

Formulario Segundo Parcial Fenomenos de transporte 3

OR

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Para pared plana semiinfinita en terminos masicos

$$\frac{\rho_A - \rho_{A,O}}{\rho_{A,S} - \rho_{A,0}} = 1 - \operatorname{erf}\left(\frac{x}{2\sqrt{D_{AB}t}}\right) \quad (1)$$

Derivada de la funcion error

$$\frac{d}{dx}(\operatorname{erf}(n)) = \frac{2}{\sqrt{\pi}} \exp(-n^2) \frac{dn}{dx} \dots \dots \dots n = \frac{x}{2\sqrt{D_{AB}t}} \quad (2)$$

Para pared plana y $Fo \geq 0.2$

$$C^* = C_1 \exp(-\zeta^2 Fo) \cos(\zeta x^*) \quad (3)$$

Para pared cilindrica

$$C^* = C_1 \exp(-\zeta^2 Fo) J_0(\zeta r^*) \quad (4)$$

Para pared esferica

$$C^* = C_1 \exp(-\zeta^2 Fo) \frac{1}{\zeta r^*} \operatorname{sen}(\zeta r^*) \quad (5)$$

Adimensionalizacion

$$C^* = \frac{C - C_\infty}{C_i - C_\infty} \dots r^* = \frac{r}{r_0} \dots x^* = \frac{x}{x_0} \quad (6)$$

Numeros adimensionales

$$Fo = \frac{D_{AB}t}{L_0^2} \quad (7)$$

$$Bi = \frac{K_C L}{D_{AB}} \quad (8)$$

Para placa plana

$$C^* = \frac{C_A - C_{A_0}}{C_{A,S} - C_{A_0}} = \operatorname{erfc}\left(\frac{x}{2\sqrt{D_{AB}t}}\right) \quad (9)$$

Densidad de flujo local en $x = 0$

$$[N_A]_{x=0} = \sqrt{\frac{D_{AB}}{t}} \quad (10)$$