## Compounds

### Ionic (Cation-Anion)

Rule:
Name of cation + name of anion (word ion dropped)

Examples:
NaCl    sodium chloride
$MgCl_2$    magnesium chloride
$Fe_3N_2$    iron(II) nitride
$Na_2CO_3$  sodium carbonate
$CaH_2$     calcium hydride
$Ca(NO_3)_2$  calcium nitrate

Comment:
The name does not indicate the numbers of cations and anions because there is only one possibility for the ions to combine to form a compound

### Covalent (Nonmetals Only)

Rule:
a. Less electronegative element first (exceptions: when one of the elements is hydrogen).
b. Number of atoms of each element is specified by Greek prefixes.
c. Prefix mono at the beginning is dropped.

Prefixes:
1= mono        6= hexa
2= di          7= hepta
3= tri         8= octa
4=tetra        9=nona
5=penta        10= deca

Examples:
$N_2O_4$    dinitrogen tetroxide
CO       carbon monoxide
$CO_2$     Carbon dioxide
$N_2O$      dinitrogen monoxide

Comment:
Tetraoxide becomes tetroxide, monoxide becomes monoxide, etc. H-containing compounds do not follow a rule concerning the order in which the elements are written and should be memorized ($H_2O$, $NH_3$, etc.)

### Compounds Containing Hydrogen

#### H-Nonmetal

Rule 1:
Without the presence of $H_2O$:
Hydrogen _ide

Examples:
HCl   hydrogen chloride
HF    hydrogen fluoride
$H_2S$   hydrogen sulfide

Rule 2
When dissolved in $H_2O$:
Hydro_ic acid

Examples:
HCl(aq)  hydrochloric acid
HF(aq)   hydrofluoric acid
$H_2S$(aq)  hydrosulfuric acid

Comment:
a. These H-containing compounds are named as if they were ionic compounds.
b. The (aq) in the formula of the acids is often omitted when it is obvious from the context that they are acids.

#### H-Oxyanion

Rule 1:
Without $H_2O$:
Cation + anion
Hydrogen hypo_ite
Hydrogen _ite
Hydrogen _ate
Hydrogen per_ate

Rule 2:
When dissolved in $H_2O$:
Hypo_ous acid
_ous acid
_ic acid
per_ic acid

Examples:
HClO  hypochlorous acid
$HClO_2$  chlorous acid
$HClO_3$  chloric acid
$HClO_4$  perchloric acid
$HNO_2$  nitrous acid
$HNO_3$  nitric acid
$H_2SO_3$   sulfurous acid
$H_2SO_4$  sulfuric acid
$H_3PO_4$  phosporic acid