

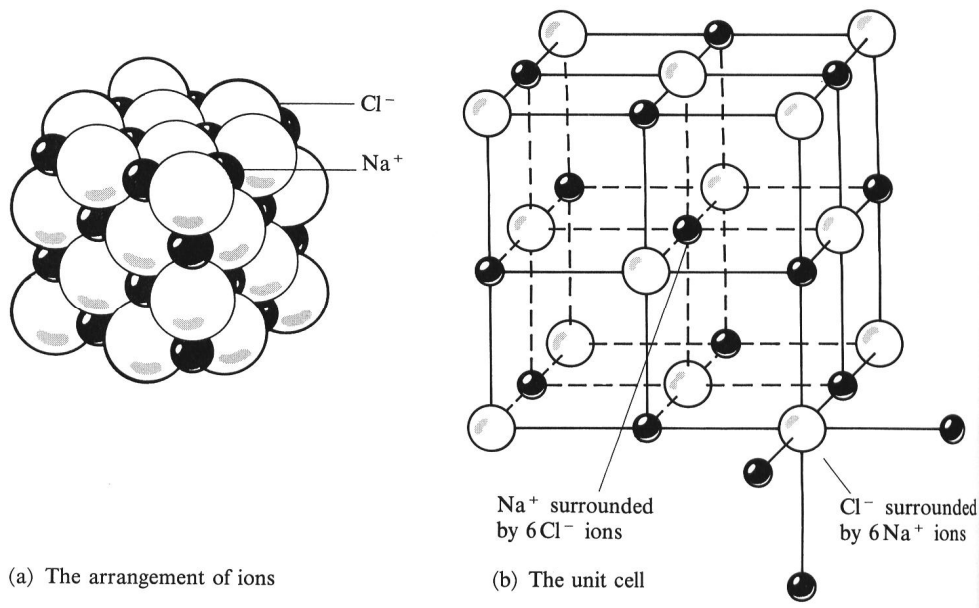


CRYSTAL TYPES

There are five types of structure: monatomic, simple molecular, ionic, giant covalent and metallic.

Monatomic substances are all gases at room temperature, but there are examples of substances with each of the other four types of structure that are solids. This looks closely at one example of a solid with each of the four remaining types of structure to reinforce and test your ideas of structure and bonding. Each of the four examples occur as crystalline solids at room temperature – hence this refers to a discussion of the four types of crystal.

1) IONIC (e.g. sodium chloride)

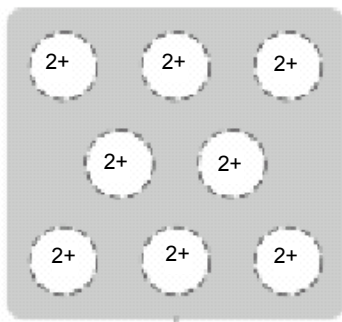


This shows very well how the ions are packed close together

Note that this diagram only shows the centre of ions to help us see how the ions are arranged in a cubic shape. Although it may look like it, there are NO covalent bonds between the ions.

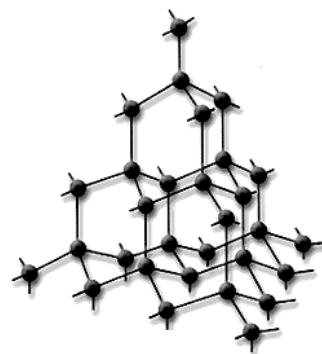
	Property	Explanation
Melting & boiling points		
Electrical conductivity		
Strength		
Solubility		

2) METALLIC (e.g. magnesium)



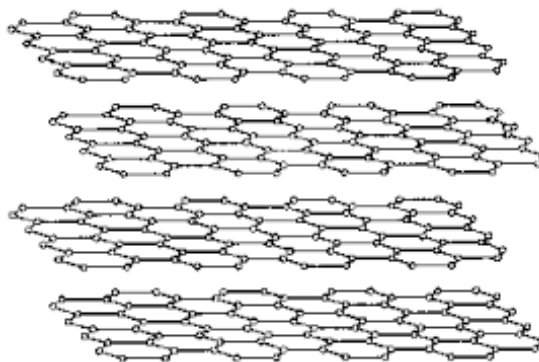
	Property	Explanation
Melting & boiling points		
Electrical conductivity		
Strength		
Solubility		

3) GIANT COVALENT (e.g. diamond)



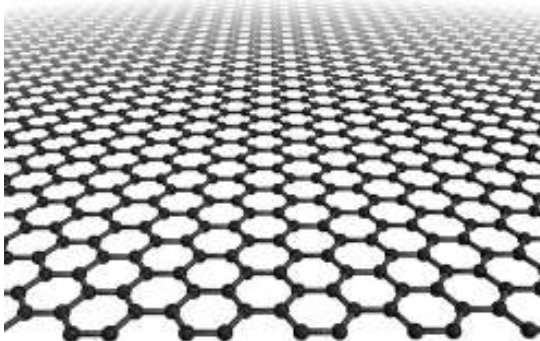
	Property	Explanation
Melting & boiling points		
Electrical conductivity		
Strength		
Solubility		

graphite



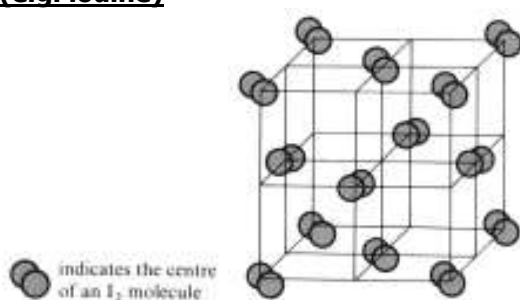
	Property	Explanation
Melting & boiling points		
Electrical conductivity		
Strength		
Solubility		

graphene



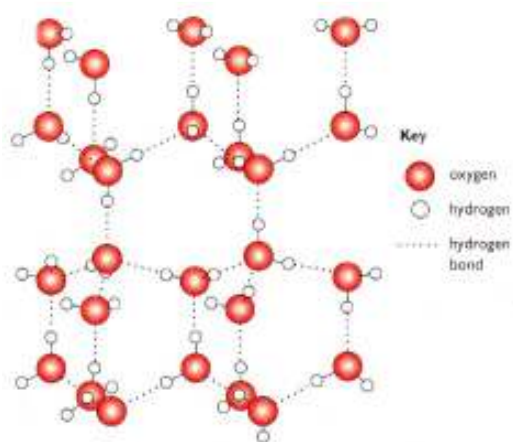
	Property	Explanation
Melting & boiling points		
Electrical conductivity		
Strength		
Solubility		

4) SIMPLE MOLECULAR (e.g. iodine)



	Property	Explanation
Melting & boiling points		
Electrical conductivity		
Strength		
Solubility		

e.g. ice



	Property	Explanation
Melting & boiling points		
Electrical conductivity		
Density of ice v water		