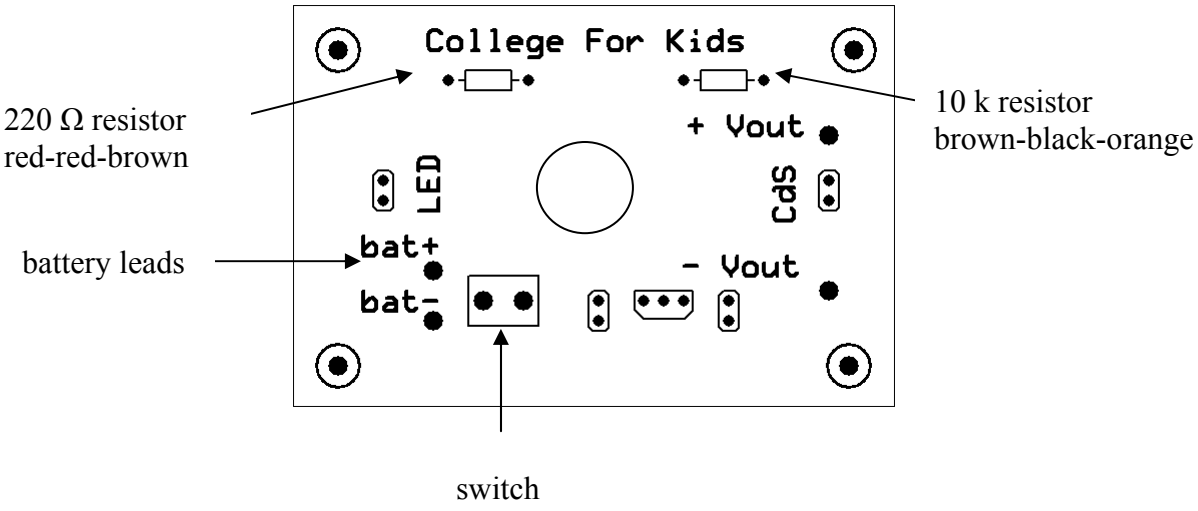
Building a Photometer to Measure Absorbance
College For Kids

In a general sense, a photometer is an instrument that measures the power of a source of light. The measurement of light power is extremely useful in chemistry, since it allows us to measure light that has been absorbed, scattered, or emitted by a chemical sample, which in turn provides information about the structure and the amount of the molecules in the sample. In fact, the measurement of light power provides the basis for every spectroscopic instrument. In this experiment you are going to build your own photometer with an LED light source and a CdS photoconductive detector.

Construction of the Photometer

Some of the photometer is already constructed for you but you do have to complete the construction. To complete the construction, solder in place: the two resistors, a switch, and the battery leads. After your soldering is complete attach the four legs to support the photometer. Plug an LED and CdS detector in the appropriate sockets and attach a battery.



Measurement of Absorbance

Follow these steps to measure the absorbance of the solution:

- Insert the appropriate colored LED.
- Place water in the sample cell and measure the voltage across the CdS
- Place the solution in the sample cell and measure the new voltage across the CdS.
- Calculate the absorbance using the Excel Spreadsheet.

Measure the absorbance of the three food coloring solutions with the red, green, and blue LEDs.