Errata

The following errors are known to be present in *The Mechanics of Inhaled Pharmaceutical Aerosols: An Introduction*:

p. 4, line 2: “x and dx” should be “x and x+dx”

p. 6: Both sides of eqn. (2.15) should be multiplied by $dx$.

p. 6: After eqn. (2.16), $v_{\text{normalized}}(x)$ should be $\int v_{\text{normalized}}(x) dx$ and both sides of eqn. (2.17) should be multiplied by $dx$.

p. 8: After eqn. (2.29), replace “where we interpret $n(x)$ as the total number of particles per unit volume” with “where $n(x)$ is the count distribution defined by eqn. (2.1)”.

p. 9: Insert a negative sign inside the exp of the integrand i.e. the integrand should be

$$\exp \left[ -\frac{(u-c)^2}{2b^2} \right]$$

p. 9: Immediately after eqn. (2.35), replace “where” with “where $b=\ln(\alpha_g)$ and”.

p. 18: Two lines above eqn. (3.5), “acts in the same direction” should read “acts in the opposite direction”.

p. 36 Figure 3.6: The double-sided arrow above x is missing its horizontal line.

p. 38, 13 lines from bottom: Q=300 cm$^3$ s$^{-1}$ should be Q=400 cm$^3$ s$^{-1}$

p. 48, 10 lines from the bottom: “Clapyeron” should be “Clapyron”

p. 49 line 4: Capitalize “kelvin“.

p. 50, eqn. (4.8): On the right hand side, $a$ should be replaced with $\frac{a}{T}$ and the minus sign should be moved to the left so it is between the square and round brackets i.e. this equation should read

$$c_s = \frac{a}{T} \exp \left[ -\left( \Delta \mu_{\text{pure}H_2O} + \delta \mu \right) / kT \right]$$

p. 56, line 11: Insert an additional 0 after the decimal i.e. 0.0002 should be 0.00002.

p. 56, line 13: Insert an additional 0 after the decimal i.e. 0.0004 should be 0.00004.
p. 59, eqn. (4.28): The right hand side is missing a negative sign in front of the 2.

p. 72, eqn. (4.3): The entire right hand side should be divided \( T \), i.e. append \( /T \) to the far right side of this equation.

p. 73, eqn. (4.63): On the right hand side, \( a \) should be replaced with \( a/T \).

p. 73, 2nd line after eqn. (4.67): The negative sign in the exponent of Avogadro's number should be removed i.e. \( 6.023 \times 10^{-23} \) not \( 6.023 \times 10^{-23} \).

p. 75, line 8: Two lines above eqn. (4.75), replace “drug in droplet” with “drug in the droplet”.

p. 85, eqn. (4.116): \( \pi \) should be deleted from this equation.

p. 86, 11 lines from bottom: “\( \rho/\rho_a \)” should be “1- \( \rho/\rho_a \)”.

p. 87, eqn. (4.127): The factor 1000 on the right hand side should be replaced with the factor 0.001.

p. 87, eqn. (4.133): The exponent should be 9 not 6 i.e. \( 10^9 \) not \( 10^6 \) and the units should be given as Pa.

p. 89, line 16: “211 K, i.e. \( -62^0 \) C” should be replaced with “209 K, i.e. \( -64^0 \) C”.

p. 89, last 5 lines of last paragraph starting at “we find the only…” should be replace with “we find the droplet temperature is \( T_f = 215 \) K i.e. \( -58^0 \) C, which is off by 3% from the more correct Stefan flow solution. The relatively small error is the result of the vapor pressure at this temperature still being only a relatively small fraction of the total pressure (see part b of example 4.2 on p. 53).”

p. 98, Table 5.1 column 7: The cumulative volume of generation 16 should be 109.26 not 190.26.

p. 101, 4 lines from bottom of last paragraph before References: “quiet” should be replaced with “quite”

p. 127, line 5: insert “a” before “real lung”.

p. 128, 1 line after eqn. (7.35) switch “a particle” and “the fluid”

p. 129, replace \( \kappa \) with \( t' \)

p. 149, line 12: “IPA” should be “IPAs”
p. 155, eqn. (7.83): \( \frac{C_c}{72} \) should be replaced with \( \frac{2C_c}{9} \)


p. 172, 6 lines from bottom: Byro should be Byron.

p. 190, 10 lines from bottom: 50 x 10^{-5} m should be 50 x 10^{-6} m

p. 194, line 12: “7.40741X 10^{-4}” should be “7.40741X 10^{-5}”

p. 206 Eqn. (9.27). Velocity “v” in the denominator should be dynamic viscosity “\( \nu \)”.

p. 215 eqn. (8.50): The exponent should be multiplied by minus 1 i.e. this eqn. should be
\[
C(t) = C_0 \left( \frac{V_{10}}{V_{10} - \lambda t} \right)^{-\frac{m_1}{4d_1}}
\]

p. 224 eqn. (9.2): the 6 should be in the numerator not the denominator i.e. this eqn. should read
\[
f = \frac{6C}{r^7}
\]

p. 226 eqn. (9.12): the 6 in the denominator should be a 12 i.e. this eqn. should read
\[
F_{vdW} = \frac{A}{12D^2} \frac{d_1d_2}{d_1 + d_2}
\]

p. 227 eqn. (9.13): The upper limit of the integral in the denominator should be \( d \) not \( D \). Also the integrations should involve a dummy variable, such as \( \Delta' \), since \( \Delta \) is reserved for the upper limit in the integrand.

p. 227, first line of running text: “is useful in understanding” should be “are useful in understanding”

p. 231 Figure 9.5: The double-sided arrow below \( D \) is missing its horizontal line.

p. 235, last sentence of Figure caption for Figure 9.7: \( R_1 \to 0 \) should be \( R_1 \to 0 \)

p. 254: In Eqn. (9.64) the first equal sign should be deleted.

p. 255: In the line immediately following eqn. (9.68), \( \rho_{\text{fluid}} \) should be replaced by \( \rho_{\text{fluid}}^* \)

p. 256, line 8: “Eq. (9.63)” should be “Eq. (9.71)”
p. 259, last line of footnote: $\int_0^u$ should be replaced with $\frac{1}{T} \int_0^T$

p. 260, line 5: “resulting” should be replaced with “result”.

p. 262 and p. 271, eqn. (9.81): The left hand side of this equation should be squared

p. 271, line 12: “$c_1 \approx 0.25$” should be “$c_1 \approx 0.04$”

p. 271, line 21: “$u_i \approx 0.3$” should be “$u_i \approx 1.4$”

p. 271, line 22: “0.3 mm” should be “0.14 mm”

p. 271, line 24: “0.3 mm” should be “0.14 mm”

p. 271, 9 lines from bottom: “$Re=0.1$” should be “$Re=0.28$”

p. 271, 9 lines from bottom: insert “almost” at the end of this line i.e. “are almost reasonable”

p. 271, 4 lines from bottom: “0.3 m s$^{-1}$” should be “1.4 m s$^{-1}$”

p. 271, 3 lines from bottom: “2.2X10$^{-12}$” should be “4.9X10$^{-11}$”

p. 271, 2 lines from bottom: “0.3 m s$^{-1}$” should be “1.4 m s$^{-1}$”

p. 271, last line: “1.5X10$^{-10}$” should be “1.7X10$^{-9}$”

p. 272, line 2: “much less” should be “greater”

p. 272, line 3: “not expected” should be “possible”; delete “however”; “is considerably” should be “is also considerably”

p. 272, line 7: “less” should be “greater”, “than adhesion” should be “than the adhesion”

p. 272, line 8: delete “not” and “many”

p. 272, line 11: “0.3 m s$^{-1}$” should be “1.4 m s$^{-1}$”

p. 272, line 16: “2X 10$^{-13}$” should be “3.4X10$^{-12}$”

p. 272, line 18 should read: “the former of which is much larger than 3.4X10$^{-12}$ and the latter is of the same size as 3.4X10$^{-12}$, so that we do not expect turbulent”

p. 272, line 21: “3X 10$^{-10}$” should be “1X 10$^{-9}$”
p. 273, line 10: “weaker than (c)” should be “weaker than (c), although (a) is strong enough to cause deaggregation”

p. 273, line 13: “geometry” should be “geometry, with (a) also contributing”

p. 274: In the reference listing for Desai et al., “in press” should be replaced by “22:107-113”.

p. 285: In the 1st line after eqn. (10.9), the words “subscript 2” and “subscript 1” should be interchanged.

p. 286, eqn. (10.12): “149.2” should be “-149.2”

p. 289 2nd last line: “s=dU/dt” should read “U=ds/dt”