

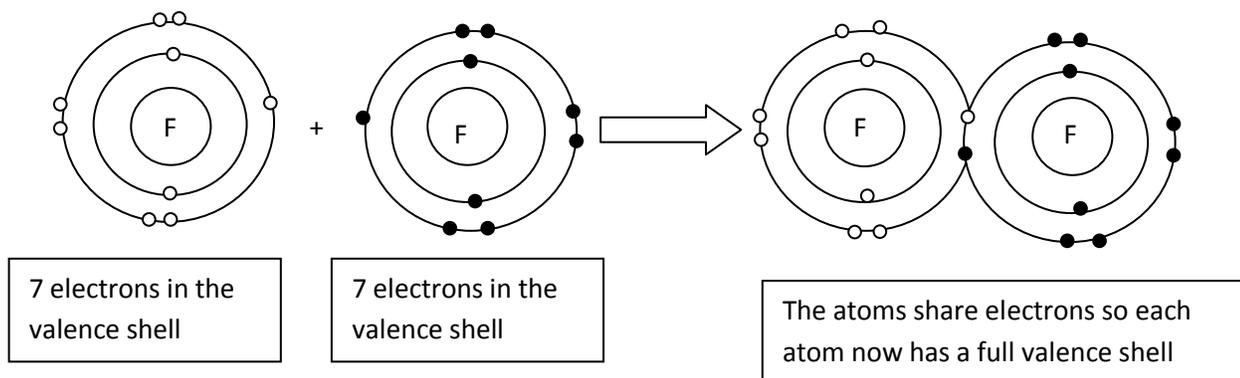
Compounds

Chapter 3.1 (p 72-75)

- Compounds are a pure substance made of two or more kinds of atoms in fixed proportions.
- They are represented by a chemical formula
 - e.g. water is H_2O because there are two hydrogen atoms and 1 oxygen atom in one molecule of water
- Chemical bonds hold them together
- They are either **covalent** or **ionic**

Covalent Compounds

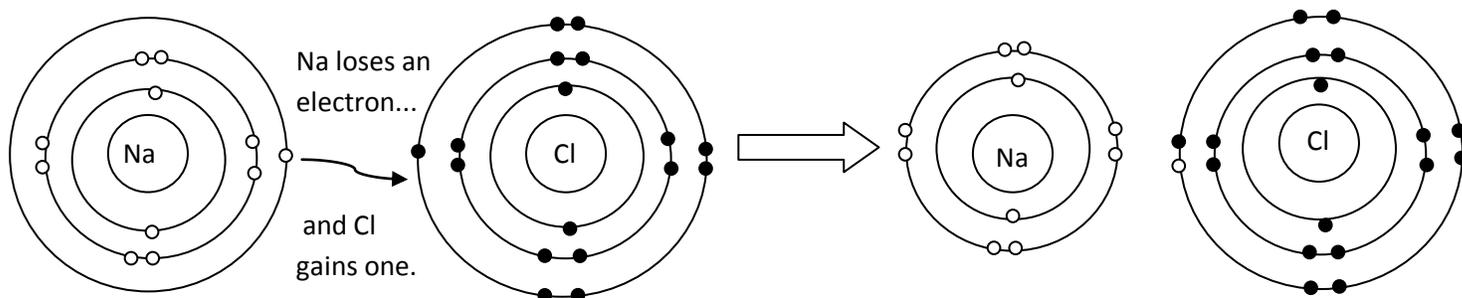
- Atoms combine by sharing electrons to form molecules
 - Molecules: a group of atoms held together by sharing one or more pairs of electrons



- Examples of covalent compounds include:
 - Water H_2O
 - Carbon dioxide CO_2
 - Methane CH_4
 - Table sugar $\text{C}_{12}\text{H}_{22}\text{O}_{11}$
- Covalent compounds are formed from non-metals only
- They do NOT conduct electricity
- They may be a solid, liquid or gas at room temperature

Ionic Compounds

- Atoms gain or lose electrons to form ions
 - Ions are atoms which are now “charged” - they will be negatively charged if they have gained electrons or positively charged if they have lost electrons



When the atoms are neutral, Na has 1 electron in its valence shell and Cl has 7 electrons.

Now both atoms have full valence shells.

- Oppositely charged ions attract each other and form a crystal
 - all the positive ions attract **all** the negative ions in the same crystal
- Ionic compounds are formed from non-metals and metals
- All are solid at room temperature and have high melting and boiling points
- Will conduct electricity when melted or dissolved in water
- Also called “salts”
- Examples include:
 - Sodium chloride NaCl
 - Calcium bromide CaBr₂
 - Calcium carbonate CaCO₃
 - Sodium hydroxide NaOH

