SPECTROSCOPY AND BEER’S LAW
Electromagnetic Spectrum
Spectrophotometer
(Simplified Diagram)

Light Source  Wavelength selection  Sample  Detector  Meter

Transmittance (Percent transmittance): The ratio of light transmitted through a solution to the light directed at the solution.

\[ T = \frac{I_t}{I_o} \]

Absorbance: A measure of the amount of light absorbed by a solution.

\[ A = -\log(T) \]
Colorimeter

Sample Compartment with cuvette

Wavelength Selector with 3 fixed wavelengths
635nm (red)
565nm (green)
470nm (blue)
Absorbance Graph

Chlorophyll Absorption Spectrum of Visible Light
Color Wheel
Beer-Lambert Law

\[ A = abc \]

Absorbance

Concentration

Path length

Molar absorptivity
  (dependent on wavelength)
Beer's Law Plot

Concentration (M)

A

1

A → C
Beer’s Law
Phet Simulation

- https://phet.colorado.edu/en/simulation/beer-law-lab