

# Quasistatic Analysis on Configuration of Two-phase Flow in Patterned Y-shaped Tube

(Talk #11)

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Darcy's law based on experimental findings plays a significant role in porous media flow and transport, in which the parameter permeability is of great importance. Permeability may be direction dependent. In this work we try to highlight that wettability condition could have significant impact on the direction in which a two-phase system will move. We propose a quasistatic study on flow divided among two identical branches having different wettability conditions (Figure 1). By minimizing the free energy of the two-phase system under the volume constraint, we can determine the equilibrium interface profile without and with the effect of gravity.

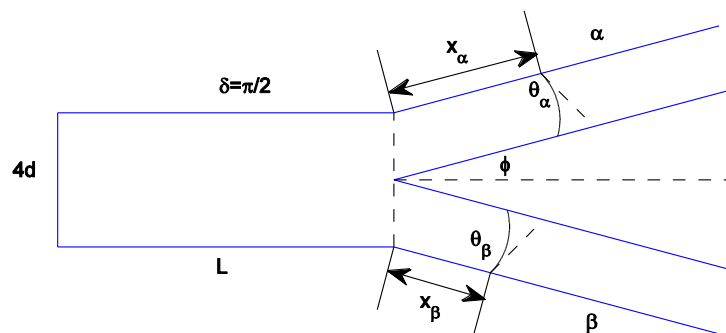


Figure 1: Schematic diagram of patterned Y-shaped tube

Reference:

[1] Hua Zhong, Xiao-Ping Wang, Amgad Salama, and Shuyu Sun, Quasistatic analysis on configuration of two-phase flow in patterned Y-shaped tube, preprint.