

16.16 Graphing Using the Arrhenius Equation (Video)

This project was preformed to supply **Libretext authors** with videos on General Chemistry topics which can be used to enhance their projects. Also, these videos are meant to act as a learning resource for **all General Chemistry students**.

Video Topics

Taking the logarithm of both sides of the Arrhenius Equation produces the linear form.

$$k = Ae^{-E_a/RT}$$

$$\ln(k) = -E_a/RT + \ln(A)$$

$$y = \ln(k)$$

$$m = \text{Slope} = -E_a/R$$

$$x = 1/T$$

$$b = \ln(A)$$

Running a series of experiments where a reaction's k values are determined at a series of different temperatures provides a means of experimentally determining E_a and A for the reaction.

Graphing $\ln(k)$ vs. $1/T$ provides a graph with a negative slope. In this graph the y-intercept is equal to $\ln A$ and the slope is equal to $(-E_a/R)$

Thus, the E_a of the reaction is: $E_a = -(\text{slope})(R)$

This video contains a set of data points which can be graphed to determine E_a and A for a sample reaction.

Link to Video

Graphing Using the Arrhenius Equation: https://youtu.be/xA_4YE3s0Ac



Attribution

- Prof. Steven Farmer (Sonoma State University)

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