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Chem 106 - 02

1/30/17

Kinetics 1 Prelab

1. The initial slope is obtained by drawing a tangent at the origin of the graph provided. The slope equals the difference in y axis/ difference in x axis. The calculations are $(.92-.35)/(1-9) = -.07125$ mols/liter

2. From the plot of concentration vs A, the slope is $-.540/\text{min}$. Absorbance is $A=ebC$.

e = molar absorptivity coefficient

b = path length

C = concentration

rate of absorbance is measured by $A = -.54/\text{min}$ and $-.54 = 383 \cdot 1 \cdot \text{rate of change in concentration}$

rate of change in concentration = $-.54/383 \text{ M/min} = -.00141 \text{ M/min}$

3. Numbers 3 and 4 are coefficients of A, B, and C in the reaction given $-dA/dt = -6.5 \cdot 10^{-2} \text{ M/sec}$.

$$-dA/2dt = -dB/3dt$$

$$dB/dt = -6.5 \cdot 10^{-2} \cdot 3/2 = -9.75 \text{ M/sec}$$

$$-dA/2dt = dC/4dt$$

$$dC/dt = 6.5 \cdot 10^{-2} \cdot 4/2 = 13 \cdot 10^{-2} \text{ M/sec}$$

4. To determine the rate for the reaction crystal violet with sodium hydroxide, numerical measurements will be taken to estimate its activation energy. The spectrophotometer is used to determine where the wavelength of Crystal Violet most strongly absorbs at. The colorimeter will then calibrate it. Three test tubes will be used for NaOH, DI water, and Crystal Violet, each of which will contain specific amounts of liquid added to it. By using the Logger Pro, all the absorbance measurements needed will be taken.