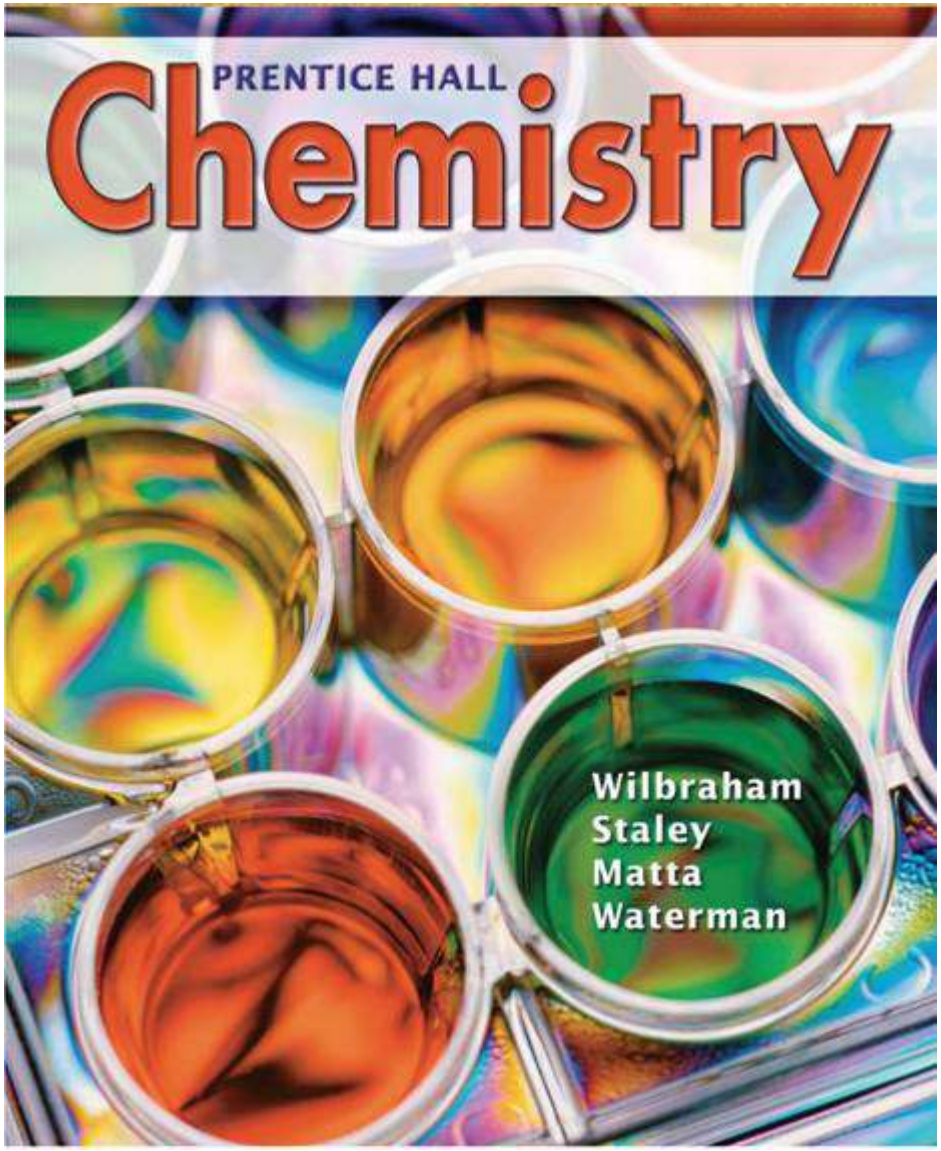
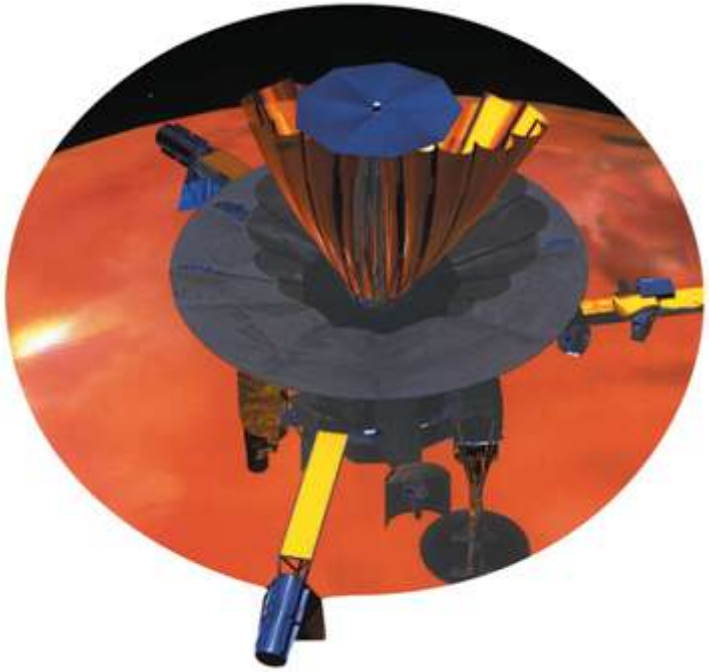

PRENTICE HALL
Chemistry
Wilbraham
Staley
Matta
Waterman

Chemistry

Connecting to Your World

–The *Galileo* spacecraft was placed in orbit around Jupiter to collect data about the planet and its moons. Chemistry helped scientists to study the geology of distant objects in the solar system.



What Is Chemistry?

–Why is the scope of chemistry so vast?

Matter is anything that has mass and occupies space.

Chemistry is the study of the composition of matter and the changes that matter undergoes.

–Because living and nonliving things are made of matter, chemistry affects all aspects of life and most natural events.

Areas of Study

–What are five traditional areas of study in chemistry?

– Five traditional areas of study are
  - organic chemistry
  - inorganic chemistry
  - biochemistry
  - analytical chemistry
  - physical chemistry

Organic chemistry is defined as the study of all chemicals containing carbon.

Inorganic chemistry is the study of chemicals that, in general, do not contain carbon.

The study of processes that take place in organisms is **biochemistry.**

Analytical chemistry is the area of study that focuses on the composition of matter.

Physical chemistry is the area that deals with the mechanism, the rate, and the energy transfer that occurs when matter undergoes a change.

Pure and Applied Chemistry

–How are pure and applied chemistry related?

Pure chemistry is the pursuit of chemical knowledge for its own sake.
Applied chemistry is research that is directed toward a practical goal or application.

–Pure research can lead directly to an application, but an application can exist before research is done to explain how it works.

Nylon

–In the early 1930's, Wallace Carothers produced nylon while researching cotton and silk.

–A team of scientists and engineers applied Carothers's research to the commercial production of nylon.

– Aspirin

Long before researchers figured out how aspirin works, people used it to relieve pain, and doctors prescribed it for patients who were at risk for a heart attack.

In 1971, it was discovered that aspirin can block the production of a group of chemicals that cause pain and lead to the formation of blood clots. This is an example of pure research.

Technology

Technology is the means by which a society provides its members with those things needed and desired.

- Technology allows humans to do some things more quickly or with less effort.

- There are debates about the risks and benefits of technology.

Why Study Chemistry?

–What are three general reasons to study chemistry?

–Chemistry can be useful in explaining the natural world, preparing people for career opportunities, and producing informed citizens.

– Explaining the Natural World

Chemistry can help you satisfy your natural desire to understand how things work.

– Preparing For a Career

Many careers require knowledge of chemistry. A photographer uses chemical processes to control the development of photographs in a darkroom.

– Being an Informed Citizen

Knowledge of chemistry and other sciences can help you evaluate the data presented, arrive at an informed opinion, and take appropriate action.

1.1 Section Quiz

Assess students' understanding of the concepts in Section 1.1.

Continue to:

Section Quiz

-or-

Launch:

ExamView® QuickTake

1.1 Section Quiz

1. Which of these traditional areas of study mostly involve compounds containing carbon?

(1) organic chemistry

(2) inorganic chemistry

(3) biochemistry

¡ (1) and (2)

¡ (1) and (3)

¡ (2) and (3)

¡ (1), (2), and (3)

1.1 Section Quiz

2. Which phrase best describes applied chemistry?

- ¡ the pursuit of knowledge for its own sake
- ¡ research that answers a general question
- ¡ addresses fundamental aspects of a question
- ¡ research directed toward a practical goal

1.1 Section Quiz

3. Informed citizens are most likely to
   - ¡ provide funds for scientific research.
   - ¡ determine which areas of research are valid.
   - ¡ decide who is qualified to do research.
   - ¡ influence the development of technology.

END OF SHOW