Modeling in Transport Phenomena: A Conceptual Approach

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Errata for Second Edition

p. 3 - Comment of Example 1.1
"blow" should be replaced by "blow up"

p. 11 - Problem 1.8
The answer should be

$$\mathcal{Q} = \frac{4}{3}\frac{\pi\, b^3\, |\Delta P|}{\mu\, \ln(R_2/R_1)}$$

p. 27 - Example 2.4
In the first line after Eq. (4) replace "Leibnitz" by "Leibniz".

p. 123 - Eq. (5.3-12)
Equation should be written as

$$\varepsilon = \frac{n_{i_o}}{(-\,\alpha_i)}\, X_i$$

p. 170 - Eq. (7) of Example 7.3
Equation should be written as

$$n_A = \frac{\mathcal{Q}_{in} c_{A_o}}{k}\left[1 - \exp(-\,kt)\right]$$

p. 172 - Part (a) of Example 7.4
Time should be

$$t = \frac{3}{32}\frac{(1145)(0.02)^2}{(128)(5.17\times 10^{-4})(8.25\times 10^{-6})} = 78,647\,\mathrm{s} = 21.8\,\mathrm{h}$$

p. 206 - Answer to part (a) of Problem 7.19
The answer should be 14 min.

p. 330 - Eq. (9.2-34a)
Equation should be written as

$$-\,k\,\frac{dT}{dr} = q_1$$

p. 344 - Eq. (9.3-28)
Equation should be written as

$$\dot{Q} = (\pi D L)\langle h\rangle\left[\frac{(T_w - T_{b_{in}}) - (T_w - T_{b_{out}})}{\ln\left(\dfrac{T_w - T_{b_{in}}}{T_w - T_{b_{out}}}\right)}\right]$$

p. 367 - Figure 9.19

Figure caption should read, "Variation in the bulk concentration of species $\mathcal{A}$ with the axial direction for a constant wall mass flux."

p. 385 - Eq. (3) of Example 9.14

Equation should be written as

$$-k \int_0^t dt = \int_{n_{A_o}}^{n_A} \frac{dn_A}{n_A}$$

p. 405 - Problem 9.33

In the second line from the bottom, replace "heterogeneous" by "homogeneous", i.e., "As $\mathcal{B}$ leaves the surface it decomposes by an isothermal first-order homogeneous reaction, $B \rightarrow A$."

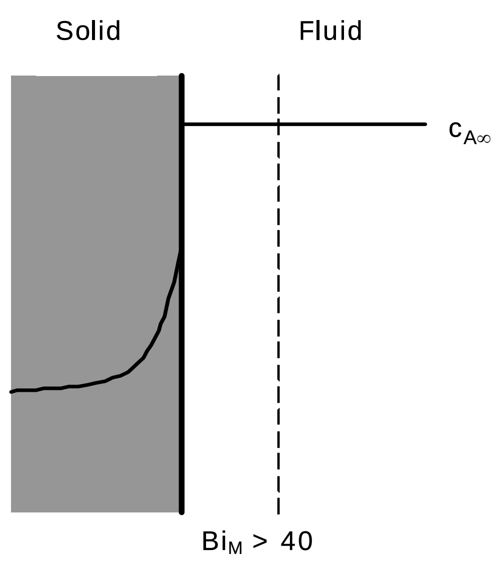
p. 406 - Problem 9.33

In Eq. (9), the definition of the dimensionless distance, ξ, is missing:

$$\xi = \frac{z}{\delta}$$

p. 446 - Figure 10.6

The concentration distribution for the case of $\mathrm{Bi_M} > 40$ should be as follows:



p. 472 - Problem 10.7

The unit of $\widehat{C}_P$ should be

$$\widehat{C}_P = 840\,\mathrm{J/\,kg.\,K}$$

p. 489 - Eqs. (11.1-56) and (11.1-57)

Equations should be written as

$$\langle v_z \rangle = \frac{(\mathcal{P}_o - \mathcal{P}_L)R^2}{8\,\mu L}\left[1 - \exp\left(-\frac{8\,\nu t}{R^2}\right)\right] \qquad (11.1\text{-}56)$$

$$\boxed{\mathcal{Q} = \frac{\pi(\mathcal{P}_o - \mathcal{P}_L)R^4}{8\,\mu L}\left[1 - \exp\left(-\,8\,\tau\right)\right]} \qquad (11.1\text{-}57)$$

p. 526 - Title of Section A.4
Replace "LEIBNITZ'S RULE" by "THE LEIBNIZ FORMULA".

p. 532 - Eq. (A.6-10)
The equation should be written as

$$a = \frac{N\,(\Sigma_i x_i y_i) - (\Sigma_i x_i)(\Sigma_i y_i)}{N\,(\Sigma_i x_i^2) - (\Sigma_i x_i)^2}$$

p. 556 - References
Replace "T.S. Sherwood" by "T.K. Sherwood".

p. 587 - Eq. (B.3-71)
Equation should be written as

$$\eta = \frac{x}{2\sqrt{\upsilon t}}$$