CALIFORNIA STATE SCIENCE FAIR
2012 PROJECT SUMMARY

Name(s)
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Project Number
J0213

Project Title
Sun While You Run

Abstract

Objectives/Goals
My objective was to design a portable USB solar power charger that could be used while "on the go." If you out running errands, running for exercise, sightseeing, hiking, or are in a remote area away from electrical plugs and power sources, the portable solar charger could be worn all day, collecting power, and able to charge any USB electronic device, such as a cell phone or an ipod while you are "on the go." You would also be able to use your phone, or device, while it is charging. The design of the portable solar charger would include a practical and easily worn case and elastic band that can be worn on your upper arm or around a hat. Many other designs could be incorporated to hold the case and allow the user to "wear" the portable device while collecting power and keeping your hands free.

Methods/Materials
The items used to make the Solar USB portable charger were: wire, a USB charging circuit, a AA battery holder, a small metal tin for housing the unit, re-chargable AA2600 1.2 V/R6 nickel metal hydride batteries, a 4V solar panel, 1N914 Diode, soldering iron, solder, tin snips, glue gun with glue, electrical tape and a battery tester. The items used to make the wearable case were: wetsuit material, elastic bands, thread, sewing machine, scissors and a hook/eye closure. The portable charger was put together using the soldering iron and then tested to make sure it was collecting power into the re-chargable batteries. The case was designed to be worn and made using the most secure but easiest to wear design.

Results
The portable solar charger worked very well and I was able to charge my cell phone while I was on the go and "out and about." I was even able to charge additional batteries which could be used as backups when power is needed at night. I also tested it with a Verilux natural light bulb which is used to simulate sunlight and this was also successful.

Conclusions/Discussion
The ease of use and efficiency of the portable USB solar charger I designed was even better than I had expected. Dead cell phone batteries will no longer be a problem when a power source isn't nearby. By simply wearing the portable USB solar charger and collecting power throughout the day, a source will always be available to recharge a phone or other small USB electrical device.

Summary Statement
A wearable, USB solar charger provides a constant, renewable source of power for a cell phone.

Help Received
My parents purchased the supplies I needed for my project.