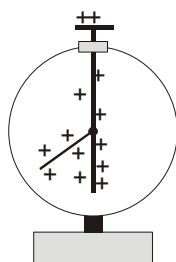


BASIC ELECTROSTATIC PHENOMENA

OBSERVATIONS IN EVERY-DAY LIFE:	<ul style="list-style-type: none"> ▪ Hair becomes “electrified” while combed. ▪ “Electro shock” after walking over the carpet in the MNG main building. ▪ Lightning
ELECTRIC CHARGE:	<p>The charge is the property of an object responsible for a new kind of force: <i>electrostatic attraction</i> or <i>repulsion</i></p> <p>A charge is a small electrically charged particle.</p>
TYPES OF CHARGE	<p>There are only two different types of electric charge: <i>positive</i> charge (e.g. glass w/ leather) and <i>negative</i> charge (e.g. ebonite or amber w/ fur).</p> <p>Like charges (positive – positive or negative – negative) repel and unlike charges (positive – negative) attract each other.</p>
CONSERVATION OF ELECTRIC CHARGE:	<p>Electric charges can’t be created or destroyed but only transferred from one object to another (e.g. from the fur to the rod). The net electric charge of an isolated system remains constant (is conserved).</p>
NEUTRALISATION:	<p>Two objects carrying charges of identical magnitude but opposite signs can be <i>neutralised</i> on contact. If the magnitudes are different, only a <i>partial</i> neutralisation occurs.</p>
MODEL:	<p>An uncharged (electrically neutral) object contains the same number of positive charges (e.g. protons) and negative charges (e.g. electrons).</p> <p>To make a neutral object positively charged, positive charges have to be added or negative charges have to be taken away.</p> <p>To make a neutral object negatively charged, negative charges have to be added or positive charges have to be taken away.</p>
MEASURING CHARGE:	<p>The magnitude of a charge can be measured with an electroscope. The charge transferred to the device spreads over the metal needle and its mount. As a consequence, the mount repels the needle. The amplitude depends on the magnitude of the charge on the electroscop.</p> <p>The sign of a charge can be detected by means of a glow lamp (neon bulb). Only the pole next to a negative charge (or opposite a positive charge, respectively) glows.</p>



electroscope



glow lamp

UNIT	<p>Unit for measuring the magnitude of an electric charge q: $[q] = 1 \text{ C (coulomb)}$</p> <p>A very convenient amount of charge is the <i>elementary charge</i>: $1 e = 1.602 \cdot 10^{-19} \text{ C}$ (A proton carries a charge $+e$, an electron a charge $-e$)</p>
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