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Net heat $= \frac{1}{3} m \bar{n} \bar{v} \frac{dT}{dx}$

We know that formula

$K \frac{dT}{dx} = dQ$

$$\boxed{K = \frac{1}{3} m n \bar{v} C_v}$$

Diffusion transportation of mass.

$n + \lambda \frac{dn}{dx}$

n

$n - \lambda \frac{dn}{dx}$

Net change $= \frac{1}{6} \bar{v} \left(n + \frac{dn}{dx} \lambda -\right.$

$= \frac{1}{3} \bar{v} \lambda \frac{dn}{dx}$

$D \cdot \frac{dn}{dx} = \frac{1}{3} \bar{v} \lambda \frac{dn}{dx}$ $\quad \boxed{D = \frac{1}{3}}$

$$P_2 = m\left(v - \lambda \frac{dv_x}{dz}\right)$$

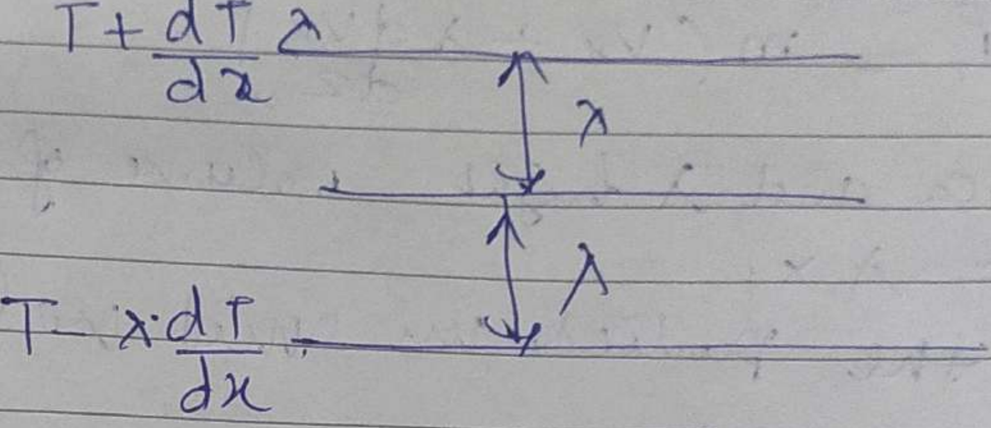
$$P_2 - P_1 = \frac{2mn\bar{v}}{6} \lambda \frac{dv_x}{dz}$$

$$dP = \frac{1}{3} mn\bar{v} \lambda \frac{dv_x}{dz}$$

$$F = \eta \frac{dv_x}{dz}$$

$$\boxed{\eta = \frac{1}{3} mn\bar{v}\lambda}$$

Thermal Conductivity



Heat =

$$dQ = \frac{mn\bar{v}}{6} \times \left(T + \lambda \frac{dT}{dx}\right)$$

$$- \frac{mn\bar{v}}{6}\left(T - \lambda \frac{dT}{dx}\right)$$

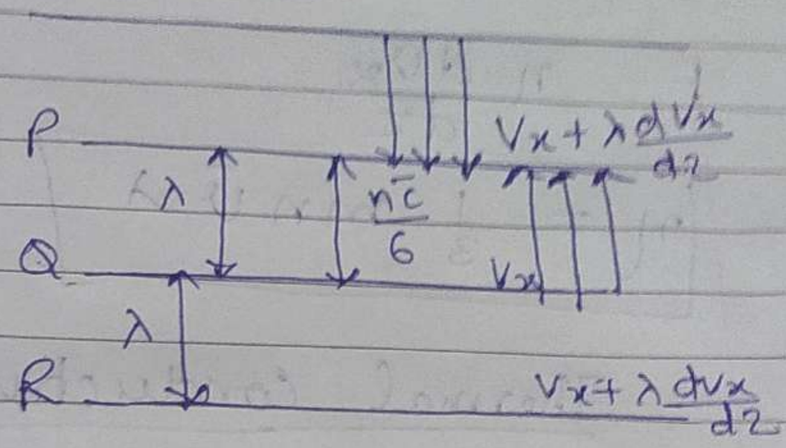
[Transpotation parameters]

(1) Viscosity

(2) Thermal conductivity

(3) Deffusion.

(1) Viscosity



$$P_1 = m\left(V_x + \lambda \frac{dV_x}{dz}\right)$$

Unit Area and λ hight volume of cylender

$\lambda A = \lambda \times 1$

n is the particle in unit volume

$= n\lambda/6$,

$\text{time} = \frac{\lambda}{\bar{v}}$

$\text{No of molecule} = \frac{n\lambda/6}{\lambda/\bar{v}}$

$= n\bar{v}/6$