2. Covalent Network Solids

Definition 

- Covalent network solids are held together by covalent bonds in a large network.
- They are different from molecular solids because atoms or molecules are covalently bonded to each other, not held together by intermolecular forces.
- Diamond and graphite are examples of covalent network solids made up of a network of carbon atoms:

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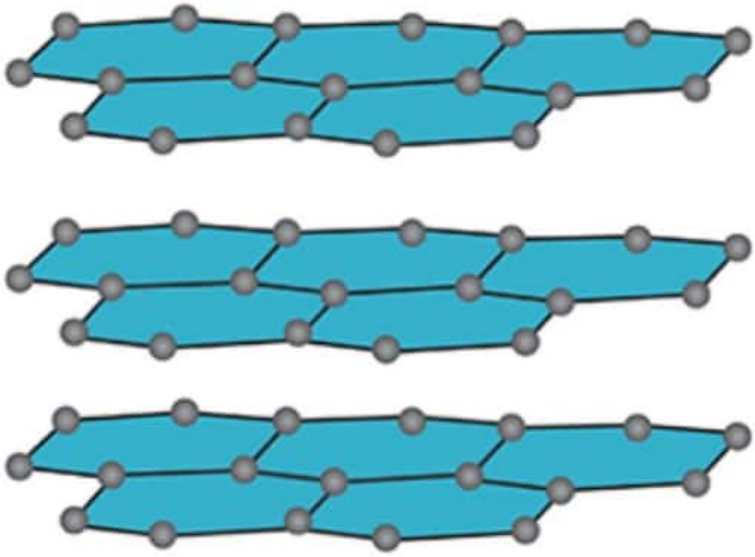
Diamond



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Properties

- They are usually hard and brittle.
- Covalent bonds are very strong, so covalent network solids typically have the highest melting points out of all four types of solids.
- They usually don't conduct electricity because valence electrons are localized within covalent bonds.
- An exception to this is graphite, where only three of four valence electrons are involved in the covalent network and the fourth is delocalized.
- They are insoluble in water.
- **Key properties to know: hard, high melting points, do not conduct electricity (in all but few cases)**

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