Static electricity and electron theory

Atoms of all materials contain positively charged protons and negatively charged electrons.

The protons are in the central core of the atom called the nucleus.

The electrons orbit the nucleus.

An uncharged atom contains the same number of protons as electrons.

When a polythene rod is rubbed on a cotton cloth, some of the electrons are removed from the cotton cloth and transferred onto the polythene rod. This means that the polythene rod has extra electrons and therefore has a negative charge. The cotton cloth has fewer electrons and is left with more protons than electrons, it is therefore positively charged.

A similar effect can be seen when an inflated balloon is rubbed on your hair. The balloon gains electrons from your hair and becomes negatively charged. One of the effects of electric charge is to attract other objects. This can be seen if the balloon is now placed in contact with a wall; the balloon will ‘stick’ to the wall because the negative charge causes attraction.