Chemistry and types of bonding

Science, Chemistry

Ionic compounds are soluble in water because water being a polar molecule attracts these charged ions forcing them to leave the lattice. When dissolved or molten state these ions are free to move and can conduct electricity. (Whitten et al 2007).

Covalent Bonding:

Covalent bonds are formed between nonmetals. Unlike ionic bonding, covalent bonds between atoms are formed by sharing of electrons. Again, the purpose is to complete the outer electron shell. Depending on the number of paired electrons shared by atoms there can be up to three (triple) covalent bonds. But these bonds are not as strong as ionic bonds and most of the molecular substances are either gases or liquids at room temperature with low melting or boiling point. If in the solid state all molecular substances form a lattice. As atoms in these structures have no charge they cannot conduct electricity even in the melted state. The bonds formed by electron sharing may not be very strong but if arranged in proper order the overall structure can be extremely hard. Diamond and silica are examples of such giant covalent structures. (Whitten et al 2007).

The following table summarizes the difference in properties of ionic and covalent bonding.