

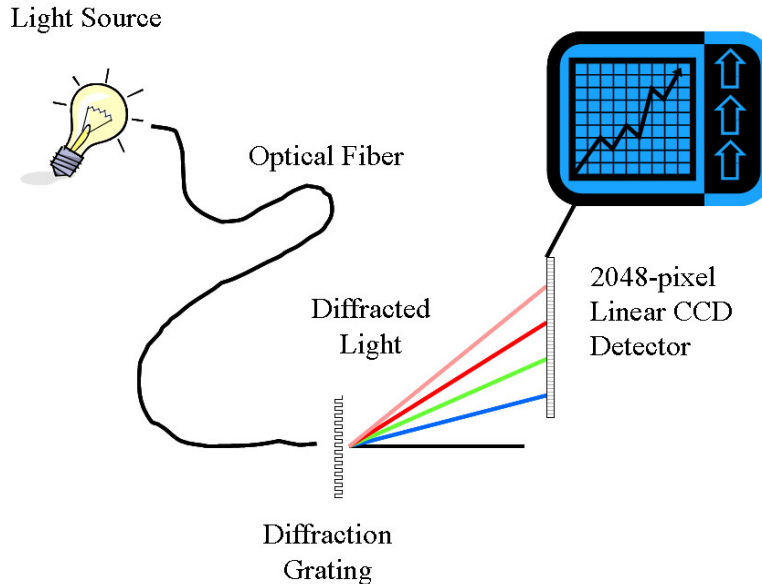
Spectra of Gas Discharge Lamps

Obtained with Ocean Optics Model S2000-FL Fiber-Optic Spectrometer

<http://www.oceanoptics.com>

<http://www.oceanoptics.com/products/s2000.asp>

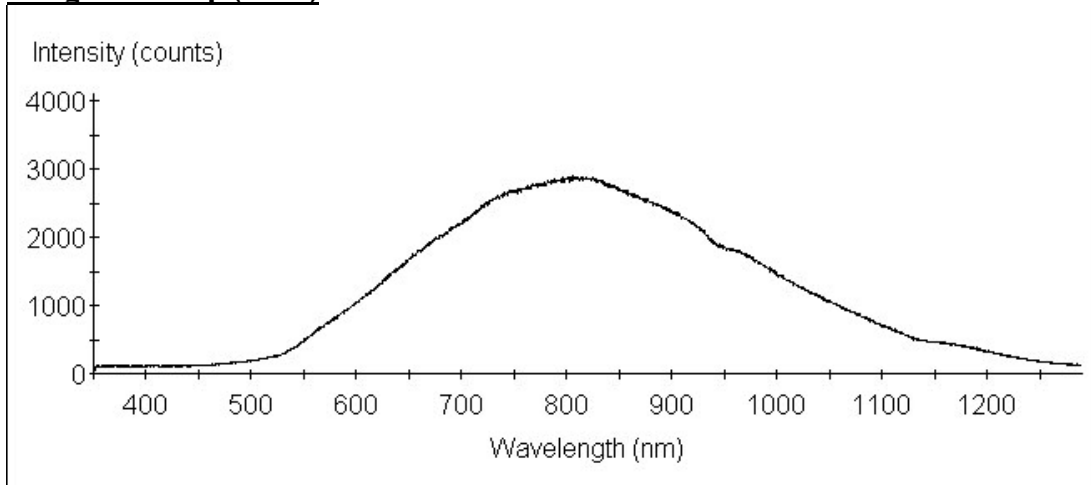
This accepts the input through an optical fiber, which transmits the light to a grating, where the light is diffracted at angles proportional to the wavelength λ



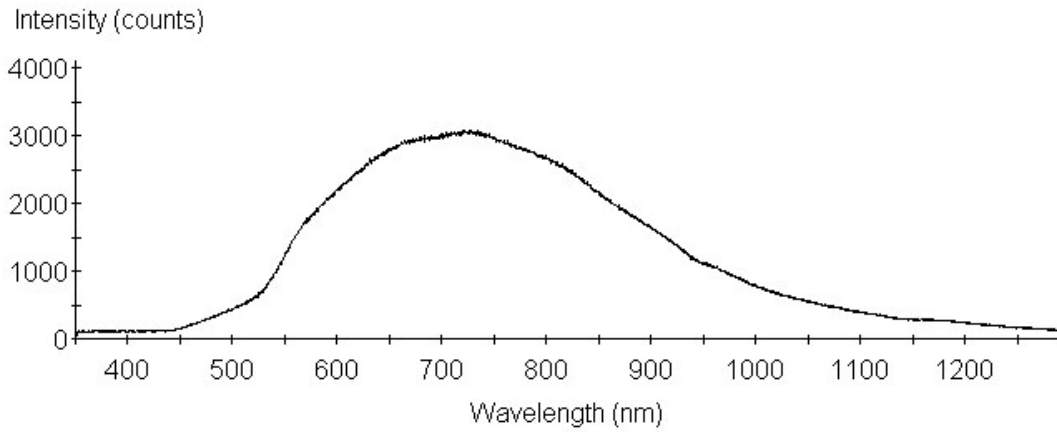
The spectra are measured over the range of wavelengths between approximately 350 nm (near ultraviolet) and 1200 nm (near infrared). Recall that the range of visible wavelengths is approximately 400 nm (blue) to 700 nm (red).

The graphs for the gas discharge lamps and for “broadband” tungsten light at two brightness settings (faint = cool lamp, bright = hot lamp) are shown on the following pages. The actual “brightness” values (y-axis) are not calibrated; in other words they are relative. Also note that the number of counts on the y-axis is limited to 4095; the values are 0-4095 \Rightarrow 4096 possible “gray levels” $\Rightarrow 2^{10}$ (this system uses a 10-bit “analog-to-digital converter”, or “ADC”). Any brightnesses larger than 4095 counts are “clipped” at 4095, hence the “flat tops” to some of the plots. This is EXACTLY like the “clipped” values of the star images that you may have seen in the first laboratory.

Tungsten Lamp (faint)

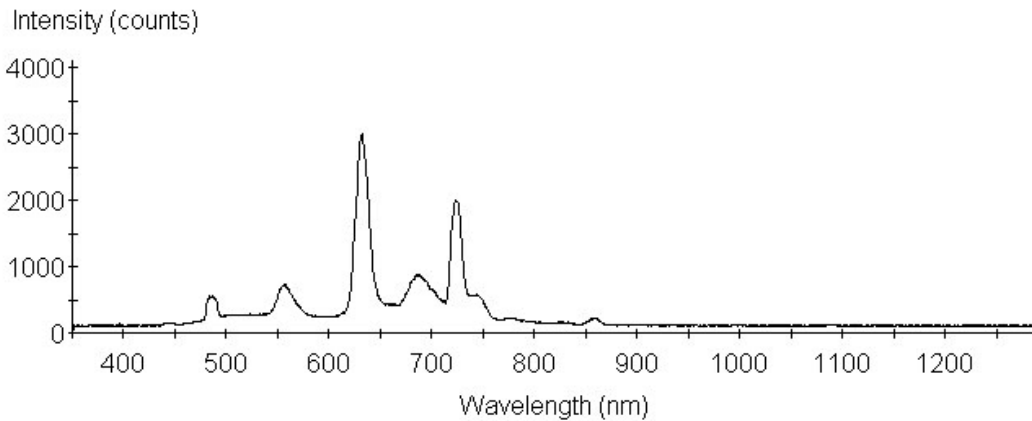


Tungsten Lamp (bright)

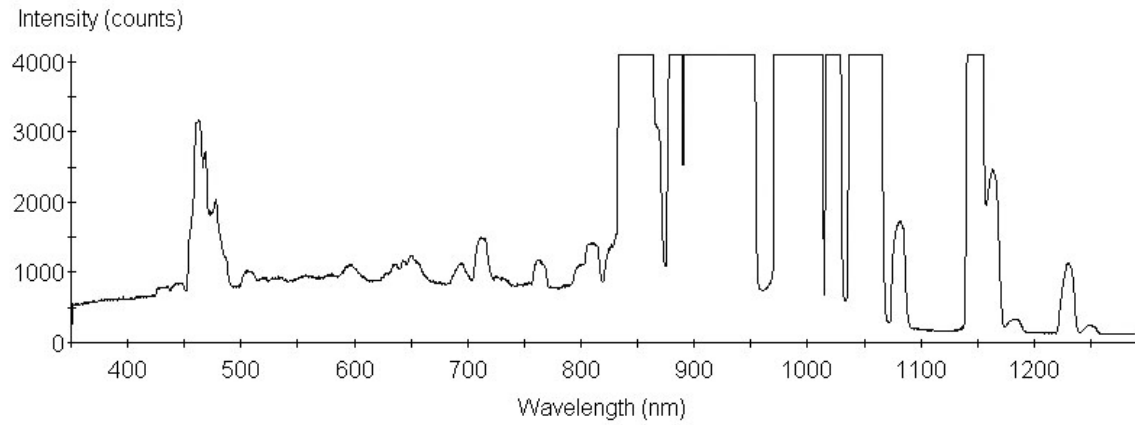


(Note that the maximum of the blackbody curve shifted to shorter wavelengths as the lamp got warmer)

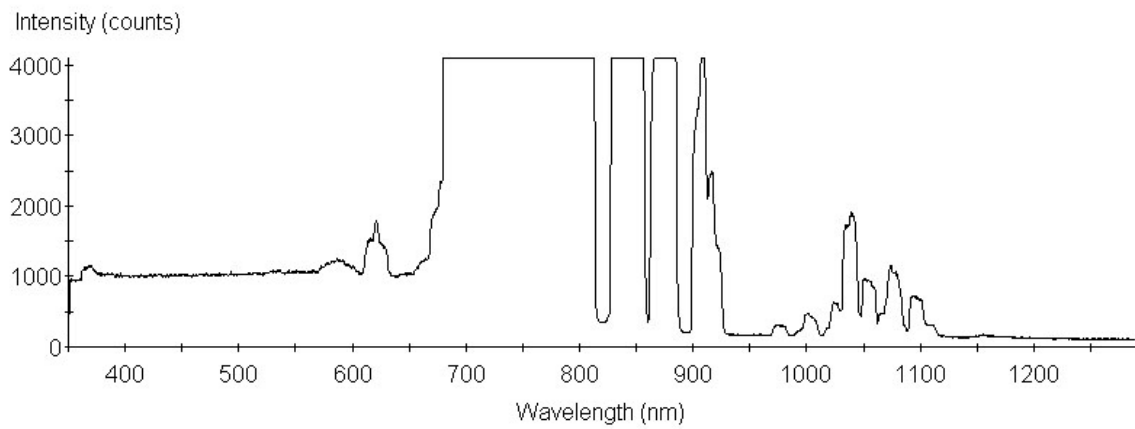
Fluorescent Lamp (Room Lights)



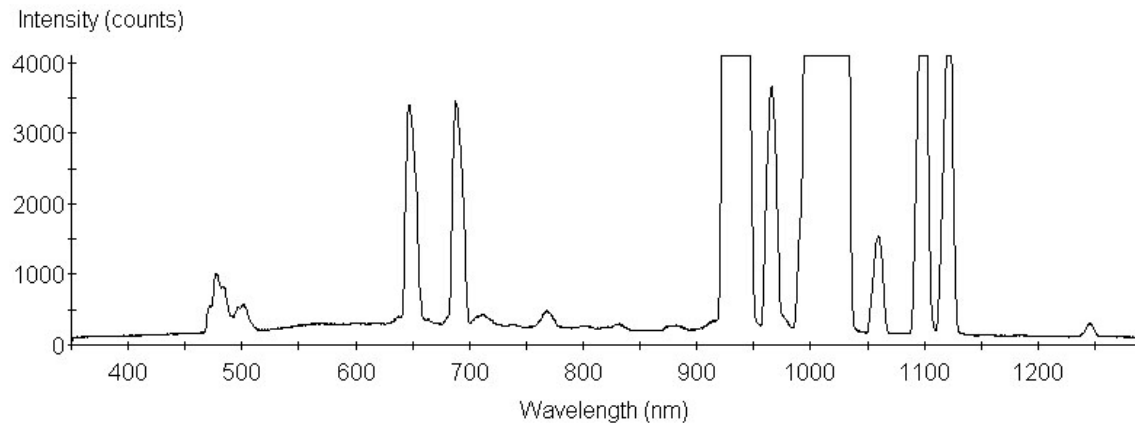
Argon – Ar



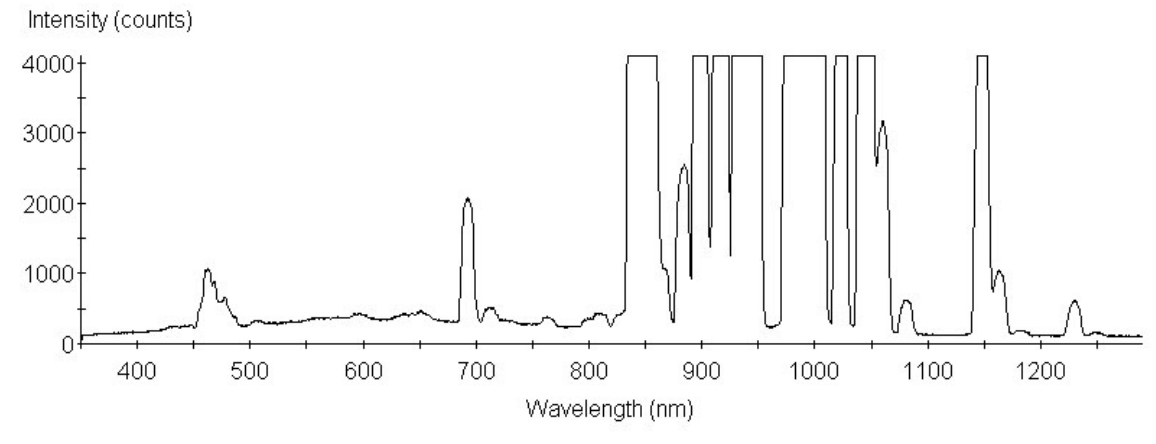
Neon -- Ne



Krypton – Kr



Sodium – Na



Mercury-Zinc-Cadium – HgZnCd

