

AQA Chemistry GCSE

Topic 5: Energy Changes

Flashcards

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What is the conservation of energy principle?



What is the conservation of energy principle?

Energy is conserved in chemical reactions. The amount of energy in the universe at the end of a chemical reaction is the same as before the reaction takes place



What is an exothermic reaction? Give examples



What is an exothermic reaction? Give examples

A reaction where energy is transferred to the surroundings so that the surroundings temperature increases – combustion, oxidation reactions and neutralisation (acid + alkali) reactions. Negative sign of energy change.



What is an endothermic reaction? Give examples



What is an endothermic reaction? Give examples

A reaction where energy is taken in from the surroundings so the surroundings temperature decreases – thermal decomposition, reaction of citric acid and sodium hydrogencarbonate. Positive sign of energy change.



What is activation energy?



What is activation energy?

Minimum amount of energy that particles need to react



What is a reaction profile?



What is a reaction profile?

Reaction profile is a graph which shows the relative energies of reactants and product, as well as activation energy of the reaction.



What occurs in a chemical reaction in terms of bond energies? Describe exothermic and endothermic reactions in terms of bond breaking/forming.

Higher Tier Only



What occurs in a chemical reaction in terms of bond energies? Describe exothermic and endothermic reactions in terms of bond breaking/forming.

Energy is supplied to break bonds and energy is released when bonds are made; exothermic – energy released from forming bonds is greater than that needed to break the bonds; endothermic – energy needed to break bonds is greater than energy released making them

Higher Tier Only



What is the equation to find enthalpy change in terms of bond energies?

Higher Tier Only



What is the equation to find enthalpy change in terms of bond energies?

Energy of reaction = sum of bonds broken – sum of bonds made

Higher Tier Only



What is a cell?



What is a cell?

A cell is composed of two electrodes dipped in an electrolyte solution. It produces electricity from a chemical reaction.



What is a battery?



What is a battery?

A battery consists of two or more cells connected in series.



What determines the voltage obtained from a cell?



What determines the voltage obtained from a cell?

Identities of metals used as electrodes and the identity and concentration of an electrolyte.



State the advantages and disadvantages of using cells and batteries.



State the advantages and disadvantages of using cells and batteries.

(+) more or less cheap, some are rechargeable, a convenient source of electrical energy

(-) harmful chemicals



Describe rechargeable and non-rechargeable cells



Describe rechargeable and non-rechargeable cells

Rechargeable – chemical reactions are reversed when an external current is supplied

Non-rechargeable – reactants are used up, cannot be recharged



What is a fuel cell? What is the overall reaction in a hydrogen fuel cell? What are the half equations?

Reactions
Higher tier only



What is a fuel cell?

Fuel cells are supplied by fuel and oxygen to oxidise the fuel to generate electricity.

Reactions
Higher tier only

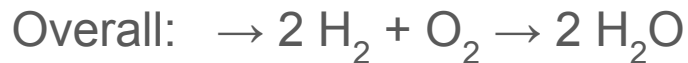
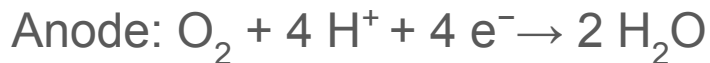
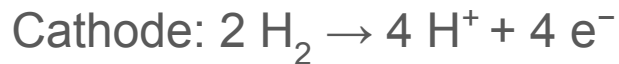


What is the overall reaction in a hydrogen fuel cell? What are the half equations?

Reactions
Higher tier only



What is the overall reaction in a hydrogen fuel cell? What are the half equations?



Reactions
Higher tier only



What are the advantages and disadvantages of hydrogen fuel cells?



What are the advantages and disadvantages of hydrogen fuel cells?

Advantages: no pollutants, no recharging

Disadvantages: flammable, H_2 difficult to store, fossil fuel production, toxic chemicals, expensive production of H_2 by electrolysis

