CH105 SI
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Naming Covalent Compounds

H_2O CO_2
SiO_4 XeF_6
CF_4 P_2Cl_3

Polyatomic Ions

NH_4^+ ClO_4^-
NO_3^- HCO_3^-
SO_4^{2-} PO_4^{3-}

Homo and heteroatomic Molecules

Diffentiate between homo- and heteroatomic molecules and provide an example of each.

Electron Dot Structures

1) Place least electronegative atom (except H) as the central atom.
2) Count the total number of e^- in the compound
3) Assign single bonds to any atoms that require one pair of e^- to have an octet.
4) If there are not enough electrons, start forming multiple bonds.
5) Check that all atoms have octets

NH_3 CO_2

H_2O NH_4^+

CF_4 N_2

Exceptions to the Octet Rule

B, Al can have 6 e^-

Be can have 4e^-

Any element in the 3rd row or below can expand its octet (10e^- or greater)

BeH_2 BF_3

$AlCl_3$ PCl_5

XeF_6

Distinguishing Between Ionic and Covalent Compounds

- Ionic compounds have large electronegativity differences (often a metal + a nonmetal)
- Covalent compounds have small electronegativity differences (often two nonmetals)
- Homoatomic molecules are always covalent.

Identify the following as either ionic or covalent. Indicate bond polarity for covalent compounds.

$PbCl_2$ CBr_4

SO_2 KNO_3

CO F_2