

Unit 8 – Intermolecular Forces

1. IMF's from weakest to strongest: London Dispersion, dipole-dipole, hydrogen bonding, ion-dipole.
2. All molecules contain LD forces, and this force gets stronger as the molecule is larger...
Larger electron cloud = more LD = more polarizable.
3. All polar molecules contain dipole-dipole forces, and this force gets stronger as the molecule is more polar.
4. H-bonds are between a NOF in one compound to a hydrogen that's already bonded to a NOF in another compound.
5. Boiling point and melting point increase as IMF's increase.
6. Vapor pressure and volatility decrease as IMF's increase.
7. Molecular solids have low melting/boiling points, and they do not conduct electricity.
8. Ionic solids have high melting/boiling points, and don't conduct electricity as a solid, but DO conduct as a liquid or (aq).
9. SiO₂ (quartz) and diamonds (C) are covalent network solids, and they have very high boiling/melting points.
10. Metallic bonds are between metals, and they ALWAYS conduct electricity, and their hardness varies.
11. When a molecular solid melts or boils, it is the IMF's between the molecules that break, not the covalent bonds.
12. Interstitial alloys are made when a smaller atom fits into the gaps between the larger atoms of a metallic crystal. Substitutional alloys are made when the radii of the metals are similar in size and are substituted into the crystal lattice.

Thou Shalt Not Forget Questions

Credit: Dan Reid

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1. List the 4 IMF's from weakest to strongest.
2. "More polarizable" refers to which IMF?
3. List the IMF's in BF_3 / H_2O / NH_3 / CO_2
4. Draw a representation of a hydrogen bond.
5. Name any 3 properties that increase as IMF's increase.
6. Name 2 properties that decrease as IMF's increase.
7. Which type of solid has the lowest melting/boiling points?
8. Which type of solid will not conduct electricity until it is a liquid or aqueous?
9. a) Give 2 examples of a covalent network solid.
b) Which type of solid has the highest melting/boiling points?
10. What type of solid always conducts electricity?
11. When a molecular solid melts or boils, which bonds break?
12. Which is a substitution alloy and which is an interstitial alloy?

