

The Kinetic Theory of Gases: Advanced Chemistry Lectures

Kinetic Theory of Gases

The pressure that a gas exerts is caused by the impact of its molecules on the walls of the container.

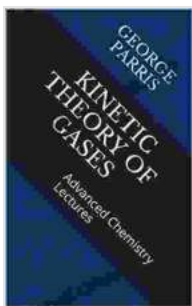


It can be shown that the average translational kinetic energy of a molecule of an ideal gas is given by,

$$\overline{KE} = \frac{1}{2} m v_{rms}^2 = \frac{3}{2} kT$$

where k is Boltzmann's constant and T is the Kelvin temperature.

The kinetic theory of gases is a fundamental theory in physics that describes the physical properties of gases in terms of the motion of their constituent particles. It is based on the assumption that gases are composed of a large number of tiny particles that are in constant random motion. These particles collide with each other and with the walls of their container, and these collisions give rise to the observed properties of gases, such as their pressure, volume, and temperature.



Kinetic Theory of Gases: Advanced Chemistry Lectures

by George Parris

★★★★☆ 4.5 out of 5

Language : English

File size : 632 KB

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The kinetic theory of gases was first developed by Daniel Bernoulli in 1738, and it has since been refined and extended by many other scientists. Today, the kinetic theory of gases is one of the most important and successful theories in physics, and it is used to explain a wide variety of phenomena, from the behavior of gases in the atmosphere to the operation of jet engines.

This book provides a comprehensive overview of the kinetic theory of gases. It covers all of the essential topics, from the basic concepts to the most advanced theories. The book is written in a clear and concise style, and it is illustrated with numerous diagrams and examples. It is an essential resource for students and researchers in chemistry, physics, and engineering.

Topics covered in this book:

- The basic concepts of the kinetic theory of gases
- The Maxwell-Boltzmann distribution
- The Boltzmann transport equation

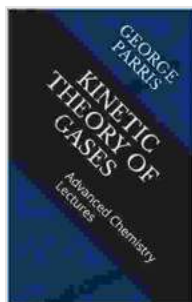
- The Chapman-Enskog theory
- Applications of the kinetic theory of gases

Benefits of reading this book:

- Gain a deep understanding of the kinetic theory of gases
- Learn how to apply the kinetic theory of gases to solve real-world problems
- Prepare for a career in chemistry, physics, or engineering

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