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Rheology of two-phase flow in mixed-wet porous media: Dynamic network model and capillary fiber bundle results

Wednesday, 2 June 2021 18:50 (15 minutes)

We expect quantitative changes in the behavior of immiscible two-phase flow in porous media when we move from uniform to mixed wet conditions [1]. Are there also qualitative changes? When viscous and capillary forces -the latter determined by the wetting conditions - compete, there is growing evidence that the flow rate depends on the pressure gradient to a power in the the range 1.5 to 2 [2]. These studies have all been performed under uniform wetting conditions. Do we still see this behavior under mixed wet conditions? Using a dynamic network simulator where we follow the motion of the fluid interfaces through the porous medium [3], and a capillary fiber bundle model [4], which is analytically solvable, we demonstrate that indeed we find the same qualitative behavior under these conditions [5].

Time Block Preference

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

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