TwoThirtyVolts ...and all things electrical

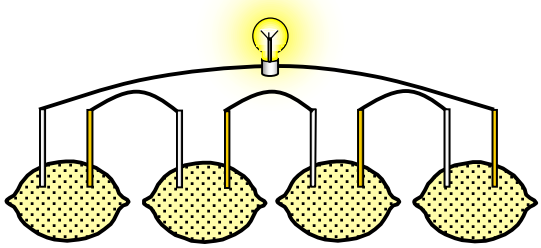
Experiment A: Electric Current (age 11 – 14) – Lemon Battery

Experiment Objective:

The aim of this experiment is to show students how batteries work and the basic principle of producing electricity electrical energy from chemical energy.

Classroom Activity:

Put two dissimilar metal electrodes (for example copper and zinc) into a lemon. A potential difference of about 1 V should be obtained between them. (Lemons usually give about 1.08 V and oranges 0.95 V). This can either be detected by connecting a low voltage bulb or a digital voltmeter between the two electrodes.



A way of making this experiment more impressive is to use a set of lemons in series using crocodile clips to trickle charge a capacitor. Then discharge this through an LED to give a flash of light like the camera flash.

Resource materials needed:

Lemon, Electrodes of copper and zinc, Crocodile clips, Low voltage bulb LED RS 586 447, Capacitor 220 mF 25 V, dc voltmeter

Expected outcomes:

The students should be aware that:

- The lemon battery is a type of battery that changes the chemical energy in the lemon into electrical energy.
- Batteries can take a number of different forms.

Linked Resources

www.Twothirtyvolts.org

Electric Current 11-14 Student Review Notes
Electric Current 11-14 Lesson Plan
Electric Current 11-14 Additional Worksheet
Electric Current 11-14 Revision Quiz