NAME: **HONORS CHEMISTRY**

SECTION: Assignments: Chemical Bonding and IMF's

Assignment	Due Date
1. Study for quiz on periodic trends	Tuesday, 2/6
2. Work on Part I of "A Tale of 4 Electrons"	Wednesday, 2/7
3. §Handout: The properties of metals 4. Work on Part I of "A Tale of 4 Electrons"	Thursday, 2/8
5. §Watch webcast on Bond Length vs. Bond Strength and take notes 6. Work on Part I of "A Tale of 4 Electrons"	Friday, 2/9
7. Work on Part I of "A Tale of 4 Electrons" 8. §Finish problem set if not completed in class	Wednesday, 2/13
9. Study for quiz on Lewis structures 10. Work on Part I of "A Tale of 4 Electrons"	Thursday, 2/14
11. *Submit Part I of "A Tale of 4 Electrons" via Google Drive	Friday, 2/15
12. Finish planning part II of "A Tale of 4 Electrons"	Tuesday, 2/26
13. Go to http://www.wwnorton.com/college/chemistry/chemistry3/chemtours.aspx and complete the resonance tutorial (Ch. 8) 14. Work on Part II of "A Tale of 4 Electrons"	Wednesday, 2/27
15. Go to http://www.wwnorton.com/college/chemistry/chemistry3/chemtours.aspx and complete the Partial Charges and Bond Dipoles tutorial (Ch. 8) 16. Work on Part II of TO4E	Thursday, 2/28
17. Go to http://www.wwnorton.com/college/chemistry/chemistry3/chemtours.aspx and complete the hybridization tutorial (Ch. 9) 18. Work on Part II of "A Tale of 4 Electrons"	Friday, 3/1
19. Bring a substantially complete draft of TO4E part II to class for peer editing	Monday, 3/4
20. §Go to the online HW site and complete 10 problems of #68—submit in Google Classroom 21. Work on Part II of "A Tale of 4 Electrons"	Tuesday, 3/5
22. *Submit Part II of "A Tale of 4 Electrons" via Google Drive	Wednesday, 3/6
23. Go to http://www.wwnorton.com/college/chemistry/chemistry3/chemtours.aspx and complete the intermolecular forces tutorial (Ch. 10) 24. Study for quiz on VSEPR geometries	Thursday, 3/7
25. Work on Part III of "A Tale of 4 Electrons" 26. Plan Part III of TO4E	Friday, 3/8
27. Finish group model building minilab if not completed in class	Monday, 3/12
28. *Submit Part III of "A Tale of 4 Electrons" via Google Drive	Thursday, 3/14
29. *Submit Part IV of "A Tale of 4 Electrons" via Google Drive	Tuesday, 3/19

Dates to Remember: §may be checked or collected in class *will be checked on-line
In class work days Friday 2/15, Friday 3/1, Monday 3/4 (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://antoine.frostburg.edu/chem/senese/101/compounds/faq/properties-ionic-vs-covalent.shtml
http://chemed.chem.purdue.edu/genchem/topicreview/bp/ch8/lewis.html#trial
http://www.shodor.org/unchem/basic/lewis/index.html#reson Resonance structures
http://www.mikeblaber.org/oldwine/chm1045/notes/Bonding/Resonan/Bond07.htm Resonance structures

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://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.shef.ac.uk/chemistry/orbitron/ visualizing orbitals (uses Flash)
http://www.wwnorton.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
- Hybrization tutorial

Shielding and Effective Nuclear Charge
http://employees.oneonta.edu/viningwj/sims/effective_nuclear_charge_s.html (uses Flash)
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://chemed.chem.purdue.edu/genchem/topicreview/bp/ch8/mo.php Molecular orbital overview
https://www.ch.ic.ac.uk/vchemlib/course/mo_theory/main.html
http://butane.chem.uiuc.edu/pshapley/genchem1/L10/1.html