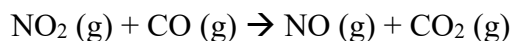


CHEM106 PS-6 Due at the beginning of class

- The activation energies for uncatalyzed and catalyzed reactions at a temperature of 298 K were found to be 95 kJ/mole and 75 kJ/mole respectively.
 - For uncatalyzed reaction, calculate the fraction of collisions with sufficient kinetic energies to react.
 - For the catalyzed reaction, calculate the fraction of collisions with sufficient kinetic energies to react.
 - Calculate how many times faster the catalyzed reaction occurs.
- Use the experimental data below to find the rate law & rate constant for the reaction



<u>Experiment Number</u>	<u>Rate (M/s)</u>	<u>[NO₂]</u>	<u>[CO]</u>
1	0.011	0.15	0.15
2	0.045	0.30	0.15
3	0.180	0.60	0.30
4	0.180	0.60	0.60

- For a chemical reaction having an activation energy of 35 kJ/mole, clearly calculate (showing all formulas and a logical process) how many times faster this reaction would occur at body temperature compared to room temperature (298K).
- Values of the rate constant for the decomposition of N₂O₅ are 2.14 x 10⁵ at 658 K and 7.03 x 10⁵ at 703 K. Determine the activation energy for this decomposition reaction.