

5 Structure and Bonding III

Allotropes of carbon

1. Graphite and diamond are different forms of carbon and are covalent giant molecular substances.
2. Giant covalent substances are held together by many strong covalent bonds in a lattice structure.
3. Giant covalent substances have high melting points because a lot of energy is needed to break the many strong covalent bonds
4. Graphite is made of layers of carbon atoms arranged in a hexagonal pattern.
5. Graphite has weak attractions between layers so the layers can slide over each other.
6. Graphite can be used as a lubricant as the layers can slide over each other
7. Graphite conducts electricity as there are delocalised electrons that can move between the layers.
8. Graphite can be used to make electrodes as it conducts electricity.
9. Diamond is very hard as the rigid structure is held together by strong covalent bonds.
10. Diamond can be used as drill bits as it is so hard.
11. C₆₀ is a fullerene. It has a simple molecular structure.
12. Polymers consist of large molecules containing chains of carbon atoms