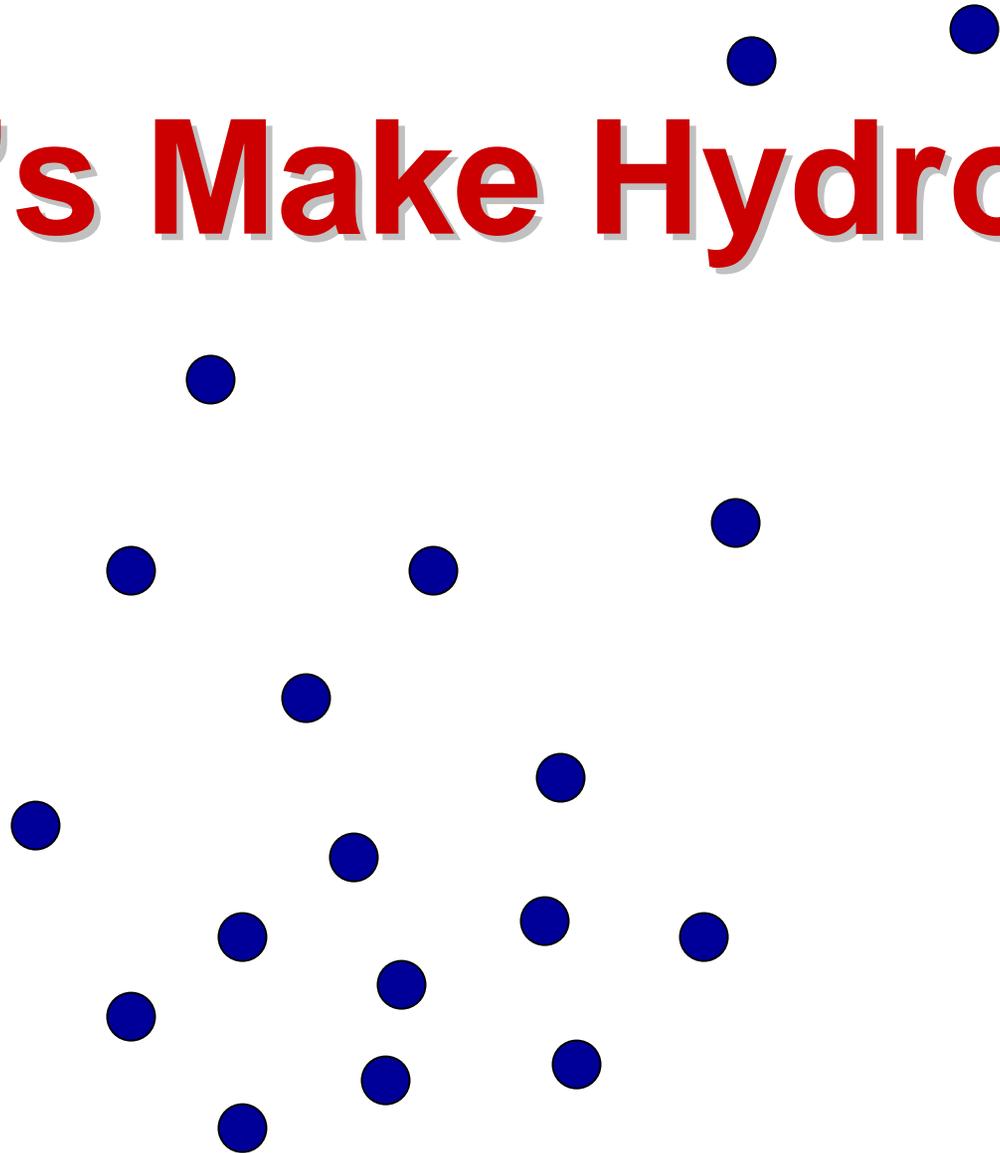


Let's Make Hydrogen!



Lesson Three: Decomposition

Let's Make Hydrogen! And an Intro To how Solar Panels Work

Key Concept: OKAY! LET'S MAKE OUR OWN HYDROGEN!

The importance of this lesson is to learn what a solar panel (photovoltaic) does. We will see decomposition (electrolysis) of distilled water in action. This will show a chemical change. This lesson will also help lead into the understanding of how a fuel cell works and what the benefits are.

Activity:

Use a solar panel for decomposition (electrolysis) and make hydrogen.

Important words:

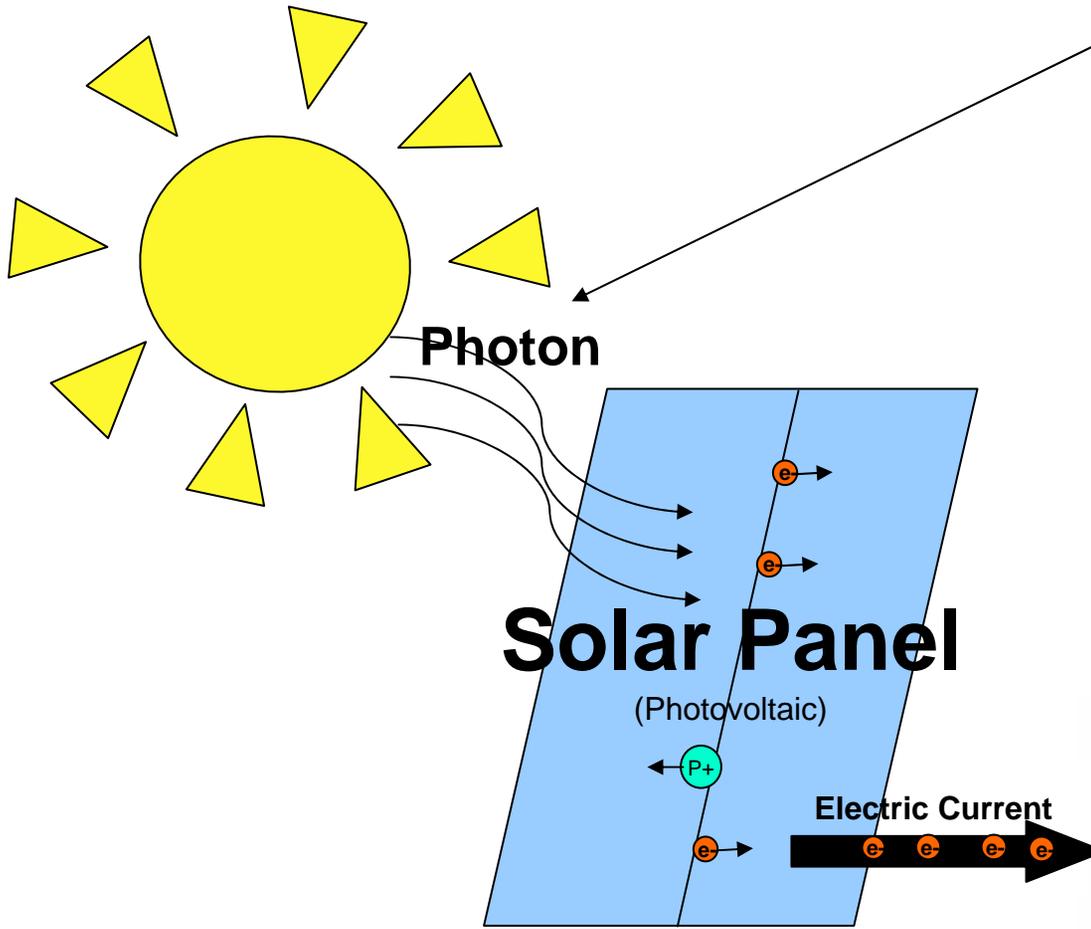
Decomposition Energy Hydrogen Gas Oxygen Gas
Exothermic Endothermic

Electricity from the Sun!

The solar panel changes the waves of light from the sun into a stream of electrons (electricity).

The solar panel that we will be using has several solar cells connected together.

Photons striking its surface knock electrons loose from one layer. The electrons are drawn to the other layer. If the two layers are connected through an external circuit, electrons will flow through that circuit. The flow of electrons is observed as an electric current. As more light is supplied to the solar cell, more photons are available to knock the electrons loose, and more current is generated.

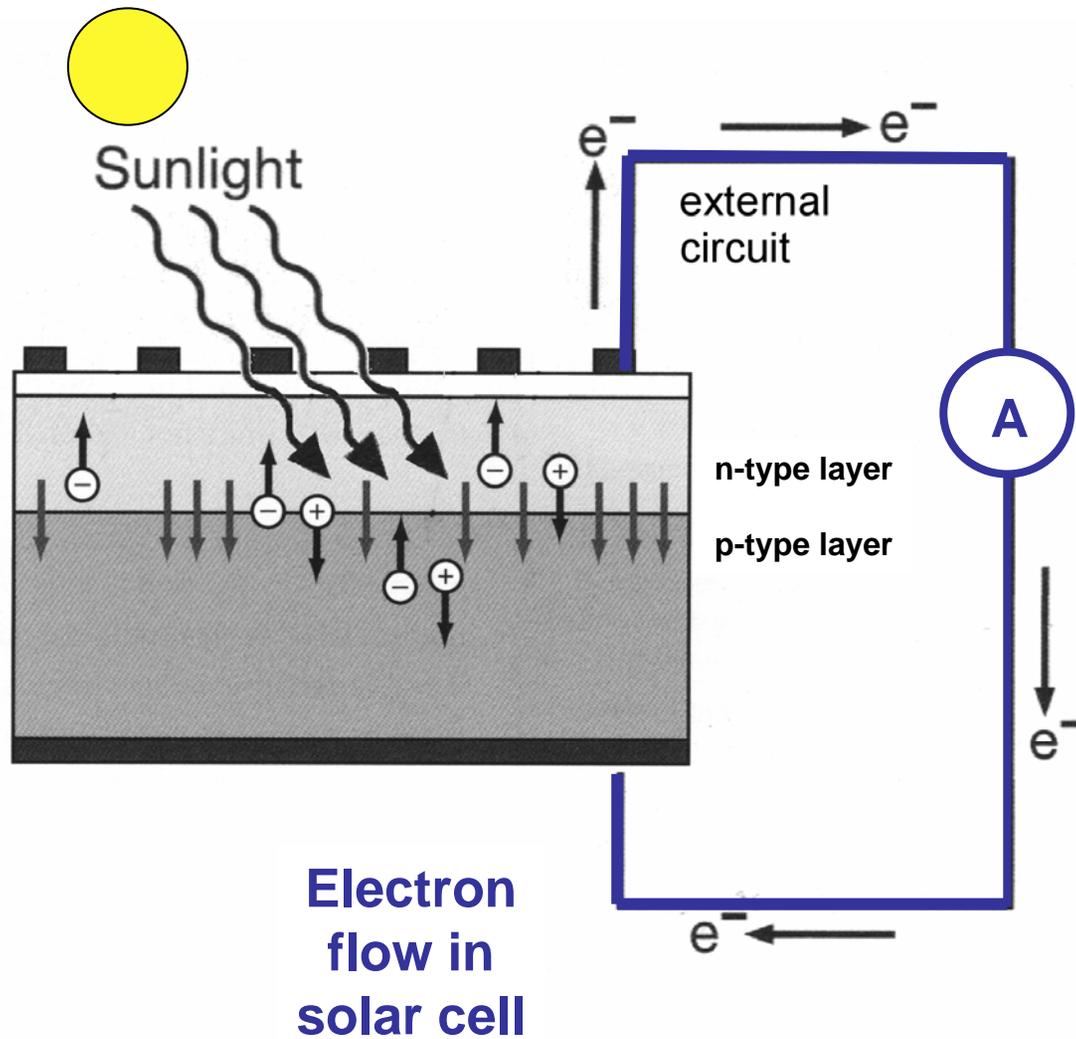


A Photon, also called Light Quantum, is a very small energy packet of electromagnetic radiation (light from the sun). The concept originated (1905) in Einstein's explanation of the photoelectric effect, in which he proposed (guessed) that there was the existence of energy packets (groups) during the process of transmission of light.

MLA style: "Photon." Encyclopedia Britannica. 2004 Encyclopedia Britannica Premium Service. 19 Apr. 2004 <<http://www.britannica.com/eb/article?eu=61325>>



Solar energy makes (produces) electricity used tobreak up water (H₂O) into H and O...



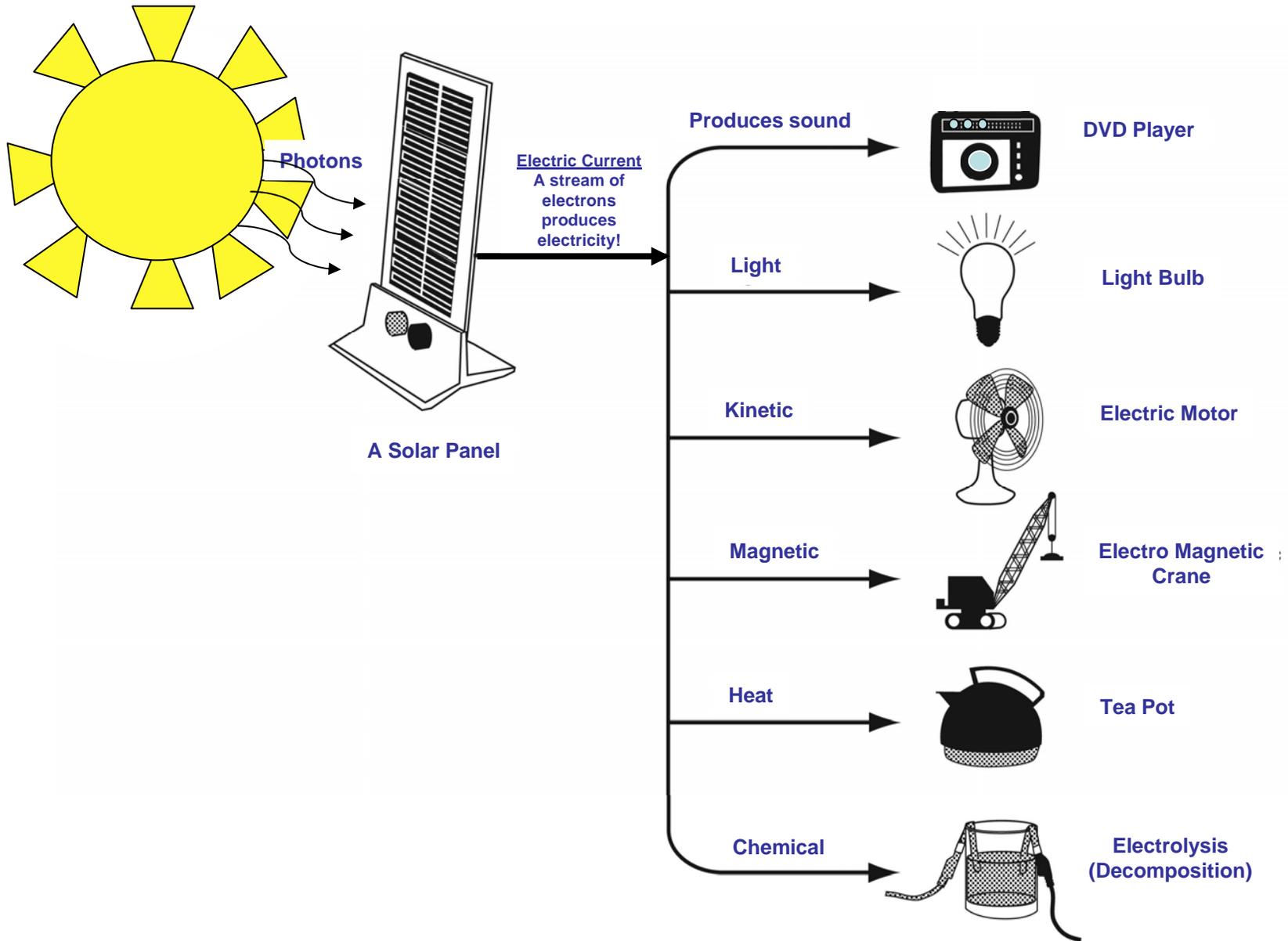


Photo taken from Washington State Fuel Cell Education Project

Did you know that some schools use solar energy to powering 50% to 60% of the school's electrical needs? For a school, that could be a savings on electrical costs of \$30,000 to \$40,000. Solar panels can replace an old roof and save money.

<http://www.sddt.com/News/article.cfm?SourceCode=20060831crcg>.

Many cities have solar schools. Below are some websites to visit.

http://www.solarintegrated.com/PR_PowerMan_06.htm.

<http://www.irecusa.org/schools/>.

<http://www.solarschools.com/>

<http://www.need.org/pgesolarschools/ssc.htm>



Solar School Roof Top



Manufacturing, Hospital, Building

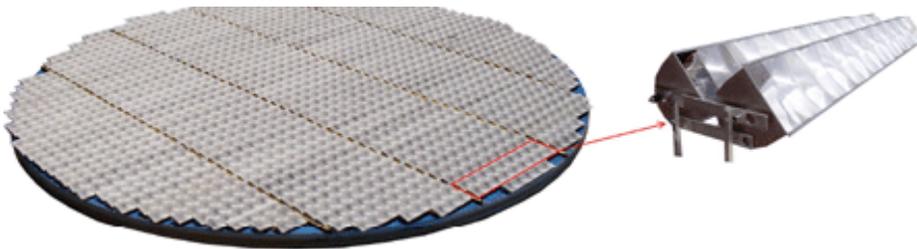
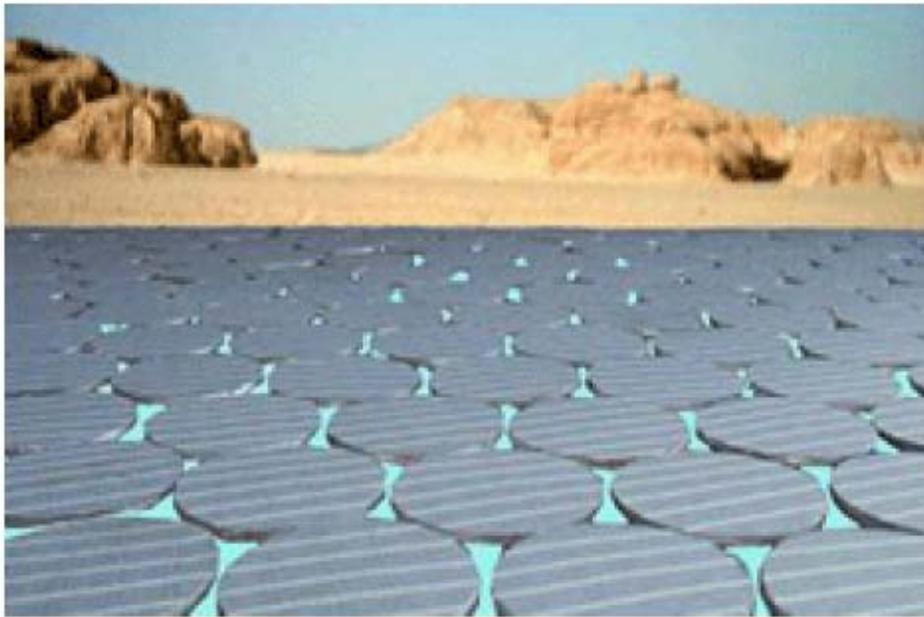


Tent or Shade Area

Photos of Solar Integrated Technology

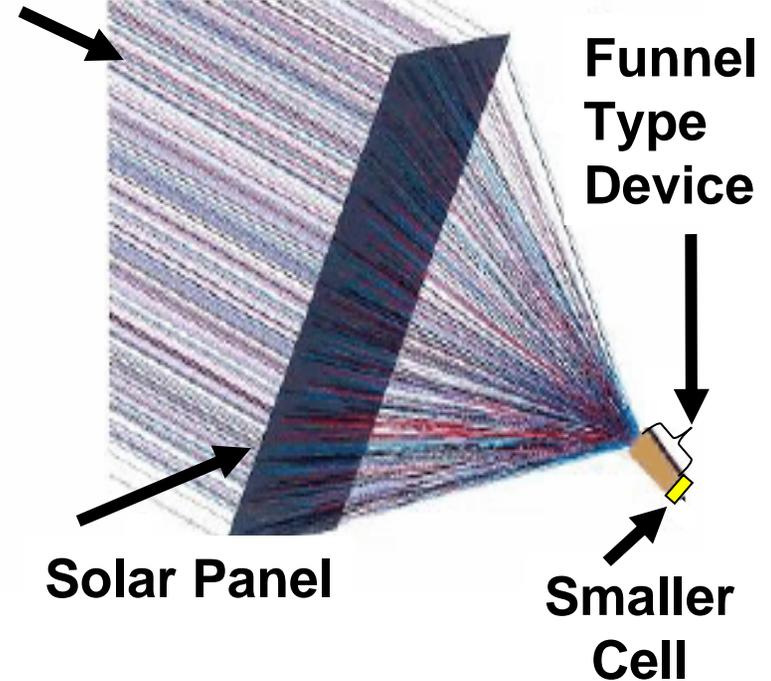
Products found at:

<http://www.solarintegrated.com/schools.htm>



CONCENTRATOR LENS SYSTEM

Sun's Rays

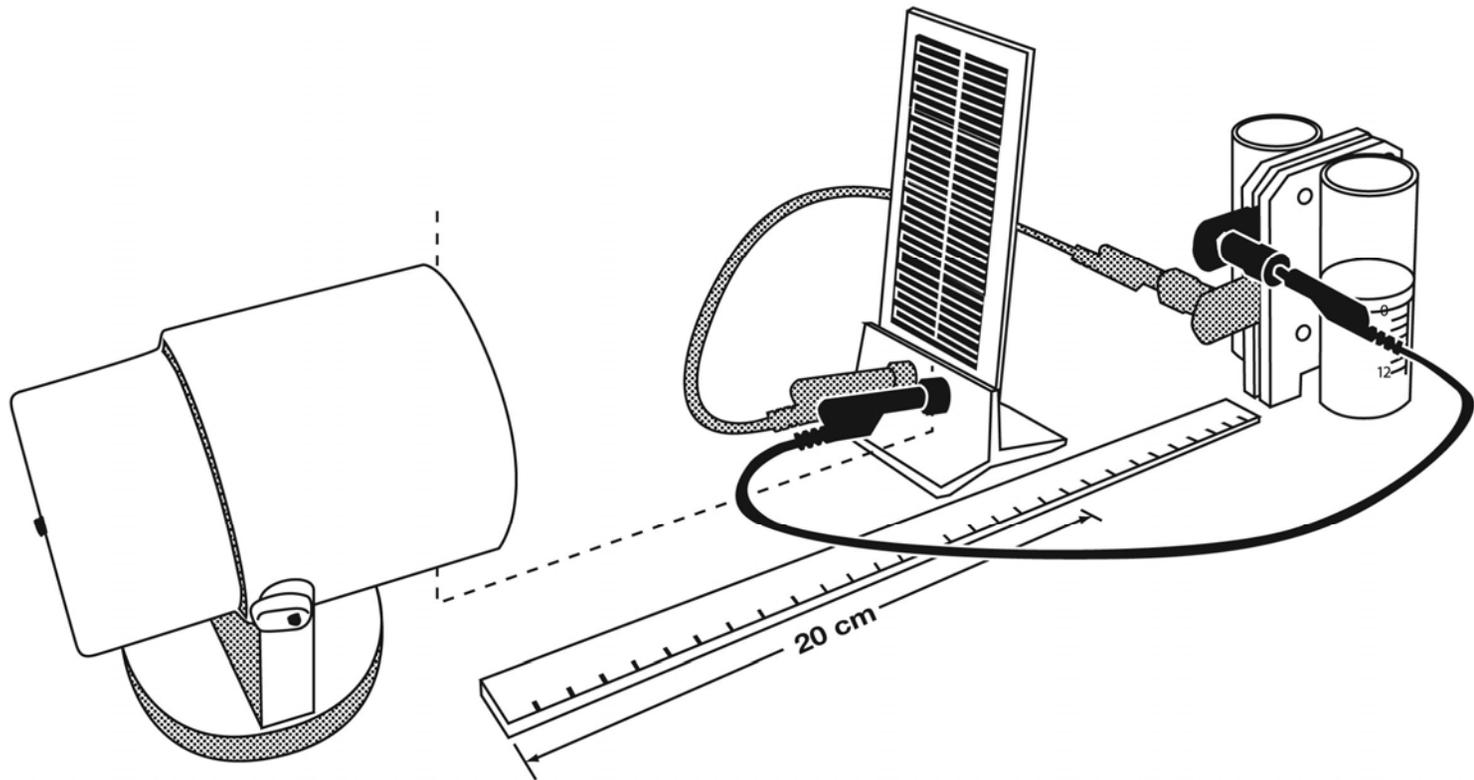


Solar panels on roof tops is one type of solar system. Another solar system can supply 800 times more electricity by capturing the sunlight, directing it into a funnel type device and spilling the concentrated sun's rays onto a smaller cell.

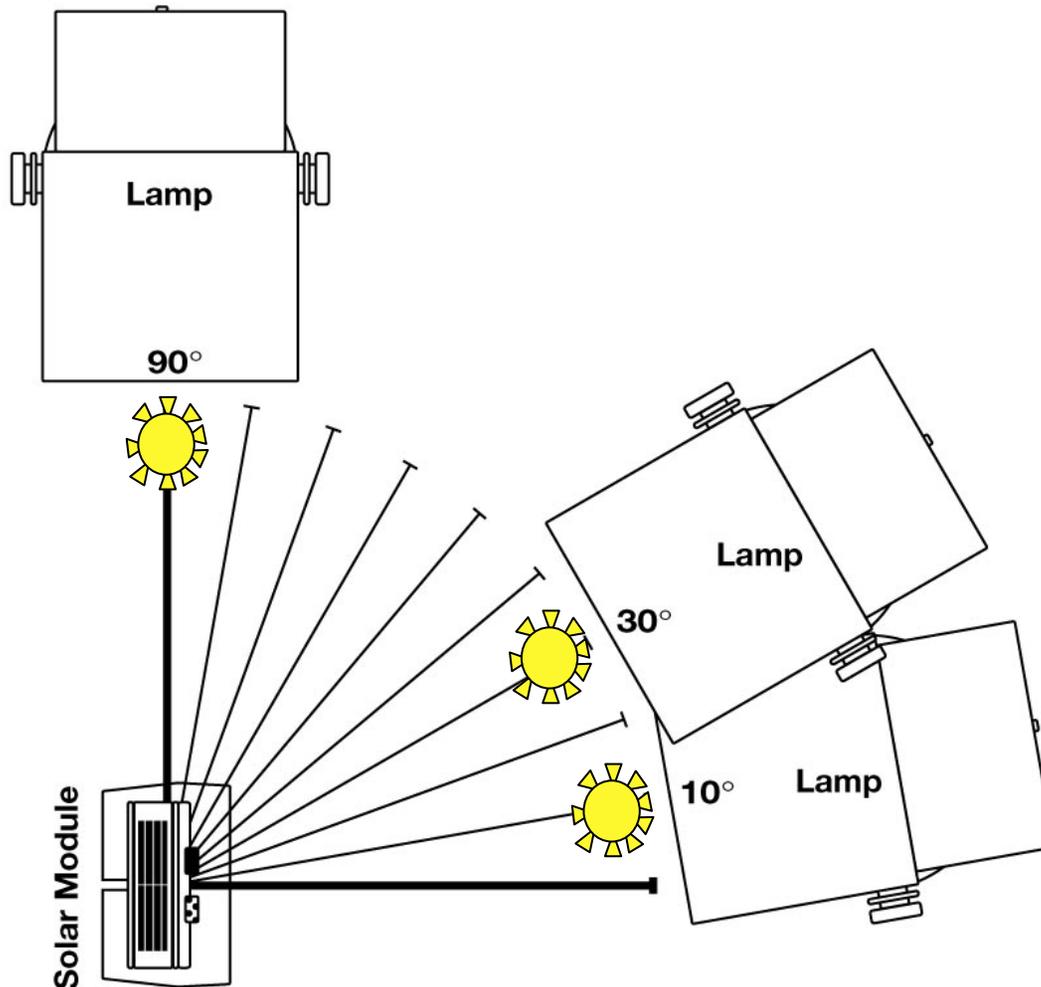
<http://www.pyronsolar.com/US>

The position of the light source is very important. Scientists are making new discoveries about harnessing the sun's energy every day. There are still a lot of problems and YOU are needed to help solve them!

Lets use a solar panel to make hydrogen and oxygen ...



The position of the light source is important.



Some Questions:

Explain that by decomposing H_2O you can get Hydrogen and Oxygen.

What is exothermic?

What is endothermic?

Lets see if you remember...

What is the difference between composition and decomposition of a compound? Give examples.

Where are the metals located on the periodic table? Non-metals? Metalloids?

Name some metals, metalloids, non-metals.

**Question: How much time
does it take to sail 220
yards at one nautical
mile per hour?**

Knot-furlong!

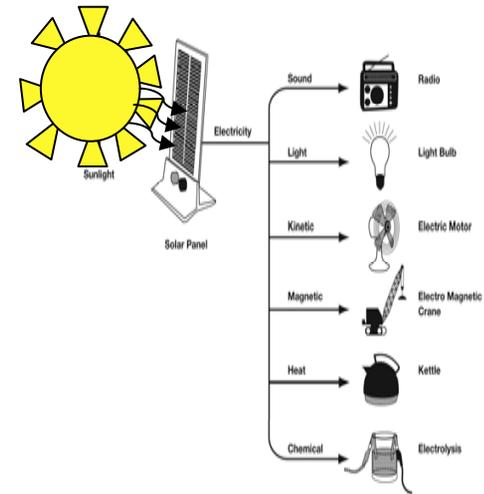
Some Cool Websites

<http://chemfinder.cambridgesoft.com/result.asp>

<http://www-tech.mit.edu/Chemicool/>

<http://chemistry.about.com/od/chemistryforkids/>

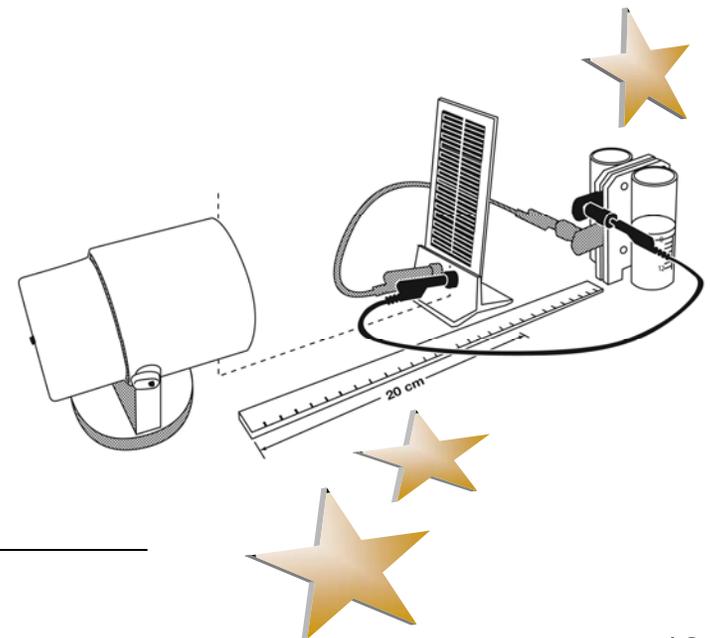
CERTIFICATE OF
Participation
PRESENTED TO



Future Fuel Cell Scientist of America

For Completing Lesson Three:
Let's Make Hydrogen - Decomposition

Mentor: _____



End of Lesson Three