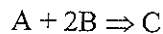


Practice quiz Q9: Rate law

#5-4 _____/8 points



The equation provided is believed to be a single step reaction.

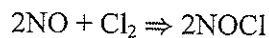
- _____ 1. (#5-4) The rate law for the equation provided is.
- Rate = $K[A][B]$
 - Rate = $K[A]$
 - Rate = $K[A][B]^2$
 - Not able to determine because individual data is needed.
- _____ 2. (#5-4) What is the order of this reaction relative to A.
- 1
 - 2
 - 3
 - not able to determine with out data.
- _____ 3. (#5-4) If you were to double the concentration of B the overall rate would.
- not be affected
 - double
 - triple
 - quadruple

Complete the following

4.

Experiment	[NO]M ²	[Cl]M	INITIAL RATE M/s NOCl
1	0.0125	0.255	2.27E-5
2	0.0125	0.510	4.45 E-5
3	0.025	0.255	9.08 E-5

Handwritten notes: Experiment 1 to 2: [NO] constant, [Cl] x2, Rate x2. Experiment 1 to 3: [NO] x2, [Cl] constant, Rate x4.



- a) Using the data provided, determine the orders for all three reactants, the overall reaction order, and the value of the rate constant including units. (3 points)

$$Rate = K [NO]^2 [Cl]^1 \quad K = \frac{2.27E-5}{(0.0125)^2 (0.255)} = 0.569 \frac{L^2}{mol^2 sec}$$

- b) c) What would be the initial rate in experiment 4, which has [NO] = 0.0500M and [Cl] = 0.0255M (1 point)

b) $0.569 (0.05)^2 (0.0255) = 3.62E-5 \frac{mol}{L sec}$

- c) d) If the Cl₂ is being removed at X rate. What is the rate at which the NO is being removed?

c) $x \cdot \frac{2}{1} = 2x$

Handwritten note: losing