InterPore2026

18th ANNUAL MEETING

Canal Saint-Félix Cité des congrès @Valéry Jonchère

CONFERENCE BOOKLET

18 - 22 May 2026

La Cité Nantes Congress Centre
Nantes, France

Nantes Université

Oniris
VetAgroBio Nantes
NATIONAL COLLEGE

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Université Gustave Eiffel

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InterPore

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Oleg Iliev (Chair)**,** Fraunhofer Institute for Industrial Mathematics, ITWM, *Germany*

InterPore

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Moran Wang (Ordinary Council Member), Tsinghua University, *China*

Chiara Recalcati (Student Member), Politecnico di Milano, *Italy*

We are so glad to welcome you!

WELCOME MESSAGES

Benoit Rousseau
CNRS, Nantes Université, *France*

Welcome to InterPore2026 in Nantes, France!
Over the years, the InterPore conference has established itself as a must-attend international annual event for sharing the most significant advances in porous media research, bringing together academics and industry professionals, as well as experimentalists and modeling experts. The conference covers a wide range of porous media, from natural systems—such as soils, aquifers, fractured rocks, and biological tissues—to engineered systems, including foams, membranes, composites, and 3D architectures developed through additive manufacturing.
As emphasized in the programme, these porous media—whose spatial organization can now be quantitatively revealed through 3D and even 4D imaging techniques—host a variety of processes, including deformation, transport, mixing, and chemical reactions, whether coupled or not, often leading to strong nonlinearities. Current advances in numerical methods (pore network models, lattice Boltzmann methods, direct numerical simulation, phase-field methods, and level-set methods), along with efficient solvers, now make it possible to investigate these phenomena directly at the pore scale and to integrate the results with increasing accuracy into continuum-scale models through upscaling techniques.
InterPore2026 is characterized by a growing emphasis on environmental challenges, including carbon capture, utilization, and storage (CCUS); hydrogen storage and conversion; improved water management; soil remediation; and the conversion of solar energy into heat or chemical energy. The Special Focus session on Green Housing will also highlight the use of bio-based and geo-sourced porous media to develop sustainable buildings, improving urban thermal comfort and the life cycle of construction materials.
On behalf of the Local Organizing Committee, and with the full support of the France InterPore Chapter, I am delighted to welcome you to the city of Nantes, where sustainable development lies at the heart of the urban vision, as exemplified by the "Green Star" initiative. Nantes is a city with a rich history and architecture that blends heritage with cutting-edge design. It is open to the world and highly creative, both culturally and gastronomically. La Cité Nantes Congress Centre, located in the city center, is a venue that perfectly embodies this dynamism.
Whether along the Loire River—France's "royal river," from which the Nantes vineyards extend—or with easy access to the Atlantic coast, Nantes is a welcoming city, true to its motto: *Favet Neptunus Eunti* ("Neptune favors those who set sail"). I hope you will all enjoy your stay.
Have an excellent InterPore2026!
Benoit Rousseau
Chair, Local Organizing Committee

WELCOME MESSAGES

Vahid Niasar
University of Manchester, *UK*

Dear Colleagues, Dear InterPore Family,

It is my great pleasure, on behalf of the Executive Committee, to welcome you to the 18th Annual Meeting and Conference of the International Society of Porous Media (InterPore2026), hosted this year in the vibrant and historic city of Nantes, France.

InterPore2026 marks another important step in the growth and global reach of our community. With more than 700 in-person participants from over 40 countries, this year's meeting reflects the truly international character of our society. Europe leads participation, with France, the United Kingdom, and Germany among the strongest contributors, alongside substantial representation from Asia, particularly China, and colleagues from the Americas, Africa, and Oceania. InterPore has also supported early-career researchers by awarding more than 20 conference grants to PhD students requiring financial assistance. This diversity remains one of our greatest strengths, enriching scientific exchange and fostering new collaborations across continents.

The scientific programme continues to expand in both breadth and depth. With close to 1,000 abstract submissions, InterPore2026 demonstrates the vitality of porous media research and the increasing relevance of our field across scientific and industrial domains. The programme spans fundamental theory, computational and experimental advances, and a wide range of applications. Several new and emerging mini-symposia reflect the evolving interests of our community and our commitment to supporting innovative and interdisciplinary research directions.

This conference would not be possible without the dedication and hard work of many individuals. I extend my sincere gratitude to the Local Organising Committee in Nantes, the Program Committee, the mini-symposia organisers, the InterPore staff, and the many volunteers whose commitment ensures the success of this event. I also thank our sponsors and partners for their continued support and engagement.

As you participate in the scientific sessions, discussions, and social events, I encourage you to take full advantage of the opportunities to connect, collaborate, and explore the vibrant atmosphere of Nantes. These interactions are at the heart of what makes InterPore such a dynamic, supportive, and forward-looking community.

On a separate note, this year's InterPore Time Capsule Interviews feature distinguished pioneers Prof. George Hirasaki and Prof. Norman Morrow, whose reflections offer invaluable insights into the development of our field and the personal journeys that have shaped it. If you have not yet watched these interviews, I highly encourage you to do so!

Thank you for being part of InterPore2026. I wish you an inspiring, productive, and enjoyable conference, and I look forward to meeting many of you in the coming days. Warm regards,

Vahid Niasar

WELCOME MESSAGES

Jaime Gómez-Hernández
Universitat Politècnica de València, *Spain*

On behalf of the Program Committee,

It is a real pleasure to welcome you to the InterPore2026 Annual Meeting in Nantes. Each InterPore meeting is special, and this year's could not be otherwise: it brings together a truly international community, a beautiful host city, and a program that reflects both the strength of our field and the many new directions in which it is growing.

I hope you will find in the program both familiar themes and new ideas that challenge and inspire. The range is remarkable: from transport phenomena, fractured and nanoporous media, and multiscale coupled processes, to environmental applications, biotechnology, food, electrochemical systems, imaging, and machine learning. I am especially pleased about the special focus session on Green Housing, a theme that connects porous media research with sustainability and the built environment.

Beyond the technical sessions, I hope you will also enjoy the many other moments that make InterPore what it is: the plenary and invited lectures, the minisymposia, the hallway conversations, and the opportunities to connect across disciplines and career stages. I would also encourage you to take part in the Career Development Event, the Grant Writing Workshop, the networking night, and the DEI Lunch Forum, all of which help make this meeting not only scientifically strong but also welcoming and enriching on a personal level.

I also want to express my sincere gratitude to the InterPore office staff for the enormous effort they put into making this meeting possible. In particular, I would like to thank Karolin Weber and Amy Spang. And also Majid Hassanizadeh, whose dedication behind the scenes is essential to the success of every InterPore meeting.
What makes InterPore truly valuable, however, is not only the program but the people. It is your presence, your ideas, your questions, and your willingness to share and engage that give this conference its energy and meaning. I hope you will find these days in Nantes stimulating, enjoyable, and full of good conversations and new connections

Enjoy the conference!
Jaime Gómez-Hernández
Program Committee Chair

InterPore Foundation

In support of outreach activities, one goal of the Foundation is to facilitate the participation of promising **students** in **international scientific gatherings** and support outstanding young scientists from **countries with financial difficulties** in joining InterPore activities.

Since 2018, the InterPore Foundation has provided close to **130 conference grants** to students and young scientists. The Foundation aims to increase both the number and amount of these grants for the coming years.

Visit www.interpore.org/interpore-foundation/
to learn more about the Foundation and how your contributions count!

Make all this possible - DONATE NOW!

Promoting InterPore educational and training activities via:

- **Courses**
- **Webinars**
- **Young Academy activities**

InterPore Academy Governance:

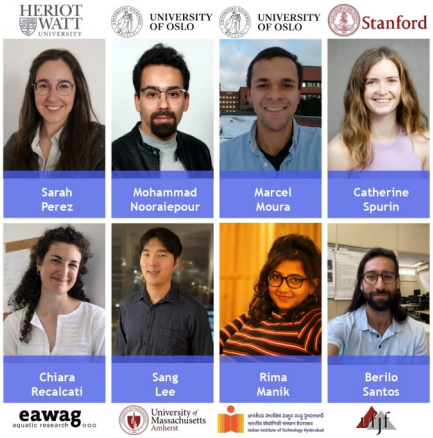
Director: Brian Berkowitz

Course Committee Members: Ilenia Battiato *(Chair)*, Sujit S. Datta, Hang Deng, Sergi Molins, Maja Rücker, and Wen Song

Webinar Committee Members: Maartje Boon *(Chair)*, Mohammad Ebadi, Hassan Mahani, Amir Pahlavan, Sorin Pop and Eleonora Secchi

Co-Chairs of Young Academy: Marcel Moura, Mohammad Nooraiepour and Catherine Spurin

Porous Media TTT Webinar Team



Contact the team at:
porousmediattt@gmail.com

Porous Media Tea Time Talks past sessions are available on our YouTube Channel via the QR-Code

To learn more about upcoming events & suggest topics and lecturers, visit:

www.interpore.org/academy/

InterPore
Student Affairs

SAC and the LOC student representatives are excited to bring you a set of activities designed to make InterPore2026 even more rewarding for students and early-career researchers.
Don't miss out - join us!

• **Career Development Event**
Choosing between academic research, industry roles, or positions within governmental institutions can be a pivotal decision. If you're exploring which path aligns with your long-term goals, this session is designed for you. Join us on Wednesday, May 20, from 1:05-2:05 PM for a panel discussion with experts representing a range of career trajectories. They will discuss their professional journeys, key decision points, and lessons learned. Attendees will also have the opportunity to engage with the panelists during an open Q&A.

• **Game Night and Networking**
InterPore2026 invites students, PhDs, and early-career researchers to a dedicated Networking Night on Wednesday, May 20, from 08:00 to 10:00 PM at Magmaa Nantes (15 Rue La Noue Bras de Fer). This informal gathering provides a welcoming space to connect with peers, exchange perspectives, and discuss research and career paths - accompanied by a glass of French wine.

• **Grant writing workshop**
Grant writing doesn't have to feel overwhelming. If you're struggling to find the right opportunities or craft a strong proposal, join us on Thursday, May 21, from 1:05-2:05 PM. This workshop will show you how to use narrative strategies that align with funder priorities and elevate the clarity, structure, and persuasiveness of your applications.

These events are open to all InterPore2026 participants, including undergraduate students, PhDs, postdocs, and early-career researchers. For more details on SAC events, please check the official program or visit the InterPore2026 website.

Make the most of InterPore2026 - we look forward to seeing you there!

On behalf of the Student Affairs Committee,
Chiara Recalcati

Get in touch with the SAC at: SAC@interpore.org

InterPore SAC 2026 Board Members

Chair: Chiara Recalcati, Politecnico di Milano, *Italy*
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Medhi Ghasemi, University of Manchester, *UK*
Raymond Mushabe, University of Bergen, *Norway*
Rina Manik, Institute of Technology Hyderabad, *India*
Sina Omrani, University of Manchester, *UK* and Agency for Science, Technology and Research (A*STAR), *Singapore*
Xiaoxing Li, Eindhoven University of Technology, *The Netherlands*

InterPore National Chapters

National Chapters offer elevated visibility, improved local and global networking, platforms for joint workshops and many other benefits.

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Didier Lasseux (Vice-Chair), CNRS, *France*
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Nicolae Tomozeiu, TU Eindhoven, *the Netherlands*
Xiaofan Yang, Beijing Normal University, *China*
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Visit the InterPore website to learn more about joining or starting your local chapter!
https://www.interpore.org/national-chapters

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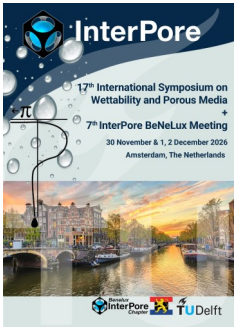

VISIT OUR EXHIBITORS

TELEDYNE LABS

Booth #1

Teledyne LABS consolidates CETAC, Hanson, ISCO chromatography and pumps, Leeman Labs and Tekmar for Chromatography, GC Sample Prep, Elemental Analysis, Automated Liquid Handling, Pumping and Dissolution, Diffusion, Physical Tablet Testing. These complementary brands support our commitment to delivering innovative laboratory instruments that improve our environmental sustainability and quality of life.

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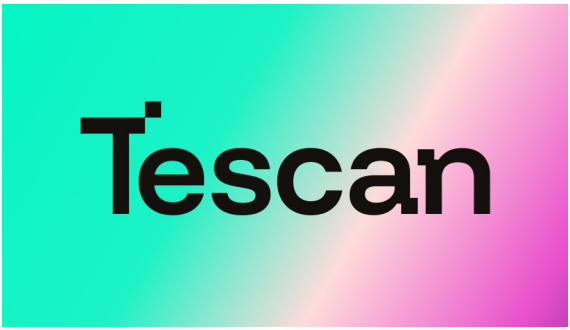

Booth #2

Tescan is more than an instrument manufacturer. We're a global team of engineers, scientists, designers, and application experts - building advanced imaging instruments and the solutions around them.
For over 30 years, we've helped scientists see deeper with advanced Scanning electron microscopes, Focused ion beam systems, micro-CT, and now 4D-STEM technologies - like our TENSOR platform, the first transmission electron microscope built from the ground up for 4D performance.
We design with real workflows in mind - from materials science and geosciences to life sciences and semiconductors - ensuring every system is intuitive, application-ready, and fully supported throughout its lifecycle.
Tescan is headquartered in Brno, Czech Republic, employees more than 750 people in 14 sites around the world. Almost 4000 SEM installations in more than 80 countries prove the highest technical solution of Tescan products.

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Booth #3

IPSDK Explorer is a high-performance image processing and analysis software for 2D and 3D images, enabling you to process very large datasets with unmatched speed and accuracy.
From image denoising and advanced segmentation to complex classification on topics going from porosity analysis, tortuosity, material characterization, or cultural heritage, IPSDK Explorer offers a comprehensive solution for every application.
IPSDK Explorer simplifies the user experience with dedicated plugins designed to guide you through your analysis on a step-by step mode. Additionally, it natively supports time-sequence management, enabling seamless processing and visualization of dynamic 2D+t and 4D (3D+t) datasets.
With IPSDK, you can automate complex workflows and accelerate your discovery time, making it an essential asset for high-resolution X-ray tomography analysis.

https://www.reactivip.com/

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Booth #4

RX Solutions has been designing and manufacturing high quality Industrial CT system for 20 years in France. Our expertise covers the full spectrum of industrial and research needs, from micro-CT to nano-CT, with systems recognized for their reliability and exceptional image quality. Built on three product lines, two Series upgrades and five scalable platforms, our machines offer unmatched configurability to meet every application requirement.

https://www.rx-solutions.com/

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Booth #5

Hiden Isochema designs and manufactures advanced gas and vapor sorption instruments for research, development, and production in surface chemistry and materials science. Based in Warrington, UK, and active since the early 1990s, it serves laboratories worldwide. Its automated gravimetric, manometric, DVS, and breakthrough systems measure sorption, kinetics, and permeation. Applications include porous materials, membranes, carbon capture, gas separation, and energy storage research.

https://hidenisochema.com/

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Booth #6

Interface Fluidics advances energy research and innovation through turnkey HPHT microfluidic systems and services designed to generate high-resolution fluid property data. We support academic and industry researchers by enabling precise evaluation of fluid behavior under representative and extreme conditions. Our platforms provide rapid, data-rich insights that inform both fundamental studies and applied investigations, improving understanding of subsurface processes and fluid interactions. In addition, our service laboratory supports upstream oil and gas through specialized testing programs. By bridging experimental rigor with practical relevance, we enable research that enhances decision-making, optimizes resource recovery, and supports more efficient and sustainable energy systems.

https://www.interfacefluidics.com/

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MATH
2 MARKET

Booth #7

Math2Market – Digital Innovation in Academia and Industry

Math2Market provides digital solutions for multiscale simulation and analysis of porous and multiphase materials through its software suite GeoDict. The software enables image-based and parameter-based modeling to predict material properties and performance across applications, such as batteries, fuel cells, filtration, composites, nonwoven, geosciences, pharmaceutical and more.
Math2Market supports research and development teams in accelerating innovation, reducing experimental effort, and gaining deeper insight into complex microstructures through non-destructive and reproducible analyses. Through the Academic Innovator Program (AIP), universities and research institutions worldwide receive tailored licensing to advance research and educate future materials scientists and engineers.

https://www.math2market.com/

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Booth #8

COMSOL is a global provider of simulation software for product design and research to technical enterprises, research labs, and universities. Its COMSOL Multiphysics® product is an integrated software environment for creating physics-based models and simulation apps. A particular strength is its ability to account for coupled or multiphysics phenomena. Add-on products expand the simulation platform for electromagnetics, structural, acoustics, fluid flow, heat transfer, and chemical applications. Interfacing tools enable the integration of COMSOL Multiphysics® simulations with all major technical computing and CAD tools on the CAE market. Simulation experts rely on COMSOL Compiler™ and COMSOL Server™ to deploy applications to their design teams, manufacturing departments, test laboratories, and customers throughout the world.

https://www.comsol.com/

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Booth #9

LTrace is a Brazilian technology company specializing in high-end solutions for the oil and gas industry. We bridge the gap between complex data and decision-making through Digital Rock Analysis and AI-driven workflows. Our flagship solutions, such as the GeoSlicer platform, enable researchers and geoscientists to perform advanced pore-scale characterization, multi-scale imaging, and petrophysical modeling. By integrating machine learning with physics-based simulations such as PNM, LTrace delivers insights into rock properties, optimizing reservoir evaluation and enhancing recovery strategies.

https://www.ltrace.com.br/

VISIT OUR EXHIBITORS

Booth #10

Thermo Fisher Scientific will present an integrated workflow combining high-resolution imaging and advanced analysis for porous media characterization.
Electron microscopes enable multiscale porosity quantification from micrometer to nanometer scales, with elemental analysis via EDS. 3D characterization is driven by FIB-SEM, enabling precise serial sectioning and reconstruction to investigate pore connectivity, network topology, and diffusion processes. Enhanced with AI, Thermo Scientific™ Avizo™ Software integrates tools for 2D/3D visualization, pore network extraction, transport property estimation, and multiphysics simulations. Electron Microscopy and image analysis enable advanced 3D chemical analysis through EDS data integration, supporting correlated structural and compositional insights within complex porous systems.

https://www.thermofisher.com/de/de/home.html

VISIT OUR EXHIBITORS

University of Stuttgart
Germany

SFB 1313

Exhibitor's Floor

SFB 1313 of the University of Stuttgart will be present at this year's InterPore Annual Meeting with an exhibition booth, featuring research insights via an interactive format. Stop by, connect and discuss with us!

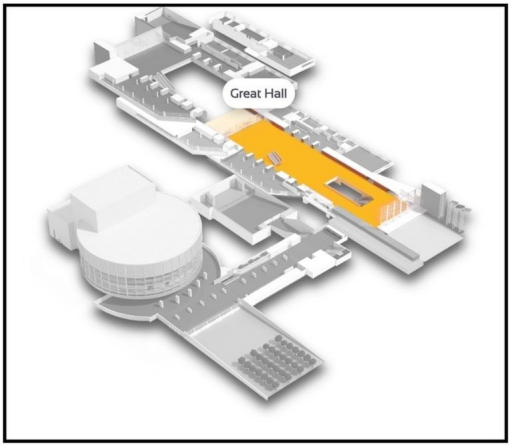
https://www.sfb1313.uni-stuttgart.de/

Thank you to our Sponsors, Exhibitors and Partners!

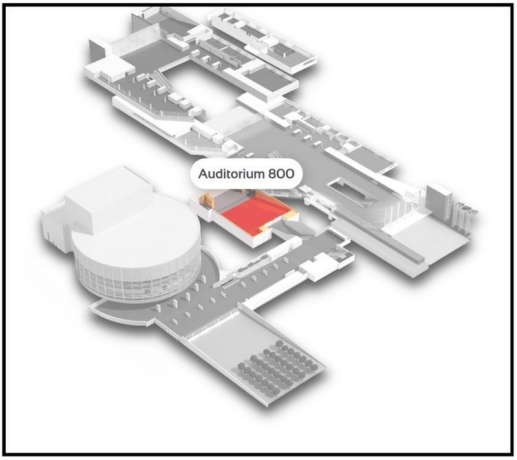
Visit the InterPore desk for more information about InterPore activities, or a chat with InterPore officials!

VENUE FLOORPLAN

La Cité Nantes Congress Centre



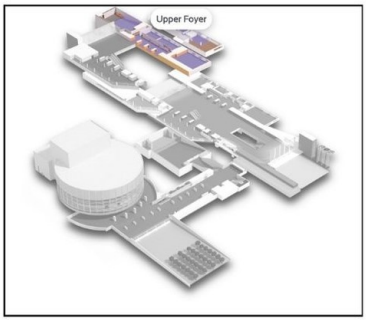
Great Hall

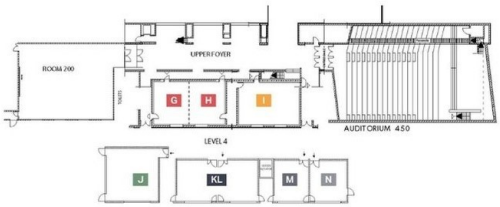


Auditorium 800

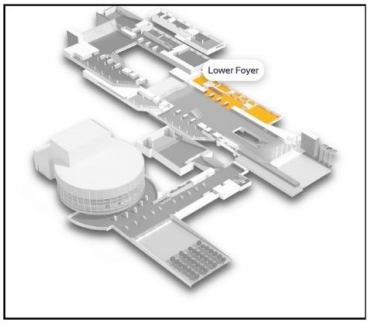
VENUE FLOORPLAN

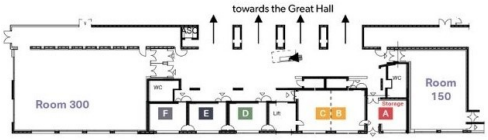
La Cité Nantes Congress Centre



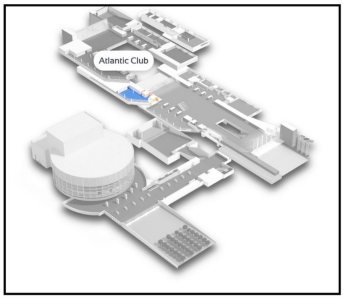


Upper Foyer
Salle G/H, I and K/L
Salle 200





Lower Foyer
Salle B/C
Salle 300
Salle 150



Club Atlantique

LIST OF MINISYMPOSIA

(MS01) Porous Media for a Green World: Energy & Climate

Organizers: Sahar Bakhshian, Sojwal Manoorkar, Benzhong (Robin) Zhao, Sophie Roman, Charlotte Garing, Mozhdeh Sajjadi

(MS02) Environmental Porous Media: Water, Agriculture and Remediation

Organizers: Amir A. Pahlavan, Linda Luquot, Joaquin Jimenez-Martinez, Bo Guo, Roseanne Ford, Mamta Jotkar, Veronica Morales

(MS03) Flow, transport and mechanics in fractured porous media

Organizers: Gege Wen, Lluís Saló-Salgado, Alessandro Lenci, Hui Wu

(MS04) Biological Processes in Porous Media

Organizers:: Na Liu, Chaojie Cheng, David Landa Marban, Eike Marie Thaysen

(MS05) Physics of multiphase flow in diverse porous media

Organizers: Chao-Zhong Qin, Saman Aryana, Ying Gao, Hossein Hejazi, Yu Jing, Hassan Mahani, Olivier Pitois, Masa Prodanovic, Ke Xu, Tao Zhang, Tongke Zhou

(MS06) Interfacial phenomena across scales

Organizers: Ran Holtzman, Catherine Noiriel, Oshri Borgman, Mykyta Chubynsky, Paula Reis, Rui Wu, Sidian Chen, Subhadeep Roy, Wen Song, Zhibing Yang

(MS07) Mathematical and numerical methods for multi-scale multi-physics, nonlinear coupled processes

Organizers: Nadja Rey, Tuanny Cajuhi, Mostafa Mollali, Keita Yoshioka

(MS08) Mixing, dispersion and reaction processes across scales in heterogeneous and fractured media

Organizers: Veronica Morales, Yves Méheust, Ran Holtzman, Silvia De Simone, Branko Bijeljic, Pietro de Anna

LIST OF MINISYMPOSIA

(MS09) Pore-scale Physics and Modelling

Organizers: Peter Kang, Ruby Fu, Bo Guo, Yashar Mehmani, Marco de Paoli, Cyprien Soulaine

(MS10) Advances in imaging porous media: techniques, software and case studies

Organizers: Maja Rücker, Tom Bultreys, Rukuan Chai, Sidian Chen, Qinhong (Max) Hu, Lin Ma, Liwei Zhang

(MS12) Coupled Flow-Deformation Processes in Porous Media

Organizers: Yihuai Zhang, Muhammad Arif, Chaojie Cheng, Sridhar Ranganathan, Qazim Llabjani, Zhenjiang You

(MS13) Fluids in Nanoporous Media

Organizers: Bin Pan, Patrick Huber, Zhehui Jin, Hassan Mahani, Yun Yang

(MS14) Advanced Flow Physics in Specialized Porous Systems: Non-linear dynamics and finite-sized effects

Organizers: Yves Méheust, Diogo Bolster, Richmond Cohen, Alberto Guadagnini, Mohaddeseh Mousavi Nezhad, Chaozhong Qin, Nicolae Tomozeiu

(MS15) Machine Learning and Big Data in Porous Media

Organizers: Bailian Chen, Ahmed H. Elsheikh, Serveh Kamrava, Saeid Sadeghnejad, Hongkyu Yoon, Marwan Fahs

(MS16) Complex fluid and Fluid –Solid-Thermal coupled process in porous media: Modeling and Experiment

Organizers: Yingfang Zhou, Praveen Linga, Shimin Liu, Moran Wang, Ruina Xu, Pål Ø. Andersen

LIST OF MINISYMPOSIA (cont.)

(MS17) Electrochemical Processes in Porous Media

Organizers: Maxime van der Heijden, Jonas Hereijgers, Colm O'Dwyer, Noemí Aguiló-Aguayo, ChungHyuk Lee

(MS18) High-temperature heat and mass transfer within porous media for energy and space

Organizers: Benoît Rousseau, Sophia Haussener, Francesco Panerai, Jaona Randrianalisoa, Dimosthenis Trimis

(MS19) Uncertainty –Aware Decision Support in Porous Media Applications

Organizers: Sarah Perez, Daniel Tartakovsky, Valentina Ciriello, Alexandre Tartakovsky, Monica Riva

(MS20) Special Session in Honor of Jun Yao

Organizers: Oleg Iliev, Yongfei Yang

WIFI INFORMATION

Stay connected! WIFI is free for all attendees.

Network: Cite-Guest

No password required

MONDAY, 18 MAY 2026

09:00 – 12:00	*Salle G/H* **Conference Course #1:** Digital Rock Physics in Subsurface Systems Workshop	*Salle I* **Conference Course #3:** Advancing Your Research Career
14:00 – 18:00	**Porous Media: From Physics to Art Tour:** *Meet at Great Hall Entrance*	
14:00 – 17:00	*Salle G/H* **Conference Course #2:** The Physics of Drying	*Salle I* **Conference Course #4:** Multiscale Pore Network Simulation with Geoslicer
14:00 – 18:00	**Registration Pre-Check-In:** *Great Hall*	

TUESDAY, 19 MAY 2026

08:00	**Registration Desk Opens:** Great Hall							
	Plenary Session 1: *Auditorium 800*							
09:00 – 09:05	**Opening Ceremony**							
09:05 – 09:10	**Award Ceremony 1**							
09:10 – 09:50	**Plenary Lecture 1:** Philip Withers							
09:50 – 11:20	**Poster Session I, Exhibition, Coffee Break:** *Great Hall*							
11:20 – 12:35	**Oral Session 1.1**							
	Club Atlantique MS20	*Salle I* MS05	*Salle 200* MS01	*Salle B/C* MS02	*Salle 300* MS09	*Salle 150* MS08	*Salle G/H* MS07	*Salle K/L* MS16
12:40 – 13:40	**DEI Lunch Forum:** *Salle 300* **Lecturer:** Naomi Lumutenga							
13:50 – 15:05	**Oral Session 1.2**							
	Club Atlantique MS12	*Salle I* MS05	*Salle 200* MS01	*Salle B/C* MS10	*Salle 300* MS09	*Salle 150* MS08	*Salle G/H* MS15	
15:05 – 16:35	**Poster Session II, Exhibition, Coffee Break:** *Great Hall*							
16:35 – 17:05	*Auditorium 800* **Invited Lecture 1:** Jesús Carrera				*Salle 300* **Invited Lecture 2:** Lara Manzocco			
17:10 – 18:10	**Oral Session 1.3**							
	Club Atlantique MS20	*Salle I* MS06	*Salle 200* MS01	*Salle B/C* MS10	*Salle 150* MS13	*Salle G/H* MS19	*Salle K/L* MS14	
18:10 – 19:10	**Welcome Reception:** *Great Hall*							

WEDNESDAY, 20 MAY 2026

08:00	**Registration Desk Opens:** Great Hall							
08:30 – 09:00	*Auditorium 800* Invited Lecture 3: Nicola Hüsing				*Salle 300* Invited Lecture 4: Yves Méheust			
09:05 – 10:05	**Oral Session 2.1**							
	Club Atlantique MS20	*Salle I* MS05	*Salle 200* MS01	*Salle B/C* MS02	*Salle 300* MS09	*Salle 150* MS13	*Salle G/H* MS19	*Salle K/L* MS14
10:05 – 11:35	**Poster Session III, Exhibition, Coffee Break:** *Great Hall*						*Auditorium 800 Bar* MiniPore Social	
11:35 – 13:05	**Oral Session 2.2**							
	Club Atlantique MS20	*Salle I* MS06	*Salle 200* MS04	*Salle B/C* MS02	*Salle 300* MS09	*Salle 150* MS03	*Salle G/H* MS15	*Salle K/L* MS13
13:05 – 14:05	**Lunch Break:** *Great Hall*				**SAC Career Event:** *Salle 150*			
14:05– 15:35	**Oral Session 2.3 (90 min)**							
	Club Atlantique MS20	*Salle I* MS05	*Salle 200* MS04	*Salle B/C* MS10	*Salle 300* MS09	*Salle 150* MS03	*Salle G/H* MS07	*Salle K/L* MS18
15:35 – 17:05	**Poster Session IV, Exhibition, Brew Break:** *Great Hall*							
	Plenary Session 2: *Auditorium 800*							
17:05 – 17:15	**Award Ceremony 2**							
17:15 – 17:55	**Plenary Lecture 2:** Paolo Colombo							
18:00 – 19:00	**LOC Social Event:** *Meet in Great Hall*							
20:00 – 22:00	**SAC Networking Night**							

THURSDAY, 21 MAY 2026

08:00	Registration Desk Opens: Great Hall							
08:30 – 09:00	*Auditorium 800* Invited Lecture 5: Yongfei Yang				*Salle 300* Invited Lecture 6: Gabriel Tobie			
09:05 – 10:05	Oral Session 3.1							
	Club Atlantique MS10	*Salle I* MS05	*Salle 200* MS01	*Salle B/C* MS13	*Salle 300* MS09	*Salle 150* MS08	*Salle G/H* MS07	*Salle K/L* MS18
10:05 – 11:35	Poster Session V, Exhibition, Coffee Break: *Great Hall*							
11:35 – 13:05	Oral Session 3.2							
	Club Atlantique MS20	*Salle I* MS05	*Salle 200* MS01	*Salle B/C* MS02	*Salle 300* MS13	*Salle 150* MS12	*Salle G/H* MS07	*Salle K/L* MS17
13:05 – 14:05	Lunch: *Great Hall*				Grant Writing Workshop: *Salle 150*			
14:05– 15:35	Oral Session 3.3							
	Club Atlantique MS10	*Salle I* MS06	*Salle 200* MS04	*Salle B/C* MS02	*Salle 300* MS09	*Salle 150* MS08	*Salle G/H* MS15	*Salle K/L* MS17
15:35 – 17:05	Poster Session, Exhibition, Coffee Break: *Great Hall*							
	Plenary Session 3: *Auditorium 800*							
17:05 – 17:15	Award Ceremony 3							
17:15 – 17:55	Plenary Lecture 3: Katharine Maher							
18:30 – 21:00	Conference Dinner: *Great Hall*							

FRIDAY, 22 MAY 2026

08:00	**Registration Desk Opens:** Great Hall							
08:30 – 09:00	*Auditorium 800* Invited Lecture 7: Tiziana Tosco				*Salle 300* Invited Lecture 8: Timothy Scheibe			
09:05 – 10:20	**Oral Session 4.1**							
	Club Atlantique MS20	*Salle I* MS06	*Salle 200* MS01	*Salle B/C* MS12	*Salle 300* MS09	*Salle 150* MS08	*Salle G/H* MS15	*Salle K/L* MS16
10:20 – 11:50	**Poster Session VII, Exhibition, Coffee Break:** *Great Hall*							
11:50 – 12:50	**Oral Session 4.2**							
	Club Atlantique MS20	*Salle I* MS05	*Salle 200* MS01	*Salle 300* MS09	*Salle B/C* MS03	*Salle G/H* MS07	*Salle K/L* MS17	
12:55 – 14:10	**Natural Porous Media for Green Housing Event:** *Salle 300* **Plenary Lecturer:** Jan Carmeliet							
14:15 – 15:30	**Oral Session 4.3**							
	Salle I MS05	*Salle 200* MS01	*Salle B/C* MS03	*Salle 300* MS09	*Salle 150* MS08	*Salle G/H* MS15	*Salle K/L* MS16	
15:30 – 17:00	**Poster Session VIII, Exhibition, Brew Break:** *Great Hall*							
	Plenary Session 4: *Auditorium 800*							
17:00 – 17:40	**Plenary Lecture 4:** Sophia Haussener							
17:40 – 17:55	**Award Ceremony 4**							
17:55 – 18:00	**Closing Ceremony**							

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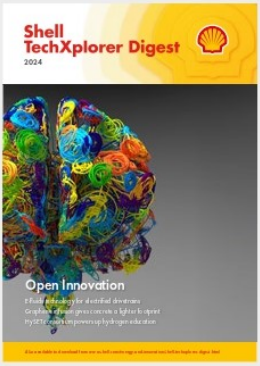
Shell TechXplorer Digest is a magazine that showcases the breadth and depth of scientific research and technology applications within Shell. The articles have been written by Shell's technologists and scientists about innovation, development and advancement of technology.



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PROGRAM HIGHLIGHTS

Opening Ceremony

Tuesday, *Auditorium 800*, *09:00-09:05*

Award Ceremony: *InterPore Meritorious Service Medal*

Tuesday, *Auditorium 800*, *09:05-09:10*

Plenary Lecture: *Philip Withers*

Tuesday, *Auditorium 800*, *09:10-09:50*

DEI Lunch Event

Tuesday, *Salle 300*, *12:40-13:40*

Invited Lectures: *Jesús Carrera & Lara Manzocco*

Tuesday, *Auditorium 800 & Salle 300*, *16:35-17:05*

Welcome Reception

Tuesday, *Great Hall*, *18:30-19:10*

Invited Lectures: *Nicola Hüsing & Yves Méheust*

Wednesday, *Auditorium 800 & Salle 300*, *08:30-09:00*

MiniPore Social

Wednesday, *Auditorium 800 Bar*,*10:05-10:45*

SAC Career Event

Wednesday, *Salle 150*,*13:05-14:05*

Award Ceremony: *InterPore Lifetime Achievement Medal & InterPore Medal for Porous Media Research*

Wednesday, *Auditorium 800*, *17:05*-17:15

Plenary Lecture: *Paolo Colombo*

Wednesday, *Auditorium 800*, *17:15-17:55*

LOC Social Event

Wednesday, *meet in Great Hall*, *18:00-20:00*

PROGRAM HIGHLIGHTS

SAC Networking Night

Wednesday, *Magmaa Food Hall Nantes, 20:00-22:00*

Invited Lectures: *Yongfei Yang & Gabriel Tobie*

Thursday, *Auditorium 800 & Salle 300, 08:30-09:00*

Grant Writing Workshop

Thursday, *Salle 150, 13:05-14:05*

Award Ceremony: *InterPore Award for Porous Media Research, InterPore PoreLab Award for Young Researchers & Rien van Genuchten Early-Career Award of Porous Media for a Green World*

Thursday, *Auditorium 800*,17*:05-17:15*

Plenary Lecture: *Katharine Maher*

Thursday, *Auditorium 800*,17*:15-17:55*

Conference Dinner

Thursday, *Great Hall, 18:00-20:00*

Invited Lectures: *Tiziana Tosco & Timithy Scheibe*

Friday, *Auditorium 800 & Salle 300, 08:30-09:00*

Natural Porous Media for Green Housing Event with Lecturer Jan Carmeliet

Friday, *Salle 300, 12:55 -14:10*

Plenary Lecture: *Sophia Haussener*

Friday, *Auditorium 800, 17:00:17:40*

Award Ceremony*: National Chapter Award, Student Poster Awards & InterPore Rosettes*

Friday, *Auditorium 800, 17:40-17:55*

Closing Ceremony

Friday, *Auditorium 800, 17:55-18:00*

CONFERENCE COURSES

Conference Course #1

Digital Rock Physics in Subsurface System Workshop: From CT Scanning to Pore-Scale Modeling

Monday, 18 May 09:00 - 12:00

Location: Salle G/H, La Cité Nantes Congress Centre

Instructor:

Saeid Sadeghnejad, *Friedrich Schiller University Jena Institute for Geosciences*

This course provides a foundational understanding of Digital Rock Physics (DRP) workflow with a focus on subsurface geological formations and their applications. By the end of the course, students will have knowledge of DRP workflows and AI-based segmentation techniques for geological and energy-related applications (hydrogen storage, carbon capture and storage, and oil and gas).

The syllabus is designed to provide participants with a comprehensive understanding of DRP starting with core analysis and imaging techniques such as micro-CT. Participants will gain practical skills in image processing, including artifact correction, segmentation, and advanced AI-driven techniques. The course also explores pore-scale modeling, covering direct numerical simulation (DNS) and pore network modeling (PNM), with real-world case studies in subsurface energy storage and contamination modeling. No prior technical expertise in AI or image processing is required, and the course ensures accessibility for beginners while offering advanced learning opportunities for experienced professionals.

CONFERENCE COURSES

Conference Course #2

The Physics of Drying

Monday, 18 May 14:00 - 17:00

Location: Salle G/H, La Cité Nantes Congress Centre

Instructor:

Philippe Coussot, *Université Gustave Eiffel*

Drying is the process by which a liquid initially contained in a porous permeable material evaporates from this material. In industry many products need to be dried at some step of fabrication to end as solid materials easier to conserve or use. This is the case in paper or textile industry, food industry, agriculture, chemical industry or civil engineering. The whole question of drying is how this liquid water extraction occurs. Addressing this question implies to control the dynamics of the process, the spatial evolution of the water distribution in the medium over time, the transport and/or accumulation of suspended elements (ions, particles), the potential shrinkage of the medium, etc.

Due to the potential transports and phase transitions of the different water phases inside the porous medium, drying processes are generally considered as so complex that they must be described by fully empirical approaches or, conversely, complex 3D modelling developments. An alternative consists to realize that drying is fundamentally governed by the coupling between the boundary conditions (i.e., vapor diffusion around the material) and the internal diffusion and its variations as a function of the local water characteristics over time. By identifying the dominant physical effects for each material type, the main regimes of drying and their dynamics can be determined. This approach can take advantage of recent multiple observations (in particular by MRI and NMR relaxometry) of the different water phases in complex porous media during drying and their spatial evolutions. This course will present the basic tools and knowledge of such a physical approach of convective drying.

1. Physical properties of liquid water, vapor, bound water: flow, diffusion, wetting, adsorption
2. Boundary conditions: boundary layer, similarity approach, characterization
3. Basic regimes of drying for simple diffusion process
4. Simple porous media (“large pores”)
5. Nanoporous materials
6. Biobased systems: wood, plants, paper, natural textiles
7. Shrinking materials (mineral pastes, gels, fruits-vegetables)

CONFERENCE COURSES

Conference Course #3

Advancing Your Research Career: Sharing 50 Years of Experience on Best Practices in Experimental Studies, Modeling, Writing, and Professional Development

Monday, 18 May, 09:00 - 12:00

Location: Salle I, La Cité Nantes Congress Centre

Instructor:

S.Majid Hassanizadeh, *Center for Simulation Science (SIMTECH), Stuttgart University, Germany, and Emeritus Professor of Hydrogeology at the Faculty of Geosciences of Utrecht University*

This short course integrates three complementary themes essential for the professional success of early-career researchers: best practices in experimental and modeling research, effective scientific writing, and scientific career development. Together, they provide a comprehensive framework for building both the quality of one's research and the visibility of one's scholarly profile.

The course begins by sharing my 50 years of experience on best practices in scientific research, with an emphasis on experimental and modeling approaches in porous media. Core topics include: i) planning your research (experiments and modeling), conducting a rigorous literature review, and defining clear scientific objectives; ii) best practices in experimental research, principles of designing robust experiments, and identifying systematic errors, random errors, and experimental artifacts; iii) good practices for using commercial software or developing computational codes, model validation and sensitivity analysis, and uncertainty quantification. The aim is to equip researchers with practical tools to enhance the credibility, rigor, and impact of their scientific work.

The second module focuses on best practices in writing scientific papers—an essential skill for disseminating research effectively. Topics include structuring papers using standard formats, ensuring logical cohesion and clarity, writing compelling abstracts and titles, and presenting data through well-designed figures and tables. Ethical aspects of authorship, transparency, and the appropriate use of AI tools will also be discussed. Guidance will be provided on navigating peer review, improving manuscript readability, and enhancing the likelihood of publication.

In the final module, we address how MSc and PhD students as well as postdoctoral researchers can strategically develop their academic and professional identity. The guidelines are divided into three themes: i) effectively presenting yourself via crafting a compelling CV and cultivating a strong online presence, ii) making connection by strategies for expanding your professional network, and iii) building a solid reputation through dependability, professional conduct, and meaningful engagement with the research communities.

CONFERENCE COURSES

Conference Course #4

Multiscale Pore Network Simulation with Geoslicer

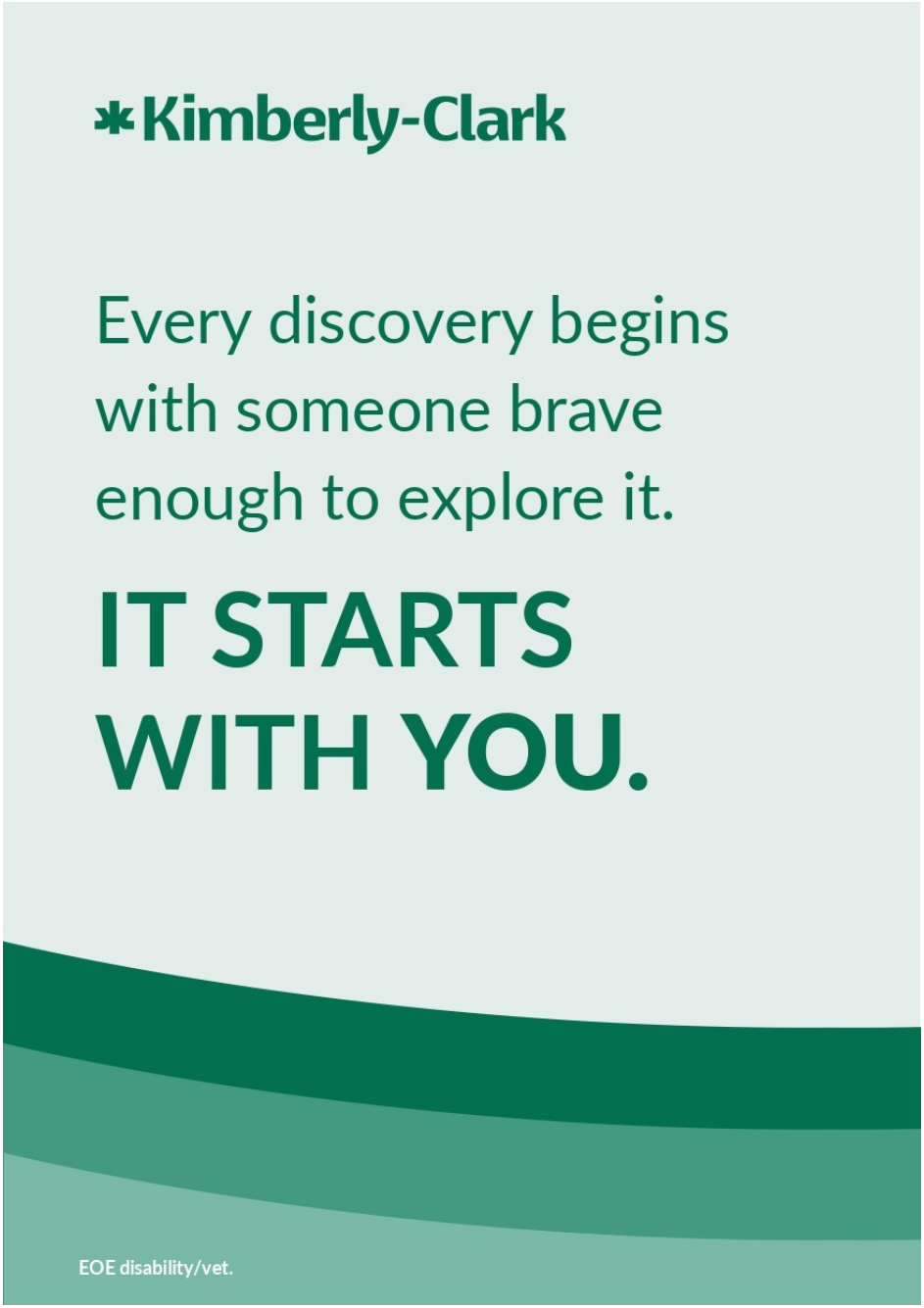
Monday, 18 May, 14:00 - 17:00

Location: Salle I, La Cité Nantes Congress Centre

Instructor:

Rafael Guntzel Arenhart, *LTrace Geosciences*

In this workshop it will be provided a introduction to Pore Network Modelling with GeoSlicer, an open-source platform designed for advanced geoscience analysis. Participants will learn the workflow for reading processing micro-tomography data from porous rock samples, beginning with image visualization and pre-processing. The course covers the technical process of extracting multiscale pore networks from the tomographic images. Finally, attendees will be taught how to run single-phase and two-phase fluid flow simulations on the extracted networks.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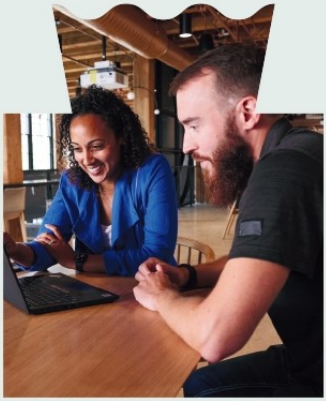


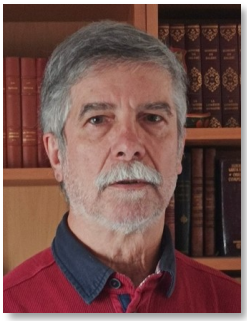
TUESDAY, 19 MAY 2026

Plenary Session

Auditorium 800, 09:10 - 09:50
Chair: *Majid Hassanizadeh*

Opening Ceremony *09:00 - 09:05*

Award Ceremony 1 *09:05 - 09:10*



InterPore Meritorious Service Medal

Michel Quintard
Institute of Fluid Mechanics, *France*

The InterPore Meritorious Service Medal recognizes individuals for exceptional, prolonged, impactful, and meaningful services to the Society.
These individuals have exhibited such exceptional devotion of time, effort, thought, and action as to set them apart from other contributions.

Plenary Session, cont.

Plenary Lecture 1 *09:10 - 09:50*

Chair: *Veerle Cnudde*

Philip Withers

University of Manchester, *UK*

3D and 4D X-ray imaging of the behaviour of porous systems

X-ray imaging can provide detailed structural information in 3D non destructively across scales ranging from tens of centimetre samples to tens of nanometres spatial resolution over timescales ranging from milliseconds to many months. This, and the fact that 3D image sequences can be collected non destructively, mean that it can uniquely shine a light on a range of porous materials behaviours from transport phenomena and permeability to fuel cells, from granular flow to cementitious materials, and from our perception of foods to the collapse of energy absorbing structures.

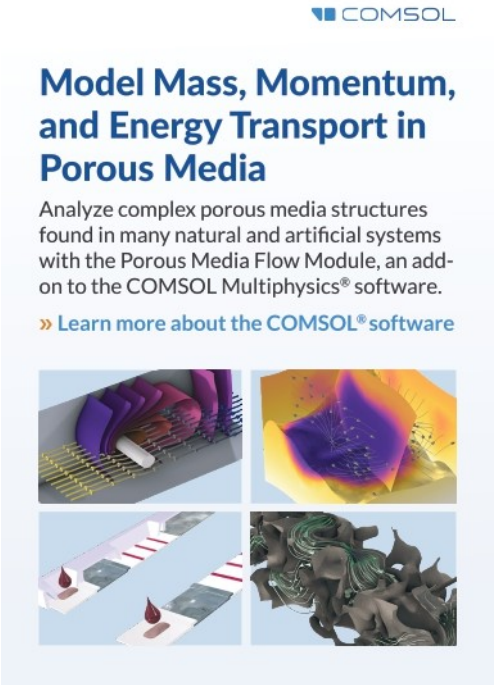
I will start with a primer on 3D and timelapse (4D) imaging for those new to the technique looking at the basic principles, the attributes and limitations of the method and its complementarity to other characterisation methods such as mercury intrusion porosimetry.

I will then examine a number of applications covering a very wide range of length and timescales and applications. In particular I will consider transport behaviour through homogeneous and inhomogeneous media, particle transport through filter cakes, the infiltration of fibrous preforms in polymer and ceramic matrix composite manufacturing, the behaviour of granular solids, the microstructure of 3D printed concrete and the long term carbonation behaviour of low carbon cements. Through these examples I will look at the practical limitations of the method, image quantification and segmentation aspects and also cover image-based modelling and digital volume correlation. I will then conclude by looking at future developments.

Coffee Break & Exhibition

09:50 - 11:20

Refreshments are available in the Great Hall. Come grab a drink, network with other attendees, visit the exhibition booths and discuss the posters on display.



Poster Session I

Great Hall, 09:50 - 11:20

Poster Board	
61	[27] **Hierarchical porous media with well-defined microstructures for capillary-driven evaporation and their application in passive heat transfer devices.** *Jiaxi Du, Yonggang Zhu*
43	[55] **Fast X-ray tomography of wicking and hygroscopic swelling in wood** *Robert Fischer, Gustavo Pinzón, Christian Schlepütz, Dominique Derome*
63	[139] **Drying of porous systems – an enigma of rocks and hard places** *David Rieder, Gijs Wensink, Maja Ruecker*
1	[220] **Micro-scale characterization of the Bauru Aquifer System (Brazil)** *Lívia de Almeida Freitas, Daphne Silva Pino, Ricardo Hirata, Claudia Varnier*
65	[229] **Characterization of hygro-thermal properties of straw bio-based insulation for building application.** *Arthur Levy, Abderezak Aouali*
5	[264] **Convective-Driven, Contact Dissolution of Residually-Trapped Carbon Dioxide with Macroscopic Ripening** *Hatem Alamara, Christophe Blondeau, Igor Bogdanov*
7	[341] **Automating the computation of relative permeability from micro-CT flow experiments** *Sveta Radeva, Eleonora Parente, Ying Gao, Robert Brijder, Evren Unsal, Steffen Berg*
67	[342] **Heat Conduction in Porous Insulation Materials for Giant Hydrogen Storage Tanks** *Gijs Schreuder, Casimir van Doorne, David Creech, Elisabeth Meacham, Valeria Cruz, Evren Unsal, Ivan Buijnsters, Steffen Berg*
17	[358] **Diffusion of Charged Rods in Three-Dimensional Channels with Varying Cross Section** *Nadja Ray, Alena Semkiv, Paolo Malgaretti*
71	[464] **Spectral Induced Polarization Signatures of Calcium Carbonate Precipitation in Microfluidic Chips: A Numerical Modeling Study** *Sheng Zhou, Linhan Wang, kexin chen, Bate Bate*

TUESDAY, 19 MAY 2026

Poster Session I, cont.

Great Hall, 09:50 - 11:20

Poster Board	
13	[474] **Multi-Region Hydrodynamic Modelling of Flow-Field–Electrode Interactions in Redox Flow Batteries** *Yiqi Sun, Vahid Niasar, Maria Perez-Page*
53	[477] **Capturing Near-Well Effects in Formation Damage Modeling for Reservoir Simulation** *David Landa Marbán, Sarah Gasda, Tor Harald Sandve*
35	[542] **Towards non-Newtonian porosimetry in borehole testing** *Martin Lanzendörfer*
15	[547] **A Microfluidic Platform for Studying Adsorption-desorption Reactions in Porous Media** *Xin Lin, Chiara Recalcati, Joaquin Jimenez-Martinez*
9	[553] **Pore-scale thermodynamics and capillary-driven salt precipitation during brine evaporation: Implications for permeability evolution** *Chaojie Cheng, Rustam Niftaliyev, Nishant Prajapati, Britta Nestler, Christoph Hilgers*
23	[562] **Hydrochemical effects of increased thermal spread in geothermal operations** *Thomas Baumann, Marlis Hegels, Annette Dietmaier*
57	[576] **Calibration of Low-Resolution Micro-CT Pore-Network to Laboratory Absolute Permeability via Evolutionary Optimization** *Rodrigo Luna, Alexandre Evsukoff, Alyne Duarte Vidal, Elizabeth May Pontedeiro, Luan Vieira, Luciano Guedes, Rodrigo Surmas*
25	[582] **Estimating Thermal Dispersion and Darcy Fluxes by Active-DTS thermal tests** *Ji-young Baek, Olivier Bour, Tanguy Le Borgne, Maria Klepikova*
45	[591] **Modelling Coupled Hydro-Mechanical Responses in Unsaturated Fractured Rock** *Muhammad Raharsya Andiva, Chuanyin Jiang, Martin Ziegler, Qinghua Lei*
19	[599] **Graph-based upscaling of karst conduit networks** *Benoît Noetinger, Yousra Housni, Ivan Colecchio Pua*
11	[603] **Labyrinth patterns in a 2D cell under gravity effect** *Maud Viallet, Knut Jørgen Måløy, Stéphane Santucci*

Poster Session I, cont.

Great Hall, 09:50 - 11:20

Poster Board	
37	[622] **Pore-scale simulation of elastic stress distribution: a Volume-Of-Solid approach** *Julien Maes*
47	[625] **Fluid Occurrence Mechanisms in Deep Tight Sandstones: Quantitative Characterization of Pore Structure and Effective Pore-Throat Cutoffs via Integrated Experiments** *Sha Li, Dongxia Chen, Zaiquan Yang, Qiaochu Wang, Yuchao Wang, Na Li, Jianchao Cai, Yuqi Wang, Yuhe Chen*
27	[639] **The Dynamic Evolution of Relative Permeability during Multiphase Reactive Transport in Carbonates** *Yuxin Cheng, Martin Blunt, Yanghua Wang, Branko Bijeljic*
69	[645] **The effect of stratigraphic temperature on the fracture damage process of shale using the digital core technology** *Yingfang Zhou, Guoliang Li*
29	[663] **Experimental Characterization of Reactive Transport and Microbial Methanogenesis in Underground Hydrogen Storage Using CT-Supported Core Flooding** *Gerald Stiedl, Holger Ott, Patrick Jasek*
31	[697] **Mixing enhancement in porous media with impermeables inclusions** *Clément Petitjean, Francesco Gomez, Joris Heyman, Marc Lamblin, Tanguy Le Borgne*
3	[781] **Stormwater management by infiltration in Sustainable Urban Drainage Systems (SUDS): fate of contaminants in the vadose zone** *Clelia Doyon, Tiago de Oliveira, Liliane Jean-Soro, Mathieu Gautier, Denise Blanc, Johnny Gasperi, Beatrice Bechet*
49	[838] **Mesoporous Silicon as a Platform for Time-Resolved Imbibition of Alcohol–Water Mixtures** *Lukas Madlindl, Laurent Joly, Olivier Vincent, Michael Fröba, Denis Morineau, Patrick Huber*
55	[874] **Up-scaling flow in discrete and continuous models : comparison of several approaches.** *Benoit Noetinger, Iván Colecchio, Yousra Housni*

Poster Session I, cont.

Great Hall, 09:50 - 11:20

Poster Board	
39	[890] **Flow/system-dependency aspects of steady-state two-phase flow in model pore networks** *Marios Valavanides, Holger Steeb, Jonas Wegner, Konstantinos Mouravas, Nikolaos Karadimitriou, Panayiotis Dimitriadis, Timur Zhainakov*
41	[910] **Influence of REV Selection on Multiscale Porosity and Permeability Assessment Using Digital Rock Imaging** *Ingrid Carneiro, Anderson Camargo Moreira, Celso Peres Fernandes, Diego Volpatto, Fernando Bordignon, Iara Mantovani, Leandro Figueiredo*
51	[925] **Position and shape of a bubble in unsaturated spherical pores** *Ahmad Tarif Almodares, Etienne Rolley, Joël Puibasset*
33	[968] **Dispersion Measurements for Underground Hydrogen Storage over Sequestered CO2** *sam kobeissi, Eric May, Michael L. Johns, Nicholas Ling*
59	[978] **Connectivity-aware pore segmentation in carbonate SEM images using an attention U-Net with physics-aware refinement.** *Omar Choudhry, Wurood Alwan, Louey Tliba, Paul Glover, Richard Collier, Thamer Alghamdi*
21	[998] **A Space Renormalisation Framework for Fast Estimation of Effective Thermal Conductivity in Multiphase Porous Media** *Mehrdad Vasheghani Farahani*

Oral presentations: Parallel sessions 1.1
11:20 - 12:35

(MS01) Porous Media for a Green World: Energy & Climate - Part 1

Salle 200

Chairs: *Sojwal Manoorkar & Shuo Yang*

11:20	[115] **A Two-Step Screening Framework for Identifying Underground Hydrogen Storage Sites in Alberta's Depleted Gas Reservoirs** *Khashayar RahnamayBahambary, Hossein Hejazi, Matthew Clarke, Mohammad Tavallali, Morris Flynn*
11:35	[312] **Optimal Cushion Gas for Underground Hydrogen Storage: A Thermodynamic Perspective** *Yuhang Wang, Li Rong, Ke Xu*
11:50	[470] **Impact of fluvial reservoir heterogeneities on underground hydrogen storage operations** *Diya Sunil Kumbhat, Anozie Ebigbo, Jan Niederau*
12:05	[787] **From Pore to Core: Multi-Scale Evidence of Underground Hydrogen Storage Stability After Three Months of Hydrogen Exposure Under Reservoir Conditions** *Lin Ma, Christopher Rochelle, Edward Hough, Heather Braid, Kevin Taylor*
12:20	[372] **The Role of Microporosity During H2 Storage in Carbonate Reservoirs** *Mohammed Al Mandhari, Andreas Busch, Kamaljit Singh*

TUESDAY, 19 MAY 2026

Oral presentations: Parallel sessions 1.1, cont.

11:20 - 12:35

(MS02) Environmental Porous Media: Water, Agriculture, and Remediation - Part 1

Salle B/C

Chairs: *Amir Pahlavan & Mamta Jotkar*

11:20	[768] **The interception history paradigm: a different way of looking at colloid transport** *Bashar A Zghoul, Diogo Bolster, Sabrina Volponi, William Johnson, Bashar Al Zghoul, Sabrina Volponi, William Johnson* **Solicited Speaker**
11:35	[764] **Pore-Scale Hydrodynamically Driven Trapping of Microplastics in Soils** *Marjan Ashrafizadeh, Saeid Sadeghnejad, Thorsten Schäfer*
11:50	[746] **Transport of Unstable Nanoparticle Suspensions in Porous Media: A Pore Network Approach Incorporating Coagulation and Deposition** *Ali Mansourieh, Marios Ioannidis, Jeff Gostick*
12:05	[721] **Oscillatory Flow Modulates Clogging Dynamics in Microfluidic Porous Networks** *Walid Okaybi, Cyprien Soulaine, Sophie Roman*
12:20	[680] **Influence of bacterial surfactants on evaporation-driven capillary flows in a model soil pore** *Nathan Chapelle, Isabelle Cantat, François Peaudecerf*

Oral presentations: Parallel sessions 1.1, cont.
11:20 - 12:35

(MS05) Physics of multiphase flow in diverse porous media - Part 1
Salle I
Chairs: *Olivier Pitois & Saman Aryana*

11:20	[257] **Ostwald Ripening Kinetics in Porous Media** *Yashar Mehmani, Nicolas Bueno, Zahid Laku, Luis Ayala* **Solicited Speaker**
11:35	[475] **Configurational Entropy in Immiscible Two-Phase Flow in Porous Media** *Anders Melve, Amalie Hermundstad, Santanu Sinha, Alex Hansen*
11:50	[245] **Interplay between Pore and Solid Tortuosities of Synthetic Rocks** *Alexandre Sac-Morane, Maria Camila Olarte Garzon, Jean-Michel Pereira, Philipp Braun*
12:05	[719] **Forced Phase Separation in Nano-Pore Network** *Ke Xu, Shuye Ling*
12:20	[78] **Interfacial instability in non-Newtonian multiphase porous media flow** *Sourav Mondal, Pooja Singh*

Oral presentations: Parallel sessions 1.1, cont.

11:20 - 12:35

(MS07) Mathematical and numerical methods for multi-scale multi-physics, nonlinear coupled processes - Part 1

Salle G/H

Chairs: *Nadja Ray & Tuanny Cajuhi*

11:20	[294] **A Spectral Framework for Coupled Thermal and Reactive Transport in Pore Network Models** *Binan Gu, Burt Tilley*
11:35	[25] **Impact of saturation on evaporation-driven density instabilities in porous media** *Carina Bringedal, Cornelis Johannes (Hans) van Duijn, Rainer Helmig, Stefanie Kiemle*
11:50	[17] **A new light on the interface condition between the flow in a porous medium and the free flow** *Eduard Marusic-Paloka*
12:05	[767] **A three-scale mathematical model of high-performance liquid chromatography** *Tobias Gebäck, Alexei Heintz*
12:20	[75] **Multiscale homogenization-based transport modeling of porous composite proton exchange membranes for maximum charge transport.** *Aditya Parida, Raka Mondal*

Oral presentations: Parallel sessions 1.1, cont.
11:20 - 12:35

(MS08) Mixing, dispersion and reaction processes across scales in heterogeneous and fractured media - Part 1
Salle 150
Chairs: *Veronica Morales & Ran Holtzman*

11:20	[49] **Reactive transport processes in porous rock sample: role of local heterogeneities** *Linda Luquot* **Solicited Speaker**
11:35	[319] **Chemically Reactive Transport in Heterogeneous Unsaturated Porous Media: Experiments and Simulations** *Gauthier Legrand, Jordi Ortín, Tomas Aquino*
11:50	[225] **Pore-Scale Dynamics of Multiphase Reactive Transport in Water-Wet Carbonates under CO2-Acidified Brine Injection: Dissolution Patterns and Reaction Rates** *Qianqian Ma, Rukuan Chai, Sajjad Foroughi, Yanghua Wang, Zhuangzhuang Ma, Martin Blunt, Branko Bijeljic*
12:05	[128] **Carbon mineralization in basaltic reservoirs: Reactive transport and pore space controls on geometry evolution in CO2-seawater systems** *Mohammad Nooraiepour, Mohammad Masoudi, Helge Hellevang*
12:20	[113] **A Particle-Tracking Reactive Transport Model for Dynamic Aperture Evolution in Discrete Fracture Networks** *Wenyu Zhou, Linda Luquot, Delphine Roubinet*

TUESDAY, 19 MAY 2026

Oral presentations: Parallel sessions 1.1, cont.

11:20 - 12:35

(MS09) Pore-Scale Physics and Modeling - Part 1

Salle 300

Chairs: *Bo Guo & Peter Kang*

11:20	[280] **Thin Film Flow: Fluid Transport via Thin Liquid Films in Slow Porous Media Flows** *Marcel Moura, Paula Reis, Per Arne Rikvold, Gaute Linga, Eirik Grude Flekkøy, Gerhard Schäfer, Renaud Toussaint, Knut Jørgen Måløy* **Solicited Speaker**
11:35	[357] **Volume-of-Fluid Simulations of Moving Contact Lines in Microchannels** *Tianyang Han, Jieyun Pan, Mingjiu Ni, Stephane Zaleski*
11:50	[361] **Two-phase flow of yield-stress fluid in porous media : flow regimes and invasion patterns** *Nathan Abitbol, Alberto Rosso, Alex Hansen, Laurent Talon*
12:05	[967] **Accurate Curvature and Surface-Tension Modeling for Pinned and Moving Contact Lines in Pore-Scale Wetting Simulations** *David Gösele, Kathrin Schulte*

Oral presentations: Parallel sessions 1.1, cont.
11:20 - 12:35

(MS16) Complex fluid and Fluid-Solid-Thermal coupled process in porous media: Modeling and Experiment - Part 1
Salle K/L
Chairs: *Yingfang Zhou & Zhaoqin Huang*

11:20	[511] **Pore Characteristics and Damage Mechanisms of Gas-Bearing Coal under In-Situ Freeze-Thaw Cycles** *Jiale Wang, Yidong Cai*
11:35	[791] **Fluid–solid–thermal coupling in fibrous porous media: distinct roles of porosity, fiber orientation and relative humidity in cellulose fiber stacks** *Karen Mourda, Philippe Coussot*
11:50	[498] **Digital rock characterization and CO2 flow simulation: Insights for carbon geological sequestration in coal reservoirs** *Weixin Zhang, Sandong Zhou*
12:05	[215] **Development and experimental validation of a physically-based hygrothermal model for bio-based materials** *Nicolas Daunais, Van-Truong Nguyen, Yuliang Zou, Philippe Coussot*
12:20	[578] **Thermo-viscous instability of flow in a weakly heat-conducting channel** *Federico Lanza, Eirik Grude Flekkøy, Fabian Barras, Gaute Linga*

TUESDAY, 19 MAY 2026

Oral presentations: Parallel sessions 1.1, cont.

11:20 - 12:35

(MS20) Special Session in Honor of Jun Yao - Part 1

Club Atlantique

Chairs: *Guan Qin & Jianlin Zhao*

11:20	[207] **Beyond Darcy's Law: Quantifications of Multiphase Flow in Complex Porous Media** *Kejian Wu, Turan Mutallimov, Nur Shuhadah Binti Japperi, Godwin Agunwoke, Ciprian-Teodor Panaitescu, Mitterank Siboro*
11:35	[346] **Snap-off dynamics in constricted noncircular cross-section channels during drainage displacement** *Jiangtao Zheng, Tian Tian*
11:50	[384] **Elucidating Vadose Zone Solute Transport Dynamic via Soil-Embedded Microfluidics: Impacts of Saturation and Heterogeneity** *Bowen Ling*
12:05	[494] **Transport and retention behaviors of irregular microplastics in saturated porous media** *Pengfei Liu, Kexin Chen, Wenyuan Wang, Bate Bate*

DEI Lunch Forum

Salle 300,12:40-13:40

Chair: *Sonia Fidder*

Dr. Naomi Lumutenga

HERS - East Africa

Why Gender Inclusion is Africa's Next Big Growth Opportunity: Higher Education in Focus

Broadly, half of Africa's market is female, yet 50.8% is still excluded. Inclusion builds nations, for example, Rwanda & Mozambique, while exclusion shrinks markets and community development. Dr. Naomi Lumutenga is the Executive Director and Co-founder of Higher Education Resource Services - East Africa (HERS-EA), an educational NGO registered in Uganda, whose goal is to increase women leaders in Higher Education Institutions (HEIs) to at least 50%. The presentation by Dr. Naomi Lumutenga will highlight the work done by HERS-EA targeting HEIs – the institutions that shape mindsets and produce most of the national and private sector leaders. HERS-EA's innovative multi-tier model has been practiced for 10 years and delivered over 250 women leaders across East Africa, who lead differently. HERS-EA prepares women for leadership at all levels of community; women researchers receive training to conduct and publish research, and capacity development for personal development, resource mobilisation and institutional leadership. In return, they are tasked to identify neglected women-oriented issues, such as menstrual hygiene management, and to collaboratively mobilise resources, conduct and publish multi-disciplinary research to inform policy change. Increased research outputs accelerate leadership and promotion prospects for the women in higher education, while simultaneously supporting women elsewhere, by using data to highlight their issues. This low input-high output ecosystem of women empowering women has received global recognition, and it offers lessons for men and women who are ready to move from policy to practices that will finally move the gender equity dial.

Organized by InterPore's Diversity, Equality & Inclusiveness Committee, the DEI Forum will include a lunch-time lecture followed by an open discussion. This event is free and open to all participants of InterPore2026. Please note that participation in the Lunch Forum is limited to 300 attendees, due to room capacity, and will be available on a first-come, first-served basis.

TUESDAY, 19 MAY 2026

Lunch Break (also available at DEI Lunch Forum)

Great Hall, *12:40 - 13:40*

Oral presentations: Parallel sessions 1.2

13:50 - 15:05

(MS01) Porous Media for a Green World: Energy & Climate - Part 2

Salle 200

Chairs: *Florian Cajot & Lifei Yan*

13:50	[711] **Reactive Transport in Underground Gas Storage: Dissolution Patterns and Effective Reaction Rates in Single-Mineral, Multi-Mineral and Multiphase Media** *Branko Bijeljic, Martin Blunt, Olatunbosun Adedipe, Qianqian Ma, Rukuan CHAI, Sajjad Foroughi* **Solicited Speaker**
14:05	[688] **Influence of Local pH Gradients on Carbonate Precipitation in Multiphase Water-scCO2 Systems: A microfluidic reactor study** *Rosalie Krasnoff, Tianxiao Shen, Emily Nienhuis, Harsh Chopra, Shaina Kelly, Todd Schaef, Yuntian Teng*
14:20	[39] **Assessing the impact of oxygen on rock mineralogy and fluid composition for subsurface biomethane storage in porous reservoirs** *Zaid Jangda, Ali Daoud, Andreas Busch, Hunter Keil, Lorraine Boak, Martin Maple, Robbie Skivington*
14:35	[299] **Chemo-Mechanical Characterisation of Effects and Working Dynamics of Nanosilica in Wellbore Cement Sheath for Advanced Application** *Chigbo Waliezi, Dirk Engelberg, Majid Sedighi, Mojgan Hadi Mosleh*
14:50	[932] **Time-Resolved Synchrotron Investigation of Acid-induced Mineral Dissolution in Rio Bonito Sandstones: Implications for CO2 Storage** *Aluizio Jose Salvador, Caetano Rodrigues Miranda, Colombo Celso Gaeta Tassinari, Jeann César Rodrigues de Araújo, Jessica Santos Rego, Nathaly Lopes Archilha, Isabella Miranda*

Oral presentations: Parallel sessions 1.2, cont.
13:50 - 15:05

(MS05) Physics of multiphase flow in diverse porous media - Part 2
Salle I
Chairs: *Ke Xu & Saman Aryana*

13:50	[279] **Design of porous materials: use of a pore-network model to optimize wettability for catalytic CO2 electroreduction** *Martin Blunt, Hao Bin Wu, Ming-Liang Qu, Qian Zhao, Qingyang Lin, Sajjad Foroughi, Yaqiong Su, Zi-Tao Yu*
14:05	[377] **A Numerical Analysis of Pore-Scale Two-Phase Flow in Porous Transport Layer of Proton Exchange Membrane Electrolyzer** *Silay Onder, Jure Oder, Lilla Koloszar, Simon Kuhn, Wim Munters*
14:20	[581] **Foam confined in granular media: liquid distribution & consequences** *Ali Salamé, Olivier Pitois, Vincent Langlois*
14:35	[423] **Multi-phase Flow and Bubble Management in Anion Exchange Membrane Water Electrolysis for Green Hydrogen Production** *Guangrong Deng, Liang An, Lizhen WU, Qiang Zheng, Tianhao Wu*
14:50	[854] **A "Coulomb friction" model of two-phase flow in a rough fracture** *Mykyta V. Chubynsky, Marco Dentz, Jordi Ortín, Ran Holtzman*

Oral presentations: Parallel sessions 1.2, cont.
13:50 - 15:05

(MS08) Mixing, dispersion and reaction processes across scales in heterogeneous and fractured media - Part 2
Salle 150
Chairs: *Pietro de Anna & Veronica Morales*

13:50	[375] **Chaotic mixing by multiphase flow in porous media** *Gaute Linga, Kevin Pierce, Marcel Moura, Francois Renard, Joachim Mathiesen, Tanguy Le Borgne* **Solicited Speaker**
14:05	[750] **Impact of connectivity on up-scaling of dispersion and line stretching** *Konstantinos Feroukas, Daniel R. Lester, Juan J. Hidalgo, Marco Dentz*
14:20	[295] **Chaotic Advection and Chaotic Mixing in Unsaturated Porous Media** *Andrés Velásquez-Parra, Federica Marone, Michele Griffa, JoaquinJimenez-Martinez*
14:35	[9] **Chaotic Advection is Inherent to Heterogeneous Darcy Flow** *Daniel Lester, Guy Metcalfe, Marco Dentz, Mike Trefry*
14:50	[218] **Mixing scales in porous media** *Joris Heyman, Tanguy Le Borgne*

Oral presentations: Parallel sessions 1.2, cont.
13:50 - 15:05

(MS09) Pore-Scale Physics and Modeling - Part 2
Salle 300
Chairs: *Peter Kang & Marco De Paoli*

13:50	[478] **What is the role of pore-scale chaotic mixing in Darcy-scale reaction kinetics ?** *Tanguy Le Borgne, Hugo Sanquer, Joris Heyman, Khalil Hanna, Satoshi Izumoto*
14:05	[648] **From Darcy to inertia-dominated convection: the role of plume-scale confinement** *Dario Schwendener, Christophe Coreixas, Jerome Noir, Jonas Latt, Xiangzhao Kong*
14:20	[692] **Investigation of a Velocity PDF-based Model for Dispersion in Porous Media** *Yilkut Aydin, Michael Manhart, Yoshiyuki Sakai*
14:35	[629] **From anomalous transport of red blood cells in microvascular networks to oxygen delivery in the brain** *Hugo Blons, Joris Heyman, Sylvie Lorthois, Tanguy Le Borgne*
14:50	[195] **Unravelling Reactive Transport in Subsurface Rocks: Can we predict what we measure?** *Jacqueline Mifsud, Hannah Menke, Florian Doster, Callum Robinson, Sam Shaw, Katherine Morris, Jingyue Hao, Lin Ma, Aislinn Boylan, Liam Abrahamsen-Mills, Vasileios Tsitsopoulos, Keith Bateman, Julien Maes*

Oral presentations: Parallel sessions 1.2, cont.
13:50 - 15:05

(MS10) Advances in imaging porous media: techniques, software and case studies - Part 1
Salle B/C
Chairs: *Maja Ruecker & Tom Bultreys*

13:50	[992] **The EXCITE Network: European transnational access to advanced imaging for porous media in Earth and Environmental sciences** *Veerle Cnudde, Laurenz Schröer, Chandra Winardhi* **Solicited Speaker**
14:05	[23] **Flow visualization in porous media through 3D printing and index matching** *Adam Gargasson, Mathieu Souzy*
14:20	[184] **Multiscale CT-based characterization of pore structures and a sliding-layer method for permeability estimation based on local connectivity** *Hongyang Ni, Hai Pu*
14:35	[301] **Real-time 3D (4D) Quantitative Phase Imaging Under Extream Conditions** *Xuan Kou*
14:50	[371] **Imaging surface reactivity in porous materials by positron emission tomography** *Cornelius Fischer, Jann Schöngart*

Oral presentations: Parallel sessions 1.2, cont.
13:50 - 15:05

(MS12) Coupled Flow-Deformation Processes in Porous Media - Part 1
Club Atlantique
Chairs: *Yihuai Zhang & Chaojie Cheng*

13:50	[563] **Cyclic Compaction of Porous Rock Under Variable Stress Paths: Implications for Underground Hydrogen Storage** *Zhaochen Xu, Jean Sulem, Philipp Braun*
14:05	[566] **CO2 injection induced fracturing simulation by a phase-field approach under non-isothermal conditions** *Keita Yoshioka, Fengshou Zhang, Hanzhang Li, Tao You, Yuhao Liu*
14:20	[349] **Effect of Bedrock Fault and Frictional Layer on Tunneling-Induced Ground Settlement: A Hydro-Mechanical Modeling Study in Composite Soil–Rock Systems** *Hadi Karimzadeh, Iman Vaezi, Qinghua Lei*
14:35	[864] **Coupled poromechanical flow and deformation at intermediate scale: numerical insights for CO2 storage** *Dario Sciandra, Eleni Stavropoulou, Lyesse Laloui*

Oral presentations: Parallel sessions 1.2, cont.
13:50 - 15:05

(MS15) Machine Learning in Porous Media - Part 1
Salle G/H
Chairs: *Hongkyu Yoon & Marwan Fahs*

13:50	[56] **Surrogate Modeling of Particle Retention in Porous Media Enabled by a Massive Pore-Scale Simulation Dataset** *Saeid Sadeghnejad, Amirhossein Avvali, Frieder Enzmann, Michael Kersten, Thorsten Schäfer*
14:05	[446] **A machine learning method to automatically segment solid and multiple fluid phases in time-dependent 3D (4D) images** *Zhuangzhuang Ma, Branko Bijeljic, Martin Blunt, Qianqian Ma, Rukuan Chai, Zhi Zheng*
14:20	[497] **Beyond Spectral Bias in Geothermal Heat Transport: A Comparative Analysis of Fourier Neural Operators and DeepONet Architectures in Heterogeneous Media** *Antonio Ortiz Romero, Juan J. Hidalgo, Silvia De Simone*
14:35	[693] **Investigating Machine Learning Models for Pore-Scale Multiphase Flow Using Simulations and Experimental Observations** *Chunyang Wang, Gege Wen, Linqi Zhu*
14:50	[899] **Operator Learning for Multispecies Reactive Transport in Heterogeneous Media** *Fatima Tokmukhamedova, Cyrille Allery, Jérôme Lux*

Brew Break & Exhibition
15:05 - 16:35

Refreshments are available in the Great Hall. Come grab a drink, network with other attendees, visit the exhibition booths and discuss the posters on display.

A CLOSER LOOK AT OUR PRODUCT PORTFOLIO

Canon Production Printing develops and manufactures high-tech printing products and workflow software for the commercial printing market and is part of Canon, a global provider of imaging technologies and services.


Continuous feed


Cut sheet


Large Format Flatbed


Large Format Roll-to-Roll


Large Format Plotters


Workflow solutions

GEODICT
The Digital Material Laboratory

TUESDAY, 19 MAY 2026

Poster Session II

Great Hall, 15:05 - 16:35

Poster Board	
4	[107] **Simulating flow and transport in fractured porous media with a statistical integro-differential fracture model (Sid-FM)** *Shangyi Cao, Daniel Stalder, Daniel Meyer, Patrick Jenny*
48	[132] **Glassy Dynamics of LiCl Solution in Nanopores Media** *Armin Mozhdehei, Mohammad Nadim Kamar, Basma Dupont, Ronan Lefort, Alain Moréac, Agathe Belime, Denis Morineau*
2	[142] **Zwitterionic surfactant stabilised oil-water separation using novel composite electrospun nanofibrous-phase inverted PES membranes** *Akmaral Karamergenova*
36	[185] **Resolution-aware multiscale SEM workflow for pore morphology and permeability in dense sandstone** *Hai Pu, Hongyang Ni*
54	[193] **Transport of surfactant solutions in thin porous media** *Myrthe Reijnier, Alex Rusu, Emma Borst, Jasper van den Hoek, Bart Erich, Olaf Adan, Henk Huinink*
38	[213] **Integrating µCT Imaging and Digital Registration to Analyze Wormhole Formation in Carbonate Rocks Acidification** *Layne Oliveira de Lucas Gontijo, Richard Bryan Magalhães Santos, Sergio Augusto Barreto da Fontoura, Alejandra Daniela Delgado Vallejo, Claudio De Lima, Luiza Fagundes Lima Fernandes, Marcel Neumann, Rafael Richie Lopez Chavez, William Godoy*
56	[251] **Moisture sorption of paper containing co-solvents and its impact on pore-fiber transport rates** *Sajjad Karimnejad, Anton Darhuber*
20	[273] **Geologic stress modulates fluid mixing at fracture intersections** *Jingxuan Deng, Laura J. Pyrak-Nolte, Peter Kang*
6	[307] **Geomechanical Stability and Hydraulic Response of Basaltic Waste Heaps Under CO_2 Mineralization Processes** *Gideon Osei Faaho, Alex Reinhart, Jason Simmons, Laura Waters, Mehrdad Razavi, Nicole Hurtig, Sai Wang*

Poster Session II, cont.

Great Hall, 15:05 - 16:35

Poster Board	
26	[347] **Snap-off dynamics in constricted noncircular cross-section channels during drainage displacement** *Jiangtao Zheng*
22	[388] **Spatial structure, chemotaxis and quorum sensing shape biomass accumulation in complex systems** *David Scheidweiler, Ankur Bordoloi, Monica Bollani, Vladimir Sentchilo, Philipp Engel, Pietro De Anna*
24	[454] **Multicomponent mass transfer in the direct reduction of an iron ore pellet** *Menno Koning, Frank Peters, Yali Tang, Niels Deen, Kay Buist*
8	[514] **Experimental study on flow patterns during gas and water flooding in fractured-vuggy reservoirs** *Zhenjiang You, Yihang Xiao, Han Xu, Chi Zhang, Xuan Qin*
40	[530] **Pore-scale chaotic mixing in rocks revealed by X-ray tomography** *Isabelle Bihannic, Atefeh Vafaie, Iman Rahimzadeh Kivi, Sojwal Manoorkar, Nihal Darraj, Mohamed Saleh, Francesco Gomez, Marc Lamblin, Benoit Cordonnier, Tanguy Le Borgne, Sam Krevor, Joris Heyman*
50	[590] **Molecular simulations of CO2 capture by selective adsorption on biomass-derived activated carbons.** *Manar Nouadria, Amaël Obliger, Guillaume Galliero, Jean-Marc Leyssale, Romain Vermorel*
60	[623] **Physics-Informed LSTM Network for Water Saturation Prediction in Heterogeneous Tight Sandstone Reservoirs: Integrating Petrophysical Constraints with Sequential Data** *Sha Li, Dongxia Chen, Zaiquan Yang, Qiaochu Wang, Jianchao Cai, Yuchao Wang*
42	[642] **From Dynamic Imaging to Direct Parameter Estimation in Porous Media** *Sundus Iqbal, Erik Andreas Hanson, Erlend Storvik*
66	[678] **Hybrid Green Roof System for Decentralized Wastewater Treatment: Building a Decision-Support Tool for Design Optimization** *Razbar Azad Wahab, Marek Petreje, Michal Snehota*

TUESDAY, 19 MAY 2026

Poster Session II

Great Hall, 15:05 - 16:35

Poster Board	
46	[691] **Modeling of sorption-induced deformations of porous materials due to surface adsorption, capillary effects, and cavitation** *Jingyi Leng, Matthieu Vandamme, Patrick Dangla, Laurent Brochard*
28	[718] **Impacts of Gravity on Gas Continuity Evolution during Injection-Retraction Cycles** *Kangdi Xu, Ke Xu*
16	[730] **Foam-assisted (bio)remediation of petroleum-contaminated soil: effects of surfactant formulation on foam behaviour, interfacial properties, and bioavailability** *Sholpan Baimaganbetova, Amélie Cavelan, Maxime Cochennec, Sagyn Omirbekov, Stéfan Colombano, Eric D. van Hullebusch*
30	[773] **May the H_2 Forces Be with You: Dimensionless Force Balance and Recovery Efficiency in Subsurface Hydrogen Storage** *Ferney Moreno, Moh´d Amro*
12	[784] **Thermodynamic Control of Wettability Evolution in High-Porosity Carbonate Rocks for CO_2 and Hydrogen Storage** *Mohammed Nasiru Bello, Branko Bijeljic, Martin Blunt*
62	[789] **A High-Fidelity Surrogate for Multiphase Flow in Complex Faulted System Using Geometric-Aware Fourier Neural Operator** *Chia-Wei Kuo, Ching-En Kung*
52	[832] **Effect of metakaolin and fly ash on the early hydration and pore structure of Portland cement** *Vanda Papp, Ioan Ardelean, Anna Bulátkó, Krisztina László, Attila Csík, Róbert Janovics, Mónika Kéri*
44	[850] **Microstructural behavior of polyester fiber-reinforced cementitious composites under freeze-thaw cycles** *Mahya Roustaei, Pooneh Maghoul, Sophie Jung, Duane Froese, Jordan Harvey, Nicolas Piche, Sam Bhat, Taieb*
68	[924] **Salt Precipitation-Driven Rock Failure Mode Transition During Geological CO2 Sequestration** *Zheng Li, Junjie Ju, Senyou An*

Poster Session II, cont.

Great Hall, 15:05 - 16:35

Poster Board	
70	[953] **4D X-ray tomography to analyze water imbibition in beech wood: interplay between cell wall diffusion and liquid water transport** *Romain Bordage, Sabine Rolland du Roscoat, Yoshiharu Nishiyama, Laurent Orgeas*
14	[960] **Gas-diffusion-dominated foam coarsening in non-Newtonian fluids** *Tongke Zhou*
10	[976] **A Coupled DEM–LBM Study on Shear Mechanisms and Permeability Evolution of Matrix–Fracture Systems in Ultra-Deep Reservoirs** *Jinhui Zheng, Tianyu Liu, Tianhao Wu, Xiaolong Yin, Dongxiao Zhang*
32	[982] **How Large Is Too Large? CFD on Multi-Billion-Voxel Micro-CT Images** *Julien Maes, Gavin J Pringle, Hannah Menke*
58	[1000] **Compressible gas flow characterized through a compressibility number and pressure curvature** *Alejandro Fernandez Visentini, Juan J. Hidalgo, Marco Dentz*
18	[1004] **Modelling of Rock Convergence and Crushed Salt Compaction in Salt Repositories in NaTREND Simulation Code** *T. Reiche, A. Rübel, D.-A. Becker, J.W. Wolf, T. Lauke*
64	[1016] **Upscaled Prediction of Key Petrophysical Properties Directly from Digital Rock Images** *Yuntao Jia, Jingwei Zhu, Hang Deng, Ke Xu, J. Blunt Martin, Chiyu Xie*
34	[1031] **Transport in Sodium–Montmorillonite from a Physics-Informed Gaussian-Process Coarse- Grained Model** *Yalda Pedram, Yaoting Zhang, Chang Seok Kim, Laurent Brochard, Laurent K Beland*

TUESDAY, 19 MAY 2026

Invited Parallel Lecture 1

Auditorium 800, 16:35 - 17:05
Chair: *Diogo Bolster*

Jesús Carrera
IDAEA, *Spain*

Conceptual challenges to model biochemical processes in aquifers

Pollution is arguably the worst environmental global challenge faced by society. While pollution problems are local in nature, current policies (e.g., spill it rivers the outflow of wastewater treatment plants, WWTPs) favor the broad spread of pollutants, to the point that many of them are becoming global threats (e.g., antimicrobial resistance, endocrine disruptors, microplastics). While this error is widely acknowledged by the scientific community, a misunderstood precautionary principle prevents the use of soil aquifer treatment to remove these pollutants from WWTP effluents. In this presentation, I will expand on the importance of pollution as a global challenge, on why regulations concerns are unfounded, and especially on the processes that govern pollutants removal. These processes rely on the fact that porous media display large specific surface areas. These surfaces host biofilms that tend to absorb many organic pollutants (specifically those that are toxic by accumulation), precisely in the locations hosting the microbial communities that degrade those pollutants (we conjecture that this is the result of natural selection). Retention and degradation processes are improved by the addition of a reactive layer, as it favors the growth of biofilms, ad the adsorption of ionic compounds. Research challenges of these processes are significant. Degradation occur at the sub-pore scale in biofilms, which host the vast majority of microorganisms that catalyze them. Therefore, solute transport and reactions become controlled by diffusive processes. But aquifer scale transport is controlled by dispersive processes and heterogeneity. The issue is further complicated by biofilm growth, which changes porosity and permeability and large-scale heterogeneity, as well as localized residence and reaction times in different portion of the medium. Addressing these pore scale processes, while acknowledging their impact on aquifer scale heterogeneity is challenging, but needed to understand how these "new" pollutants are removed during soil passage, in turn needed to help convince regulators.

Invited Parallel Lecture 2

Salle 300, 16:35 - 17:05

Chair: *Anton Darhuber*

Lara Manzocco
University of Udine*, Italy*

Porous pathways to improve food functionality and sustainability

The complexity of food arises not only from their multicomponent chemical nature but also from the diverse molecular and supramolecular arrangements that form a complex matrix comprising both matter and voids. Porous regions, distributed across nano-, micro-, and macro-scales, are not merely empty spaces but critical features that influence food functionality and sustainability. Food porosity significantly increases surface area, driving chemical and biological reactivity at interfaces and enhancing the release or absorption/adsorption of food liquids (e.g., water, oil), volatile compounds (e.g., flavors, antioxidants), and bioactive molecules (e.g., vitamins and other micronutrients). The size, shape, and connectivity of food pores can affect food performance throughout its lifecycle—from processing and storage to final consumption and digestion in the gut—impacting food acceptability, sensory perception, nutrient release during digestion, shelf life, and the efficient use of natural, often plant-based, resources.

Although many foods with macroporosity have traditionally been produced through processes such as fermentation, frying, puffing, or extrusion, the development of novel micro- and nano-structured porous materials with diverse potential functionalities has only recently emerged. This progress is largely driven by the ability to produce cryogels and aerogels. Cryogelation exploits the pore-forming action of ice crystals during freezing, while aerogelation involves replacing the liquid phase in a biopolymer gel or biological tissue with air—often through supercritical carbon dioxide drying.

This presentation initially focuses on the basic approach for preparing highly porous food-grade materials from proteins (whey, pea and soy), polysaccharides (carrageenan, cellulose) and food residues (whey and plant residues). It then explores a range of advanced food applications for porous materials – used as monoliths or particles -including smart ingredients controlling nutrient release, delivery systems for active compounds, oil structuring agents to develop fat substitutes, sensory experience modulators, cell-growth scaffolds, and novel biodegradable and intelligent food packaging materials. These examples serve to analyse current research challenges and prospect future market opportunities.

TUESDAY, 19 MAY 2026

Oral presentations: Parallel sessions 1.3
17:10 - 18:10

(MS01) Porous Media for a Green World: Energy & Climate - Part 3
Salle 200
Chairs: *Lifei Yan & Alessandro Lenci*

17:10	[53] **Modeling the optimal foam injection slug in porous medium accounting adsorption effects** *Grigori Chapiro*
17:25	[906] **Finite Element Modeling of CO_2–Brine Flow with Thermal Effects in Saline Aquifers** *Daniel Peixoto, Thiago Dias dos Santos*
17:40	[1005] **Organic Matter Enrichment Mechanisms and Organic Pore Evolution Models of Black Shales in the Gufeng Formation, Northern Sichuan Basin** *Zimeng Wang, Guang Hu*
17:55	[970] **An enhanced multiscale GmFEM approach with no-flow Lagrangian-Eulerian scheme for three-phase flows in high-contrast porous media** *Eduardo Abreu, Jean François, Juan Galvis, Paola Ferraz*

(MS06) Interfacial phenomena across scales - Part 1
Salle I
Chairs: *Paula Reis, Rui Wu & Ran Holtzman*

17:10	[971] **Gravity fingering in porous media: bridging pore-scale physics with macroscopic observations** *Mohammad Salehpour, Tian Lan, Benzhong (Robin) Zhao* **Solicited Speaker**
17:25	[972] **Beyond Tate's law: geometric control of pendant drop detachment** *Bauyrzhan Primkulov* **Solicited Speaker**
17:40	[672] **Understanding the apparent wettability of bubbles and droplets: A multimethod experimental study** *Fabian Tapias, Nitu Lakhmara, Nikolaos Karadimitriou, Holger Steeb, Maartje Boon*
17:55	[827] **A new experimental approach for the analysis of surface energies in porous ceramic membranes for hydrogen applications** *George Claudiu Savulescu, Anne Timmermans, Diletta Giuntini, Joris Remmers, Maja Ruecker*

Oral presentations: Parallel sessions 1.3, cont.
17:10 - 18:10

(MS10) Advances in imaging porous media: techniques, software and case studies - Part 2
Salle B/C
Chairs: *Liwei Zhang & Qinhong Hu*

17:10	[695] **Zoom-in tomography of 1.5" rock samples: first results obtained at high energy using a hybrid detector at the MOGNO beamline.** *Nathaly Lopes Archilha, Gabriel Schubert Ruiz Costa, Aline Barbosa de Oliveira, Lucca Bavia Cuenca Campoi, Lucas Eduardo Pinho Vecina, Larissa Macul Moreno, Eduardo Xavier Miqueles, Daphne Silva Pino, Rodrigo Surmas, Everton Lucas De Oliveira*
17:25	[516] **CTracks: A novel computed tomography algorithm for fast 4D X-ray microparticle velocimetry in porous media** *Robert van der Merwe, Wannes Goethals, Sharon Ellman, Sojwal Manoorkar, Jan Aelterman, Matthieu Boone, Tom Bultreys*
17:40	[572] **High temperature behavior of concrete revealed by in-situ coupled neutron and x-ray tomography and thermo-hydromechanical modelling** *Elena Ilari, Dal Pont, Roberto Felicetti, Tengattini*
17:55	[821] **DYRECT: Dynamic Reconstruction of Events in micro-CT data of multiphase flow in porous media** *Wannes Goethals, Robert van der Merwe, Jan Aelterman, Matthieu Boone, Tom Bultreys*

TUESDAY, 19 MAY 2026

Oral presentations: Parallel sessions 1.3, cont.

17:10 - 18:10

(MS13) Fluids in Nanoporous Media - Part 1

Salle 150

Chairs: *Bin Pan & Patrick Huber*

17:10	[467] **Humidity-driven crystallization and deliquescence of salt in nanopores** *Olivier Vincent, Hugo Bellezza, Marine Poizat* **Solicited Speaker**
17:25	[797] **Elastocapillary Fingerprints of Distinct Drying Regimes in Nanoporous Media** *Juan Sanchez, Laura Gallardo, Philippe Coussot, Patrick Huber*
17:40	[152] **Moisture transport through nanoporous clay** *Yousra Ait-Chekh, Benjamin Maillet, Philippe Coussot*
17:55	[376] **NMR T_{1-T2} mapping of fluid mobility and pore structure alterations in Mowry shale** *Johanna Romero, Anastasiia Nagmutdinova, Villiam Bortolotti, Vladimir Alvarado*

(MS14) Advanced Flow Physics in Specialized Porous Systems: Non-linear dynamics and finite-size effects - Part 1

Salle K/L

Chairs: *Nicolae Tomozeiu & Yves Méheust*

17:10	[106] **The flow of yield stress fluids in porous media: statistical properties, universality classes and boundary conditions.** *Laurent Talon* **Solicited Speaker**
17:25	[594] **Direct Visualization of viscoelastic flow fields in 3D porous media using X-ray particle velocimetry** *Parsa Damanshokouh, Sojwal Manoorkar, Robert van der Merwe, Wannes Goethals, Cyprien Soulaine, Flavio Marchesini de Oliveira, Tom Bultreys*
17:40	[592] **Interaction of structure, flow and dispersion for non-Newtonian fluids in heterogeneous networks** *Marco Dentz, philippe gouze, Alexandre Puyguiraud*
17:55	[771] **Activity driven flows of dense bacteria suspensions in porous structures** *Juan David Torrenegra-Rico, Harold Auradou, Morgan Chabanon*

Oral presentations: Parallel sessions 1.3, cont.

17:10 - 18:10

(MS19) Uncertainty-Aware Decision Support in Porous Media Applications - Part 1

Salle G/H

Chairs: *Sarah Perez & Ahmed ElSheikh*

17:10	[62] **Stochastic cooperative game models for CO2 storage with uncertain payoffs under pressure space competition** *Per Pettersson, Svenn Tveit, Sarah Gasda* **Solicited Speaker**
17:25	[740] **Accelerating Preconditioned MCMC via Multiscale Sampling** *Arunasalam Rahunanthan, Abdullah Al-Mamun, Alsadig Ali, Felipe Pereira*
17:40	[93] **Bayesian Full-waveform Monitoring of CO2 Storage with Fluid-flow Priors via Generative Modeling** *Haipeng Li, Nanzhe Wang, Louis Durlofsky, Biondo Biondi*
17:55	[504] **The benefit of multivariate data assimilation for prediction of states and fluxes in soils and aquifers** *Bastian Waldowski, Harrie-Jan Hendricks-Franssen, Insa Neuweiler*

(MS20) Special Session in Honor of Jun Yao - Part 2

Club Atlantique

Chairs: *Bowen Ling & Cunqi Jia*

17:10	[96] **Reconstruction of digital rock based on discrete element method considering thermal-mechanical coupling effect** *Chunqi Wang, Jun Yao*
17:25	[585] **Impact of Pore Geometry Evolution on Relative Permeability during Hydrate Dissociation Processes: A Coupled Lattice-Boltzmann Approach** *Zhuoran Li, Guan Qin*
17:40	[461] **Pore-Scale Simulation of CO2 Dissolution in Saline Aquifers under Convective Conditions Using the Lattice Boltzmann Method** *Jianlin Zhao, Taoran Zhao, Guangqing Zhang, Feifei Qin*
17:55	[116] **Pore-scale simulation of underground hydrogen storage in aquifers based on lattice Boltzmann method** *Tianyu Zuo, Jun Yao, Hai Sun, Lei Zhang, Wenxin Yang*

Welcome Reception

Great Hall, 18:10-19 :10

Join us for a welcome reception and the official opening of the conference exhibition. Wine and light refreshments will be provided. This is a great opportunity to socialize with your peers, visit the exhibitor booths, and kick-off the conference.
Tickets are included in the in-person registration and accompanying persons fees.

Anneaux de Buren, Nantes
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Invited Parallel Lecture 3

Auditorium 800, 08:30 - 09:00
Chair: *Noushine Shahidzadeh*

Nicola Hüsing
Universität Salzburg, *Austria*

Sol-Gel Chemistry with a Twist: Porous Materials from Unconventional Precursors

The design of porous materials with well-defined architectures is a central challenge in materials chemistry, since pore size, connectivity, tortuosity, and shape strongly determine their potential applications in catalysis, separation, energy storage, and sensing.

Conventional sol-gel approaches often lack the versatility to achieve such deliberate structural control, motivating the development of new synthetic strategies. In this contribution, we present sol-gel processing routes towards highly porous monoliths based on unconventional, glycolated precursors such as tetrakis(2-hydroxyethyl)orthosilicate, organically substituted and related metal derivatives.

The replacement of classical alkoxy groups by diols/ polyols alters the reactivity of the precursors, enabling new pathways to tailor porosity, surface chemistry, and material composition, while also introducing specific synthetic challenges. In combination with co-monomers, these systems provide access to functional and structurally complex networks that extend the scope of sol-gel chemistry. By highlighting both opportunities and limitations of these non-traditional precursors, this work outlines new perspectives for the rational design of porous materials with controllable architectures and advanced functionalities.

Invited Parallel Lecture 4

Salle 300, 08:30 - 09:00

Chair: *Brian Berkowitz*

Yves Méheust
University of Rennes, *France*

Immiscible two-phase flow in geological fractures

In crystalline rocks of the Earth's crust, most fluid flows are accommodated by networks of interconnected fractures. Immiscible two-phase flow in such geological fractures is relevant to various industrial contexts, including subsurface fluid storage and hydrocarbon recovery. The fractures are natural objects resulting from thermally- or mechanically-inducted fracturing of a geological formation, followed by mechanical and/or (bio-)chemical weathering over millions of years. Their geometry possesses an inherent stochastic disorder that is well-characterized statistically; the wall roughness is usually Gaussian-distributed while exhibiting a self-affine scale invariance, and the two walls' topographies are matched with each other at length scales larger than a characteristic 'correlation' length.

As in porous media, primary displacement of a resident fluid by an injected one in such geometries is controlled by the joint effect of viscous forces, capillary forces arising from surface tension effects at fluid-fluid interfaces, and gravity. However, capillary forces act in a different manner in fractures as compared to porous media, because in porous media the two principal curvatures of fluid-fluid interfaces are constrained by the medium's structural heterogeneity, whereas in fractures only the out-of-plane curvature is; the in-plane curvature, in contrast, depends on the history of the displacement.

We use a combination of numerical simulations and analogue experiments to study such displacement in geological fractures, focusing on configurations for which the injected fluid is non-wetting. The numerical simulations adopt a volume-of-fluid approach to either describe the three-dimensional (3D) flow in the fracture's volume, or directly model the depth-averaged 2D flow along the fracture plane, the latter approach being much more computationally-efficient.

Continued on next page

Invited Parallel Lecture 4, cont.

The experiments rely on transparent rough walls obtained from realistic synthetic geometries; their position with respect to each other can be adjusted to modify the relative fracture closure.

Various morphological features of the fluid phases' occupation patterns in the fracture plane, as well the pressure drop across the fracture, are analyzed to characterize the flow regimes as a function of three geometric parameters, the viscosity ratio of the fluids, the capillary number and/or Bond numbers, and an additional, novel, non-dimensional number. Phase diagrams are proposed for such primary two-phase flows in geological fractures. Flow configurations which maximize trapping of the displaced fluid are also determined.

Oral presentations: Parallel sessions 2.1

09:05 - 10:05

(MS01) Porous Media for a Green World: Energy & Climate - Part 4

Salle 200

Chairs: *Laurez Maya & Sojwal Manoorkar*

09:05	[80] **Geomechanical Response to Cyclic Hydrogen Storage in a Fault-Bounded Saline Aquifer** *Anna-Maria Eckel, María Belén Febbo, Hannes Hofmann, Cornelia Schmidt-Hattenberger* **Solicited Speaker**
09:20	[610] **Assessing geothermal reservoir deformation and hydro-mechanical behavior through numerical modeling informed by borehole pressure and injection data** *Arezou Dodangeh, Renaud Toussaint, Eirik Grude Flekkøy, Marwan Fahs*
09:35	[805] **Mesoscale simulations for modeling clay swelling due to completion fluids in CCS** *Vishal Ahuja, Chaitanya Pradhan, Foram Thakkar*
09:50	[508] **Interplay of Multiphysics Processes for Reliable CO2 Storage Design in Chalk Reservoirs** *Hamid M. Nick, Ali Reza Khazali, Armin Abdoulahi, Behzad Hosseinzadeh, Carlos Ferreira, Frederic Amour, Hamed Kermani*

WEDNESDAY, 20 MAY 2026

Oral presentations: Parallel sessions 2.1, cont.
09:05 - 10:05

(MS02) Environmental Porous Media: Water, Agriculture, and Remediation - Part 2
Salle B/C
Chairs: *Linda Luquot & Veronica Morales*

09:05	[684] **Permeation of semi-dilute polymer solutions into water-saturated soils** *Callum Cuttle, Hangkai Wei, Chris MacMinn* **Solicited Speaker**
09:20	[437] **Time-lapse X-ray microtomography of particle transport and retention in porous media** *Muhammad Muqeet Iqbal, Cyprien Soulaine, Sojwal Manoorkar, Sophie Roman, Tom Bultreys, Catherine Noiriel*
09:35	[488] **From Nanoplastics to PFAS: Engineered Carbonaceous Porous Media for Emerging Contaminant Removal** *Mojgan Hadi Mosleh, Chundi Feng, Samaneh Ghaedi, Esther Nyebe, Partasarathi Mandal, Hamid Rajabi, Majid Sedighi*
09:50	[356] **Nanoremediation of porous aquifers: facing mobility and entrapment of nZVI** *Daphne Silva Pino, Carlo Bianco, Luiz Fernando de Lima Luz Junior, Nathaly Lopes Archilha, Pavel Kazakovtsev, Reginaldo Bertolo, Tannaz Pak, Tiziana Tosco*

Oral presentations: Parallel sessions 2.1, cont.
09:05 - 10:05

(MS05) Physics of multiphase flow in diverse porous media - Part 3
Salle I
Chairs: *Olivier Pitois & Chao-Zhong Qin*

09:05	[304] **Pore-Scale Liquid-Gas Interactions: A Geometric and Free Energy View** *Liang Lei, Feiyan Jin, Zhenqi Guo* **Solicited Speaker**
09:20	[8] **A novel method for Determining Hydrogen Relative Permeability** *Eleonora Parente, Steffen Berg, Evren Unsal, Karin de Borst, Shashank Tiwari, Stefania Moioli, Vishal Ahuja, Ying Gao*
09:35	[868] **Intermittent Two-Phase Flow in Gas–Brine Systems: Experimental Evidence from CO_2 and Hydrogen Core-Flooding** *Amin Taghavinejad, Azibayam Amabogha, Yihuai Zhang*
09:50	[975] **In Situ Local Viscosity Mapping in Microfluidic channels by using molecular rotors** *Florence Guibouin, Gérald Clisson, Javier Ordonez-Hernandez, Julien Renaudeau, Norberto Farfan, Pierre Lidon, Yaocihuatl Medina-Gonzalez*

(MS09) Pore-Scale Physics and Modeling - Part 3
Salle 300
Chairs: *Yashar Mehmani & Bo Guo*

09:05	[16] **A Theoretical Model for Stable Drainage Fronts in 3D Porous Media** *Paula Reis, Knut Jørgen Måløy*
09:20	[308] **Water percolation threshold in porous media modulated by geometry and interfacial physics** *Zhenqi Guo, Beichen Ji, Liang Lei, Sergio Andres Galindo Torres*
09:35	[339] **Pore-scale modelling of Polymer Permeation in sands with the application of Geotechnical Excavation Support** *Si Suo, Catherine O'Sullivan, Martin Blunt*
09:50	[34] **Improved Invasion Percolation Algorithm with Trapping for Pore Network Modeling** *Homam Khatirzad Baboli, Hans Janssen, Stefan Vandewalle*

WEDNESDAY, 20 MAY 2026

Oral presentations: Parallel sessions 2.1
09:05 - 10:05

(MS13) Fluids in Nanoporous Media - Part 2
Salle 150
Chairs: *Olivier Vincent & Bin Pan*

09:05	[428] **Coupled dynamics of imbibition, evaporation and precipitation in nanoporous media** *Bin Pan, Mingshan Zhang, Patrick Huber*
09:20	[104] **Water Dynamics in Porous Materials: What can we learn from Quasielastic Neutron Scattering?** *Alain Moreac, Denis Morineau, Jacques Ollivier, Jean-Marc Zanotti, Markus Appel, Michael Fröba, Nadim Kamar, Patrick Huber, Quentin Berrod, Ronan Lefort*
09:35	[878] **A new experimental protocol to investigate adsorption-transport coupling in microporous materials** *Rizwan Minhas, Laurent Perrier, David Gregoire*
09:50	[726] **A Novel Situ Gas Content Measurement Method for Deep Coalbed Methane Reservoirs Using Pressure Build-Up Analysis** *Wei Xiong, Mingyan Sun, Weifeng Lv, xianggang Duan, Yingying Xu, Yishen Duan, Runshi Huo*

(MS14) Advanced Flow Physics in Specialized Porous Systems: Non-linear dynamics and finite-size effects - Part 2
Salle K/L
Chairs: *Richmond Cohen & Chaozhong Qin*

09:05	[252] **A numerical model for the transport and drying of solutions in thin porous media - Coffee-stain effect and solute ring formation** *Shuo Wang, Anton Darhuber*
09:20	[92] **Non-linear moisture transport in textiles investigated by NMR relaxometry** *Floriane Gerony, Jaime Gil-Roca, Benjamin Maillet, Philippe Coussot*
09:35	[200] **Ultra-Fast NMR Imaging of Salt Solutions in Coated Paper: Primers for Inkjet Printing** *Isik Arel, Bart Erich, Henk Huinink, Luc van Keulen, Nicolae Tomozeiu, Olaf Adan*
09:50	[527] **How Non-Fickian Diffusion Suppresses Anomalous Transport of Miscible Phases in Porous Media** *Tongzhou GAN, Yaniv Edery, Ludmila Abezgauz*

Oral presentations: Parallel sessions 2.1, cont.
09:05 - 10:05

(MS19) Uncertainty-Aware Decision Support in Porous Media Applications - Part 2
Salle G/H
Chairs: *Sarah Perez & Nanzhe Wang*

09:05	[89] **Carbon sequestration in fractured formations: new insights thanks to sensitivity analysis** *Aronne Dell'Oca, Jeffrey Hyman* **Solicited Speaker**
09:20	[44] **Stochastic Upscaling of Hydraulic Properties in Natural Shear Fractures** *Sarah PEREZ, Florian Doster, Hannah Menke, Ahmed H. Elsheikh, Andreas Busch*
09:35	[596] **Uncertainty Quantification of Fluid Migration in Fault Zones for Geologic CO2 Sequestration** *Hannah Lu, Lluis Salo-Salgado, Ruben Juanes*
09:50	[834] **Assessing the role of uncertainty on reactive transport across redox-active porous media** *Laura Ceresa, Michela Trabucchi, Monica Riva, Paula Rodríguez-Escales, Xavier Sanchez-Vila*

(MS20) Special Session in Honor of Jun Yao - Part 3
Club Atlantique
Chairs: *Ke Xu & Yingfang Zhou*

09:05	[421] **In-situ observation of pore-throat plugging by rapidly swelling–shrinking hydrogel particles** *Jiawei Shi, Junjie Zhong, Liyuan Zhang*
09:20	[439] **A shear-controlled phase diagram for biofilm growth and deformation in porous media** *Wenhai Lei, Shuo Yang, Zhuxuan Cui, Aleksandar Loncar, Yves Méheust, Shervin Bagheri*
09:35	[922] **Microfluidics in Subsurface Energy Applications** *Zhenbang Qi, Ali Abedini*
09:50	[531] **Direct visualization of CO2-hydrocarbon miscibility and rapid MMP measurement in multiscale porous media via a nanofluidic slim-tube** *Zengding Wang, Shuo Liu, Jiayi Zhao, Jun Yao, Hai Sun, Yongfei Yang, Lei Zhang, Junjie Zhong*

Coffee Break & Exhibition
10:05 - 11:35

Refreshments are available in the Great Hall . Come grab a drink, network with other attendees, visit the exhibition booths and discuss the posters on display.

MiniPore Social
Auditorium 800 Bar, 10:05-10:45

MiniPore – Caregiving, Careers, and Conferences

EquiPore and MiniPore invites to an informal discussion about navigating academic and professional landscape while raising a family. We will exchange practical tips on travel, scheduling, childcare logistics, networking as a caregiver, and how to support each other, whether you are attending, presenting, or holding things down at home. Expect an honest conversation focused on what actually helps, plus a shared "takeaway list" of community strategies and conference improvements we would love to see.

Caregivers, partners, children and allies are all warmly invited.

Poster Session III

Great Hall, 10:05 - 11:35

Poster Board	
19	[26] **Quantifying the occurrences of anomalous diffusion through disordered porous structures of subsurface geomaterials** *Ashish Rajyaguru, Ralf Metzler, Ishai Dror, Daniel Grolimund, Brian Berkowitz*
11	[28] **Gravity signal induced by water content variations due to meteorological forcing in hillslopes** *Maryam Khodadadi, Arthur Vidard, Nolwenn Lesparre, Philippe Ackerer*
59	[41] **MD-aided homogenization: a novel strategy for the modeling of nanofiltration phenomena** *Kevin Wittkowski, Mauro Chinappi, François Gallaire, Giuseppe Antonio Zampogna*
33	[66] **Analytical modeling of nanoparticle-stabilized foam flow in porous media** *Tatiana Danelon de Assis, Rouhi Farajzadeh, Pavel Bedrikovetsky, Grigori Chapiro*
45	[71] **Container wall corrugation as a means to reduce fluid flow maldistribution in random packed beds** *Maciej Marek, Paweł Niegodajew, Artur Durajski, Michał Wilczyński*
35	[85] **Gravity-Induced Shape Effects in Diffusion-Limited Evaporation of Sessile Droplets on Inclined Surfaces** *Nitu Lakhmara, Fabian Tapias, Maartje Boon*
51	[91] **Bread crumb structuration during baking: a methodology based on X-ray micro-tomography** *Henry Jäger, Kate Waldert, Olivier Rouaud, Sylvie Swyngedau Chevallier*
21	[98] **A Multiscale Skin Factor Model for CO2 Injection in Coalbed Reservoir** *Minchuan Jiang, Tien Dung Le, Christian Moyne, Irina Panfilov, Marcio Murad*
1	[100] **Thermal Maturity and Stress Dependence of Gas Breakthrough Experiments in Fine Grained Sedimentary Rocks: A Case Study of Pliensbachian Claystones from the Hils Syncline, Germany.** *Brian Mbui, Garri Gaus, Ralf Littke*

WEDNESDAY, 20 MAY 2026

Poster Session III

Great Hall, 10:05 - 11:35

Poster Board	
47	[105] **Modeling Hydrogen Flow Around and Through Porous Pellets for Hydrogen-Based DRI** *Prajwal Reddy, Staffan Lundström, Anna-Lena Ljung, Fredrick Engström, Gunnar Hellström*
67	[133] **Computer Modelling with Single Prompts** *Maciej Matyka*
13	[228] **Experimental and numerical study of perchloroethylene vapor transport in the unsaturated zone of a porous aquifer.** *Solenn Cotel, Anthony Julien, Hervé Wodling, Pascal Friedmann, Raphaël di Chiara Roupert, Gerhard Schäfer*
3	[270] **Fluid Migration in Sedimentologically Heterogeneous Reservoirs: Implications for ISL Uranium Mining, South Tortkuduk deposit, Chu-Sarysu basin, South Kazakhstan** *Bekzhan Smagambetov, Clemence Besancon, Yerlibek Bolat, Milovan Fustic*
5	[385] **Durability and microstructural evolution of ternary cement-based materials in marine environments** *Walaa Farhat, Emmanuel Roziere, Stephanie Bonnet*
69	[507] **Lessons learned and perspectives of an image-based history-matching study for the FluidFlower CO2 storage benchmark** *Sarah Gasda, David Landa Marbán, Tor Harald Sandve, Jakub Both, Jan Martin Nordbotten*
53	[518] **Porous media study with NMR and X-ray tomography experiments using MOGNO beamline** *Everton Lucas-Oliveira, Cassiano Sergio Noventa Corrêa Bueno, Edson Luiz Géa Vidoto, Mailson da Silva Souza, Nathaly Lopes Archilha, Rodrigo Surmas, Tito José Bonagamba*
72	[528] **Exploring crystallization pressure limits via molecular simulation** *Bilal Mahmoud Hawchar, Florian Osselin, Jean-Michel Pereira, Laurent Brochard, Lionel Mercury, Matthieu Vandamme, Tulio Honorio*
63	[602] **Incorporating turbulent flow effects in graph-based karst models** *Benoit Noetinger, Yousra Housni, Iván Colecchio*

Poster Session III

Great Hall, 10:05 - 11:35

Poster Board	
55	[637] **Time-Lapse µ-XRCT Analysis of Pore Structure Evolution During Enzyme-Induced Calcite Precipitation** *Puyan Bakhshi, Samira Emadi, Andreas Pohlmeier, Johan Alexander Huisman*
15	[655] **Investigating pore-scale oxygen dynamics and redox potential in unsaturated porous media using microfluidic soil-on-chip technology** *Ilil Levakov, Hamidreza Khoshtarash, Sanaa Musa, Veronica Morales, Oshri Borgman*
57	[664] **4D Imaging Insights into Oil Pathway During Primary Drainage in Natural Porous Media** *Anderson Camargo Moreira, iara mantovani, Celso Peres Fernandes, Everton Lucas De Oliveira, Janeth Alina Vidal Vargas, Jose Maria Herrera Saravia, Nathaly Lopes Archilha, Rodrigo Nagata, Rosangela Barros Zanoni Lopes Moreno, Walter Leonardo Flores Antelo*
17	[670] **Data-Driven Prediction of Oil Removal Efficiency in Surfactant-Enhanced Remediation** *Ehsan Hajibolouri, Bakbergen Bekbau, Sagyn Omirbekov, Dinara Turalina, Masoud Riazi*
61	[728] **Transient bubbles in a metastable liquid: free energy of formation beyond the capillarity approximation** *Joël Puibasset*
23	[741] **Living Porous Media: Uncovering the Microbe-Fluid-Rock Interactions That Reshape Subsurface Transport** *Hamidreza Khoshtarash, Bashar Al Zghoul, Veronica Morales*
29	[754] **Fluctuations in foam state in flow through porous media: origin, magnitude, modeling, and implications for foam mobility** *William Rossen, Milan Louter, Rodrigo Orlando Salazar Castillo, Rouhi Farajzadeh, Sian Jones*
31	[772] **Comprehensive Analysis and Modelling of Gas Slippage Effects Governing Permeability in Tight Porous Media for H2 and CO2 storage** *Ferney Moreno, Amro moh, Carlos Herrera Guevara*
49	[788] **Dynamic Synchrotron Imaging of Pore-scale Microstructure Controls on Fines Migration and Deposition** *Lin Ma, Ke Wang, Philip Withers*

WEDNESDAY, 20 MAY 2026

Poster Session III

Great Hall, 10:05 - 11:35

Poster Board	
7	[799] **Impact of Flow Rate and Salt Zonation on Porosity–Permeability Evolution During CO_2 Storage in Saline Aquifers** *Arash Pourakaberian, Javad Shokri, Mehrdad Vasheghani Farahani, Elizabeth Evans, Hassan Mahani, Masoud Babaei, Vahid Niasar*
39	[800] **Heterogeneity-controlled trapping behavior in long-term CO_2 sequestration: field-scale THC reactive transport simulations** *Chia-Wei Kuo, Yun-Chen Yang, Wan-Jung KUO, Yin-Tung Kuo, Ching-En Kung*
65	[861] **Identifying Structural Controls on Nonlinear Flow and Transport in Pore Networks Using Interpretable Machine Learning** *Alexandre Puyguiraud, Philippe Gouze, Jeffrey Hyman, Marco Dentz*
25	[871] **Analysis of Microbially Induced Carbonate Precipitation Processes (MICP) at a Sandstone-Cement Interface** *Emna Mejri, Anozie Ebigbo, Megan Barnett, Simon Gregory*
27	[904] **Bacterial chemotaxis in porous media** *Amir Pahlavan*
41	[913] **Influence of Skin Factor on WAG Performance and CO_2 Storage in a Heterogeneous Carbonate Reservoir Model** *Lorena Cardoso Batista Aum, José Jadsom Sampaio de Figueiredo, Cláudio Lucas, Thiago Henrique da Silva Barbosa, Carlos Speglich, Pedro Aum*
71	[915] **Optimal Experimental Design for the Simultaneous Estimation of Relative Permeability and Capillary Pressure via Single/Multi-Rate USS Coreflooding Experiments** *Filipe Oliveira da Silva, Gianfranco de Mello Stieven, Caroline Henrique Dias, Antônio Emanuel Marques dos Santos, Eddy Ruidiaz Muñoz, André Luiz Martins Compan, Paulo Couto*
37	[933] **Pore-Scale Controls on Hydrogen Production and Storage in Geological Media: An NMR-Based Investigation** *Elhadj Marwane Diallo, Anis Younes, Hussein Hoteit, Marwan Fahs, Muhammad Ali*

Poster Session III

Great Hall, 10:05 - 11:35

Poster Board	
43	[979] **Influence of pore structure on elastic anisotropy in carbonate rocks** *Ismael Vasconcelos, Cristian Mejia, Deane Roehl*
9	[980] **Selective CO Separation via π-Complexation in Pore-Engineered Cu(I)-Loaded Pelletized Activated Carbon** *Jeonghoon Kim*

Oral presentations: Parallel sessions 2.2

11:35 - 13:05

(MS02) Environmental Porous Media: Water, Agriculture, and Remediation - Part 3

Salle B/C

Chairs: *Bo Guo & Veronica Morales*

11:35	[141] **Role of diffusiophoresis in colloidal transport through porous media: Microfluidics experiments** *Pauline Etienne, Cyprien Soulaine, Sophie Roman*
11:50	[276] **Diffusiophoresis of colloids in 3D unsaturated media with dead-end regions** *Mamta Jotkar, Saif Farhat, Guillem Sole-Mari, Diogo Bolster*
12:05	[282] **Diffusiophoretic transport induced by mineral dissolution in porous media** *Florian Cajot, Cyprien Soulaine, Sophie Roman*
12:20	[232] **Nanoplastic-facilitated transport of lead through reactive porous media** *Melissa Kozhaya, Valentina Prigiobbe*
12:35	[196] **Anomalous particle retention in "clean" water with catastrophic clogging consequences in porous media** *Xukang Lu, Han Xiao, Mingbao Zhang, Wenbo Gong, Howard A. Stone, Moran Wang*
12:50	[561] **Characterization of NAPL biodegradation by microfluidic imaging and spectral induced polarization (SIP) measurements** *Shuo Yang, Hervé Tabuteau, Sylvie Collin, Philippe Leroy, Tanguy Le Borgne, Pauline Kessouri, Damien Jougnot, Yves Méheust*

WEDNESDAY, 20 MAY 2026

Oral presentations: Parallel sessions 2.2, cont.
11:35 - 13:05

(MS03) Flow, transport and mechanics in fractured porous media - Part 1
Salle 150
Chairs: *Lluís Saló-Salgado & Alessandro Lenci*

11:35	[330] **Does bleed-off work? Hydromechanical controls on injection-induced seismicity in enhanced geothermal systems** *Iman Rahimzadeh Kivi, Victor Vilarrasa, Kwang-Il Kim, Hwajung Yoo, Ki-Bok Min* **Solicited Speaker**
11:50	[101] **Quantifying the contribution of poroelasticity and fluid injection on seismic rupture directivity** *Sandro Andrés Martínez, David Santillán Sánchez, Juan Carlos Mosquera Feijoo, Luis Cueto-Felgueroso*
12:05	[373] **How do fracture network connectivity and length distribution control injection-induced seismicity?** *Iman Vaezi, Chin-Fu Tsang, Qinghua Lei*
12:20	[390] **Combined Effects of Geomechanical Deformation and Geometric Distribution on Flow and Transport Behaviors in Fractured Media** *Chuanyin Jiang, Xiaoguang Wang, Chin-Fu Tsang, Auli Niemi, Qinghua Lei*
12:35	[533] **Modeling Desiccation in Opalinus Clay: A Phase-Field Study of the Cyclic Deformation (CD-A) Experiment at Mont Terri** *Tuanny Cajuhi, Gesa Ziefle, Keita Yoshioka*
12:50	[867] **Uncertainty Quantification for Fault Leakage Risk in CO_2 Storage: A Rapid Screening Workflow** *Hariharan Ramachandran, Chee Phuat Tan, Florian Doster, Ikhwanul Musa, Sebastian Geiger*

Oral presentations: Parallel sessions 2.2, cont.
11:35 - 13:05

(MS04) Biological Processes in Porous Media - Part 1
Salle 200
Chairs: *Sarah Gasda & Eike Thaysen*

11:35	[72] **How laboratory experiments can help to understand the dependencies of microbial activity during hydrogen storage on the various environmental aspects of porous rock formations** *Anja Bettina Dohrmann, Martin Krüger* **Solicited Speaker**
11:50	[182] **Evaluating Microfluidic Platforms for Pore-Scale Investigation of Sulfate-Reducing Bacteria under Hydrogen Storage Conditions** *Na Liu, Chaojie Cheng, Christian Ostertag-Henning*
12:05	[324] **Impact of rock-microbe interactions on methanogenic conversion of hydrogen** *Chaojie Cheng, Anja Dohrmann, Martin Krüger, Anne-kristin Kaster, Christoph Hilgers*
12:20	[651] **Biogeochemical reactivity in carbonate reservoirs during underground hydrogen storage** *Soetkin Barbaix, Dominique Ceursters, Hossein Younesian Farid, Maxime Latinis, Nico Boon, Sojwal Manoorkar, Stefanie Van Offenwert, Stefanie Van Offenwert, Tom Bultreys*
12:35	[243] **Experimental Micromodel Approaches for Capturing Biogeochemical Interactions in UHS Systems** *Frank Viveros Acosta, Martin Ferno, Na Liu*

Oral presentations: Parallel sessions 2.2, cont.
11:35 - 13:05

(MS06) Interfacial phenomena across scales - Part 2
Salle I
Chairs: *Rui Wu, Mykyta Chubynsky & Ran Holtzman*

11:35	[296] **2.5D precision nano/microfluidics for controlled study of the interplay between capillarity and crystallization within complex pore structures** *Kelsey Yao, Shaina Kelly*
11:50	[747] **Particle tracking for scalar transport restricted to a single phase in two-phase flow** *Tomas Aquino, Gaute Linga*
12:05	[242] **Improving the Representation of Mineral Nucleation in Reactive Transport Models** *Cornelius Fischer, Helge Hellevang, Mohammad Nooraiepour, Nikolaos Prasianakis, Sergi Molins*
12:20	[479] **Shapes of ideal stalagmites** *Piotr Szymczak, Tony Ladd*
12:35	[612] **Fluid-calcite interface tracking by X-ray micro-tomography of bio-cemented sand samples exposed to acidic conditions** *Michela La Bella, Laurenz Schröer, Veerle Cnudde, Mario Scheel, Fabrice Emeriault, Christian Geindreau, Catherine Noiriel, Antoine Naillon*
12:50	[846] **Transition from Equilibrium to Nonequilibrium Evaporation under Temperature Ramping: Vapor-Phase Accumulation Effects** *Abdallah EL MALKI, Amine Ben Abdelwahed, Antonio Rodríguez de Castro, Marc Valat*

Oral presentations: Parallel sessions 2.2, cont.
11:35 - 13:05

(MS09) Pore-Scale Physics and Modeling
Salle 300
Chairs: *Marco De Paoli & Yashar Mehmani*

11:35	[1019] **Regime-Dependent Reactive Mixing Across a Mineral Precipitation Boundary** *Anna Kottsova, Chaozhong Qin, Jlanqi Rong, Xiangzhao Kong*
11:50	[318] **Pore-scale modeling of coupled mineral nucleation and reactive flow in porous matrix** *Fengchang Yang, Bowen Ling*
12:05	[272] **Redissolution Controls Clogging Dynamics During Coupled Mineral Dissolution and Precipitation** *Jingxuan Deng, Agnieszka Budek, Piotr Szymczak, Peter Kang*
12:20	[908] **Modeling the Influence of Microorganisms on the Formation of Banded Manganese Dendrites** *Dawid Woś, Anna Neubeck, Piotr Szymczak, Zhaoliang Hou*

Oral presentations: Parallel sessions 2.2, cont.
11:35 - 13:05

(MS13) Fluids in Nanoporous Media - Part 3
Salle K/L
Chairs: *Patrick Huber & Zhehui Jin*

11:35	[222] **Flow and Electrokinetic Transport in Nanoporous Media** *Moran Wang* **Solicited Speaker**
11:50	[790] **Electrochemical Responses of Mesoporous Carbons in Aqueous Electrolytes** *Mariia Liseanskaia, Emiliy Zholkovskij, Sanjay Jatav, Volodymyr Kovalchuk, Manuel Brinker, Andriy Yaroshchuk, Michael Fröba, Patrick Huber*
12:05	[366] **Experimental observation of the dependence of a liquid adsorbate's elastic modulus on the pore size** *Klaus Schappert, Rolf Pelster*
12:20	[362] **Periodic Mesoporous Organosilicas as Host Materials for Studying Surface Chemistry and Pore Size Effects on the Properties of Nanoconfined Water** *Philip Lenz, Sandra König, Sophia-Marie Meinert, Uta Sazama, Michael Steiger, Michael Fröba*
12:35	[588] **Capillary Flow of Aqueous Solutions in Nanopores** *Abir-Wissam Boudaoud, Laurent Joly, Olivier Vincent*
12:50	[605] **Cavitation in Confined Fluid** *Benedicte Lebeau, Etienne Rolley, Habiba Nouali, Joël Puibasset, Kristina Davitt, Panayotis Spathis, Patricia Ott, Paul Coutin*

Oral presentations: Parallel sessions 2.2, cont.
11:35 - 13:05

(MS15) Machine Learning in Porous Media
Salle G/H
Chairs: *Marwan Fahs & Saeid Sadeghnejad*

11:35	[224] **Decoupling the Non-linear Influence of Pore Structure on CO_2 Saturation: An Explainable Data-Driven Approach based on Microfluidic Experiments** *Han Ge, Xiulei Chen, Jiawang Chen*
11:50	[94] **Residual-based PINN Modeling for Coupled Transport Phenomena in Porous Gas Diffusion Layers** *Hui Zhang, Man Yuan, Hongnan Zhang, Bo Li*
12:05	[383] **Glassy dynamics in steady-state two-phase flow in porous media** *Santanu Sinha, Humberto Carmona, Jose S. Andrade Jr., Alex Hansen*
12:20	[650] **Transparent on-demand neural approximation of EOS-based thermodynamics for pore-scale gas-condensate flow** *Gabriel Gerlero, Pedro Calderano, Brenda Maria De Castro Costa, Sergio Ribeiro, Maria Helena Caeiro, Gonçalo Ferreira, João Casacão, Heloisa Althoff, Marcio Carvalho*
12:35	[163] **An integrated workflow for high fidelity multiscale digital rock modelling of heterogeneous carbonate rocks** *Zhenkai (Josh) Bo, Hannah Menke, Julien Maes, Ahmed H. Elsheikh, Kamaljit Singh*
12:50	[743] **Assessing the potential of physics informed neural networks for modeling groundwater flow in unconfined aquifers** *Parisa Asghari, François Lehmann, Behzad Ataie-Ashtiani, Razi Sheikholeslami, Marwan Fahs*

Oral presentations: Parallel sessions 2.2, cont.
11:35 - 13:05

(MS20) Special Session in Honor of Jun Yao - Part 4
Club Atlantique
Chairs: *Yu-Shu Wu & Longlong Li*

11:35	[715] **Ostwald Ripening in Porous Media: A Decade of Exploration** *Ke Xu*
11:50	[529] **Pore scale investigation of reaction induced mechanical weakening of subsurface rock** *Yingfang Zhou*
12:05	[412] **Multi-scale Digital Core Construction and Simulation Technology** *Lei Zhang, Hai Sun, Jun Yao, Yongfei Yang*
12:20	[151] **Self-propulsion of an active droplet** *Guangpu Zhu*
12:35	[810] **A Smart Core Method for Predicting Multiscale Reservoir Storage Space Parameters** *Lin Yan, Li Hou, Yili Ren, Hanjing Tang, Mingjun Zhao*
12:50	[149] **Local injection dynamics govern non-local chemical equilibration: Pore-scale origins of rate-dependent hydrogen dissolution in saturated porous media** *Gloire Imani, Hai Sun, Lei Zhang*

Lunch Break
Great Hall, 13:05-14:05

SAC Career Event

Salle 150, 13:05-14:05

As a PhD candidate, you will inevitably face this decision: "What am I going to do after my PhD?"

We aim to help you better envision your future career path. Join us on Wednesday, May 20, from 1:05 to 2:05 PM for the traditional Career Development event hosted by the Student Affairs Committee (SAC) at InterPore2026 in Nantes, France.

We have invited professionals with diverse backgrounds who will share their personal stories and career paths, including the pivotal decisions they made along the way. You will also have the opportunity to ask the questions you've always wanted to ask experts in the field.

This free event is open to all InterPore2026 participants.

Panel Members:

Dr. Ziad Maksassi - Entrepreneur & Researcher at Nantes University
Dr. Na Liu - Senior Researcher at the University of Bergen
Dr. Benjamin Claessens - Associate Professor at Aix-Marseille University
Dr. Serveh Naderi - Scientist at TotalEnergies

WEDNESDAY, 20 MAY 2026

Oral presentations: Parallel sessions 2.3
14:05- 15:35

(MS03) Flow, transport and mechanics in fractured porous media - Part 2
Salle 150
Chairs: *Alessandro Lenci & Lluís Saló-Salgado*

14:05	[860] **Role of Fluid Inertia in Fractured Porous Media Flows: A Critical Driver of Mixing and Reaction** *Peter Kang, Weipeng Yang* **Solicited Speaker**
14:20	[710] **What Controls Mixing in Fracture Networks?** *Stefano Ascione, Daniel Lester, Joris Heyman, Tanguy Le Borgne, Benoit Pinier*
14:35	[753] **The impact of fracture slip and opening on heat transport in fractured media** *Silvia De Simone, Sebastián González-Fuentes, Sandro Andrés Martínez, Victor Vilarrasa*
14:50	[656] **Analysis of Fully Coupled Flow and Particle Transport during Internal Erosion** *Solveig Winkelmann*
15:05	[615] **4D X-ray particle tracking velocimetry of multiphase flow through rough fractures: quantifying the influence of roughness on flow dynamics** *Sojwal Manoorkar, Robert van der Merwe, Sharon Ellman, Parsa Damanshokouh, Hossein Younesian Farid, Andreas Busch, Tom Bultreys*
15:20	[699] **Fluid flow along 3D rough creeping fractures: from contact mechanics to pore-scale flow modeling** *Javier Fernández-Fidalgo, Sandro Andrés Martínez, M. Andres Soage-Quintans, Luis Cueto-Felgueroso*

Oral presentations: Parallel sessions 2.3, cont.
14:05 - 15:35

(MS04) Biological Processes in Porous Media - Part 1
Salle 200
Chairs: *Na Liu & Sarah Gasda*

14:05	[551] **Model calibration and prediction of biogeochemical processes in porous hydrogen storage** *Birger Hagemann* **Solicited Speaker**
14:20	[681] **Pore Scale Mechanistic Transitions in Geo-Methanation** *Patrick Jasek, Gerald Stiedl, Holger Ott*
14:35	[897] **Detailed characterization of pore structure and transport properties of biomass particles during pyrolysis** *Ninghua Zhan, Abdolreza Kharaghani, Nicole Vorhauer, Rui Wu*
14:50	[329] **Pore-scale modeling of coupled processes in biofilm-colonized porous media** *Malik Ali A. Dawi, Giovanni Porta, Martina Siena, Xavier Sanchez-Vila, Michele Starnoni*
15:05	[731] **PINNs enhanced multi-resolution modeling of laminar vortex dynamic process in pore-scale MICP** *Dianlei Feng*
15:20	[103] **Model based assessment of pore-size dependent biofilm growth kinetics with application to productive bio-reactors** *Maike Werdin, Loisa Borde, Nicole Vorhauer*

Oral presentations: Parallel sessions 2.3, cont.
14:05 - 15:35

(MS05) Physics of multiphase flow in diverse porous media - Part 4
Salle I
Chairs: *Chao-Zhong Qin & Olivier Pitois*

14:05	[261] **Quantifying Pore Flow During Drying in Dual-Porosity Micromodels Using Micro-PIV** *Yaofa Li, Bo Guo, Diego Armstrong, Md Ahsan Habib*
14:20	[449] **Pore-scale insights into dynamics of brine drying and salt precipitation induced by CO2 injection in porous media** *Tongke Zhou, Mehrdad Vasheghani Farahani, Javad Shokri, Vahid Niasar*
14:35	[300] **A study of hysteresis in geometric, topological and macroscopic measurements of micro-CT images of fast, dynamic multiphase flow in porous media** *Eric Sonny Mathew, Michael Camilleri, Quan Zheng, Yufu Niu, Bianca Brandstätter, Kunning Tang, Mohammad Ebadi, Peyman Mostaghimi, Ryan T. Armstrong, Samuel Jackson*
14:50	[873] **Modelling and experiments for a circular cross-flow filtration system** *Diganta Das*
15:05	[159] **Polymer Slug Displacement Mechanism by Microfluidic Experiments** *Mingbao Zhang, Moran Wang, Rui Li, Xukang Lu*
15:20	[593] **Drainage Regimes in Rough Fractures: An Experimental Study** *Amin Rezaei, Francesco Gomez, Isabelle Bihannic, Insa Neuweiler, Yves Méheust*

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WEDNESDAY, 20 MAY 2026

Oral presentations: Parallel sessions 2.3, cont.
14:05 - 15:35

(MS07) Mathematical and numerical methods for multi-scale multi-physics, nonlinear coupled processes - Part 2
Salle G/H
Chairs: *Mostafa Mollaali & Keita Yoshioka*

14:05	[4] **Numerically Stable Infiltration Modeling via a Bounded Auxiliary Variable** *Abderrahmane Benfanich, Abdelaziz Beljadid, Yves Bourgault*
14:20	[732] **Strong-Form Meshfree Modelling of Richards Equation with Multiple Soil Hydraulic Constitutive Relationships** *Aatish Anshuman*
14:35	[248] **Explicit Hyperbolic System for Coupled Buoyant Two-Phase Flow and Transport in Heterogeneous Porous Media** *Armin Riess, Hamdi Tchelepi, Patrick Jenny, Rasim Hasanzade*
14:50	[202] **Optimal convergence of the arbitrary Lagrangian–Eulerian interface tracking method for two-phase Navier–Stokes flow without surface tension** *Weifeng Qiu, Buyang Li, Shu Ma*
15:05	[961] **An efficient method to determine the Klinkenberg correction for slip flow in porous media** *Didier Lasseux, Francisco José Valdés-Parada, Tony Zaouter*
15:20	[126] **Linear and Nonlinear Stability of Double-Diffusive Convection in Couple-Stress Porous Layers under Viscous Dissipation.** *Priyanshu Agrahari*

Oral presentations: Parallel sessions 2.3, cont.
14:05 - 15:35

(MS09) Pore-Scale Physics and Modeling - Part 5
Salle 300
Chairs: *Bo Guo & Marco De Paoli*

14:05	[900] **Diffusiophoretic transport of a colloidal blob in porous media** *Amir Pahlavan* **Solicited Speaker**
14:20	[240] **Flow homogenization in heterogeneous porous media via non-Newtonian particle suspensions** *Wenbo Gong, Wenhai Lei*
14:35	[199] **Stochastic Modeling of Hydrodynamic Particle Bridging and Permeability Impairment in Porous Media: A Pore-Scale Approach** *Laurez Maya, Cyprien Soulaine, Emmanuel Le Trong, Laurent ANDRE, Sophie Roman, Walid Okaybi*
14:50	[246] **Pore-scale dynamics of salt precipitation during brine-CO_2 displacement in micromodels** *Lijuan Shi, Alexander Shapiro*
15:05	[676] **Manifold Tortuosity for heterogenous microstructures characterisation** *Johan Chaniot*
15:20	[628] **Pore-Scale Modelling of Fluid Flow: A Volume-of-Solid Approach** *Gospel Ezekiel Stewart, Hannah Menke, David Egya, Jacqueline Mifsud, Julien Maes*

WEDNESDAY, 20 MAY 2026

Oral presentations: Parallel sessions 2.3, cont.
14:05 - 15:35

(MS10) Advances in imaging porous media: techniques, software and case studies - Part 3
Salle B/C
Chairs: *Lin Ma & Rukuan Chai*

14:05	[506] **Micro-CT Insights into Relative Permeability and CO_2 Spreading in Reservoir Rocks from the Otway CCS Site** *Catherine Spurin, Catherine Callas, Sally Benson, Sharon Ellman, Sojwal Manoorkar, Tom Bultreys* **Solicited Speaker**
14:20	[79] **Stochastic Modeling of Particle Transport in Micrographs of Porous Shale Media Using Cellular Automata: Validation with Carman-Kozeny** *Jorge Alberto Briones Carrillo, Benny Obregon-Gonzalez, Darío Farrera-Salazar, Juan Emiliano Acevedo-González, Leonel Escobar-Hernández, Sebastian Romo-Castillo, Valeria Valenzuela Gutierrez*
14:35	[661] **Mitigating Beam Hardening for Accurate Density and Atomic Number Estimation in µCT: A Dual-Energy Inversion Approach** *Cinar Turhan, Bernard Chang, Masa Prodanovic, Richard Ketcham, Rodolfo Araujo Victor*
14:50	[192] **The comparison of different image analysis techniques for mapping spatiotemporal pH and carbon dissolution in density-driven convection of CO2 in water.** *Yao Xu, Marcel Moura, Eirik Grude Flekkøy, Knut Jørgen Måløy*
15:05	[227] **Micro-CT and SEM characterization on biochar-modified wellbore cement exposed to a CO2-rich environment** *Liwei Zhang, Theogene Hakuzweyezu, Manguang Gan, Yan Wang*
15:20	[303] **Observation of Gas and Water Distributions in a Proton Exchange Membrane Water Electrolyzer Using Operando X-ray CT** *Satoru Kato, Tetsuichiro Hayakawa, Toshikazu Satoh, Wataru Yoshimune, Yuki Higuchi, Yusaku Nishimura*

Oral presentations: Parallel sessions 2.3, cont.
14:05 - 15:35

(MS18) High-temperature heat and mass transfer within porous materials for energy and space - Part 1

Salle K/L

Chairs: *Benoit Rousseau & Francesco Panerai*

14:05	[221] **One-domain approach for simulating ablative porous materials in high-enthalpy flows** *Bruno Dias, Brandon van Gogh, Nagi N. Mansour* **Solicited Speaker**
14:20	[77] **Morphological and non-Beerian radiative characterization of a fibrous medium** *Mahé Souveton, Franck Enguehard, Vital Le Dez*
14:35	[237] **Inverse Problem Approach for Physical Parameter Identification in Wood Pyrolysis Modelling** *josselin Penicaud, Jean Lachaud, Jean-Christophe Mindeguia*
14:50	[259] **Random-Walk simulation methods for the modeling of ballistic/diffusive heat and mass transfer in evolving porous media** *Gerard Vignoles* **Solicited Speaker**
15:05	[395] **Multi-scale multi-physical modeling of porous ablators** *Alexandre Martin, Savio Poovathingal*
15:20	[928] **Comparative analysis of numerical methods for coupled conduction-radiation heat transfer in non-homogenizable simulation boxes of porous media** *Franck Enguehard, Léa Penazzi, Alexandra Adjovi Fortunat, Benoît Roussesu, Cyril Caliot, Cyril Daoût, Denis Rochais, Dominique Jehl, Fabrice Rigollet, Frédéric Joly, Frédéric Topin, Gérard Vignoles, Jérémi Dauchet, Jérôme Vicente, Léo Royon, Mohd Afeef Badri, Mouna El Hafi, Olivier Farges, Pierre Jolivet, Richard Fournier, Simon Eibner, Stéphane Blanco, Sylvain Chupin, Vincent Eymet, Yann Favennec, Yann Jobic*

WEDNESDAY, 20 MAY 2026

Oral presentations: Parallel sessions 2.3, cont.
14:05 - 15:35

(MS20) Special Session in Honor of Jun Yao - Part 5
Club Atlantique
Chairs: *Wenhai Lei & Junjie Zhong*

14:05	[124] **A Multi-Continuum Model for CO2 Flow and Storage in Karst Aquifers for Geosequestration** *Jing Fu, Yu-Shu Wu, Zhaoqin Huang*
14:20	[796] **Numerical Investigation on the Hydrodynamic Mechanisms of CO2 Sequestration in UCG Cavities: A Fully Coupled Free-Porous Flow Approach** *Longlong Li*
14:35	[957] **Augmented operator-based linearization for modeling of history-dependent behavior in CO2 sequestration** *Jianxin Lu, Aleksei Novikov, Denis Voskov*
14:50	[226] **Role of natural fracture distribution in integrated stimulation and production performance of fractured geothermal reservoirs through multilateral wells** *Xu Zhang, Zhaoqin Huang, Wanjing Luo*
15:05	[130] **Coupled Free Flow and Seepage Simulation of Shale Multi-Scale Digital Core** *Liang Zhou, Hai Sun*
15:20	[327] **Subsurface CO2 Leakage Detection Using Multi-Stage Well Testing and Machine Learning** *Xupeng He, Moataz Abu AlSaud*

Brew Break & Exhibition
15:35 - 17:05

Refreshments are available in the Great Hall. Come grab a drink, network with other attendees, visit the exhibition booths and discuss the posters on display.

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WEDNESDAY, 20 MAY 2026

Poster Session IV

Great Hall, 15:35 - 17:05

Poster Board	
44	[46] **Adsorption properties of kerogens linked to their chemistry by molecular simulations** *Amaël Obliger, Jean-Marc Leyssale*
64	[61] **Impacts of permeability heterogeneities on foam flow in porous media: uncertainty quantification and sensitivity analysis** *Berilo de Oliveira Santos, Rodrigo Weber dos Santos, Iury Igreja, Grigori Chapiro, Bernardo Rocha*
46	[147] **Exploring Structural and Thermal Transitions in Diamine-Water Binary Solutions: Bulk vs. Confined Systems via DSC and WAXS** *Sonja Kemmerer, Andreas Meyer, Michael Fröba*
56	[190] **Multi-scale AI-enabled production forecasting for shale gas: integrating digital rock physics, geo-engineering descriptors and field time-series** *Runshi Huo, Wei Xiong, Yutian Luo*
52	[204] **Partially Saturated Flow in a Sand Column under Tidal Forcing: Moving Multi-Front Modeling and Laboratory Experiment** *Khalil Alastal, Rachid Ababou, Dominique Astruc*
14	[211] **Investigating the Influence of Rheology on the Spatiotemporal Distribution of Bacillus subtilis Biofilms in Porous Media** *Zahra Hajian, Eleonora Secchi, Roman Stocker, Joaquin Jimenez-Martinez*
22	[269] **Pore-scale mechanisms of granular material consolidation using foam** *Camille Chateau, Mario Scheell, Olivier Pitois, Vincent Langlois, Yacine Khidas, Zahraa Hammoud*
32	[291] **Direct Pore-Scale Simulation of the Origins of Intermittency in Multiphase Flow** *Sasha Karabasova, Branko Bijeljic, Martin Blunt, Sajjad Foroughi*
24	[338] **The effects of pore space modification on multiphase flow dynamics and salt precipitation within natural building stones** *Sharon Ellman, Zhaoyuan Zhang, Dulce Valdez Madrid, Marijn Boone, Veerle Cnudde*

Poster Session IV, cont.

Great Hall, 15:35 - 17:05

Poster Board	
8	[355] **Microbiological and pore-structure characterization of an urban aquifer contaminated by sewage leakages** *Daphne Silva Pino, Claudia Varnier, Cristina Nakayama, Lívia de Almeida Freitas, Reginaldo Bertolo, Ricardo Hirata*
38	[521] **In-situ micro-CT imaging of CO2-brine two-phase flow in heterogeneous sandstone** *Yan Wang, Liwei Zhang, Manguang Gan*
54	[540] **Impact of particle morphological complexity on migration dynamics and pore clogging phenomena during multiphase flow in porous media** *Zhenjiang You, Yixiao Wang, Tianyu Li, Heping Cai*
28	[544] **Surrogate-Assisted Analysis of Pore-Geometry Effects on Free-Flow Porous-Medium Coupling Conditions** *Rebecca Kohlhaas, Paula Strohbeck, Johannes Müller, Martin Schneider, Iryna Rybak, Bernd Flemisch*
40	[549] **Cross-scale imaging studies of porous media using approaches from synchrotron, neutron, and tracers** *Qinhong Hu, Fang Hao, Tao Zhang, Qiming Wang, Yubin Ke, He Cheng, Xiuhong Li, Keliang Liao, Ningning Zhou*
26	[554] **Colloidal transport in unsaturated heterogeneous porous system** *Michele Caola, Isaac Pincus, Pietro De Anna*
16	[559] **The impact of heterogeneity on bacterial biofilm growth dynamics in microfluidic porous media** *Oree Stokelman, Elhanan Tzipilevich, Oshri Borgman*
2	[571] **Influence of diagenesis on reservoirs rock parameters and extent of H2-rock reaction during subsurface storage: Insights from petrophysical and geochemical laboratory experiments.** *Philipp Weniger, Christian Ostertag-Henning*
4	[621] **Impact of pore size distribution in the membrane of polymer electrolyte fuel cells (PEMFCs) on its pressure drop, and mass transport** *Mahsheed Rayhani, Cuiying Jian, Volker Schulz*
30	[636] **Coupled free flow and degenerate porous media flow** *Kejdi Danglli, Nadja Ray*

WEDNESDAY, 20 MAY 2026

Poster Session IV

Great Hall, 15:35 - 17:05

Poster Board	
10	[641] **Understanding the Effect of Solute Density on Chaotic Mixing** *Carla Feistner, Mónica Basilio Hazas, Gabriele Chiogna*
34	[673] **Shear versus exponential stretching as drivers for mixing in porous media flows** *Manuel Maeritz, Tanguy Le Borgne, Daniel Lester, Joris Heyman*
58	[690] **Generation of Porosity Maps from Micro-CT Using Dual Acquisition and Statistical Calibration** *Júlio de Castro Vargas Fernandes, Aurea Pereira Martins Neta, Alyne Duarte Vidal, Lizianne Carvalho Medeiros, Carlos Eduardo Menezes dos Anjos, Luan Vieira, Felipe Bevilaqua Foldes Guimarães, Rodrigo Surmas, Alexandre Evsukoff*
18	[703] **Environmental factors controlling biogeochemical activity in two model hydrogenotrophic thermophiles under simulated reservoir conditions** *CJ Jones, Andreas Busch, Julia de Rezende, Kamaljit Singh*
42	[769] **Fast Time-Resolved MicroCT with a Large-Area CdTe Detector at Mogno beamline: Gap Compensation Approaches and Applications** *Aluizio Jose Salvador, Eduardo Xavier Miqueles, Larissa Macul Moreno, Matthieu Boone, Nathaly Lopes Archilha, Wannes Goethals*
62	[774] **A preliminary experimental analysis of 3D printed cellular SiOC structures for heat transfer enhancement** *Alberto Ortona, Giovanni Bianchi, Ludovica Maglioccola, Marcello Iasiello, Marco Pelanconi, Nicola Bianco, Riccardo Balzarotti, Samuele Bottacin*
6	[835] **Hydrate-Based Kinetic Investigation of CO2 Sequestration in Subsea Clayey Sediments Using Sustainable Promoters** *Yogendra Kumar, Jitendra Sangwai*
36	[836] **Contact-Aware Grain Mechanics for Improved Elastic and Seismic Property Prediction in Digital Rocks** *Olga Lykhachova, Arne Jacob, Gordon Burmester, Matthias Halisch, Andreas Wiegmann, Christian Hinz, Erik Glatt*
12	[843] **Foam-Based Desorption of Multicomponent PFAS from Soil: Influence of Foam Generation Conditions** *Fereshteh Habibi, Maxime Cochennec, Adil Baigadilov, Nathalie Guiserix, Julien Grandclément, Eric D. van Hullebusch, Stéfan Colombano*

Poster Session IV, cont.

Great Hall, 15:35 - 17:05

Poster Board	
48	[863] **Experimental Study on In-situ Emulsion Formation Behavior on Enhanced Oil Recovery in Sandstone Porous Media** *Muh Naim, Ismailova Jamilyam Abdulakhatovna, Maral Khanjani, Masoud Riazi, Peyman Pourafshary, Sagyn Omirbekov*
20	[872] **Needleless Futures: Modelling the Future of Microneedle Design and Innovation** *Diganta Das*
73	[876] **Nonlinear Drift-Diffusion of Charge Carriers within Porous Semiconductor Materials: Monte Carlo Method for Artificial Photosynthesis Devices** *Daniel Yaacoub, Fabrice Gros, Jean-François Cornet, Jérémi Dauchet, Richard Fournier, Stéphane Blanco, Thomas Vourc'h*
60	[930] **Surrogate Modeling of Heat Transport in Geothermal Reservoirs Using Graph Neural Networks and Transformers** *Reza Najafi-Silab, Hannah Menke, Florian Doster, David Egya, Julien Maes*
68	[931] **Time-Resolved MRI Study of Coupled Multiphase Flow and THF Hydrate Formation** *khadijeh zare, Jim Hall, Robert Morris, Seyed Shariatipour, Lucas Goehring, Ran Holtzman*
50	[940] **An Integrated Quantitative Method for Determining Movable Fluid Saturation in Different Pore-Throat Units of Sandstone Reservoirs** *Zaiquan Yang, Dongxia Chen, Sha Li, Jianchao Cai, Yuchao Wang*
66	[941] **Calibration of Suffusion Constitutive Models Using Empirical Critical Hydraulic Gradient Estimation** *Muhammad Hamza Khalid, Mohd. Ahmad Syed, Partasarathi Mandal*
70	[956] **Flow homogenization in heterogeneous porous media via non-Newtonian particle suspensions** *Wenbo Gong, Wenhai Lei*

WEDNESDAY, 20 MAY 2026

Plenary Session

Auditorium 800, 17:05 - 17:55
Chair: *Ann Muggeridge*

Award Ceremony 2 *17:05 -17:15*

InterPore Lifetime Achievement Medal

J. Jaime Gómez-Hernández
Universitat Politècnica de València, *Spain*

The InterPore Lifetime Achievement Medal is reserved for individuals who have made extraordinary contributions to porous media science and technology, who are world renowned in the porous media community, and whose contributions are consistent with the aims and ideals of InterPore.

InterPore Medal for Porous Media Research

Ruben Juanes
Massachusetts Institute of Technology, *USA*

The InterPore Medal for Porous Media Research (formerly InterPore Award for Excellence in Porous Media Research) is given to scientists with an established career, in recognition of excellent research in general porous media, with emphasis on research conducted over the past 10 years. Awardees are senior scientists who have an excellent research record that has contributed to the theoretical, experimental and/or modelling advances in understanding of problems involving natural and/ or industrial porous media.

Plenary Session, cont.

Plenary Lecture 2 *17:15 - 17:55*

Chair: *Jeff Gostick*

Paolo Colombo
University of Padova, *Italy*

Additive Manufacturing of Porous Ceramics from Precursors

Additive manufacturing of porous ceramics is somewhat limited by their high melting temperatures and the processing issues related to handling of feedstocks containing a large volume of particles. Processing slurry-based feedstocks, in fact, poses several challenges: a high amount of powder is required to promote densification and results in high viscosity, scattering and sedimentation phenomena in vat photopolymerization processes, as well as clogging problems at the nozzle for extrusion-based processes. Some of these issues can be solved or mitigated when using precursor-based feedstocks, when they are all liquid.

Our research activities have focused on the use of preceramic polymers solutions as feedstock for the production of porous ceramic components by additive manufacturing.

We also investigated the additive manufacturing of both geopolymer solutions and geopolymer powders, as precursors for different components of interest for absorption, catalysis or high temperature applications.

In this talk, our strategies for producing high quality ceramic components using a variety of precursor feedstocks will be presented. Different additive manufacturing techniques were used to fabricate components ranging in size from the sub-micron to the tens of centimeters, including direct ink writing, binder jetting, digital light processing, two photon polymerization, robotic arm manufacturing and volumetric additive manufacturing.

WEDNESDAY, 20 MAY 2026

LOC Social Event

Meet in the Great Hall, 18:00– 19:00

Join us for a relaxed, informal evening outing through the city. This unstructured walk offers a chance to explore Nantes at your own pace in small groups while enjoying the atmosphere and connecting with colleagues.

SAC Networking Night

Magmaa Food Hall Nantes, 20:00—22:00

Eager to expand your academic network? InterPore2026 provides an ideal setting to do so.

Join fellow students, PhDs, and early-career researchers on Wednesday, May 20, from 20:00 to 22:00 for SAC Networking Night. This informal evening offers a welcoming environment to meet peers, exchange ideas, and discuss research interests and career trajectories - accompanied by a glass of French wine. The event is designed to foster meaningful interactions and lasting professional connections.

Registration for this event is free and can be made with your conference registration.

We look forward to seeing you there.

Invited Parallel Lecture 5

Auditorium 800, 08:30 - 09:00
Chair: *Hossein Hejazi*

Yongfei Yang
China University of Petroleum (East China), *China*

Advances and Future Directions in Flow Mechanics for Unconventional Hydrocarbon Reservoirs

The Research Center of Multiphase Flow in Porous Media, founded by Professor Jun Yao at China University of Petroleum (East China), has become a globally recognized hub for innovation in hydrocarbon flow mechanics. Since its early focus on well-test analysis in the 1990s, the center has systematically built a modern theoretical framework for multiphase flow in porous media, bridging multiscale pore structures, multimode transport, and coupled physics.

The efficient development of unconventional hydrocarbon resources—including shale, tight, fractured-vuggy, and deep to ultra-deep reservoirs—presents critical challenges due to extreme multiscale pore structures, diverse flow regimes, and coupled multiphysics processes. This presentation reviews major advances in the mechanics of flow in porous media tailored to unconventional reservoirs. Key scientific breakthroughs include: (1) microscale simulation of shale/tight oil and gas using multiscale, multimineral digital rocks and nanofluidic chips; (2) coupled flow models spanning nanopores, micro-fractures, and macro-fractures at the meter-scale fracture network, enabled by a generalized embedded discrete fracture model (gEDFM); (3) the first discrete fracture-vug network (DFVN) model integrating Darcy–Navier–Stokes coupling at the hundred-meter scale; and (4) intelligent optimization of three-dimensional stereo development using offline surrogate-assisted, variable-dimension evolutionary algorithms. Future trends are identified, including flow mechanics in deep/ultra-deep reservoirs (high temperature, high pressure, high stress), underground coal gasification in deep coal seams (thermo-hydro-mechanical-chemical coupling), and intelligent flow mechanics leveraging deep learning and reduced-order modeling. These advances establish a new paradigm for multiscale, multiphysics, and multimode flow in unconventional reservoirs, supporting strategic energy security and efficient resource exploitation.

Invited Parallel Lecture 6

Salle 300, 08:30 - 09:00
Chair: *Gerard L. Vignoles*

Gabriel Tobie
Nantes Université, *France*

Porous Media as a Means to Promote Exchange Processes in Icy Worlds of the Outer Solar System

Beyond the orbit of Mars, most of the solid planetary bodies contain a large fraction of water ice. During the last three decades, a series of space missions to Jupiter's system (Galileo 1995-2003, Juno (2016-2026), Saturn's system (2004-2017), dwarf planets Ceres (Dawn (2014-2018) and Pluto (New Horizons 2015), have revealed that several of these icy worlds possess salty water oceans beneath their icy crust. Due to lower gravity and reduced hydrostatic pressure and temperature compared to the terrestrial context, porosity can be maintained over geological timescales and sustained active exchange processes between the different layers constituting their interior. Porous media processes therefore play a key role in promoting chemical and thermal transport in these extraterrestrial environments, including hydrothermal water flow in their porous rocky core, tidally-induced porous flow at the ocean interface and in partially melted layers, and vapor transport through the porous ice near the surface and in active faults. In this presentation, I will review the current knowledge about these icy worlds and highlight a series of active processes revealed by recent exploration, involving porous media.

THURSDAY, 21 MAY 2026

Oral presentations: Parallel sessions 3.1

09:05 - 10:05

(MS01) Porous Media for a Green World: Energy & Climate - Part 5

Salle 200

Chairs: *Shuo Yang & Alessandro Lenci*

09:05	[635] **CO_2 Migration and Trapping in Deep-Marine Fan Systems** *Trine Solberg Mykkeltvedt, Odd Andersen, Sarah Eileen Gasda, Anna Pontén, Ingunn Remme Fjeldaas, Sarah Riordan*
09:20	[849] **Vertical-Equilibrium Modelling of CO_2 Migration in Depleted Reservoirs** *Saeid Telvari, Hariharan Ramachandran, Gang Wang, Florian Doster*
09:35	[881] **Experimental Investigation of Horizontal versus Vertical CO$_2$ Plume Migration in Porous Reservoir Media Using Core Flooding with Variable Core Thickness** *Anirudh Bardhan, Krishna Raghav Chaturvedi, Saurav Bhattacharjee, Raj Deo Tewari, Vikram Vishal*
09:50	[12] **A New Open-Source Porous Media Compositional Solver in OpenFOAM: Salt Precipitation Modelling in CO2 Storage in Saline Aquifers** *Ali Papi, Gabriel Marcos Magalhães, Amir Jahanbakhsh, M. Mercedes Maroto-Valer*

(MS05) Physics of multiphase flow in diverse porous media - Part 5

Salle I

Chairs: *Ke Xu & Saman Aryana*

09:05	[714] **Pore-scale study of liquid-vapor phase change in porous media by hybrid lattice Boltzmann method** *Feifei Qin* **Solicited Speaker**
09:20	[962] **Closed physically based dynamic capillary pressure for two phase flow in porous media** *Didier Lasseux, Francisco José Valdés-Parada*
09:35	[828] **Pore-scale level-set simulation of drainage and imbibition of trapped gas in the presence of oil and water during reservoir pressure cycling** *Johan Olav Helland, Espen Jettestuen, Olav Aursjø*
09:50	[573] **Pore-scale numerical investigation on the displacement patterns of gas-water two-phase flow inside tight sandstone** *Xiaojie Jin, Zhonghong Chen*

Oral presentations: Parallel sessions 3.1, cont.

09:05 - 10:05

(MS07) Mathematical and numerical methods for multi-scale multi-physics, nonlinear coupled processes - Part 3

Salle G/H

Chairs: *Tuanny Cajuhi & Nadja Ray*

09:05	[236] **Network-based modeling of fluid flow through membranes** *Binan Gu, Linda Cummings, Lou Kondic, Matthew Illingworth*
09:20	[538] **Resistance-Distance-Based Coarse Graining of Flow Networks via Gradient-Based Conductivity Estimation** *Iván Colecchio, Yousra Housni, Benoit Noetinger*
09:35	[287] **A Comparative Study of Fine-scale and Multi-scale Finite-Volume and Finite-Element Methods for Coupled Poroelastic Problems** *Mahsa Mehrazar, Cornelis Vuik, Mohammed Al Kobaisi, Hadi Hajibeygi*
09:50	[604] **An incremental variational gradient damage model for saturated poroelastic media with THM coupling and cohesive zone effect** *Yifan Xu, Long Cheng, Fabrice Golfier*

(MS08) Mixing, dispersion and reaction processes across scales in heterogeneous and fractured media - Part 3

Salle 150

Chairs: *Yves Méheust & Pietro de Anna*

09:05	[230] **Structural Controls on Solute Diffusion in Porous Media** *Tingchang Yin, Brian Berkowitz*
09:20	[476] **Structural barriers to complete homogenization and wormholing in dissolving porous and fractured rocks** *Tomasz Szawełło, Jeffrey Hyman, Peter Kang, Piotr Szymczak*
09:35	[363] **Full homogenization of advection-diffusion-reaction model for packed bed reactors** *Alessio Lombardo Pontillo, Agnese Marcato, Daniele Marchisio, Gianluca Boccardo, Matteo Icardi, Ilenia Battiato*
09:50	[382] **Effect of matrix diffusion on anomalous transport and reactions in cerebral microcirculation** *Dimitri Flalkovsky, Sylvie Lorthois, Tanguy Le Borgne*

THURSDAY, 21 MAY 2026

Oral presentations: Parallel sessions 3.1, cont
09:05 - 10:05

(MS09) Pore-Scale Physics and Modeling - Part 6
Salle 300
Chairs: *Peter Kang & Marco De Paoli*

09:05	[926] **Deep learning for reactive transport modelling acceleration and upscaling workflows** *Ahmed H. Elsheikh, Florian Doster, Hannah Menke, Julien Maes* **Solicited Speaker**
09:20	[763] **Predicting Multiphase Transport in Technical Textiles via CFD and Machine Learning** *Eleonora Bianca, Ghasem Beiginalou, Ada Ferri, Gianluca Boccardo*
09:35	[779] **Development of an Image-Data-Driven Flow Solver for Investigating Intermittency Effects in Multiphase Flow** *David Rieder, Karlijn Smeulders, Maja Ruecker, Tom Bultreys*
09:50	[153] **Mechanical behavior of dense suspensions in porous media: A pore-scale model** *Nassim Cheikh, Emmanuel Le Trong, Cyprien Soulaine*

(MS10) Advances in imaging porous media: techniques, software and case studies - Part 4
Club Atlantique
Chairs: *Tom Bultreys & Qinhong Hu*

09:05	[416] **Application of Advanced Transmission Electron Microscopy in Imaging Porous Media: A Case Study of Geomaterials** *Wenbo Zhou, Tianhao Wu, Wenpei Gao*
09:20	[443] **Quantitative Analysis of Foaming Kinetics in Sodium Geopolymers Using 4D X-ray Micro-Computed Tomography and Advanced Image Segmentation** *Ahmad Awdi, Mario Scheel, Timm Weitkamp, Arnaud Poulesquen*
09:35	[526] **Quantifying Mass Transfer Between Partially-Soluble Fluids in Multiphase Systems** *Anna Herring, Christopher Allison, Ruotong Huang, Joe-Sam Nkuah, Saba Hanif, Haochen Li*
09:50	[568] **Investigating Cooling Induced Salt Crystallization In Porous Media Using Lab-based Dynamic Micro-CT** *Arjen Mascini, Hannelore Derluyn, Wesley De Boever, Gülce Kalyoncu, Mingchun Yuan, Jan Dewanckele*

Oral presentations: Parallel sessions 3.1, cont.
09:05 - 10:05

(MS13) Fluids in Nanoporous Media - Part 4
Salle B/C
Chairs: *Yun Yang & Bin Pan*

09:05	[552] **Coupled thermal-hydraulic-mechanical-chemical processes in nanoporous media** *Qinhong Hu, Yufeng Xiao, Keyu Liu, Guangshun Xiao, Tao Wang, Hongguo Qiao, Tao Zhang, Qiming Wang, Shengyu Yang*
09:20	[73] **Thermal Maturity and Gas Loading Effects on Transport Properties of Kerogen from Molecular Simulations** *Alex Eduardo Delhumeau Lozano, Amaël Obliger, Jean-Marc Leyssale*
09:35	[37] **$CH_4/CO_2/H_2$ Storage and Transport in Nanoporous Media: Microscopic Mechanisms and Scale Effects** *Lingfu Liu, Saman Aryana*
09:50	[320] **Molecular-Scale Perspectives on Subsurface Hydrogen Storage** *Mehdi Ghasemi*

(MS18) High-temperature heat and mass transfer within porous materials for energy and space - Part 2
Salle K/L
Chairs: *Benoit Rousseau & Gerard Vignoles*

09:05	[155] **Numerical analysis of ammonia-air flame stabilisation in porous media** *Rishabh Puri, Thorsten Zirwes, Oliver T. Stein*
09:20	[268] **Topology Optimization of High-Temperature Volumetric Solar Absorbers Using a Homogenized Porous Media Approach** *Augustin De Ls Vauvre, Benoit Rousseau, Laurent Cangemi, Yann Favennec*
09:35	[707] **Micro-CT-Based Permeability Characterization of Virgin and Pyrolyzed Wood Using Deep Learning Segmentation and Image-Based CFD Simulations** *Abderrahman M'jikou, Abdelaziz Omari, Azita Ahmadi, Cécile gaborieau, Jean Lachaud*
09:50	[738] **Resolving high temperature material degradation with X-rays** *Francesco Panerai*

Coffee Break & Exhibition
10:05 - 11:35

Refreshments are available in the Great Hall. Come grab a drink, network with other attendees, visit the exhibition booths and discuss the posters on display.

Poster Session V
Great Hall, 10:05 - 11:35

Poster Board	
35	[7] **3D experimental monitoring and modelling of pore collapse during viscous sintering of protein-based filaments for additive manufacturing** *Laurent Chaunier, Marco de Siati,, Anne-Laure Reguerre, Sébastien Comas*
69	[13] **Physical Experimental Simulation on Gas-Water Two-Phase Flow Behavior in 3D Large-Scale Rock Samples of Ultradeep Fractured Tight Sandstone Gas Reservoirs** *Xu Zhou, Zhaoqin Huang, Aifen Li, Jun Yao, Xianzhe Li*
37	[32] **A generic analytical pore-scale model for predicting pressure drops as an alternative to empirical models** *Sonia Fidder*
39	[45] **Reducing Confinement-Induced Layering in Random Packings via Sinusoidal Wall Corrugation** *Paweł Niegodajew, Maciej Marek, Artur Durajski, Michał Wilczyński*
51	[48] **Hydro-Mechano-Chemical Coupling for the Simulation of Pore -Scale Integrity in Dissolution and Crystallization Process** *Jérémie Racot, Jean-Matthieu Etancelin, Philippe Poncet*
25	[117] **Impact of portlandite dissolution and aperture distribution on the self-healing of concrete microfractures by calcite precipitation** *Lukas Blumenreuter, Anozie Ebigbo, Po-Wei Huang*
21	[123] **DuMux – an open-source simulator for solving flow and transport problems in porous media with a focus on model coupling** *Anna Mareike Kostelecky, Ivan Buntic, Timo Koch*

Poster Session V, cont.

Great Hall, 10:05 - 11:35

Poster Board	
53	[170] **From Crystalline Swelling to Shear Rheology: Multiscale Mechanics of Hydrated Smectite Faults** *hassan breiteh, Laurent Brochard*
41	[284] **Low-Cost Paper-Based Lab-on-Chip: Creating Hydrophobic Barriers using Common Materials for Microfluidic Uses** *Shantanu Banerjee, Mansi Chandra, Arnab Sarkar, Vijay Shinde*
7	[309] **Co-transport of ZnO and TiO2 nanoparticle aggregates with bacteria in soil: A coupled experimental and modeling approach** *Rima Manik, N. Seetha*
1	[353] **Modeling Microbial Dynamics and Soil Structure in Soil Organic Carbon Stabilization** *Nadja Ray, Maximilian Rötzer, Alexander Prechtel*
61	[379] **Investigation of Flow Behaviour and Bubble Dynamics in Microscale Porous Media** *Selcuk Kizilcaoglu, Sara Gonzalez Ruiz, Delphine Laboureur, Aiman Ouazzani, Tom Bultreys*
63	[396] **Radiative heat transfer in porous ablators** *Ahmed Yassin, Ayan Banerjee, Savio Poovathingal*
13	[411] **Assessment of 1D averaged model for predic tion NAPL contamination in heterogeneous media** *Anne-Julie Tinet, Constantin Oltéan, Fabrice Golfier, Michel Quintard*
23	[433] **Effect of Fracture Network Properties on Freeze-Thaw Dynamics in Geological Media** *Jia-Jing Lin, Chuanyin Jiang, Chin-Fu Tsang, Auli Niemi, Patrik Vidstrand, Qinghua Lei*
11	[441] **Porous media modeling of macromolecule diffusivity in living cells** *Olivier Destrian, René-Marc Mège, Benoit Ladoux, Benoit Goyeau, Morgan Chabanon*
19	[473] **Role of structural heterogeneity in interface propagation through disordered media** *Viswakannan R K, Peter Henning, Martin Weigel, Ran Holtzman, Subhadeep Roy*

THURSDAY, 21 MAY 2026

Poster Session V

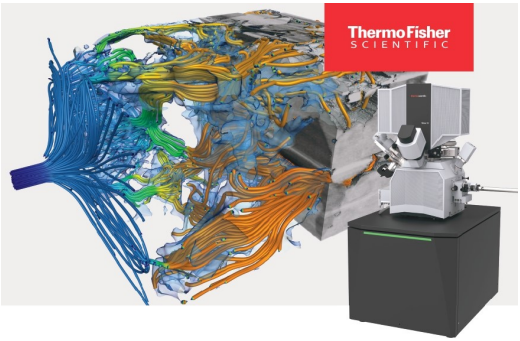
Great Hall, 10:05 - 11:35

Poster Board	
27	[480] **Biofilm formation and dynamics within porous structures** *Joanne Quet, Nadine Harmsen, Pietro De Anna*
29	[483] **Mixing in Confined Heterogeneous Porous Media** *Fateme Sajedi, Isaac Pincus, Mayumi Hamada, Nolwenn Delouche, Pietro De Anna*
3	[589] **Securing water supply for agriculture with storm-water based managed aquifer recharge** *Anne Schultze, Thomas Baumann*
55	[608] **Coupled Flow–Deformation in Salt Caverns: Viscoplastic vs. Poro-Viscoplastic Integrity Predictions** *Blanca Fernández-Amado, M. Andres Soage-Quintans, José París, Ignacio Colominas, Juan Carlos Mosquera Feijoo, Luis Cueto-Felgueroso*
47	[617] **X-ray CT Imaging of Gas Dispersion in Porous Media for Underground Hydrogen Storage Applications** *Ianna Gomez Mendez, Anne H. Menefee, Zuleima Karpyn*
45	[619] **Can morphological adaptations of microvascular networks minimize anomalous transport?** *George Atkinson, Philippe Davy, Sylvie Lorthois, Tanguy Le Borgne, Yohan Davit*
65	[632] **Machine Learning-Guided Design of Porous Architectures for Liquid-Metal Control in Fusion Reactor First Walls** *Daniel Andruczyk, Kaiyue Ding, Kenta Kawashimo, Luke Olson, Pejman Tahmasebi, Serveh Kamrava*
49	[634] **Numerical Homogenization For Health Applications : A Study Of Osteosarcoma Metastasis-Free Survival** *Tristan Marty, Anne Gomez, Michel Quintard, Nathalie Van Acker, Pascal Swider, Pauline Assemat, Romain Alis*
71	[755] **Pore-Scale Controls on PFAS Transport in the Vadose Zone** *Valentin Grenier, Joris Heyman, Khalil Hanna, Tanguy Le Borgne*

Poster Session V, cont.

Great Hall, 10:05 - 11:35

Poster Board	
5	[831] **Improving the Prediction of Interfacial Tension and Adsorption at Fluid–Fluid Interfaces for Mixtures of PFAS and/or Hydrocarbon Surfactants by Considering Synergistic Effect** *Martin Witt, Dominique Guyonnet, Eric D. van Hullebusch, Maxime Cochennec, Nicolas Devau, Stéfan Colombano*
57	[877] **Capacitive Measurement of Adsorption Isotherms** *Bénédicte Lebeau, Etienne Rolley, Habiba Nouali, Kristina Davitt, Patricia Ott*
15	[888] **Uncovering role of viscoelasticity in Polymer Flooding: A Pore-Scale Study of Microscopic Oil Displacement** *Amarjit Pandey, Abhijit Kakati*
31	[902] **Reactive air–water interfaces in unsaturated media** *Daniel Dominguez Vazquez, Hui Wang, Khalil Hanna, Guillem Sole-Mari, Oshri Borgman, Joris Heyman, Tanguy Le Borgne, Yves Méheust, Tomas Aquino*
59	[919] **Experimental and Machine learning Investigation of Emulsification and flow distribution in Porous Media** *Islam Kakharov, Masoud Riazi, Ismailova Jamilyam Abdulakhatovna, Mian Shafiq*
17	[920] **Volume-Averaged Model for Multicomponent Two-Phase Transport with Interfacial Mass Transfer and Surface Reaction at a Porous–Free-Flow Interface** *Oscar Luevano-Rivas, Roel Hernández-Rodríguez*
33	[974] **Switchable hydrophilicity solvents in porous-like microfluidic devices** *Jean-Baptiste Salmon, Margaux Zollo, Thierry Tassaing, Yaocihuatl Medina-Gonzalez*
67	[999] **Comparative review of 54 porous material codes with applications to pyrolysis** *Jean Lachaud*



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Innovation with Integrity

Oral presentations: Parallel sessions 3.2
11:35 - 13:05

(MS01) Porous Media for a Green World: Energy & Climate - Part 6
Salle 200
Chairs: *Sojwal Manoorkar & Robin Zhao*

11:35	[86] **Hydrogen and Brine displacement processes in Clashach Sandstone: Relevance of Haine´s jumps and Intermittent Flow** *Eike Thaysen, Aliakbar Hassanpouryouzband, Catherine Spurin, Damien Freitas, Fernando Alvarez-Borges, Ian Butler, Katriona Edlmann, Robert Atwood, Roberto Rizzo*
11:50	[532] **Hysteresis, Trapping, and Wettability Effects in Underground Hydrogen Storage: A Pore-to-Field-Scale Comparative Study** *Ibrahim Alobaidan, Ahmad Abushaikha, Sajjad Foroughi, Branko Bijeljic, Martin Blunt*
12:05	[943] **Uncertainty-Driven Screening and Optimisation of UK Depleted Reservoirs for Hydrogen Storage** *Ehsan Vahabzadeh Asbaghi, Farzaneh Nazari, Vahid Niasar*
12:20	[638] **The combined effects of pressure decline and gas withdrawal in underground hydrogen storage: A pore-scale experimental study** *Waleed Dokhon, Branko Bijeljic, Martin Blunt*
12:35	[713] **Hydrogen Wettability of Peridotite under Various Brine Compositions and Temperatures: Implications for Natural Hydrogen Accumulation and Underground Hydrogen Storage** *Dong Chen, Jiacheng Dai, Boxin Ding, Ronghao Zhou, Shouceng Tian, Haizhu Wang, Yang Cheng*

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Oral presentations: Parallel sessions 3.2, cont.
11:35 -13:05

(MS02) Environmental Porous Media: Water, Agriculture, and Remediation - Part 4

Salle B/C

Chairs: *Amir Pahlavan & Joaquin Jimenez-Martinez*

11:35	[386] **Spatial organization of biomass controls intrinsic permeability of porous systems** *Wenqiao Jiao, David Scheidweiler, Nolwenn Delouche, Alberto Guadagnini, Pietro De Anna* **Solicited Speaker**
11:50	[334] **Multi-Scale Dynamics of Root-Induced Soil Compaction (RISC): Sharp Interfaces and Rhizosphere Hydrology** *Uri Nachshon, Nurit Goldberg-Yehuda, Shmuel Assouline, Yair Mau*
12:05	[490] **Quantification of Pore-Scale Controls on Bacterial Behavior via Information Theory** *Chiara Recalcati, Maximilian Stoll, Roman Stocker, Alberto Guadagnini, Joaquin Jimenez-Martinez*
12:20	[686] **Mechanical interactions between bacteria and grains in a model soil** *Willy Bonneuil, François J. Peaudecerf, Hervé Tabuteau*
12:35	[466] **Membrane-Coated MBBR Adsorbents for Circulation-Based Groundwater Remediation: Experiments and Dual-Porosity Modeling** *Aron Kneer, Sahar Zare Farjoudi, Eduard Alesi*
12:50	[580] **Hydrodynamic dispersion in flowing networks induces bacterial (mis)communication** *Despoina Anastasopoulou, Gabriel Ramos, Julien Lefort, Peter Redder, Tanguy Le Borgne, Yohan Davit*

Oral presentations: Parallel sessions 3.2, cont.
11:35 - 13:05

(MS05) Physics of multiphase flow in diverse porous media - Part 6
Salle I
Chairs: *Saman Aryana & Ke Xu*

11:35	[574] **Study on non-isothermal drying of porous media with hybrid lattice Boltzmann method: drying rate prediction** *Timan Lei, Dominique Derome, Jan Carmeliet, Kai H. Luo, Linlin Fei*
11:50	[436] **Modelling and monitoring particle-filled flow in 3D fibrous media for composite materials** *Léonie Marchand, Alexandre Hautefeuille, Christophe Binetruy, Sébastien Comas-Cardona*
12:05	[405] **Mechanisms of Inertia-Induced Flow Pattern Reshaping in Porous Media Two-Phase Displacement: From Meniscus Dynamics to Mesoscale Cooperative Propulsion** *Wenyuan Wang, Bate Bate*
12:20	[665] **Simulation Of A Porous Iron Particle Heating In A Metallurgical Slag** *Jean Robin, Aliyeh Rafiei, Cesar Pairetti, Edouard Izard, Giorgia Petrella, Stephane Zaleski*
12:35	[944] **Unsaturated Flow Dynamics Under Infiltration–Evaporation Cycles: Effects of Soil Heterogeneity and Gravity Finger Formation** *Juan Jose Hidalgo Gonzalez, Marco Dentz, Yajaira Alexandra Castillo Gonzales*
12:50	[633] **Pore-Scale and Core-Scale Investigation of Water-Alternate -Emulsion Flooding for Enhanced Oil Recovery** *Bruna Leopércio, Arthur Almeida, Ferlaque Moreira, Jorge Avendaño, Leonardo Moreira, Listbeth Manchego, Marcio Carvalho, Ranena V. Ponce F.*

THURSDAY, 21 MAY 2026

Oral presentations: Parallel sessions 3.2, cont.
11:35 - 13:05

(MS07) Mathematical and numerical methods for multi-scale multi-physics, nonlinear coupled processes - Part 4
Salle G/H
Chairs: *Keita Yoshioka & Mostafa Mollaali*

11:35	[884] **Physics-preserving enriched Galerkin method for a fully-coupled thermo-poroelasticity model** *Son-Young Yi, Sanghyun Lee* **Solicited Speaker**
11:50	[503] **Coupled Flow and Mechanics Simulations using the Fracture Displacement-Pressure Basis Function Method for Highly Fractured Rock** *Giulia Conti, Daniel Stalder, Patrick Jenny*
12:05	[205] **Discontinuous Galerkin Method for Flow in Enlarged Fractured Carbonates** *Igor Mozolevski, Luciane Schuh, Edson Valmorbida, Marcio Murad, Josue Barroso* **Solicited Speaker**
12:20	[560] **Algebraic dynamic multilevel method for CO2 Storage in deep saline aquifers** *Mengjie Zhao, Marc Gerritsma, Cornelis Vuik, Hadi Hajibeygi*
12:35	[752] **A posteriori error estimators and adaptivity for CO2 sequestration.** *Ibtissem Lannabi, Eric Flauraud, Martin Vohralik, Soleiman Yousef*
12:50	[359] **Pseudo-Spectral method for an inverse problem with noisy data** *Hallah Abuanga, Ibrahim Sarumi*

Oral presentations: Parallel sessions 3.2, cont.
11:35 - 13:05

(MS12) Coupled Flow-Deformation Processes in Porous Media - Part 2
Salle 150
Chairs: *Yihuai Zhang & Qazim Llabjani*

11:35	[844] **Experimental and numerical investigation of the fracturing mechanisms of unconsolidated sandstone reservoirs** *Ana Loyola, Carmine Gragnano, Jacques Danquigny, Jalel Ochi, Jean Sulem, Jean-Claude Dupla, Thang Tung Nguyen*
11:50	[323] **High Pressure/high temperature CO2-brine relative permeability for ultra-deep carbon storage: core-flooding measurements in Berea sandstone** *Yun Yang* **Solicited Speaker**
12:05	[949] **Stress-Controlled Gas Transport in Boom Clay: From Oedometer to Isotropic Conditions** *Salar Lakimahalleh, Enrique Romero, Laura Gonzalez Blanco*
12:20	[689] **Swelling Porous Media – Developing a Multi-scale Model of Overburden Pressure as a Function of Water Content in Montmorillonite-Bearing Clayey Soils.** *Ryan Whitehead, Lynn Schreyer, Idil Akin*
12:35	[42] **Energy-Preserving TPFA Scheme for Compressible Gas Flow in Deformable Porous Media** *Mayssam Mohamad, Frédéric Grondin, Jad Dabaghi, Mazen Saad*
12:50	[502] **A hybrid Phase-Field-Poromechanical Model for Tumor Growth in Encapsulated conditions** *Amine Ben Abdelwahed, Giuseppe Sciumè, Matthieu Lacour, Mejdi Azaiez*

Oral presentations: Parallel sessions 3.2, cont.
11:35 - 13:05

(MS13) Fluids in Nanoporous Media - Part 5
Salle 300
Chairs: *Mingshan Zhang & Zhehui Jin*

11:35	[131] **Adsorption and Thermal Conductivity in Nanoporous Materials: Underlying Molecular Mechanisms and the Rattle Effect** *Benoit Coasne, Nikolas Ferreira de Souza, Cecilia Herrero, Thomaz Rossetti Ghizoni, Luis Mercier Franco* **Solicited Speaker**
11:50	[381] **Phase Behavior of CO2-Alkane Mixtures in Nanopores: Insights from Wang–Landau Transition-Matrix Monte Carlo Simulations** *Jilong Xu, Zhehui Jin*
12:05	[685] **Exploring Helium Metastability Using Porous Systems** *Benoit Chabaud, Etienne Rolley, Jean-Francois Motte, Kristina Davitt, Laurent Cagnon, Marine Schott, Panayotis Spathis, Paul Coutin, Pierre -Etienne Wolf, Thierry Crozes*
12:20	[523] **From Molecular Fluctuations to Coupled Transport: A Space- and Time-Dependent Onsager Matrix** *Minh-Thê Hoang, Ian Bourg*
12:35	[125] **Dynamic migration and recovery mechanism of multi-component shale gas within intra-connected kerogen nanopores** *Mingshan Zhang, Kai lv*
12:50	[57] **Gas Separation through Nanoporous Graphenes: insights from Molecular Simulations** *Guillaume Galliero, Juncheng Guo, Romain Vermorel*

Oral presentations: Parallel sessions 3.2, cont.
11:35 - 13:05

(MS17) Electrochemical Processes in Porous Media - Part 1
Salle K/L
Chairs: *Maxime van der Heijden & Jonas Hereijgers*

11:35	[569] **The role of porous media in durability and performance of fuel cells and electrolyzers** *Aimy Bazylak* **Solicited Speaker**
11:50	[463] **Engineering Microporous Layers in Polymer Electrolyte Water Electrolyzers** *Rafaël Vos, Antoni Forner-Cuenca*
12:05	[775] **Pore-Scale Characterization of Stress-induced Compression in Porous Gas Diffusion Layers Using X-ray Computed Tomography and Pore Network Modelling** *Shayan Talebi Marand, Jasmin Graf, Felix Mäurer, Nils Baumann, Martin Quintus, Aimy Bazylak*
12:20	[255] **Modelling of gas flow regimes in anodic flow channels of PEMWE** *Ahmed Elewaily, Gergely Schmidt, Insa Neuweiler*
12:35	[742] **Porous Transport Layer Optimization via Additive Manufacturing of Inconel 718 Lattice Structures** *Tomisin Oluwajuyigbe, Mihaela Vlasea, Mohsen K Keshavarz, Sagar Patel, Jeff Gostick, Sharon Chen*
12:50	[959] **Processing–Structure–Performance Relationships in Pristine and Recycled Catalyst Layers for CO_2 Electrolysis** *Ashkan Irannezhad, Aimy Bazylak*

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Oral presentations: Parallel sessions 3.2, cont.
11:35 - 13:05

(MS20) Special Session in Honor of Jun Yao - Part 6
Club Atlantique
Chairs: *Zhixue Sun & Zhaoqin Huang*

11:35	[984] **Multicontinuum modeling for heterogeneous porous media processes** *Dmitry Ammosov, Mohammed Saad Al Kobaisi, Yalchin Efendiev*
11:50	[283] **Continuum model for evaporation of porous media: revisiting from large pore network modeling** *Rui Wu*
12:05	[138] **Gradient-Regulated Interfacial Behavior and Multiphase Transport: From Bioinspired Surfaces to Electric-Field-Driven Subsurface Systems** *Zheng Li, Shaoqian Hao, Xiaoguang Wang, Wentong Zhang, Jianlong Kou*
12:20	[285] **Micro-Continuum Simulation of Pore-Scale Mineral Dissolution: Pore-Space Structure and Dissolution Regime** *Jinlei Wang, Yongfei Yang, Branko Bijeljic, Martin Blunt*
12:35	[95] **Integrated thermo-hydro-mechanical coupling numerical simulation of hydraulic fracturing and production in tight oil reservoirs** *Jun Yao, Zhaoqin Huang, Jinlong Li*
12:50	[83] **Insights from Monte Carlo Simulations for Phase Diagram Shift of n-Alkane Induced by Nanoconfinement in Shale Formations** *Yifan Li, Jun Yao*

Lunch Break (also served during the Grant Writing Workshop)
Great Hall, 13:05-14:05

Grant Writing Workshop

Salle 300, 13:05 - 14:05

Prof. Nima Shokri

Dean of Faculty and Head of Institute,
Hamburg University of Technology, *Germany*

Embark on Your Funding Journey

Ever felt lost in the maze of grant writing? Overwhelmed by where to start or which grants are the right fit for your career stage? Ready to turn confusion into confidence? Dive into the world of successful grant writing with SAC's exclusive workshop!

InterPore's Students Affairs Committee (SAC) presents an exclusive Grant Writing Workshop at InterPore2026 – a transformative experience designed to empower you in securing funds for your research projects.

About the Workshop:

"Persuasive Grant Writing" is your guide to using narrative tools that resonate with your funders. Elevate the quality of your grant applications, align your proposals with funder objectives, and apply narrative tools to make your applications more informative and persuasive.

Key Learning Points:

- Craft winning grant applications
- Create effective project budgets
- Design impactful projects
- Uncover the secrets of successful grant revisions

Who Should Attend

Anyone eager to master the art of finding and applying for grants! Whether you're a student, a Ph.D. or postdoc, or an early-career researcher, this workshop is tailored just for you.

This workshop is your all-in-one ticket to navigating the grant writing sphere with confidence! Ready to embark on your funding journey? Join us in Nantes to make InterPore2026 an unforgettable experience!

You can secure your spot at registration; seating will be limited!

Oral presentations: Parallel sessions 3.3
14:05 - 15:35

(MS02) Environmental Porous Media: Water, Agriculture, and Remediation - Part 5

Salle B/C

Chairs: *Linda Luquot & Joaquin Jimenez-Martinez*

14:05	[950] **Field data driven root density distribution to enhance tree water uptake predictions in numerical models** *Loujain Alharfouch, Joaquin Jiménez-Martínez, Marius G Floriancic, J. A. Castro-Lopez, Pilar Llorens, Jerome Latron, Juan J Hidalgo*
14:20	[435] **Coupled numerical simulation of electrical geophysics and multiphase flow for monitoring the contamination and remediation of NAPL in porous media** *Behshad Koohbor, Behzad Ataie-Ashtiani, Dorian Davarzani, Jacques Deparis, Philippe Leroy, Stéfan Colombano*
14:35	[896] **X-ray Computed Tomography-informed models of preferential macropore flow in soils.** *Hamza Chaif, Chloé Caurel, Stéphane Sammartino, Nicolas Beudez, Anne-Sophie Lissy, Stéphane Ruy, Nathalie Moitrier, Eric Michel*
14:50	[859] **Pore-Scale Investigation of a Novel Method for the Remediation of Chlorinated Solvents Using Pickering Emulsions** *Abdelaziz Omari, Antonio Rodríguez de Castro, Azita Ahmadi, Fernando Leal-Calderon, Shuxin Wang*
15:05	[87] **Multi-scale modelling of enzymatic hydrolysis of biomass using numerical homogenization.** *Emma Berson, Paul Duru, Pauline Assemat*
15:20	[15] **Ion selectivity with capacitive deionization** *Volker Presser*

Oral presentations: Parallel sessions 3.3, cont.
14:05 - 15:35

(MS04) Biological Processes in Porous Media - Part 2
Salle 200
Chairs: *Chaojie Cheng & Na Liu*

14:05	[705] **Real Rock Microfluidics Investigation of Solute Diffusion in Biofilm-Rock Systems** *Eva Albalghiti, Brian Ellis*
14:20	[88] **Design of a microfluidic setup to assess scale-dependent metabolic kinetics in Azotobacter vinelandii biofilms producing polysaccharides** *Loisa Borde, Maike Werdin, Stefanie Duvigneau, Nicole Vorhauer-Huget*
14:35	[286] **Raman spectroscopic detection and quantification of microbial reactions in the pore network within a microfluidic chip** *Christian Ostertag-Henning, Anja Dohrmann, Chaojie Cheng, Na Liu*
14:50	[156] **Drying and Storage of Sporosarcina pasteurii for Subsequent Use in Microbially Induced Carbonate Precipitation** *Patrick Hanisch, Constanze Eulenkamp, Markus Pechtl, Robert Huber, Sebastian Krickl, Timo Melchin*
15:05	[333] **Investigations on the Reduction of the Porosity and Water Absorption Properties of Recycled Brick Aggregate by MICP Treatment** *Brigitte Nagy, Benjamin Enogieru, Robert Huber, Andrea Kustermann*
15:20	[99] **Spatio-temporal Characteristics Of A Proliferating Saccharomyces cerevisiae Clog** *Mathieu Ghenni, Olivier Liot, Morgan Delarue, Paul Duru, Pierre Joseph*

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Oral presentations: Parallel sessions 3.3, cont.
14:05 - 15:35

(MS06) Interfacial phenomena across scales - Part 3
Salle I
Chairs: *Paula Reis, Rui Wu, Ran Holtzman & Mykyta Chubynsky*

14:05	[452] **Self similarity in salt creeping efflorescence crystallization** *Noushine Shahidzadeh, Rozeline Wijnhorst, Marc Prat*
14:20	[468] **Evaporation of Microfluidic Pore Networks with Formation of Colloidal Liquid Bridges** *Jinchi Zhang, Rui Wu, Abdolreza Kharaghani, Evangelos Tsotsas*
14:35	[798] **Coupled Evaporation and Imbibition of Surfactant-Laden Droplets on Unsaturated Porous Media** *Xiaoxing Li, Hans Kuerten*
14:50	[59] **Mathematical modelling of evaporation in capillary porous media** *Ellen Luckins*
15:05	[487] **Evaporation in Heterogeneous Porous Media** *Isaac Pincus, Pietro De Anna*
15:20	[447] **Evaporation Of A Sodium Chloride Aqueous Solution From A Porous Medium: Dome Efflorescence Formation** *Oumeima Souissi, Marc Prat, Paul Duru, Sandrine Geoffroy*

Oral presentations: Parallel sessions 3.3, cont.
14:05 - 15:35

(MS08) Mixing, dispersion and reaction processes across scales in heterogeneous and fractured media - Part 4

Salle 150

Chairs: *Silvia De Simone & Branko Bijeljic*

14:05	[647] **Exsolution and mixing during hydrogen storage with CO2 cushion-gas in heterogeneous porous media** *Amir Reza Zargar, Maartje Boon* **Solicited Speaker**
14:20	[556] **Transverse mixing enhancement by dispersed two-phase flow in porous media** *Yang Liu, Marco Dentz, Moran Wang*
14:35	[332] **Reactivity persistence as a unifying control on carbonate dissolution during CO2 injection** *Atefeh Vafaie, Samuel Krevor*
14:50	[380] **Solute Mixing Under Unstable Two-Phase Flow in Heterogeneous Porous Media** *Eugenio Pescimoro, Marco Dentz, Juan J. Hidalgo, Federico Municchi*
15:05	[716] **Enhanced mixing in dynamic multiphase flow through 3D porous media** *Kevin Pierce, Marc Lamblin, Tanguy Le Borgne, Joris Heyman, Gaute Linga*
15:20	[354] **Effect of permeability heterogeneity on reactive convective dissolution** *Juan J. Hidalgo, Rima BenHammadi, Anne De Wit*

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Oral presentations: Parallel sessions 3.3, cont.
14:05 - 15:35

(MS09) Pore-Scale Physics and Modeling - Part 7
Salle 300
Chairs: *Yashar Mehmani & Peter Kang*

14:05	[662] **Stress-Tensor Tomography in 3D Granular Media** *Shiyao Wang, Wei Li, Ruben Juanes*
14:20	[806] **Pore-scale hydrate formation and dissociation in porous networks: micromodel imaging and advanced Lattice Boltzmann modelling** *Saleh Mohammadrezaei, Lifei Yan, Rouhi Farajzadeh, Jeroen Snippe, Vahid Niasar*
14:35	[830] **Image-to-Property Digital Workflows: Linking 3D Microstructure, Transport, and Mechanics of Porous Media** *Arne Jacob, Andreas Wiegmann, Christian Hinz, Anton du Plessis*
14:50	[426] **Extending image super resolution and network extraction techniques to model sub- micron porosity in TB-sized images with application to carbonates** *Clément Varloteaux, Georgy Borisochev, Imran Benoual, Abbas Zerkoune, Mohamed Regaieg*
15:05	[175] **Permeability of 3D printed porous media: towards the convergence of experimental and numerical results** *Paul Baral, Julien Bruchon, Nicolas Moulin, Renaud Ferrier, Sylvain Drapier*
15:20	[420] **Grain-scale computational mechanics of discrete materials with a Level Set shape description** *Jerome Duriez, Cédric Galusinski*

Oral presentations: Parallel sessions 3.3, cont.

14:05 - 15:35

(MS10) Advances in imaging porous media: techniques, software and case studies - Part 5

Club Atlantique

Chairs: *Liwei Zhang & Maja Rücker*

14:05	[21] **Laser-drilled functional wood materials show improved dimensional stability upon humidity changes - a neutron imaging analysis** *Yong Ding*
14:20	[659] **Direct Observation of Wet Snow Using X-ray Tomography: 3D Images, Curvature Fields, and Outlooks** *Frederic Flin, Pierre Latil, Iheb Haffar, Fatou-Toutie Ndoye, Hayat Benkhelifa, Pascal Charrier, Nicolas Lenoir, Jonathan Perrin, Mario Scheel, Timm Weitkamp*
14:35	[666] **Assessing resilience of wood assemblies to floodings - from neutron imaging to hygrothermal simulation** *Daniel de Cotret, Pavel Trtik, Marie-Amélie Boucher, Dominique Derome*
14:50	[519] **Optimal transport metrics for analyzing variability in experimental images and simulations** *Jakub Both, Olav Folkvord, Trygve Tegnander, Enrico Facca, Martin Ferno, Jan Martin Nordbotten*
15:05	[378] **Combining Computed Tomography and Numerical Simulations for the 4D Analysis of Dissolution Dynamics** *Michał Dzikowski, Alessandro Tengattini, Dawid Woś, Marta Majkut, Max Cooper, Piotr Szymczak*
15:20	[609] **Wettability and Fluid Phase Redistribution Analysis by High-Resolution Micro-CT** *Maira Lima, Luciano Guedes, Thiago Pineiro, Rodrigo Surmas, Paulo Couto*

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Oral presentations: Parallel sessions 3.3, cont.
14:05 - 15:35

(MS15) Machine Learning in Porous Media - Part 3
Salle G/H
Chairs: *Hongkyu Yoon & Saeid Sadeghnejad*

14:05	[40] **PCP-GAN: Property-Constrained Pore-scale Image Reconstruction** *Ali Sadeghkhani, Brandon Bennett, Masoud Babaei, Arash Rabbani*
14:20	[317] **A Graph Neural Network Framework for Upscaling the Pore Network Modeling Calculations** *Mehdi Mahdaviara, Amir Raoof*
14:35	[448] **Generalizable 3D Multiphase Segmentation for Pore-Scale Micro-CT: A Mamba-Unet** *Rui Zhang, Linqi Zhu, Xianzhi Song, Qianqian Ma, Branko Bijeljic, Martin Blunt*
14:50	[191] **Physics-Informed BERT with Self-Supervised Masking for Forecasting Shale Gas Production Dynamics** *Runshi Huo, Wei Xiong, Yutian Luo*
15:05	[776] **Physics-informed machine learning for estimating permeability and dispersivity distributions in three-dimensional heterogeneous porous media** *Hongkyu Yoon, Jonghyun Lee*
15:20	[937] **GeoSlicer a Platform for Digital Rock Physics: Integrated Machine Learning, Data Preparation, and Generative AI with SinGAN** *Bruno Honório, Fernando Bordignon, Ingrid Carneiro, Leandro Figueiredo, Rafael Arenhart, Rodrigo Surmas*

Oral presentations: Parallel sessions 3.3, cont.
14:05 - 15:35

(MS17) Electrochemical Processes in Porous Media - Part 2
Salle K/L
Chairs: *Jonas Hereijgers & Jeff Gostick*

14:05	[575] **Rethinking Electrode Choice: Matching Porous Microstructures to Electrolyte Properties in Redox Flow Batteries** *Maxime van der Heijden, Sonia Khalghollah, Andreina Camano Alcedo, Arielle Chung, Tova Gilbert*
14:20	[70] **Flow Engineering in Porous Electrodes Towards Enhanced Redox Flow Battery Performance** *Jonas Hereijgers, Kavin Teenakul*
14:35	[841] **Performance prediction of Solid Oxide Cells (SOC) by ex-situ characterization of electrodes and physical modelling** *Mohammadhadi Mohammadi, Arash Rabbani, Hamid Reza Abbasi, Masoud Babaei*
14:50	[649] **Modeling Drying of a Colloidal Dispersion in a Fibrous Porous Medium Using Full Morphology Approach** *Pierluigi Arnelli, Joël Pauchet, Marc Prat, Michel Quintard*
15:05	[894] **A Structure-Transport-Driven Framework for Optimizing Laser-Engineered 3D Porous Electrodes** *Nadia Bali, Michalis Athanasiou, N. Spyros Yannopoulos*

Brew Break & Exhibition
15:35 - 17:05

Refreshments are available in the Great Hall. Come grab a drink, network with other attendees, visit the exhibition booths and discuss the posters on display.

THURSDAY, 21 MAY 2026

Poster Session VI

Great Hall, 15:35 - 17:05

Poster Board	
26	[11] **Experimental Study on the Influence of Surfactants on Contact Angle and Evaporation of Single Droplets** *Ayomikun Bello, Abdolreza Kharaghani, Evangelos Tsotsas*
36	[20] **Pore-Scale Reactive Transport Modeling of Mineral Dissolution with a New Roughness-Based Surface Reactivity Parameterization** *Sina Parsa, Olaf A. Cirpka, Tao Yuan*
44	[43] **Advanced Micro-CT Techniques for Visualizing Pore-Scale Microplastic retention patterns in Soils** *Saeid Sadeghnejad, Marjan Ashrafizadeh, Thorsten Schäfer*
9	[110] **Improved modeling of transient heat conduction in voxelized heterogeneous media using the Brownian walkers method** *Mattéo Roch, Franck Enguehard, Cyril Daoût, Denis Rochais*
38	[134] **Inertial effects on fluid flow through natural porous media** *Maciej Matyka, Sahrish Naqvi, Damian Śnieżek, Dawid Strzelczyk, Mariusz Mądrala*
70	[167] **Experimental investigation of non-premixed ammonia combustion in porous inert media** *Daniel Kretzler, Benjamin Bock-Seefeld, Björn Stelzner, Christos Aneziris, Dimosthenis Trimis, Nora Brachhold, Oliver T. Stein, Rishabh Puri, Thorsten Zirwes*
68	[181] **Additive manufacturing of metallic thin porous media with plasma enhances vapor deposition coating for electrochemical applications** *Volker Paul Schulz, Jan Panthaler, Jeremi König, Nicolas Weber, Pascal Piller*
30	[203] **Single Phase Compressible Gas Flow in Porous Media: Review and Advances** *Rachid Ababou, Mohamed Haythem Bahlouli, Zakaria Saadi, Israel Canamon Valera*
2	[214] **Evaluation of the pore pressure influence on the acoustic velocities of Brazilian carbonate rocks** *Marco Ceia, Lucas Oliveira, Marcus Correa, Harald Flesche, Marcel Naumann, Jorge Matias, Roseane Missagia, Fernando Moraes*

Poster Session VI, cont.

Great Hall, 15:35 - 17:05

Poster Board	
56	[233] **Effect of cross-sectional geometry, pore diameter and varying hydrophilicity on the water droplet confined in a-silica nanopores** *Gopi Kundia, Kaustubh Rane*
66	[235] **Applying topological data analysis to porous media** *Aakash Karlekar, Catherin Lalu, Ebru Dagdelen, Jonathan Jaquette, Linda Cummings, Lou Kondic, Manav Arora, Matthew Illingworth*
20	[311] **Effect of biofilm on the transport of zinc oxide nanoparticles in soil** *Rima Manik, N. Seetha*
52	[350] **High-Resolution Coupled Hydro-Mechanical Modelling of Tunneling-Induced Ground Settlement: A Case Study of the West Link Project, Sweden** *Hadi Karimzadeh, Iman Vaezi, Qinghua Lei*
4	[364] **The use of mobile δ13C measurements for CO2 leak detection at the Salt Wash Fault System, Utah** *Hull Cai, Sally Benson, Samuel Krevor*
58	[387] **A novel way for the characterization of carbon aerogels by NMR relaxation methods** *Mónika Kéri, Dávid Nyul, Krisztina László, István Bányai*
60	[389] **Effect of the interactions between CO2 and heavy hydrocarbons on flow** *Zhuoying Dou, Zhengming Yang, Haibo Li, Chenyu Han*
34	[391] **Combined effects of an open fracture and groundwater flow on CO2 behavior in fractured porous media** *Seung-Wook Ha, Chaewon Park, Ji-Young Baek, Kang-Kun Lee*
54	[413] **Strain (De-)correlation as a Hallmark of Plastic Memory in Granular Media** *Satyaki Kundu, Yaniv Edery, Arnold Bachrach*
46	[442] **Quantitative Image Analysis in X-ray Microtomography Using Reference Standards for Beam-Hardening Correction and Noise Assessment** *Rodrigo Surmas, Andreidy Andry Andrade, Aurea Pereira Martins Neta, Carlos Eduardo Menezes dos Anjos*

THURSDAY, 21 MAY 2026

Poster Session VI

Great Hall, 15:35 - 17:05

Poster Board	
6	[499] **Pore-Scale Controls on Capillary Entry Pressure in Underground Hydrogen Storage** *Behjat Karipayhan, Katriona Edlmann, Aliakbar Hassanpouryouzband*
24	[522] **Water-sensitive effect and main controlling factors of Baikouquan Formation reservoir in Mahu Sag, Junggar Basin, China** *Na Liu, Yihang Xiao, Zhenjiang You, Han Xu, Haishen He, Yuxin Si*
72	[607] **New insights on air-water interface adsorption in partially saturated porous media** *Valentin Grenier, Joris Heyman, Khalil Hanna, Tanguy Le Borgne*
8	[614] **Consequences of Low Gas Relative Permeability on Field-Scale CO_2 Storage and Oil Recovery** *Martin Blunt, Oranan Ariyarit, Ann Muggeridge, Nattaphon Temkiatvise, Nopparit Somboonkittichai, Vinicius Luiz Santos Silva*
40	[630] **Pore System Characterization of Sandstones from Morro Pelado, Rio do Rasto Formation, Paraná Basin** *Alexandra Nicole Sanchez Hidalgo, Manoela Bettarel Bállico, Monica Oliveira Mana, Maiara Silva Baltazar, Rodrigo Nagata, Celso Peres Fernandes*
62	[640] **Integrated Characterization Methods for Shale Reservoir Heterogeneity and Oil Content: Lithofacies, Pore Network, and AI-Based Oil Content Evaluation** *Zaiquan Yang, Dongxia Chen, Sha Li, Jianchao Cai, Xianglu Tang, Yuchao Wang*
32	[652] **Development and Validation of the One-Domain Approach for Two-Dimensional Flow in Partially Porous Systems** *Benoit Goyeau, Fátima Callejas Quiroz, J. Alberto Ochoa Tapia, Roel Hernández Rodríguez*
16	[679] **Reactive Transport Of Nutrients Via Reconfiguration Of Porous Soil Matrices** *Gabriela de Barros, Celso Peres Fernandes, Thiago Reginaldo Corrêa, Iara Frangiotti Mantovani, Ingrid Bertin Carneiro, Rodrigo Nagata, Anderson Camargo Moreira, Ramiro Tres, Vanderlei Rodrigues da Silva*
10	[709] **Time-Resolved Pore-Scale Multiphase Flow Dynamics for CO_2 and Hydrogen Storage Using 4D Synchrotron Imaging** *Yihuai Zhang, Amin Taghavinejad, Azibayam Amabogha*

Poster Session VI, cont.

Great Hall, 15:35 - 17:05

Poster Board	
12	[735] **Underground Hydrogen Storage: A Data-Driven Approach to Site Selection and Performance Optimisation** *Abdolali Mosallanezhad, Amir Jahanbakhsh, M. Mercedes Maroto-Valer*
64	[761] **Deep Learning Super-Resolution of Brazilian Pre-Salt Carbonates Micro-CT Images** *Felipe Bevilaqua Foldes Guimarães, Júlio de Castro Vargas Fernandes, Carlos Eduardo Menezes dos Anjos, Luan Vieira, Rodrigo Surmas, Alexandre Evsukoff*
42	[777] **Assessing Salt Precipitation Dynamics: Pore Network Model vs. Microfluidic Experiments** *Priyanka Agrawal, Vishal Ahuja, Lifeil Yan, Steffen Berg, Jeroen Snippe, Rouhi Farajzadeh*
28	[865] **Study on wetting film and apparent contact angle beyond classical DLVO: effects of salinity and finite ion size via a DFT–MSA Poisson–Fredholm model** *Vahid Niasar, Wenxing Dai*
48	[892] **Visualizing CO2 hydrate formation in porous media with X-ray micro-tomography** *Christian Basa, Joseph Diaz, Pascale Sénéchal, Christophe Blondeau, Christophe Dicharry, Hannelore Derluyn*
14	[990] **The Influence of Temperature on N2, H2 and Syngas Wettability at 5 Bar** *Muhammet Çimen, Fabian Tapias, Maartje Boon*
18	[993] **Selective Plane Imaging Microscopy (SPIM) for 3D imaging of mixing and bacteria colonization in porous media.** *Valentine Rollot, Despoina Anastasopoulou, Marc Lamblin, Manuel Maeritz, Joris Heyman, Tanguy Le Borgne*
22	[1002] **How harmful is Aluminium to bone formation? A study based on bone porous structure analysis** *Anderson Camargo Moreira, Mara Rubia Marques, Celso Peres Fernandes, Fernanda Cristina Alcantara dos Santos, Iara Frangiotti Mantovani, Isabela Cristina Gomes de Souza Nascimento, Pedro Vale de Azevedo Brito*
50	[1011] **Integrated Online Workflows and Simulation in the Digital Porous Media Portal (DPMP)** *Bernard Chang, Cinar Turhan, Maria Esteva, Masa Prodanovic, Bahareh Nojabaei, John Gentle, Richard Ketcham, Shayan Khan, Vera Belcher*

THURSDAY, 21 MAY 2026

Plenary Session *17:05-17:55*

Auditorium 800

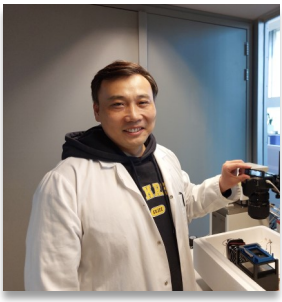
Chair: *Vahid Niasar*

Award Ceremony 3 *17:05 -17:15*

InterPore Award for Porous Media Research

Ilenia Battiato
Stanford University, *USA*

The InterPore Award for Porous Media Research (formerly Procter & Gamble Award for Thin and Swelling Porous Media Research) is given to mid-career researchers in recognition of outstanding research in general porous media, with emphasis on research conducted over the past 5 years.



InterPore PoreLab Award for Young Researchers

Lifei Yan
Delft University of Technology, *The Netherlands*

This award is given to a young researcher in recognition of outstanding contributions in the field of porous media from a fundamental point of view. The research may be theoretical, computational, or experimental.

A word of gratitude: This award has been made possible by a generous grant from PoreLab (a research center of excellence jointly formed by Norwegian University of Science and Technology (NTNU)) in Trondheim and the University of Oslo (UiO). PoreLab focuses on the physics of porous media using experimental, theoretical and computational methods.

Plenary Session, cont.

Award Ceremony 3, cont.

Rien van Genuchten Early-Career Award of Porous Media for a Green World

Catherine Spurin
Stanford University, *USA*

The Rien van Genuchten Early Career Award is given to an early-career researcher whose focus is the general topic of "porous media research for a green world". This may involve significant theoretical, experimental and/or modeling advances addressing major soil, hydrologic and/or environmental problems facing our planet.

A word of gratitude: This award has been made possible by a generous donation from Dr. Betty-May Pontedeiro to the InterPore Foundation and is created in honor of the eminent soil and groundwater scientist Marthinus (Rien) Th. van Genuchten. Rien van Genuchten is world renown for his enormous achievements in the area of fluids flow and solutes transport in partially-saturated porous media. He has made highly impactful contributions to the understanding and modeling of subsurface processes, in such widely varying fields as soil physics, hydrology, geology, the environmental sciences, and civil engineering.

THURSDAY, 21 MAY 2026

Plenary Session, cont.

Plenary Lecture 3 *17:15 –17:55*

Auditorium 800

Chair: *Martin J. Blunt*

Katharine Maher
Stanford University, *USA*

Reactive transport modeling of soil-based carbon removal: from reactive interfaces to objective limits

Achieving the temperature goals of the Paris Agreement will require 100 to 300 gigatons of carbon dioxide removal (CDR) this century. As large-scale interventions become central to climate planning, distinguishing between temporary carbon fluxes and durable atmospheric removals is essential. Yet the absence of robust and efficient monitoring, reporting and verification (MRV) frameworks remains a critical barrier for investment, policy progress and market development. Reactive transport models (RTMs) are often viewed as too complex, uncertain or immature to underpin MRV, despite their unique potential to enable uncertainty quantification, data assimilation and harmonization of discrepant fluxes. This tension highlights a broader challenge in carbon markets: how should scientific models be incentivized, governed and trusted as part of financial and regulatory infrastructure?

Using enhanced weathering (EW) as a case study, this lecture examines how mechanistic models can illuminate the coupled physical and chemical processes that govern CDR. MRV for EW requires translating mineral dissolution into durable atmospheric drawdown, as a function of coupled gas and aqueous transport, surface pH buffering, and dissolution-precipitation processes in variably saturated porous media and over scales spanning soils to estuaries. For the soil zone, new frameworks for surface proton buffering and the development of "reaction tags" identify mechanistic limits to verifiable carbon sequestration that arise from inefficiencies in alkalinity generation and export. Model-based analysis also establishes a physical basis for reconciling discrepancies between feedstock dissolution inferred from solid-phase measurements and the lack of measurable aqueous carbon export, a harmonization critical for robust MRV.

Continued on next page

Plenary Lecture 3, cont.

Together, these examples illustrate both the diagnostic power of mechanistic modeling and the current limitations in parameterization, data integration, and multiphysics representations that constrain the readiness of models for decision support.
The talk concludes by expanding to other soil-based CDR pathways and raising emerging questions around model governance: What constitutes "fit-for-purpose" modeling in carbon markets, and how should model-based evidence be evaluated when used to substantiate claims of durable CO_2 removal?

Conference Dinner

Great Hall, 18:30-21:00

The conference dinner will be a seated event featuring live entertainment.
Tickets are included in the in-person registration fee as well as in the accompanying persons fee.

I**mportant note:** The conference dinner is a seated dinner with pre-ordered meals based on the attendance and menu selections submitted during registration. Only participants who indicated during registration that they would attend the dinner can be guaranteed a seat and meal. Please bring your **dinner ticket** with you to the dinner, as it will be used for both admission and meal,

Bords de l'Erdre, Île Versaille, Nantes
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Invited Parallel Lecture 7

Auditorium 800, 08:30 - 09:00
Chair: *Timothy Rollins Ginn*

Tiziana Tosco
Politecnico di Torino, *Italy*

Designing the nanoremediation of contaminated aquifers: from laboratory tests to field implementation

Nanoremediation is a promising in-situ remediation strategy based on the subsurface injection of reactive suspensions of engineered nanoparticles (NPs), aimed at promoting the degradation, transformation, or immobilization of a broad range of groundwater contaminants. The success of field-scale applications depends on the ability to characterize and predict NP transport, retention, and reactivity in complex hydrogeological and geochemical conditions.

This talk presents an integrated methodology combining laboratory-scale testing and numerical modelling to support the design of nanoremediation interventions. Column transport experiments are performed using natural porous media and controlled flow conditions to evaluate key processes governing NP mobility, including deposition onto collector surfaces, detachment, aggregation, and clogging. These tests are designed to systematically explore the effects of ionic strength, pore-water velocity, and carrier fluid rheology. Experimental results are interpreted using the MNMs, a numerical model developed for one-dimensional simulation of colloid transport in saturated porous media, which enables inverse modelling of column tests to derive deposition kinetics and constitutive transport relationships. The resulting parameters are then used as input to MNM3D, a three-dimensional colloid transport model that simulates NP behaviour under realistic field-scale conditions, accounting for site heterogeneity, variable flow regimes, and evolving geochemical environments. The modelling framework enables the simulation of alternative injection scenarios, supporting the optimization of operational parameters such as NP dosage, injection flow rate, duration, and spatial well configuration. It also provides insights into NP retention profiles and long-term fate under natural groundwater flow conditions.

The approach has been successfully applied in several field-scale studies with iron-based NPs, demonstrating its robustness as a quantitative, process-based tool for the design and performance assessment of permeation-based nanoremediation applications.

Invited Parallel Lecture 8

Auditorium 800, 08:30 - 09:00
Chair: *Thomas Baumann*

Timothy Scheibe
Pacific Northwest National Lab, *USA*

Scaling microbial processes in porous media

Many porous media processes of interest involve microorganisms such as bacteria, fungi and viruses; examples include bioremediation, bioclogging, nutrient cycling, plant-microbe interactions, and critical mineral recovery. Consider the life of a bacterium in a porous medium. The size of its home is measured in micrometers – typical soil/sediment pores range in size from a few micrometers (e.g., shales or clays) to a few hundred micrometers (e.g. coarse sands). Like human homes, soil bacterial homes vary quite a lot in terms of who lives there (microbial community), how well they get along (competition or syntrophy), and what resources are available to the occupants (food, air, water). The microbially-mediated biogeochemical transformations that will occur, the types of microbes that will perform them, and the rates at which they occur, can dramatically differ between individual pores separated by very small differences. Importantly, microbes can actively respond to and modify their environment through regulation of their metabolism and other functions, so are often not well represented by standard chemical reaction models. On the other hand, the measurements we can make at field scales, and the models we use to represent field-scale biogeochemical transformations, are at the bulk scale. That is, we combine huge numbers of soil pores, grains, and microbes into a single sample (for measurement) or a single grid cell (in a numerical model) and we measure or simulate bulk properties (e.g., concentrations) and processes (e.g., reaction rates). But what a microorganism or microbial community actually senses and responds to is the environment in their individual pore home. Because natural porous media are highly heterogeneous, and the key reaction substrates (for example, oxygen, organic matter, nitrate, metals) are not uniformly distributed, the bulk characteristics are very different from the actual environment in any given individual pore. Furthermore, biogeochemical reaction processes are typically non-linear, so they don't readily average up in the way we might expect.

Continued on next page

Invited Parallel Lecture 8, cont.

As a result, modeled reactions do not adequately represent the actual experiences and responses of microorganisms, creating a significant barrier to the application of biological advances to understanding and prediction of reactive transport in porous systems. This presentation will discuss these challenges in greater detail and present some novel approaches that may help us to address this scaling challenge based on emerging technologies and a creative combination of biological, physical, and computational sciences.

Oral presentations: Parallel sessions 4.1

09:05 - 10:20

(MS01) Porous Media for a Green World: Energy & Climate - Part 7

Salle 200

Chairs: *Muqeet Iqbal & Robin Zhao*

09:05	[643] **Pore-Scale Experimental and Pore Network Modeling Study of CO2 Injection in Microfluidic Porous Media** *Brenda Maria De Castro Costa, Yan Medeiros, Gabriel Gerlero, Marcio Carvalho, Pedro Calderano, Sergio Ribeiro, Bruno Pina, Daniel O'Connor, João Casacão, Mário Santos, Paloma Simões*
09:20	[557] **Pore-scale investigation of steady-state relative permeability of hydrogen and carbon dioxide in water-wet carbonate rocks** *Ahmed AlZaabi, Branko Bijeljic, Martin Blunt, Qianqian Ma, Rukuan Chai*
09:35	[143] **Pore-scale dynamics of exsolution-driven multiphase flow during gas storage in heterogeneous porous reservoirs** *Amir Reza Zargar, Maartje Boon*
09:50	[370] **Laser-Etched Glass Microfluidic Device Facilitates Visualizing CO2 Hydrate Film Propagation in Porous Media** *Wei Yu, Masud Babayev, Abdullah Sultan*
10:05	[717] **Pore-Scale Insights into CO2 Hydrate Kinetics** *Lifei Yan, Manon Schellart, Diederik Boersma, Denis Voskov, Rouhi Farajzadeh*

Oral presentations: Parallel sessions 4.1, cont.
09:05 - 10:20

(MS06) Interfacial phenomena across scales - Part 4
Salle I
Chairs: *Paula Reis & Mykyta Chubynsky*

09:05	[292] **Adsorption of ionic PFAS at the air–water interface at low concentrations** *Bo Guo, Wenqian Zhang* **Solicited Speaker**
09:20	[618] **Incorporating the direct effect of surface tension in two-phase flow into generalized anisotropic effective stress at large scale** *Rashad Abbasov, Renaud Toussaint, Marwan Fahs, eirik flekkøy, Knut Jorgen Maloy*
09:35	[785] **Up-flow foam fractionation and down-flow filtration for enhanced PFAS removal by adsorption at air-water and solid-water interfaces** *Edo Boek, Hassan Alradhawi, Farid Bustos, Onno Kramer*
09:50	[855] **Flow-Induced Surface Charge Heterogeneity and Its Impact on Cation Exchange Kinetics** *Shahar Shahror, Yael Mishael, Nimrod Schwartz*
10:05	[891] **Fugacity-based diffuse-interface modeling of multicomponent multiphase flow at the pore scale** *Luis Cueto-Felgueroso, M. Andres Soage-Quintans, Steven Velásquez -Chancí, Luis F. Ayala*

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Oral presentations: Parallel sessions 4.1, cont.

09:05 - 10:20

(MS08) Mixing, dispersion and reaction processes across scales in heterogeneous and fractured media - Part 5

Salle 150

Chairs: *Yves Méheust & Silvia De Simone*

09:05	[712] **Thanks to the experimentalists we can now test mixing theories more broadly.** *Timothy Ginn, Sabrina Volponi*
09:20	[18] **Stochastic Lagrangian Velocity Dynamics and Upscaled Transport in Rough Fractures** *Alessandro Lenci, Yves Méheust, Marco Dentz, Vittorio Di Federico*
09:35	[951] **Transition from porous-medium to viscosity-ratio control in miscible solute dispersion modeling** *Sina Omrani, Vahid Niasar*
09:50	[22] **Role of pore size distribution on velocity fields in 3D porous media** *Mathieu Souzy, Antoine Wautier, Fan Chen*
10:05	[119] **Water isotope transport behavior and potential implications for assessment of catchment properties** *Dan Elhanati, Erwin Zehe, Ishai Dror, Brian Berkowitz*

Oral presentations: Parallel sessions 4.1, cont.

09:05 - 10:20

(MS09) Pore-Scale Physics and Modeling - Part 8

Salle 300

Chairs: *Yashar Mehmani & Peter Kang*

09:05	[675] **Pore network modeling of drying-induced salt precipitation** *Ran Holtzman, Nihal Muhammed Habeeb, Fatima-Zohra Sahraoui, Mykyta V. Chubynsky, Lucas Goehring*
09:20	[654] **Pore-network modeling of buoyancy-driven microbubbles in a supergravity field** *Kristoffer Skjelanger, Anna Mareike Kostelecky, Maziar Veyskarami, Bernd Flemisch, Timo Koch*
09:35	[290] **Salt Precipitation during CO_2 Injection: Insights from Quasi -1D Validation and 3D Pore-Network Modelling** *Yuxi Liang, Branko Bijeljic, Martin Blunt*
09:50	[360] **Quasi-Static Pore-Network Modeling for Evaporation-Driven Salt Transport and Precipitation in Porous Media** *Zhixin Chen, Bo Guo, Mathis Kelm, Theresa Schollenberger, Rainer Helmig*

(MS12) Coupled Flow-Deformation Processes in Porous Media - Part 3

Salle B/C

Chairs: *Zhenjiang You & Chaojie Cheng*

09:05	[565] **Enabling Boundary-Value Interpretation of Element-Level Tests through Distributed Fibre Optic Sensing** *Qazim Llabjani, Alessio Ferrari, Lyesse Laloui, Paul Marschall*
09:20	[929] **A stress-strain constitutive model for bentonite-based engineered barriers considering adsorption, capillarity and pore structure evolution** *Alessandro Parziale, Angelica Tuttolomondo, Lyesse Laloui*
09:35	[244] **Capillary compression of a soft sponge** *Hangkai Wei, Oliver Paulin, Callum Cuttle, Chris MacMinn*
09:50	[118] **When Structure Matters: Heterogeneity in the Poromechanics of Periodically Pulsed Soft Porous Materials** *Matilde Fiori, Sylvie Lorthois*
10:05	[36] **Friction modifies poroelasticity of a yeast clog** *Térence Desclaux, Callum Cuttle, Pierre Joseph, Paul Duru, Chris MacMinn, Morgan Delarue, Olivier Liot*

Oral presentations: Parallel sessions 4.1, cont.
09:05 - 10:20

(MS15) Machine Learning in Porous Media - Part 4
Salle G/H
Chairs: *Ahmed Elsheikh & Serveh Kamrava*

09:05	[52] **Microstructure/permeability relation of porous ceramics through active learning assisted experimental campaign** *Jnanesh Gopale Gowda*
09:20	[135] **Comparison of CNN and GAN-Based Super-Resolution Methods for 3D Porous Microstructures** *Rishabh Saxena, Thomas Carraro*
09:35	[265] **Machine Learning for Tailoring Microstructural Properties** *Serveh Kamrava, Hossein Mirzaee*
09:50	[460] **Data-Driven Prediction of Relative Permeability: Applications to CO_2 and Hydrogen Storage** *Abdolali Mosallanezhad, Amir Jahanbakhsh, M. Mercedes Maroto-Valer*
10:05	[823] **DimExDAM: A Diffusion–Adversarial Framework for 2D-to-3D Generation of Complex Porous Microstructures** *Ali Aouf, Bart Rogiers, Christophe De Vleeschouwer, Eric Laloy*

Oral presentations: Parallel sessions 4.1, cont.
09:05 - 10:20

(MS16) Complex fluid and Fluid-Solid-Thermal coupled process in porous media: Modeling and Experiment - Part 2

Salle K/L

Chairs: *Yingfang Zhou & Moran Wang*

09:05	[430] **Study on Leakage Mechanisms in Vesicular Volcanic Rocks Dominated by Fine-to-Microscopic Pore Structures** *haoyuan Dou, Bing Hou, Yifan Dai, Zhuang Zhang, Zhihao Liao*
09:20	[352] **Beyond phenomenology: a micromechanics-based model for rock-like materials within the framework of irreversible thermodynamics and multistep homogenization** *Yue Shi, Chi Yao, Wanqing Shen, Chuangbing Zhou, Jianfu Shao*
09:35	[939] **Heating-induced pore pressure generation and K_0 evolution in low-permeability clayey soils** *Nuria Sau, Enrique Romero, Hervé Van Baelen*
09:50	[963] **A coupled pore-network modeling and experimental validation framework for freeze-drying: fluid–solid–thermal interactions in porous media under rarefied-gas conditions** *Shalong Xiong, Foerst Petra, Nicole Vorhauer-Huget, Rui Wu*

The Grand Elephant, Nantes
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Oral presentations: Parallel sessions 4.1, cont.
09:05 - 10:20

(MS20) Special Session in Honor of Jun Yao - Part 7
Club Atlantique
Chairs: *Yongfei Yang & Lei Zhang*

09:05	[938] **Hydromechanics of fractures and fracture networks** *Holger Steeb, Hamid Madadi*
09:20	[69] **A Variable-Dimension Evolutionary Transfer Optimization Framework for Well-Fracture Pattern Co-optimization of Fractured Horizontal Wells in Shale-Gas Reservoirs** *Dali Zhao, Jun Yao, Hai Sun, Zhaoqin Huang, Yongfei Yang, jinlong li, Zhuocheng Hu*
09:35	[24] **Numerical Simulation of Reactive Flow in Fractured Vuggy Carbonate Reservoirs Considering Hydro-Mechanical-Chemical Coupling Effects** *Cunqi Jia, Zhaoqin Huang*
09:50	[727] **The Study on Water-Invaded Fracture Network Flow Mechanisms Evolution and Mathematical Characterization for Deep Shale Gas Reservoirs** *Xianggang Duan, YINGYING XU, Wei Xiong, Zhiming Hu, Yutian Luo, Jin Chang, Danting Xiao, Mingyan Sun, Runshi Huo*
10:05	[331] **Thermodynamically Consistent Modeling and Algorithms for Fluid Flow in Fractured Porous Elastic Media with Consideration of Fracture Activation and Closure** *Shuyu Sun*

Coffee Break & Exhibition
10:20 - 11:50

Refreshments are available in the Great Hall. Come grab a drink, network with other attendees, visit the exhibition booths and discuss the posters on display.

Poster Session VII

Great Hall, 10:20 - 11:50

Poster Board	
21	[47] **Numerical Estimation of Transport Tensors in Immiscible Two-Phase Flow through Porous Media** *Jorge Alberto Briones Carrillo, Benny Obregon-Gonzalez, Darío Farrera-Salazar, Juan Emiliano Acevedo-González, Leonel Escobar-Hernández, Sebastian Romo-Castillo, Valeria Valenzuela Gutierrez*
23	[81] **Two-Phase Flow Simulation in Chicontepec Porous Media Using Pore Network Models: Integration of SEM Images, OpenPNM and Experimental Data** *Jorge Alberto Briones Carrillo, Benny Obregon-Gonzalez, Darío Farrera-Salazar, Juan Emiliano Acevedo-González, Leonel Escobar-Hernández, Sebastian Romo-Castillo, Valeria Valenzuela Gutierrez*
53	[97] **Influence of Local Thermal Non-Equilibrium Processes in Saturated Porous Media and Coupled Systems** *Anna Mareike Kostelecky, Maziar Veyskarami, Rainer Helmig*
55	[162] **Modeling Salt Precipitation under Short Intermittent CO_2 Injection: Role of Salinity, Capillarity and Injection Rate on Injectivity** *Alfredo Perez-Perez, Aurelie Berthelot*
63	[187] **Pore structure and fluid occurrence in flexible shale nanocomposites: decoupling the role of pressure, inorganic matter and fluid content** *Tianhao Li, Hai Sun, Zheng Li, Lian Duan, Dongyan Fan, Lei Zhang, Yongfei Yang, Jun Yao*
29	[197] **Wettability changes via nanoparticle adsorption across scales: From interfacial wetting behaviors to multiphase displacement in porous media** *Xukang Lu, Mingbao Zhang, Fanyuan Zhang, Wenhai Lei, Yang Liu, Howard A. Stone, Moran Wang*
17	[198] **Pattern Formation During Swelling in Aqueous Glycerin Solutions of Hydrogel Beads** *Sebastián Ariel Falcioni, Yanina Lucrecia Roht, German Drazer, Irene Ippolito*
66	[231] **Cellular automata–based modelling of pore microstructure and water retention in fine-grained soils** *Shilpa Prajapati, Arghya Das, Suaiba Mufti, Mohd Sameer Alam*

FRIDAY, 22 MAY 2026

Poster Session VII, cont.

Great Hall, 10:20 - 11:50

Poster Board	
1	[260] **Elastic Anisotropy of the porous systems in the Pre-Salt carbonates by Thomsen parameters and numerical simulations** *Herson Rocha, Roseane Missagia, Irineu Lima Neto, Marco Ceia*
25	[266] **A Model for Seasonal Energy Storage in Cone-Shaped Geological Formations** *Hatem Alam, Igor Bogdanov, Sabine Delahaye*
35	[293] **Realizable Entropic Lattice Boltzmann Method for High-P'eclet Scalar Transport in Complex Porous Media** *Jingsen Feng, Xu Chu, Yang Liu*
37	[432] **Understanding karstification process in fractured media through reactive transport modeling** *Léo Chapuis, Linda Luquot, Delphine Roubinet*
27	[440] **Uncertainty Analysis of Relative Permeability Curves in Carbonates Rocks** *Rodrigo Surmas*
3	[456] **Measurement and interpretation of low CO2 relative permeability** *Anfal Al Zarafi, Ahmed AlZaabi, Branko Bijeljic, Martin Blunt, Rukuan Chai*
39	[459] **Thermo--hydro--chemical reactive flow in rough fractures: temperature-dependent PHREEQC coupling in OpenGeoSys** *Mostafa Mollaali, Thomas Nagel, Haibing Shao, Thomas Baumann*
11	[469] **Modelling Colloid-Facilitated Radionuclide Transport with Two-Site Kinetic Sorption (COFRAME-2)** *Tatiana Reiche, Ulrich Noseck*
5	[524] **Osmotic Compression–Driven Zeolite Formation: In Situ Monitoring of Gel-to-Crystal Transition by ^{1}H NMR Relaxometry** *Adilson Francisco Luis Samba, Arnaud Poulesquen, Benjamin Maillet, Rahima Sidi-Boulenouar*
41	[660] **Flow rate distribution in a 2D disordered porous medium** *José Arnal, Guillem Sole-Mari, Tomas Aquino*
57	[668] **A multiscale approach for wettability determination in gas diffusion layers for polymer electrolyte fuel cells** *Barbara Thiele, Jens Eller, Juan Herranz, Thomas J. Schmidt*

Poster Session VII, cont.

Great Hall, 10:20 - 11:50

Poster Board	
47	[674] **Simulating Liquid Water Distribution at the Pore Scale in Snow: Use of a Pore Morphological Model to Obtain Water Retention Curves and Effective Transport Properties** *Lisa Bouvet, Nicolas Allet, Neige Calonne, Frederic Flin, Christian Geindreau*
7	[783] **Estimation of the dissolution rate during CO2 storage in deep aquifer with variable permeability** *Christophe Blondeau, Igor Bogdanov*
13	[826] **Impact of microplastics on solute transport dynamics in soil** *Milad Aminzadeh, Tanmay Kokate, Ali Usman Chaudhry, Harris Rabbani, Branko Bijeljic, Martin Blunt, Nima Shokri*
59	[833] **Ligand assisted electrochemical process switching** *Muhammed Musthafa Ottakam Thotiyl, Muskan Muskan*
31	[851] **Pore-scale investigation of adsorbing solute transport in partially saturated porous Medium** *Aronne Dell'Oca, Ilan Ben-Noah, J. Jiménez-Martínez, Monica Riva, Roel Hernández Rodríguez*
15	[852] **Microplastics reshape evaporation and salt crystallization in saline soils** *Sahar Jannesarahmadi, Berit Zeller-Plumhoff, Fabian Wilde, Mehdi Mahdaviara, Milad Aminzadeh, Nima Shokri, Patrick Huber, Birte Hindenlang*
9	[880] **Coreflood Evidence of Connectivity-Controlled CO$_2$ Breakthrough and Residual Trapping** *Anirudh Bardhan, Saurav Bhattacharjee, Krishna Raghav Chaturvedi, Raj Deo Tewari, Vikram Vishal*
51	[903] **Imbibition of Cellulose Nanocrystal Gels in Paper: Hydromechanical Coupling and Multiscale Transport** *Léopold Oudinot, Antoine Naillon, Jérémie Viguié, Laurent Orgéas, Frédéric Dufour*
19	[997] **Numerical investigation and experimental validation of LNAPL infiltration and vapor transport in porous media for early leak detection** *Dorian Davarzani, Amir Alamooti, Alassane Wade, Nicolas Aubert, Valérie Guérin, Marc Crampon*

FRIDAY, 22 MAY 2026

Poster Session VII, cont.

Great Hall, 10:20 - 11:50

Poster Board	
70	[1003] **A Locally Conservative Low-Order Stabilized Mixed Finite Element Method for the Brinkman Problem in Highly Heterogeneous Porous Media** *Juan Felipe Pacazuca, Frederic Valentin, Diego Volpatto*
33	[1012] **Simulation of Ocean-Groundwater Interactions through the Beach: Focus on the Validation of Richards Equation in the Porous Media** *Tony Bonnet, Martin Parisot, Mathieu Coquerelle*
43	[1020] **Impact of Mineralogical Heterogeneity on Porosity Enhancement in Carbonates During Acidizing** *Jéssica Nascimento Pereira, Natalino da Silva Souza, Igor Barreto, Renato Sol Paiva de Medeiros, Pedro Tupã Pandava Aum, Daniel Nobre Nunes da Silva, Cláudio Regis dos Santos Lucas*
49	[1026] **Pore-scale simulations of carbon mineralization during fluid mixing in basalt** *Heng Li, Justine Parmentier, Gaute Linga, Francois Renard, Tanguy Le Borgne*
61	[1028] **Data-worth analysis to constrain uncertainty in geothermal production from geologically complex reservoirs** *Guofeng Song, Denis Voskov, Hemmo Abels, Philip Vardon, Sebastian Geiger*
45	[1029] **Impact of anisotropy on gravity currents in heterogeneous porous media** *Patricio Hernández-Parra, Bruno Rossi, Sepideh Majdabadi Farahani, Vittorio Di Federico, J. Jaime Gómez-Hernández*

Oral presentations: Parallel sessions 4.2
11:50 - 12:50

(MS01) Porous Media for a Green World: Energy & Climate - Part 8
Salle 200
Chairs: *Anna Herring & Eduardo Abreu*

11:50	[161] **Lab Evaluation of Long-Distance Propagation of CO2 Foam for Deep Mobility Control** *William Rossen, H. Yu, Jinyu Tang, Long Yu, X. Zou, Xudong Jing*
12:05	[745] **Investigating the effect of operational and petrophysical parameters on salt precipitation and injectivity loss** *Javad Shokri, Masoud Babaei, Rens Florian van der Vleuten, Rouhi Farajzadeh, Vahid Niasar*
12:20	[736] **Physicochemical Characterization of CO2-Activated Colloidal Silica Gels for Adaptive Subsurface Sealing** *Simon Zougheib, Enoc Basilio, Hussein Hoteit*
12:35	[10] **Interfacial Effects of an Anionic Surfactant on Evaporation in a Porous Medium** *Ayomikun Bello, Abdolreza Kharaghani, Evangelos Tsotsas*

(MS03) Flow, transport and mechanics in fractured porous media - Part 3
Salle 150
Chairs: *Lluís Saló-Salgado & Giulia Conti*

11:50	[780] **Optimization and experimental validation of graph-based modeling of complex transport processes in fractured porous media** *Christopher Zahasky, Collin Sutton, Sahishnu Sarma Duvvuri* **Solicited Speaker**
12:05	[577] **A hybrid modelling approach for coupled fluid flow and heat transfer in highly fractured low-permeability porous media** *Nour Alawieh, Behshad Koohbor, Anis Younes, Fabrice Golfier*
12:20	[108] **Efficient Flow and Transport in Fractured Porous Media using the Basis Function Method** *Daniel Stalder, Shangyi Cao, Daniel Meyer, Patrick Jenny*
12:35	[58] **Monte Carlo based approach for simulating fracture flow using fully-unstructured pEDFM** *Ryan Haagenson, Artur Castiel Reis de Souza, Mengjie Zhao, Cornelis Vuik, Hadi Hajibeygi*

FRIDAY, 22 MAY 2026

Oral presentations: Parallel sessions 4.2, cont.

11:50 - 12:50

(MS05) Physics of multiphase flow in diverse porous media - Part 7

Salle I

Chairs: *Tongke Zhou & Chao-Zhong Qin*

11:50	[550] **Pore-Network-Continuum Model for Two-Phase Flow in Porous Media** *Chaozhong Qin*
12:05	[451] **Pore-scale Imaging and Modeling of CO2-Brine Relative Permeability Reduction and Hysteresis in a Reservoir Carbonate** *Rukuan Chai, Sajjad Foroughi, Qianqian Ma, Foo Yoong Yow, Branko Bijeljic, Martin Blunt*
12:20	[535] **Reconstruction of digital rocks of shale matrix and numerical predictions of apparent permeability** *Zhiwei Wang, Chaozhong Qin, Jlanqi Rong, Yingfang Zhou, Bowen Shi, 东晨 刘*
12:35	[808] **An Intelligent Method for Predicting Microscopic Residual Oil Based on Digital Core** *Yili Ren, Weifeng Lv, Li Hou, Ninghong Jia, Linghui Sun, Xin Li*

(MS07) Mathematical and numerical methods for multi-scale multi-physics, nonlinear coupled processes - Part 5

Salle G/H

Chairs: *Tuanny Cajuhi & Nadja Ray*

11:50	[431] **Thermo-Hydraulic Modeling of Freeze-Thaw Processes in Fractured Porous Media** *Jia-Jing Lin, Chuanyin Jiang, Chin-Fu Tsang, Auli Niemi, Patrik Vidstrand, Qinghua Lei*
12:05	[889] **On modeling freezing front propagation in samples of saturated porous medium** *Michal Benes, Michal Sněhota, Martina Sobotková, Maneesh Narayanan*
12:20	[351] **Stability of Drainage Fronts in Porous Media: Phase-Field versus Dynamic Capillary Pressure model** *Siddhartha Harsha Ommi, Giulio Sciarra*
12:35	[706] **A Multiscale Model for Flow in Karstified Carbonate Reservoirs using Two-Level Upscaling and Surrogate-Based Transmissibilities under Geomechanical Effects** *Patricia Pereira, Emanuel Gomes, Josue Barroso, Tayna Lobo*

Oral presentations: Parallel sessions 4.2
11:50 - 12:50

(MS09) Pore-Scale Physics and Modeling - Part 9
Salle 300
Chairs: *Marco De Paoli & Bo Guo*

11:50	[671] **Multiscale Pore-Network Model of Carbonate Reservoirs: Experimental Validation and Wettability Analysis** *Fernando Bordignon, Giovanni Formighieri, Leandro Figueiredo, Rafael Arenhart, Rafael Melo, Robim Pacheco, Rodrigo Surmas, Rômulo Cenci*
12:05	[19] **Pore-network modelling of evaporation in microfluidic porous media: mechanisms and uncertainties** *Maziar Veyskarami, Amir Raoof, Rainer Helmig*
12:20	[458] **Depth-Integrated Modeling of Immiscible Two-Phase Flow in Rough Fractures: Comparison with Experimental Observations** *Rahul Krishna, Amin Rezaei, Oshri Borgman, Francesco Gomez, Isabelle Bihannic, Yves Méheust, Insa Neuweiler*
12:35	[579] **Pore Scale CFD Simulation to Investigate Transport Phenomena in Multiphase Catalytic Packed-Bed Reactors** *Diego Fida, Giuseppe Pipitone, Antonio Buffo, Matteo Icardi, Gianluca Boccardo, Daniele Marchisio, Samir Bensaid*

Oral presentations: Parallel sessions 4.2, cont.
11:50 - 12:50

(MS17) Electrochemical Processes in Porous Media - Part 3
Salle K/L
Chairs: *Jeff Gostick & Maxime van der Heijden*

11:50	[770] **Mass transport characterization in nanoporous polymer electrolyte membranes used in electrochemical systems.** *Abel Netter, Alejandro Mateos, Michael Deligant, Stéphane Chevalier, Tommaso Carpuso* **Solicited Speaker**
12:05	[50] **Coated Metallic Foams as Versatile Porous Substrate: From Hydrogen-Electrolysis Electrodes to Photocatalytic Water Treatment** *Felix Neupert, A. Tillmann, I. Lindemann, N. Eißmann, T. Büttner, T. Weißgärber*
12:20	[65] **A Novel Approach to Fabricating 3D PAN based Carbon Electrode Architectures** *Frederik Vandenbulcke, Antoni Forner Cuenca, Baichen Liu, Jonas Hereijgers, Rémy Jacquemond*
12:35	[765] **Discrete Particle Model (DPM) to Study the Two-Phase Behaviour in Gas Channel PEM Fuel Cells** *Mahtab Shahrzadi, Mehrdad Vasheghani Farahani, Stuart Holmes, Vahid Niasar*

Oral presentations: Parallel sessions 4.2
11:50 - 12:50

(MS20) Special Session in Honor of Jun Yao - Part 8
Club Atlantique
Chairs: *Zheng Li & Guangpu Zhu*

11:50	[393] **Investigation of Pore-Scale Dynamics of Dissolution-Precipitation of Mineral Using Micromodels** *Hongjin Yu, Zhaoyang Ma, Ziyou Zhu*
12:05	[137] **Pore-scale modelling of underground hydrogen storage: a coupling approach combining level-set interface tracking and pore network modelling** *Wenhui Song, Masa Prodanovic, Yan Jin*
12:20	[345] **Physics-constrained contact angle extraction in 3D porous media** *Feiyan JIN, zhenqi guo, Liang Lei*
12:35	[392] **Dynamic Visualization of Immiscible Fluid Displacement in Porous Media Using Near Real-Time 4D Micro CT** *Hongjin Yu, Zhaoyang Ma, Ziyou Zhu*

Lunch Break (also served during the Natural Porous Media for Green Housing Event)
Great Hall, 12:55 - 14:10

Natural Porous Media for Green Housing Event

Salle 300, 12:55-14:10

Moderator: *Monika Woloszyn*

Jan Carmeliet
ETH Zürich, *Switzerland*

Porosity for cool cities: Turning down the heat

In his lecture, Jan Carmeliet explains how porous materials can help cool cities and reduce pedestrian heat stress during increasingly frequent heatwaves. He shows how trees, porous pavements, textile shading, and green roofs and walls provide cooling through shading, transpiration, and evaporation. Using simulations across different climates, he demonstrates the strong potential of porous systems for urban cooling, while emphasizing the need for well-designed and integrated strategies to build climate-resilient cities.

This plenary lecture given by Jan Carmeliet will be followed by a Q&A session. Lunch will be served during the event which is free and open to all participants. However, please note that participation in the Lunch Forum is limited to 300 attendees, due to room capacity, and will be available on a first-come, first-served basis.

Oral presentations: Parallel sessions 4.3
14:15 - 15:30

(MS01) Porous Media for a Green World: Energy & Climate - Part 9
Salle 200
Chairs: *Eduardo Abreu & Bill Rossen*

14:15	[525] **Methane Cracking in Metal Porous Media via Electromagnetic Induction Monolithic Heating** *Qinwen Deng, Yong Shuai, Ruming Pan, Zhuoran Wei*
14:30	[837] **Improving Ground Ice Segmentation in Permafrost Cores Using X-ray CT** *Mahya Roustaei, Evan Francis, Duane Froese, Jan Nitzbon, Jordan Harvey, Julia Boike, Steffen Schlueter*
14:45	[415] **Time-Dependent Pore-Scale Evolution of Petrophysical Properties and In-Situ Resistivity During CCS and CCUS in Permian Basin Carbonates** *Muhammad Noman Khan*
15:00	[302] **Double Diffusive Convection in Aquifer Thermal Energy Storage (ATES) Systems** *Tarun Jain, Khashayar Rahanamay, Morris Flynn, Chunendra K Sahu*
15:15	[815] **From Molecular Design to Pore-Scale Flow: A Chemo-Selective Guar Biopolymer Blend for Sustainable Enhanced Oil Recovery** *Abhishek Tyagi, Akhil Agrawal*

Oral presentations: Parallel sessions 4.3, cont.
14:15 - 15:30

(MS03) Flow, transport and mechanics in fractured porous media - Part 4
Salle B/C
Chairs: *Alessandro Lenci & Daniel Stalder*

14:15	[911] **A Hysteretic Aperture Model for Fractured Rocks** *Josue Barroso, Alexandr Zhemchuzhnikov, Euripedes Vargas, Marcio Murad, Matheus Peres, Tayna Lobo*
14:30	[422] **Physics-Informed Modeling of Flow Instabilities during CO_2 Migration in Saline Aquifers** *Henglai Zhai, Jefferson Gomes*
14:45	[114] **Impact of Mineral Spatial Distribution on CO2 Dissolution Rates in Multimineral Carbonate Rocks** *Olatunbosun Adedipe, Yousef Al-Khulaifi, Sajjad Foroughi, Qingyang Lin, Martin Blunt, Branko Bijeljic*
15:00	[586] **Modeling Upscaled Retention Behavior of Unsaturated Fractured Rocks** *Muhammad Raharsya Andiva, Martin Ziegler, Chuanyin Jiang, Qinghua Lei*

Château des Ducs de Bretagne, Nantes
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Oral presentations: Parallel sessions 4.3
14:15 - 15:30

(MS05) Physics of multiphase flow in diverse porous media - Part 8
Salle I
Chairs: *Chao-Zhong Qin & Tongke Zhou*

14:15	[546] **Employing NMR To Quantify Porosity Changes and Surface Relaxivity for CCUS Carbon Mineralization Applications** *Derrick Green, Dragan Veselinovic, Jake Tielke, James Howard, Michael Dick, Olivia Terry, Shaina Kelly, Tianxiao Shen, Zuhao Kou*
14:30	[485] **MRI-based instantaneous-profile measurement of relative permeability during evaporation-driven air–water flow in deformable earthen porous media** *Emmanuel Keita, Ghida Karbala, Anh-Minh Tang, Benjamin Maillet, Matthieu Vandamme, Myriam Duc, Patrick Belin, Rahima Sidi-Boulenouar*
14:45	[31] **Fluid transfers through versatile dynamic NMR relaxometry** *Benjamin Maillet, Philippe Coussot, Rahima Sidi-Boulenouar*
15:00	[624] **Effects of permeability and flow orientation on CO_2 capillary trapping in saline aquifers** *Rayana Peres, Yan Salema de Medeiros, Felicle Lopez, Ranena V. Ponce F., Daniela Hartmann, Marcio Carvalho*
15:15	[289] **Influence of Wettability on Water and Air Relative Permeability Curves in Unconsolidated Porous Media: From Water-wet to Oil-wet** *Gerhard Schäfer, Kevin Hernandez-Perez, Amir H. Alizadeh, Mohammad Piri, Renaud Toussaint*

Oral presentations: Parallel sessions 4.3, cont.
14:15 - 15:30

(MS08) Mixing, dispersion and reaction processes across scales in heterogeneous and fractured media - Part 6
Salle 150
Chairs: *Ran Holtzman & Branko Bijeljic*

14:15	[583] **Luminescence Thermometry for Dynamic Imaging of Heat Transport in Analog Porous Media** *Arwa Rashed, Benoît Fond, Sergey Borisov, Gauthier Rousseau, Yves Méheust, Maria Klepikova*
14:30	[63] **Numerical simulations of convective mixing in confined porous media with complex fluids** *Marco De Paoli, Sergio Pirozzoli*
14:45	[646] **Experimental Investigation of CO2 Mineralization in Basaltic Porous Media: from Batch Kinetics to Slim-Tube Dynamic Flow** *Valentin Fortier, Pierre-Alexandre Teboul, Imane Gietni, Alexandra Klimenko, Marguerite Godard, Richard Leprovost, Philippe Gouze, Sylvain Calassou*
15:00	[239] **Characterization and Modeling of Secondary Fe(OH)3 Phases in Stimulated Shale** *Zuhao Kou, Vladimir Alvarado, Saman Aryana, Qingyu Li, Cindy Ross*
15:15	[445] **Dispersion in porous media with spatially evolving heterogeneities** *Morgan Chabanon, J. Alberto Ochoa-Tapia, Benoit Goyeau*

Oral presentations: Parallel sessions 4.3
14:15 - 15:30

(MS09) Pore-Scale Physics and Modeling - Part 10
Salle 300
Chairs: *Yashar Mehmani & Bo Guo*

14:15	[76] **The influence of microstructure and fluid rheology on liquid penetration in bread using the lattice Boltzmann method combined with X-ray micro-computed tomography** *Hongling Zhou, Dominique Thévenin, Farshad Gharibi*
14:30	[434] **Pore-scale simulations of conjugate heat transfer under single-phase flow through porous media** *Qiuheng Xie, Senyou An, Masoud Babaei, Vahid Niasar*
14:45	[887] **Computational Modeling of Langmuir–Blodgett Molecular Self-Assembly for Tailored Nanoporous Thin Membranes and Films** *Dario Calvani, Francesco Buda, Grégory F. Schneider, Xue Liu*
15:00	[845] **Three-phase hysteresis in porous rock characterized with a discrete-domain model and direct pore-scale simulations** *Mohammadsajjad Zeynolabedini, Espen Jettestuen, Johan Olav Helland, Olav Aursjø*
15:15	[337] **Mechanistic investigation of pore structure evolution in fine-grained soils subjected to chemical alteration and wetting–drying cycles** *Mohd Sameer Alam, Arghya Das*

Oral presentations: Parallel sessions 4.3, cont.
14:15 - 15:30

(MS15) Machine Learning in Porous Media - Part 5
Salle G/H
Chairs: *Ahmed Elsheikh & Serveh Kamrava*

14:15	[68] **ML-Assisted Topology Optimization of Thermochemical Heat Storage Reactors** *Torben Prill, Thomas Jahnke*
14:30	[148] **Fast-to-Long Acquisition Projection Learning for Denoising X-ray Microtomography** *Luan Vieira, Aurea Pereira Martins Neta, Felipe Bevilaqua Foldes Guimarães, Carlos Eduardo Menezes dos Anjos, Lizianne Carvalho Medeiros, Rodrigo de Sapienza Luna, Júlio de Castro Vargas Fernandes, Rodrigo Surmas, Alexandre Evsukoff*
14:45	[696] **Shearlet, a Novel Operator Learning Model** *Júlio de Castro Vargas Fernandes, Fabio Pereira dos Santos, Jairson Alberto Sami, Bruno de Oliveira Jucá*
15:00	[627] **ML-assisted design of porous monolithic reactors using pore-resolved CFD surrogate models** *Olivier Guévremont, Gianluca Boccardo, Daniele Marchisio, Federico Galli, Nick Virgilio, Bruno Blais*

Oral presentations: Parallel sessions 4.3
14:15 - 15:30

(MS16) Complex fluid and Fluid-Solid-Thermal coupled process in porous media: Modeling and Experiment - Part 3
Salle K/L
Chairs: *Yingfang Zhou & Moran Wang*

14:15	[687] **Experimental comparison of thermoresponsive associative and conventional polymers flowing through porous media for enhanced oil recovery** *Andres Ramirez, Andrea Mora, Rodrigo Lipparelli, Sergio Ribeiro, Marcio Carvalho*
14:30	[247] **Double scale modelling of the thermo-hydro-mechanical behaviour of argillaceous rocks** *Pierre Bésuelle, Alice Di Donna, Cyrille Couture, Nicolas Zalamea, Stefano Dal Pont*
14:45	[918] **Numerical Evaluation of the Temperature Influence on Matrix Acidizing Efficiency in Carbonate Formations at Laboratory Scale** *Caio Cézar Goes Pereira, Nathalia Almeida Braga, Lorena Cardoso Batista Aum, Raphael Gachet, Pedro Aum*
15:00	[201] **Interplay between bound and free water during starch drying** *Olfa Hbaieb, Benjamin Maillet, Rahima Sidi-Boulenouar, Philippe Coussot*

Brew Break & Exhibition
15:30 - 17:00

Refreshments are available in the Great Hall. Come grab a drink, network with other attendees, visit the exhibition booths and discuss the posters on display.

FRIDAY, 22 MAY 2026

Poster Session VIII

Great Hall, 15:30- 17:00

Poster Board	
6	[29] **Suspensions of Self-Organizing Synthetic Clays for Subsurface Hydrogen Containment** *Alirza Orujov, Saman Aryana*
20	[30] **Mechanistic Simulation of Long-Distance Foam Propagation: Optimization of Injection Strategy** *Guanqun Yu*
38	[84] **Miscible viscous fingering in porous media flow** *Sourav Mondal, Arpita Mandal*
50	[109] **Multiphase porous bio-composite for green housing: experimental and numerical thermos-mechanical study** *Kanto Rasoloarijaona, Alexandre Gacoin, Ibrahim Niang, Hervé Pron*
52	[136] **Effects of physically meaningful pore structure parameters on shale anisotropy thermal conductivity and machine learning-based prediction** *Chi Xiong, Qiang Song, Ruina Xu*
46	[217] **Transverse dispersion enhancement below the water-air interface in porous media** *Joris Heyman, Tanguy Le Borgne, Kevin Pierce, Gaute Linga*
72	[223] **Wettability effects on multiphase displacement in porous media by microfluidic experiments** *Moran Wang*
8	[298] **From silicate solutions to colloidal gels: dynamic NMR relaxometry to probe water dynamics and structural evolution in porous media** *Rahima Sidi-Boulenouar, Adilson Samba, Arnaud Poulesquen, Benjamin Maillet*
2	[310] **Design Strategies for Enhancing Gas Separation with High-Performance Mixed Matrix Membranes** *Mehdi Ghasemi, Lev Sarkisov, Masoud Babaei*
22	[313] **An Algebraic Dynamic Multilevel Method for the Simulation of Contaminant Transport through Vadose Zones** *Shuohan Zhang, Yuhang Wang, Zhang Wen, Hadi Hajibeygi*

Poster Session VIII, cont.

Great Hall, 15:30- 17:00

Poster Board	
54	[328] **Microscopic phase transition characteristics of condensate gas and molecular mechanisms of CO2 injection for enhanced recovery** *Mingshan Zhang, Han Xu, Liang Huang, Yongming He, Zhenjiang You, Yihang Xiao*
40	[365] **Nested Newton solver for multiphase multicomponent flow in porous media and highly anistropic fractured grid generation for ground water flow in porous media** *Markus M. Knodel*
26	[374] **How can fluid injection induce seismicity without sustained permeability enhancement?** *Iman Vaezi, Chin-Fu Tsang, Qinghua Lei*
69	[406] **Physics informed neural network for modeling seawater intrusion in coastal aquifers** *Maryam Mansouri Bajgiran, Mohammad Mahdi Rajabi, Anis Younes, François Lehmann, Marwan Fahs*
24	[409] **Numerical Investigation of LNAPL Displacement by Complex Fluids: Colloidal Gas Aphrons in One-Dimensional Porous Columns** *Dana Sapobekova, Stéfan Colombano, Masoud Riazi, Yanwei Wang, Yerlan Amanbek, Bexultan Sabyrbay, Maxime Cochennec, Sagyn Omirbekov*
28	[501] **FracLab: A Robust 3D DFN Generator for Conditional Simulation and Coupled Process Modelling for Fractured Media** *Chuanyin Jiang, Qinghua Lei*
65	[520] **Phase-field models for the multi-scale modeling of liquefiable sands** *Hannah Keese, Luise Zieger, Dominic Mokbel, Oliver Stelzer, Sebastian Aland, Mostafa Mollaali, Thomas Nagel*
56	[534] **Geology-driven multiphase segmentation for pore-scale Digital Rock Physics in low-porosity crystalline rocks** *Noël-Aimée Keutchafo Kouamo, Martin Balcewicz, Lisa Marie Beiers, Jörg Renner, Erik H. Saenger*
58	[587] **Heat transfer in radially-arranged packings of arbitrary shaped material: a computational study** *Eleonora Bianca, Martina Gilardi, Nicodemo Di Pasquale, Matteo Icardi, Daniele Marchisio, Gianluca Boccardo*

FRIDAY, 22 MAY 2026

Poster Session VIII

Great Hall, 15:30- 17:00

Poster Board	
10	[620] **Gas diffusion and permeability in dry and partially saturated industrial concrete** *Chuanrui Wang, Ludovic Potier*
30	[644] **Evaluation of models of gas relative permeability in three-phase flow: pore-scale insights and empirical models** *Zhi Zheng, Branko Bijeljic, Yanghua Wang, Martin Blunt*
4	[653] **Multicomponent Gas Ripening and Redistribution during Underground Hydrogen Storage** *Hossein Younesian Farid, Sojwal Manoorkar, Soetkin Barbaix, Samuel J. Jackson, Tom Bultreys*
60	[698] **Integrated Multiscale DigitalROCK Workflow for Multiphase Flow and Relative Permeability** *Okhtay Taghizadeh, Andrew Fager, Bernd Crouse, Ganapathi Balasubramanian, Guangyuan Sun, Nicolas Fougere, Rafael Salazar-Tio*
73	[782] **CO2 Electroreduction on Nano-Cu-ZIF Grown inside Activated Carbon** *Santanu Jana, Arie Borenstein*
71	[802] **PatchSRGAN3D: Toward Physically Consistent Validation of Super-Resolved Micro-CT Images for Pore-Scale Transport Analysis** *Ifeanyi Nwankwo, Frank Male, Zuleima Karpyn*
62	[807] **Pore-scale hydrate formation and dissociation in porous networks: micromodel imaging and advanced Lattice Boltzmann modelling** *Saleh Mohammadrezaei, Lifei Yan, Rouhi Farajzadeh, Jeroen Snippe, Vahid Niasar*
42	[818] **An iterative, two-way coupling of regional and site models for multi-scale CO$_2$ injection simulations** *Eda Onal, Eirik Keilegavlen, Helge Dahle, Tor Harald Sandve, Sarah Eileen Gasda*
32	[840] **Physics-based closure for population balance modelling of foam transport in unconsolidated porous media** *Kuralay Yeldoskyzy, Adil Baigadilov, Stéfan Colombano, Sagyn Omirbekov, Nathalie Guiserix, Julien Grandclément, Eric D. van Hullebusch, Maxime Cochennec*

Poster Session VIII, cont.

Great Hall, 15:30- 17:00

Poster Board	
12	[869] **Pore-Scale Modelling of Wormhole Formation in Fractured Salt-Bearing Reservoir Rock** *Hariharan Ramachandran, Julien Maes, Lin Ma, Hannah Menke*
34	[955] **Microfluidic investigation of water-scCO2 multiphase flow properties in vesicular basalt pore system proxies** *Kelsey Yao, Tianxiao Shen, Shaina Kelly*
36	[996] **Experimental Investigation of Thermal Marangoni Effects in Evaporating Microcapillaries** *Nikolaos Karadimitriou, Holger Steeb*
48	[1007] **Pore-Scale Modeling of Dissolution Pattern Transitions in Carbonate Rocks During Geological Carbon Sequestration** *Qiuheng Xie, Senyou An, Heping Xie, Wendong Wang, Vahid Niasar*
14	[1021] **Influence of local influx on non-local tracer transport in a variably saturated system** *Doron Kalisman, Ilan Ben-Noah, Ishai Dror, Brian Berkowitz*
44	[1025] **4D imaging of mixing-limited mineralization in porous basalt rocks** *Justine Parmentier, Shuting Miao, Anne Pluymakers, Tanguy Le Borgne, Francois Renard*
16	[1027] **Immobilized organic coating in a porous media to study nanoparticle behavior by size-resolved analysis using sp-ICP-MS** *Iliyas Kodebay, Beatrice Bechet, Denis Courtier-Murias, Pierre-Emmanuel Peyneau*
18	[1030] **Thermo-Hydro-Mechano-Biological modelling of organic matter degradation in sediment stockpiles: comparative climate and material case studies and optimisation** *Nicolas Ruyssen, Claire Chassagne, Julia Gebert*
64	[1032] **Pore-to-core scale tracer transport imaging in heterogeneous porous media** *Jesper Ejlebæk Holm, Chandra Winardhi, Hossein Younesian Farid, Sharon Ellman, Sojwal Manoorkar, Tom Bultreys*

FRIDAY, 22 MAY 2026

Plenary Session

Auditorium 800, 17:00 17:55
Chair: *Azita Ahmadi-Senichault*

Plenary Lecture 4

Auditorium 800, 17:00 - 17:40
Chair: *Volker Presser*

Sophia Haussener
EPFL, *Switzerland*

Multi-physical transport in porous media for energy applications

Meso-structured, porous materials exhibit favorable charge, heat, and mass transport properties and are used as absorbers, heat exchangers, insulators, reaction sites, electrodes and/or reactants in a wide variety of applications ranging from chemical processing, (photo)electrochemistry, combustion, filtering, to concentrated solar reactor technology. The transport properties of these materials largely depend on the meso-structure of the material and significantly affect its combined transport and ultimately the performance of the device. For example, electrochemical reactors for CO_2 reduction show significant variation in activity and selectivity dependent on the (anistropic) mesostructure of the gas diffusion electrode or porous thermal storage devices made of phase change material show significant variation in capacity and discharge time dependent on the mesostructure. In-depth understanding of the structure-property relation followed by pore-engineering of the materials used in the applications is therefore of fundamental importance to further improvements in performance. I will discuss decoupled and coupled pore-level numerical approaches for transport characterization and estimation of the local heterogeneity, discuss the use of neural networks for rapid performance assessment and optimization, and inverse experimental-numerical approaches for the characterization of the transport in porous media in extreme conditions.

Award Ceremony 4

Auditorium 800, 17:40 - 17:55

InterPore National Chapter Award

The National Chapter Awards are given in recognition of remarkable activities over the past year.

InterPore Student Poster Award

The Student Poster Award is given in recognition of outstanding student poster presentations at the annual InterPore conference. Each year, at the annual InterPore conference, the Honors and Awards Committee will choose the best four student poster presentations to win the Student Poster Award.

These awards have been made possible by generous grants from Earth Energy Science (EES) and Capillarity.

Award Ceremony 4, cont.

Auditorium 800, 17:40 - 17:55

InterPore Rosette

InterPore thrives on the dedication and efforts of its volunteers. Their countless hours of voluntary work are essential to the success of our international platform. Recognizing and honoring these contributions not only sets a standard for service but also fosters long-term engagement and inspires others to get involved.

Each year, InterPore honors **individuals who have made exceptional contributions** to the society's activities by awarding them the **InterPore Rosette**.

2026 InterPore Rosette Honorees:

- Andrew Baker
- Béatrice Bechet
- Christophe Binetruy
- Olaf Kolditz
- Benoit Rousseau
- Tiina Roose
- Dorthe Wildenschild

Closing Ceremony

Auditorium 800, 17:55 - 18:00

A brief video of Rio de Janeiro, Brazil, the InterPore2027 location, will be shown.
See you all in Rio de Janeiro in 2027!

Join us for fascinating lectures, engage with fellow researchers from across the globe and discover cutting-edge exploration of porous media.

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