Naming of chemical compounds

Ion: atom or group of atoms that has a net charge

Cations: positively charged ion
e.g. Ba^{2+}, NH_4^+

Anion: negatively charged ion
e.g. Cl^-, CO_3^{2-}

Hydrogen: H^+ (common) or H^- (hydride)

Alkali Metals: lose $1e^-$ → form +1 ions

Group 2A: lose $2e^-$ to form 2+ ions

Aluminum: lose $3e^-$ to form Al^{3+}

Group 7A: gains $1e^-$ to form 1- ions

Group 6A: gains $2e^-$ to form 2- ions

N and P: gain $3e^-$ to form N^{3-}, P^{3-}

Type I metals:

one kind of charge

- alkali metals, alkaline earth metals

aluminum, silver, zinc, cadmium:

Naming: name of element

+ "ion"

Type II metals:

more than one kind of charged ion:

Example Fe^{2+} / Fe^{3+}

Naming: name of element + charge as roman numbes + "ion"

Fe^{2+} : iron II ion

Fe^{3+} : iron III ion

Mono Atomic anions

suffix "ide" is substituted for the ending of the name

Cl^- : ~~chlorine~~ chloride

Naming of binary compounds

Type I :

$NaCl$: sodium chloride

MgO : magnesium oxide

Al_2O_3 : aluminum oxide

Type II :

$FeCl_2$: iron II chloride

$FeCl_3$: iron III chloride

Naming of binary covalent compounds

- between two non-metals
- the element farther left in the periodic table is written first

Ex.: SF_6

- name of first element remains unchanged
- suffixe "ide" replaces the ending of second element
- use prefixes to indicate the number of each kind; mono is omitted for first element

  SF_6 : sulfur hexafluoride

CO : carbon monoxide

Polyatomic Ions

- ionic : follow same rules as with binary compounds
- metal / cation written first
- if Type II metal, show charge in parantheses as roman numeral
- polyatomic ion is then named or written

Anion	Acid
___ ide	hydro___ ic acid
chloride, Cl^-	HCl : hydrochloric acid
cyanide, CN^-	HCN : hydrocyanic acid
___ ate	___ ic acid
chlorate, ClO_3^-	chloric acid, $HClO_3$
perchlorate, ClO_4^-	perchloric acid, $HClO_4$
sulfate, SO_4^{2-}	sulfuric acid H_2SO_4
___ ite	___ ous acid
chlorite, ClO_2^-	chlorous acid $HClO_2$
hypochlorite, ClO^-	hypochlorous acid $HClO$
sulfite, SO_3^{2-}	sulfurous acid H_2SO_3