

14 • Chemical Kinetics

14.5 Reaction Mechanism Lecture Worksheet

What do we know about Kinetics?

- Rate laws tell us how changing the concentrations affect the rate of a reaction
- Certain things generally increase the rate of a reactions
 - o Increasing Temperature
 - o Increasing concentration of reactants

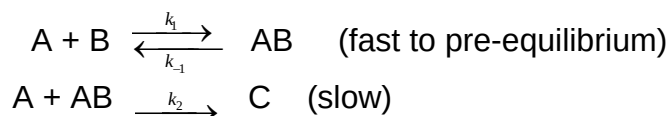
So, what are reaction mechanisms?

- o Reaction Mechanisms describe the steps involved in a chemical reaction. They tell us how reactants possibly collide to make products
- o They relate to the balanced equation since the equation gives us information about the reactions
- o They also describe the rate law and we can determine the rate law from looking at the reactions mechanism. Here's how:

1. Determine the Rate Law from the following mechanism

Chemical Equation $2A + B \rightarrow C$

Mechanism 1 is a possible mechanism for the above reaction.



Net equation: $2A + B \rightarrow C$

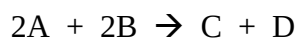
Determine the Rate Law for this mechanism

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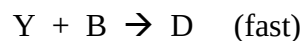
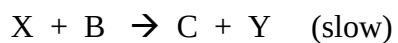
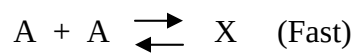
R a t e M e c h a n i s m L e c t u r e W o r k s h e e t

Problem #2

Balanced Equation:



Possible mechanism:



Net Equation

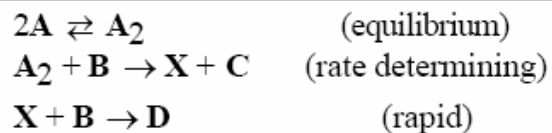
Determine the Rate Law for this mechanism

14 • Chemical Kinetics

R a t e M e c h a n i s m L e c t u r e W o r k s h e e t

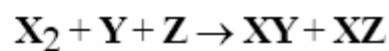
Problem #3

The reaction $2\text{A} + 2\text{B} \rightarrow \text{C} + \text{D}$ proceeds by this mechanism:

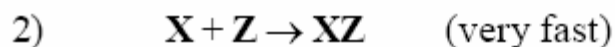
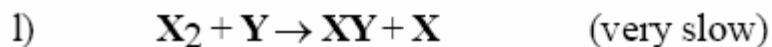


The rate equation for the reaction is

Problem #4 For the reaction



the mechanism was determined to be



What is the rate law for this reaction?

