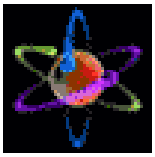


Ionic & Covalent Bonding

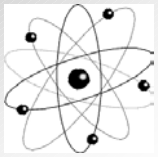
Bohr Models &
Lewis Dot Structures

The Goal

All atoms want 8 electrons in their outer shell to make them happy

Ionic Bonding

Bohr Models



- Ionic bonding occurs between charged particles.
- These may be atoms or groups of atoms.
- the particles must have lost or gained electrons.

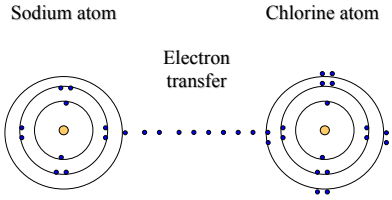
- Electrons have a negative charge, so a particle that gains electrons gains a negative charge.
- Equally, a particle that loses electrons must be left with a positive charge (assuming it started with no charge).

Bonding

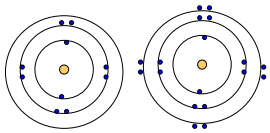
- Since opposite charges attract, the particles in an ionic compound are held together by this attraction.

Ionic Bonding

in salt



Sodium Chloride



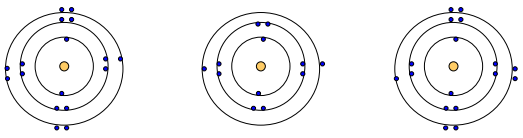
\+ -

Positive and negative ions attract

Ionic Bonding

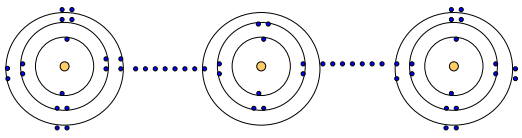
in magnesium chloride

Chlorine Magnesium Chlorine



2,8,7 2,8,2 2,8,7

Chloride Magnesium Chloride



\- **2+** -

2,8,8 2,8 2,8,8

Cations & Anions

+ and -

Ions

- Cation
  - –Positively charged ion
- Anion
  - –Negatively charged ion

Ionic Charge

Number of protons	12
- number of electrons	10
Charge of ion	+2

- Metal atoms tend to lose electrons
- Non metals tend to gain electrons

Polyatomic Ions

- an ion consisting of two or more atoms chemically bonded together and carrying a net electric charge

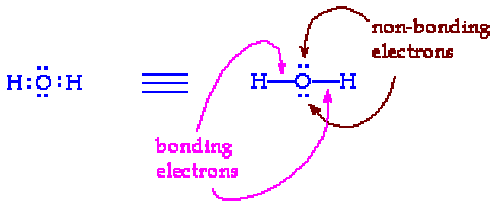
Common Cations of the *Transition Elements*

- Cr^{3+}
- Mn^{2+}
- Fe^{2+}
- Fe^{3+}
- Co^{2+}
- Ni^{2+}
- Cu^{2+}
- Zn^{2+}
- Ag^{+}
- Cd^{2+}
- Hg^{2+}

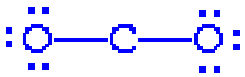
Covalent Bonding

- Sharing of electrons

Water



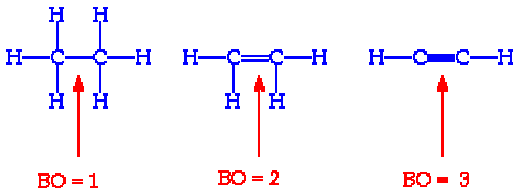
CO_2



Where are the bonding and

non bonding electrons?

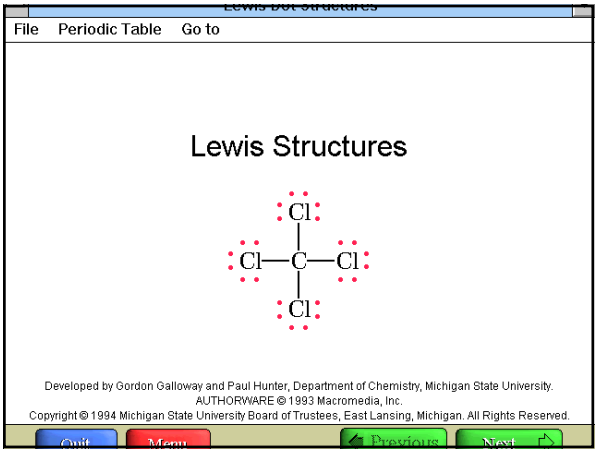
Bond Order and Bond Length

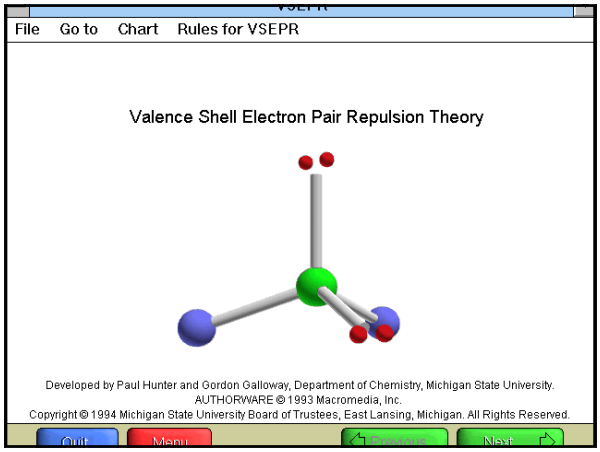


Lewis Dot Structures

Site

Site 2 (flash)




File
Go to
Chart
Rules for VSEPR
Valence Shell Electron Pair Repulsion Theory
Developed by Paul Hunter and Gordon Galloway, Department of Chemistry, Michigan State University.
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