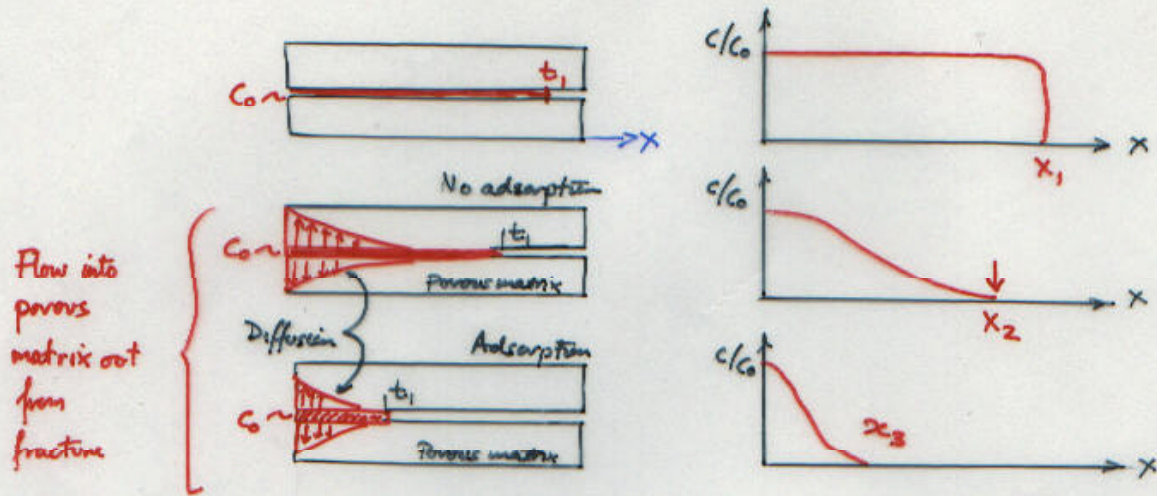


6.3 FRACTURED ROCK

- Retardation in fractured rock may be considered as a non-equilibrium reaction
- Conditioned by fracture surface area.



Diffusive process - is reversible
 - is not in equilibrium with the groundwater flow

Approximate representation as a linear isotherm

$$K_d = \frac{\text{mass of solute on solid phase per unit "area" of solid phase}}{\text{concentration of solute in solution}}$$

i.e. K_d per unit surface area, not volume $\frac{\bar{V}}{V_c} = 1 + A K_d = R$

$$A = \text{surface area / void volume of fracture} = \frac{2A}{A \cdot b} = \frac{2}{b}$$

Planar fracture $\frac{\bar{V}}{V_c} = 1 + \underbrace{\frac{2}{b} K_d}_R$

Small fractures have greater retardation capacity.