

INTERMOLECULAR FORCES

Intermolecular forces: .

Intermolecular forces are forces of attractions and they require to overcome them.

Structures that have intermolecular forces as their strongest force of attraction are generally .

There are three types of intermolecular forces:

- 1.
- 2.
- 3.

Strength of these forces

Induced dipole-dipole interactions

molecules have induced dipole-dipole interactions.

They arise due to the movement of electrons. At any given time one area of a molecule may contain electrons than another. This forms an . As the molecule with the instantaneous dipole approaches another molecule it a dipole as the electrons in the neighbouring molecule .

The force between them is known as .

Permanent dipole-dipole interactions

Permanent dipole-dipole interactions arise due to the difference in between atoms within a molecule.

Electronegativity: .

(Hint the closer an atom is to the top left of the periodic table the more electronegative the atom is)

A molecule that has a permanent dipole is said to be .

There is a electrostatic force of attraction between the molecules this is known as a .

Hydrogen bonding

Hydrogen bonding occurs when either a atom is attached to a atom.

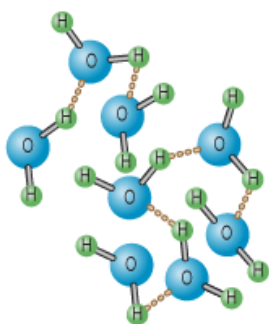
Hydrogen bonding is the _____ type of intermolecular force. Hydrogen bonding occurs between _____ on NOF and a slightly positive hydrogen atom on a neighbouring molecule.

e.g. Water

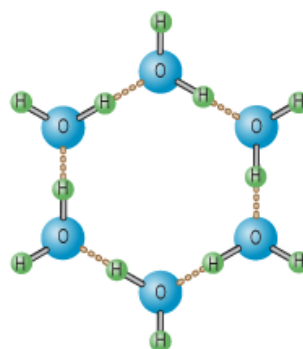
Remember to include:

Anomalous properties of water:

1. Density of ice is _____ than water. This is due to the _____ structure that ice has, meaning that the molecules are held _____ in the solid rather than the liquid.



Structure of molecules in water



Structure of molecules in ice

2. Water has a _____ melting point compared to other hydrides due to the hydrogen bonding involved.

Answer the following questions

1) State the strongest intermolecular force of attraction between the following molecules and draw a diagram for each

a) Ammonia and water

b) Molecules of hydrogen bromide

c) Molecules of methane

2) Describe how induced dipole-dipole interactions arise