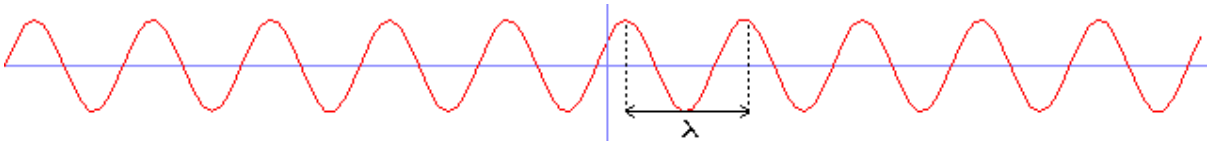
Green Monochromatic Lamps.

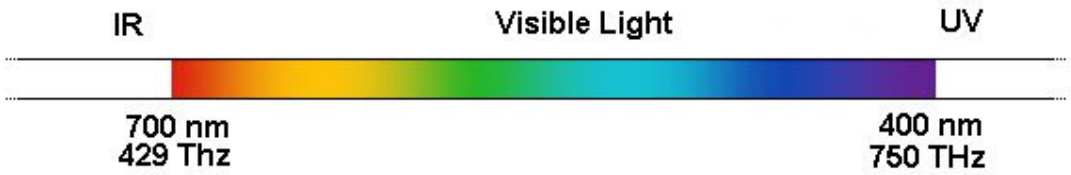
Light source for testing the flatness of polished optical surfaces. Very effective for viewing Brewster's Fringes and Newton's Rings. Each lamp contains two fluorescent bulbs without coating, except the smallest, which has one U-shaped bulb. Each window is composed of two plastic sheets, one diffusing white and one transparent green to pass only the green line, 5461Å, of the mercury spectrum present. Green filter displays sharply-defined interference rings. Visibility is several times greater than helium-type lights and the green light helps eliminate eye fatigue. The unit is tilted forward at 120° angle of diffusion, allowing uniform illumination over the surface. Lamps are provided with a grounded 3-prong cord (230V) and tilting base (approximately 30° tilt forward)

Our normal white light or a visible light has a sine wave type frequency from 430 THz to 750 THz. (1 THz = 1 TeraHertz = 10^12 Hz). All other EM waves can't be seen.

Monochromatic light is light made up of one single pure frequency (this is certainly not the general case, most light you see is multichromatic). Monochromatic light looks to the eye as a pure color, and can never be white or magenta. Since it contains only one frequency, the wave of monochromatic light can be represented as a sine:

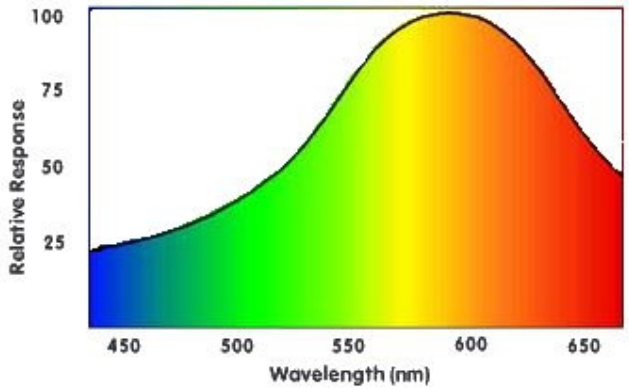


The height of the sine is the amplitude or how bright the light is. The width of one period (called lambda) is the wavelength of the light, and is inversely related to the frequency: since the light travels at 300000000 m/s, it's wavelength is 300000000/f where f is the frequency. So the visible spectrum of light has wavelengths from around 400 to 700 nm.(1 nm = 10^-9 meter).

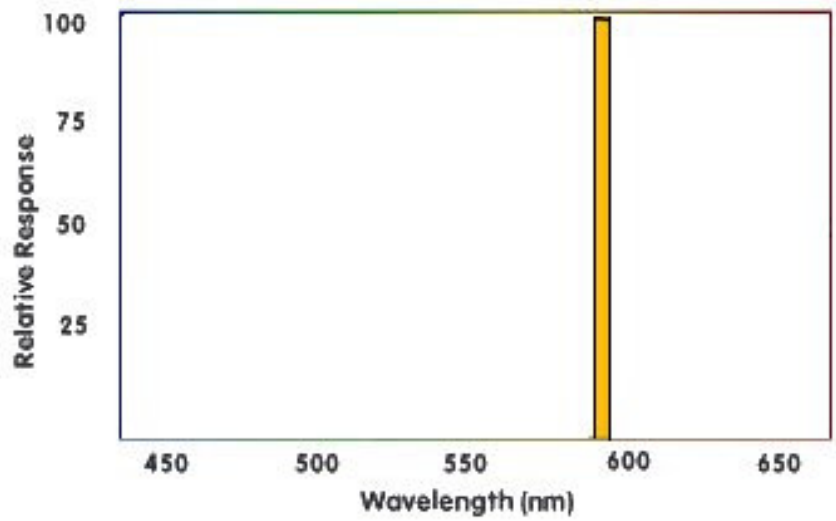


Light waves are a sum of many different frequencies, or the sum of many sine curves. Each of these sine curves has it's own frequency, and can have it's own amplitude. A **spectrum** shows for each frequency the amplitude.

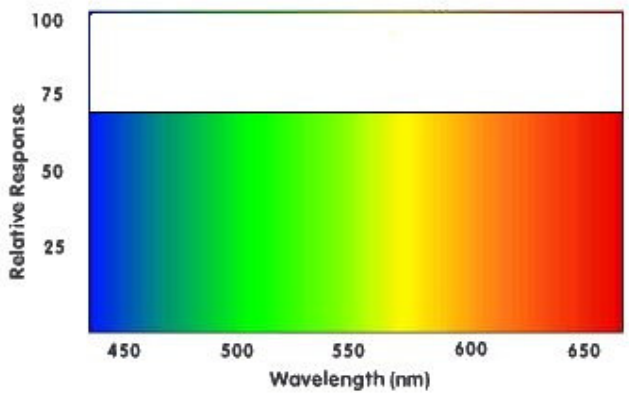
Here's an example of such a spectrum:



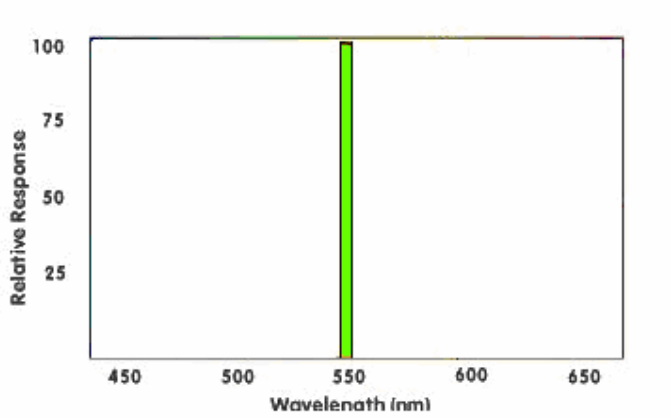
It is the spectrum of a yellow LED found. The top of the spectrum is the Dominant Frequency, and that is the color our eyes will usually see if light with this spectrum shines on it. If this yellow LED would have been monochromatic, the spectrum would have looked like this instead:



The spectrum of white light is as follows (the height of the curve doesn't really matter):



Here we are using the spectrum of “Green” LED found in the visible light. The intensity of this LED is slightly lower than the yellow LED and is more pleasing to our eyes. The spectrum of this green LED will look like



Since the green light is a pleasing light to eye and also has a fixed frequency we have chosen the green source as a monochromatic light. The monochrome frequency of the light source which is called as lambda for green light is 5461Å. This is for the further calculations if needed.