

Exercise 19

1. Estimate the Bodenstein number for a straight cylindrical capillary with an inner diameter of $d_t = 1.0 \text{ mm}$. The space-time of the gaseous reactant is $\tau = 1 \text{ s}$. ($D_m = 10^{-5} \text{ m}^2 \text{ s}^{-1}$)
2. Estimate the diameter of a straight cylindrical capillary with a length of $L = 0.2 \text{ m}$ required to obtain a Bodenstein number of $Bo = 100$. The space-time of the liquid reactant is $\tau = 300 \text{ s}$. ($\nu = 10^{-6} \text{ m}^2 \text{ s}^{-1}$; $D_m = 10^{-9} \text{ m}^2 \text{ s}^{-1}$). Can we assume stratified flow?