Contribution ID: **597** Type: **Oral 20 Minutes**

The effect of pore scale disorder on unstable multiphase flow at the pore scale.

Tuesday, 15 May 2018 15:58 (15 minutes)

The flow of multiple immiscible fluids at the pore scale is sensitive to local porosity fluctuations that can be measured as pore scale disorder. Our high fidelity direct numerical simulations of pore scale multiphase flow indicate that the degree of disorder governs the expression of viscous instability at the pore scale. Instability is suppressed when porosity is highly ordered even for large viscosity contrasts. While instability appears for even minute deviations away from the ordered state, it saturates beyond a certain threshold that depends on the viscosity ratio. The importance of the length scale of flow paths associated with such behaviors will be reported. Implications for permeability measurement and the construction of REV scale under time varying flow will also be examined.

References

Acceptance of Terms and Conditions

Click here to agree

Primary author: Prof. RIAZ, Amir

Presenter: Prof. RIAZ, Amir

Session Classification: Parallel 5-A

Track Classification: MS 2.05: Modeling and Controlling of Viscous Fingering in Miscible and Immiscible Displacements in Subsurface Porous Media