

***Naming Molecular and Ionic Compounds, Part I:  
Simple Compounds***

I. Molecular Compounds

General form: (First element) + (Second element stem)-ide

Element	Stem	Name as second element
Oxygen	ox-	oxide
Sulfur	sulf-	sulfide
Nitrogen	nitr-	nitride
Phosphorous	phosph-	phosphide
Fluorine	fluor-	fluoride
Chlorine	chlor-	chloride
Bromine	brom-	bromide
Iodine	iod-	iodide

Greek prefixes are used to indicate the number of atoms of an element. The prefix mono is seldom used.

Greek Prefixes\*

mon(o) = 1

di = 2

tri = 3

tetr(a) = 4

pent(a) = 5

hex(a) = 6

hept(a) = 7

oct(a) = 8

non(a) = 9

dec(a) = 10

***\*Important note: When the element begins with a vowel, the letter in parentheses is dropped. Exceptions: di- and tri-.***

II. Ionic Compounds

General form: (First element) + (Second element stem)-ide

The rules for ionic compounds essentially follow the same rules as molecular compounds, with the following exceptions.

1. Metal Hydrides: The names start with the metal cation and end with hydride.  
Example:  $\text{CaH}_2$  – Calcium hydride
2. Nonmetal atoms and hydrogen: Typically follow the rules for molecular and inorganic nomenclature.

Example: H<sub>2</sub>S – Hydrogen sulfide

3. There are a number of polyatomic ions (both cations and anions) you need to know. See page 62, Table 2.5 of Brady *et al.* for these ions.

4. It is not necessary to use Greek prefixes!

5. Transition metals used the Stock system of naming. Roman numerals are used to represent the charge on the atoms:

Examples

Metal Ion	Stock System Designation	Sample Compound	Stock System Name
Fe <sup>2+</sup>	iron(II)	FeCl <sub>2</sub>	iron(II) chloride
Fe <sup>3+</sup>	iron(III)	FeCl <sub>3</sub>	iron(III) chloride
Cr <sup>2+</sup>	chromium(II)	CrS	chromium(II) sulfide
Cr <sup>3+</sup>	chromium(III)	Cr <sub>2</sub> S <sub>3</sub>	chromium(III) sulfide
Cu <sup>+</sup>	copper(I)	Cu <sub>2</sub> O	copper(I) oxide
Cu <sup>2+</sup>	copper(II)	CuO	copper(II) oxide