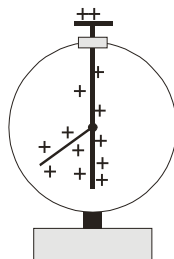


## BASIC ELECTROSTATIC PHENOMENA

Observations in Everyday Life:	<ul style="list-style-type: none"> <li>▶ Hair becomes “electrified” while combed.</li> <li>▶ “Electro shock” after walking over the carpet in the MNG main building.</li> <li>▶ Lightning</li> </ul>
Electric Charge:	<p>The <i>charge</i> is the property of an object responsible for a new kind of force: <i>electrostatic attraction</i> or <i>repulsion</i></p> <p>A <i>charge</i> is a small electrically charged particle.</p>
Types of Charge	<p>There are only <i>two different types</i> of electric charge: <i>positive</i> charge (e.g. glass with leather) and <i>negative</i> charge (e.g. ebonite or amber with fur).</p> <p><i>Like charges</i> (positive – positive or negative – negative) <i>repel</i> and <i>unlike charges</i> (positive – negative) <i>attract</i> each other.</p>
Conservation of Electric Charge:	<p>Electric charges <i>cannot be created</i> or <i>destroyed</i> but only <i>transferred</i> from one object to another (e.g. from the fur to the rod). The <i>net electric charge</i> of an isolated system <i>remains constant</i> (<i>is conserved</i>).</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 partial 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 <i>magnitude</i> of a charge can be measured with an <i>electroscope</i>. 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 <i>sign</i> of a charge can be detected by means of a <i>glow lamp</i> (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 <math>q</math>: <math>[q] = 1 \text{ C}</math> (coulomb)</p> <p>A very convenient amount of charge is the elementary charge:</p> <p><math>1 e = 1.602 \times 10^{-19} \text{ C}</math></p> <p>(A proton carries a charge <math>+e</math>, an electron a charge <math>-e</math>)</p>
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