



**CALIFORNIA STATE SCIENCE FAIR
2005 PROJECT SUMMARY**

Name(s) Nichole M. Cabbage	Project Number S1504
Project Title The Spectrum and Its Relationship to Temperature	
<p style="text-align: center;">Abstract</p> <p>Objectives/Goals To determine and compare the temperature of two or more light sources by measuring each maximum intensity using the spectrum. the maximum intensity has a corresponding wavelength which will be placed in Wein's Law to find the approximate temperature. I also plan to contact the company of the light sensor to figure out a way to calibrate the results I received from the light sensor, to get the true temperatures of the light sources.</p> <p>Methods/Materials Vernier light sensor, manila folder, yardstick, flashlight, overhead projector, Macintosh computer, Data Logger program, diffraction grating, He-Ne Laser</p> <p>Calibrate the diffraction grating, find the angle of diffraction for each ight source, receive the maximum intensity for each ligh source, calibrate the information, find the maximum wavelength, use Wein's law to get the temperatures, compare and contrast.</p> <p>Results The overhead projector had a lower wavelenth, and therefor a higher temperature, but only slightly. I also measured the spectrum of the sun, and the temperature came out way too low, especially compared to past research and tests. This caused me to research the light sensor to make a conclusion for now.</p> <p>Conclusions/Discussion The light sensor has an uneven spectral response, and contact with Hamamatsu, the manufacturer of the Vernier light sensor, is eminent before any further conclusions are made. If my results are calibrated, I can find and compare the true temperatures of the light sources, and new information on how to use the Vernier light sensor will be available.</p>	
Summary Statement Measuring and comparing the temperatures of two light sources using their visible spectrums, maximum intensities and corresponding wavelengths, and Wein's Law.	
Help Received I used lab equipment at Rialto High School under the supervision of Mr. Timothy Bacon.	