Chapter 10: Polymers

✔ What you need to succeed:

- Define a polymer and a monomer.
- Know the conditions necessary for polymerization.
- Define addition polymerization.
- Using the bracket structure we discussed in class, draw the monomer of the 6 types of addition polymers and give properties/examples:
  - Polyethylene
  - Polypropylene
  - Polyvinyl chloride (PVC)
  - Polyvinylidene chloride (PVDC)
  - Polytetrafluoroethylene (PTFE)
  - Polymethylpentadiene
- Define condensation polymerization and name 3 common types of products from this type of reaction.
- Name 4 types of natural polymers.
- Name and draw the bracket structure of the monomer of rubber.
- Define vulcanization. What are the conditions necessary for this reaction? What products can be made from this reaction?

✔ Suggested Study Questions (from Chemistry for Changing Times textbook):

45 Example 10.2 Exercise 10.2A

✔ Critical Figures and Tables

Table 10.2—Addition polymers
Figure 10.4—Vulcanization
Everything from the PowerPoint lecture!

<table>
<thead>
<tr>
<th>Monomer</th>
<th>Polymer</th>
<th>Polymer Name</th>
<th>Some Uses</th>
</tr>
</thead>
<tbody>
<tr>
<td>H₂C=CH₂</td>
<td>[H   H]</td>
<td>Polyethylene</td>
<td>Plastic bags, bottles,</td>
</tr>
<tr>
<td></td>
<td>C—C</td>
<td></td>
<td>toys, electrical</td>
</tr>
<tr>
<td></td>
<td>[H   H]</td>
<td></td>
<td>insulation</td>
</tr>
<tr>
<td>H₂C=CH—CH₃</td>
<td>[H   H]</td>
<td>Polypropylene</td>
<td>Indoor-outdoor</td>
</tr>
<tr>
<td></td>
<td>C—C</td>
<td></td>
<td>carpeting, bottles,</td>
</tr>
<tr>
<td></td>
<td>[H   H]</td>
<td></td>
<td>luggage</td>
</tr>
</tbody>
</table>
Study Guide

Chem 100

\[
\begin{align*}
\text{H}_2\text{C}=&\text{CH} - \text{Cl} \\
\text{H} & \quad \text{H} & \quad \text{C} & \quad \text{C} \\
\text{H} & \quad \text{Cl} & \quad \text{C} & \quad \text{C} \\
\text{H} & \quad \text{Cl} & \quad \text{C} & \quad \text{C} \\
\text{F} & \quad \text{F} & \quad \text{C} & \quad \text{C} \\
\end{align*}
\]

- Polyvinyl chloride (PVC)  
  Plastic wrap, simulated leather, plumbing, garden hoses, floor tile
- Polyvinylidene chloride (Saran)  
  Food wrap, seatcovers
- Polytetrafluoroethylene (Teflon)  
  Nonstick coating for cooking utensils, electrical insulation