

4 Atomic Structure



ELECTRONS AND THE STRUCTURE OF ATOMS

4.1 Defining the Atom



For students using the Foundation edition, assign problems 1, 3–7.

Essential Understanding

Atoms are the fundamental building blocks of matter.

Lesson Summary

Early Models of the Atom The scientific study of the atom began with John Dalton in the early 1800s.

- ▶ The ancient Greek Democritus first proposed that matter is made up of small, indivisible particles that he called atoms.
- ▶ John Dalton made the first accepted theory on atoms almost 2000 years after the work of Democritus.
- ▶ Dalton's atomic theory included that all atoms of an element are alike, the atoms of different elements are different, and atoms can combine to form compounds.

Sizing up the Atom Atoms are extremely small, but technology enables scientists to view atoms.

- ▶ An atom is the smallest part of an element that has the properties of that element.
- ▶ Individual atoms can be seen and even moved around using instruments such as scanning electron microscopes.

After reading Lesson 4.1, answer the following questions.

Early Models of the Atom

1. Democritus, who lived in Greece during the fourth century B.C., suggested that matter is made up of tiny particles that cannot be divided. He called these particles atoms.
2. List two reasons why the ideas of Democritus were not useful in a scientific sense. They did not explain chemical behavior, and they lacked experimental support because Democritus's approach was not based on the scientific method.
3. The modern process of discovery about atoms began with the theories of an English schoolteacher named John Dalton.

Chemistry Chapter Self Check Activity Answers

Richard Bailey



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