



**CALIFORNIA STATE SCIENCE FAIR
2007 PROJECT SUMMARY**

Name(s) Simon D. Jacobs	Project Number S1610
Project Title Do Different Frequencies of Light Contain Different Amounts of Energy?	
Abstract Objectives/Goals The experiment "Do different frequencies of light contain different amounts of energy?" was conducted to discover whether higher frequencies of visible light, such as blue light, transfer greater, measurable amounts of energy to other substances. Although it's true that higher frequencies carry greater amounts of energy than lower frequencies, it is not widely known how wide the difference is between colors as close in the spectrum as red, green, and blue. Methods/Materials The experimental apparatus included an LED capable of creating three colors, red, green, and blue, by changing the circuit's construction. The light was directed at a drop of isopropyl alcohol. The time it took for the alcohol to evaporate would represent the relative power of each color of light. Each color was tested 25 times. Results Using red light, the alcohol evaporated after an average of 1:18.74. It evaporated in 1:06.39 under green, and 0:48.48 using blue. According to the t-test, the differences between these results were all statistically significant. Conclusions/Discussion Blue light, which is a higher frequency of light, transfers more energy to other substances than light of lower frequencies, such as red and green.	
Summary Statement Blue light transfers more energy to a drop of alcohol than red or green, as evidenced by the amount of time it takes for a drop of alcohol to evaporate.	
Help Received People at electronics store helped find LED and explained how to hook up circuit; Father helped figure out how to measure heat transfer without an appropriate thermometer, helped connect different components of the circuit, explained t-test, and helped write application; Teachers helped with the	