

Bonding in Carbon - Covalent Bonds

Chapter 4: Carbon and its Compounds · Topic 1

Key Concept

Carbon compounds are generally poor conductors of electricity (since covalent compounds lack free ions or electrons to carry charge) and typically have low melting and boiling points compared to ionic compounds. Carbon can form single, double, or triple covalent bonds, and its tetravalency (ability to form 4 bonds) combined with catenation allows for straight chains, branched chains, and ring structures — the foundation of organic chemistry, which studies the vast diversity of carbon-based compounds essential to all living organisms.

Quick Revision Notes

- Carbon forms covalent bonds by sharing electrons, due to having 4 valence electrons.
- Catenation: carbon's ability to bond with itself, forming chains and rings.
- Carbon compounds are generally poor electrical conductors with low melting/boiling points.
- Tetravalency + catenation allow carbon to form millions of diverse compounds.

Practice Questions

- 1 Explain what is meant by carbon's property of catenation.
- 2 Why does carbon form covalent bonds rather than ionic bonds?
- 3 List two general properties of carbon compounds related to their bonding.