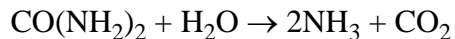


Kinetics of the Hydrolysis of Urea

The data file “Hydrolysis of Urea,” which is in the course’s workshop folder, contains data collected during the hydrolysis of urea



displayed as a plot of [urea] as a function of time. The rate of the reaction is defined as the change in the concentration of urea per unit change in time; that is

$$\text{Rate} = \frac{\Delta[\text{urea}]}{\Delta\text{time}} = \frac{d[\text{urea}]}{dt}$$

You will note that there is a cursor which displays values of [urea] and time. In addition, the cursor function displays the slope at each data point. Using this data, answer the following questions.

1. What is the average rate between $t = 4$ days and $t = 16$ days?
2. What is the rate at $t = 10$ days?
3. What happens to the reaction’s rate over time? Explain your reasoning.
4. At what point in time does the reaction have its greatest rate? To what value is the rate approaching?
5. The [urea] as a function of time appears to follow a predictable pattern. Fit an appropriate equation to this data (hint: you’ve seen similar data in lab) and speculate on the meaning of the equation’s variables.