

DEFINITIONS

MATTER: anything that takes up space and has mass... it is made up of elements!!

ELEMENT: substance that cannot be broken down into other substances by chemical reactions

COMPOUND: substance that consists of 2 or more elements in a fixed ratio

SHAPE AND FUNCTION

- molecular function related to its shape

- shape is determined by **bond angles**

- shape is used in how molecules recognize and relate to each other

- **INDUCED FIT** lock and key model

- allows for molecular mimics

CHEMICAL REACTIONS

- the making & breaking of bonds that leads to changes in the composition of matter

- chemical reactions change reactants into products while conserving matter

- most are reversible

EXAMPLE

$2\text{H}_2 + \text{O}_2 = 2\text{H}_2\text{O}$ reactants= products

EMERGENT PROPERTIES

* sodium (Na) is a metal

* chlorine (Cl) is a poisonous gas

* combined= NaCl= table salt

CHEMICAL BONDING

IONIC BONDS

- transfer of electrons

- forms + and - ions

- weak bond formed because of their opposite charges

- ionic compounds are called salts

- environment affects the strength of ionic bonds

CHEMICAL BONDING

HYDROGEN BONDS

- weak chemical bond

- partially +H atom in water molecule is attracted to the partially -O in another

- can occur wherever an -OH exists in a larger molecule

EQUILIBRIUM

- chemical equilibrium is reached when the forward and reverse reaction rates are

EQUAL

5 to 5 or 10 to 10

LIFE NEEDED ELEMENTS

CHNOPS

96% = CHON

4% = SPKCa

CHEMICAL BONDING

COVALENT BONDS

- sharing electrons

- strong = both atoms holding onto bond electrons

- forms molecules

- double covalent bonds 2 atoms can share more than one pair of electrons

"double and triple bonds"

POLAR COVALENT BONDS

- electrons are not shared equally

- electronegativity

- oxygen is one of the most electronegative of the 92 elements

