

NAME:**HONORS CHEMISTRY****SECTION:****ASSIGNMENTS: CHEMICAL BONDING AND IMF'S**

Assignment	Due Date
1. Handout on periodic trends	Tuesday, 2/6
2. Concept map on periodic trends	Thursday, 2/8
3. Google classroom assignment	
4. Set up account at https://simbucket.com/chemthinkserver/chemthink/index.html (code is posted in google classroom)	
5. Study for quiz on periodic trends	
6. §Handout: The properties of metals	Monday, 2/12
7. Complete the tutorial on covalent bonding (uses flash) at http://www.simbucket.com/simulation/436/	
8. *Complete the tutorial and questions on ionic bonding at https://simbucket.com/chemthinkserver/chemthink/index.html	Tuesday, 2/18
9. Work on Part I of "A Tale of 4 Electrons"	
10. §Watch webcast on Bond Length vs. Bond Strength and take notes	Wednesday, 2/14
11. Work on Part I of "A Tale of 4 Electrons"	
12. Work on Part II of "A Tale of 4 Electrons"	Thursday, 2/15
13. *Submit Part I of "A Tale of 4 Electrons" via Google Drive	Friday, 2/16
14. Go to http://www.wwnorton.com/college/chemistry/chemistry3/chemtours.aspx and complete the resonance tutorial (Ch. 8)	Tuesday, 2/27
15. Work on Part II of "A Tale of 4 Electrons"	
16. §Finish problem set	Wednesday, 2/28
17. Work on Part II of "A Tale of 4 Electrons"	
18. Go to http://www.wwnorton.com/college/chemistry/chemistry3/chemtours.aspx and complete the Partial Charges and Bond Dipoles tutorial (Ch. 8)	Thursday, 3/1
19. Work on Part II of TO4E	
20. Work on Part II of "A Tale of 4 Electrons"	Friday, 3/2
21. Go to http://www.wwnorton.com/college/chemistry/chemistry3/chemtours.aspx and complete the hybridization tutorial (Ch. 9)	Monday, 3/5
22. §Go to the online HW site and complete 10 problems of #68	
23. Bring a substantially complete draft of TO4E part II to class for peer editing	Tuesday, 3/6
24. *Submit Part II of "A Tale of 4 Electrons" via Google Drive	Wednesday, 3/7
25. Work on Part III of TO4E	Thursday, 3/8
26. Study for quiz on VSEPR geometries	
27. Go to http://www.wwnorton.com/college/chemistry/chemistry3/chemtours.aspx and complete the intermolecular forces tutorial (Ch. 10)	Friday, 3/9
28. Finish group model building minilab if not completed in class	Monday, 3/12
29. *Submit Part III of "A Tale of 4 Electrons" via Google Drive	Wednesday, 3/14
30. *Submit Part IV of "A Tale of 4 Electrons" via Google Drive	Monday, 3/19

Dates to Remember: §may be checked or collected in class *will be checked on-line
 In class work days Thursday 3/2, Tuesday 3/7 (time for peer editing of Part II in class)

After studying chapters 10, 14.3, and 14.5-14.6, you should be able to:

- Explain why most atoms form chemical bonds.
- Differentiate among properties of ionic, covalent, and metallic bonds.
- Compare and contrast the properties of ionic and molecular compounds.
- Classify bonds as ionic, covalent, or polar based on electronegativity differences.
- Create Lewis structures for covalent compounds containing single, double, and triple bonds, including resonance structures and exceptions to the octet rule.
- Use covalent radii to calculate bond lengths.
- Explain the modern interpretation of resonance bonding.

- Calculate the formal charge on atoms in molecules and evaluate Lewis structures on the basis of formal charge.
- Describe the shapes of simple covalently bonded molecules using VSEPR theory.
- Use bond dipoles to predict molecular dipoles.
- Define dipole and compare the strengths of intermolecular forces based on dipole moments.
- Describe hybrid orbitals and use hybridization theory to explain the bond angles in compounds.
- Differentiate sigma and pi bonding, and saturated and unsaturated carbon compounds.
- Define, explain, and give examples of isomerism.
- Determine bond order and correlate bond order, bond energy, and bond length.

Some Useful Websites for Bonding:

<http://chemistry.armstrong.edu/P1/Bonding.html> notes and some problems on bonding

<https://www.wisc-online.com/learn/natural-science/chemistry/gch6904/the-solid-state> Types of bonds

<http://chemed.chem.purdue.edu/genchem/topicreview/bp/ch8/lewis.html#trial>

<http://antoine.frostburg.edu/chem/senese/101/compounds/faq/properties-ionic-vs-covalent.shtml>

<http://www.science.uwaterloo.ca/~cchieh/cact/c120/dotstruc.html> A good overview of Lewis structures, resonance, and formal charge

<http://www.chem.purdue.edu/gchelp/vsepr/example222.html> practice problems for VSEPR

http://www.chem.ox.ac.uk/vrchemistry/vsepr/intro/vsepr_splash.html includes interactive tutorial (at an advanced level) and problem set (you may need a plug-in)

<https://chemfiesta.org/2015/03/10/vsepr-theory/> (doesn't include the full range of geometries)

<http://www.mikeblaber.org/oldwine/chm1045/notes/Bonding/Resonan/Bond07.htm> Resonance structures

<http://www.shodor.org/unchem/basic/lewis/index.html#reson> Resonance structures

<http://dl.clackamas.edu/ch106-02/typesof.htm> Types of hybridization

<http://www.mhhe.com/physsci/chemistry/essentialchemistry/flash/hybrv18.swf> pretty pictures of hybrid orbitals

<http://chemed.chem.purdue.edu/genchem/topicreview/bp/ch8/hybrid.html> visualizing hybrid orbitals

<http://www.shf.ac.uk/chemistry/orbitron/> visualizing orbitals (uses Flash)

<http://www.wvnorton.com/college/chemistry/chemistry3/chemtours.aspx> Under chapters 8 and 9:

- Bonding Tutorial
- Lewis Structures tutorial
- Expanded Octets tutorial
- Partial Charges and Bond Dipoles tutorial
- VSEPR tutorial
- Hybridization tutorial

Shielding and Effective Nuclear Charge

http://employees.oneonta.edu/viningwj/sims/effective_nuclear_charge_s.html

<http://facultyfp.salisbury.edu/dfrieck/htdocs/212/rev/zeff/shielding.htm>

Metallic Bonding

<http://hyperphysics.phy-astr.gsu.edu/hbase/Solids/band.html> Introduces band theory

http://chemwiki.ucdavis.edu/Theoretical_Chemistry/Chemical_Bonding/General_Principles/Metallic_Bonding

http://www.rpi.edu/dept/phys/ScIT/InformationProcessing/semicond/sc_content/semi_30.html#

Intermolecular attractions:

<http://chemed.chem.purdue.edu/genchem/topicreview/bp/intermol/intermol.html>

<http://chemistry.bd.psu.edu/jircitano/IMforces.html>

<http://chemistry.elmhurst.edu/vchembook/160Aintermolec.html>

http://www.mhhe.com/physsci/chemistry/chang7/ssg/chap11_2sg.html

<http://www.ausetute.com.au/intermof.html>

http://www.chem.wisc.edu/deptfiles/genchem/netorial/rottosen/tutorial/modules/intermolecular_forces/index.htm

Interested in exploring bonding in more depth?

<http://www.science.uwaterloo.ca/~cchieh/cact/c120/mo.html> Molecular orbitals of hydrogen

<http://chemed.chem.purdue.edu/genchem/topicreview/bp/ch8/mo.php> Molecular orbital overview