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Chemistry 30

Unit 2: Chemical Kinetics

Assignment 2: 2-1 to 2-3

1. Describe the collision theory, being sure to list the factors required for successful collisions.

- 2. Think of a set of tasks that you do on a regular basis (such as getting out of bed and getting ready for school).
 - List the starting point of this event series (the initial "reactants")
 - List the final end point of the series (the final "product")
 - List the steps required, in the proper order, and the amount of time required for each step (approximate times are fine)
 - Which step is the rate determining step?
 - How might you speed up the rate determining step?

3. Given the following reaction mechanism, determine the equation for the overall reaction.

Step 1:
$$A_2(g) \rightarrow 2 A(g)$$

Step 2:
$$2 A(g) + 2 B(g) \rightarrow 2 AB(g)$$

Step 3:
$$2 AB(g) + C_2(g) \rightarrow 2 ABC(g)$$

Step 4:
$$2 ABC(g) \rightarrow 2 AC(g) + 2 B(g)$$

Also list the reaction intermediates for this reaction:

4. Draw a basic kinetic energy diagram. Include a line to represent threshold energy for a reaction, and label the line. Also label the axes but you do not need to include numerical values on these axes.