

Fruit Battery Exploration

Introduction:

In this exploration you will construct fruit batteries.

1) How are these batteries like other batteries?

2) How does a battery "work"?

(Calculators, iPods, cell phones and tablets are a few examples of devices powered by batteries)

3) Why are some batteries rechargeable while others are not?

Materials: (per student pair)

Fruits/Vegetables

DC Voltmeter, 0 - 5 V

2 electric leads with alligator clips at both ends

various conducting materials; Cu, Zn, Pb strips, household and personal objects

Procedure:

1. Select materials to use as electrodes from the metal strips provided.
2. Attach each electrode to one terminal of the voltmeter.
3. Push electrodes into various fruits/vegetables, noting the voltages produced.
4. Sketch your "best" battery in your tablet/lab notebook, noting the electrodes and fruits/vegetables used.
4. Record the voltage produced (don't forget to record the sign and the value).

Follow-up Discussion:

1. What are an anode and a cathode? What experimental evidence allowed you to determine which material was the anode and which was the cathode in your fruit battery?
2. Look at your fruit battery diagram. Which way are electrons flowing? Draw arrows to indicate the flow of electrons on your diagram.
3. Without performing the experiment, how would you predict which electrode is the anode and which is the cathode?
4. Is the potential difference, voltage, dependent on:
 - (a) The kind of fruit used?
 - (b) The kind of electrodes used?
 - (c) The size of the electrodes?

Why or why not?

5. Examine the drawing of the group who constructed the fruit battery with the largest voltage. How does it differ from yours? Why do you think their voltage is larger than yours?

