

## Key Q's and Vocab – Spectroscopy

### Vocab:

1. **Electromagnetic (EM) Spectrum** - spectrum that relates the energy, wavelength, and frequency of photons emitted from matter.
2. **Analyte** - species of interest in an experiment or solution
3. **Absorbance** - value that represents the amount of light absorbed by analyte of interest in a solution
4. **Percent Transmittance** - amount of light that “makes it through” a sample and reported as a percentage (amount of light entering solution / amount of light exiting solution). **Absorbance =  $-\log(\text{transmittance})$**
5. **Lambda ( $\lambda$ ) max** – wavelength of light that analyte of interest is most efficient at absorbing energy
6. **Beer-Lambert Law** - Law stating that the concentration of an analyte is directly proportional to the amount of light that will be absorbed
7. **Standard curve** – relates known concentrations to absorbance values to determine the linear relationship

### Key Questions:

1. Explain why it is necessary to use  $\lambda$  max when conducting a Beer-Lambert Law experiment.
2. You are given a 5M standardized solution of  $\text{CuSO}_4$  and have a sample of  $\text{CuSO}_4$  with an unknown concentration. Write out the steps necessary to determine the concentration of the unknown.
3. Explain why different regions of the EM spectrum are used to probe different properties/structures of the elements