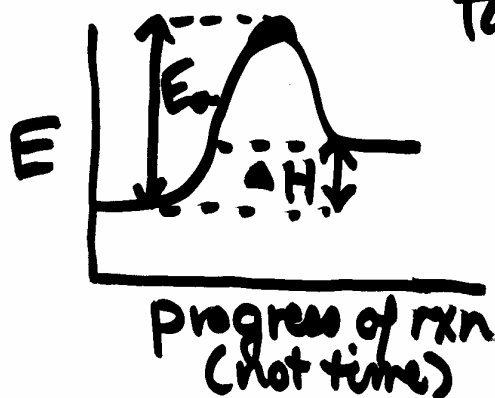


Chapter 15 - Chemical Kinetics

- 2 theories - collision theory (effective collision)
- transition state theory



- transition state
- potential energy diagram
- activation energy

- 4 factors affect reaction rate

① nature of reactant

② concentration of reactants

rate law expression depends on Experiments + data

$$\text{Rate} = k [A]^x [B]^y$$

specific rate constant - units from overall order of rxn

③ temperature (Arrhenius Eq. $k = A e^{-E_a/RT}$)

don't memorize

$$\ln\left(\frac{k_2}{k_1}\right) = \frac{E_a(\text{J})}{R} \left(\frac{T_2 - T_1}{T_1 T_2} \right)$$

$R = 8.314 \text{ J/mol}\cdot\text{K}$

④ catalyst

- reaction mechanism + rate law expression
- first order rate problems

Memorize $\ln \frac{A_t}{A_0} = -kt$ $k = \frac{0.693}{t_{1/2}}$

or equivalent $t_{1/2}$