CHEMICAL NOMENCLATURE

I. Binary Ionic Compounds

Name: List the cation and the anion last with the -ide ending

Formula: Must be electrically neutral

Must be in lowest terms

Practice Problems

Write names and formulas for the binary ionic compounds composed of the following pairs of elements:

1. bromine and magnesium
2. aluminum and chlorine
3. nitrogen and strontium
4. Calcium and oxygen
5. aluminum and sulfur

1. Mg^{2+} Br^{-}

magnesium bromide

EACH 2+ 1−

$MgBr_2$ ✓

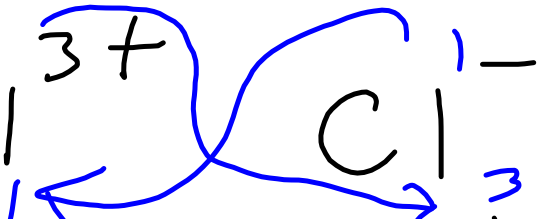
TOTAL 2+ 2− → ∅ neutral

EACH 2+ 1−

Mg_2Br_4 ✗ NOT IN LOWEST TERMS

TOTAL 4+ 4− → ∅ neutral

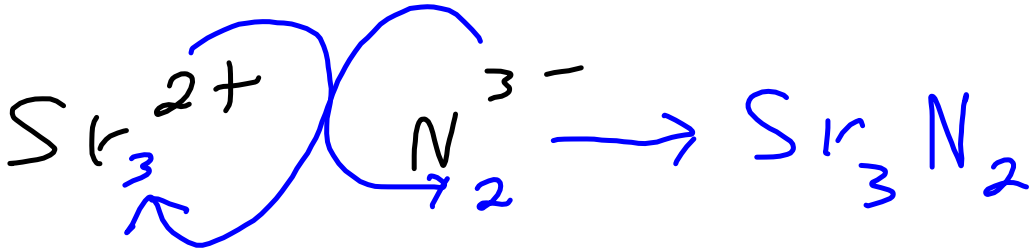
2. Al^{3+} Cl^{1-}



aluminum chloride

$AlCl_3$

3. N^{3-} Sr^{2+}



strontium nitride

4. Ca^{2+} O^{2-} → Ca_2O_2

$_2$ $_2$

Calcium oxide

REDUCE

CaO

5. Al^{3+} S^{2-} → Al_2S_3

aluminum sulfide

"sodium ion"

Na^+

"lead ion"

Pb^{4+} or Pb^{2+}

Two ways to avoid the ambiguity

1. Stock system - A Roman number indicates the charge on the metal
2. -ic/-ous system where the suffix -ic indicates the higher charge and the suffix -ous indicates the lower charge.

Pb^{4+} plumbum

lead(IV) ion

plumbic ion

Pb^{2+} lead(II) ion

plumbous ion

lead chloride ?

lead(IV) chloride Pb^{4+} Cl^-

plumbic chloride $PbCl_4$

lead(II) chloride Pb^{2+} Cl^-

plumbous chloride $PbCl_2$

Common Charges of some Transition Metal Ions

Cr^{3+} Chromium(III) ion
Chromic ion

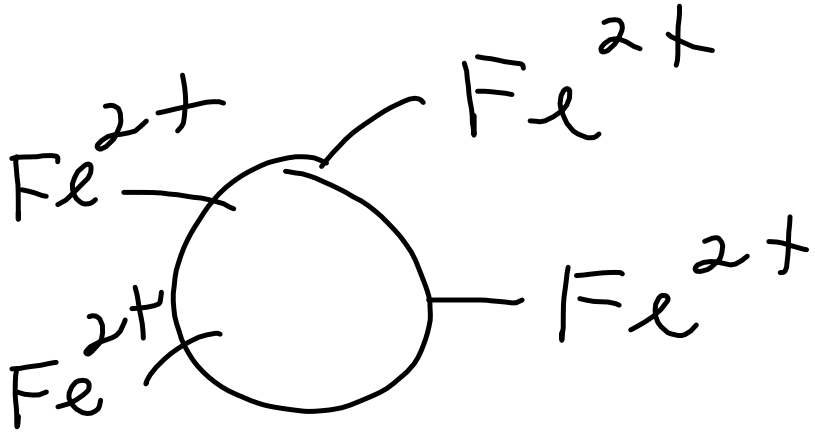
Cr^{2+} Chromium(II) ion
Chromous ion

Mn^{3+}

Mn^{2+}

Fe^{3+}

Fe^{2+}



Co^{3+}

Co^{2+}

Cu^{2+}

Cu^{+}

Au^{3+}

Au^{+}