Chem 302 Laboratory 1

Plotting and working with the Planck Distribution

NAME:

The Planck distribution predicts the intensities of all frequencies of radiation emitted by a black body. Its equation in terms of ***wave numbers*** $\tilde{\nu}$ (m^{-1}) is:

$$\rho = 2hc^2\tilde{\nu}^3 \frac{1}{e^{\frac{hc\tilde{\nu}}{k_B T}} - 1}$$

What constants will you need to plot it? What are their values in MKS units?

Finish the black body function in the file **planck_dist_plot.R**. Register it and use it to plot a black body distribution. Print out the plot.

What domain of ***wavelengths*** (in units of nm) gives a good picture of the distribution at 1500K? Hint: It may be handy to use the relationship between wave numbers and wavelength. Watch your units though!!!

Approximately where does the maximum intensity occur at this temperature?

What named portion of the electromagnetic spectrum does the maximum fall in?

What spectroscopy might this black body radiator provide a good source of radiation for?