Foxford Learning Plan

KS4

Chemistry

Rate and extent of Chemical Changes

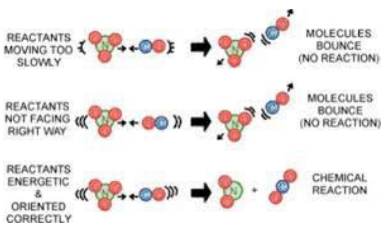
Key Vocabulary

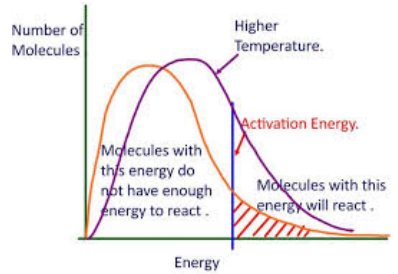
Activation Energy	The minimum amount of energy that particles must collide with to react
Catalyst	Catalysts increase the rate of reaction by providing a different pathway for the reaction that has a lower activation energy. They are not used up during the reaction
Collision Theory	According to this theory, chemical reactions can occur only when reacting particles collide with each other and with sufficient energy.
Effect of concentration on reaction rate	Increasing the concentration of reactants in solution means the reacting particles will be closer together. This means they will collide more often so there will be a higher rate of successful collisions and a faster rate of reaction
Effect of temperature on reaction rate	Increasing the temperature means the particles will have more kinetic energy and so will move faster. If the molecules are moving faster they will collide more often and, since they've gained kinetic energy, a larger proportion of the particles will have at least the activation energy. For both these reasons the rate of reaction increases
Effect of changing pressure on reaction rate	Increasing the pressure of gaseous reactants means the reacting particles will be closer together. This means they will collide more often so there will be a higher rate of successful collisions and a faster rate of reaction.
Effect of surface area on reaction rate	Increasing the surface area of the reactants means there are more exposed reacting particles. This means there are more frequent successful collisions so the rate of reaction increases
Equilibrium	When a reversible reaction occurs in apparatus which prevents the escape of reactants and products, equilibrium is reached when the forward and reverse reactions occur at exactly the same rate
Le Chatelier's Principle	If a reaction at equilibrium is subjected to a change in concentration, temperature or pressure, the position of equilibrium will move to counteract the change.
Rate of reaction	The measure of the amount of product formed or reactant used over time. The units of rate of reaction may be given as g/s, cm3 / s or mol/s
Reversible Reaction	Reactions in which the products from the reaction can react together to form the original reactants. The direction of reversible reactions can be changed by changing the conditions

Key Skills

Over the course of the topic, I will be able to: -

- Be able to use models and diagrams to explain collision theory.
- Practical be able to carry out practical work safely investigating the different ways that affect the rate of chemical reaction
- Numeracy – Be able to use date provided to draw conclusions about the rate of reaction
- Numeracy – Be able to use graphs to support conclusion about the rate of reaction
- Explain how different factors affect the rate of reaction





I will Understand

- What is meant by rate of reaction
- How temperature, concentration, pressure, surface area and the use of a catalyst affects the rate of reaction
- What is meant by equilibrium
- What is meant by collision theory