|| नमस्ते ||

IDEAL GAS

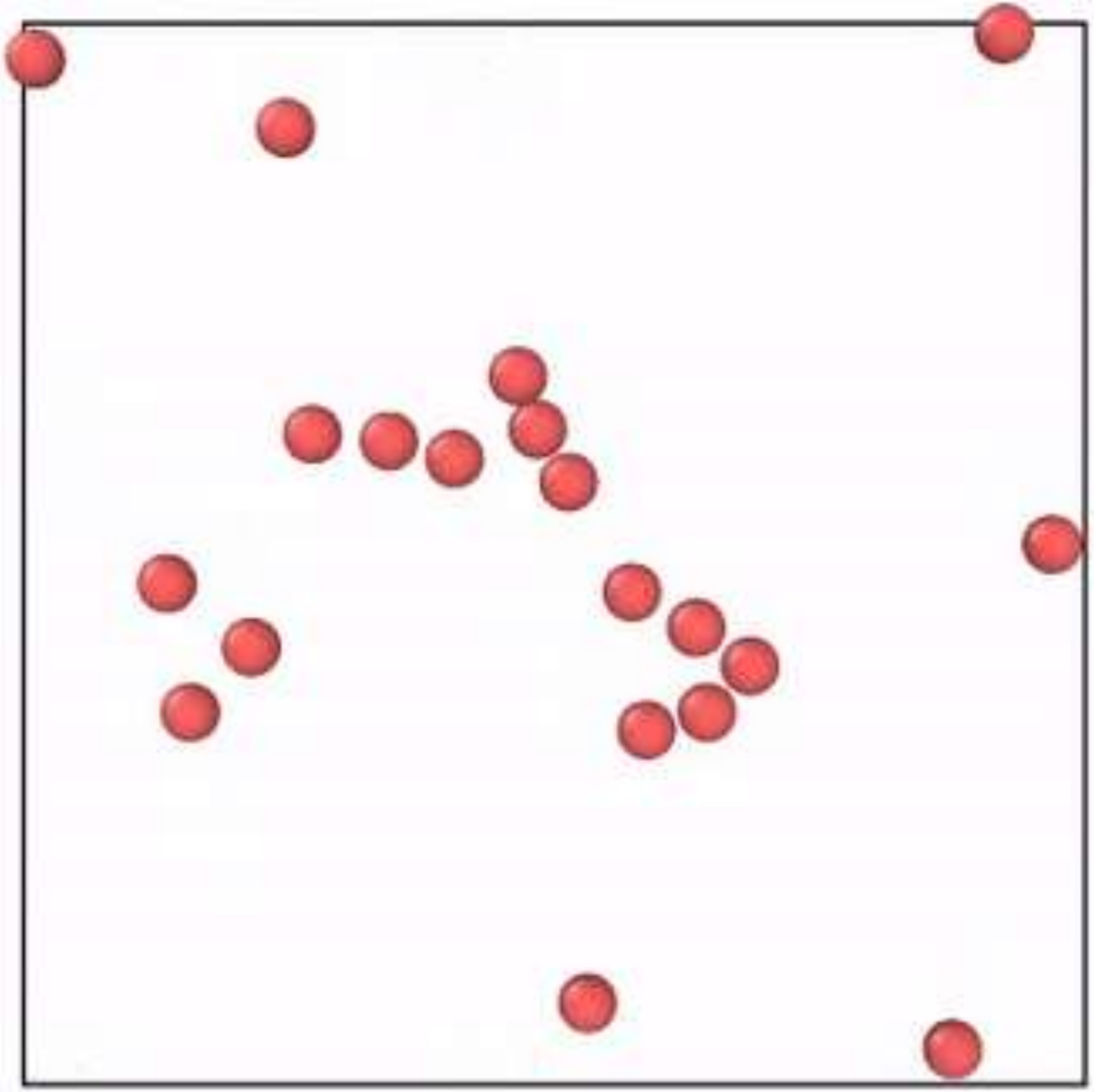
WHAT IS IDEAL GAS?

- Gases are complicated.
- They're full of billions and billions of energetic gas molecules that can collide and possibly interact with each other.
- Since it's hard to exactly describe a real gas, people created the concept of an Ideal gas as an approximation that helps us model and predict the behavior of real gases.

- The term ideal gas refers to a hypothetical gas composed of molecules which follow a few rules:
- 1.Ideal gas molecules do not attract or repel each other. The only interaction between ideal gas molecules would be an elastic collision upon impact with each other or an elastic collision with the walls of the container (Elastic Collision is the total kinetic energy before the collision is equal to the total kinetic energy after the collision)
- 2.Ideal gas molecules themselves take up no volume. The gas takes up volume since the molecules expand into a large region of space, but the Ideal gas molecules are approximated as point particles that have no volume in and of themselves.

- There are no gases that are exactly ideal, but there are plenty of gases that are close enough that the concept of an ideal gas is an extremely useful approximation for many situations.
- In fact, for temperatures near room temperature and pressures near atmospheric pressure, many of the gases we care about are very nearly ideal.
- The any gas obeys PV=mRT law then that gas is called ideal gas.
- Where,
- Where P is the pressure of the gas, V is the volume taken up by the gas, T is the temperature of the gas, m is the number of molecules in the gas in moles(1 moles is $6.02 \times 10^{23}\ molecules$), R is gas constant.

- $PV = MRT$
- $\frac{PV}{T} = MR = CONSTANT$
- This shows that, as long as the number of moles (i.e. molecules) of a gas remains the same, the quantity $\frac{PV}{T}$ is constant for a gas regardless of the process through which the gas is taken.
- In other words, if a gas starts in state 1 (with some value of pressure P_1 ,Volume V_1, Temperature T_1) and is altered to a state 2 (pressure P_2 ,Volume V_2, Temperature T_2) then regardless of the details of the process we know the following relationship holds.
- $\frac{P_1V_1}{T_1} = \frac{P_2V_2}{T_2}$



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Real Gas	Ideal Gas
• Particles have Volume	• Particles have No Volume
• Particles have Inelastic collision	• Particles have elastic collision
• Kinetic energy lost in collision	• No kinetic energy lost in collision
• There is intermolecular force between particles	• There is no such intermolecular force between particles
• It does not obey gas equation PV=MRT	• It does obey gas equation PV=MRT
• Example All gases like oxygen organ ammonia etc	• Example There are no such ideal gases but Oxygen and nitrogen behave like ideal gas at standard sea level atmospheric conditions

Today’s Amazing Fact!!

On Friday, 13th April 2029 an asteroid more than 1000 feet wide will pass by earth closer than moon and easily observed by naked eyes

धन्यवाद

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