Trends in melting point

1) What are two factors that determine the melting point of an element?

2) Describe and explain the general trend in melting point in the metals in periods 2 and 3.

3) Explain the reason for the peak in melting point in C (carbon) and Si (silicon).

4) Describe and explain the trend in melting point for the elements after C and Si in periods 2 and 3.

Answers

1) The two factors that determine the melting point of an element are the type of bonding (metallic, covalent or ionic) and the structure (ionic lattice, giant covalent, molecular covalent or metallic structure).

2) The melting point of the 3 first metals in periods 2 and 3 increases as the strength of the metallic bond increases.

3) The reason for the peak in melting point in C and Si is related to their structures – they both have giant covalent structures which have high melting points.

4) After C and Si in periods 2 and 3, there is a big decrease in melting point – this is related to the structures – the elements N to F and P to Cl have molecular covalent structures which have low melting points.

Note – we will look at the types of bonding and structures in more detail in topic 4 (bonding).