CALIFORNIA STATE SCIENCE FAIR
2006 PROJECT SUMMARY

Name(s)
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Project Number
J1101

Project Title
Reflective Materials and Solar Power

Abstract

Objectives/Goals
The objective of this experiment is to compare the reflective values of different products on solar cells. The goal is to determine which product produces the most energy output on solar cells. The product with the greatest reflective value will produce the highest energy output and may be used in the future design and construction of public buildings, residential homes, and possibly transportation in the U.S.

Methods/Materials
A 12x12 inch solar panel was set up outdoors and hooked to an amp meter.The solar panel was placed away from the sun. Nine different materials were strategically placed a foot away from the solar panel at an approximate 45 degree angle to reflect sunlight into the solar panel. The materials consisted of mirror, aluminum, silver photo reflector, white plastic, white ceramic tile, white foam board, plywood, cardboard, and black fabric.The reflective value of each of the products was measured with the amp meter. The experiment was repeated 3 times and the results were averaged.

Results
The silver photo reflector produced the highest miliamp reading. The average was 140.3 milliamps. The mirror tested just behind the reflector at an average of 135.3 milliamps. Next was the white foam board at an average reading of 65 milliamps,then the aluminum with an average of 46.3 milliamps,then the plywood at 43.3 milliamps. The white plastic and white ceramic tile tested at 41.3 and 38.5 milliamps. The cardboard tested at an average of 33.3 milliamps.Finally,the lowest milliamp reading came from the black material at an average of 13 milliamps.

Conclusions/Discussion
The silver photo reflector possessed the most reflective value. It produced the highest milliamp readings.The black material actually decreased the milliamp readings by absorbing the light. The results from this experiment could prove to be important for the future of the building industry. In cold climate regions,roofing and other building materials could be made to absorb sunlight for a more energy efficient design. In warmer regions, building products made with reflective qualities could be made to reflect sunlight off of roofs, producing a more energy efficient building.This same idea could be used to produce alternative energy for cities or states by capturing the reflected light from rooftops of government and commercial buildings via solar panels.

Summary Statement
This project will compare the reflective values of different materials on solar cells.

Help Received