Errors in version 1.10 (Corrected in v. 1.20)

Back cover: Corrected Rf and Db's atomic number
Various places: correctly spelled "**phosphorus**"

Prologue

- p. 3: adding "A Novel" to **the** end…
- p. 5: a bit weird **starting**…
- p. 6: ask a teacher what **he or she** just said…
- p. 7: reread the parts of the chapter that gave you the most trouble (deleted **with**)
- p. 7: The problems are divided into three starred **sections**.

Chapter 1

- p. 11: **would** tell you that matter and ….
- p. 11: but it has **to** be done chemically
- p. 18: every instrument will **have** some degree of error
- A **mixture** is **a** combination of two or more substances.
- p. 22: problem P2d should read 3.301×10^{6}
- p. 25: the majority of the world **uses** the Celsius scale
- p. 25: This means that **there** are no negative temperatures in the Kelvin scale
- p. 30: Problem P4c. Key error. Answer should be 1.05×10^{-4}
- p. 31: formatting error with G
- p. 31: that dinosaurs **were**…
- p. 32: Put starred section's titles in boldface and 14 pt font to match later parts of book.
- p. 33: Problem 5c. Key error. Answer should be 86.9
- p. 34: Problem 9b. Key error. Answer should be 550 **cm**
- p. 35: Problem 12e. sold as 80 proof, or **40 %**

Chapter 2

- p. 41: is at least 2500 years old**,** (comma)
- p. 42: Those who **consider** themselves to be "Potterphiles"
- p. 43: and by **the** start of the eighteenth century
- p. 43: still used by modern **chemists**
- p. 46: This and experiments like it soon led **to** the discovery
- p. 47: 10.0 g lead + 1 g sulfur = **7.5** g lead sulfide + **3.5** g lead
- p. 47: **6.5** g lead + 3 g sulfur = **7.5** g lead sulfide + 2 g sulfur
- p. 48: can lead to results that are similar **to** the lead/sulfur example
- p. 49: which **scientists** continue to test and modify to this day.
- p. 52: as **we'll** see later…
- p. 55: carbon-14's symbol should be $^{14}_{6}\mathrm{C}$
- p. 56. Problem 1e. Key error. Answer should be tin-122
- p. 62: of hydrogen's isotopes are deuterium**,** (comma)
- p. 63: and plutonium (**Pu**)
- p. 63 & 64: Fixed Rf's and Db's atomic numbers in figures
- p. 66: bent **or** flattened

Chapter 3:

- p. 76: You're probably familiar with these to some degree already (deleted extra **already**)
- p. 77: a quick peek at **the** periodic table…
- p. 81: molecules can also have **an** unequal number…
- p. 81: shown in the following table**:** (colon)
- p. 84: formatting error with Example question
- p. 86: little packets of silica **gel**

- p. 86: Problem P3. Minor key error. b) +3, **c)** +1, d) +4
- p. 88: At the start of **Part 2**, it was mentioned…
- p. 88: their only choice is **to** play nice and share.
- p. 91: see our list in Part **2** for a few common ones
- p. 91: changing their names just to fit the system
- p. 93: missing first quote mark in "phosphorus chloride"
- p. 97: Problem 9c. Key error. Answer should be calcium sulfate **dehydrate**
- p. 98: Name each of the compounds from **question 12**.
- p. 98: Problem 14c should be chromium (**VI**) perchlorate

Chapter 4:

- p. 103: which would be enough **to** cover the entire planet
- p. 103: tweaked part of the intro a bit
- p. 104: $0.20\ \cancel{\text{mol Na}} \times \frac{22.99\ \text{g } \mathbf{Na}}{\cancel{1\ \text{mol Na}}} = 4.6\ \text{g Na}$
- p. 106: In example solution, added fourth sig. fig. to Avogadro's number (for consistency's sake).
- p. 107: Problem P4b. Key error. Answer should be 63.56 g $\mathbf{SO_2}$
- p. 108: 38.0 g x **0.06174** = 2.55 g H
- p. 109: that's true for a lot **of** what we do here…
- p. 109: $\frac{\mathbf{2}\ (1.008\ \cancel{\text{g/mol}})}{30.03\ \cancel{\text{g/mol}}} \times 100 = 6.714\%$ H
- p. 112: and when you have **a** fraction
- p. 113: Problem P7c. Key error. Answer is 83.62% C
- p. 113: Problem P7d. Minor Key error. Answer is **9.153%** H
- p. 118: At first, that may not seem possible, since **there isn't**
- p. 118: Another **option** is to use a coefficient…
- p. 121: Believe it **or** not…
- p. 121: the **recommended** way to read…
- p. 126: to ensure that the more expensive one **reacts** completely
- p. 127: is actually required to react with **5.00 g** of hydrogen.
- p. 129: If you're **a** smoker…
- p. 130: will react **to** form…
- p. 136: Problem 2d. Minor key error. Answer should have 4 sig. figs.
- p. 137: Problem 9d. Removed coefficients
- p. 137: Problem 10c. Rewrote to "How many grams of carbon are required to produce 427 g of calcium carbide?"
- p. 139: Problem 19b. Key error. Answer should be 26.1 g Ag
- p. 141: Problem 24. Mass should be 3.079 g

Chapter 5

- p. 145: Carbonated beverages, for **example,** (comma)
- p. 145: A **solution** is composed of…
- p. 146: Pure water is actually **a** poor conductor.
- p. 154: and therefore isn't split up into ions
- p. 156: Problem P3c. $\mathbf{CaCl_2}$ and $CuClO_3$
- p. 157: An **acid** can be defined as **a** substance…
- p. 158: but when you dissolve it in water…
- p. 159: a *salt* is defined **as** an ionic compound
- p. 161: Hydrochloric acid and magnesium **chloride** are aqueous
- p. 163: **2**HNO_3 (middle two equations)
- p. 165: Problem P9d. Key error. $3Cu_2S(s) + 2H_3PO_4(aq) \rightarrow \mathbf{2Cu_3(PO_4)\ (s)} + 3H_2S(g)$
- p. 165: Problem 11a. Key error. Should be $2H^+$
- p. 181: *M* represents the initial and final **concentrations**

- p. 182: Problem P17a. How many grams of aluminum **are needed** to react
- p. 182: Problem P17b. Key error. Answer should be 43.5 mL
- p. 186: Problem 11b. K^+ and Mg^{2+}

Chapter 6

- p. 196: which **led** to the formation of
- p. 196: a proportionality (α) equation **to** an equality (=)
- p. 199: having the volume in **liters** instead of mL
- p. 208: V_1 and V_2 **are** the same value
- p. 201: Added fourth digit to Avogadro's number (for consistency's sake).
- p. 212: Rewrote question P7. Key should read 10.4 **L**
- p. 212: Problem P8b. would be **needed** to be produce 2.00 L
- p. 213: Sometimes, the question only refers **to** "a gas."
- p. 214: Graham discovered that **the** effusion rate…
- p. 216: Problem P9. Minor key error. Several missing units.
- p. 216: Problem 10c. If neon diffuses at **a** rate of
- p. 219: Calculate the root-mean-squared speed of oxygen (O_2) at **25** °C, answer should be **481 m/s**
- p. 225: Problem 11. 0.82 mol O_2 and 0.15 mol N_2 **in a 10.0 L flask at 30 ºC**
- p. 226: Problem 12c: Key error. Answer should be 6.3 x 10^3 mm/min
- p. 227: unknown gas is found to be **2.2** times faster than **iodine** gas

Chapter 7

- p. 234: a capital Greek letter delta (Δ) **is often** used to represent change and is…
- p. 237: q_{water} = (**500**.0 g)(4.184 J/g·°C)(63.0-25.0 °C) = 7,950 J
- p. 238: missing equal sign in second equation
- p. 243: -10 to 0 ºC heat should be **209**, not 249
- p. 245: add together to give the combustion of carbon**,** (comma, not period)
- p. 245: CO**(g)** + ½O_2(g) → CO_2(g) ΔH = -283.0 kJ
- p. 247: equation 1 has one mole of C_2H_2 on the **product** side, and the reaction in question has one mole of C_2H_2 on the ***reactant*** side
- p. 250: you must also **modify** the value of ΔH in the same way.
- p. 250: fourth equation should be CuCl(s) + ½Cl_2(g) → $CuCl_2$(s) ΔH = -82.9 kJ
- p. 253: Therefore, N_2O is said to have ΔH_f = 81.6 kJ/**mol**
- p. 257: Problem 6. The specific of the **liquid** is 1.85
- p. 257: How many **grams** of water… Key should read 9,240 g.
- p. 257: Problem 8. Key error. Answer should be -187.8 kJ
- p. 258: Problem 11. Heat given is in **joules**, not kJ
- p. 259: Problem 13. Key error. Answer should be a) 1.75 kJ, b) 12 ºC
- p. 259: Problem 16. Key error. Answer should be **6**H_2, not 5

Chapter 8

- p. 265: X-ray should read 10 pm – 10 nm
- p. 268: Added fourth digit to Avogadro's number (for consistency's sake).
- p. 269: Problem P1b. Minor key error. Missing unit (should be Hz).
- p. 269: Problem P3c. Minor key error. Missing unit (should be J).
- p. 269: Problem P4.Minor key error, should read 1.61 x 10^{-4} J
- p. 270: when hydrogen burns it gives **off** a purple color
- p. 272: "orbiting" the nucleus similar to the way the planets **orbit** the sun
- p. 272: answer to bottom example should read -5.45 x 10^{-19} J
- p. 275: then **releases** that heat to return to its ground state.
- p. 276: Problem P6. Minor key error. Second answer is P6b

- p. 276: Problem P7b. Key error. Answer should read 4.85 x 10^{-7} m
- p. 277: waves that close at the same point it **begins.** (added period)
- p. 280: Recall **from** Chapter 1 that
- p. 282: didn't realize at the time was **that** these shells…
- p. 284: The **term** *orbital* is sort of a throwback to Bohr's theory
- p. 290: Problem 3a. Key error. Answer should be 3.43 x 10^{17} Hz
- p. 290: Problem 5c. Key error. Answer should be 434.1 nm
- p. 290: Problem 7a. the **4th** shell.

Chapter 9

- p. 297: The *A* in Aufbau should be bold-faced.
- p. 300: second configuration should read $1s^2 2s^2 2p^6 \mathbf{3s^2}$
- p. 305: That's because an atom's actual electron **configuration** isn't…
- p. 312: There are several anomalous configurations in **the** inner transition group (the *f* block) where…
- p. 312: Sometimes an *f* block **element** will follow the Aufbau principle,
- p. 314: Before that, back in Chapter **3**,
- p. 319: Notice that even though the resulting ions are isoelectronic,
- p. 320: With the alkaline earth metals (Be **and Mg**),
- p. 320: with the group 3A elements the big increase occurs with the ***fourth*** IE.
- p. 321: If you think about **it**, it makes sense…
- p. 323: that the atoms in groups 3A and 6A have **a** *p* electron
- p. 325: because adding an electron is actually **an**
- p. 327: Problem 1b. Key error. Answer should be $1s^2 2s^2 2p^6 3s^2 3p^6 4s^2 3d^{10} 4p^6 5s^2 \mathbf{4d^7}$
- p. 237: Problem 5b. Key error. Answer should be $1s^2 2s^2 2p^6 3s^2 3p^6 3d^6$
- p. 237: Problem 6. Key error. Answer should be Al<Na<Ca<**Ba**
- p. 237: Problem 7. replaced krypton with arsenic, updated key.
- p. 238: Problem 10a. Key error. Answer should be **Si**
- p. 238: Problem 11c. Key error. Answer should be [Xe]$\mathbf{4f^{14}} 5d^2$
- p. 238: Problem 13. Key error Answer should be $1s^2 2s^2 2p^6 3s^2 3p^6 4s^2 3d^{10} 4p^6 5s^1 4d^{10}$

Chapter 10

- p. 333: In this chapter, and the two that **follow**, we're going **to discuss** covalent compounds in a little more detail.
- p. 334: Sodium only needs to rid itself…
- p. 344: In ***other***, other words (italicized first "other" to emphasize it's not a typo).
- p. 349: **nitrogen** is singly bonded to two oxygens
- p. 349: Formal charges **give** us an idea…
- p. 349: the more evenly **distributed** the electrons are within that molecule.
- p. 349: It has as many atoms with a zero formal **charge** as possible.
- p. 350: Problem P4. Key error. Answer should be c
- p. 350: Problem 5c. Which resonance **structure** is predicted to be the major structure.
- p. 352: we can use formal **charges** to see that…
- p. 357: Problem 2d. Key error. Answer should be 8
- p. 357: Problem 4. Which of the following molecules from question **3**…
- p. 357: Removed problem 6c
- p. 358: Problem 8. Key error. Answers to 8b and 8c are flipped.

Chapter 11

- p. 364: (depending **on** the complexity of the molecule)
- p. 364: condensed formula of dimethyl ether incorrectly labeled as diethyl ether
- p. 367: If not, and you have **a** pencil nearby, pick it up and snap it **in** half.
- p. 370: and most reactions occur in a solution, in many cases…

- p. 373: giving an ideal **angle** of 180º.
- p. 374: it looks like a linear **molecule** that's been bent
- p. 376: In **a** structure such as water's,
- p. 377: two distinct positions in a trigonal bipyramidal arrangement**.** (added period)
- p. 378: Added general formulas to subheaders (AX_3E_2 and AX_2E_3)
- p. 378: as seen in the structure of bromine **pentachloride**.
- p. 379: If a lone pair occupies one **of** the six positions
- p. 384: But since this **is** a *linear* molecule,
- p. 387: Removed second comma after problem P7c
- p. 388: Problem 5a. Key error. Answers should be **fluorine** is negative
- p. 390: Problem 10a. Key error. Answer should be trigonal bipyramidal
- p. 390: The last four problems should be numbered 14-17 (key is correct).
- p. 390: Problem 14. Key errors. 14a should be -84 and 14b should be zero.

Chapter 12

- p. 399: as usual, *1*'s are not written, so we don't **call** them…
- p. 405: According to valence bond theory, these *d* orbitals **can also hybridize**
- p. 409: which accounts for four of its six **electrons**,
- p. 414: Like the **carbons** of benzene…
- p. 416: but it can—as **we'll** see
- p. 431: Problem 2c. Key error. Answer should be sp^3d
- p. 431: Problem 3c. Key error. Answer should be sp^2, 3p
- p. 431: Problem 4a. Key error. Answer should be "a **4p** of bromine"