

Static electricity – transcript

A Van de Graaff generator accumulates charge. This can be explained using an understanding of electrostatic charge.

Electrostatic charge can be produced and detected using insulators such as polythene and Perspex.

Friction causes electrons to be transferred from the cloth to the polythene rod.

The rod becomes negatively charged and the cloth becomes positively charged.

Charged objects are surrounded by an electric field. Other charged objects in the electric field experience an attractive or repulsive force.

A second polythene rod is rubbed with a cloth and becomes negatively charged.

When the second rod is brought towards the first polythene rod, the rods experience a repulsive force. Both polythene rods are negatively charged. Like charges repel.

When a Perspex rod is rubbed with a cloth, electrons are rubbed off the rod onto the cloth. The Perspex rod becomes positively charged and the cloth becomes negatively charged.

When the positively charged Perspex rod is brought towards a negatively charged polythene rod, the rods experience an attractive force. Unlike charges attract.

Charged objects also cause other interesting effects. For example, a charged object deflects a stream of water.

Charging by induction occurs when a charged object is brought close to a neutrally charged object.

When a negatively charged polythene rod is brought towards neutrally charged pieces of paper, they experience an attractive force.

Electrons on the side of the paper close to the negatively charged rod are pushed away. The side of the paper facing the rod becomes positively charged and is attracted to the rod.

A similar effect can be observed by rubbing a balloon. The balloon becomes negatively charged.

When brought towards a neutrally charged object the balloon experiences an attractive force.

A gold leaf electroscope can also be used to show charging by induction.

Electrostatic charge is accumulated by the gold leaf electroscope.

A variety of methods have been used to show the production and detection of electrostatic charges. Charging by induction has also been demonstrated.