Nomenclature: Binary Compounds

Learning goal
To be able to name and write chemical formulas for ionic compounds (including multivalent metals)

1. Ionic Compounds - I

- Metal + Non-metal
  (+) (-)

- *Naming:*
  metal name + non-metal with "ide" ending
- *Writing chemical formula:*
  use crossover method

Note - write chemical formula in reduced form

Examples:

a) $BaCl_2$ Barium - Chloride

b) magnesium oxide MgO

Let's try a Few:

Write the chemical formula that would result from the following atoms:

- Lithium + Fluorine LiF
- Magnesium + Chlorine $MgCl_2$
- Aluminum + Oxygen $Al_2 O_3$
- Aluminum + Nitrogen Al N

Let's try a Few:

Write the name of the following compounds

- SrCl Strontium - Chloride
- K_2O Potassium - Oxide
- $AlBr_3$ Aluminum - Bromide
- AlN Aluminum - Nitride

2. Ionic Compounds – II

(Multivalent Metals)

- Transition metal (multiple charges) + Non-metal
  (+) (-)

- *Naming:*
  metal name with **roman numeral** + non-metal with "ide" ending

indicates the charge of the metal

- *Writing chemical formula:*
  use crossover method

Note - write chemical formula in reduced form

Examples:

a) Fe_2O_3 Iron(III) Oxide

b) Tin (IV) chloride $SnCl_4$

Let's Try a Few

Write the formula and name for the compound formed from the following atoms:

- Copper (I) and Fluorine
  - CuF
  - copper(I)-fluoride
- Iron (III) and Nitrogen
  - FeN
  - Iron(III) Nitride
- Manganese (II) and oxygen
  - MnO
  - Manganese(II) Oxide

Let's Try a Few

Write the name of the following compounds:

- CoI_2 Cobalt(II) Iodine
- Hg_3N Mercury(I) Nitride
- AuN Gold(III) Nitride
- PbO_2 Lead(IV) Oxide

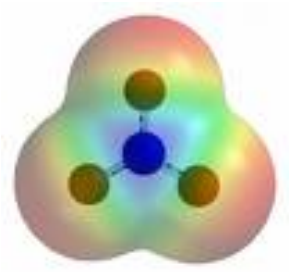
Nomenclature: Polyatomic and Ternary Ionic Compounds

Learning goal
To be able to name and write chemical formulas for polyatomic and ternary ionic compounds

What are Polyatomic Ions?

"Poly" = many

- **Polyatomic Ion**
  - a group of atoms covalently bonded together with an overall net charge



- Most of the polyatomic ions are called **oxyanions**
  - contain oxygen bonded to another element
  - have a net (-) charge
  - have the suffix "ate"

Common oxyanions:

NO_3^-	- nitrate	ClO_3^-	- chlorate
CO_3^{-2}	- carbonate	SO_4^{-2}	- sulfate
PO_4^{-3}	- phosphate	OH^-	- hydroxide

- Common (+) polyatomic ions:
  NH_4^+ - ammonium

3. Ternary Ionic Compounds

- Metal + oxyanion

- *Naming:*

  metal name (with roman numeral, if applicable) + oxyanion name

- *Writing chemical formula:*

  use crossover method

  Note - write chemical formula in reduced form

Examples:

a) K_2CO_3 Potassium Chlorate

b) lead (II) nitrate $Pb(II)(NO_3)_2$

c) Cu_3PO_4 Copper(I) Phosphate

d) aluminum sulfate $Al_2(SO_4)_3$

Homework

- Worksheet X 2
  - 1st, polyatomic ionic compounds activity
  - http://www.youtube.com/watch?v=Jp5yblKmQQI
  - http://www.youtube.com/watch?v=J91ux1E0eTs&feature=related