

## Lesson 46 & 47 (continued): Synthetic Polymers I

text: 960-968, 982-991

supplements:

-Ethylene and propene (23), Types of plastics (24), Organic compounds (25)

what to know:

-properties and classifications of polymers, §25-1

-how to make addition and condensation polymers, §25-1

-concepts of copolymers and crosslinking, §25-1

-examples of synthetic polymers, their uses and monomers, §25-3

-fibers, plastics, rubber, §25-3

-paint, p-986

questions:

1. Distinguish between synthetic and natural polymers and between addition and condensation polymers. Give examples of each kind.
2. Think of organic polymers in your life and list the properties of organic polymers (plastics) which make them so useful.
3. The United States chemical industry produces more ethylene (ethene) than any other organic compound.
  - a. What is the source of the ethylene?
  - b. List the products made from ethylene.
4. Draw the structure for the monomer from which polypropylene is made.
5. If the structure of ethylene is  $\text{CH}_2=\text{CH}_2$ , polyethylene is best represented as:  
 $-(\text{CH}=\text{CH})_n$  or  $-(\text{CH}_2-\text{CH}_2)_n$
6. Polyethylene is stable in acid while Dacron (a polyester) and nylon (a polyamide) are not. Explain.
7. Look at the structure of Teflon and tell why it is so "unsticky".
8. Sketch a portion of the polystyrene molecule.
9. Which of the following could be used to form an addition polymer?  
a condensation polymer?
  - a.  $\text{C}_2\text{H}_6$
  - b.  $\text{C}_2\text{H}_4$
  - c.  $\text{HOCH}_2\text{CH}_2\text{OH}$
  - d.  $\text{HOCH}_2\text{CH}_3$
10. Write a balanced equation to illustrate the polymerization of 1,1-dichloroethylene. The product of
11. Describe the various types of polyethylene.
12. Discuss the chemistry of rubber.