Chemistry Chapter 5 Energy changes

Energy changes in reactions

- In all chemical reactions energy changes happens
- This means things may heat up or cool down when chemical react
- Every energy store have some energy and different chemical store different amounts

Energy in reactions

- If the products like the new Chemicals after the reaction store more energy they must have taken in energy from the surrounding
- If the product store less energy the extra energy is given out to the environment
- The total energy never changes energy cannot be made or destroyed it only moves around

Exothermic reaction

- Give energy to the surrounding usually as heat
- temperature goes up

Examples are

- Burning fuels
- Neutralization
- Many oxidation reactions like Sodium and water

- hand warmers
- self heating cans

Endothermic reactions

Take in energy from the surrounding
temperature goes down

examples are

- Melting ice
- citric acid and sodium hydrogen carbonate
- thermal decomposition
- cold packs for injuries
- Photosynthesis and respiration

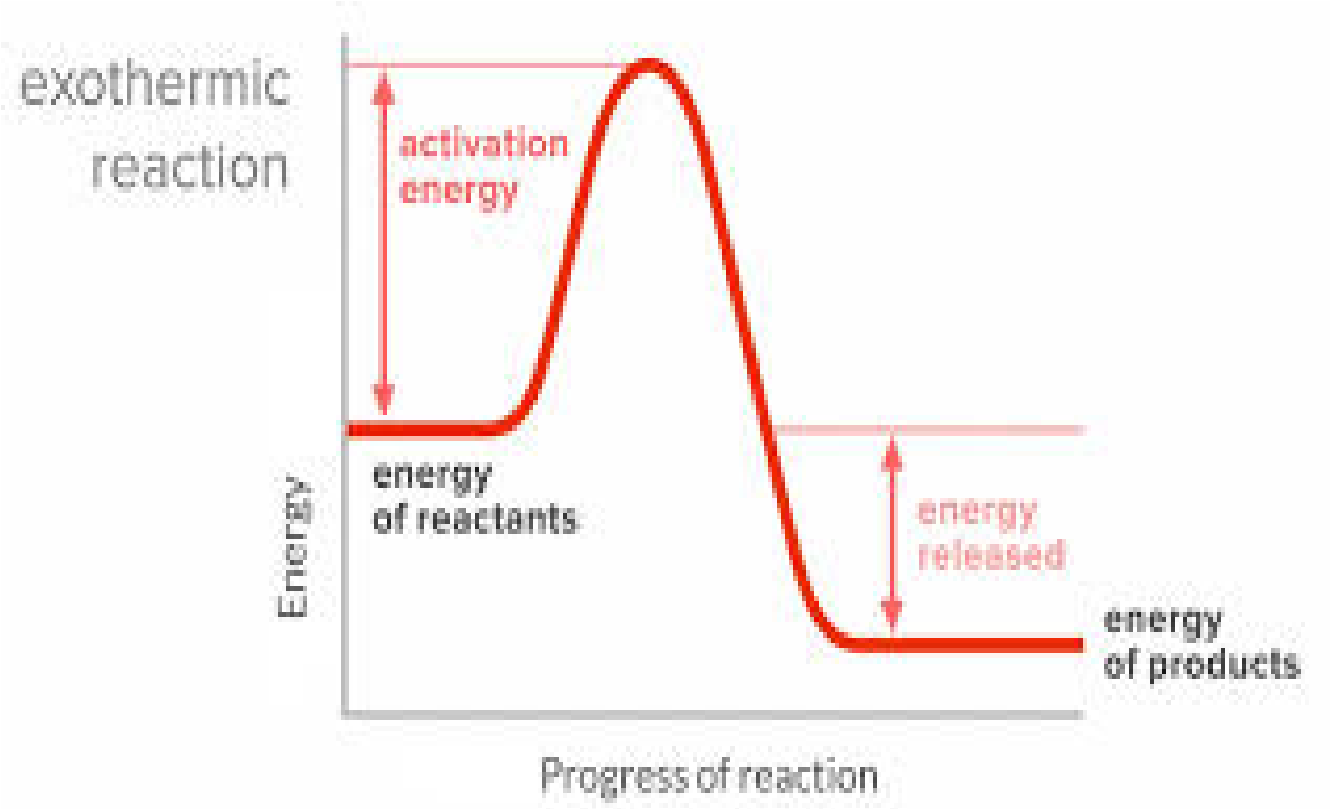
Bond energy

Chemical reactions happen because old bonds break a new bonds

- Breaking bonds needs energy So breaking bonds is endothermic
- Forming new bonds releases energy so making bonds is exothermic

reaction profile

- Reaction profile shows
- the energy of reactants
- the energy of products
- how the energy changes during the reaction



Exothermic Reaction profile

- **The products are at lower energy than the reactants**
- **the drop in height on the graph shows the energy given out**
- **the small rise at the start shows the activation energy needed to begin the reaction**

Endothermic reaction profile

- **The products are at higher energy level then the reactants**
- **the rise in height shows the energy taken in**

Activation energy

- Activation energy is the minimum energy needed to for reactants to collide and react
- if activation energy is high then the reaction is harder to start and you may need a lot of heat to begin the reaction