9th Grade

CHEMISTRY CHAPTER -03

ATOMS AND MOLECULES

LECTURE-01

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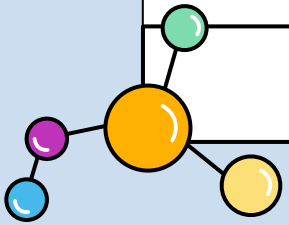
01

ATOMIC MASS

ATOM KITNA BHARI HAI???



ATOMIC MASS

ACTUAL ATOMIC MASS (A.A.M)

Atom : Smallest unit of matter

Atomic mass = Mass Number

Mass of (proton + neutron)

Mass of proton = 1.67×10^{-24} g = 1 amu

Atomic mass unit (amu or u)

1 amu = $1/12^{th}$ of mass of C-12 atom

AAM = mass number $\times 1.67 \times 10^{-24}$ g

- AAM NEVER CHANGES

ATOMIC MASS

RELATIVE ATOMIC MASS (R.A.M)

- ✓ Mass of any atom in amu
- ✓ Mass of any atom **relative** to $1/12^{th}$ of mass of C-12 atom

$$\text{RAM} = \frac{AAM}{\frac{1}{12th} of\ mass\ of\ C{-}12\ atom}$$

RAM = MASS NUMBER (AMU)

RAM is scale dependent quantity. Changes on changing the reference

ATOMIC MASS

AVERAGE ATOMIC MASS

ISOTOPES : Same atomic number but different mass number

Ex : H^1 H^2 H^3

Average of atomic mass of all possible isotopes of atoms

$$A_{avg} = \frac{\sum A_i n_i}{\sum n_i}$$

Where , A_i = Atomic mass of isotopes

n_i = Number of moles, mass %, ,mass ratio, mole ratio of isotopes

ATOMIC MASS

GRAM ATOMIC MASS (GAM) or MOLAR MASS

Definition : The mass of an element expressed in grams which is numerically equal to the mass in 'u'

For example,
Atomic mass of Nitrogen (N) = 14u
Gram atomic mass = 14 g

Atomic mass of Sulphur (S) = 32u
Gram atomic mass = 32 g

WHAT IS MOLECULES ?

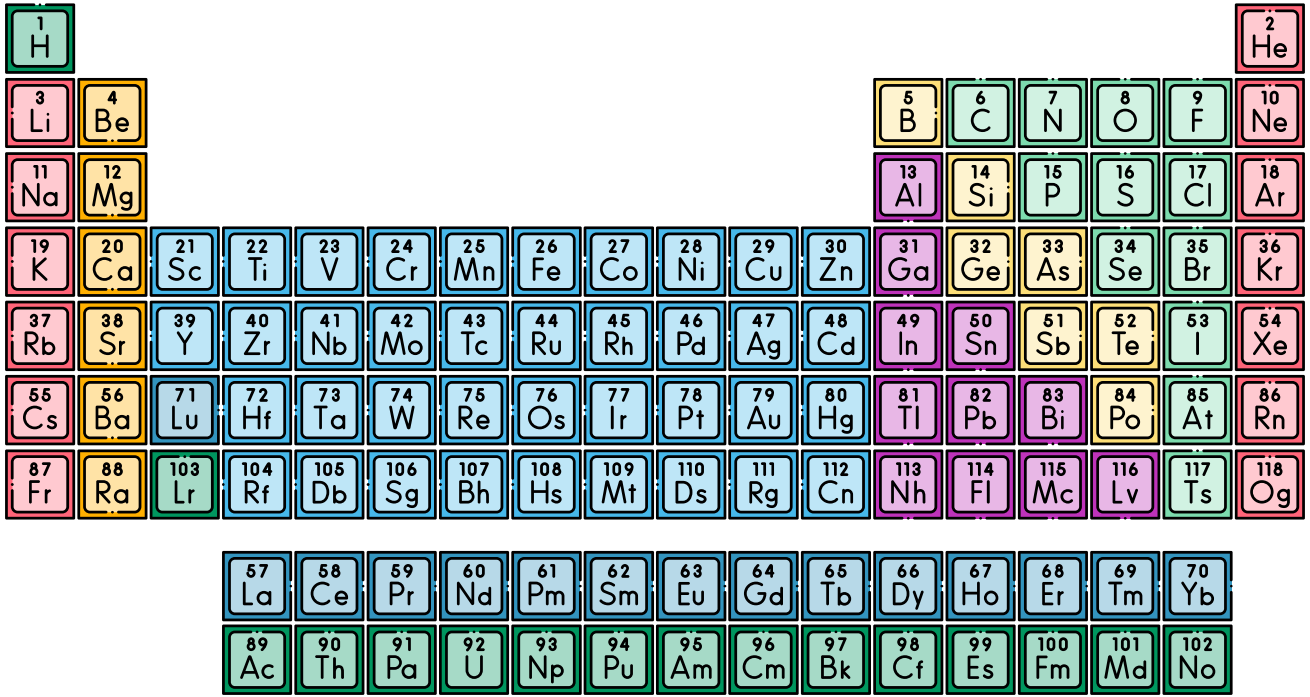
The atoms of the same or different elements are bonded together tightly by some strong forces of attraction also called chemical bonds. The new species which are formed as a result of this chemical combination are called **molecules.**

Definition : Molecules represents a group of two or more atoms (same or different) chemically bonded to each other and held tightly by strong attractive forces.
Molecules are represented in terms of symbols of constituting atoms, and it is known as chemical formula.

Molecules are of two types

- Homoatomic (Molecules of elements)
- Heteroatomic (Molecules of compounds)

MODERN PERIODIC TABLE



THANKS

Revise Last Chapter, Learn 20 Elements