Contribution ID: **401** Type: **Poster Presentation**

Computational and experimental microfluidics for geosciences

Tuesday, 31 May 2022 15:20 (1h 10m)

A fundamental understanding of multiphase flows in porous media is relevant to the process of CO2 sequestration, remediation of contaminated aquifers, or Enhanced Oil Recovery. These processes are greatly influenced by a phenomenon known as snap-off. Snap-off is a complex pore-scale mechanism responsible for the break-up of the invading fluid at the entrance of a pore-throat, it leads to the storage of a droplet within the pore chamber. The snap-off and coalescence (merging of droplets) of a fluid phase during two-phase flow affect the quantities of residual trapping and thus affect the storage capacity of a reservoir.
In this work, we investigate trapping mechanisms of a fluid phase during two-phase flows. We use a combination of computational and experimental microfluidics to decipher physical processes using models of geological porous media. With this approach, we demonstrate that we can improve our prediction of residual trapping during two-phase flow. In particular, we observed and characterized cycles of snap-off and reconnection events that contradict the criteria that are generally used in numerical models for snap-offs.

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Time Block Preference

Time Block A (09:00-12:00 CET)

Participation

In person

Primary authors: ROMAN, Sophie (University of Orleans); Dr SOULAINE, Cyprien (Earth Sciences Institute of Orléans)

Presenter: ROMAN, Sophie (University of Orleans)

Session Classification: Poster

Track Classification: (MS06-A) Physics of multiphase flow in diverse porous media