

IGCSE Chemistry (9-1) Specification 1(g)

(g) Covalent bonding

Students should:

1.44 know that a covalent bond is formed between atoms by the sharing of a pair of electrons

1.45 understand covalent bonds in terms of electrostatic attractions

1.46 understand how to use dot-and-cross diagrams to represent covalent bonds in:

- diatomic molecules, including hydrogen, oxygen, nitrogen, halogens and hydrogen halides
- inorganic molecules including water, ammonia and carbon dioxide
- organic molecules containing up to two carbon atoms, including methane, ethane, ethene and those containing halogen atoms

1.47 explain why substances with a simple molecular structures are gases or liquids, or solids with low melting and boiling points the term intermolecular forces of attraction can be used to represent all forces between molecules

1.48 explain why the melting and boiling points of substances with simple molecular structures increase, in general, with increasing relative molecular mass

1.49 explain why substances with giant covalent structures are solids with high melting and boiling points

1.50 explain how the structures of diamond, graphite and C₆₀ fullerene influence their physical properties, including electrical conductivity and hardness

1.51 know that covalent compounds do not usually conduct electricity