

Lecture Outline 9/17

Review: Ionic Compounds

Nomenclature (Naming Rules)

Cations

Formed from metals? Cation is named with element name and ends in the word *ion*.

Example: Ca^{2+} : Calcium Ion

Metal can have multiple charges? Indicate with Roman numerals

Example: Cu^{2+} : Copper (II) ion

Nonmetal? Memorize names. They always end in *ium*

Memorize table 2.4

Anions

Monatomic? Ends in *-ide*

Example: H^- : Hydride

Simple polyatomic? Also ends in *-ide*

Example: OH^- : hydroxide

Oxyanions? Most common oxyanion ends in *-ate*. You will need to memorize which is the most common. Remove one Oxygen, the oxyanion ends in *-ite*. Remove another oxygen, the oxyanion starts with *hypo-* and ends in *-ite*. Add one oxygen to the most common oxyanion and it starts with *per-* and ends in *-ate*.

Example: ClO_4^- : perchlorate

ClO_3^- : chlorate

ClO_2^- : chlorite

ClO^- : hypochlorite

Adding an H^+ (a proton!) to an oxyanion? (Is it still an ion?): Add the word *hydrogen* or *dihydrogen* (as appropriate) to the beginning of the name.

Example: HCO_3^- hydrogen carbonate ion

Memorize table 2.5 and the rules laid out in figure 2.26

Ionic Compounds: Cation comes first, anion comes second.

Example: NaOH : sodium hydroxide

Acids: Adding enough H^+ To *neutralize* the ion? Base the name of the acid on the name of the anion.

Anion ends in *-ide*? Acid is *hydro_____ic acid*

Anion ends in *-ate*? Acid is *_____ic acid*

Anion ends in *-ite*? Acid is *_____ous acid*

Memorize naming algorithm diagrammed in figure 2.8

Binary molecular compounds

NOT IONIC!

1. Element from the farthest **left** on the periodic table is written first. *EXCEPTION:*

Oxygen goes last

2. Same group? Write the **bottom** one first.

3. The second element ends in **-ide**.

4. Greek prefixes (*di-*, *tri-*, *tetra-*, *penta-*, etc.) indicate number. *EXCEPTION: don't start a name with -mon*

Organic Compounds

Hydrocarbons (made of H and C)

Methane: CH₄

Ethane: C₂H₆

Propane: C₃H₈

Functional groups: group of atoms responsible for the chemical characteristics

Example: Alcohol (-OH) group

Chapter 3:

When balancing a chemical reaction, only adjust the stoichiometric coefficient and not the molecular subscripts.

Example: $2\text{H}_2\text{O}_2 (\text{l}) \rightarrow 2\text{H}_2\text{O} (\text{l}) + \text{O}_2 (\text{g})$