Name

Photovoltaic Cells!

Purpose

To demonstrate how an electrical current can be generated using Photovoltaic (PV) cells

Additional information

Photovoltaic (PV) cells are made of special materials called semiconductors such as silicon, which is currently the most commonly used. Basically, when light strikes the cell, a certain portion of its energy is absorbed within the semiconductor material. The energy knocks electrons loose, allowing them to flow freely. This flow of electrons is a current, and by placing metal contacts on the top and bottom of the PV cell, we can draw that current off to use externally. For example, the current can power a calculator. This current, together with the cell's voltage (which is a result of its built-in electric field or fields), defines the power (or wattage) that the solar cell can produce.

Materials
Solar panel
Small wires with metal rings
Solar motor
Motor stand
Fan blade

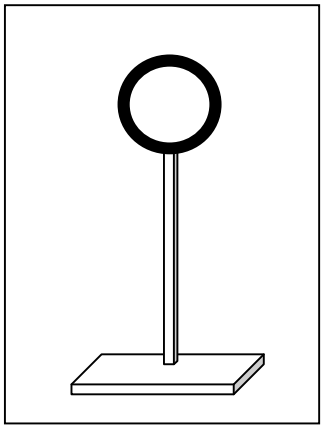

Figure 1

Step-By-Step Procedure

1) Assemble the motor stand. It should appear something like the one in figure 1.
2) Insert the motor into the ring on the motor stand.
3) Press the fan onto the motor. It should now look a bit like figure 2.
4) Now locate the solar panel and the small wires with rings.
5) Undo the thumb nuts on the back of the solar cell and wire it as shown in figure 3

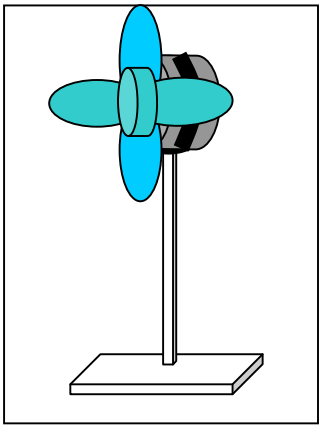

Figure 2

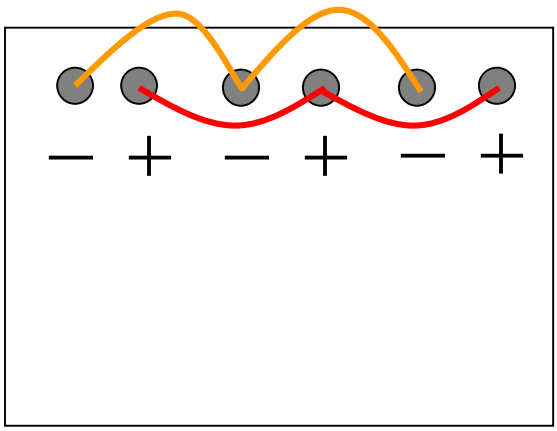

Figure 3

6) Next, wire the motor to the solar panel as show in figure 4.

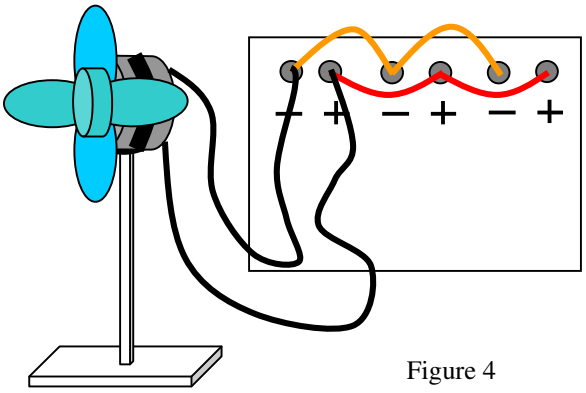

Figure 4

7) Try to get the motor to spin in the light. Try different sources of light. Try fluorescent, try incandescent, try sunlight through a window. If Brian allows try it outside.

Questions:

1) What source of light made the motor work the best?

_____
_____
_____
_____

2) What is a common material used to make Photovoltaic cells?

_____
_____

3) Can you change the direction of the motor? If so, how did you do it?

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_____
_____
_____

4) What are the particles that cause the electrical current?

_____
_____
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