

MULTIPHASE FLOW AND TRANSPORT AT MICROSCALE AND IN POROUS MEDIA

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Key words: Microscale Flow, Multiphase Flow, Porous Media Flow, Transport

ABSTRACT

This session is focused on the presentation of theoretical and applied works involving the resolution of fluid flow and/or mass transport problems in non-homogeneous media and systems. These non-homogeneities frequently manifest through scale jumps or phase changes, occurring primarily at a micrometric scale. Key examples include porous media, hydraulic fractures, microdroplets, microemulsions, and environments with heterogeneities induced by the accumulation of electrical charges in solution. Intrinsic characteristics of these physical systems include laminar fluid flow regimes, or very low Reynolds numbers, and, in the case of mass transport, conditions dominated by high Péclet numbers. These scenarios are characteristic of a wide variety of contexts and applications, such as paper-based microfluidics, enhanced oil recovery, contaminant migration in soils and aquifers, reactant transport in mineral matrices, transport in artificial biological media, transport of biomolecules in micro- and nanostructured spaces, and lubrication flows [1],[2],[3],[4]. Ultimately, this session seeks to gather contributions from both theoretical and applied perspectives, promoting an interdisciplinary exchange between academic research and technological challenges in these diverse areas.

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