Intermediate Inorganic Chemistry - Spring 2008

Chem-422-001

Instructor: Prof. David Vicic
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Lecture: MWF, 10:30 – 11:20am, Bilger 335
Office hours: anytime, or by appointment.

Textbooks: *Required:* "Inorganic Chemistry," 4th Ed., by Shriver & Atkins. ISBN: 0-7167-4878-9, Publisher: W.H. Freeman and Co.

Course Description: This class will provide a contemporary introduction to the discipline of inorganic chemistry. One goal is to develop your understanding of the structure, bonding, and reactivity of inorganic compounds. Principle topics covered include group theory, bonding models, organometallic systems and reactions, coordination chemistry, and the chemistry of the solid state from the nanoscale to extended frameworks.

Attendance: Mandatory. You will be penalized a whole letter grade for each absence.

Grading:

Exam 1	200 points	(Feb. 15th)
Exam 2	200 points	(Apr 4th)
Exam 3	200 points	(May 7th)
10 homeworks	200 points	
40 minute presentation	200 points	(beginning April)
Total	1000 points	

*No late assignments will be accepted. There will be **no** make-up exams offered. Random in-class quizzes may be given in place of homeworks and also to serve as an attendance check.*

Presentations: A PowerPoint presentation (at least 40 minutes) to the class on a current topic in inorganic chemistry is required. I can help suggest topics, and everyone's topic should get my approval before presentation. Good places to look for topics include the following journals: *Inorganic Chemistry*, *Chemical Reviews*, *Organometallics*, *Journal of the American Chemical Society*, *Science*, and *Nature*. We have free access to most of those journals online. Sample presentations from previous undergraduates will be placed on webCT.

Grading Scale: A (100-90%), B (89-80%), C (79-70%), D (69-60%), F (below 60%). If I give a test that is too hard (i.e., the class does poorer than I expect) I *may* curve the scores up to compensate. The exact criteria for when I will do this and the amount of the curving will not be defined here. You will have to trust my judgment.

Additional information:

- Academic honesty policies can be found in the UH Student Conduct Code: http://www.hawaii.edu/student/conduct/
- Much of the materials used for class will be placed on webCT. Please log on to webct.hawaii.edu on a regular basis to check.

Important dates:

Jan 21	MLK Jr. Day, no class
Feb 18	President's day, no class
Mar 21	Good Friday, no class
Mar 24-28	Spring Break
May 7	Last day of class
May 12-16	Finals

Shriver & Atkins: *Inorganic Chemistry* 4e

Textbook errata not yet corrected (Sept 06)

Chapter 1, page 20, Figure 1.22

The colour coding of the top two lines in the 4th level should be reversed: blue to red and red to blue respectively.

Chapter 2, page 38, Structure 6

The pair of dots on the N on the far left structure should be deleted.

Chapter 2, page 39, Structure 7

The pair of dots on the N on the two left-hand structures should be deleted.

Chapter 2, pages 42-43

In the text, change the following bond energies to match the values that are given in Table 2.5.

C-C, change from 347 to 348

Si-Si, change from 222 to 226

Si-H, change from 328 to 318

C-Cl, change from 327 to 338

N-N, change from 165 to 163

P-P, change from 200 to 201

N-Cl, change from 194 to 200

Chapter 2, page 64, Fig. 2.30

The top row reads "N2p N2s H3", but really, the top row should read:

"N NH3 H3" and the N2p and N2s labels are already located at the appropriate orbitals.

Chapter 3, page 86, last full paragraph

The fluorite coordination numbers are listed as (4,8), but actually it should be (8,4); the anti-fluorite coordination numbers are reversed as well: anti-fluorite should be (4,8).

Chapter 3, page 88, Figure 3.37a

The rutile structure labels the green spheres as Ti and the red spheres as O, but these should be reversed. The Ti is represented by the red spheres as noted by the octahedral coordination of the central red sphere, and the green spheres are actually the oxygens.

Chapter 3, Page 95, Example 3.12

The value for Avogadro's number used in the problem is 6.023×10^{23}, but since 1961 (when the definition of amu was changed to use carbon as the standard, instead of oxygen), the current value of Avogadro's number is $6.02\mathbf{2} \times 10^{23}$. Please note that this doesnt affect the answer which is calculated to 3 significant figures.

Chapter 13, page 323, Structure 5

The caption should start with [Os] rather than [O *followed by* lower case 5].

Answer section

799 **Chapter 1, Self-test 1.8.** The answer should be: "Group **14**. …"

799 **Chapter 1, Self-test 1.10.** The answer in the back of the book lists Cs+ as the correct answer. It is not. Na+ is the correct answer.

799 **Chapter 1, Exercicse 1.14(e).** The answer in the back of the book lists $[Xe]4f^{14}5d^{10}6s^{2}3p^{3}$ but the correct answer is $[Xe]4f^{14}5d^{10}6s^{2}\mathbf{6}p^{3}$

799 **Chapter 1, Exercicse 1.15(a).** The answer in the back of the book lists $[Ar]3d^{10}4s^{2}$ but the correct answer is $[Ar]3d^{\mathbf{1}}4s^{2}$

800 **Chapter 3, Exercise 3.6.** The answer currently reads '363pm', it should read: 429 pm.

804 **Chapter 10, Self-test 10.1.** The answer should be LiF 602 kJ mol^{-1}, NaF 527 kJ mol^{-1}