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8:50	Chen Huangxin: A one-domain approach for modeling and simulation of free fluid over a porous medium
9:08	Edo Boek: The importance of inertial effects and Haines jumps in pore scale model- ling of drainage displacement for geological CO2 sequestration
9:26	Tingyu Li: Coupled thermal-hydraulic-mechanical simulation for enhanced geothermal system based on embedded discrete fracture model
9:44	Xueying Lu: Integrated Compositional Simulation and Optimization for Gas Mobility Control Techniques during CO2 Sequestration in Cranfield
10:02	Tameem Almani: Apriori Error Estimates for the Undrained Split Iterative Coupling Scheme for Coupling Flow with Geomechanics
10:20	Coffee Break
	Parallel Session 10
10 4	MS 1.07: Advances in solubility trapping of CO2 in geological formations
10-A	Organizers: Hamid Emami, Hassan Hassanzadeh
Room A	
10:47	Hamid Emami-Meybodi: CO2 convective dissolution controlled by temporal changes in free-phase CO2 properties
11:05	Ravid Rosenzweig: The impact of horizontal groundwater flow on the dissolution of CO2 in saline aquifers
11:23	Juan J. Hidalgo: Effect of heterogeneity on the mixing of fluids under convective flow
11:59	Sulav Dhakal: Quantitative study of reservoir quality changes due to methane hydrate formation
12:02	German Abzaletdinov: Simulating Thermal EOR using high performance computing – case example from a naturally fractured heavy oil reservoir
10 R	MS 4.17: Transport through Soft Porous Media
10-0	Organizers: Qianhong Wu, Rungun Nathan
Room B	
10:47	Pejman Sanaei: Mathematical modeling of microstructured membrane filters: A stochastic approach
11:05	Rungun Nathan: On the Pressure Generation anRelaxation in a Porous Media under a Spherical Loading Surface
11:23	Rungun Nathan: From Red Cells to Soft Porous Lubrication
11:59	Sarah Krainer: Short timescale wetting and penetration on paper
1 2:02	Nadine Kijanski: Direct numerical simulations of solid particle interactions in suspensions using Smoothed Particle Hydrodynamics
12:05	Logan Battrell: Experimental Investigation and Synchrotron Visualization of Water Transport of Thin Porous Media in Polymer Electrolyte Membrane Fuel Cells

12:08	David Smeulders: In silico characterization of chloride-based salt hydrates for ther- mochemical heat storage
12:11	Gabriele Seitz: Numerical Model of a thermochemical heat storage reactor
10-C	MS 2.03: Challenges in flow and transport simulations in poro-fractured media: numerical methods and modeling
Room C	Organizers: Stefano Berrone, Jeffrey Hyman, Sandra Pieraccini
10:47	Donald M Reeves: Network Connectivity in Complex, Three-Dimensional Fracture Networks
11:05	Stefano Scialò: Coupling of different numerical approaches for efficient simulations in porous and fractured media
11:23	Andrea Borio: Applications of standard and mixed Virtual Elements to the simulation of physical phenomena in poro-fractured media
11:41	Yin Feng: A parallel boundary element method for subsurface flow problems in three-dimensional fracture networks
11:59	Dawei Wu: A Numerical Method of Coupled Reservoir-Geomechanical Problem Using High Resolution for Fluid Flow Domain
12:02	Haoyan Wei: A Meshfree Approach to Modeling Hydraulic Fracturing in Saturated Porous Media
12:05	Riza Elputranto: Near Fracture Capillary End Effect on Shale Gas and Water Production
10-D	MS 3.06: Microfluidics and Micromodels in Porous Media Research Organizers: Farzan Kazemifar, Yaofa Li
Room D	
10:47	Simon Franchini: Pore scale velocity measurements in 3D –measurements in empty flow channel
11:05	Ioannis Zarikos: Manufacturing a micro-model with integrated fibre optic pressure sensors
11:23	Yaofa Li: Micro-PIV Measurements of Pore-Scale Flow of Water and Supercritical CO2 in 2D Circular Porous Micromodels at Reservoir Conditions
11:41	Lucas Mejia: Using Surfactants to Induce Viscosity Driven Crossflow in Oil-Wet Frac- tured Micromodels
11:59	Christopher Griffith: Flow behavior of charged nanoparticle stabilized emulsions in a glass micromodel
12:02	Dimitris Nikitopoulos: High-Resolution, Rock-Based, 2.5D Polymer Micromodels
12:05	Prasanna Krishnamurthy : Understanding the influence of small scale geological heterogeneity on capillary trapping of CO2 using engineered beadpacks
12:08	Hailun Ni: Characterizing CO2 Residual Trapping through Experiments
12:11	Guosheng Qin: The characterization of multimodal structure and pores in conglom- erate reservoir

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10-E	GS 4 (Cont.): Porous media applications (renamed)
Room E	Organizers: Michael A. Celia, Anozie Ebigbo, Henk Jonkers
10:47	Behnam Partopour: Influence of particle shape on reaction and transport patterns in fixed beds for methanol partial oxidation to formaldehyde
11:05	Ben Schweizer: Stable fingering patterns induced by an elementary hysteresis law
11:23	Thien Nguyen: Spatiotemporally resolved PIV/SPIV velocity measurements in a MRI facility of randomly packed spheres
11:41	Abdelaziz Beljadid: A continuum model of gravity fingering endowed with an entropy function and bounded saturation overshoot
11:59	Andres Abad Gonzalez: A groundwater flow model: Flow behavior through anisotropic granular porous media
12:02	Alessandro Scola: Device for Process Characterization of Ceramic Matrix Composites Fabricated by Liquid Injection
12:05	Jun Yao: Numerical Modelling of Reactive Flow and Wormhole Formation in Carbonate Rocks
10-F	MS 1.23: Challenges in porous media characterization and model- ling of multiphase flow with capillarity
Room F	Organizers: Jianchao Cai, Yingfang Zhou, Harpreet Singh
10:47	Jianchao Cai: Characterization of dynamic fracture network extension in porous media by means of fractal geometry
11:05	Peiqiang Zhao: Estimating permeability of shale gas reservoirs from porosity and mineral contents
11:23	Branko Bijeljic: Spatial correlation of contact angle and curvature in pore- space images
11:41	Peter Johnson: A numerical modeling approach for capillary effects in systems with changing porosity
11:59	Wenjuan Zheng: Effects of Bacterial EPS on Drying of Porous Media
10.0	GS 2: Computational challenges in porous media simulation
10-0	Organizers: Inga Berre, Sorin Pop, Jun Yao
Room G	
10:47	Jad Dabaghi: A posteriori error estimates, stopping criteria, and adaptivity for a two phase flow with exchange between phases as a nonlinear complementarity problem in porous media
11:05	Robert Fischer: Understanding Wicking in Textile by Multiscale Imaging and Modeling
11:23	Yashar Mehmani: Multiscale Computation of Pore-Scale Fluid Dynamics

11:41	Velimir Vesselinov: Unsupervised Machine Learning Based on Tensor Factor- ization
11:59	Rafid al Khoury: A Computational Model for Freezing and Thawing in Soil
12:02	Hoonyoung Jeong: Fast Forecast of Future Reservoir Performance Using Deep Learning
12:05	Bill Carey: Risk Assessment of Carbon Sequestration into A Naturally Fractured Aquifer at Kevin Dome, Montana
12:08	D. Lasseux : Diffusion and dispersion with heterogeneous reaction in homogeneous porous media: The macroscale models revisited
12:11	Santosh Konangi: Examination of Capillary Pressure-Saturation-Interfacial Area Relation under Dynamic Conditions using Volume-Of-Fluid (VOF) Method
10-H	MS 2.02 (Cont.): Modeling and simulation of subsurface flow at various scales
Room H	Organizers: Shuyu Sun, Jun Yao
10:47	Tao Zhang: Study on SAV scheme in Diffuse Interface model for the mul- ti-phase fluid system with the Peng-Robinson equation of state
11:05	Arun Kumar Narayanan Nair: Molecular Simulation Study of Swelling Clays
11:23	Rencheng Dong: Numerical Simulation of Carbonate Matrix Acidizing Using Adaptive Enriched Galerkin Method
11:41	Guangpu Zhu: Decoupled, energy stable scheme for Cahn-Hilliard phase field
	model of two-phase incompressible flows
11:59	model of two-phase incompressible flows Liu Piyang: Modelling and simulation of reactive dissolution during acidization of fractured carbonate rocks
11:59 12:02	model of two-phase incompressible flowsLiu Piyang: Modelling and simulation of reactive dissolution during acidization of fractured carbonate rocksKangxin Zhang: Numerical Study on the Influence of Natural Fracture Size on Heat Transfer Process in Hot Dry Rock

Poster Number	MS/GS	Author/Title
51	4.19	Sulav Dhakal: Quantitative study of reservoir quality changes due to methane hydrate formation
52	4.19	German A Abzaletdinov: Simulating Thermal EOR using high performance com- puting – case example from a naturally fractured heavy oil reservoir
53	4.19	Fabio Terzini Soares: Response of Relative Permeability to Coal Surface Chemistry through Steady-State Core Flooding Measurements using X-ray CT Scanner and Packed Bed Samples
54	4.19	Qiang Wang : A numerical simulation study on the hydraulic fracture propagation in heavy oil reservoir with the THM coupling
55	4.19	Mohammad Mehraban: Comprehensive Experimental and CFD Simulation Study on the Effect of Brine Composition in Waterflooding of Carbonate Oil Reservoirs
56	1.07	Reza Azin : Experimental measurement of CO2 diffusion coefficient in water based nanofluids
54 55 56	4.19 4.19 1.07	In heavy oil reservoir with the THM coupling Mohammad Mehraban : Comprehensive Experimental and CFD Simulation Studi on the Effect of Brine Composition in Waterflooding of Carbonate Oil Reservoirs Reza Azin : Experimental measurement of CO2 diffusion coefficient in water based nanofluids

57	1.07	Amin Amooie: Pattern Formation and Mixing Dynamics in Three-Dimensional Non-Boussinesq Solutal Convection
58	1.07	Farzad Basirat: Pore-scale simulation of mass transfer across scCO2-water inter- face using phase-field method
102	3.02	Sarah Krainer: Short timescale wetting and penetration on paper
103	3.02	Nadine Falkner: Direct numerical simulations of solid particle interactions in suspensions using Smoothed Particle Hydrodynamics
104	3.02	Nicolae Tomozeiu: When an ink droplet meets coated paper: dynamics
105	4.16	Chao-Zhong Qin : Application of Dynamic Pore-Network Modeling in the Study of Air-Water Flow through Thin Porous Layers
106	4.16	Karrar Alofari: Percolation Behavior in Catalytic Porous Materials
107	4.17	Qianhong Wu: On the Examination of the Darcy Permeability of Soft Fibrous Porous Media; New Correlations.
108	4.04	David Smeulders: On sugar alcohol based heat storage materials: A nanoscale study and beyond
109	4.04	Yaoqing Hu: Influence of High Temperature on the Microstructure Characteristics of Sandstone
110	4.04	Jana Stengler: Porous media for thermochemical energy storage: experimental investigation on structural changes of reactive materials
111	4.27	Gabriele Seitz: Numerical Model of a thermochemical heat storage reactor
112	4.27	Svyatoslav Korneev: Integrating Advanced Imaging Techniques and Multiscale Electrochemical Modeling to Determine Effective Lithium-Ion Transport Proper- ties
113	4.27	Peng Wang: Sequential data assimilation with multiple nonlinear models and applications to subsurface flow
160	2.11	Dawei Wu : A Numerical Method of Coupled Reservoir-Geomechanical Problem Using High Resolution for Fluid Flow Domain
161	2.11	Mark Ashworth: A Dual-Continuum Hydromechanical Framework for Modelling Fractured Porous Media
162	2.19	Haoyan Wei: A Meshfree Approach to Modeling Hydraulic Fracturing in Saturated Porous Media
163	2.19	Wen Deng, Zeng Chao: Thermal stress effect on fracture integrity in enhanced geothermal systems
164	2.19	Ibtihel Ben Gharbia: New Capacities for Hydraulic Fracturing Studies: A Full Geomechanical Coupling in a 3D Discrete Fracture Networks
165	2.19	Zhiqiang Fan: Poroelastic response of a stationary fracture subjected to a con- stant fluid flux
166	2.19	Ruben Juanes : Induced Seismicity in Subsurface Technologies: New Operational Constraints in Need of New Computational Models
167	2.19	Ehsan Haghighat : Automatic switching from quasi-static to dynamic geomechani- cal modeling of friction in rate-state faults
168	2.03	Riza Elputranto : Near Fracture Capillary End Effect on Shale Gas and Water Production

169	2.03	Yin Feng: A parallel boundary element method for subsurface flow problems in three-dimensional fracture networks
170	2.03	Stefano Scialo: Uncertainty Quantification in DFN simulations with random geometry
171	2.03	Fabio Vicini: GP-GPU for DFN flow simulations
172	2.03	Andrea Borio: Simulation of elasto-plastic phenomena in heterogeneous soils using the Virtual Element Method
173	2.03	Chven Mitchell: Evolution of Particle Swarms Falling under Gravity in Fractures
174	2.03	André Fourno: FraC: a DFN conforming meshing approach used to obtain refer- ence simulations for steady-state flow, transport and well-test simulations
208	3.08	Fei Shen: Quantitative Evaluation of the Interlayer Interference of Multilayer Commingled Production in Offshore Heavy Oil Reservoir
209	3.08	Hailun Ni: Characterizing CO2 Residual Trapping through Experiments
210	3.08	Guosheng Qin: The characterization of multimodal structure and pores in con- glomerate reservoir
211	3.08	Mingze Jiang: Carbonate pore space segmentation and classification by a combi- nation of multiscale imaging and deep learning
212	3.08	Prasanna Krishnamurthy: Understanding the influence of small scale geological heterogeneity on capillary trapping of CO2 using engineered beadpacks
213	3.06	Simon Franchini: Pore scale velocity measurements in 3D –measurements in empty flow channel
214	3.06	Christopher Griffith: Flow behavior of charged nanoparticle stabilized emulsions in a glass micromodel
215	3.06	Mehrdad Ahkami: Visualization of flows in 3D-printed fractured porous media: an experimental approach
216	3.06	Bin Pan: Custom-built wetting properties in microchips with geomaterials by using layer-by-layer (LbL) assembly technology
217	3.06	Farzan Kazemifar: Interfacial curvature and capillary pressure measurements during water displacement by supercritical CO2 in a micromodel
219	3.04	Sophie Roman: Dissipative Processes during Two-Phase Flows
220	3.04	Dongliang Jin : Theory and Molecular Simulation of Methane Hydrate in Porous Media
221	3.04	Mohammad Nooraiepour : Geomaterial microfluidic experiment at reservoir conditions: Insights on salt precipitation in fractured shale caprocks during CO2 injection
222	3.05	Dimitris Nikitopoulos: High-Resolution, Rock-Based, 2.5D Polymer Micromodels
223	3.05	Dimitris Nikitopoulos: Rock-Based, 2.5D Ceramic Micromodels
286	GS4	Andres Abad Gonzalez: A groundwater flow model : Flow behavior through anisotropic granular porous media
287	GS4	Alessandro Scola: Device for Process Characterization of Ceramic Matrix Compos- ites Fabricated by Liquid Injection
288	GS4	Eva Gregorová : Hierarchically porous hydroxyapatite ceramics prepared with wheat flour and their microstructural characterization via mercury porosimetry, image analysis and tomography

289	GS4	Luwen Zhuang: Experimental and Numerical Studies of Saturation Overshoot during Water Infiltration into Dry Soil
290	GS4	Karolina Labus: Hydrogel based porous matrices for immobilization of bioactive molecules
291	GS4	Claire Beauchesne: Experimental analysis of tissue growth in a perfusion biore- actor
292	GS4	Ishtiaque Anwar: Gas flow through corroded wellbore casing
293	GS4	Shreyank Gupta: Fiber-enhancement Filtering for Segmentation and Analysis of Microstructure in Fibrous Materials
294	GS4	Martin Diaz-Viera: A Prediction of the Spatial Distribution of Petrophysical Properties with Bernstein Copula using Seismic Attributes as Secondary Variables
295	GS4	Allison Lindgren: Numerical evaluation of the validity domain of Lorenz equations as a model for natural convection in porous media
296	GS4	Lyudmila Sakhanenko: Statistical Modelling of neuronal fibers based on HARDI
297	GS4	Li Yuyao, Wang Sen: Coupled Fracture-Propagation and Reservoir Simulation to Optimize Tight Oil Production
298	GS4	Martin Diaz-Viera: Joint stochastic modeling using copulas for the dependency between petrophysical properties and seismic attributes at well-logs scale
299	GS4	Roman Ligotski: Determination and Prediction of VOC Adsorption Performance Data of Activated Carbon Based Filter Media for Indoor Air Purification
300	1.20	Jun Yao: Numerical Modelling of Reactive Flow and Wormhole Formation in Carbonate Rocks
301	1.20	Yuqi Wu: Application of multiple-point statistics to reconstructing digital rock
302	1.20	ed by fracture surface roughness and fracture width
302 303	1.20 1.20	Xiangreng Liu: Experimental Study on seepage characteristics of sandstone affect- ed by fracture surface roughness and fracture width Wang Laigui: Experimental Study on the Variation of Micro structure of Coal under Chemical Solution
302 303 304	1.20 1.20 1.20	Xiangreng Liu: Experimental Study on seepage characteristics of sandstone affected by fracture surface roughness and fracture width Wang Laigui: Experimental Study on the Variation of Micro structure of Coal under Chemical Solution Mingxian Wang: Transient-flow analysis of an acid fracturing well in a fractured-vuggy carbonate reservoir
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361	1.23	YuTian Luo: Precisely Studies on Petrophysical Parameters and Interface Proper- ties of Cores from Tight Oil Reservoirs
362	1.23	Wei Lin: Modeling of Multi-scale 3D Digital Cores by Combining Different Resolu- tion X-CT Images and FIB-SEM Images
363	1.23	ZhengMing Yang: Microscopic pore - throat structure characteristics of different types of tight oil reservoirs in Central Sichuan Basin
364	1.23	Yingzhi Zhang: Study on Microscopic Pore Structure Characteristics and Seepage Law for Fuyu Oil Layer in Qingxin Oilfield
365	1.23	ShengChun Xiong: Micro-pore Characteristics and Reservoir State of "Three Low" Reservoirs in Jiangsu Oilfield
366	1.23	Yuqi Wu: Microstructures characterization of sandstone based on the data-con- strained modeling
367	1.23	Xiangyang Wang: Countercurrent imbibition into tight porous media: Theory and methodology
368	1.23	Yong Qin: Simulation of spontaneous imbibition in tight oil reservoir with complex hydraulic fracture network
369	1.23	Feng Yang: Effect of Salt Precipitation on Transport Properties of Lacustrine Shale Reservoir: a Case Study from Jianghan Basin, China
370	1.23	Haibo Li: Micro production characteristic of Tight Oil Reservoir
371	1.23	Ziyue Li: A New Method for Estimating the Clay Content of Tight Oil Reservoirs from NMR Logs
372	1.23	Harpreet Singh: A Stochastic Method to Characterize Caprock by History-Match- ing Pressure Monitoring Data
423	GS2	Rafid al Khoury: A Computational Model for Freezing and Thawing in Soil
424	GS2	Hoonyoung Jeong: Fast Forecast of Future Reservoir Performance Using Deep Learning
425	GS2	Bill Carey : Risk Assessment of Carbon Sequestration into A Naturally Fractured Aquifer at Kevin Dome, Montana
426	GS2	Zongyu Gu: Continuum modeling of porous media based on pore-space accessiv- ity
427	GS2	Santosh Konangi: Examination of Capillary Pressure-Saturation-Interfacial Area Relation under Dynamic Conditions using Volume-Of-Fluid (VOF) Method
428	GS2	D. Lasseux : Diffusion and dispersion with heterogeneous reaction in homogeneous porous media: The macroscale models revisited
429	GS2	Devin Justman : Combining Products of Fossil Energy R&D with Advanced Data Computing to Develop a Virtual Subsurface Data Framework for the U.S.
430	GS2	Fei Zhao: Comparing Segmentation Methods for X-ray CT Images of Porous Media
431	GS2	John Ortiz: A reduced-order model to assist real-time predictions of gas transport in unsaturated fractured media

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432	4.15	Albert Valocchi: A Lagrangian scheme to model subgrid-scale mixing in heteroge- neous porous media
433	4.15	Diogo Bolster: Spatial Markov Models for Predicting Mixing and Reactions in Porous Media
481	2.02	Liu Piyang: Modelling and simulation of reactive dissolution during acidization of fractured carbonate rocks
482	2.02	Tingyu Li: Coupled thermal-hydraulic-mechanical simulation for enhanced geo- thermal system based on embedded discrete fracture model
483	2.02	Kangxin Zhang: Numerical Study on the Influence of Natural Fracture Size on Heat Transfer Process in Hot Dry Rock
484	2.02	Jiangyan Dong: A General Purpose Model for Multiphase Compositional Flow Simulation
485	2.02	Yilin Mao: Thermal Analytical Solution for Rate Transient Analysis
486	2.02	Minghai Xu: A stream function modeling method for incompressible two phases flow in porous media
487	2.02	Shudong Liu : Study on production Change rule of fractured horizontal gas well with throttle
488	2.02	Dong Joon Youn : Numerical investigation of adsorption and slippage effects on unconventional gas transport in shale reservoirs using molecular dynamics and reservoir simulations
489	2.02	Shuyu Sun: Compositional two-phase fluid flow in porous media: from the pore scale to Darcy's scale
490	2.02	Jianchao Cai: A fractal study on effective thermal conductivity of porous media

13:45	Invited Talks - See following page
	Parallel Session 11
11-A	MS 1.07 (Cont): Advances in solubility trapping of CO2 in geological formations
Room A	Organizers: Hamid Emami, Hassan Hassanzadeh
14:20	Laurence Rongy: Control of carbon dioxide convective dissolution with chemi- cal reactions in porous media: Enhanced dissolution flux
14:38	Elif Agartan: Contribution of Heterogeneity within Semi-Confining Shale Layers to Mixing and Storage of Dissolved CO2
14:56	Yuri Leonenko: In-situ and ex-situ dissolution for carbon dioxide sequestration
15:14	Vikranth Kumar Surasani: Reactive Transport Modeling and Simulation of CO2 Sequestration in Deccan Trap Basalt Formation









INVITED SPEAKERS

Florin Adrian Radu Professor, Department of Mathematics, University of Bergen

Robust numerical simulation of poromechanics *Room A*

Parisa Mirbod Assistant Professor, Department of Mechanical and Aeronautical Engineering, Clarkson University

Flow and transport of particle-laden liquids over permeable surfaces; Theory and experiment (Invited by MS 4.17) *Room B*

Birol Dindoruk Shell International E&P

Quantification of Multi-Scale Nature of the Porous Media Flows and Scale Up: Experimental and Numerical Challenges *Room C*

Matthew Balhoff

Associate Professor, Dept of Petroleum and Geosystems Engineering, University of Texas, Austin

New Insights and Mechanisms for Chemical Enhanced Oil Recovery using Polymers *Room D*

	MS 4.27: Novel Concepts in Energy Storage
11-B	Organizers: Ilenia Battiato, John Cushman, Daniel Tartakovsk
Room B	MS 4.04: Thermo-hydro-mechanical-chemical energy storage (THMC-ES)
	Organizers: David Smeulders, Jacco Haasnoot, Frank Wuttke
14:20	John H Cushman: A New Type of Flow Battery Based on Oxidation State Instability
14:38	Eric Hall: Multiscale sensitivity analysis of nanoporous materials
14:56	Jacco Haasnoot: Heating by underground ice storage
11-C	MS 2.03 (Cont.): Challenges in flow and transport simulations in poro-fractured media: numerical methods and modeling
Room C	Organizers: Stefano Berrone, Jeffrey Hyman, Sandra Pieraccini
14:20	Fabio Vicini: A C++ parallel solver for flow in networks of fractures
14:38	Massimiliano Ferronato: Block Preconditioning in the Numerical Simulation of Fractured Media
14:56	Guotong Ren: Fully-coupled Geomechanics and Flow with Embedded Meshes
15:14	Etienne Lavoine: A stress-driven DFN model to account for fracture network geometrical complexity
15:32	Xavier Raynaud: Simulation of injectivity decline in fractured near-well regions
	MS 3.04: Micro and nano fluidic approaches for studying flow,
	transport and crystallization processes in porous media
11-D	Organizers: Noushine Shahidzadeh, Hannelore Derluyn, Daniel Brose- ta, Joaquin Jimenez-Martinez
Room D	MS 3.05: Advanced methods for micromodel fabrication and diag- nostics within
	Organizers: Dimitris Nikitopoulos, Daniel Park
14:20	Patrick Huber: Condensation, Imbibition and Crystallization of Molecular Liquids in Nanoporous Solids
14:38	Xiaojing Fu: Controlled depressurization of a hydrate-crusted gas capsule: insights from microfluidic experiments and phase-field modeling
14:56	Hannelore Derluyn: Sodium chloride crystallization in confinement: The mechanism of cubic to hopper crystal growth transition
15:14	Yaqi Zhang: A universal surface modification approach to functionalize micro- chip devices with rocks/soils surface chemistry

11-E	MS 1.20: Porous media evolving mechanism, theory and its applica- tions in energy engineering
Room E	Organizers: Yangsheng Zhao, Dong Yang
14:20	Yangsheng Zhao: Porous media evolving mechanism, theory and its applica- tions in Hot Dry Rock geothermal energy and oil shale
14:38	Yuqi Wu: Stochastic reconstruction of 3D porous media from a 2D thin slice
14:56	Dong Yang: Evolution of Pore Structures of In-situ Oil Shale Pyrolysis Through Superheated Steam
15:14	Mingqiang Wei: Production decline behaviors analysis of a vertical well with natural water influx/waterflood
11-F	MS 1.23 (Cont.): Challenges in porous media characterization and modelling of multiphase flow with capillarity
Room F	Organizers: Jianchao Cai, Yingfang Zhou, Harpreet Singh
14:20	Ranena V. Ponce F.: Capillary Driven Mobility Control by Emulsion Injection in Heterogeneous Porous Media
14:38	Jiang Zhihao: Evaluation of Waterflooded Grade in the Framework of Hydrau- lic Flow Units in Ultra Low Permeability Reservoir, Ansai Oilfield, Ordos Basin, China
14:56	Yudong Yuan: Multiscale characterisation of and flow simulation in the na- no-porous structure of shale matrix: challenges and solutions
15:14	S.M. Hassanizadeh: Challenges in modelling two-phase flow in industrial porous media
15:32	Bernd Crouse: Detailed numerical simulation of capillary pressure curve hysteresis
	GS 2 (Cont.): Computational challenges in porous media simulation
11-G	Organizers: Inga Berre, Sorin Pop, Jun Yao
Room G	
14:20	Feifei Qin: Detailed numerical simulation of capillary pressure curve hysteresis
14:38	Giorgiy Lutidze: Localized Solution Methods for the Efficient High-Resolution Simulation of Multiple MFHWs in Unconventional Reservoirs
14:56	Karl Igor Martins Guerra: A Dynamic Symplectic Manifold Analysis for Wave Propagation in Porous Media
15:14	J Gunnar I. Hellström: Initial study of permeability in bed of snow using x-ray microtomography and CFD

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15:32	Zongyu Gu: Continuum modeling of porous media based on pore-space accessivity
11-H	MS 2.02 (Cont.): Modeling and simulation of subsurface flow at various scales
Room H	Organizers: Shuyu Sun, Jun Yao
14:20	Jiří Mikyška: An alternative model of multicomponent diffusion based on a combination of the Maxwell-Stefan theory and continuum mechanics
14:38	Liping Cheng: An integrated tool for digital rock physics: benchmark results for flow simulations
15:50	Coffee Break
16:10	Plenary 4 - see following page

Brass Band, by Todd Coleman, courtesy of New Orleans CVB



Dr. Jens Birkholzer

Senior Scientist

Lawrence Berkeley National Laboratory



Cross-Cutting Subsurface Challenges:

Insights from Dedicated Subsurface Energy Field Observatories

Subsurface resources currently supply over 80% of the United States' energy needs. Within and beyond the U.S., they have enormous importance to economy, jobs, and energy security. A large fraction of these energy needs is currently provided by fossil fuels which when consumed using traditional methods release long-stored carbon into the atmosphere, with disruptive climatic effects. The transition to a large-scale U.S. clean energy future is expected to take decades, and may take longer in many other parts of the world. New scientific discoveries and technological advances must enable smarter, cleaner, and more efficient and environmentally responsible use of subsurface resources. This presentation first discusses selected cross-cutting challenges that currently limit efficient and environmentally responsible utilization of the subsurface. With cross-cutting challenges, we mean those that are similarly associated with a variety of subsurface energy applications, such as CO2 sequestration, unconventional hydrocarbon extraction, enhanced geothermal systems, nuclear waste disposal, and subsurface energy storage. The talk then moves on to the important role that geosciences field observatories can play in this context, allowing for focused in situ studies under controlled conditions at well-characterized locations, over long time periods. Several existing and planned examples of deep geoscience observatories are presented and discussed, addressing a range of R&D challenges in several subsurface energy applications.



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Innovation

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Many of our most important innovations depend on fluid flow in porous media, spanning from manufacturing processes all the way to consumer usage. If you have a passion for helping people around the world through science and technology, check out <u>http://www.careersatkc.com</u>.







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