

Lesson Plan

Build a Solar Cell

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Grade Level: 9-12

National Standards (1996)

- 1) Unifying concepts and Processes
- 2) Form and Function
- 3) Structure and Properties of Matter
- 4) Science and Technology
- 5) Science, Natural Resources and Environmental Quality

Introduction

This lab exercise involves using the renewable energy of the sun with dye-sensitized solar cells to generate electricity. Constructing the solar cell along with learning science principles are the objective of this lab.

Materials

Ethyl alcohol	Mortar and Pestle
Plant fruit juice	
Iodine/Potassium Iodide solution	Candle
Titanium oxide	
Conductive glass slides	Matches
Hot Plate	
Multimeter	Pipettes
Binder clips	
150ml Beaker	Paper towels
150ml Erlenmeyer flask	
Spatula	Razor blade

Procedure

A liquid mixture of Titanium Oxide is prepared. Using a spatula, it is applied to the conductive side of the slide. A razor blade is used to spread an even coating on a section of the slide. This is then heated on a hot plate to set and dry. When dry, plant juice is used to lightly cover the Titanium Oxide. The Iodine/Potassium Iodide is then sparingly applied to the berry juice coating. A second slide is then coated with carbon from the lit candle. The two coated sides are then placed face to face and secured with the binder clips. The electrodes of the multimeter are then used to record the voltage produced with the solar cell in the sunlight.

Results

Results should show a .4V result.

Conclusion

The resulting experiment results show electricity can be produced by this method.

Reference

Flinn Scientific, "Build a Solar Cell," Science Kit