



**CALIFORNIA STATE SCIENCE FAIR  
2010 PROJECT SUMMARY**

<b>Name(s)</b> <b>Trey Schoenwetter</b>	<b>Project Number</b> <b>J1030</b>
<b>Project Title</b> <b>The Effect of Light Wavelength on the Output of Photovoltaic Cells</b>	
<b>Abstract</b> <b>Objectives/Goals</b> The objective is to determine the effect of light wavelength on the electrical output of photovoltaic cells with the goal of improving the efficiency of solar panels. <b>Methods/Materials</b> 1.5 watt and 5 watt solar panels were exposed to seven different light wavelengths using colored light filters. The modules were first observed using sunlight as the light source. After exposure to each light wavelength, the electrical output of each panel was recorded in volts using a direct current digital voltmeter. Both panels were then re-tested using a halogen lamp with two 500W bulbs as the light source. Each of the four treatments was replicated three times to improve accuracy of results. <b>Results</b> Of the seven wavelengths tested, the yellow wavelength produced the most electrical energy with both panels and light sources. The electrical output of the other six wavelengths varied depending on the light source. White light outperformed all seven wavelengths. Surprisingly, the effect of wavelength on the solar panels did not produce a linear result. The size of the light wavelength did not directly affect the electrical output of the photovoltaic cells. <b>Conclusions/Discussion</b> Different wavelengths do affect the electrical output of photovoltaic cells. While there was no single wavelength in the visible spectrum that was more productive than full sunlight, the differences in productivity of each wavelength suggests that there may be a way to tune a solar panel so it can more efficiently collect the most productive wavelengths, visible or non-visible, of the electromagnetic spectrum.	
<b>Summary Statement</b> This project seeks to determine if exposure to specific light wavelength can improve the efficiency of photovoltaic cells.	
<b>Help Received</b>	