

Ionic Bonds

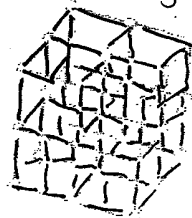
In case where one or more atoms lose electrons and other atoms gain them in order to produce a noble gas electron configuration, the bond is called an ionic bond.

Some atoms, such as metals tend to (19.) lose electrons to make the outside ring or rings of electrons more stable and other atoms tend to gain electrons to complete the outside ring. An (20.) ION is a charged particle. Electrons are negative. The negative charge of the electrons can be offset by the positive charge of the protons. When an atom loses electrons it becomes a (21.) positive ion because the number of protons exceeds the number of electrons. Nonmetal ions and most of the polyatomic ions have a negative charge. The nonmetal ions tend to (22.) gain electrons to fill out the outer shell. When the number of electrons exceeds the number of protons, the ion is negative. The attraction between a positive ion and a negative ion is an ionic bond. Any positive ion will bond with any (23.) Negative ion. They are not fussy. An ionic compound is a group of atoms attached by an ionic bond that is a major unifying portion of the compound. A positive ion, whether it is a single atom or a group of atoms all with the same charge, is called a

(24.) Cation. A negative ion is called an (25.) ANION. The name of an ionic compound is the name of the positive ion (cation) first and the negative (anion) ion second.

The names of the ions of nonmetal elements (anions) develop an -ide on the end of the name of the element. For instance, fluorine ion is fluoride, oxygen ion is (26.) oxide, and iodine ion is (27.) iodide. There are a number of elements, usually the (28.) transition metals that having more than one valence, that have a name for each ion, for instance ferric ion is an iron ion with a positive three charge. Ferrous ion is an iron ion with a charge of plus two. There are some ion which are called polyatomic ions. These are covalently bonded groupings that act all together as ions. Examples of polyatomic ions are phosphate, cyanide, ammonium, and hydroxide.

Below is a diagram of a sodium chloride crystal. Note how the ions are arranged in a regular pattern. Also note that there is a line indicating the attraction between each of the ions in each of the molecules. This attraction between molecules allows for the ionic compound to have a (29.) High melting point. Properties of ionic compounds include that they are (30.) solids at room temperature, will (31.) conduct electricity when melted or dissolved, and will not conduct electricity when in the (32.) crystalline form.



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