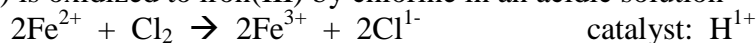


●Chemical Kinetics

If the rate of decomposition of PH_3 is 0.328 M/s, what is the rate of formation of H_2 ?



Iron(II) is oxidized to iron(III) by chlorine in an acidic solution



Consider the following data:

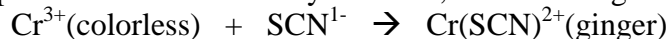
	Initial Conc (M)			Initial Rate (M/s)
	Fe^{2+}	Cl_2	H^{1+}	
Exp 1	0.0020	0.0020	1.0	1.0×10^{-5}
Exp 2	0.0040	0.0020	1.0	2.0×10^{-5}
Exp 3	0.0020	0.0040	1.0	2.0×10^{-5}
Exp 4	0.0040	0.0040	1.0	4.0×10^{-5}
Exp 5	0.0020	0.0020	0.5	2.0×10^{-5}
Exp 6	0.0020	0.0020	0.1	1.0×10^{-4}

What is the rate law for the reaction? What is the rate constant?

Cyclobutane decomposes when heated to form ethylene; the rate constant is $5.09 \times 10^{-4}/\text{s}$. In an experiment, the initial concentration of cyclobutane was 0.00150 M. After heating at 450°C for 751 s, what is the concentration of cyclobutane?

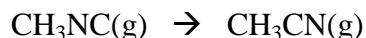
The disproportionation of *para*-toluenesulfonic acid has a rate constant of $0.1372/(\text{M}\cdot\text{min})$ at room temperature. If the initial sample of *para*-toluenesulfonic acid is 0.100 M, how long would it take for the concentration to decrease to 0.0351 M?

In the presence of excess thiocyanate ion, the following reaction occurs; the rate constant is $2.0 \times 10^{-6}/\text{s}$.



If 85.0% reaction is needed to obtain a noticeable color from the formation of $\text{Cr}(\text{SCN})^{2+}$, how many hours will it take for color to appear?

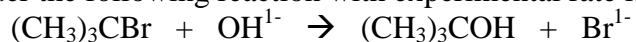
Consider the isomerization of methyl isocyanide:



At 230°C , the rate constant for the reaction is $6.3 \times 10^{-4}/\text{s}$. What is the half life? How long would it take for the concentration of CH_3NC to decrease to 25% of its initial value?

The rate of a reaction quadruples when the temperature is increased from 25°C to 35°C . Calculate the activation energy for this reaction.

Consider the following reaction with experimental rate law of rate = $k[(\text{CH}_3)_3\text{CBr}]$.



Is the following mechanism plausible?

