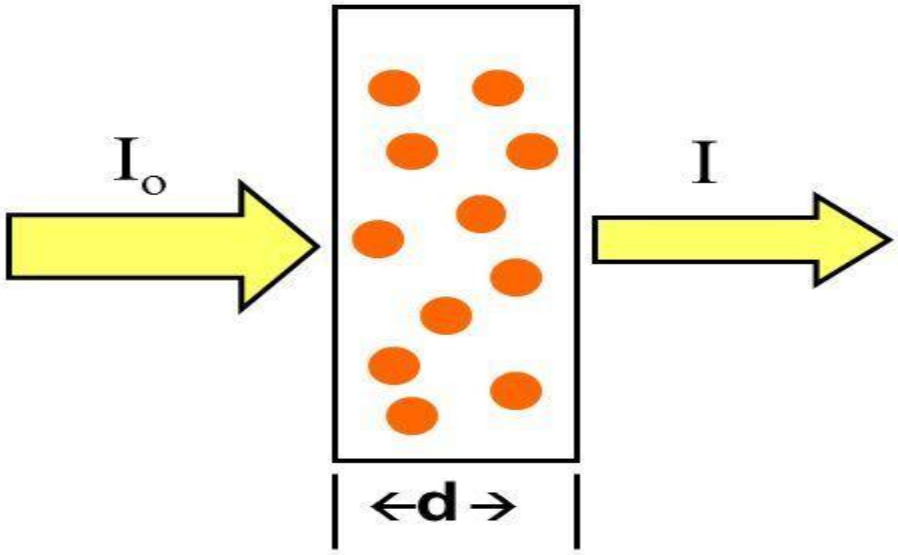
Lambert - Beer Law : brief overview

In a nutshell:

How much light goes out when it touches a surface or object

Beer-Lambert Law

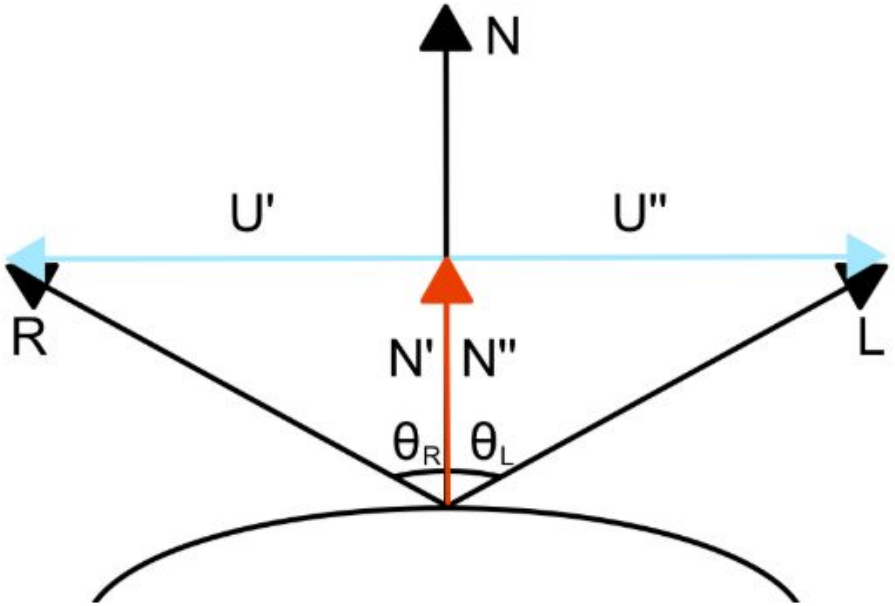


$$I = I_o 10^{-\varepsilon dc}$$

I = light intensity
ε = extinction coefficient
d = thickness
c = concentration

$$\text{Absorption (A)} = -\log(I/I_o) = \varepsilon dc$$

PHONG MODEL



$$\Theta_R = \Theta_L$$

$$\hat{R} \cdot \hat{N} = \hat{L} \cdot \hat{N}$$

$$\hat{U}' = -\hat{U}''$$

$$\hat{U}' = \hat{R} - \hat{N}' = \hat{R} - (\hat{R} \cdot \hat{N})\hat{N}$$

$$\hat{U}'' = \hat{L} - \hat{N}'' = \hat{L} - (\hat{L} \cdot \hat{N})\hat{N}$$

$$\hat{R} - (\hat{R} \cdot \hat{N})\hat{N} = -(\hat{L} - (\hat{L} \cdot \hat{N})\hat{N})$$

$$\hat{R} - (\hat{L} \cdot \hat{N})\hat{N} = -(\hat{L} - (\hat{L} \cdot \hat{N})\hat{N})$$

$$\hat{R} = (\hat{L} \cdot \hat{N})\hat{N} - (\hat{L} - (\hat{L} \cdot \hat{N})\hat{N})$$

$$\hat{R} = (\hat{L} \cdot \hat{N})\hat{N} - \hat{L} + (\hat{L} \cdot \hat{N})\hat{N}$$

$$R = 2(\hat{N} \cdot \hat{L})\hat{N} - \hat{L}$$