Name_____

Chapter 6: Chemical Bonds

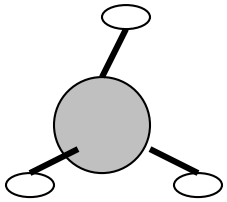
6:1 and 6.2 Read pgs. 158- 169.

I. Chemical Bond = The attractive force that holds atoms or ions together.

II. Chemical Structure = The arrangement of bonded atoms or ions within a substance.

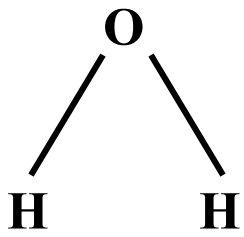
Examples of Models:

Ball and Stick Model



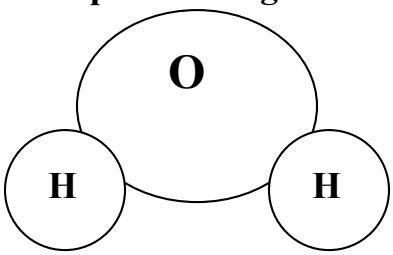
NH_3

Structural Formulas



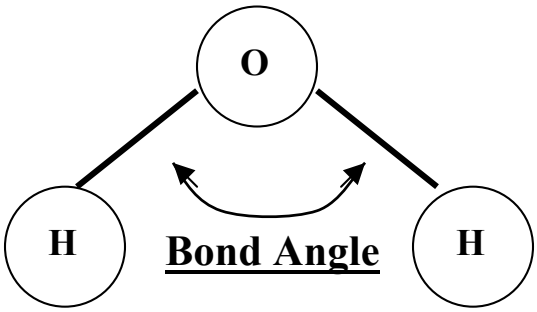
H_2O

Space-Filling models

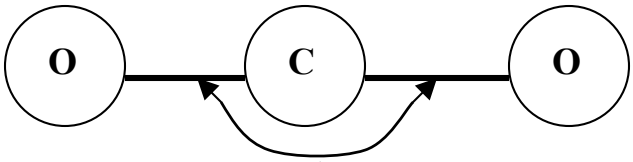


H_2O

III. Bond angles: The angles formed by two bonds to the same atom.



Bond Angle



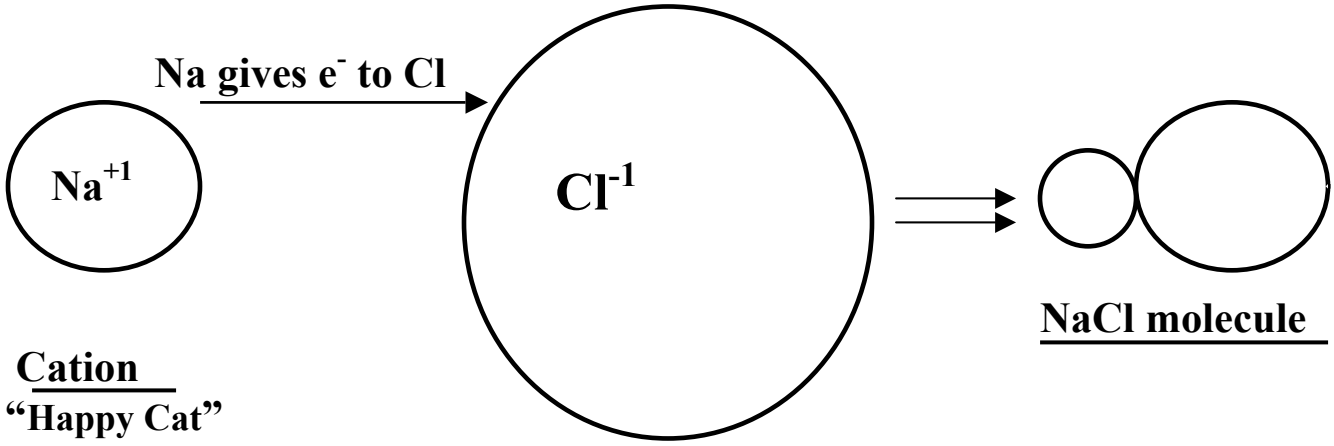
Bond Angle

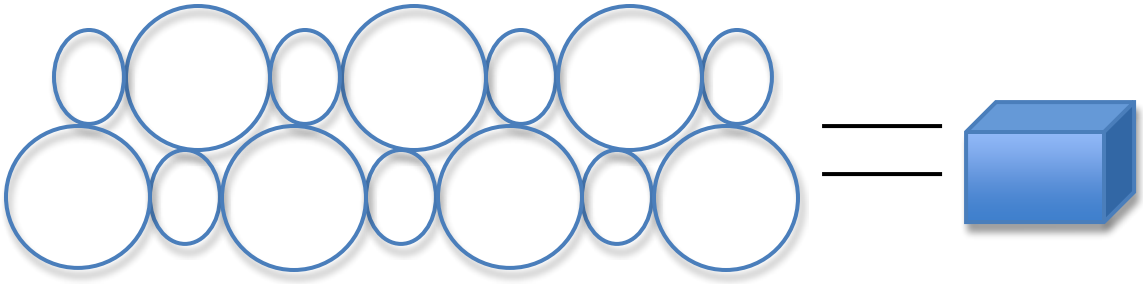
IV. Atoms join to form bonds so that each atom has a full outer energy level.

A. Full is 8 valence electrons
B. Except H and He – with 2 electrons.

V. Ionic Bonds: Are for Metals and Nonmetals.

A. Metals lose valence electrons becoming cations.
B. Nonmetals gain valence electrons becoming anions.
C. Ionic bonds are STRONGER than covalent bonds
D. Can dissolve in water
E. Can conduct electricity when dissolved in water.
F. Solid at room temperature.

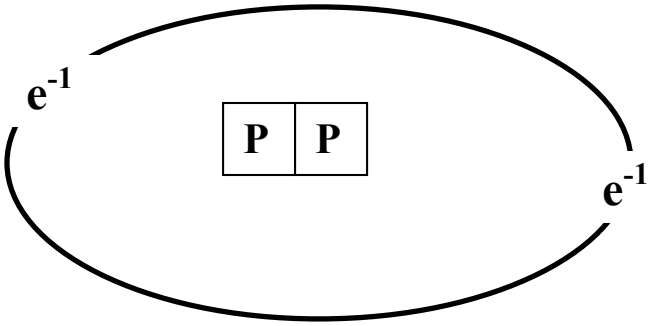




VI. Covalent Bonds: nonmetals bond by sharing electrons.

a. These form a molecular structure. (i.e. Hydrogen gas)

H_2



Two protons (nucleus) sharing the electrons.

VII. Two Types of Covalent Bonds

Polar Covalent Bonds:

A. Don't share electrons equally

b. Dissolve in water

c. Does NOT conduct electricity when dissolved in water.

d. Usually a liquid or gas at room temperature.

e. Molecular shape is bent.

Nonpolar Covalent Bonds

A. Share electrons equally.

B. Solid or liquid forms doesn't dissolve in water

C. Molecular shape is straight lines or has symmetry.

VIII. Metallic Bonds: only metals bonding.

A. The metals lose their valence electrons becoming cations.

B. The electrons are "delocalized" moving into the "sea of electrons".

a. The electrons don't belong to a particular atom.

b. This structure give metals their properties