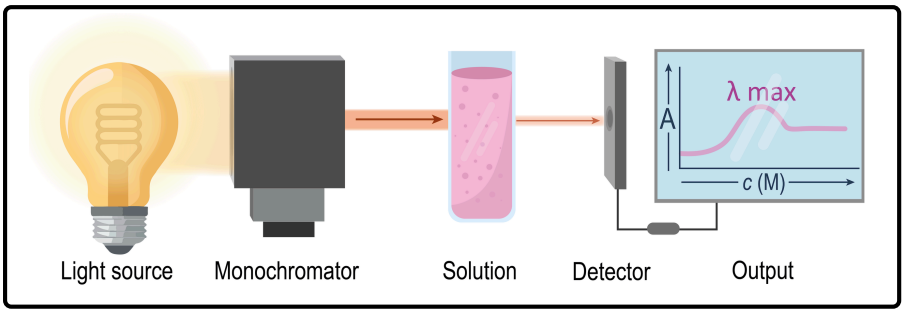
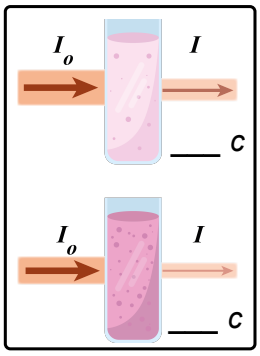
CONCEPT: BEER-LAMBERT LAW

- **Beer-Lambert Law**: linear relationship between _____ of a sample and how strong it _____ light.
  - □ Used to measure concentration (____) of a solution, its _____ (A) or _____ absorptivity (ε).
    - When sample solution absorbs light, I is _____ than I_0.





Beer-Lambert Law Equation

$$A = \log\left(\frac{\_\_}{\_\_}\right) = \_\_\_\_$$

A = _____ of sample
I_0 = _____ of light
I = Intensity of light through _____

ε = molar absorptivity (_____)
c = sample concentration (_____)
l = pathlength of light (____)

EXAMPLE: A sample solution was found to have absorbance of 0.602. Calculate the I_0/I ratio.

PRACTICE: A 1.6 x 10^{-3} g sample of compound (MM = 136 g/mol) was dissolved in 15 mL of methanol. Maximum absorption at λ_{max} (258 nm) represents absorbance of 0.73. Determine the molar absorptivity of the sample if the light travels through a 1.6 cm UV cell.

a) 581718 $M^{-1}\,cm^{-1}$ b) 58.0 $M^{-1}\,cm^{-1}$ c) 2.06 x 10^5 $M^{-1}\,cm^{-1}$ d) 580 $M^{-1}\,cm^{-1}$