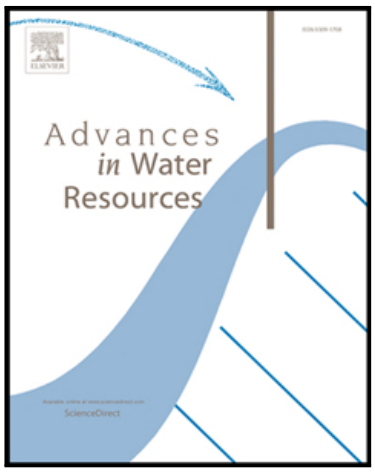

A Mixture Theory Approach to Model Co- and Counter-Current Two-Phase Flow in Porous Media Accounting for Viscous Coupling

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Highlights

- A generalized model based on mixture theory is presented for multiphase flow in porous media
- The model accounts for viscous coupling between fluid phases and the porous media
- Co-currently measured relative permeabilities are optimistic as viscous coupling lowers mobility
- Spontaneous imbibition and gravity drainage flow yield different flow regimes locally and with time
- Using a fixed set of relative permeability functions will not capture the flow process adequately