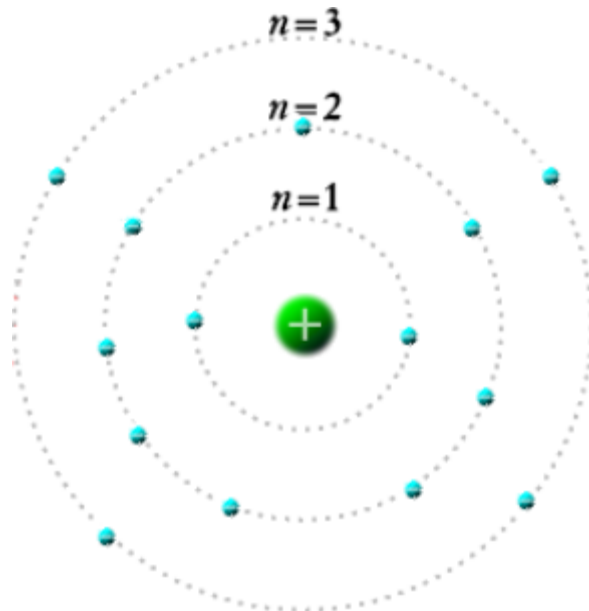


South Bristol Amateur Radio Club Lesson 4 – Supplementary Information

Conductors and Insulators

We have already mentioned that Current is the flow of electrons between the terminals of a battery or power supply.

In some materials these electrons flow easily and in others they do not flow at all. Materials where there is an easy movement of electrons are called CONDUCTORS, whilst those where there is little or no flow are called INSULATORS.



The simplified diagram of an atom to the left shows the central core or nucleus which is made up of positively charged Protons and neutral Neutrons surrounded by negatively charged Electrons in progressively increasing orbits. The number of Protons and Electrons are equal so that an atom overall has no charge.

The outermost electrons, being further from the nucleus are less tightly bound to it and in a conductive material these electrons can be made to jump from atom to adjacent atom by the application of a voltage.

Metallic conductors have a very low Resistance because of their freely available mobile Electrons.

Amongst the most commonly used metals are copper, brass, steel and nickel. Metals such as silver and gold have very good conductive properties but their cost prohibits their widespread use.

By contrast Insulators have very few mobile electrons and therefore conduct little or no electrical current. Typical materials are dry wood, rubber, ceramic, glass, plastics, fibreglass and dry air. These materials still have uses as illustrated in the main Lesson notes.

Also if the applied voltage is large enough it is possible for an insulator to break down and allow a current to flow.