

Using LINEST function in Excel, we get the following results:

Table 2: Slope, intercept and their uncertainties

slope	818.5714	s_m	22.1405
intercept	0.0103	s_b	0.0080
s_y	0.0117	R^2	0.9963

From table 2, the molar absorptivity = $818.571 \pm 22.141 \text{ (M}^{-1} \text{ cm}^{-1}\text{)}$

Figure 1 shows the equation of linear line. This equation can be used to calculate the phosphate concentration in unknown sample as follow:

$$y = 818.57x + 0.0103$$

(where y is absorbance and x is the phosphate concentration in the diluted hydrolyzed solution)

Rearrange the equation :

$$x = (y - 0.0103) / 818.57$$

From table 1, the absorbance for unknown (1) is 0.095. thus the concentration of phosphate in diluted hydrolyzed solution:

$$x = (0.095 - 0.0103) / 818.57$$

$$= 1.03 \times 10^{-4} \text{ M}$$

The amount of phosphate = $1.03 \times 10^{-4} \text{ M} \times 0.002 \text{ L}$

$$= 2.06 \times 10^{-7} \text{ mol}$$