

## **Metallic bonding**

Metals form giant structures in which electrons in the outer shells of the metal atoms are free to move. The metallic bond is the force of attraction between these free electrons and metal ions. Metallic bonds are strong, so metals can maintain a regular structure and usually have high melting and boiling points.

### **Properties of metals:**

#### **1. Metals have high melting points**

This is because it takes a lot of heat energy to break up the lattice.

#### **2. Metals are malleable and ductile.**

Malleable: They can be bent and pressed into shapes.

Ductile: They can be drawn out into wires.

This is because the layers can slide without the metallic bond breaking, because the electrons are free to move too.

#### **3. Metals are good conductors of heat**

That's because the free electrons take in heat energy, which makes them move faster and they quickly transfer the heat through the metal structure.

#### **4. Metals are good conductors of electricity**

This is because the free electrons can move through the lattice carrying the charge.