# InterPore News

**Issue #13, 26 June 2020**

Dear InterPore friends,

Our InterPore community is rich with beautiful science. Read about microscale chemical gradients, bacteria being in different places in our solar systems, 4D synchrotron of imbibition and advanced modeling of charged species.

The InterPore community goes online: a new webinar series in initiated by young researchers (Porous Media TTT) reaching out to you to discuss their latest scientific achievements. And if you're not near Stuttgart, Germany, you can still join their lectures.

Of course, InterPore2020 is coming up. **Abstract deadline is this weekend!** While the Newsletter is being distributed, the organizers are testing the online conference 'venue'. A handbook is written with instructions on 'how to', just in case you're less comfortable with all the digital stuff. In my opinion, there will be much more time for scientific discussions than during a regular conference. We will update you with more details as soon as we can.

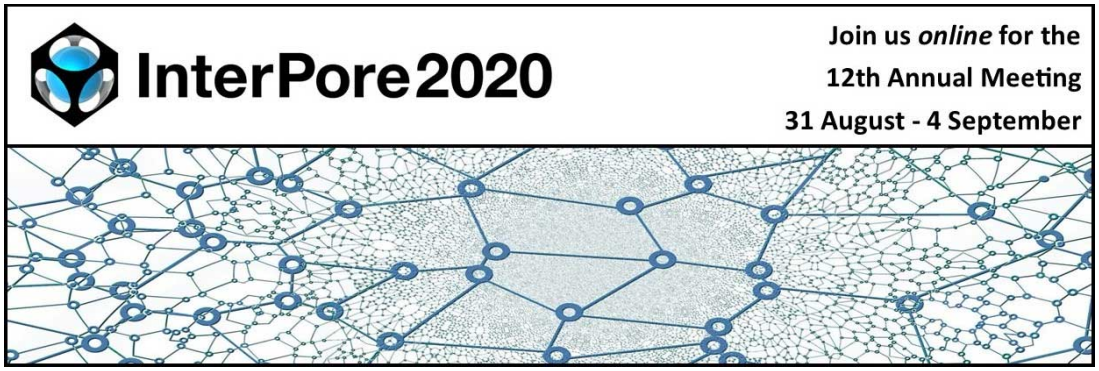
**Content**



Please think about the elections, conference grant program (please do!), and check out the available positions.

Stay healthy,

Matthijs de Winter
Editor-in-Chief
*InterPore News*




## InterPore2020 very last call!

Abstracts for InterPore2020 can be submitted until **29 June**, midnight in California!

Please submit **here**.

Meanwhile, InterPore is working hard to create a fantastic online conference. We're running several smaller test-events, all to make sure the online venue is fully prepared and ready and we will be able to guide you through our online venue! General features of the conference can be found here. Once all the abstracts are submitted, we can work out all the details of the actual conference program.

We look forward to welcoming you online! And feel free to distribute the **flyer** (7.8 MB) around to colleagues!

Please contact us for comments and questions here.

## The social side of online conferencing


*Geralt on Pixabay*

We could still do with some help to shape the online social program. We offer the platform and it is you who can address the international community.

Do you **play in a band** ? Are you an **artist** (painting, sculptures, performance, etc) in your free time? Or perhaps your partner? Do you **recite poems**, either your own or some with a special story behind it?

Please contact us and we will get you on the international stage with your talent. We'll join forces to take care of the social side of online conferencing.

*Alberto Guadagnini and Matthijs de Winter*

## Elections 2020: Call for Nominations

*Ulrike Leone from Pixabay*

The InterPore Elections are coming up, spanning an election period from 1 - 30 November 2020. With this announcement, we wish to inform the Society members about the details of the election procedure.

**Who will be elected**: A new President-Elect, five new Council members and three members of the Student Affairs Committee (SAC).

**Who is conducting the elections**: The Election Committee, chaired by Prof. Gabriel Wittum.

**Who can vote?** All current InterPore members.

**Nomination Committee**: In accordance with the InterPore bylaws, a Nomination Committee is formed, chaired by Prof. Tissa Illangasekare.

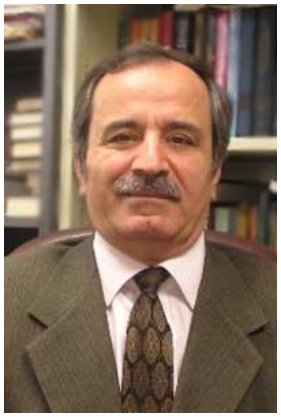
**Nomination deadline**: 13 September 2020.

**How to nominate**: Please volunteer to run for an office and/or nominate candidates now; please contact Tissa Illangasekare. Criteria for the selection of candidates by the Council are (1) personal qualifications, (2) balancing industry and academia, and (3) ensuring – as much as possible – gender and geographical balance. Only nominees who agree to serve, once elected, will be accepted.

More information on the committees involved and the election procedure can be found here and feel free to contact Tissa Illangasekare for any related questions.

## Apply for InterPore Kimberly-Clark Distinguished Lecture 2021

The Kimberly-Clark Distinguished Lecture Series in 2021 features



**Prof. Muhammad Sahimi**
University of Southern California, USA

The title of the lecture is: *Porous Media, Small and Large: From Atomistic Modeling of Nano-porous Membranes to Modeling of Flow and Transport in Geological Formations.*

The abstract of the lecture and a short biography of Prof. Sahimi can be found on our website. Apply now to request and host the 2021 InterPore Kimberly-Clark Distinguished Lecture at your institute!

# InterPore Awards

## Conference Grant Program: Apply now for InterPore2020!

**Applications for conference grants are still being accepted!**

We are pleased to announce that InterPore Foundation for Porous Media Science and Technology (InterPore Foundation) would once again like to offer a significant number of conference grants to scientists from academic institutions from countries with lower- or middle-income economies, as defined by the World Bank (20 grants in total) and to graduate students (50 in total). These grants include the waiving of the conference fee of the now online InterPore2020 conference.

Please send the full application package to Karolin Weber by **Monday, July 6**.

Look **here** for more details regarding the application requirements.

# Community News

## Popular science lecture series of the SFB 1313 science exhibition „Pretty Porous – Alles Porös“

The SFB 1313 team likes to invite you to its popular science lecture series which takes place in the context of the SFB 1313 science exhibition “Pretty Porous – Alles Porös”. The six lectures are


scheduled for the coming Wednesdays in June and July at 6:30 pm:

**Place:** Planetarium Stuttgart, Kuppelsaal, Willy-Brandt-Strasse 25, 70173 Stuttgart
**Time:** 6:30 pm
**Registration via e-mail to:** Patrizia Ambrisi

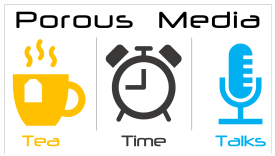
The talks aim to introduce various topics related to porous media for the general public and will all be given in German language. All talks will also be broadcasted via a live stream. The next talk is:

**Wednesday, July 1, 2020, 6:30 pm**
**Prof. Oliver Röhrle**, Institute for Modelling and Simulation of Biomechanical Systems, University of Stuttgart
Lecture in German: *Poröser Mensch: Von den Wirbeln zu den Muskeln*
YouTube live stream

Click **here** for the full program.

We look forward to seeing you there!

## Porous Media Tea Time Talks




This year is bringing in many new challenges to the worldwide porous media community, and those challenges can be particularly harsh against those of us at an early career stage. As conferences worldwide are being cancelled or postponed, many of us are found with little practical outlet to advertise our recent work and interact with the broader scientific community.

With that in mind, we, a team of five young porous media researchers from five different groups, have decided to create a virtual outlet to help fill in that gap in form of a regular webinar. We are pleased to introduce the **Porous Media Tea Time Talks (#PorousMediaTTT).**

The 30 min webinar, including two presentations (2 x 10 + 5 min) from speakers of different institutes, will occur fortnightly at varying times to accommodate researchers from around the world.

# Porous Media Tea Time Talks

#PorousMediaTTT

**30th June 2020**
**15:00 (CET)**


Speakers:
**Joachim Falck Brodin** (left)
**Arjen Mascini** (right)

**Visualizing 3D multiphasic flows in porous media: going inside and living to tell the tale**

By: Joachim Falck Brodin, PoreLab, University of Oslo, Norway

&

**Event-based contact angle measurements inside porous media using time-resolved micro-computed tomography**

By: Arjen Mascini, Ghent University, Belgium

**30.06.2020 at 3 pm CET (Your Time)**
The YouTube Channel

The goal of the Porous Media TTT is to act as a complimentary platform to the already very successful Geoscience and Geoenergy webinars with the focus placed on young professionals.

We are very much looking forward to seeing you online!

Kamalijt Singh (HW), Marcel Moura (PoreLab, UiO), Tom Bultreys (UGhent), Mohammad Nooraiepour (UiO), Maja Ruecker (ICL)

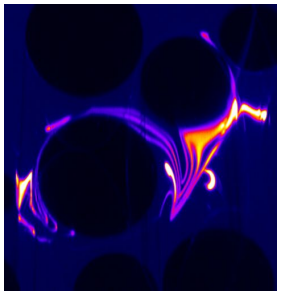
# InterPore In Journals

## Promote your Publication

### Stretching and folding sustain microscale chemical gradients in porous media

*Joris Heyman, Daniel R. Lester, Régis Turuban, Yves Méheust, Tanguy Le Borgne*

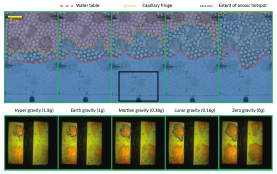
We provide high-resolution experimental images that fully resolve the three-dimensional pore-scale mixing dynamics in densely packed assemblies of glass beads. We show that grain contacts control the folding of fluid elements in the pore space, which, in addition to fluid stretching at stagnation points, leads to the exponential enhancement of microscale concentration gradients. We use these insights to derive a kinematic model linking mixing rates to pore geometry, opening perspectives for reactive transport modeling.



PNAS 2020, 202002858
Corresponding author: Daniel Lester

### Reduced gravity promotes bacterially mediated anoxic hotspots in unsaturated porous media

*B. Borer, J. Jiménez-Martínez, R. Stocker, D. Or*

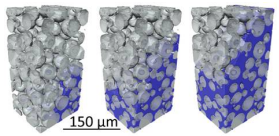


Permanent human presence on nearby planets and related deep space exploration depend on the production of food and the regeneration of oxygen, water, and waste – services readily provided on Earth by plants. Growing plants in space poses many challenges, especially how to avoid the onset of anoxic conditions in the root zone under reduced gravity that could stunt plant growth and increase greenhouse gas emissions. We provide experimental evidence that restrictions to oxygen diffusion imposed by capillary induced redistribution of water in reduced gravity combined with bacterial oxygen consumption renders these active volumes of soil anoxic.

Scientific Reports 10, 8614
Corresponding author: Joaquin Jimenez-Martinez

### 4D synchrotron microtomography and pore-network modelling for direct in-situ capillary flow visualization in 3D printed microfluidic channels

*Agnese Piovesan, Tim Van De Looverbosch,Pieter Verboven, Clement Achille, Cesar Parra Cabrera, Elodie Boller, Yin Cheng, Rob Ameloot, Bart Nicolaia*



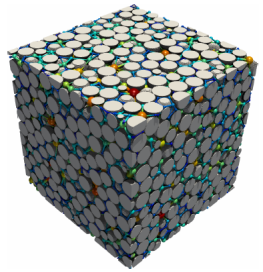

Capillary wicking in 3D printed porous channels was visualized in-situ through dynamic synchrotron X-ray microtomography at the European Synchrotron Radiation Facility. The segmented images were used to follow imbibition dynamics, to compute the system effective contact angle and to generate a pore-network to model capillary imbibition. A preferential wicking direction was observed which was proved to be caused by a contact angle gradient arising during 3D printing and subsequent drying.

Lab Chip, 2020, Advance Article
Corresponding author: Agnese Piovesan

### Modeling Transport of Charged Species in Pore Networks: Solution of the Nernst-Planck Equations Coupled with Fluid Flow and Charge Conservation Equations

*Mehrez Agnaoua, Mohammad Amin Sadeghia, Thomas George Tranterc, Jeff Gosticka*

This work presents a comprehensive approach to modeling charged species transport suitable for a wide range of applications from electrochemical devices to nanoparticle movement in the subsurface. The proposed framework is developed by first deriving the numerical model equations corresponding



to the partial differential equations based on several different time and space discretization schemes. Comparisons with finite element method (FEM) solvers showed an average deviation, in terms of ions concentration, between PNM and FEM below 5% with the PNM simulations being over 10^4 times faster than the FEM.

Computers & Geosciences, 140, 104505
Corresponding author: Jeff Gostick

*InterPore Members, do you want to promote your publication to the community? If so, please submit your highlight to newsletter@InterPore.org.* ***Clearly indicate which of the authors is an InterPore member (or the institute with an Institutional Membership).*** *Note that we will not review the entries nor does InterPore endorse the published work. Furthermore, we publish on a "submitted first, published first" basis. The highlighted publication should be no older than 6 months (available online).*

*The highlight should be short (**max 100 words**) and contain an illustration. Please note that we offer this opportunity exclusively to InterPore members. If you would like to become a member, please have a look here.*

# Research Positions

- Post-Doctoral Researcher, Fluid Transfers during Drying of Bio-based Construction Materials, LABEX MMCD, Université Paris-Est, France
- PhD position, Mixing and reactive transport modeling in fractured media, University of Minnesota, USA
- Postdoctoral position, Microbial behavior in soil, ETH Zurich, Switzerland

# InterPore Calendar

| Date | Event |
|---|---|
| **31 August - 4 September 2020** | The 12th annual InterPore meeting (online) |

| Date | Event |
|---|---|
| **September 2020** | The Hellenic National InterPore Chapter meeting (Athens, Greece) |
| **1-2 October 2020** | The German Chapter meeting (Stuttgart, Germany) |
| **26-28 October 2020** | The French Chapter meeting (Strasbourg, France) (flyer) |
| **2 November 2020** | The Benelux Chapter meeting (Enschede, The Netherlands) |
| **23-25 November 2020** | The Australian Chapter meeting (Perth, Australia) |
| **31 May - 3 June 2021** | The 13th annual InterPore meeting (Edinburgh, UK) |
| **15-21 May 2022** | The 14th annual InterPore meeting (Albuquerque, New Mexico, USA) |

## Imprint

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Articles and news items on the study and characterization of porous media,
especially when relevant to other types of porous media,
are welcomed for publication in this newsletter, issued twice a month.

Find us on: | |

## Editors