

## 1.1: The Role of the Ideal Gas

---

The concept of ideal gas behavior plays a pivotal role in the development of science and particularly in the development of thermodynamics. As we shall emphasize, intermolecular forces do not influence the behavior of an ideal gas. Ideal gas molecules are neither attracted to one another nor repelled by one another. For this reason, the properties of an ideal gas are particularly simple. Because ideal gas behavior is so important, we begin by studying ideal gases from both an experimental and a theoretical perspective.

In Chapter 2, we review the experimental observations that we can make on gases and the idealizations that we introduce to extrapolate the behavior of ideal gases from the observations we make on real gases. We also develop Boyle's law from a very simple model for the interactions between point-mass gas molecules and the walls of their container.

In Chapter 4, we develop a detailed model for the behavior of an ideal gas. The physical model is the one we use in Chapter 2, but the mathematical treatment is much more sophisticated. For this treatment we need to develop a number of ideas about probability, distribution functions, and statistics. Chapter 3 introduces these topics, all of which again play important roles when we turn to the development of statistical thermodynamics in Chapter 19.

---

This page titled [1.1: The Role of the Ideal Gas](#) is shared under a [CC BY-SA 4.0](#) license and was authored, remixed, and/or curated by [Paul Ellgen](#) via [source content](#) that was edited to the style and standards of the LibreTexts platform.