

Gaseous state

Kinetic Theory of Gases

In order to explain behaviour of gases Maxwell, Boltzmann, Clausius, etc. suggested a theoretical model which is known as kinetic theory of gases.

The main assumptions of the kinetic theory of gases are —

- (i) All gases are made up of very large number of extremely small particles called molecules.
- (ii) The molecules are separated from one another by large spaces so that the actual volume occupied by the molecules is negligible as compared to the total volume of the gas.
- (iii) The molecules are not at rest but possess rapid random motion. During their motion, they collide with one another and also against the walls of the container.
- (iv) The pressure of the gas is due to bombardment of the gas molecules against the walls of the container.
- (v) The collisions of the molecules with each other and with the walls of the container are perfectly elastic, i.e. There is no loss or gain of kinetic energy. However, there may be redistribution of energy during such collisions.

(vi) There are no attractive or repulsive forces between the molecules of gas. They are completely independent of each other.

(vii) At any instant, different molecules possess different velocities and hence, different energies. However, the average kinetic energy of the molecules is directly proportional to the absolute temperature.