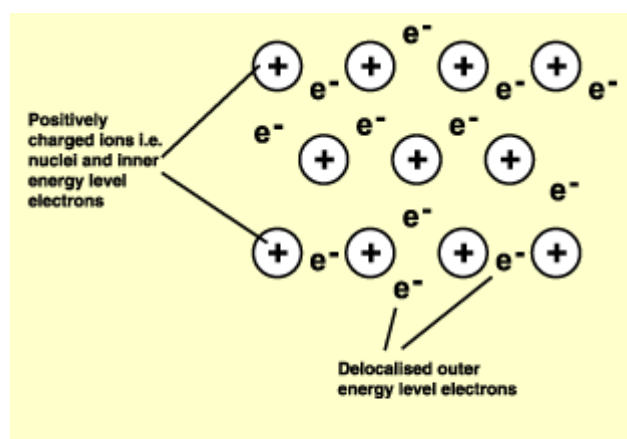


Topic:	METALLIC BONDING
Objective:	FK_03_03
Given metallic atoms	
the student must be capable of doing the following:	
<ul style="list-style-type: none"> • depict the metallic bonding formed • determine the properties of the metal formed <ul style="list-style-type: none"> ○ physical state (s, l, g) ○ solubility in water (high / low) ○ fusion and boiling points (high/low) ○ mechanical properties ○ electrical conduction 	

Electron-Sea Model for Metallic Bonding

One very simple model that accounts for some of the most important characteristics of the metals is the **electron-sea model**. In this model the metal is pictured as an array of metal cations in a "sea" of valence electrons.



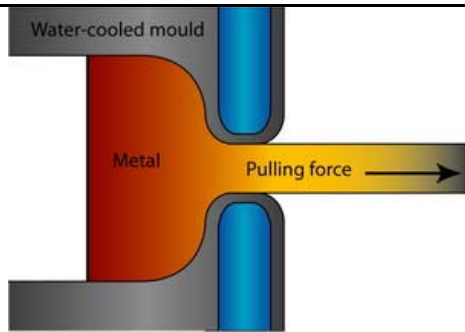
<http://www.bbc.co.uk/scotland/education/bitesize/higher/img/chemistry/energy/bsp/fig01.gif>

The electrons are mobile and no individual electron is confined to any particular metal ion.

Physical Properties of Metals

Most metals are solids. Their fusion points can be high. Their solubility in water is low.

Most metals are **malleable**, which means that they can be hammered into thin sheets, and **ductile**, which means that they can be drawn into wires.

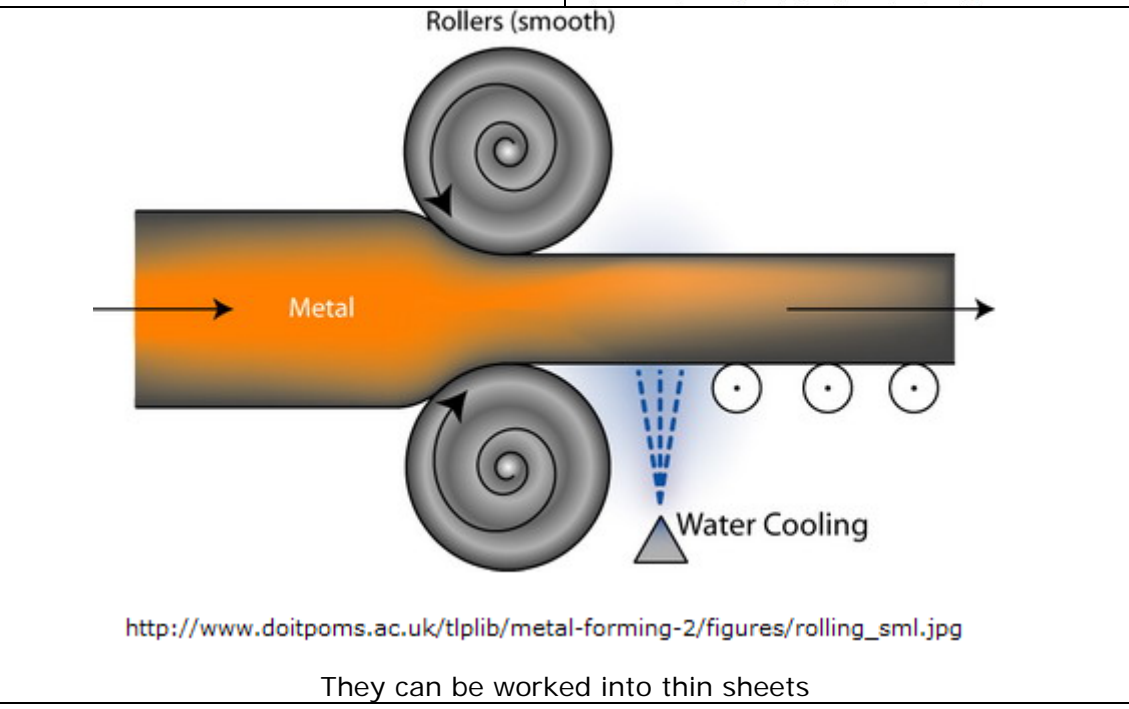


http://www.doitpoms.ac.uk/tlplib/metal-forming-2/figures/drawing_sml.jpg

Metals can be drawn into wires



<http://www.mining-technology.com/projects/kgm/images/kgm-7.jpg>



http://www.doitpoms.ac.uk/tlplib/metal-forming-2/figures/rolling_sml.jpg

They can be worked into thin sheets

Metals are good conductors of electricity because they have mobile electrons.