ERRATA
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The only errata listed here are those that might affect understanding of the manual. Obvious errors such as simple misspellings are not included.

Chapter 1
p. 4 (Courtesy Margaret Sietsema and Jeff Sloan, Purdue) Point III.B.2.c should say that shorter bonds are associated with higher atomic number along a row of the periodic table.

p. 12 In Figure SG1.2a and Fig. SG1.2b, the $\psi^2$ should be instead $\psi^2$.

p. 13 The answer to Problem 1.2(c) should be seven valence electrons.

p. 15 In the solution to Problem 1.14(b), last line, there are eight valence electrons, not seven, in the chloride ion.

p. 18 (Courtesy of Jamie Pratt, Purdue) The solution to Problem 1.22(b) should read, “chloride ion (atomic number = 17 and one negative charge, therefore 18 electrons): (1s)^2(2s)^2(2p)^6(3s)^2(3p)_x^2(3p)_y^2(3p)_z^2 or (1s)^2(2s)^2(2p)^6(3s)^2(3p)_x^2(3p)_y^2(3p)_z^2”

p. 19 (Courtesy of Eric van Horn and Jennifer Ford, Purdue) In the solution to Problem 1.29(a), the last sentence should say, “There are 2l + 1 = 7 equivalent f orbitals.”

p. 20 In the Solution to Problem 1.30, delete the closing parenthesis.

p. 23 In the Solutions to Problems 1.36 and 1.37, the page references to the Figures SG1.7 and SG1.8 should both be to p. 24 (the following page).

Chapter 2
p. 35 On the last line of the solution to Problem 2.1(b), the word “impoosible” should be “impossible.”

p. 38 In the answer to Problem 2.17(b), 2nd to last line, O$_2$ has 32 g/mol, not 16.

p. 45 (Courtesy of Andrea Cover, Purdue) In Problem 2.36(b), the O$_2$ is missing in the equation after the (3n + 1)/2 coefficient.

Chapter 4
p. 94 (Courtesy of Terri Patterson, Purdue) In the solution to Problem 4.11(b), the name of the first compound is propene.

p. 94 (Courtesy of Chelsea Robinson, Purdue) The answer to Problem 4.13(b) should read, “… the product is less stable than the reactant.”

p. 95 In Problem 4.14, the last two sentences should refer to the $\Delta H_f$ of 1-heptene, not 1-hexene.

p. 95 (Courtesy of April Gamble, Purdue) In the solution to Problem 4.18(a) the structure is wrong. It should be (CH$_3$)$_2$C—Cl.

p. 106 (Courtesy of Christina Chung, Purdue) The computation should yield $-3010.5$ kJ mol$^{-1}$ as the $\Delta H_f$ of the reaction, not $-2859.0$ kJ mol$^{-1}$. The heat liberated is thus $3010.5$ kJ mol$^{-1}$ (719.5 kcal mol$^{-1}$).

Chapter 5
p. 129 (Courtesy of Gregg Howe, Purdue) The name of the compound in the first display is missing the “cyclo” prefix. It should be 1-isopropyl-4-methylcyclohexane.

p. 131 (Courtesy of Kathryn Summer and Daniel Thompson, U. of Tennessee) In the solution to Problem 5.1a, there should be no water over the arrow; the reaction is carried out in an inert solvent.
p. 145  (Courtesy of Nimita Patel, Purdue) The first structure on the page is missing a “fishhook.” It should be

![Image of a fishhook]

(Courtesy of Laura Geswein, Purdue) In the equations shown in the solution to Problem 5.40(a), the first structure in equation C is missing a hydrogen; it should be (CH₃)₂C=CHCH₃. In part (b) of the same solution, in the second paragraph, first line, change the last B to C, so that the sentence reads, “When we compare reactions B and C, we start with a more branched alkene in C…”

p. 146  (Courtesy of Siyuan Yang, Purdue) The CH₂ group of carbocation A should be a CH₃ group.

Chapter 6

p. 164  (Courtesy of Daniel Thompson, U. of Tennessee) In the answer, there is no –1 on the exponent of the mL units; that is, the answer should be +13.3 deg mL g⁻¹ dm⁻¹.

p. 173  (Courtesy of Jamie L. Bessich, Cornell University) In the solution to Problem 6.39(a), there is a missing structure (H) in the display. This is simply the mirror image of structure G. The corrected display is as follows:

![Image of structures]

p. 176  (Courtesy of Christina Chung, Purdue) Problem 6.46 asks also whether the four compounds shown are chiral, and the answer is not given. Compounds (a), (b), and (c) are achiral. You can verify this by drawing their mirror image and demonstrating noncongruence. Compound (d) is chiral.

Chapter 7

p. 191  (Courtesy Sarah Murray, Purdue) In Study Guide Link 7.1, the names of compounds A and B are wrong in the paragraph below these structures. Change the 2 to a 4 so that the sentence reads, “Compound A is trans-1-chloro-4-methylcyclohexane; compound B is cis-1-chloro-4-methylcyclohexane.

p. 201  (Courtesy of Katie Fagan, U. of Tennessee) In the solution to Problem 7.12(c), the shorter arrow should be pointing to the right and the longer arrow to the left, thus indicating that the diaxial conformation is the minor component of the equilibrium mixture.

Chapter 8

p. 243  (Courtesy of Josh Remer, Purdue) In the solution to Problem 8.30(a), the first compound mentioned should be 2-methyl-1-butanol, not 2-methyl-1-pentanol.

p. 245  (Courtesy of Matt Hoch, Purdue) In the solution to Problem 8.34(b), the solvent should be CH₂Cl₂ to match what is given in the problem.

Chapter 9

p. 269  (Courtesy of Matt Hoch, Purdue) In the solution to Problem 9.6(a), omit the final parenthesis in the exponent of the expression following the first equal sign, so that the equation reads as follows:

\[ \frac{k_A}{k_B} = \frac{10^{(\Delta G^\circ_A - \Delta G^\circ_B)} / 2.3RT}{etc.} \]

p. 270  (Courtesy of Matt Hoch, Purdue) In the solution to Problem 9.10, the names of the two structures are (R)-1-chlorobutane-1-d and (S)-1-iodobutane-1-d.
p. 279  *(Courtesy of Donna Morgan, Purdue)* In the solution to Problem 9.32, the first line of text and the structures should be moved to the beginning of Problem 9.33. The remaining part of the solution to Problem 9.32 is correct.

**Chapter 11**

p. 339  *(Courtesy of Susan Rieser, Purdue)* In the display following statement 3b, the last structure is not correct. It should be as follows:

\[
\begin{align*}
\text{H} & \quad \text{CH}_3 \\
\text{CH}_3 & \quad \text{H}
\end{align*}
\]

p. 360–361  *(Courtesy of Christina Chung, Purdue)* In the solution to Problem 11.45, the identity of compounds \(A\) and \(B\) are reversed throughout, including the structure captions. Change “compound \(A\)” to “compound \(B\)” and vice versa throughout the solution.

p. 355  *(Courtesy of Mary Rozwarski, Purdue)* At the top of p. 355, the equation at the top of the page was inadvertently inserted again. The second equation is thus identical to the first and should be deleted.

p. 365  *(Courtesy of Christina Chung, Purdue)* In the solution to Problem 11.51, the very last structure, \((\pm)-4,5\text{-octanediol}\), should be labeled “compound \(C\).”

p. 366  *(Courtesy of Christina Chung, Purdue)* In the solution to Problem 11.52(a), the cyclic ketone product shown is cyclopentanone, but it should be cyclohexanone.

\[
\begin{align*}
\text{change } & \quad \text{O} = \text{O} \\
\text{to } & \quad \text{O} = \text{O}
\end{align*}
\]

p. 366  *(Courtesy of Mary Rozwarski, Purdue)* In the solution to Problem 11.52(b), a methyl group is missing at the bridgehead position of all bicyclic compounds shown and at the corresponding position of the final aldehyde. The corrected reaction scheme is as follows:

\[
\begin{align*}
\text{CH}_3 & \quad \text{OsO}_4 \quad \text{H}_2\text{O} \quad \text{Os(VI)} \quad \text{H}_2\text{O}_6 \\
\text{H}_2\text{O}_6 & \quad \text{CH}_3 \quad \text{OH} \quad \text{OH} \quad \text{H}_2\text{O}_6 \\
\text{H}_2\text{O}_6 & \quad \text{H}_2\text{O}_4 \quad \text{O} \quad \text{O} \quad \text{O} \\
\text{H}_2\text{O}_6 & \quad \text{CH}_3 \quad \text{H} \quad \text{H} \quad \text{H}
\end{align*}
\]

p. 367  *(Courtesy of Mary Rozwarski, Purdue)* In the solution to Problem 11.56(a), the reaction was inadvertently repeated. Thus, lines 3 and 4 of the display are redundant and should be deleted.

**Chapter 12**

p. 381 In the solution to Problem 12.5, the first equation has \(\nu\) and \(\bar{\nu}\) reversed. The correct equation is \(\nu = \bar{\nu}\).

p. 388 In the solution to Problem 12.33, the masses of the peaks resulting from \(\alpha\)-cleavages of 2-methoxybutane have their masses reversed. Loss of \(\text{CH}_3\) gives a peak with \(m/z = 73\), and loss of ethyl gives a peak with \(m/z = 59\).
Chapter 13

p. 393  The value of Planck’s constant has a misprint in the exponential. It should be $3.99 \times 10^{-13}$ kJ · s$^{-1}$ · mol$^{-1}$.

p. 395  In Part C.2.d., in the last sentence, change the word “large” to “small” so that the sentence now reads, “Hence, protons near electropositive groups should have relatively small chemical shifts.”

p. 416  (Courtesy of Virona Abdel-Shahid, Purdue) In the solution to Problem 13.22, the last word should be “chloride,” to read: “—CH$_2$— group in ethyl chloride.”

p. 421  (Courtesy of Brian Hong, Purdue) The name of the product of the hydrogenation reaction in the second display is 2,2,4-trimethylpentane. The name below the structure and in the paragraph following should be changed.

Chapter 14

p. 444  (Courtesy of Kelli Rice, Purdue) In Problem 14.15, structure C should be the conjugate acid of methylamine, not ethylamine: CH$_3$—NH$_3$$^+$. 

p. 445  (Courtesy of Christina Chung, Purdue) In the solution to Problem 14.20, delete the “I” and the “CH$_3$” above and to the right of the NaNH$_2$ over the second reaction arrow.

p. 454  (Courtesy of Christina Chung, Purdue) In the solution to Problem 14.35(a), in the second line of text, change $\delta$ 2.41 to $\delta$ 1.43.

Chapter 15

p. 467  (Courtesy of Christina Chung, Purdue) In the solution to Problem 15.4, the first structure (trans-1,3-pentadiene) is missing a hydrogen atom on the double bond. The correct structure is 

\[
\text{trans-1,3-pentadiene}
\]

p. 483  (Courtesy of Christina Chung, Purdue) In the solution to Problem 15.27(b), the first line of text should read, “The radical on the right…” That is, change the word “left” to “right.”

Chapter 16

p. 511  (Courtesy of Daniel Thompson, U. of Tennessee) Under D.1., the only thing over the equation should be the AlCl$_3$ catalyst; unlike the Friedel-Crafts acylation, no water (or H$_3$O$^+$) is required for the workup.

p. 534  (Courtesy of William Crisp, Purdue) In the solution to Problem 16.48, the wrong starting material was used to illustrate the mechanism. Hence, all of the structures are incorrect as well. Change the structures of the starting material to the one given in the problem and follow the same steps of the mechanism.

Chapter 17

p. 543  (Courtesy of Brian Sanders, U. of Tennessee) In the structure of the benzylic radical under 2.b., the second resonance structure is missing a double bond. It should be as follows:

\[
\text{CH}_2
\]

p. 547  (Courtesy of Raman Shah, Caltech) At the top of page 547, the cross-reference in B.2. should be to page 763, Eq. 17.36.
In the solution to Problem 17.6(a), the resonance structures in the bracket do not correspond; that is, if the left structure results from abstraction of a hydrogen, the right structure is not its resonance structure. A corrected equation is as follows:

\[
\begin{align*}
\text{cyclohexene} & \xrightarrow{\text{NBS}} [\overset{\cdot}{\underset{\cdot}{\text{CH}}}] \quad \text{free-radical intermediate} \quad [\overset{\cdot}{\underset{\cdot}{\text{H}}} \underset{\cdot}{\text{CH}}] \quad \text{3-bromocyclohexene} \\
\text{starting material} & \quad \text{(identical resonance structures)} \quad \text{(product)}
\end{align*}
\]

In the second resonance structure, the unpaired electron should be on the CH, not the CH\(_3\):

\[
\begin{align*}
\overset{\cdot}{\text{CH}} & \quad \overset{\cdot}{\text{H}} \\
\text{H} & \quad \text{H} \\
\text{CH} & \quad \text{CH} \\
\text{CH}_2 & \quad \text{CH}_2 \\
\text{CH}_3 & \quad \text{CH}_3
\end{align*}
\]

free-radical intermediate from abstraction of hydrogen (a)

In the solution to Problem 17.10(b), the wrong starting material was used. The equation should be as follows:

\[
\begin{align*}
\text{(CH}_3\text{)}_2\text{C} & \xrightarrow{1) \text{Kmno}_4, \text{OH}} \text{(CH}_3\text{)}_2\text{C} \quad \xrightarrow{2) \text{H}_2\text{O}^+} \text{(CH}_3\text{)}_2\text{C} \\
\text{1-butyl-4-tert-butylbenzene} & \quad \text{4-tert-butylbenzoic acid}
\end{align*}
\]

Chapter 18

Near the bottom of p. 580, in Sec. II.C.2., add an s to the word ligand so that the phrase reads, “…removing all ligands…”.

In the two-line introduction to Section IV, add an s to the word reactions so that the phrase reads, “…reactions are readily understood…”.

In the solution to problem 18.30(b), the second nitration product should have the chlorine atom para to the nitro group rather than para to the hydroxy group.

In the solution to Problem 18.32(b), the first mechanism should show attack on the methyl group, as follows:

\[
\begin{align*}
\text{PhCH}_2 & \quad \text{PhCH}_2 \\
\text{O} & \quad \text{O} \\
\text{CH}_3 & \quad \text{CH}_3
\end{align*}
\]

benzyl methyl ether (after protonation by HBr) benzyl alcohol methyl bromide

In the solution to Problem 18.37(c), the text reference should be to p. 816, not p. 81.

Chapter 23

In part (b) of the solution to Problem 23.39 at the top of the page, the second product should have an additional hydrogen on the nitrogen.

Chapter 25

In the solution to Problem 25.1(b), the phrase “two electrons are involved” was inadvertently repeated; delete the second of these phrases.

Chapter 26

In the note marked by the arrow following the solution to part (d), the word “coon” in the second line should be “common.”