

6. Chemical Kinetics

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Keywords	Definitions
Absolute Temperature	The temperature in Kelvin, proportional to the average kinetic energy of the particles in a substance.
Activation Energy	The minimum value of kinetic energy which particles must have before they are able to react.
Biotechnology	An industry that uses biological processes to create products for humans.
Collision Theory	In order to react, particles must collide with kinetic energy greater than the activation energy and have the correct collision geometry.
Enzyme	A biological catalyst
Gas Syringe	A ground glass barrel and plunger that moves outwards as the gas collects.
Initial Rate	The rate of a reaction at the start of the reaction.
Kinetic-Molecular Theory of Matter	Particles in a substance move randomly as a result of the kinetic energy they possess. Because of this random nature, not all particles in a substance at any one time have the same values of kinetic energy but will have instead a range of values.
Kinetics	Movement, in Chemistry it refers to the progress of a reaction.
Maxwell-Boltzmann Distribution Curve	A curve that displays the range of kinetic energy found in particles of a gas at a particular temperature.
Quenching	A substance is introduced to stop a reaction in the sample.
Rate of Reaction	The increase in concentration of products or the decrease in concentration of reactants per unit time.
Reaction Mechanism	A sequence of bond breaking and bond making that makes up a reaction at a molecular level.
Transition State	An intermediate state reactants have when they have the activation energy but have not yet formed products.

Higher Keywords

Keywords	Definitions
Arrhenius Constant	Indicates the frequency of collisions and the probability that collisions have the correct orientation.
Arrhenius Equation	The equation that links the Arrhenius constant with activation energy, temperature and the gas constant.
Arrhenius plot	A graphical representation of the Arrhenius equation
Bimolecular	An elementary step that involves two reactant particles
Elementary Steps	Individual steps in a reaction which cannot be observed directly.
First-Order	When the rate is directly proportional to the concentration of the reactant.
Frequency Factor	Indicates the frequency of collisions and the probability that collisions have the correct orientation.
Molecularity	Indicates the number of reactant species involved in an elementary step
Overall Order	The sum of the individual orders for all reactants.

Pre-Exponential Factor	Indicates the frequency of collisions and the probability that collisions have the correct orientation.
Rate Constant	A constant for a particular reaction at a specified temperature.
Rate Expression	An equation that shows the relationship between the reaction rate and concentration of the reactants using a constant.
Rate Law	An equation that shows the relationship between the reaction rate and concentration of the reactants using a constant.
Rate-Determining Step	The slowest step in a reaction mechanism which determines the overall rate of the reaction.
Second-Order	When the rate is directly proportional to the square of the concentration of the reactant.
Termolecular	A rare elementary step that involves three reactant particles
Unimolecular	An elementary step that involves a single reactant particle
Zero-order	When the rate is not affected by the concentration of the reactant