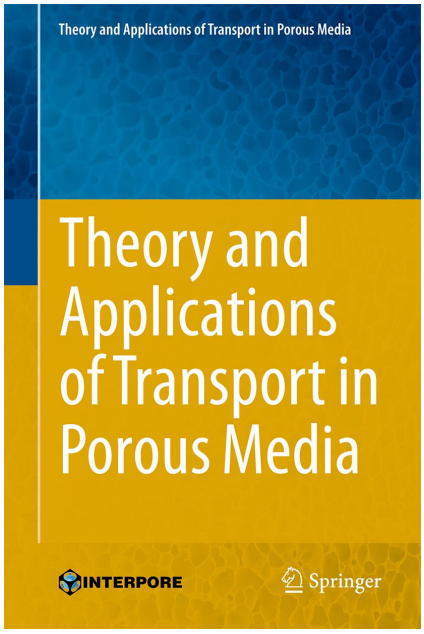




## Theory and Applications of Transport in Porous Media

Series Ed.: S.M. Hassanizadeh

The Theory and Applications of Transport in Porous Media book series is aimed at engineers and scientists who work and perform research in a wide variety of disciplines involving transport of matter and energy in porous media. This includes Civil Engineering, Hydrology, Mechanical Engineering, Chemical Engineering, Material Engineering, food industry, Petroleum Engineering, Agricultural Engineering, Biomedical Engineering, and Geothermal Engineering, to mention but a few.

Fluid-filled porous media are ubiquitous in many natural and industrial systems. The working of these systems is controlled and/or affected by the movement of fluids, solutes, particles, electrical charges, and heat through them. Examples of natural porous media and corresponding processes are flow of oil, gas, and water in oil reservoirs; the potential mobilization of methane in gas hydrates; the flow of Non-Aqueous Phase Liquids (NAPLs) in contaminated aquifers; the storage of CO2, nuclear waste, other hazardous wastes, and heat in the subsurface; the flow of fluids and solutes in biological tissues; and melting and metamorphism of snow. Examples of industrial porous media and corresponding processes are drying of paper pulp, the adsorption of liquids in diapers and similar absorbing products, gas and water management in fuel cells, and the drying of foods, as well as water and solute movement in building materials, detergent tablets, textiles, foams, coatings, paper, and filters.

Many physical, chemical, thermal, and biological processes (such as fluids flow, diffusion, capillarity, dissolution, adsorption, clogging, degradation, shrinkage, swelling, fracturing, and flow of electrical charges) occur in these materials. For the design, operation, and maintenance of porous media systems, it is extremely important to understand these processes, describe them quantitatively (by mathematical models) and simulate them.

Porous media processes are observed, studies, and modelled at a wide range of scales, from nano to micro scales, through the laboratory scale, to the field scale. Understanding above-mentioned transport phenomena, experimental studies of them, and modeling them at different scales, as well as coping with the uncertainties that are inherent in such models, especially as a result of spatial heterogeneity, are the subject matter of the books included in Theory and Applications of Transport in Porous Media. Thus, the state-of-art of the underlying theory, investigation tools, and applications are presented in the series.

Accepted for inclusion in Scopus.

Comments or suggestions for future volumes are welcomed.

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