

Chemical Bonds and Reactions

Overview Sheet

Essential Questions

Why/how do atoms interact with each other?


How do atoms and their bonds determine the properties of compounds/molecules?

Vocabulary

chemical bond	valence	ionic bond	covalent bond
metallic bond	molecule	diatomic molecule	compound
chemical reaction	chemical equation	chemical formula	subscript
coefficient	reactants	products	Octet Rule
Lewis Structure	exothermic reaction	endothermic reaction	catalyst
chemical property	chemical change	physical property	physical change
Law of Conservation of Mass/Matter		Law of Conservation of Energy	

Objectives

- 1) Describe valence electrons and identify their significance when it comes to chemical bonding and reactions.
- 2) Describe the "tricks" to using the periodic table to determine the number of valence electrons.
- 3) Explain the Octet Rule.
- 4) Describe Lewis Structures (electron dot diagrams) and how they are used.
- 5) Distinguish between the different types of chemical bonds (ionic, covalent, metallic).
- 6) Describe the results of bonding - compounds & molecules.
- 7) Explain chemical reactions, what affects them, and the different types (exothermic & endothermic).
- 8) Differentiate between the physical and chemical properties of matter
- 9) Identify examples of physical and chemical changes
- 10) Identify chemical equations and their components.
- 11) Describe the laws that relate to chemical reactions - Law of Conservation of Mass/Matter & Law of Conservation of Energy.

More on back 

Helpful Websites

- http://en.wikipedia.org/wiki/Valence_electron (valence electrons)
- http://www.visionlearning.com/library/module_viewer.php?mid=52 (periodic table and valence electrons)
- <http://web.jjay.cuny.edu/~acarpi/NSC/4-pertab.htm> (periodic table and valence electrons)
- http://www2.wwnorton.com/college/chemistry/gilbert/tutorials/interface.swf?chapter=chapter_06&folder=lewis_structures (Lewis dot structures tutorial)
- <http://www.usetute.com.au/lewisstr.html> (Lewis dot structures)
- http://www2.wwnorton.com/college/chemistry/gilbert/tutorials/interface.swf?chapter=chapter_06&folder=bonding (chemical bonding tutorial)
- <http://www.school-for-champions.com/science/chembonding.htm> (chemical bonding overview)
- http://www.visionlearning.com/library/module_viewer.php?mid=55 (chemical bonding)
- <http://ippex.pppl.gov/interactive/matter/molecule.html> (interactive chemical bonding overview)
- http://www.chem4kids.com/files/atom_bonds.html (chemical bonding overview)
- <http://www.beyondbooks.com/psc92/3.asp> (three types of bonds)
- <http://web.jjay.cuny.edu/~acarpi/NSC/5-bonds.htm> (ionic and covalent bonds)
- <http://www.beyondbooks.com/psc92/3a.asp> (covalent bond)
- <http://www.beyondbooks.com/psc92/3b.asp> (ionic bond)
- http://ithacasciencezone.com/chemzone/lessons/03bonding/mleebonding/ionic_bonds.htm (ionic bond)
- http://en.wikipedia.org/wiki/Metallic_bond (metallic bond)
- <http://ithacasciencezone.com/chemzone/lessons/03bonding/mleebonding/metallicbonding.htm> (metallic bond)
- <http://library.thinkquest.org/15567/main.html> (covalent bond)
- http://ithacasciencezone.com/chemzone/lessons/03bonding/mleebonding/covalent_bonds.htm (covalent bond)
- <http://education.jlab.org/qa/compound.html> (compounds and molecules)
- http://www.visionlearning.com/library/module_viewer.php?mid=54&l=&c3= (chemical reactions)
- http://www.wisc-online.com/objects/index_tj.asp?objid=AP13004 (four types of chemical reactions)
- <http://www.marymount.k12.ny.us/marynet/stwbwk05/05hchemistry.html> (chemical reaction animations)
- http://virtual.yosemite.cc.ca.us/lmaki/Chem150-99/chapters/chapter1/lessons/phys_chem/phy_c_1.htm (interactive lesson - physical and chemical changes)
- <http://cw.x.prenhall.com/petrucci/chapter1/medialib/tutor/f20/0103.html> (chemical and physical change animation)
- http://www.bbc.co.uk/schools/scienceclips/ages/10_11/rev_irrev_changes.shtml (reversible and irreversible changes)
- <http://www.fordhamprep.org/gcurran/sho/sho/lessons/lesson15.htm> (physical and chemical changes)
- <http://www.mcwn.org/chemist/pcchange.html> (physical and chemical changes)
- <http://www.quia.com/rr/38085.html> (review game)
- <http://www.mhhe.com/physsci/chemistry/essentialchemistry/flash/activa2.swf> (exothermic and endothermic tutorial)
- <http://dbhs.wvusd.k12.ca.us/webdocs/Equations/Meaning-of-Equation.html> (chemical equations)
- <http://dbhs.wvusd.k12.ca.us/webdocs/Equations/Balance-Equation.html> (balancing equations)
- <http://www.wfu.edu/%7EYlwong/balanceeq/balanceq.html> (balancing equations tutorial)
- <http://www.usetute.com.au/balcheme.html> (balancing equations)
- <http://funbasedlearning.com/chemistry/chembalancer/default.htm> (balancing equations)
- <http://www.quia.com/jq/10777.html> (quiz)
- http://www.nisd.net/secww/science/Science-FinalProjects/Bonding/bonding_quiz.htm (quiz)
- http://glencoe.mcgraw-hill.com/sites/0078617677/student_view0/chapter1/chapter_review_quizzes-eng.html#quest2 (quiz)
- <http://www.chemistrycoach.com/tutorials-1.htm> (tons of links)