Thermal Energy in Chemical and Physical Processes

Picture Vocabulary

C2G5AB Thermal Energy in Chemical and Physical Processes

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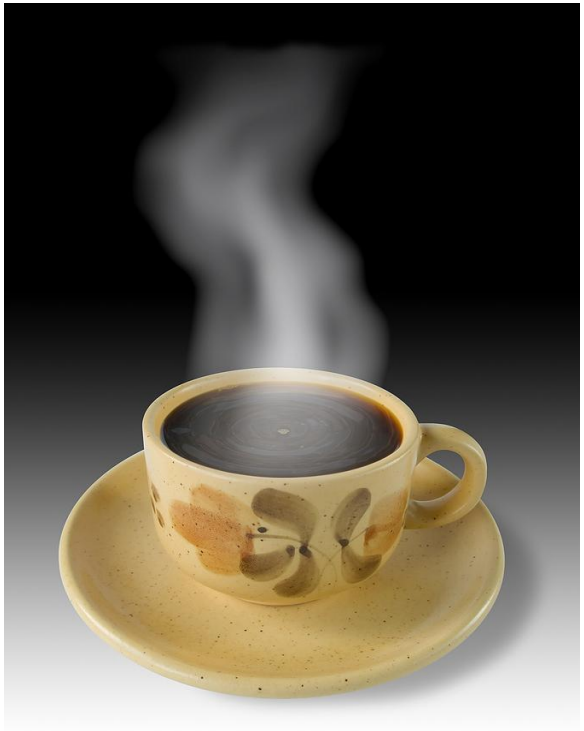
Heat



Energy transferred between two objects of different temperatures, moving continually in a predictable pattern from warmer site to cooler site until all sites have reached the same temperature

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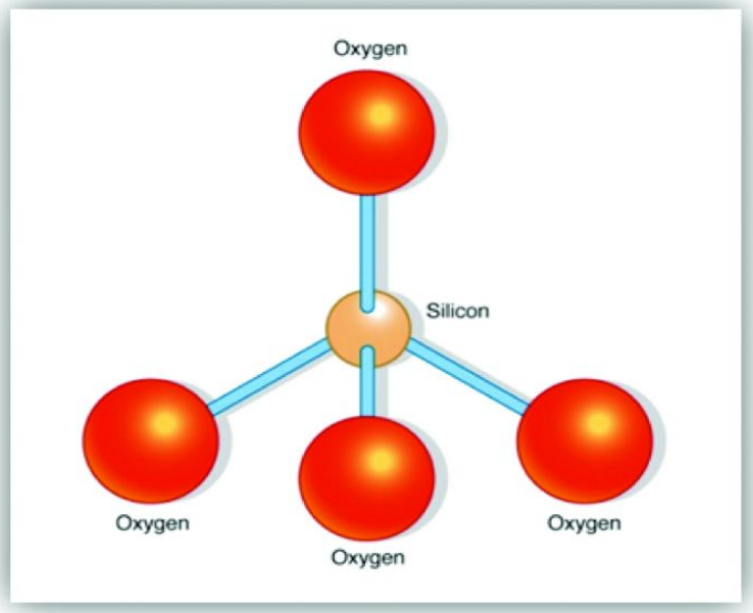
Bond energy



A measure of the strength of chemical bonds; equal to the heat required to break one mole of molecules into their individual atoms

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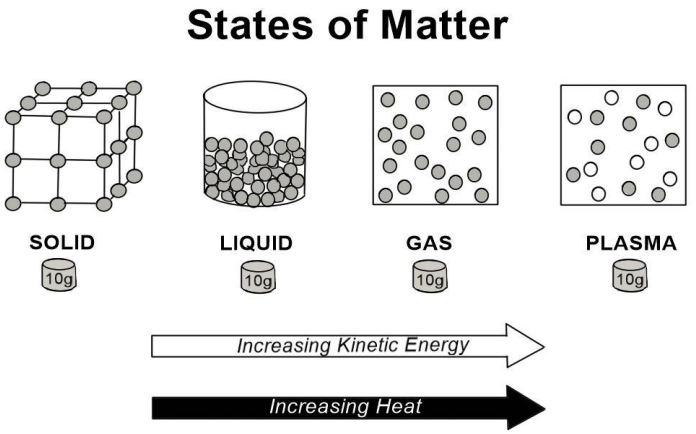
Hess's law



I aw that states that regardless of the various stages/steps of a reaction, the total enthalpy change for the reaction is the sum of all changes

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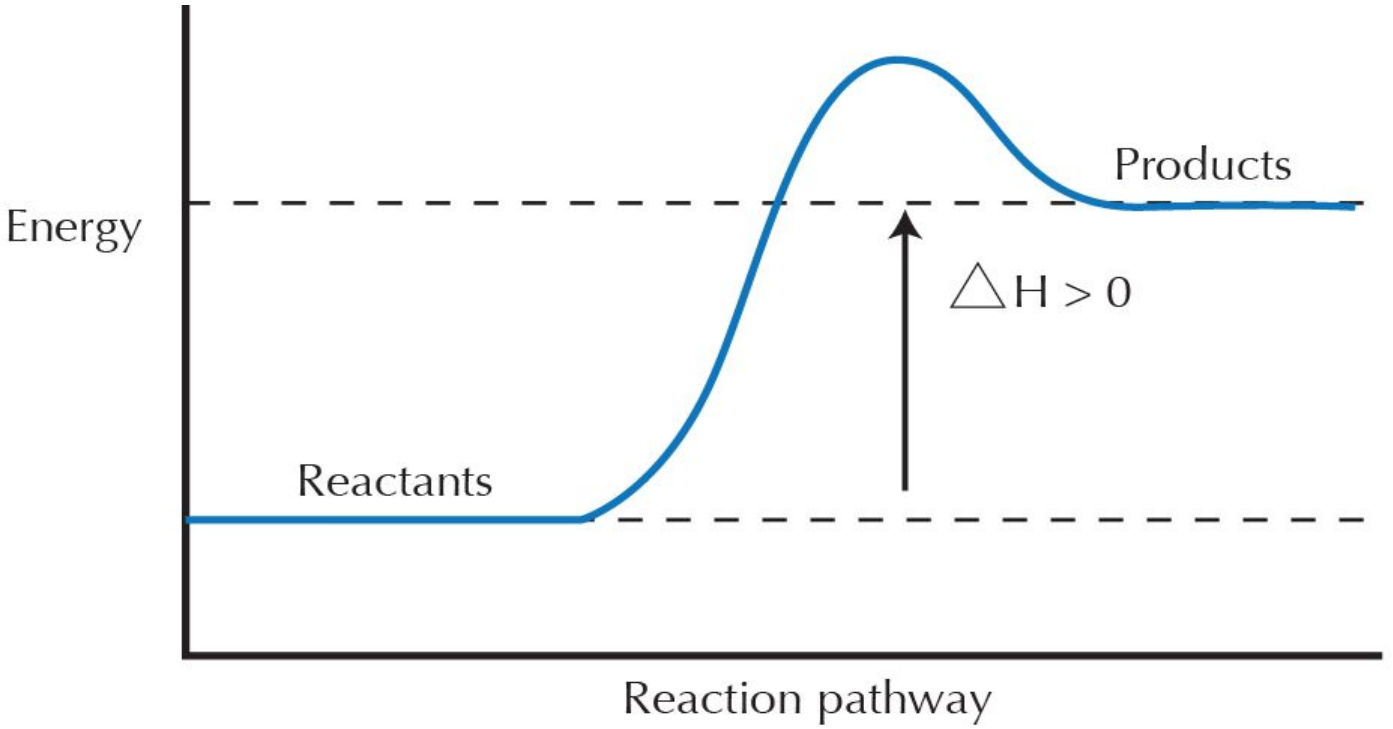
Endothermic



A process in which heat is absorbed

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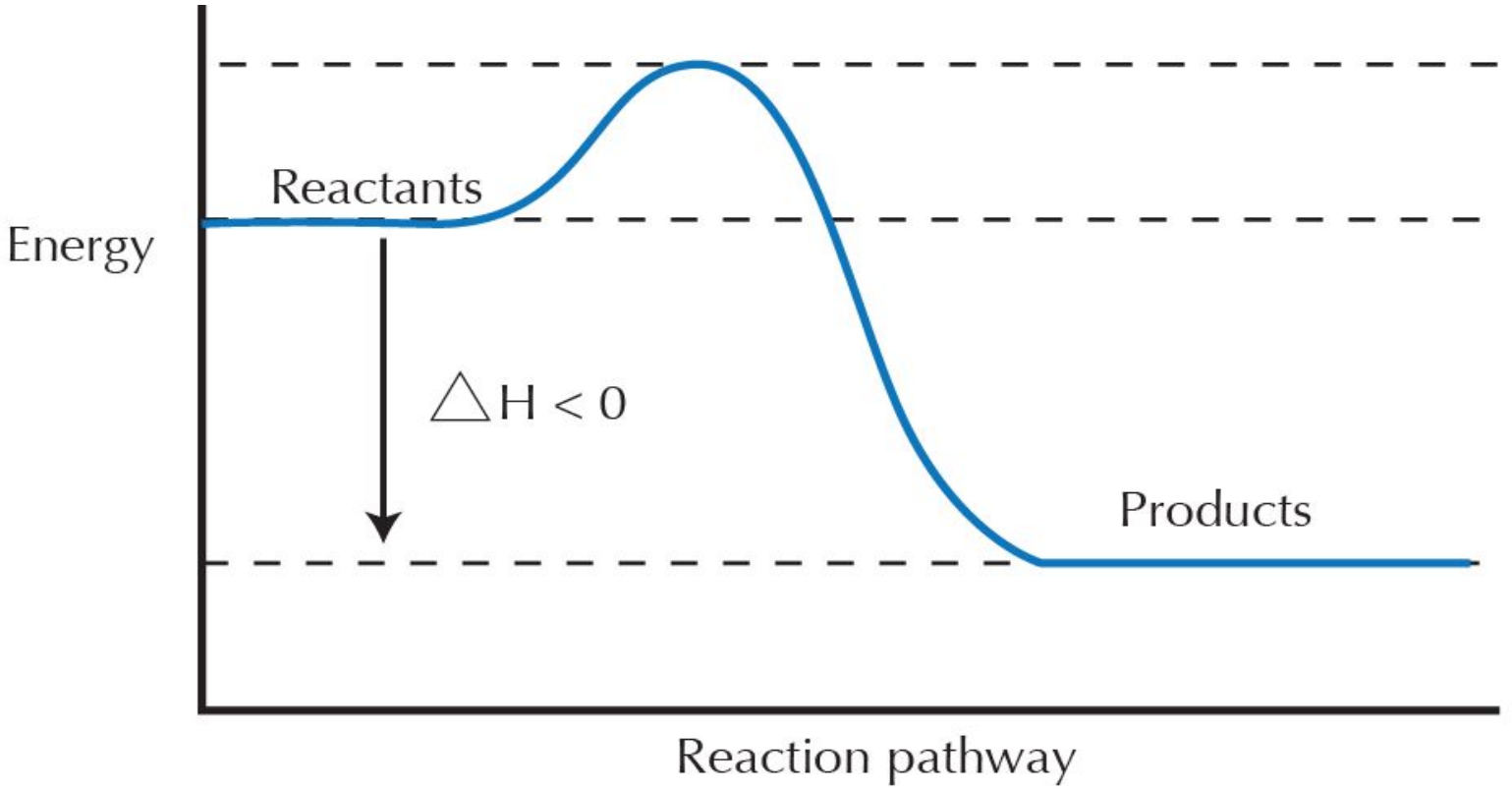
Exothermic



A process in which heat is released

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Enthalpy

$$\Delta H = \Delta H_{products} - \Delta H_{reactants}$$

The heat content of a system plus the product of the pressure and volume of the system

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Heat of formation

STANDARD ENTROPIES OF SOME TYPICAL SUBSTANCES AT 298.15 K	
Substance	$S°$ (J mol^{-1} K^{-1})
$Ag(s)$	42.55
$Al(s)$	28.3
$CO_2(g)$	213.6
$CH_4(g)$	186.2
$Ca(s)$	154.8
$H_2O(l)$	69.96
$K_2SO_4(s)$	176
$NH_2(g)$	192.5
$NaOH(s)$	64.18
$SO_2(g)$	248.5

The thermal energy gained or released during the formation of one mole of a substance from its constituent elements

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Heat of vaporization

The change in enthalpy required to change a given amount of a substance from a liquid to a vapor at a given pressure

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Heat of fusion

The change in enthalpy required to change a given amount of a substance from a solid to a liquid at the melting point of the substance

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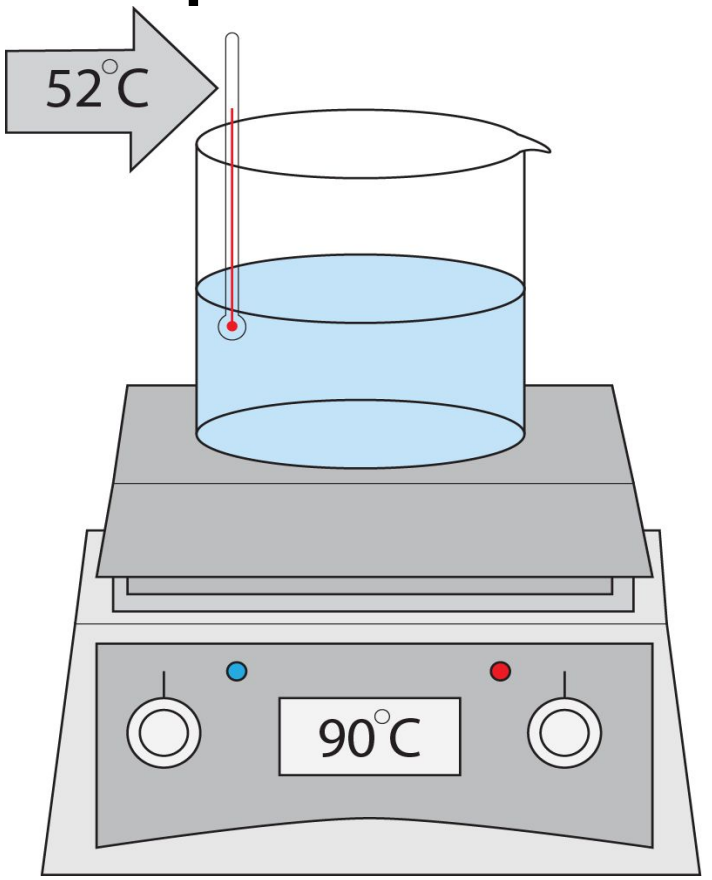
Specific heat



The amount of heat required to raise the temperature of one gram of an object by one degree

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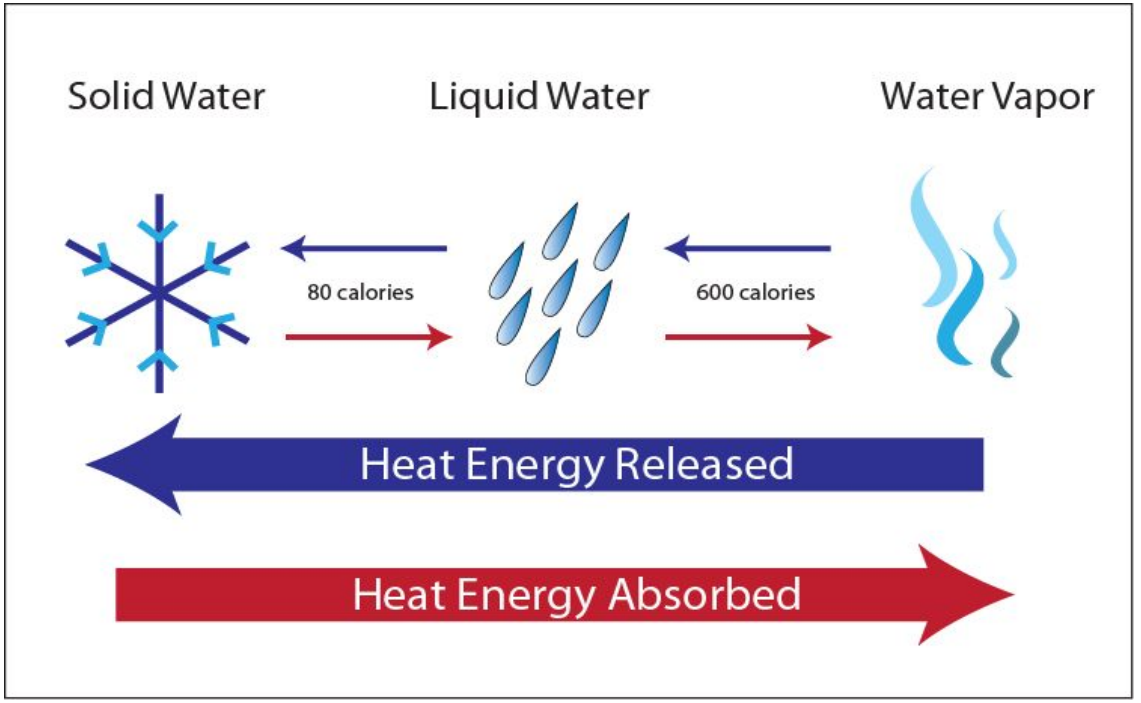
Phase transition



The transformation of a thermodynamic system from one phase or state of matter to another one by heat transfer

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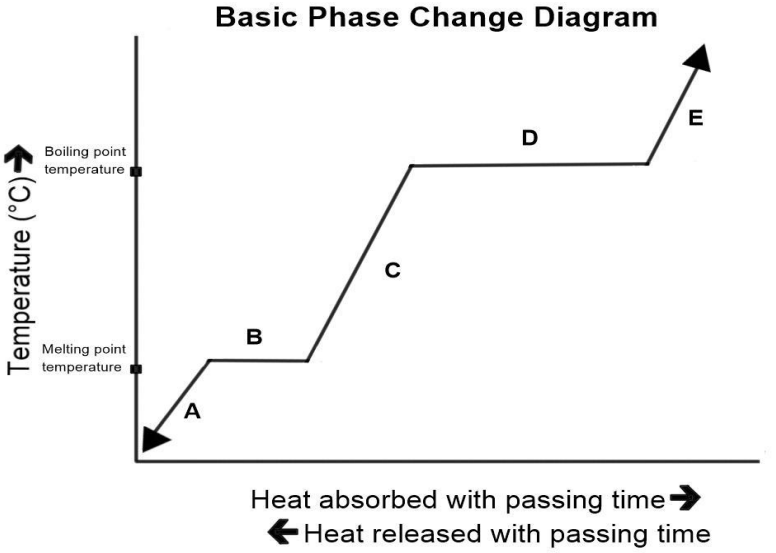
Heating curve



Shows how the temperature changes as a substance is heated up

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