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Editorial

HIGHLIGHTS FROM THE THIRD ISSUE OF INTERPORE JOURNAL

Nima Shokri

Institute of Geo-Hydroinformatics, Hamburg University of Technology, Hamburg, Germany

Correspondence to:
Nima Shokri at nima.shokri@tuhh.de

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It is with immense pride and gratitude that I introduce the third issue of the *InterPore Journal*. This milestone reflects the extraordinary commitment and collaboration of our vibrant community in porous media science and technology. Whether you have contributed as an author, reviewer, or part of our editorial team, your efforts have been essential in shaping the *InterPore Journal* into a platform for cutting-edge research and innovation. I am pleased to present this new issue of the journal.

In an invited contribution, Pahlavan (1) discusses the complex nexus of microplastics, bacteria, and biofilms. Bacteria, among Earth's oldest life forms, play essential roles in nutrient cycling, supporting ecosystems, and human health. However, microplastics disrupt bacterial ecosystems globally. These stable, persistent particles travel through soil and water, interacting with bacteria, being ingested or colonized, and acting as carriers for contaminants and pathogens. How bacteria adapt to microplastic-rich environments remains an open question with significant implications for planetary and human health. Pahlavan's commentary focuses on the "plastisphere", the intersection of bacteria, biofilms, and microplastics, highlighting key challenges and opportunities for future research.

Dörenkamp et al. (2) investigates high-resolution 3D printing for producing gas diffusion layers tailored for polymer electrolyte fuel cells. The findings highlight additive manufacturing (AM)'s potential to create complex 3D features and its current challenges, including accuracy and reliability. The study offers insights for future research directions and advancement necessary to leverage AM for manufacturing next-generation porous materials.

Mura et al. (3), introduces a new subsurface simulator (MF3DGC) that combines flow, geomechanics, and geochemistry in an integrated and fully coupled manner for processes like CO_2 sequestration and contaminant transport. The model supports user-defined kinetics and simulates diverse geochemical scenarios with potential applications in CO_2 sequestration, geothermal energy production, solution mining, and environmental protection.

Mont-Eton (4) presents a numerical inverse method (FlowPaths) to determine the hydraulic conductivity field of an isotropic heterogeneous porous medium from a known specific discharge field and constant-head boundary conditions. This method enables a new approach to reactive transport experiments, capturing both the evolving reaction and flow geometry. FlowPaths assumes steady, two-dimensional

flow through a grid and uses a graph-theoretical approach to find flow paths based on the specific discharge components.

Both et al. (5) provides, for the first time, direct qualitative and quantitative comparisons of mixed-dimensional models against laboratory experiments. These models for flow in fractured media have been widely used for nearly two decades utilizing the explicit representation of fractures by lower-dimensional manifolds embedded in the surrounding porous media. High-resolution PET images as well as state-of-the-art numerical simulations are used in this study.

Stefansson (6) addresses the challenges of solving multiphysics models with nonlinearities and discontinuities arising from the incorporation of the fracture contact mechanics. They propose a cheap and reliable approach tailored to the discontinuities to deal with strong nonlinearities and discontinuities. They demonstrate the application of the algorithm on a series of test cases for poromechanics and thermoporomechanics in fractured porous media.

As we bring the third issue of InterPore Journal to a close, I want to express my gratitude to the authors, reviewers, and readers who make this journal a vibrant hub of knowledge and innovation. Your engagement is vital to our mission of fostering meaningful discussions in our field. I encourage you to continue sharing your valuable work and insights with us, shaping the future of porous media science and technology together. Happy reading!

ORCID ID

Nima Shokri https://orcid.org/0000-0001-6799-4888

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