INTERPORE 2020
12th ANNUAL MEETING

Detailed Block Program
*First version, 22 August 2020*
MONDAY, 31 AUGUST 2020

Question and answer: Parallel sessions 1

(_MS 3) Flow, transport and mechanics in fractured porous media – Part 1

Q&A 1 Time Block A - Chairs: Holger Steeb, Hamid Nick, Benoit Noetinger

[614] Study on water injection mechanism of tight reservoir based on large-scale outcrop physical simulation experiment
Yutian Luo; Xuewei Liu

[286] Oxidative dissolution during spontaneous imbibition in organic-rich shale: implication for the matrix stimulation
Qiuyang Cheng; Lijun You; Yili Kang; Yang Zhou; Nan Zhang

[515] The Influence of Fractures on the Enrichment of Tight Sandstone Gas
Ping Wang

[84] Flow Law of Foam in Fractured Vuggy Reservoir
Zhengxiao Xu

[741] Analysis of Factors Affecting Fracturing and Absorbing Parameters in Tight Reservoir
Zhu Jiamin

[756] Analysis of Hydrate Seafloor Subsidence Induced by Depressurization in Nankai Trough, Japan
Shuyue Ding; Shuxia Li; Didi Wu; Shaung Li

[363] The influence of microfractures on hydrocarbon migration
Wenqing Tang

[252] A physics based model of gas flow in shales predicts enhanced gas production
Syed Haider

(_MS 3) Flow, transport and mechanics in fractured porous media – Part 2

Q&A 2 Time Block A - Chairs: Holger Steeb, Hamid Nick, Benoit Noetinger

[360] Combined effects of network topology, hydraulic conditions and in-situ stress variations on solute propagation in natural fracture networks
Chuanyin Jiang; Xiaoguang Wang; Delphine Roubinet; Zhixue Sun

[50] Pipe Network Modelling for Fractured Rock Cores with Micro-computed Tomography Imaging
YU JING; Ryan Armstrong; Peyman Mostaghimi

[1307] The hydraulic conductivity of shaped fractures with permeable walls
Daihui Lu; Federico Municchi; Ivan Christov

[120] A systematic investigation of the intrinsic flow properties of fractures using a combined 3D printing and micro-computed tomography approach
### Question and answer: Parallel session 1 (cont.)

#### (MS 3) Flow, transport and mechanics in fractured porous media – Part 2 (cont.)

**Q&A 2 Time Block A - Chairs: Holger Steeb, Hamid Nick, Benoit Noetinger**

1. **[48]** A Mesh-free Approach to Investigate Flow Behaviors in Fractured Porous Media with Multi-scale Complex Fracture Networks
   - Zhiming Chen; Wei Yu; Wendong Wang

2. **[63]** Sensitivity Analysis on Different Parameters Affecting the Gas-Oil Gravity Drainage Mechanism in Naturally Fractured Reservoirs
   - Mohammad Madani; Amin Daryasafar

3. **[927]** Capillarity vs. Saturation in Fracture-Matrix Systems
   - Qi Liu, Alejandro Cardona

4. **[625]** A multilayer model for reactive flow in fractured porous media
   - Alessio Fumagalli; Anna Scotti; Luca Formaggia

#### (MS 3) Flow, transport and mechanics in fractured porous media – Part 3

**Q&A 3 Time Block B - Chairs: Holger Steeb, Hamid Nick, Benoit Noetinger**

1. **[326]** Adaptive Virtual Element Method for simulations of flow in fractured media
   - Andrea Borio; Stefano Berrone; Alessandro D'Auria

2. **[1323]** Multiscale model reduction of unsaturated flow problem
   - Denis Spiridonov

3. **[674]** Implicit multiscale modelling for stress-dependent permeability in a poroelastic dual-continuum setting
   - Mark Ashworth

4. **[683]** The impact of fracture surface roughness on stress dependent permeability
   - Amanzhol Kubeyev; Christine Maier; Niko Kampman; Kevin Bisdom; Rafael March Castaneda Neto; Florian Doster

5. **[443]** Topological analysis of 3D Discrete Fracture Networks: a graph approach to connectivity and percolation in fractured rocks
   - Tawfiq Rajeh; Israel Cañamon; Rachid Ababou; Manuel Marcox

6. **[313]** Measuring the deformation of porous media in response to hydraulic pressure
   - Martin Stolar; Yaniv Edery; Tajudeen M. Iwalewa; James R. Rice

7. **[1149]** Bandwidth re-fracturing technique optimization and design consideration in naturally-fractured tight reservoirs --- Case study on Ansai oil field, Ordos basin
   - Xia Du

8. **[420]** Estimating Flow Characteristics of 3D Fracture Network based on Persistent Homology
   - Anna Suzuki; Miyuki Miyazawa; Takatoshi Ito; Peter Kang
### Question and answer: Parallel sessions 1 (cont.)

#### (MS 3) Flow, transport and mechanics in fractured porous media – Part 4

**Q&A 4**  **Time Block B - Chairs: Holger Steeb, Hamid Nick, Benoit Noetinger**

<table>
<thead>
<tr>
<th></th>
<th>Title</th>
<th>Authors</th>
</tr>
</thead>
<tbody>
<tr>
<td>[919]</td>
<td>Understanding Hydraulic Fracturing Dynamic Stimulation: Dynamic Characterization and Design Considerations for Tight Porous Media</td>
<td>Abhijith Suboyin; MD Motiur Rahman</td>
</tr>
<tr>
<td>[320]</td>
<td>Fracture pore network model: efficient pore scale modelling of fluid flow in fractured porous media</td>
<td>Chenhui Wang; Kejian Wu; Gilbert Scott</td>
</tr>
<tr>
<td>[461]</td>
<td>A comparative study of Lattice Boltzmann models for complex fractal geometry</td>
<td>Dong Zhang</td>
</tr>
<tr>
<td>[256]</td>
<td>Laser-Induced Fluorescence (LIF) study of solute transport in 3D-printed fractured porous media</td>
<td>Mehrdad Ahkami</td>
</tr>
<tr>
<td>[354]</td>
<td>An investigation into the controls of fracture tortuosity in rock sequences and its impact on fluid flow in the upper crust</td>
<td>Nathaniel Forbes Inskip; Tomos Phillips; Kevin Bisdom; Georgy Borisochev; Andreas Busch; Sabine den Hartog</td>
</tr>
<tr>
<td>[1032]</td>
<td>Experimental study of contaminant transport in coupled fracture-porous medium systems</td>
<td>Monika S. Walczak</td>
</tr>
<tr>
<td>[1274]</td>
<td>Gas-Oil Displacement Mechanisms in Fractured Vuggy Carbonates at Immiscible and Miscible Conditions</td>
<td>Xiongyu Chen; Kishore Mohanty</td>
</tr>
<tr>
<td>[1249]</td>
<td>Effect of Fracture on Reactive-Density-Driven Convection of Injected CO2 in Porous Reservoir</td>
<td>Paiman Shafabakhsh</td>
</tr>
</tbody>
</table>

#### (MS 3) Flow, transport and mechanics in fractured porous media – Part 5

**Q&A 5**  **Time Block C - Chairs: Holger Steeb, Hamid Nick, Benoit Noetinger**

<table>
<thead>
<tr>
<th></th>
<th>Title</th>
<th>Authors</th>
</tr>
</thead>
<tbody>
<tr>
<td>[198]</td>
<td>A three-field approach for flow simulations in networks of fractures on non conforming meshes</td>
<td>Stefano Berrone; Sandra Pieraccini; Stefano Scialò; Denise Grappein</td>
</tr>
<tr>
<td>[667]</td>
<td>Extended finite element analysis of a coupled fracture-reservoir model</td>
<td>Elisa Bergkamp</td>
</tr>
<tr>
<td>[1290]</td>
<td>Recent advances in Mixed Virtual Elements for DFM simulations</td>
<td>Matías Benedetto; Andrea Borio; Franco Dassi; Alessio Fumagalli; Davide Losapio; Anna Scotti; Stefano Scialò; Giuseppe Vacca</td>
</tr>
</tbody>
</table>
### Question and answer: Parallel sessions 1 (cont.)

**Q&A 5  Time Block C - Chairs: Holger Steeb, Hamid Nick, Benoit Noetinger**

<table>
<thead>
<tr>
<th>Paper Number</th>
<th>Title / Authors</th>
</tr>
</thead>
</table>
| [232]        | Fluid flow through anisotropic and deformable double porosity media with ultra-low matrix permeability: An efficient continuum framework  
Qi Zhang; Ronaldo Borja |
| [165]        | Fracture-matrix interactions implicated by matrix pore connectivity: From waste repository to shale hydrocarbon production  
Qinhong Hu |
| [278]        | Numerical Simulation of Fault Slip in Shale Gas Reservoirs Based on Discrete Fracture Network Model  
Hao Liu; Zhaoqin Huang; Qinghua Lei |
| [566]        | Fracture propagation in porous media during fluid injection  
Srutarshi Pradhan |

**Q&A 6  Time Block C - Chairs: Holger Steeb, Hamid Nick, Benoit Noetinger**

<table>
<thead>
<tr>
<th>Paper Number</th>
<th>Title / Authors</th>
</tr>
</thead>
</table>
| [71]         | Investigations of pore connectivities and permeabilities of fractured vuggy carbonates based on digital rock techniques  
Weichao Yan; Sun Jianmeng |
| [630]        | Experimental Study on Two-phase Miscible Displacement Pattern of Porous Media  
Wei Guo; Ran Hu |
| [238]        | Study on Water Quality Sensitivity and Characterization of Permeability in Water Flooding Sandstone Reservoirs  
Xiankun SONG; Jianzhong WANG |
| [1033]       | Experimental investigation of low salinity water flooding efficiency in tight carbonate fractured oil reservoirs; a case study  
Rasoul Mokhtari; Mohammad Sadegh Mousapour; Pourya Malmir; Amin Alinejad; Shahab Ayatollahi |
| [196]        | Impact of fracture sealing on the percolation state of orthogonal fracture networks  
Weiwei Zhu |
| [145]        | Pore structure characteristics of the Paleogene Shahejie Shale Oil Formation in Dongying Sag, Bohai Bay Basin, China  
Xiuchuan Zhu |
| [1252]       | Role of mineralogy in controlling fracture formation.  
Olivia Brunhoeber; Lauren Beckingham |
Question and answer: Parallel sessions 2

(MS 7) Mathematical and numerical methods for multi-scale multi-physics, nonlinear coupled processes– Part 1

Q&A 1  Time Block A - Chairs: Sorin Pop

[1306] A Numerical Study on Multiphysics Fluid Flow in a Shale Gas Reservoir with Non-Uniform Fractures
Abhishek Kumar; Suresh Kumar Govindarajan

[1207] Spectral time-dependent solutions for natural convection in porous enclosure
AMIN FAHS; ALI ZAKERI; ADRIEN WANKO

Debin Xia

[658] An Embedded Discrete Fracture Method Based Well-Test Model for Pressure Transient Analysis in Fractured Wells with Complex Fracture Networks
Hui Liu; Xinwei Liao; Xiaoliang Zhao; Lijia Yuan; Juan Zhao

[716] A Discrete Fracture-Matrix Model for Pressure Transient Analysis in Multistage Fractured Horizontal Wells with Arbitrarily Distributed Natural Fractures
Hui Liu; Xinwei Liao; Xuefeng Tang; Xiaoliang Zhao; Lijia Yuan; Juan Zhao

[1297] A multi-scale nonlinear finite element modelling of subsurface energy storage under cyclic loading
Kishan Ramesh Kumar

[918] A new parallel framework for general purpose reservoir simulation with advanced discretization and linearization schemes
Longlong Li; Ahmad Abushaikha

[1161] Simulation of two-phase flow in fractured media with discontinuous capillary pressure
Luat Khoa Tran

(MS 7) Mathematical and numerical methods for multi-scale multi-physics, nonlinear coupled processes– Part 2

Q&A 2  Time Block A - Chairs: Sorin Pop

[530] A feasible method for the construction of fixed-tortuosity capillary medium with self-similarity behavior
Wei Wei

[241] A revisited compositional 2-phase flow model for gas transport at various scales in heterogeneous porous structures in a deep geological radioactive waste disposal facility
Zakaria SAÂDI

[102] A (real) multi-scale solver for two-phase flow: a micro-continuum approach
Cyprien Soulaine; Francisco Carrillo; Ian Bourg
<table>
<thead>
<tr>
<th>Q&amp;A 2 Time Block A - Chairs: Sorin Pop</th>
</tr>
</thead>
</table>
| [1291] Coupling conditions for Stokes-Darcy problems with arbitrary flow directions  
Elissa Eggenweiler; Iryna Rybak |
| [1192] Generation of a micro-earthquake clouds induced by the arrival of nonlinear fronts of pressure and temperature  
Arrigo Caserta; Roman Kanivetsky; Ettore Salust |
Lars von Wolff; Iuliu Sorin Pop |
| [641] Study on the coupling mathematical model of gas-water two-phase seepage and wellbore pipe flow in fractured horizontal Wells in volcanic gas reservoirs  
Cheng Fu |

<table>
<thead>
<tr>
<th>Q&amp;A 3 Time Block B - Chairs: Sorin Pop, Peng Xu</th>
</tr>
</thead>
</table>
| [1190] Production Enhanced Potential Evaluation and Integrated Design for Horizontal Wells Energized Fracturing --- Case Study on Chang 7 Tight Reservoir, Ordos Basin  
Guanqun Li |
| [1333] Residual-driven online Generalized Multiscale Finite Element Method for the poroelasticity problem in fractured and heterogeneous media  
Aleksei Tyryugin |
| [439] MULTISCALE PORE NETWORK INTEGRATION USING THE POREFLOW SOFTWARE  
Elizabeth May Pontedeiro |
| [1319] Nonlocal nonlinear upscaling for problems in heterogeneous and fracture media using machine learning technique  
Maria Vasilyeva |
Martin Schneider; Edward Coltman; Killian Weishaupt; Rainer Helmig |
| [1280] Multiphase mixture models with phase change and filtration in OpenFOAM®  
Federico Municchi; Matteo Icardi |
| [665] A Bundle of Capillary Tubes (BOCT) Model for Carbonated Water Flooding (CWF); a Promising Technique for Simultaneous CO2 Storage and Enhanced Oil Recovery Purposes  
Puyan Bakhshi; M. Mercedes Maroto-Valer; Mohammad Amani |
| [287] Equivalent Conductivity Tensor in 3D Anisotropic Heterogeneous Formations  
Qinzhuo Liao; Gang Lei; Dongxiao Zhang; Shirish Patil |
### Q&A 4  
**Time Block B - Chairs: Sorin Pop, Peng Xu**

<table>
<thead>
<tr>
<th>Number</th>
<th>Title</th>
<th>Authors</th>
</tr>
</thead>
<tbody>
<tr>
<td>1316</td>
<td>A multi-step Dirichlet-Neumann domain decomposition method applied to polymer injection in porous media</td>
<td>Renatha Batista dos Santos; Rodrigo Silva Tavares; Sidarta Araújo Lima; Adriano Santos</td>
</tr>
<tr>
<td>908</td>
<td>Physics-Preserving Algorithms for Flow and Transport in Porous Media</td>
<td>Shuyu Sun</td>
</tr>
<tr>
<td>1269</td>
<td>Efficiency and Accuracy of Micro-Macro Models for Dissolution/Precipitation in Two-Mineral Systems</td>
<td>Stephan Gärttner; Peter Frolkovic; Peter Knabner; Nadja Ray</td>
</tr>
<tr>
<td>324</td>
<td>Incremental petrophysical characterization of carbonate rocks using μCT box counting fractal analysis for upscaling purposes</td>
<td>Tatiana Lipovetsky; Luca Moriconi; Behzad Ghanbarian</td>
</tr>
<tr>
<td>1320</td>
<td>Modeling and design optimization for pleated membrane filter</td>
<td>Yixuan Sun; Pejman Sanaei; Lou Kondic; Linda Cummings</td>
</tr>
<tr>
<td>1324</td>
<td>Stochastic Modelling of Adsorption and Sieving in a Pore Network</td>
<td>Binan Gu; Pejman Sanaei; Linda Cummings; Lou Kondic</td>
</tr>
<tr>
<td>352</td>
<td>A pore-network model approach for coupling free flow with porous medium flow applied to evaporation</td>
<td>Kilian Weishaupt; Rainer Helmig</td>
</tr>
<tr>
<td>33</td>
<td>Multi-scale iterative scheme for a phase-field model for reactive transport problems</td>
<td>Manuela Bastidas</td>
</tr>
</tbody>
</table>

### Q&A 5  
**Time Block C - Chairs: Sorin Pop, Peng Xu**

<table>
<thead>
<tr>
<th>Number</th>
<th>Title</th>
<th>Authors</th>
</tr>
</thead>
<tbody>
<tr>
<td>1178</td>
<td>An accelerated staggered solution scheme to phase-field modeling of brittle fracture</td>
<td>Erlend Storvik</td>
</tr>
<tr>
<td>1144</td>
<td>Proactive Optimization of CO2 Sequestration under Geomechanical Constraints</td>
<td>Mohammad Salehian</td>
</tr>
<tr>
<td>585</td>
<td>Computational Multiscale Methods for Linear Poroelasticity using CEM-GMsFEM</td>
<td>Eric Chung; Sai-Mang Pun; Shubin Fu; Robert Altmann; Roland Maier; Daniel Peterseim</td>
</tr>
</tbody>
</table>
### Q&A 5 Time Block C - Chairs: Sorin Pop, Peng Xu

<table>
<thead>
<tr>
<th>Paper ID</th>
<th>Title</th>
<th>Authors</th>
</tr>
</thead>
<tbody>
<tr>
<td>[695]</td>
<td>Gravity Segregation in Foam Mobility Control in Heterogeneous Reservoir</td>
<td>Xiaocong Lyu; Denis Voskov; William Rossen</td>
</tr>
<tr>
<td>[1180]</td>
<td>Multiscale computation of pore-scale geomechanics</td>
<td>Yashar Mehmani; Nicola Castelletto; Hamdi Tchelepi</td>
</tr>
<tr>
<td>[460]</td>
<td>Stochastic and upscaled analytical modeling of fines migration in porous media induced by low-salinity water injection</td>
<td>Yulong Yang</td>
</tr>
<tr>
<td>[1328]</td>
<td>Integration Pulse Decay Experimental Data into A Novel Continuum-Scale Multi-Physics Model to Study Gas Transport in Shale Formations</td>
<td>Zihao Li</td>
</tr>
</tbody>
</table>

### Q&A 6 Time Block C - Chairs: Aimy Bazylak, Saman Aryana

<table>
<thead>
<tr>
<th>Paper ID</th>
<th>Title</th>
<th>Authors</th>
</tr>
</thead>
<tbody>
<tr>
<td>[987]</td>
<td>LBM simulations of graded Gas Diffusion Layer for PEMFC applications</td>
<td>Graham Danny KOYEERATH; Yann Favennec; Christophe Josset; Bruno Auvity</td>
</tr>
<tr>
<td>[1265]</td>
<td>Assessment of end-effects during two-phase flow in micro-fluidic model pore networks – is it possible?</td>
<td>Marios Valavanides; Nikolaos Karadimitriou; Holger Steeb</td>
</tr>
<tr>
<td>[1255]</td>
<td>In-situ Capillary Pressure Measurements for Gaining Insight into Foam Flow in Porous Media</td>
<td>Eric Vavra; Maura Puerto; George Hirasaki; Sibani Lisa Biswal</td>
</tr>
<tr>
<td>[966]</td>
<td>Core flood-on-a-chip: a study of viscoelasticity’s effects on oil recovery using a foot-long micromodel</td>
<td>Yujing Du</td>
</tr>
<tr>
<td>[1237]</td>
<td>Quantification of non-linear multiphase flow in porous media</td>
<td>Yihuai Zhang; Branko Bijeljic; Ying Gao; Qingyang Lin; Martin Blunt</td>
</tr>
</tbody>
</table>
(MS 8) Mixing, dispersion and reaction processes across scales in heterogeneous and fractured media – Part 1

**Q&A 1 Time Block A - Chairs: Marco Dentz, Branko Bijeljic**

- [195] Permeability of salt crusts from evaporation of sand columns.  
  *Joseph Piotrowski*

- [49] Quantitative Tortuosity Measurements of Carbonate Rocks using Pulsed Field Gradient NMR.  
  *Kaishuo Yang*

- [66] Experimental analysis of plumes transport and dilution processes under highly transient boundary conditions.  
  *Mónica Basilio Hazas*

  *Saideep Pavuluri; Christophe Tournassat; Francis Claret; Cyprien Soulaine*

- [740] The Peclet number and viscous ratios impact on the fingering evolution during miscible displacement in rough fractures.  
  *Xusheng Chen*

- [874] Experimental assessment of turbulent mixing in the hyporheic zone.  
  *Elisa Baioni*

- [1223] Hydrodynamic Dispersion in Simple Pore Geometries: Combining Experimental and Simulated Results at Individual Pore Scales.  
  *Matthijs de Winter*

- [763] A novel upscaling procedure for characterising heterogeneous shale porosity from nm- to mm-scale in 3D and 4D images.  
  *Lin Ma; Patrick Dowey; Ernest Rutter; Kevin Taylor; Peter Lee*

(MS 8) Mixing, dispersion and reaction processes across scales in heterogeneous and fractured media – Part 2

**Q&A 2 Time Block A - Chairs: Branko Bijeljic, Marco Dentz**

- [988] Evolution of reaction rates in natural porous media stemming from coupling of pore-space heterogeneity, multi-species transport and reaction reversibility.  
  *Branko Bijeljic*

  *Christian Hinz; Jens-Oliver Schwarz; Andreas Weber; Andreas Wiegmann*

  *Saman Aryana; Yuhang Wang; Jesse McKinzie; Frederico Furtado*

- [718] Experimental Study on Influence of Peclet number on the Dissolution patterns in rough fractures.  
  *Ting Wang*

- [769] Flow behavior of CO2/ N2/ CH4 huff and puff process for enhanced heavy oil recovery.  
  *Wu Mingxuan; Zhaomin Li; Songyan Li; Chen Lu; Zhengxiao Xu*
### Q&A 2 Time Block A - Chairs: Branko Bijeljic, Marco Dentz

- [341] Plume deformation, mixing and reaction kinetics in 3-D heterogeneous anisotropic porous media.
  - **Yu Ye; Gabriele Chiogna; Chunhui Lu; Massimo Rolle**

### Q&A 3 Time Block B - Chairs: Hossein Hejazi, Amir Raoof

- [1012] Numerical simulation of convective mixing in geologic carbon sequestration applications.
  - **Anna-Maria Eckel**

- [1304] Chemical Component Transport in Heterogeneous Porous Medium during Low Salinity Water Flooding.
  - **Hasan Al-Ibadi; Karl D. Stephen; Eric Mackay**

- [521] Fractal analysis of two phase matrix-fracture transfer function in fractured reservoirs.
  - **Lan Mei**

- [930] Investigation of carbonation and degradation of well cement under geologic carbon sequestration using X-ray imaging and numerical modeling.
  - **Xiuxiu Miao; Liwei Zhang; Yan Wang; Manguang Gan**

- [1279] Multi-rate mass transfer models and reactive transport in heterogeneous porous media.
  - **Matteo Icardi**

- [675] Studying the effects of heterogeneity on karstification and wormholing phenomena using Operator Based Linearization and High-Resolution LiDAR data.
  - **Stephan de Hoop**

- [160] The topological origin of anomalous transport: Persistence of $\beta$ in the face of varying correlation length.
  - **yaniv edery**
### Q&A 4  Time Block B - Chairs: Hassan Mahani, Afshin Goharzadeh

1. Experimental study of corner flow using 2.5-D microfluidic porous media.  
   **Guanju Wei; Ran Hu; Zhen Liao; Yifeng Chen**

2. Foam Trapping and Foam Mobility in a Model Fracture.  
   **Kai Li**

   **Antonia Sugar**

   **Menggang Wen**

5. A Microfluidic Investigation of In-Situ Water-in-Oil Emulsion Formation during Waterflooding of Heavy Oil Reservoirs.  
   **Mohammad Salehpour**

6. 3D printing micro-model and deep learning method application for micro displacement experiment and remaining oil analysis.  
   **Yimin Zhang**

7. Fabrication of “sandwich-like” microfluidic chips by ceramic 3D printing for flow visualization experiments.  
   **Shidong Li**

   **Saheb Mohammadi; Hassan Mahani; Shahab Ayatollahi; Vahid J Niasar**

### Q&A 5  Time Block C - Chairs: Amir Raoof, Hossein Hejazi

   **Cunqi Jia; Jun Yao**

2. In Operando synchrotron microfluidics experiment and reactive transport modeling of acid erosion of carbonate fractures.  
   **Hang Deng; Jeff Fitts; Ryan Tappero; Julie Kim; Catherine Peters; Qian Zhang**

3. Transport and deposition of suspended particles in the context of permafrost thaw: An experimental and numerical modelling study.  
   **Madiha Khadhraoui**

   **Martin Lesueur**

5. The effect of buoyant convection on the buoyancy-driven spreading and draining that arises within a layered porous media with a permeability jump.  
   **Md Imran Khan**
<table>
<thead>
<tr>
<th>Q&amp;A 6  Time Block C - Chairs: Florian Doster, Yves Méheust</th>
</tr>
</thead>
<tbody>
<tr>
<td>[1275] Capillary flow mediated drop formation in a yarn-based microfluidic system.</td>
</tr>
<tr>
<td><strong>Bhaskarjyoti Sarma</strong></td>
</tr>
<tr>
<td>[1043] Role of Connate Water in Immiscible Viscous Fingering.</td>
</tr>
<tr>
<td><strong>Lucas Mejia; Matthew Balhoff; Kishore Mohanty</strong></td>
</tr>
<tr>
<td><strong>Ningyu Wang; Yifei Liu; Matthew Balhoff; Masa Prodanovic</strong></td>
</tr>
<tr>
<td>[146] An analytical fractal model for water transport in shale reservoirs.</td>
</tr>
<tr>
<td><strong>Yu Zhang; Fanhui Zeng</strong></td>
</tr>
<tr>
<td>[81] Visualization of CH4 Hydrate Dissociation Under Permafrost Temperature Conditions Using High-Pressure Micromodel.</td>
</tr>
<tr>
<td><strong>Jyoti Shanker Pandey</strong></td>
</tr>
<tr>
<td><strong>William Johnson</strong></td>
</tr>
<tr>
<td><strong>Jiwei Wu; Thomas Cochard; Lizhi Xiao; David A. Weitz</strong></td>
</tr>
<tr>
<td><strong>Rumbidza A. E Nhunduru</strong></td>
</tr>
<tr>
<td><strong>Afsjin Davarpanah; Holstvoogd Jorijn; Simon Cox; William Rossen</strong></td>
</tr>
</tbody>
</table>
# Porous Media for a Green World: Energy & Climate – Part 1

### Q&A 7 Time Block A - Chairs: Sebastian Geiger, Rainer Helmig

1. Introducing the concept of Paradise Island for quantifying the role of subsurface porous media in the green transition.  
   *Ali Akbar Eftekhari*

2. **CO2 Transport and Mineralization in Reactive Magnesium Cement-Based Concrete.**  
   *Anna Herring; Penny King; Fatin Mahdini; Afiq Muzhafar Kemis Yahyah; Mohammad Saadatfar*

3. Assessment of Conglomerate Reservoir for CO2 Sequestration using X-ray CT image Analysis.  
   *Gidon Han*

   *Jie Li; Jiaxiang Liu; Wenquan Tao; Zhuo Li*

5. Upscaling capillary pressure functions for modeling vertical migration of CO2 in brine aquifers.  
   *Kan Bun Cheng; Avinoam Rabinovich*

   *Mianmo Meng*

7. Quantitative evaluation of mobile shale oil at different pore sizes.  
   *Ning Qi; Mingyue Lu; Haitao Xue; Jinxiu Yang; Bojie Zhang; Dongquan Sun; Xueping Liu; Jiafan Tang*

8. Integrating geological data and upscaling static and dynamic properties for a CCS project.  
   *Mark Knackstedt; Mohammad Saadatfar; Robert Sok; Paal Eric Oeren; Lachlan Deakin*

# Porous Media for a Green World: Energy & Climate – Part 2

### Q&A 8 Time Block A - Chairs: Sebastian Geiger, Rainer Helmig

9. Valuation criteria of shale gas reservoir classification-- taking Longmaxi formation in Pengshui area as an example.  
   *Ning Qi; Mingyue Lu*

10. Experimental Studies on Carbonated Smart Water-flooding Mechanisms in Tight Reservoir.  
    *Rukuan CHAI; Yuetian LIU; Liang XUE; Jing XIN*

11. CO2 Mobility Control by Foam at the Pore Level.  
    *Tore Føyen*
TUESDAY, 1 SEPTEMBER 2020

Question and answer: Parallel sessions 1 (cont.)

(MS1) Porous Media for a Green World: Energy & Climate – Part 2 (cont.)

**Q&A 8 Time Block A - Chairs: Sebastian Geiger, Rainer Helmig**

  *Yingwen Li; Yongfei Yang*

- [1212] Study on Mechanism of Nitrogen Stimulation Production Aided by Viscosity Reducer in common heavy oil.  
  *Yunong Zang; Binfei Li*

- [1193] Capillary heterogeneity trapping within the Captain Sandstone - a core to field scale study.  
  *Catrin Harris;*

- [1143] Development of multi-physics models accounting for reversible flow at various subsurface energy storage sites.  
  *Beatrix Becker;*

- [1165] Research on geological modeling of porosity and permeability in CO2 gas reservoirs——Taking Surennuor area as an example.  
  *Ning Qi; Mingyue Lu*

(MS1) Porous Media for a Green World: Energy & Climate – Part 3

**Q&A 9 Time Block B - Chairs: Rainer Helmig, Sebastian Geiger**

  *Jeroen Snippe; Niko Kampman; Kevin Bisdom; Tim Tambach; Rafael March; Tomos Phillips; Nathaniel Forbes Inskip; Florian Doster; Andreas Busch*

  *Ke Xu; Yashar Mehmani*

  *Mohammad Masoudi; Saeed Parvin; Rohaldin Miri; Helge Hellevang*

- [770] Geothermal Simulation Using MRST.  
  *Øystein Klemetsdal; Marine Collignon; Olav Meyner; Halvor Nilsen; Odd Andersen; Knut-Andreas Lie*

- [983] Low Salinity Water-flooding in Chalk Core Samples from a Danish North Sea Reservoir.  
  *Rasoul Mokhtari; Benaiah Anabaraonye; Karen Louise Feilberg*

- [970] Effect of aging method on wettability and oil recovery from danish north sea carbonate reservoirs.  
  *Samira Mohammadkhani; Jonas Folke Sundberg; Ming Li; Karen Louise Feilberg*
(MS1) Porous Media for a Green World: Energy & Climate – Part 3 (cont.)

Q&A 9  Time Block B - Chairs: Rainer Helmig, Sebastian Geiger

mingyue lu; Ning Qi

[1141] Optimizing carbon dioxide storage in oilfields at the pore-scale.
Abdulla Alhosani

(MS1) Porous Media for a Green World: Energy & Climate – Part 4

Q&A 10  Time Block B - Chairs: Rainer Helmig, Sebastian Geiger

Amir Jahanbakhsh

Debanjan Chandra; Debanjan Chandra

[1227] Carbon Dioxide Plume in Bespoke 2D Porous Micromodels.
Niloy De

[992] Experimental Investigation on the Effects of Ion Type/Valency and Ionic Strength of Formation Water on Rock-Fluid Interactions during CO2 Geological Storage.
Shima Ghanaatian; Omid Shahrokhi; Susana Garcia; M. Mercedes Maroto-Valer

[1246] Numerical Simulation of CO2 enhanced gas recovery (CO2-EGR) for the optimal CO2 injection perforation position and injection rate.
Liu Shuyang; Sun Baojiang

[315] Evaluation of CO2 enhanced recovery potential as pre-pad in tight reservoir compared with slickwater.
Liyao Fan

Rafael March; Florian Doster; Sebastian Geiger

Muhammad Yasir

(MS1) Porous Media for a Green World: Energy & Climate – Part 5

Q&A 11  Time Block C - Chairs: Bo Guo, Sarah Gasda

Chidera Iloejesi; Lauren Beckingham
Q&A 11 Time Block C - Chairs: Bo Guo, Sarah Gasda

- Chemo-Hydro-Poromechanics of Enhanced Cracking in Geo-Energy Engineering. 
  ManMan Hu
- Buoyant convection from a discrete source in closed vs. leaky porous media. 
  Morris Flynn; Chunendra K. Sahu; Mark Roes
- Redistribution of residually trapped CO2 by Ostwald ripening due to capillary heterogeneity. 
  Yaxin Li; Charlotte Garing; Sally M Benson
- Parametric study on the residual CO2 trapping in Deccan Volcanic Basalt. 
  Pradeep Reddy Punnam; Shakti Raj Singh Bawal; Himavarsha Pakala; Vikranth Kumar Surasani
- A vertically integrated approach to field-scale modelling of mineral trapping in reactive rocks. 
  Tom Postma; Karl Bandilla; Mike Celia
- Pore connectivity of shale oil reservoirs from small angle neutron scattering, mercury intrusion porosimetry and spontaneous imbibition experiments. 
  Xiaohui Sun
- The grading evaluation and sweet spot prediction of shale reservoirs based on high-pressure mercury intrusion technology and fractal theory. 
  Yu Zhang

Q&A 12 Time Block C - Chairs: Bo Guo, Sarah Gasda

  Jyoti Shanker Pandey
- Use of limited deep formation monitoring data with shallow aquifer observations for leakage monitoring in geologic carbon storage. 
  Tissa Illangasekare; Ahmad Askar; Jakub Solovsky; Radek Fucik; Ye Zhang; Jiangyin Jiao; Andrew Trautz
- The Seebeck effect in membrane systems of ions abundant in seawater. 
  Peder Holmqvist; Signe Kjelstrup; Kim Kristiansen
- Hydrophobicity/Hydrophilicity Driven CO2 Solubility in Kaolinite Nanopores in Relation to Carbon Sequestration. 
  Wenhui Li; Zhehui Jin
- Using 2D seismic line data to estimate the possible impact of large-scale and sub-scale structural trapping in the Gassum Formation on the Norwegian Continental Shelf. 
  Odd Andersen
### Q&A 13 Time Block C - Chairs: Saman Aryana, Majid Hassanizadeh

<table>
<thead>
<tr>
<th>Session</th>
<th>Title</th>
<th>Authors</th>
</tr>
</thead>
<tbody>
<tr>
<td>[972]</td>
<td>Impact of pair interactions on frictional fluid dynamics</td>
<td>Louison Thorens; Knut Jorgen Maloy; Mickaël Bourgoin; Stéphane Santucci</td>
</tr>
<tr>
<td>[1187]</td>
<td>Thin film flow: fluid transport via thin liquid films in slow porous media flows</td>
<td>Marcel Moura</td>
</tr>
<tr>
<td>[1301]</td>
<td>Physical origin of pressure-saturation curves during drainage: modelling based on gravitational and capillary effects, and recipe for upscaling by correcting finite-size effects</td>
<td>Renaud Toussaint; Monem Ayaz; Gerhard Schäfer; Marcel Moura; Knut Jorgen Maloy</td>
</tr>
<tr>
<td>[1107]</td>
<td>Reservoir Parameter Changes of Weakly-Volatile Oil Reservoir Developed by Natural Energy and The Potential Analysis of Water Injection: A Case Study of Offshore X Oilfield</td>
<td>Jianting Huang; Jintao Wu; Guangming Pan; Hao Li; Zhenpeng Li</td>
</tr>
<tr>
<td>[1154]</td>
<td>Bistability in the unstable flow of polymer solutions through porous media</td>
<td>Christopher Browne; Audrey Shih; Sujit Datta</td>
</tr>
<tr>
<td>[1142]</td>
<td>An experimental study on the impacts of gas pressure on carbon isotope fractionation during methane desorption in shale rock</td>
<td>Yongbo Wei</td>
</tr>
</tbody>
</table>
### Q&A 7 Time Block A - Chairs: Gennady Gor, Patrick Huber

[1160] Molecular Simulation Study of Inorganic and Organic Porous Materials  
* Arun Kumar Narayanan Nair; Shuyu Sun

[646] Nondestructive high-throughput screening of nanopore geometry in porous membranes by imbibition: Laser-Interferometry and Dilatometry Experiments  
* Juan Sanchez Calzado; Zhuoqing Li; Luisa G. Cencha; Michael Kappl; Floudas George; Claudio L.A. Berli; Steinhart Martin; Michael Fröba; Raul Urteaga; Patrick Huber

[334] Distribution of oil in shale formations and its effects on kerogen nano-structural properties  
* Qian Sang; Xinyi Zhao; Mingzhe Dong

[250] Adsorption Evaluations of Shale Gas in Nanometer Pores Based on Molecular Simulation Method  
* Sun Renyuan; Sun Ying; Tang Guiyun; Gong Dajian; Cao Haipeng

[1132] The effects of oxidation on the capacity of shale gas desorption and diffusion in nanoscale pores  
* Yang Zhou; Lijun You; Yili Kang; Qiuyang Cheng; Yang Chen

[528] Fractal analysis of real gas transport in 3D shale matrix  
* Zhenhua Tian

[297] Imbibition-Induced Deformation Dynamics in Nanoporous Media: The Interplay of Bangham and Laplace Pressure Effects  
* Zhuoqing Li; Juan Sanchez Calzado; Michael Fröba; Patrick Huber

### Q&A 8 Time Block A - Chairs: Gennady Gor, Patrick Huber

[1157] Evaporation and condensation of water in nanopores with salt  
* Olivier Vincent; Piyush Jain; Marine Poizat; Léo Martin; Abraham Stroock

[779] Viscosity of hydrocarbons in slit pores by molecular dynamics  
* Vasily Pisarev

[596] Study on the distribution of micro remaining oil in different sedimentary microfacies by using glass etching displacement experiments  
* Xianbo Luo

[1325] The effects of oxidation on the capacity of shale gas desorption and diffusion in nanoscale pores  
* Yang Zhou; Lijun You; Yili Kang; Qiuyang Cheng; Yang Chen

[559] Adsorption and Flow Behaviors of Shale Oil in Organic Slit by Molecular Simulation  
* Jie Liu

[1285] Extension and Limits of Cryoscopometry for Nanoconfining Solutions  
* Benjamin Malfait; Alban Pouessel; Aicha Jani; Denis Morineau
TUESDAY, 1 SEPTEMBER 2020

Question and answer: Parallel sessions 2 (cont.)

(MS 13) Fluids in Nanoporous Media – Part 2 (cont.)

Q&A 8  Time Block A - Chairs: Gennady Gor, Patrick Huber

[489] Giant Piezoelectrolytic Actuation in Nanoporous Silicon-Polypyrrole Membranes
Manuel Brinker; Guido Dittrich; Thelen Marc; Lakner Pirmin; Claudia Richert; Tobias Krekeler; Thomas F Keller; Norbert Huber; Patrick Huber

Mark Busch; Tommy Hofmann; Bernhard Frick; Jan Embs; Boris Dyatkin; Patrick Huber

(MS 13) Fluids in Nanoporous Media – Part 3

Q&A 9  Time Block B - Chairs: Gennady Gor, Patrick Huber

[1267] Water Dynamics in Nanoporous Confinement: A Quasielastic Neutron Scattering Study
Aicha Jani; Benedikt MIETNER; Mark Busch; Jacques OLLIVIER; Bernhard Frick; Markus APPEL; Jean-Marc ZANOTTI; Patrick Huber; Michael Fröba; Denis Morineau

[267] Small Angle Neutron Scattering to determine the Interplay between Fluids and Pores in Mudrocks
Amirsaman Rezaeyan; Timo Seemann; Pieter Bertier; Vitaliy Pipich; Lester Barnsley; Andreas Busch

[1302] Dynamic Heterogeneities in Liquid Mixtures Confined in Nanopores
Aicha Jani; Ramona Mhanna; Benedikt MIETNER; Mark Busch; Jean-Marc ZANOTTI; Bernhard Frick; aziz ghoufi; Patrick Huber; Michael Fröba; Denis Morineau

[117] A serially-connected pore model (SCPM) for characterising disordered mesoporous materials
Henry Enninful; Daniel Schneider; Richard Kohns; Dirk Enke; Rustem Valiullin

[116] Characterisation of strongly disordered mesoporous solids with the serially-connected pore model (SCPM)
Henry R. N. B. Enninful; Daniel Schneider; Antonia Hoppe; Dirk Enke; Rustem Valiullin

[457] Physically-based combined model for water retention of cementitious materials
Walaa Issa; Jean-Philippe Carlier; Nicolas Burlion

[898] Stochastic apparent permeability model considering pore-throat structures and fluid-solid molecular interactions for shale oil reservoir
Jilong Xu; Yuliang Su; Wendong Wang; Han Wang

[635] Permeation and separation of CH4/CO2, N2/O2 mixtures through single-layer nanoporous graphene membranes: theory and molecular simulations
Juncheng Guo; Romain Vermorel; Guillaume Galliero
### Q&A 10 Time Block B - Chairs: Gennady Gor, Patrick Huber

<table>
<thead>
<tr>
<th>Paper Number</th>
<th>Title</th>
<th>Authors</th>
</tr>
</thead>
<tbody>
<tr>
<td>859</td>
<td>Mechanism of shale gas occurrence: Insights from comparative study on pore structures of marine and lacustrine shales</td>
<td>Lei Chen; Keyu Liu</td>
</tr>
<tr>
<td>1166</td>
<td>Direct pore scale simulation of water in nanoporous shale and prediction of apparent liquid permeability</td>
<td>Tao Zhang; Ying Yin; Xiangfang Li</td>
</tr>
<tr>
<td>10</td>
<td>Pore-scale Investigation of Effects of Organic-matter Pores on Shale Properties Based on Multicomponent and Multiscale Digital Rocks</td>
<td>Yuqi Wu; Pejman Tahmasebi; Chengyan Lin</td>
</tr>
<tr>
<td>308</td>
<td>A variation free approach for free energy minimization in density functional theory</td>
<td>Yuriy Kanygin</td>
</tr>
<tr>
<td>511</td>
<td>Density Functional Theory Model for Adsorption-Induced Deformation of Materials with Convex Pore Walls</td>
<td>Andrei Kolesnikov; Gennady Gor</td>
</tr>
<tr>
<td>1266</td>
<td>Experimental Evaluation of the Saturation Vapor Pressure above Supercooled Nanoconfined Liquids</td>
<td>Klaus Schappert; Rolf Pelster</td>
</tr>
<tr>
<td>1286</td>
<td>Pore size distribution in nanoporous materials using NMR cryoporometry</td>
<td>Marc Fleury</td>
</tr>
</tbody>
</table>

### Q&A 11 Time Block C - Chairs: Gennady Gor, Patrick Huber

<table>
<thead>
<tr>
<th>Paper Number</th>
<th>Title</th>
<th>Authors</th>
</tr>
</thead>
<tbody>
<tr>
<td>1238</td>
<td>Pore connectivity characterization of Woodford Shale using liquid imbibition and tracer gas diffusion methods</td>
<td>Chen Zhao</td>
</tr>
<tr>
<td>328</td>
<td>A fractal model for shale gas apparent permeability</td>
<td>Fanhui Zeng; Chao Wen; Jianchun Guo; Qiang Zhang; Jianhua Xiang</td>
</tr>
<tr>
<td>1228</td>
<td>Permeability and Adsorption of Light Gas Through Mature Shale Kerogen by Molecular Simulations</td>
<td>Fouad Oulebsir</td>
</tr>
<tr>
<td>164</td>
<td>Nanopore Connectivity and Fluid Migration in Shales</td>
<td>Qinhong Hu</td>
</tr>
<tr>
<td>1188</td>
<td>CO2-Regulated Octane Flow in Calcite Nanopores from Molecular Perspectives</td>
<td>WEI ZHANG; Zhehui Jin; Qihong Feng</td>
</tr>
</tbody>
</table>
### Q&A 11  Time Block C - **Chairs:** Gennady Gor, Patrick Huber

<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td><strong>Yu Pang</strong></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>[997]</th>
<th>Wetting dynamics of nanoliter water droplets in nanoporous media</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td><strong>Bin Pan; Christopher Clarkson; Marwa Atwa; Chris DeBuhr; Amin Ghanizadeh; Viola Birss</strong></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>[103]</th>
<th>Impact of solvent extraction on the petrophysical analysis of lacustrine shale</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td><strong>Hongguo Qiao</strong></td>
</tr>
</tbody>
</table>

### (MS 4) Swelling and shrinking porous media

### Q&A 12  Time Block C - **Chairs:** Jacques Huyghe, Sridhar Ranganathan, Muhammad Sahimi

<table>
<thead>
<tr>
<th>[1303]</th>
<th>The coupling between compaction and pressurization in cyclically sheared drained granular layers: implications for soil liquefaction.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td><strong>Shahar Ben Zeev; Renaud Toussaint; Liran Goren; Stanislav Parez; Einat Aharonov</strong></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>[1206]</th>
<th>Swelling properties in reinforced polymeric ion-exchange membranes.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td><strong>Íñigo Lara; Sagrario Muñoz; V. María Barragán García</strong></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>[812]</th>
<th>Volumetric response of crushed dunite during carbonation reaction under controlled σ-P-T conditions.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td><strong>Jinfeng Liu</strong></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>[1062]</th>
<th>Extremely large deformation and fracture of hydrogels.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td><strong>Jacques Huyghe; Eanna Fennell</strong></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>[335]</th>
<th>Deformation of kerogen and its effects on oil flow in shale.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td><strong>XINYI ZHAO; QIAN SANG; YAJUN LI; HOUJIAN GONG; MINGZHE DONG</strong></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td><strong>Yuntian Teng</strong></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>[323]</th>
<th>Modelling the drying shrinkage of porous materials incorporating capillary and adsorption effects.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td><strong>GINGER EL TABBAL; Patrick Dangla; Matthieu Vandamme; Marina Bottoni; Sylvie Granet</strong></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td><strong>Jean Lachaud; Michael Meyer; Cyrille Metayer; Marin Virey; Wahbi Jomaa; Jérémy Meurisse</strong></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>[867]</th>
<th>Poroelastic effects of CO2 adsorption capacity in coal seams under subsurface boundary conditions.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td><strong>Yuxun Zhu</strong></td>
</tr>
</tbody>
</table>
### Q&A 13  Time Block C - Chairs: Bernd Flemisch, Martin Schneider

<table>
<thead>
<tr>
<th>Session Title</th>
<th>Presenters</th>
</tr>
</thead>
<tbody>
<tr>
<td>[1158] Equilibria, kinetics, constraints, and multiple scales.</td>
<td>Malgorzata Peszynska; Choah Shin</td>
</tr>
<tr>
<td>[1074] Effects of Quasi-Saturation on Water Table Dynamics, Estimated Recharge Rates, and Groundwater Modeling.</td>
<td>Roger Gonçalves; Hung K. Chang; Martinus van Genuchten</td>
</tr>
<tr>
<td>[957] From open source to open workflows?</td>
<td>Lars Bilke; Jörg Buchwald; Thomas Fischer; Thomas Kalbacher; Olaf Kolditz; Thomas Nagel; Dmitri Naumov; Erik Nixdorf; Karsten Rink; Haibing Shao; Wenqing Wang</td>
</tr>
<tr>
<td>[680] Research collaboration Highlights: A tribute to Rainer Helmig.</td>
<td>Al Cunningham</td>
</tr>
</tbody>
</table>
### TUESDAY, 1 SEPTEMBER 2020

**Question and answer: Parallel sessions 3**

(MS 17) Thermal Processes, Thermal Coupling and Thermal Properties of Porous Media: modeling and experiments at different scales – Part 1

**Q&A 7 Time Block A - Chairs: Ruina Xu, Moran Wang**

| [456] Numerical Analysis of Interaction between a Reacting Fluid and a Moving Bed with Spatially and Temporally Fluctuating Porosity  
Alban ROUSSET; Abdoul Wahid MAINASSARA CHEKARAOU; Xavier BESSERON; Bernhard PETERS; Chiara GALLETTI |
| [1196] Influence of the porous network on the conductive-radiative behavior of SiC-based cellular ceramics up to very high temperature  
Benoit Rousseau; Jerome Vicente; Afeef Badri; Yann Favennec |
| [724] Thermal Conduction Simulation Based on Reconstructed Digital Rocks with Respect to Fractures  
Haixuan Yang; Yongfei Yang; Jun Yao |
| [857] Buoyancy-induced flow and heat transfer through and around a porous cylinder in a cavity  
Shimin Yu; Tingting Tang; Jianhui Li; Peng Yu |
| [872] Unsteady mixed convection flow through and around an array of cylinders  
Tingting Tang |
| [1116] Analysis of Viscous Fingering for Steam Flooding Heavy Oil Reservoirs  
Xue Liu; Jing Huang; Xiangyun Qu |
| [959] Impact of moisture transfer in the context of borehole thermal energy storage application  
Haibing Shao; Boyan Meng; Bo Wang; Sebastian Bauer; Olaf Kolditz |

(MS 6-A) Physics of multi-phase flow in diverse porous media– Part 2

**Q&A 8 Time Block A - Chairs: Ryan Armstrong, Nima Shokri**

| [1231] Pore-Scale Imaging of Controlled-Salinity Waterflooding in a Heterogeneous Carbonate Rock at Reservoir Conditions  
Ahmed Selem |
| [540] Insights into Laws of Topology in Wetting  
Chenhao Sun |
| [1311] Pore scale observations of wetting alteration during low salinity water flooding  
Edward Andrews |
| [885] Quantifying Wettability Alteration Effects on Fluid Flow Properties of Heterogeneous Porous Media  
Omar Al-Farisi |
| [406] Upscaling of capillary force in simultaneous infiltration of two immiscible fluids through porous media: pore scale LBM modelling  
Zi Li; Sergio Galindo-Torres; Ling Li |
Q&A 8  Time Block A - Chairs: Ryan Armstrong, Nima Shokri

[1236] Heterogeneity and mixed wetting states imaged during two-phase flow in carbonate rocks using X-ray tomography at high resolution and large fields of view
Salome M.S. Shokri-Kuehni

[1335] Transition from micro-scale to macro-scale modeling of solute transport in drying porous media
Faeez Ahmad; Rahimi Arman; Evangelos Tsotsas; Marc Prat; Abdolreza Kharaghani; Amy Spang

[1210] Pore-by-pore wettability characterization in sandstone and carbonate rocks
Gaetano Garfi, Sam Krevor

Q&A 9  Time Block B - Chairs: Shuyu Sun, Hui Zhou

[126] Optimal Dispatch Techniques for Natural Gas Industry - Reservoir Simulation and Data Simulation.
Tao Zhang; Yiteng Li; Shuyu Sun; Hua Bai

Tao Zhang

Zelong Wang

Liang Xue; Junru Zhang

[227] Numerical well testing of water drive gas reservoir based on the random forest and EnKF method.
Liang Xue; Lin Zhao

Yahong Xiang; Xianbing Luo

Bailian Chen; Dylan Harp; Rajesh Pawar

Xianbing Luo; Meng Li

[1015] DoE*-based history matching as a method for uncertainty quantification in THM(C) models of clay.
Jörg Buchwald; Olaf Kolditz; Sabine Attinger; Thomas Nagel
### Q&A 10 Time Block B - Chairs: Christos Tsakiroglou, Olga Vizika

1. [1081] A True-to-Mechanism Model for Plasma and Transport Phenomena inside a DBD reactor  
   *Nadia Bali; Christos Aggelopoulos; Eugenios Skouras; Christos Tsakiroglou; Vasilios Burganos*

2. [1295] Simulating microscale zero-valent iron injection in field-like conditions: large-scale radial laboratory experiments and numerical modeling  
   *Federico Mondino; Amelia Piscitello; Carlo Bianco; Andrea Gallo; Tiziana Tosco; Rajandrea Sethi*

3. [577] Remediation of solid wastes by nanosecond pulsed dielectric barrier discharge plasma  
   *Christos Aggelopoulos*

4. [613] Wastewater treatment in continuous-flow fixed-bed photoreactors packed with ZnO nanoparticles-coated beads  
   *Christos Tsakiroglou*

5. [1313] Numerical predictive modelling for groundwater remediation using nanotechnology  
   *Daphne Silva Pino; Tannaz Pak; Alexander Wood; Masoud Babaei; Reginaldo Bertolo*

### Q&A 11 Time Block C - Chairs: Marios Valavanides, Qi Li

1. [1310] The first nanoremediation pilot-test in Brazil: site selection criteria and nZVI mobility studies  
   *Daphne Silva Pino; Reginaldo Bertolo; Petr Kvapil; Carlo Bianco; John Etim; Tannaz Pak*

2. [1283] Method of Moments to Characterize a Reservoir Using a Single Non-Ideal Tracer Test  
   *Deepshikha Singh; Jyoti Phirani*

3. [1282] Quantifying wetted area of sediments during multiphase flow in geological porous media  
   *Deepshikha Singh; Jyoti Phirani*

4. [1170] EUTROFICATION CONTROL TREATMENTS AND CARBON GAS EMISSIONS  
   *DAngelo A. Sandoval; Anne M. Hansen; Armando González-Sánchez; Rodolfo Sosa-Echeverria*

5. [1271] Mathematical modeling of the fate and transport of per- and polyfluoroalkyl substances (PFAS) in the vadose zone  
   *Bo Guo*
Q&A 12 Time Block C - Chairs: Bernhard Krooss, Yingfang Zhou

- [863] Forced convection with viscous dissipation in a power-law fluid saturated porous medium using a two-equation model
  Xingwang Tian

- [1208] Experimental Study on the Performance of a Hybrid Evaporator Wick with Bionic Topological Substrate
  Xin Cheng

  Sarah van Rooij

- [80] Numerical and semi-analytical investigation on forced convection in tubes fully/partially filled with metal foams
  Farshid Jamshidi

- [202] Numerical modeling of coupled heat and water transport for the study of permafrost dynamics: High Performance Computing simulations for watershed scale analysis
  Laurent Orgogozo; Oleg S. Pokrovsky; Christophe Grenier; Emmanuel Mouche; Manuel Marcoux; Michel Quintard

- [787] Flow of sub- and supercritical CO2 in nano-porous ceramics: direct comparison of laboratory experiments and numerical simulation
  Steffen Nolte; Yue Wang; Reinhard Fink; Bernhard M. Krooss; Moran Wang; Alexandra Amann-Hildenbrand

- [863] Forced convection with viscous dissipation in a power-law fluid saturated porous medium using a two-equation model
  Xingwang Tian

Q&A 13 Time Block C - Chairs: Shuyu Sun, Morris Flynn

  Elvar K. Bjarkason; Anna Suzuki

- [1173] Local and global sensitivity analysis of THM consolidation around a point heat source.
  Aqeel Afzal Chaudhry

- [1308] A novel molecular communication paradigm for porous media applications.
  Matteo Icardi; John Couch
### Q&A 13 Time Block C - Chairs: Shuyu Sun, Morris Flynn

<table>
<thead>
<tr>
<th>Ref.</th>
<th>Title</th>
<th>Authors</th>
</tr>
</thead>
<tbody>
<tr>
<td>[1195]</td>
<td>Quality assessment and parameter estimation of post-laminar flow models.</td>
<td>Mohaddeseh Mousavi Nezhad; Alberto Guadagnini</td>
</tr>
<tr>
<td>[1284]</td>
<td>Quantifying uncertainty using Monte Carlo method in methane hydrate reservoir simulations.</td>
<td>Neelam Choudhary; Jyoti Phirani</td>
</tr>
<tr>
<td>[1229]</td>
<td>Application of Discrete Fracture Network Modeling using Sequential Gaussian Simulation.</td>
<td>Timur Merembayev; Yerlan Amanbek; Sanjay Srinivasan</td>
</tr>
<tr>
<td>[739]</td>
<td>Evaluating influence factors on phase equilibria calculation of CO2/H2O mixture using the CPA equation of state.</td>
<td>Yiteng Li; Tao Zhang; Shuyu Sun</td>
</tr>
<tr>
<td>[663]</td>
<td>Reduced-Physics Multilevel Monte Carlo Methods for Uncertainty Quantification in Complex Reservoirs.</td>
<td>Øystein Klemetsdal; Stein Krogstad; Knut-Andreas Lie</td>
</tr>
</tbody>
</table>
Question and answer: Parallel sessions 1

(MS 6-A) Physics of multi-phase flow in diverse porous media– Part 4

Q&A 14 Time Block A - Chairs: Ryan Armstrong, Majid Hassanizadeh

[801] Gas Slippage in Partially Saturated Tight Rocks
Steffen Nolte; Mohammadreza Shabani; Reinhard Fink; Bernhard M. Krooss; Alexandra Amann-Hildenbrand

Dongxing Du; Yinjie Shen; Di Zhao; Weifeng Lv; Ninghong Jia; Tong Li; Yingge Li

[1230] Study on multi-phase seepage of complex pore network in strongly heterogeneous carbonate reservoir based on various methods: A case study in Upper Cretaceous Khasib of the E Oilfield in the Middle East
Hao Lu; Hongming Tang; Yijun Wang

[1214] Mechanism study on water plugging and EOR by nitrogen foam injection in bottom-water reservoirs
Danqi Chen

[700] Experimental study on enhanced oil recovery of offshore heavy oil reservoirs by activated water flooding
Xin Chen

[589] Measurement and Research of Two-phase Micro-force of Foam Fluid and Heavy Oil
Zihan Gu

[449] Synergy of surfactant and nanoparticle on the strength of generated foam flowing through porous medium
Xuesong Li; Sebastien Vincent Bonnieu; Siavash Kahrobaei; Steffen Berg; Matthias Appel; Sian Jones

(MS 6-A) Physics of multi-phase flow in diverse porous media– Part 5

Q&A 15 Time Block A - Chairs: Ryan Armstrong, Holger Ott

[1250] Effect of the deformation and variability of biosourced reinforcement mats on their permeability
Tarek Abdul Ghafour; Chiara Balbinot; Nils Audry; Florian Martoia; Laurent Orgéas; Pierre J.J. Dumont

[358] Electrolyte Transport through the Porous Electrode in Vanadium Redox Flow Batteries
Nico Bevilacqua; László Eifert; Kerstin Köble; Rupak Banerjee; Tomas Farago; Marcus Zuber; Aimy Bazylak; Roswitha Zeis

[1299] Insights on transition from capillary toward viscous flow in porous media
Mahdi Mansouri-Boroujeni
### (MS 6-A) Physics of multi-phase flow in diverse porous media– Part 5 (cont.)

**Q&A 15 Time Block A - Chairs: Ryan Armstrong, Holger Ott**

- [271] Effect of Pore-Scale Wettability Distribution Patterns on Fluid Connectivity
  
  Omid Shahrokhi; Amir Jahanbakhsh; Krystian L. Wlodarczyk; Duncan P. Hand; M. Mercedes Maroto-Valer

- [572] Control of immiscible displacement patterns in disordered porous media
  
  Xinlei Qi; Zhengyuan Luo; Bofeng Bai

- [628] Pore Scale Mechanisms of Chemical Injection into Heterogeneous Micromodel
  
  Dongqing Cao; Ming Han; Jinxun Wang; Abdulkareem AlSofi

- [300] Experimental study of CO2/CH4 diffusion coefficient in oil-saturated cores under reservoir conditions
  
  Zerong Li; Yi Zhang

- [1281] Meter-scale core floods and 3D numerical modelling to study the interplay between immiscible viscous fingering and geological heterogeneity
  
  Samuel Jackson

### (MS 6-A) Physics of multi-phase flow in diverse porous media– Part 6

**Q&A 16 Time Block B - Chairs: Yaniv Edery, Majid Hassanizadeh**

- [1341] Asymptotic analysis of immiscible two-phase flow with moving contact line in a thin strip
  
  Carina Bringedal; Stephan Lunowa; Iuliu Sorin Pop

- [122] Pore-scale imaging of multiphase flow in porous media: wettability, minimal surfaces, displacement efficiency
  
  Qingyang Lin

- [214] Effect of Wetting Transition during Multiphase Displacement in Porous Media
  
  Zhongzheng Wang; Jean-Michel Pereira; Yixiang Gan

- [1159] Real-time imaging reveals distinct pore scale dynamics during transient and equilibrium subsurface multiphase flow
  
  Catherine Spurin

- [1217] Characterization and 3D numerical modelling of multiphase flow in Carbonate rocks
  
  Nele Wenck

- [1242] The Impact of Entrapped Air on Satiated Hydraulic Conductivity of Coarse Sands Interpreted by X-ray Microtomography
  
  Tomas Princ; Helena M.R. Fideles; Johannes Koestel; Michal Snehota

- [520] Pore-scale study of spontaneous imbibition in digital rock by using a color-gradient lattice Boltzmann model
  
  Yang Liu
(MS 6-A) Physics of multi-phase flow in diverse porous media– Part 6 (cont.)

Q&A 16 Time Block B - Chairs: Yaniv Edery, Majid Hassanizadeh

[876] Gravity-driven fluid slug splitting at T-junctions: visual experiments and a novel model
Zhijing Yang; Song Xue; Yi-Feng Chen

(MS 6-A) Physics of multi-phase flow in diverse porous media– Part 7

Q&A 17 Time Block B - Chairs: Yaniv Edery, Saman Aryana

[565] Compositional pore network model for gas condensate flow
Paula Reis; Marcio Carvalho

[1179] Upscaled equations for two-phase flow in highly heterogeneous porous media
Tufan Ghosh

[965] Relative magnitude of capillary over bulk viscosity resistances for NWP blobs flowing within periodic capillary tubes
Marios Valavanides; Santanu Sinha; Alex Hansen

[355] Pore-scale wettability characterization in mixed-wet sandstones using dynamic laboratory micro X-ray tomography
Arjen Mascini; Marijn Boone; Veerle Cnudde; Tom Bultreys

[1288] The effect of solution gas liberation on oil flow in the porous medium
Wael Al-Masri; Alexander Shapiro

[1051] Study on formation water mobility and its determination method in tight sandstone gas reservoirs
Dongsheng Li

[1341] Asymptotic analysis of immiscible two-phase flow with moving contact line in a thin strip.
Carina Bringedal; Stephan Lunowa; Iuliu Sorin Pop

(MS 9) Pore-scale modelling – Part 1

Q&A 18 Time Block C - Chairs: Martin Blunt, James McClure

[1258] Improving physics of residual trapping of CO2 in pore-network flow models using direct numerical simulation.
Amir Kohanpur; Albert Valocchi

[1254] Pore-network modeling of mineral dissolution and reactive transport in porous media.
Barbara Esteves; Paulo L.C. Lage; Paulo Couto; Anthony Kowscek
Q&A 18 Time Block C - Chairs: Martin Blunt, James McClure

  *mingyue lu; Ning Qi*

[1141] Optimizing carbon dioxide storage in oilfields at the pore-scale.
  *Abdulla Alhosani*

[274] Validating pore-scale modeling of fluid flow and mass transport in multi-scale porous media with microporosity
  *Bin Wang; Karsten Thompson; Richard Hughes; Lin Mu*

[1234] Scale-effect in the simulation of two-phase flow in porous media
  *Brandon Yokeley*

[765] Lattice Boltzmann Modeling of the Apparent Viscosity of Thinning-Elastic Fluids in Porous Media
  *Chiyu Xie; Matthew Balhoff*

[413] An analysis model for hydraulic fracturing liquid imbibition into shale matrix: coupling molecular interactions and dynamic contact angle
  *Han Wang; Yuliang Su; Wendong Wang*

[1296] Unfitted boundary method to improve mesh convergence of high-resolution CT-scan permeability
  *Martin Lesueur*

[1329] Pore-scale CFD based estimation of permeability decline in porous media due to fines migration
  *Pramod Bhuvankar; Abdullah Cihan; Jens Birkholzer*

Q&A 19 Time Block C - Chairs: Martin Blunt, James McClure

[1251] A new upscaling method for fluid flow simulation in highly heterogeneous unconventional reservoirs
  *Qi Zhang; Huibin Yu; Xiaofeng Li; Tiesheng Liu; Junfeng Hu*

[186] Analysis of capillary imbibition for fluid through confined Nano pores
  *Fanhui Zeng; Qiang Zhang; Jianchun Guo; Yu Zhang*

  *Rafael Cruz*

[975] Expanding the role of pore-scale models to capture the multi-scale evolution of porous media
  *Sergi Molins; Hang Deng; David Trebotich; Carl Steefel*

[1239] Fully-implicit dynamic pore-network modeling of two-phase flow in porous media
  *Sidian Chen*
<table>
<thead>
<tr>
<th>Q&amp;A 19 Time Block C - Chairs: Martin Blunt, James McClure</th>
</tr>
</thead>
</table>
| [1312] A new generation of lattice Boltzmann code for pore-scale simulation of scCO2-brine displacement in complex geometries  
  Yu Chen; Qinjun Kang; Albert Valocchi; Hari Viswanathan |
| [1201] Numerical Analysis of a Model of Biofilm Growth at the Pore-Scale  
  Azhar Alhammali; Malgorzata Peszynska |
| [1163] Modeling the droplet occurrence, growth and detachment at the interface between the porous layers in a PEM fuel cell coupling a pore-network model with Stokes flow  
  Cynthia Michalkowski |
### (MS 2) Porous Media for a Green World: Water & Agriculture

#### Q&A 14  
**Time Block A - Chairs: Joaquín Jiménez-Martínez, Jan Vanderborgh, Jun Yin**

| [960]  | Structured Mini-Dunes (SMDs) as Self-Irrigation Units: A Lesson from the Sand Dunes of Arid Regions.  
| Afrah Al-Shukaili; Ali Al-Maktoumi; Anvar Kacimov |
| Ahmed Al-Mayahi |
| Amirhossein Hassani; Adisa Azapagic; Nima Shokri |
| [83]  | Tracing back the source of contamination.  
| J. Jaime Gómez-Hernández; Zi Chen; Andrea Zanini |
| Monica Granetto; Lucia Re; Carlo Bianco; Aurora Audino; Luca Serpella; Francesco Vidotto; Silvia Fogliatto; Tiziana Tosco |
| [964]  | Nanoporous carbon scaffolds for membrane filtration and capacitive deionization applications.  
| Arlene (Chengying) Ai |
| [136]  | Hydraulic behaviour of sand-biochar mixtures: Particle size effects on permeability.  
| Ziheng Wang; Majid Sedighi; Amanda Lea-Langton |
| [208]  | The effect of salinity on fecal bacteria transport through porous media.  
| Dong Zhang; Valentina Prigiobbe |
| Jingwen Wang |

### (MS 15) Machine Learning and Big Data in Porous Media – Part 1

#### Q&A 15  
**Time Block A - Chairs: Denis Voskov, Kai Zhang**

| [236]  | Evaluation of machine learning methods for predicting the oil-water relative permeability: a comparison of tuning processes and model performances  
| Baosheng Jiang; Zhixue Sun |
| [668]  | Data-driven models based on flow diagnostic and machine learning techniques  
| Manuel Borregales; Stein Krogstad; Knut-Andreas Lie |
| [1098] | Predicting Performance of Offshore Oilfield in High Water Cut Period Based on Big Data and Artificial Intelligence  
| Cunliang Chen |
Question and answer: Parallel sessions 2 (cont.)

(MS 15) Machine Learning and Big Data in Porous Media – Part 1 (cont.)

Q&A 15  Time Block A - Chairs: Denis Voskov, Kai Zhang

[1168] Optimization of fracturing parameters in shale gas reservoir by a modified variable-length particle swarm optimization algorithm
   Zhihao Li

[298] Flux Regression Neural Networks for Backbone Identification in Discrete Fracture Networks
   Stefano Berrone; Francesco Della Santa; Antonio Mastropietro; Sandra Pieraccini; Francesco Vaccarino

[764] Analysis of Neural Networks Performances for Flux Regression in Discrete Fracture Networks
   Stefano Berrone; Francesco Della Santa; Sandra Pieraccini; Francesco Vaccarino

[514] Predicting the effective thermal conductivities of sands using machine learning and a thermal conductance network model
   Wenbin Fei; Guillermo Narsilio

(MS 5) Biochemical processes and biofilms in porous media

Q&A 16  Time Block B - Chairs: Anozie Ebigbo, Ssecchi Eleonora

[621] Experimental Methods and Imaging for Enzymatically Induced Calcite Precipitation in micro-fluidic devices.
   Felix Weinhardt

[967] Pore-scale simulations of hydraulic properties during biomass accumulation.
   Holger Ott

[620] A Numerical Model for Enzymatically Induced Calcite Precipitation.
   Johannes Hommel; Arda Akyel; Adrienne Phillips; Robin Gerlach; Al Cunningham; Holger Class

[562] Numerical simulations of biofilms in core samples: MEOR and MICP.
   David Landa Marbán

[989] Field trials on Microbially Induced Desaturation and Precipitation for liquefaction mitigation.
   Leon van Paassen

[1152] Life in a tight spot: Bacterial motility in porous media.
   Tapomoy Bhattacharjee; Daniel Amchin; Jenna Ott; Felix Kratz; Sujit Datta

   Beibei Gao; Ehsan Taghizadeh; Brian Wood; Roseanne Ford

[1298] How does microbial calcite precipitation alter soil water retention characteristics?
   Ehsan Nikooee; Rahim Saffari; Ghassem Habibagahi; Martinus van Genuchten

[1248] Modelling biofilm formation in porous media flow.
   Christoph Lohrmann
Question and answer: Parallel sessions 2 (cont.)

(MS 15) Machine Learning and Big Data in Porous Media – Part 2

**Q&A 17  Time Block B - Chairs: Bailian Chen, Jianchun Xu**

[730] A Physics-based Data-driven Model for Waterflooding Profile Control and Water Plugging Performance

Hui Zhao


Xiaopeng Ma; Kai Zhang

[682] Equivalent Permeability Prediction of Karst Core Samples Using Deep Learning

Monique Dali; Sergio Ribeiro; Frederico Gomes; Marcio Carvalho

[868] Properties Quantification of Heterogeneous Media with 3D Vision informed Machine Learning

Omar Al-Farisi


Qiaonan Li

[611] Research on Prediction of Remaining Oil Distribution Based on SVM and LSTM

Gujian Wei; Yanlong Ren

(MS 6-B) Interfacial phenomena in multiphase systems – Part 1

**Q&A 18  Time Block C - Chairs: Yashar Mehmani**


Grigori Chapiro; Luis Fernando Lozano; Rosmery Zavala; Pacelli Zitha

[1044] Uncertainty quantification in a model for foam flooding in porous media.

Rodrigo Weber dos Santos

[684] Applications of the electromagnetic heating in EOR.

Samuel Almeida


Yu Qiu; Ke Xu

[690] Polymer Screening Using Microfluidics.

Mohammad Zargartalebi

[777] Effects of Salinity and N-, S-, and O-Bearing Polar Components on Light Oil-Brine Interfacial Properties from Molecular Perspectives.

Wenhui Li; Zhehui Jin


Fabian Torres Mendez; Martijn Janssen
**WEDNESDAY, 2 SEPTEMBER 2020**

Question and answer: Parallel sessions 2 (cont.)

(MS 6-B) Interfacial phenomena in multiphase systems – Part 1 (cont.)

<table>
<thead>
<tr>
<th>Q&amp;A 18 Time Block C - Chairs: Yashar Mehmani</th>
</tr>
</thead>
<tbody>
<tr>
<td>[567] Probing Chemical Interactions of Asphaltenes with Silica and Calcium Carbonate Surfaces.</td>
</tr>
<tr>
<td>Saleh Hassan</td>
</tr>
</tbody>
</table>

(MS 15) Machine Learning and Big Data in Porous Media – Part 3

<table>
<thead>
<tr>
<th>Q&amp;A 19 Time Block C - Chairs: Bailian Chen, Bo Guo</th>
</tr>
</thead>
<tbody>
<tr>
<td>[1189] A novel approach to identify hydraulic conductivity fields that best approximate geological uncertainties via unsupervised learning techniques and Wellhead Protection Area Analysis</td>
</tr>
<tr>
<td>Abelardo Rodríguez-Pretelín</td>
</tr>
<tr>
<td>[1314] Estimating Oil Recovery Factor from Reservoir Characteristics using the XGBoost Algorithm</td>
</tr>
<tr>
<td>Alireza Roustazadeh</td>
</tr>
<tr>
<td>[73] Estimation of Subsurface Hydraulic Conductivities using Geophysical Signatures</td>
</tr>
<tr>
<td>Debasmita Misra; Peter Calvin</td>
</tr>
<tr>
<td>[697] Physics-informed machine learning of permeability prediction and upscaling of reactive transport in porous media</td>
</tr>
<tr>
<td>Hongkyu Yoon</td>
</tr>
<tr>
<td>[1003] Automation of flow simulation in porous media</td>
</tr>
<tr>
<td>Masa Prodanovic; Javier Santos; Honggeun Jo; Michael Pyrcz</td>
</tr>
<tr>
<td>[1272] Bayesian inference of poroelastic properties from induced seismicity data using an energy-based poromechanics model</td>
</tr>
<tr>
<td>Mina Karimi</td>
</tr>
<tr>
<td>[1221] A Hybrid-driven method to improve dynamical reservoir characterization</td>
</tr>
<tr>
<td>Vanessa Simoes</td>
</tr>
</tbody>
</table>
### (MS 12) Advances in modeling and simulation of poromechanics – Part 1

**Q&A 14 Time Block A - Chairs: Alessio Fumagalli, Jianchao Cai**

<table>
<thead>
<tr>
<th>Paper Number</th>
<th>Title</th>
<th>Authors</th>
</tr>
</thead>
<tbody>
<tr>
<td>[508]</td>
<td>Multi-scale Extended Finite Element Method For Fractured Geological Formations.</td>
<td>Fanxiang Xu; Hadi Hajibeygi; Bert Sluys</td>
</tr>
<tr>
<td>[282]</td>
<td>Influence of reservoir heterogeneity on fracture propagation of true triaxial hydraulic fracturing.</td>
<td>Jin Wang</td>
</tr>
<tr>
<td>[237]</td>
<td>The influence of porosity and gas hydrate on tortuosity in porous media based on CT scanning - lattice Boltzmann method.</td>
<td>Lei Liu; Zhixue Sun</td>
</tr>
<tr>
<td>[284]</td>
<td>Stress Field Change of Multi well and Multi period Fracturing and its Influence on Reservoir Development.</td>
<td>Rongtao Jiang</td>
</tr>
<tr>
<td>[1209]</td>
<td>A generalized finite volume method for density driven flows in porous media.</td>
<td>Yueyuan Gao</td>
</tr>
<tr>
<td>[550]</td>
<td>The change of reservoir physical properties with formation pressure decreasing and its influence on remaining oil.</td>
<td>Jintao Wu; Yong Hu; Guangming Pan; Jianting Huang; Hao Li</td>
</tr>
</tbody>
</table>

### (MS 10) Advances in imaging porous media: techniques, software and case studies – Part 1

**Q&A 15 Time Block A - Chairs: Liwei Zhang, Nima Shokri**

<table>
<thead>
<tr>
<th>Paper Number</th>
<th>Title</th>
<th>Authors</th>
</tr>
</thead>
<tbody>
<tr>
<td>[732]</td>
<td>Research on Multiscale Microscopic Pore Structure of shale.</td>
<td>Lei Liu</td>
</tr>
<tr>
<td>[555]</td>
<td>SEM, Raman and Micro-CT characterization of CO2–Induced Wellbore Cement degradation.</td>
<td>Yan Wang; Liwei Zhang; Xiuxiu Miao; Manguang Gan</td>
</tr>
<tr>
<td>[391]</td>
<td>The influence of confining pressure and flow process on the corrosion of wellbore cement under geological storage environment.</td>
<td>Manguang Gan</td>
</tr>
<tr>
<td>[551]</td>
<td>Distribution and Quantitively Evaluation of Micro Residual Oil after Polymer Flooding based on CT Scanning.</td>
<td>Liu Tao</td>
</tr>
</tbody>
</table>
**WEDNESDAY, 2 SEPTEMBER 2020**

Question and answer: Parallel sessions 3 (cont.)

**(MS 10) Advances in imaging porous media: techniques, software and case studies – Part 2**

<table>
<thead>
<tr>
<th>Q&amp;A 16  Time Block B - Chairs: Liwei Zhang, Nikolaos K. Karadimitrio</th>
</tr>
</thead>
</table>
| [759] Multi-scale 3D/4D imaging of the pore network in shales and its evolution under subsurface conditions.  
Lin Ma; Kevin Taylor; Patrick Dowey; Michael Chandler; Peter Lee |
| [1293] Dynamic in situ computed tomography study of strain evolution in Draupne shales under triaxial loading.  
Aldritt Scaria Madathiparambil |
| [435] Pore-scale imaging with measurement of relative permeability and capillary pressure on the same reservoir sandstone under water-wet and mixed-wet conditions.  
Ying Gao; Ali Q. Raeini; Ahmed Selem; Igor Bondino; Martin J. Blunt; Branko Bijeljic |
| [1089] Porous system characterization of a heterogeneous carbonate rock bed using x-ray microtomography.  
Fernanda Hoerlle; William Godoy; Elizabeth May Ponteideiro; Paulo Couto |
| [1225] Contrast enhanced X-ray micro-tomography of tomato fruit tissues for microscale gas transport simulation.  
Hui Xiao; Pieter Verboven; Agnese Piovesan; Bayu Nugraha; Bart Nicolai |
| [112] An experimental study of the interplay between viscous, capillary and gravitational forces in two-phase flow in a three-dimensional porous medium.  
Joachim Falck Brodin |
| [1022] 2D to 3D Transform: Material Properties from 2D Images.  
Juan Pablo Daza; Amos Nur; Tapan Mukerji |
Yixin Zhang; Rouzbeh Ghanbarnezhad Moghanloo; Davud Davudov |

**(MS 23) Special Session for Professor Rainer Helmig – Part 2**

<table>
<thead>
<tr>
<th>Q&amp;A 17  Time Block B - Chairs: Bernd Flemisch, Martin Schneider</th>
</tr>
</thead>
</table>
| [1300] Component transport at the soil – atmosphere interface.  
Lisa Bahlmann; Insa Neuwiler |
Peter Knabner |
| [1174] Precipitation and dissolution in complex media: modelling, upscaling and simulation.  
Manuela Bastidas; Carina Bringedal; Iuliu Sorin Pop; Florin Adrian Radu; Lars von Wolff |
| [1181] Robust and efficient solvers for flow in deformable porous media.  
Florin Adrian Radu |
(MS 23) Special Session for Professor Rainer Helmig – Part 2 (cont.)

Q&A 17 Time Block B - Chairs: Bernd Flemisch, Martin Schneider

[719] 3D modelling of subsurface methane leakage through unconsolidated sedimentary aquifers; implications for environmental monitoring. 
Gilian Schout; S. Majid Hassanizadeh; Jasper Griffioen; Niels Hartog; Rainer Helmig

(MS 12) Advances in modeling and simulation of poromechanics – Part 2

Q&A 18 Time Block C - Chairs: Alessio Fumagalli, Florian Doster

[54] Dynamic hydraulic fracturing in naturally fractured reservoirs. 
Mohammad Vahab; Mohammadreza Hirmand; Nasser Khalili

Ning Zhang; Cijia Wang; Thomas Nagel

[1232] A deformation-dependent permeability model for polycrystalline rocks. 
Florian Zill

Paiman Shafabakhsh; Marwan Fahs; Renaud Toussaint

Didi Wu

Jintao Wu; Lei Zhang; Jianting Huang; Hao Li; Guangming Pan

(MS 10) Advances in imaging porous media: techniques, software and case studies – Part 3

Q&A 19 Time Block C - Chairs: Nikolaos K. Karadimitrio, Morris Flynn

Ahmed Hassan

[1205] Time-lapse imaging of fines migration within subsurface reservoirs. 
Chenzi Shi

[1218] A quantitative method to compare Invasion Percolation models to high-resolution gas-injection experiments in sand. 
Ishani Banerjee

[1197] Impact of image resolution on quantification of mineral properties and simulated mineral reactions and reaction rates. 
Fangq Qin; Lauren Beckingham
**WEDNESDAY, 2 SEPTEMBER 2020**

Question and answer: Parallel sessions 3 (cont.)

(_MS 10) Advances in imaging porous media: techniques, software and case studies – Part 3 (cont.)

<table>
<thead>
<tr>
<th>Q&amp;A 19 Time Block C - Chairs: Nikolaos K. Karadimitrio, Morris Flynn</th>
</tr>
</thead>
</table>
| [1256] Study on the effect of pore structure in thermal conductivity and permeability of volcanic rocks.  
Sandra Vega |
| [212] Three-dimensional characterization of pore space architecture in granular materials.  
Nimisha Roy |
| [686] 3D Visualization of Oil Displacement by a Suspension of Microcapsules.  
Raphael Chalhub Oliveira Spinelli Ribeiro |
### Question and answer: Parallel sessions 1

**Q&A 20 Time Block A - Chairs: Martin Blunt, Stephane Zaleski**

<table>
<thead>
<tr>
<th>[701]</th>
<th>Ion-Tuned Water - An Image-Based Pore-scale Study of Oil Recovery Improvement</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Artur Shapoval</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>[85]</th>
<th>Lattice Boltzmann simulation of amphiphilic fluids flow through porous media</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Bei Wei</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>[458]</th>
<th>Lattice Boltzmann Simulations for micro-macro interactions during isothermal drying of porous media</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Debashis Panda; Supriya B; Vikranth Kumar Surasani</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>[1039]</th>
<th>An improved empirical model considering viscous coupling effect for hydraulic conductance of three-phase flow in pore network modeling</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Fei Jiang</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>[1191]</th>
<th>Opalinus Clay experimental dataset with High Pressure Sorption, review and application to Pore Network Modelling</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Georgy Borisochev; Andreas Busch; Jingsheng Ma; Lin Ma</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>[986]</th>
<th>Minkowski measure fields as basis for rock-typing and upscaling</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Han Jiang; Christoph Arns</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>[618]</th>
<th>Discrete Multiple Media Geological Modelling Method</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Jiaxin Dong; Qiquan Ran; Wen Shi</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>[727]</th>
<th>The construction of multi-scale multi-component pore network model with application in shale characterization</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Ke Wang</td>
</tr>
</tbody>
</table>

### Question and answer: Parallel sessions 2

**Q&A 21 Time Block A - Chairs: Martin Blunt, Stephane Zaleski**

<table>
<thead>
<tr>
<th>[1176]</th>
<th>Effects of pore-size disorder on forced imbibition in porous media</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Lianwei Xiao</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>[1139]</th>
<th>Using topology and energy balance to determine wettability in two and three-phase flow</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Martin Blunt; Takashi Akai; Alessio Scanziani; Qingyang Lin; Abdulla Alhosani; Branko Bijeljic</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>[228]</th>
<th>Pore Scale Study of Solid/Liquid Phase Change in a 3D Cubic Lattice Metal Frame</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Moghtada Mobedi; Chunyang Wang</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>[1080]</th>
<th>Complex interplay between wettability and pore geometry controlling dynamics of two phase flow in heterogeneous porous media</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Sahar Bakhshian; Rabbani Harris; Seyed Hosseini; Nima Shokri</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>[215]</th>
<th>A multi-scale diffuse interface/front tracking model for multi-component two-phase flow</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Guangpu Zhu; Kou Jisheng; Yao Jun; Qianhong Yang</td>
</tr>
</tbody>
</table>
Question and answer: Parallel sessions 1 (cont.)

(MS 9) Pore-scale modelling – Part 4 (cont.)

<table>
<thead>
<tr>
<th>Q&amp;A 21</th>
<th>Time Block A - Chairs: Martin Blunt, Stephane Zaleski</th>
</tr>
</thead>
<tbody>
<tr>
<td>[183]</td>
<td></td>
</tr>
<tr>
<td>Thermal coupled reactive transport in porous media based on SPH method</td>
<td></td>
</tr>
<tr>
<td>Qianhong Yang</td>
<td></td>
</tr>
<tr>
<td>[1017]</td>
<td></td>
</tr>
<tr>
<td>Effective parameter identification via NMR experiment and simulation using multi-task Bayesian optimization</td>
<td></td>
</tr>
<tr>
<td>Rupeng Li; Igor Shikhov; Christoph Arns</td>
<td></td>
</tr>
<tr>
<td>[645]</td>
<td></td>
</tr>
<tr>
<td>Curvature Correction to Model Capillary Driven Flows at the Pore-Scale Using Volume-of-Fluid</td>
<td></td>
</tr>
<tr>
<td>Saideep Pavuluri; Julien Maes; Florian Doster</td>
<td></td>
</tr>
</tbody>
</table>

(MS 9) Pore-scale modelling – Part 5

<table>
<thead>
<tr>
<th>Q&amp;A 22</th>
<th>Time Block A - Chairs: Martin Blunt, Stephane Zaleski</th>
</tr>
</thead>
<tbody>
<tr>
<td>[394]</td>
<td></td>
</tr>
<tr>
<td>Numerical Modeling of Wettability Alteration in Porous Media Induced by Low Salinity Water</td>
<td></td>
</tr>
<tr>
<td>Takashi Akai; Martin Blunt; Branko Bijeljic</td>
<td></td>
</tr>
<tr>
<td>[851]</td>
<td></td>
</tr>
<tr>
<td>Pore scale disorder on tensile fracturing of porous medium using Lattice method simulation</td>
<td></td>
</tr>
<tr>
<td>WenXiang Tian</td>
<td></td>
</tr>
<tr>
<td>[1076]</td>
<td></td>
</tr>
<tr>
<td>Micro-CT image resolution limitation effects on NMR simulation response</td>
<td></td>
</tr>
<tr>
<td>Yingzhi Cui; Igor Shikhov; Christoph Arns</td>
<td></td>
</tr>
<tr>
<td>[407]</td>
<td></td>
</tr>
<tr>
<td>Mesoscopic modelling of fluid-solid interaction and its effect on permeability estimation</td>
<td></td>
</tr>
<tr>
<td>Zi Li; Sergio Galindo-Torres; Ling Li</td>
<td></td>
</tr>
<tr>
<td>[155]</td>
<td></td>
</tr>
<tr>
<td>Pore scale study of multiphase and multicomponent transport in methane hydrate bearing sediment</td>
<td></td>
</tr>
<tr>
<td>Junyu Yang</td>
<td></td>
</tr>
<tr>
<td>[468]</td>
<td></td>
</tr>
<tr>
<td>Probabilistic Modeling of Halite Nucleation and Growth in Porous Media: Pore Scale Modeling</td>
<td></td>
</tr>
<tr>
<td>Mohammad Masoudi; Hossein Fazeli; Rohaldin Miri; Helge Hellevang</td>
<td></td>
</tr>
<tr>
<td>[670]</td>
<td></td>
</tr>
<tr>
<td>Investigation of salt-precipitation processes in porous-media systems at the pore scale</td>
<td></td>
</tr>
<tr>
<td>Theresa Kurz</td>
<td></td>
</tr>
<tr>
<td>[441]</td>
<td></td>
</tr>
<tr>
<td>Pore-scale study of complex transport phenomena in porous media.</td>
<td></td>
</tr>
<tr>
<td>Li Chen</td>
<td></td>
</tr>
</tbody>
</table>
Question and answer: Parallel sessions 1 (cont.)

(MS 9) Pore-scale modelling – Part 6

Q&A 23  Time Block B - Chairs: Martin Blunt, James McClure

[1259] Pore network modeling from micro-CT X-Ray data, methodology using open source software and digital rock printing
Aarón Sánchez

[466] Quasi-3D pore-scale simulation of wettability heterogeneity in porous media
Amir Jahanbakhsh

[873] Capillary Pressure of Non-Wetting Ganglia in Porous Media: a Sub-Darcy Model
Chuanxi Wang; Ke Xu

[810] The optimal wettability for oil recovery by waterflooding: dependence on structural factors
Fanli Liu; Moran Wang

[1317] Effect of grain-size distribution on the temporal evolution of interfacial area during multi-phase flow through porous media
Fizza Zahid

Juan Pablo Daza; Tapan Mukerji; Amos Nur

[1244] Pore-scale flow with the memory-efficient Lattice Boltzmann formulation
Maciej Matyka; Michał Dzikowski

[140] Study of the effect of pore-scale mineral wettability alterations on the relative permeability curves
Ming Fan; James McClure; Ryan Armstrong; Mehdi Shabaninejad; Li Zhe; Laura Dalton; Dustin Crandall; Cheng Chen

(MS 9) Pore-scale modelling – Part 7

Q&A 24  Time Block B - Chairs: Martin Blunt, James McClure

[931] An interface-tracked dynamic network simulator for two-phase flow in porous media: recent developments and results
Santanu Sinha; Magnus Aa. Gjennestad; Morten Vassvik; Alex Hansen

[1289] Capillary bundle-Meter model for non-Newtonian fluid flow in porous media
Takshak Shende

[65] Capillary instabilities during two-phase flow process in a porous medium
Tao Zhang; Rui Wu

[1028] Contact line motion: comparing molecular dynamics, the phase field model and the sharp interface model
Ugis Lacis; Petter Johansson; Thomas Fullana; Stéphane Zaleski; Berk Hess; Gustav Amberg; Shervin Bagheri
### Q&A 24 Time Block B - Chairs: Martin Blunt, James McClure

- **[419]** Lattice Boltzmann-pore network hybrid modelling of gas transport in nanoporous media
  - *Wenhui Song; Maša Prodanović; Christopher J. Landry; Jun Yao*

- **[1326]** Pore network modeling of fuel cell catalyst layer performance
  - *Amin Sadeghi*

- **[304]** Experimental and numerical evidence of a tunable Janssen effect
  - *Louison Thorens; Knut Jorgen Maloy; Mickaël Bourgoin; Stéphane Santucci*

- **[1041]** Gas separation in bent microchannel at low Reynolds number
  - *Minh Tuan Ho; Jun Li; Wei Su; Lei Wu; Matthew Borg; Zhihui Li; Yonghao Zhang*

---

### Q&A 25 Time Block B - Chairs: Martin Blunt, James McClure

- **[913]** Permeability prediction of fibrous porous media by the lattice Boltzmann method with a fluid-solid boundary reconstruction scheme
  - *Suguru Ando*

- **[979]** Failure mechanism of kerogen by molecular dynamics simulations in relation to hydraulic fracturing in organic-rich shale
  - *Tianhao Wu*

- **[843]** Pore Structure Characterization and Numerical Simulation of Electrical Conductivity for Tight Sandstone by Digital Rock Physics
  - *Xuefeng Liu; Hao Ni; Jingxu Yan; Xiaowei Zhang*

- **[147]** A unified multiple transport mechanism model for gas through shale pores
  - *Fanhui Zeng*

- **[124]** Pore-scale Simulation of Gas Flow in Microscopic Porous Media with Complex Geometries
  - *Yuhang Wang; Saman Aryana*

- **[1183]** Reconstruction of Porous Media Based On Variational Autoencoders Method Using 2D Slice
  - *Yurun Li*
### Q&A 20  Time Block A - Chairs: Ke Xu, Holger Ott

<table>
<thead>
<tr>
<th>Session</th>
<th>Title</th>
<th>Authors</th>
</tr>
</thead>
<tbody>
<tr>
<td>856</td>
<td>Effect of Salinity on Water-Alternating-Gas (WAG) Injection in Microporous Media.</td>
<td>Vishnu Bhadran; Yit-Fatt Yap; Afshin Goharzadeh</td>
</tr>
<tr>
<td>31</td>
<td>Critical Gas Saturation and Relative Permeability for Pressure Depletion and Gas Injection Processes.</td>
<td>Steffen Berg; Ying Gao; Apostolos Georgiadis; Niels Brussee; Ab Coorn; Hilbert van der Linde; Jesse Dietderich; Faruk Omer Alpak; Daniel Eriksen; Miranda Mooijer-van den Heuvel; Jeff Southwick; Matthias Appel; Ove Bjorn Wilson</td>
</tr>
<tr>
<td>539</td>
<td>Study on Film effects during isothermal diffusion dominated evaporative drying of square capillary tube using Lattice Boltzmann model.</td>
<td>Supriya B; Debashis Panda; Nicole Vorhauer; Vikranth Kumar Surasani</td>
</tr>
<tr>
<td>337</td>
<td>Microscopic flow mechanism of shale oil based on digital cores with multi-mineral phases.</td>
<td>Lian Duan; Hai Sun; Jun Yao; Lei Zhang; Yongfei Yang</td>
</tr>
<tr>
<td>643</td>
<td>Direct imaging of bubble ripening in two-dimensional porous media micromodels.</td>
<td>Nerine Joewondo; Valeria Garbin; Ronny Pini</td>
</tr>
<tr>
<td>101</td>
<td>Influence Mechanism of Potential Determining Ions on Oil-in-water Emulsion Stability in Smart Water-flooding.</td>
<td>Rukuan Chai; Yuetian Liu; Liang Xue</td>
</tr>
<tr>
<td>535</td>
<td>Visual Study on Phase Interface Change of CH4 Hydrate Replaced by CO2 Combined with Depressurization.</td>
<td>Shuyang Liu; Baojiang Sun</td>
</tr>
</tbody>
</table>

### Q&A 21  Time Block A - Chairs: Dominik Obrist, Rainer Helmig

<table>
<thead>
<tr>
<th>Session</th>
<th>Title</th>
<th>Authors</th>
</tr>
</thead>
<tbody>
<tr>
<td>1278</td>
<td>A scale-independent framework for whole brain simulation of blood flow in the human brain.</td>
<td>Erlend Hodneland; Jan Martin Nordbotten</td>
</tr>
<tr>
<td>372</td>
<td>Simulating vertebroplasty: A look into the biomechanics and modelling challenges.</td>
<td>Zubin Trivedi; Christian Bleiler; Arndt Wagner; Oliver Röhrle</td>
</tr>
<tr>
<td>305</td>
<td>Diffusion and convection in brain extracellular spaces embedded with perivascular networks.</td>
<td>Vegard Vinje; Miroslav Kuchta; Marie E. Rognes; Timo Koch; Kent-Andre Mardal</td>
</tr>
</tbody>
</table>
**THURSDAY, 3 SEPTEMBER 2020**

**Question and answer: Parallel sessions 2 (cont.)**

**(MS 20) Biophysics of living porous media: theory, experiment, modeling and characterization (cont.)**

**Q&A 21 Time Block A - Chairs: Dominik Obrist, Rainer Helmig**

  Kun Xie; Kaoping Song; Xiangguo Lu; Bao Cao; Jian Hou; Wei Lin; Jinxiang Liu; Weijia Cao; Cheng Su

  Qiyao Peng; Fred Vermolen

- [1047] Modeling perfusion in cardiac tissue.  
  Rodrigo Weber dos Santos

**(MS 21) Effective elastic, thermal, electrical and optical properties of porous materials, cellular materials, foams and metamaterials**

**Q&A 23 Time Block B - Chairs: Majid Hassanizadeh, Oleg Iliev**

- [251] How to take into account of clay content in computing elastic moduli of arenites from micro-tomographic images.  
  Jiabin Liang; Stanislav Glubokovskikh; Boris Gurevich; Maxim Lebedev; Stephanie Vialle; Alexey Yurikov

- [536] Elastic equivalent numerical modeling of porous media digital core.  
  Shi-kai Jian

- [70] Analysis of Low Resistivity of Gravel Sandstone Reservoir in Beibuwan Basin Based on Petrophysical Experiments.  
  Weichao Yan; Jianmeng Sun; Likai Cui

**(MS 16) Fluid Interactions with Thin Porous Media**

**Q&A 23 Time Block B - Chairs: Majid Hassanizadeh, Oleg Iliev**

  Dieter Froning; Uwe Reimer; Werner Lehnert

- [349] Dynamics of capillary rise and finger formation in angular pores.  
  Thijs de Goede; Rozeline Wijnhorst; Daniel Bonn; Noushine Shahidzadeh

- [169] Characterization of capillary flow within hybrid woven screens in vertical and horizontal directions.  
  Ye Wang
## Q&A 24  Time Block B - Chairs: Grigori Chapiro, Hai Sun

<table>
<thead>
<tr>
<th>ID</th>
<th>Title</th>
<th>Authors</th>
</tr>
</thead>
<tbody>
<tr>
<td>[367]</td>
<td>Experimental investigation of contact angle change and oil globule movement in a capillary.</td>
<td>Lifei Yan</td>
</tr>
<tr>
<td>[571]</td>
<td>Interfacial Viscoelasticity in Crude Oil-water Systems.</td>
<td>Ahmed M. Saad</td>
</tr>
<tr>
<td>[163]</td>
<td>Effect of proppant wettability on fines transport and retention in propped fractures during gas–water two-phase flow in coalbed methane reservoirs.</td>
<td>Fansheng Huang; Changyin Dong; Xiaosen Shang</td>
</tr>
<tr>
<td>[261]</td>
<td>An investigation of the Effect of Gravity on Foam in Model Fractures.</td>
<td>Kai Li</td>
</tr>
<tr>
<td>[414]</td>
<td>Multiphase flow in deformable media.</td>
<td>Dawang Zhang; Bjornar Sandnes</td>
</tr>
<tr>
<td>[317]</td>
<td>Novel Method for Improving Injectivity of Polymer solution in Porous Media.</td>
<td>Mohsen Mirzaie Yegane</td>
</tr>
</tbody>
</table>
### (MS 10) Advances in imaging porous media: techniques, software and case studies – Part 3

**Q&A 20 Time Block A - Chairs: Adrian Sheppard, Nima Shokri**

| [1020] X-ray CT core flooding study to understand the impact of clay interlayers on supercritical CO2 migration in sandstones. |
| Liang Xu; Matthew Myers; Cameron White; Qi Li |
| [553] Microstructure characterization and permeability modeling of creeping porous media under various pressures. |
| Yuxuan Xia |
| Agnese Piovesan; Tim Van De Looverbosch; Pieter Verboven; Clement Achille; Cesar Parra Cabrera; Elodie Boller; Yin Cheng; Rob Ameloot; Bart Nicolai |
| Changzhong Zhao; Yi Zhang; Baokun Zhao; Yongchen Song |
| [45] Enhanced Gas Recovery evaluated with 1D NMR imaging and relaxometry measurements. |
| Ming Li; Sarah J. Vogt; Xiaoxian Yang; Paul Connolly; Eric F. May; Michael L. Johns |
| [725] Study on Formation Damage Mechanism of a Sandstone Reservoir based on Micro-Computed Tomography. |
| Zhiyu Wang; Yongfei Yang; Jun Yao; Xinze Li; Yingwen Li; Changfu Liu |

### (MS 19) Electrochemical processes in porous media – Part 1

**Q&A 22 Time Block A - Chairs: Pablo García-Salaberri, Ezequiel Medici**

| [389] Pore-network modeling of gas diffusion layers in polymer electrolyte fuel cells using a continuum-based formulation |
| Pablo Ángel García-Salaberri; Iryna Zenyuk; Jeff Gostick; Adam Z. Weber |
| [1219] Modelling non-isothermal effects in a proton exchange membrane fuel cell (PEMFC) |
| Sagrario Muñoz; V. María Barragán |
| [1247] Reactive transport in porous media: Modeling electro-diffusion process using Nernst-Planck-Poisson Equation |
| Sara Tabrizinejad; Jerome Carrayrou; maarten saaltink; Marwan Fahs |
| [144] On volume averaging modelling of porous electrodes – intrinsic phase average and macroscopic flux definition at solid/electrolyte interface |
| Xiaoquang Yin; Zeyong Wang; Thomas Sweijen; S. S. Majid Hassanizadeh; Baohua Li |
| [924] Non-isothermal Battery Modelling |
| Astrid F. Gunnarshaug; Lena Spitthoff |
### Q&A 22 Time Block A - Chairs: Pablo García-Salaberri, Ezequiel Medici

[365] Multiphysics modeling of a vanadium redox flow battery
Vanesa Muñoz Perales; Santiago Enrique Ibañez-León; Sabrina Berling; Enrique García-Quismondo; Jesús Palma; Pablo Ángel García-Salaberri; Marcos Vera

### Q&A 23 Time Block B - Chairs: Jeff Gostick, Iryna Zenyuk

[1277] Towards scalable multi-scale open-source solvers for ionic transport and electrochemistry
Matteo Icardi; Federico Municchi; Robert Barnett

[1204] Comparing chronopotentiometric behavior in homogeneous cation- and anion- exchange membranes
Chunyu Tian; Kim Roger Kristiansen; Signe Kjelstrup; V. María Barraqán García

[772] Study on electrokinetic reactive fluid in dielectric porous media with Lattice Boltzmann Method
Haijing Li; Herman Clercx; Federico Toschi

[249] PEM fuel cell performance studies of a tree-like pattern milled on graphite flow field plates
Marco Sauermoser; Signe Kjelstrup; Natalya Kizilova; Bruno G. Pollet

[150] Visualizing 3D distribution of wet domain in microporous layer in polymer electrolyte fuel cell by X-ray computed tomography under water vapor supply
Satoru Kato

[442] Pore-scale study of reactive transport processes in porous electrodes of pemfc
Ting Min

### Q&A 24 Time Block B - Chairs: Huijin Xu, Satoru Kato

[884] Thermal stimulation to activate the desorption of shale gas over organic-rich shales.
Xinlei Li; Lijun You; Yili Kang; Jiang Liu; Mingjun Chen

[158] Experimental study on evolution law of key parameters and characterization of initial gas desorption of coal particles.
Chaojie Wang

Hamid Rajabi
Question and answer: Parallel sessions 3 (cont.)

(MS 22) Catalysis and adsorption/absorption processes in porous media (cont.)

<table>
<thead>
<tr>
<th>Q&amp;A 24  Time Block B - Chairs: Huijin Xu, Satoru Kato</th>
</tr>
</thead>
<tbody>
<tr>
<td>[961] 3D pore scale simulation of reactive flow in catalytic filter on CT image. Oleg Iliev; Torben Prill; Pavel Toktaliev; Robert Greiner; Martin Votsmeier</td>
</tr>
<tr>
<td>[289] Pore Structure Analysis for Exhaust Particle Filter Development. Atsushi Tanaka</td>
</tr>
<tr>
<td>[1140] Investigation of adsorption and diffusion behaviors of multi-component gases in kerogen. Yu Shi; Xiaona Yang</td>
</tr>
</tbody>
</table>