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Chemistry

For the IB Diploma

Brighter Thinking
Better Learning

Chapter 8

The metallic model

Diagrams showing how metallic bonds are formed

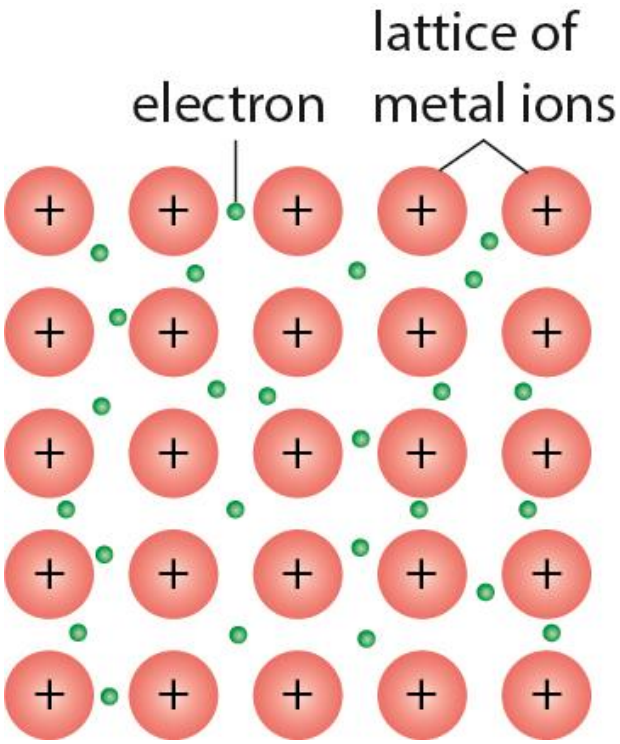

Figure 8.1: A metallic structure. This is a giant structure – there are no individual molecules.

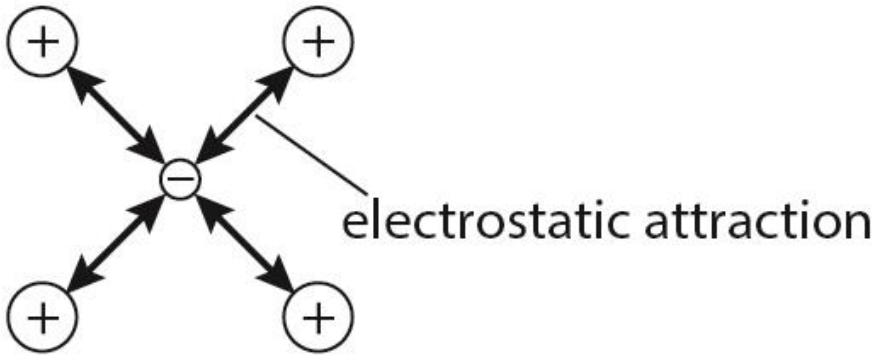

Figure 8.2: The attraction between metal ions and a delocalised electron.

Why does the melting point of the Group 1 metals decrease as you go down the group?

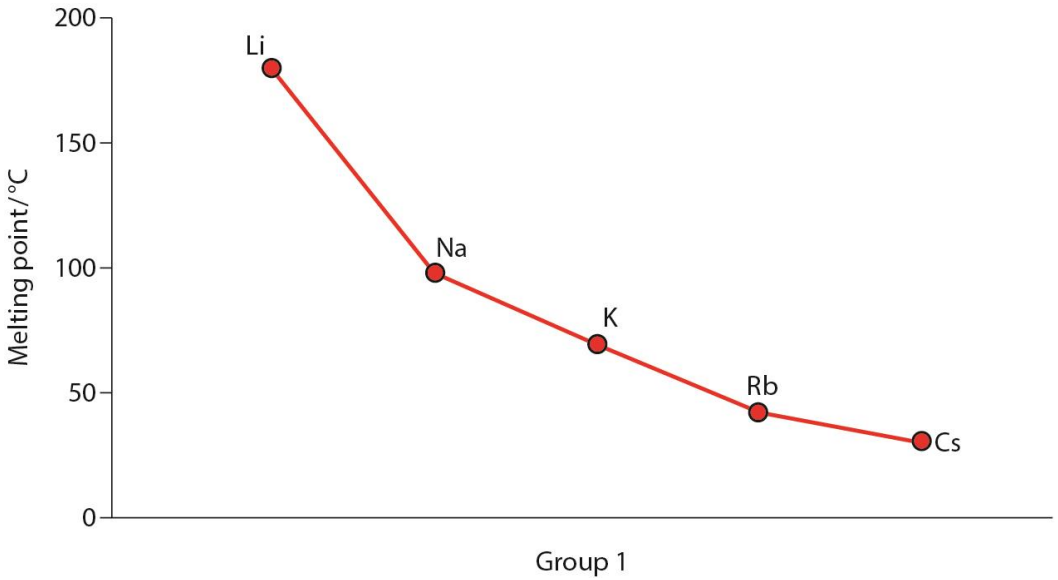

Figure: 8.3: Variation in melting point in Group 1.

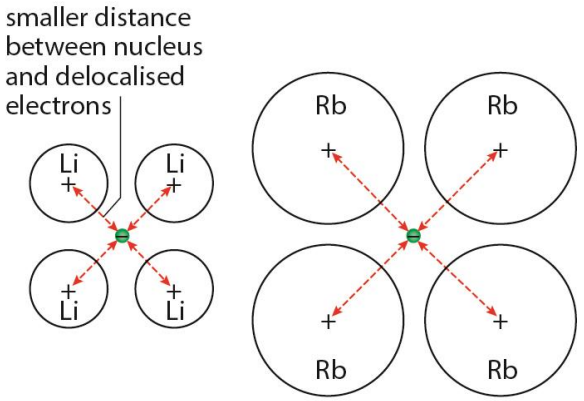

Figure 8.4: The delocalised electrons are attracted more strongly in lithium than in rubidium.

Why does the melting point increase as you go across Period 3, from sodium to aluminium?

Metal	sodium	magnesium	aluminium
Melting point/ °C	98	650	660

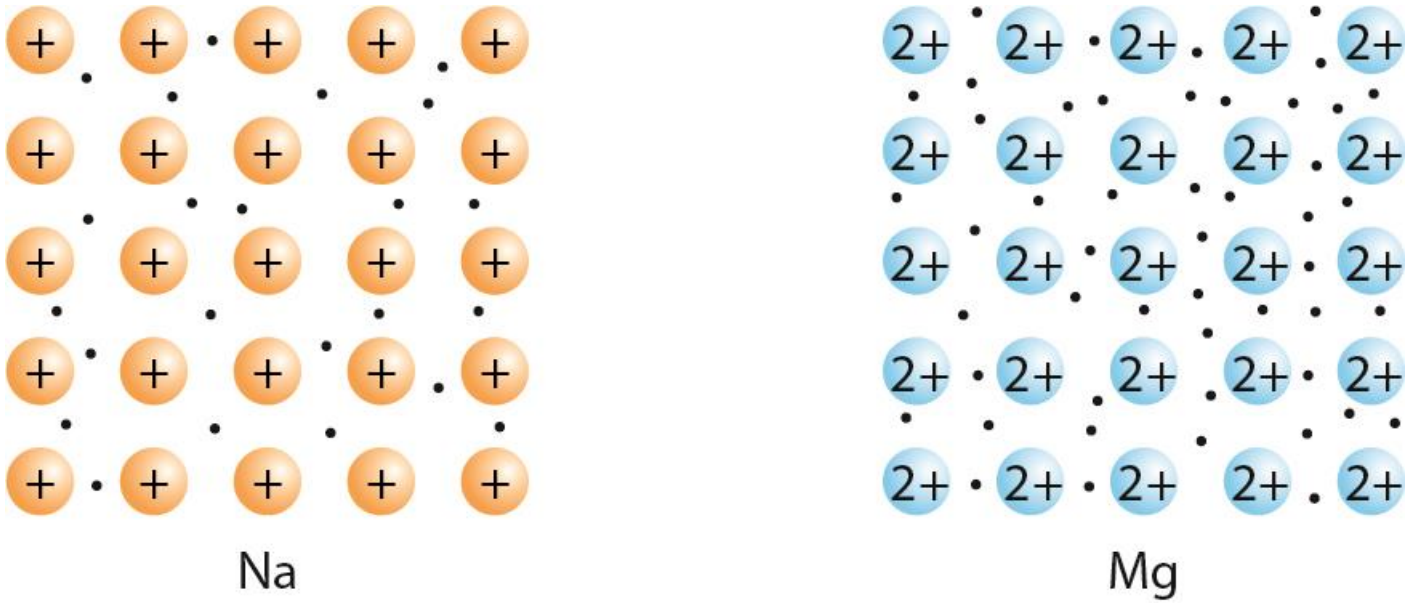

Figure 8.5: Metallic bonding in sodium and magnesium.

Explain why metals are malleable and ionic compounds are brittle

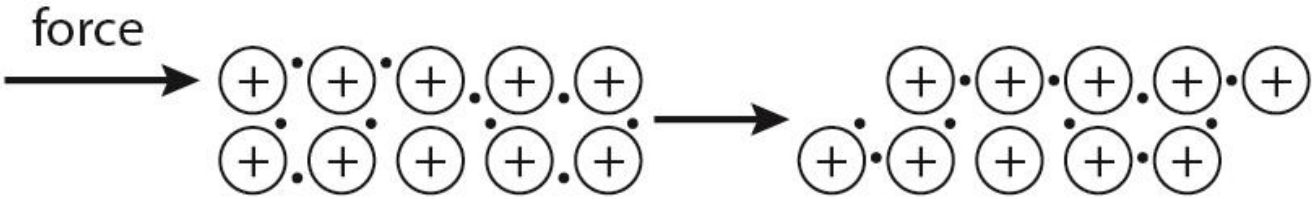

Figure 8.6: Metals are malleable. Displacing one layer makes no difference to the metallic bonding.

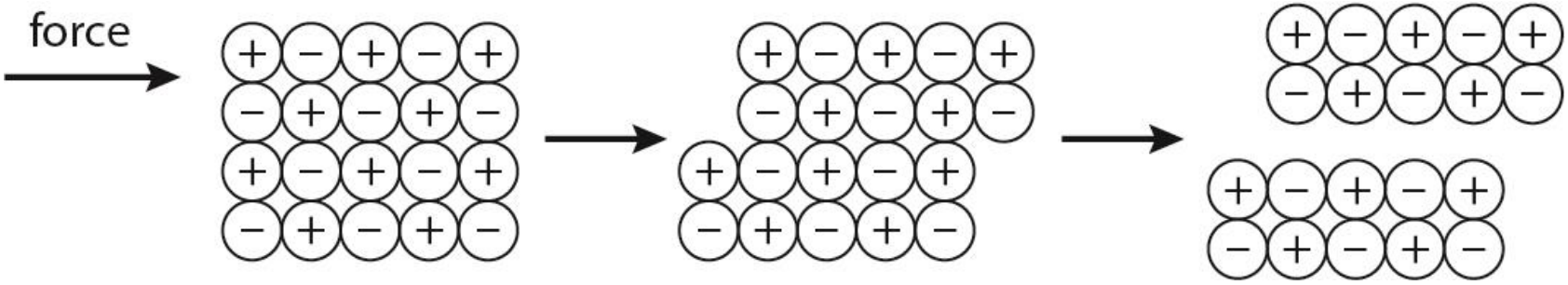

Figure 8.7: Brittleness. Displacement of layers results in like charges being next to each other.