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*** (m-1) is:

1. What are the values of the constants you need to plot it in MKS units?

2. Finish the black body function in the file **planck\_dist\_plot.R**. Register it and use it to plot a black body distribution. Try wavenumbers in the range from 10000m-1 to 3000000m-1 and a temperature of 1500K.

a. Upload your plot.

b. Paste in all your R code

3. What ***wavelengths*** (in units of nm) do the wave number range you chose correspond to?

4. Approximately where does the maximum intensity occur at this temperature. Express the maximum in units of cm-1, s-1 (Hz), and nm?

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

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