Hands on Electrical Demonstrations

Batteries and LED's

Ask Mr. Shumway for two batteries, and some Light Emitting Diodes (LED's). Diodes only allow electricity to flow in one direction. These particular diodes convert electrical energy to electromagnetic energy in the visible range of frequencies. Experiment a little.

A magnet passes through a coil of wire. The changing magnetic field induces an electric current, the electric current passes through an LED, creating electromagnetic energy in the visible range of frequencies (light). Ask Mr. Shumway for a device.

A motor connected to gears and a crank handle generates electricity. Borrow one to try it out.

Obtain 2 solar cells from Mr. Shumway. Light (electromagnetic energy in the visible frequency range) provides the energy to electrons to jump the energy band gap. Now the solar cell acts like a battery. Measure the voltage output of a solar cell in **room light**. _____

Measure the current flow of a single solar cell. _____ Have Mr. Shumway initial _____

Does it matter if you are right below a light?_____ Does it matter if the cell is perpendicular to the beams of light?_____

Take two solar cells outside. Measure the voltage when one cell is in **direct sunlight**.

_____

Measure the current flow when a single cell is in direct sunlight_____.

What happens to the value of the current as you change the angle of the cell._____

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Connect two solar cells in **parallel**. Measure the voltage in direct sunlight. _____

Measure the current. _____ Multiply the voltage and the current. _____

Connect two solar cells in **series**. Measure the voltage _____

Measure the current flow. _____ Multiply the voltage and the current. _____

Do the products remain about the same? _____