

Michelle Garcia
College of Southern Nevada

Diffraction Grating and Emission Spectra

The objective of the experiment is to measure the wavelength emitted by the gas discharge tube to identify the element. Electrical energy is delivered to the gas causing the electrons to become “excited” and emit light at certain wavelengths. We’ve measured the emission spectrums of hydrogen, helium, neon and compared our result to the known measurements. We used a grating spectrometer to measure at which angle the colors appear. We take our measurement and use the equation to figure out our wavelength (λ)

$n\lambda = d \sin \theta$ where n is equal to the spectral line order, d is grating distance between slits and θ is equal to the angle measured. After calibrating the instrument, we used hydrogen as our known variable to see how accurate our data was. We then took the measurements of neon and helium and are going to put them on a plot line to see how accurate our data is with known measurements. Looking at an emission spectrum can be used to determine the composition of a material. Many astronomers use this method to identify the composition of stars and distant planets.