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Spectroscopy

This research project was conducted on the question of how to you can find the chemical composition of a star. I hypothesized that by finding the different wavelengths of light a star gives off you can find its chemical composition because every element has its own electron orbitals, and thus has its own wavelengths of light.

My materials were: one CFL light bulb, one incandescent light bulb, one full spectrum incandescent light bulb, one LED light bulb, four lamps, wood, woodworking tools and hardware, black cloth, one camera, one light diffraction grating, and one light diffraction grating chart. (A light diffraction grating works as a prism that shows the different wavelengths of light that are emitted by different matter.)

I made a viewing box, from which I could better study the different wavelengths of light that were emitted. After the viewing box was crafted I screwed each light bulb into a lamp and turned on each light bulb individually. I used the light diffraction grating to measure the different wavelengths of light they emit to the light diffraction grating chart. From this I was able to tell the chemical composition of the light bulbs. When I was finished gathering data from the light bulbs I put a camera behind the light diffraction grating in order to record my data.

I found that because each light bulb created light in a different way that each light bulb emitted different wavelengths of light.