List of Errata in POMC8 (last revised Feb. 20, 2021)

Figure 1.16 The charge shown on each Ne isotope should be shown as 2+ to be consistent with the wording in the first paragraph in Section 1.5

Page 26 In the middle of the first paragraph of Section 1.6, the word “grealy” should be changed to “greatly”.

Page 40 In the first equation on page 40, there should be the number 2 before H_2O.

Page 65 Four lines before Example 3.1, it should say Newton's third law, not Newton's second law.

Page 97 The entry 0.2082 Å in equation 3.24 should read 0.2082 Å/D.

Page 111 Change “considered in the previous section” to “considered in Section 3.9.5”

Page 123a) In the end-of-chapter problem 8, the word “electron” in part a) should be “helium nucleus”.

Figure 4.15 Label below (b) should be “Absorption spectrum” not “Absorbing spectrum”

Page 176b Problem 35(a) should read “in its corresponding velocity component” (rather than in its velocity component in this direction)
Page 218 Problem 5.29 lists slightly incorrect electron speeds for the photoelectron spectrum. The correct speeds of the electrons for the four peaks are: 7.9924×10^6 m s^{-1}, 2.0421×10^7 m s^{-1}, 2.0712×10^7 m s^{-1}, and 2.0956×10^7 m s^{-1},

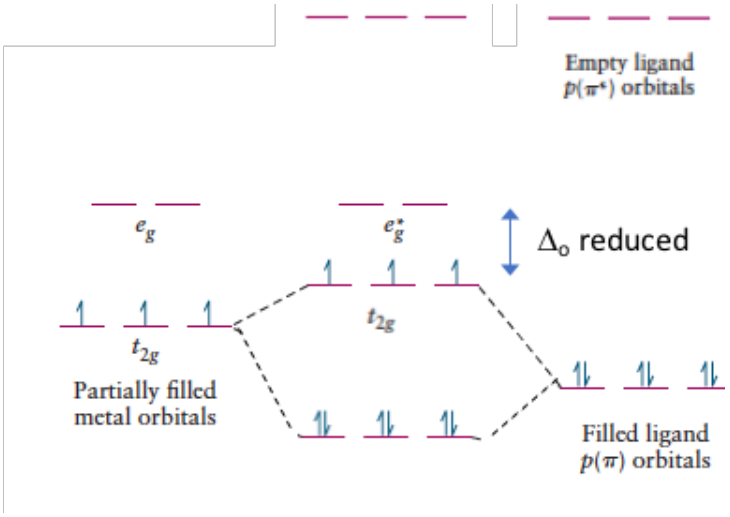
Page 247 In Equation 6.11b the last term should have a prime on it, so should read $C'_{\mathrm{B}}(2s^{\mathrm{B}})$, not $C_{\mathrm{B}}(2s^{\mathrm{B}})$. In the prior equation, Equation 6.11a, the $C_{\mathrm{B}}(2s^{\mathrm{B}})$ is correct as is (no prime needed in that one).

Page 315 The description of the bonding scheme in amides needs to be revised. The structure is planar with the atoms attached to the nitrogen in the CNO plane. The C and N atoms are sp^2 hybridized and the three out-of-plane p orbitals, on the O, C and N atoms respectively, form a π–bonding MO. Thus the π bonding is delocalized, resulting the planar structure. (This should not be described by invoking a resonance structure where the N atom is sp^3 hybridized.) Figure 7.30 should be revised in the 9th edition to show the π–bonding MO. The new figure is courtesy of Dr. Preston Scrape.

Page 350 In the next to last sentence on the page, the sentence starting with “Square planar complexes of metals…”, d^8 should be replaced by d^6 in two places.

Figure 8.31 Part (a) (the left frame in the figure) should be revised to the figure below

and part (b) of the figure should have the t_{2g}^* label moved to the uppermost orbitals in the center of the MO diagram and the three p(π) orbitals copied into the center of the diagram.



a) π donor ligands

Page 361 In Figure 8.31b, the t_{2g}* label should be on the three orbitals directly above the e_g* ones, not above the Empty ligand p(π*) label

Page 367b Problem 8.34 concerns the reduction of the 3+ ions to the corresponding 2+ ions. There are four typos in the middle of the question. It should say "It is an experimental fact that Mn^{3+} and Co^{3+} are more easily reduced …" and "…is harder to reduce than Mn^{3+} and Co^{3+}."

Page 367b Problem 8.39 should read "Estimate the CFSE for the complex in Problem 37."

Page 367b Problem 40 should read "Estimate the CFSE for the complex in Problem 38."

Page 367c The formula for the coordination complex compound in part c) of Problem 54 has an erroneous closed square bracket at the end. It should be written $[Zn(OH_2)_3(OH)]Cl$

Page 413f Problem 9.91 is a near duplicate of Problem 1.43. Replace in the 9th edition.

Page 476 Change "colligative properties of solutions describe how nonvolatile solvents cause these changes" to "colligative properties of solutions describe how nonvolatile solutes cause these changes"

Page 477 Part c) of Cumulative Exercise: The driving force for the sap rise is actually not from osmotic pressure; but rather from trapped CO_2 produced in an enzymatic metabolism of starch in the tree roots.

Page 447a In Problem 11.13(b) the erroneous $H_2O(\ell)(s)$ in the middle of the products should be deleted to read $K_2CO_3(s) + 2\ HCl(aq) \rightarrow 2\ KCl(aq) + CO_2(g) + 2\ H_2O(\ell)$

Page 494 The equation currently written as $U = q_P - P\Delta V$ is missing a Δ. It should read $\Delta U = q_P - P\Delta V$

Page 514 Under the green box [12.16], Change "Again, not that" to "Again, note that"

Page 520 In Example 12.12 the value of k_B, (2 places) should be changed from 1.380×10^{-23} to 1.381×10^{-23}, and the intermediate values of k_BT and the energy in vibration (the multiples of 6.42×10^{-21}) should be kept to more significant figures in that calculation.

Page 525 In end-of-chapter Problem 4 the wording “take the height of the waterfall to be Δh” should be changed to “take the initial height (vertical position) of the water to be h_i and the final height of the water to be h_f), so the change in height is negative as it falls.

Page 525d In Problem 46 (Chap 12) change cyclohexane to cyclohexene and in Problem 48 change 9382 to 9823.

Page 525g In Problem 80 (Chap 12) change in the middle of the problem from “the work done” to “the work done on the oxygen”

Page 592 In the second column of page 592 in the “Connection to Biology” section, it gives a chemical equilibrium that is not consistent with the K given. To be consistent with the ensuing equation for the fractional saturation of hemoglobin in the “all or nothing” model of Archibald Hill, the chemical equilibrium should be written for the single step unbinding of all four O_2 molecules from fully saturated hemoglobin $Hb(O_2)_4 \rightleftharpoons Hb + 4O_2$, and the wording directly preceding this expression should be changed to “The resulting equilibrium constant expression for the single step unbinding of all four O_2 molecules from fully saturated hemoglobin would be:”

Page 610h In Problem 91 (Chapter 14) the equation has a typo. 10.560 K should be 10,560 K.

Page 650 The second equation gives an incorrect expression for the pH. To correct it, insert a + sign between pK_a and pK_h and insert $\log_{10}$ before $\frac{K[HCO_3^-]}{(P_{CO_2})}$

Page 723 In the sentence beginning with “Vacancies (holes) left in the…” it should say “Vacancies (holes) left in the valence band…” (not conduction band).

Page 751 In Problem 2 (Chap 17), the latter half of the expression for the galvanic cell has a typo. It should read $HCl(aq)$, not $HCI(aq)$.

Page 751a In Problem 13 (Chap 17), the first half-cell has a typo. It should be a $Br_2|Br^-$ half-cell

Page 751a In Problem 23 (Chap 17), the product should be Mn(*s*), not MN(*s*)

Page 751b In Problem 25 (Chap 17) in part (b) of the problem, the choice of reducing agents should be $Br_2(\ell)$ or Br^-, not $Br_2(\ell)$ or Br_2.

Page 759b In problem 34 the reactant H_2O^+ should be H_3O^+.

Page 799 The **turnover number** k_{cat} is perhaps better called a turnover frequency per active site, but the name "turnover number" is in common use. The equation for k_{cat} given on the page is missing square brackets around E_T.

Page 806a In end-of-chapter problem 17, just below the displayed equation, it should say NH_4^+, not NH_4^-.

Page 806c In problem 30(b) the equation "$O_3 + NO \rightarrow O_2\ NO_2$" a + sign is missing. It should read "$O_3 + NO \rightarrow O_2$ **+** NO_2"

Page 806d In problem 43 (Chap 18) near the end of the problem it should read "an ethane" rather than "a ethane". The T in the rate constant expression should be in italics.

Page 821 In Figure 19.6, near the center, the chemical symbol for radon is incorrect. It should be $^{222}_{86}\mathrm{Rn}$ (not $^{222}_{86}\mathrm{Ru}$)

Page 838c In problem 41 in the chemical reaction given, the barium product mass number is incorrect. It should be $^{139}_{56}\mathrm{Ba}$ (not $^{130}_{56}\mathrm{Ba}$). It is given correctly in the last sentence of the problem.

Page 852 In Equation 20.6a, there should be a few extra spaces separating the formula hBJ(J+1) from the list of possible values of the quantum number J = 0, 1, 2,…

Page 866 The equation near the top of the page should show that the total vibrational energy in a polyatomic molecule is the sum of the vibrational energy in all the modes, so the rightmost two equal signs should be replaced by + signs.

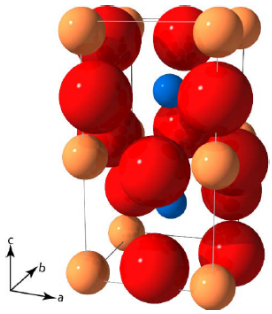
Page 908 In Figure 21.6, the drawing of the trigonal primitive should show the top face with all solid lines (two are erroneously shown dotted)

Page 914 In two places in Table 21.2 the square root should not extend over the π, so the table should have $\frac{\sqrt{3}\pi}{8} = 0.680$ and $\frac{\sqrt{2}\pi}{6} = 0.740$ as the two last entries on the lowest

row.

Page 927-8 It is poor notation at the bottom of page 927 to call the nearest neighbor distance at which V(R_0) is a minimum by the same symbol as the variable R_0 in the potential. Best to rewrite the last equation on page 927, which comes from evaluating the equation $\left.\frac{dV}{dR_0}\right|_{R_0=R_{0,min}}$ = 0, as $R_{0,min}$ = 1.09σ. Then Table 21.4 lists $R_{0,min}$, the optimum value of R_0 at which the potential energy of the molecular crystal is minimized.

Page 934a In problem 21.20 the perovskite unit cell is incorrectly described. Half of the actual unit cell is shown in the figure to the right. It does have the same empirical formula as the erroneous unit cell described in the problem, but each half contains two formula units, for a total of four formula units. The unit cell volume is 224 cubic angstroms.



Appendix C, page A.30 Table C.2. In the third column, to integrate the function $\frac{1}{x}$ it should have $\int_{x_1}^{x_2} \frac{1}{x^2}\,dx = -\left(\frac{1}{x_2} - \frac{1}{x_1}\right)$

Appendix G, page A.58. There is a typo in the answer to the second question of problem 19 in Chap 4. Replace "E_3 = 26.06 x 10^{-18} J" with "E_3 = –6.06 x 10^{-18} J so the energy required to pull the electron away from the cation is 6.06 x 10^{-18} J"

Appendix G, page A.58 The solution to problem 4.33 is missing. The answers are a) the crystal spacing a = 2.29 Å (assuming n = 1) and b) 34°

Appendix G, page A.60 In the solution to problem 6.47, the words "an s" should be changed to "a σ" (where σ is the Greek symbol sigma)

Appendix G, page A.62 In the solution to problem 8.3 delete the space between the + and the 5. It is referring to the +5 oxidation state.

Appendix G, page A.65 In the solution to problem 12.57, a "–" sign should replace a "2" in two places. The solution should read T_f = 144 K; $w = \Delta U$ = –3.89 kJ; ΔH = –6.48 kJ.

Appendix G, page A.65 In the solution to problem 13.39(c) the answer for the work done by the engine should be 500 J, not –500 J. Write: "(c) work done by engine = 500 J" Do not use the symbol w for this work so as to avoid confusion with the work done on the engine.

Appendix G, page A.66 In the solution to problem 14.63(b) the answer for $\Delta H°$ also has a 2 instead of a minus sign. The correct answer is $\Delta H°$ = –55.6 kJ. The other answers are correct.

Appendix G, page A.67 Problems 15.71 and 15.73 show answers unrelated to the stated problems (pending addition of the correct solutions to the cubic equations in the 9th edition).

Appendix G, page A.68 In the solution to problem 17.13 the cathode reaction is written incorrectly. It should read:

cathode: $Br_2 + 2\ e^- \rightarrow 2\ Br^-$

Appendix G, page A.68 In the solution to problem 17.49, the answer should be corrected for water at pH = 7.

Appendix G, page A.69 In the solution to problem 19.31, the chemical symbol for a neutrino, the third product in both reactions, should be ν, not *n*. (correction in 2 places)

Appendix G, page A.69 The solution to problem 20.15 is 1.21 Å (the problem did not ask for a moment of inertia, so delete the moment of inertia given in the current solution)

Appendix G, page A.70 In the solutions to problem 22.5(b) the oxidation state of K is incorrect. It should be +1, not 11.

Appendix G, page A.71 The solution to problem 1(b) in the Appendix A problems should be 4.02×10^2 (not 1.402×10^3).

Appendix G, page A.71 The solution to problem 7(b) in the Appendix B problems should be 1.15×10^3 (not 1.51×103). (note 2 changes: the 1.15 and the exponent 3)

Appendix G, page A.71 If you solve problem 11(b) in the Appendix C problems iteratively, you will get 4.07×10^{-2}. A graphical solution or solving the cubic equation will give you the two additional solutions, 0.399 and -1.011. Always assess whether a solution found in these ways are physically valid – e.g. a concentration is never negative!

Physical Constants (in the inside back cover of the text) The first item is Avogadro's constant, incorrectly named Avogadro's number in the text and here in the Physical Constants list. This change will be made throughout the text in the 9th edition.