Chemistry in the Community: Not Your Typical Chemistry Textbook

AACT webinar, May 8, 7 PM ET

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American Chemical Society
Website Orientation

www.acs.org/chemcom

• Highlights features of the book
• Gives you a preview of the look and feel
• Learn about the ChemCom philosophy
• Request a review copy
• Order the text
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What’s Inside

Let’s dive into Unit 3
Petroleum: Breaking and Making Bonds

**SECTION A**
Petroleum—What Is It?
(page 268)

**SECTION B**
Petroleum: A Building-Material Source
(page 297)

**SECTION C**
Petroleum: An Energy Source
(page 330)

**SECTION D**
Alternatives to Petroleum
(page 358)

How can the physical properties of petroleum be explained by its molecules and their interactions?

Why are carbon-based molecules so versatile as chemical building blocks?

What are the benefits and consequences of burning hydrocarbons?

What alternatives to petroleum are available for burning and building?
Activity Types

- Goals
- Concept Check
- Investigating Matter
- Developing Skills
- Modeling Matter
- Chem Quandry
- Making Decisions
- Section Summary
- Chemistry at Work
- Illustrations
- Putting it all Together

Section B Petroleum: A Building-Material Source

- Concept Check 4
- B.1 Making Decisions Life Cycle of a Polymer
- B.2 Chemical Bonding
- B.3 Developing Skills Predicting and Representing Chemical Bonds
- Concept Check 5
- B.4 Creating New Options: Petrochemicals
- B.5 Modeling Matter Polymer Structure and Properties
- B.6 Beyond Alkanes
- B.7 Modeling Matter Builder Molecules
- Concept Check 6
- B.8 Carbon Rings as Builder Molecules
- B.9 Builder Molecules Containing Oxygen
- B.10 Investigating Matter Condensation
- B.11 Condensation Polymers
- B.12 Making Decisions Builder Molecules in Transportation
- Section B Summary

CHEMISTRY AT WORK: Environmental Chemistry

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Johnstone’s Triangle

Solid Copper(II) Oxide

2Cu(s) + O₂(g) → 2CuO(s)

Macroscopic

Particulate

Symbolic
You Try

DEVELOPING SKILLS

C.3 ENERGY IN CHEMICAL REACTIONS

1. One way to understand energy involved in breaking chemical bonds is to use an analogy, such as the process of pulling apart two magnets.
   a. How is pulling apart magnets similar to breaking chemical bonds?
   b. Does pulling apart magnets require energy or release energy?
   c. How is the energy involved in pulling apart magnets analogous to the energy involved in breaking chemical bonds?
   d. Think about holding two magnets close to each other. You let go, and they snap together. How is this similar to energy involved in making chemical bonds?
You Try

MAKING DECISIONS

C.12 FUEL FOR TRANSPORTATION

Now that you have examined the importance of petroleum as a fuel, particularly for transportation (Figure 3.53), it is time to revisit the television ad for the TLC-p that opened this unit. Later, you will have the opportunity to design an original advertisement for an alternative-powered vehicle.

Use what you have learned about petroleum to answer the following questions:

1. Consider this claim made in the television ad: Unlike older petroleum-fueled vehicles, the TLC-p plug-in hybrid automobile is virtually emission free. It’s as close as you can get to “carbon-less transportation.”
   
a. Evaluate this claim in terms of CO₂ emissions that may directly result from operating the vehicle.
   
b. Evaluate this claim in terms of CO₂ emissions that may be created through the manufacturing and transportation of the vehicle to your local dealership.

Figure 3.53 Petroleum, precursor to the fuels used by these vehicles, is a nonrenewable resource. What alternative fuels can be devised to power vehicles such as these?
Purchase Options

• Print and ebook
• Hybrid models available
• Bulk pricing
• Multi-year adoption for ebook available
• LMS integration
  – Anything but Google Classroom
Questions?

Thank you!

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