Student presentations

**POLYMERS OF INTEREST**

Polyacetylene \((\text{H}_2\text{C} = \text{C})_n\)

Electron-conducting polymer

Acetylene \((\text{C} = \text{C})_n\)

\(\text{H} = \text{C} = \text{C} = \text{H}\)

**Polyactic acid**

Lactic acid \(\text{HO} - \text{CH}(\text{C})\text{O} - \text{OH}\)

Polymeric acid \(\text{H} - \text{C} = \text{C} = \text{H}\)

Biodegradable screws for surgery patients

**PHOSPHOLIPIDS**

Non-polar

Polar

\(-\text{O} - \text{P} - \text{OCH}_2\text{CH}_2 - \text{NH}_3\)
PHOSPHOLIPIDS - continue
+ They make up all membranes - bilayer
+ Polar head group + hydrocarbon tail

Cell membrane - lipid bilayer
+ Proteins help ions go through the membrane

WAXES

long-chain alcohols

long-chain esters

See transparencies on web
See pictures in your book.
Plants use it to keep water in
TERPENES

\[
\text{isoprene - building block:}
\]
\[\text{C}_5, \text{C}_{10}, \text{C}_{15}, \text{C}_{20} \ldots \text{ 5-carbon isoprene units}\]

See transparencies for examples

Cholic acid - bile salt

Titration curve of aniline - from book

Isoelectric point - after adding 1 eq of base

Another titration diagram - from transparencies (website)

Structure of proteins
+ pleated sheet
+ \(\alpha\)-helix
Structural elements in proteins and peptides

- H-bonding
- disulfide bridges
- proline turn

trans vs. cis = generates turns

Avian pancreatic peptide - see picture

Enzymes - their structure depends on these structural elements

How do we make proteins/peptides?

1. Chemical synthesis - *Textbook* Fig. 17.12

\[
\begin{align*}
\text{H}_3\text{C} & \quad \text{O} \\
\text{CH}_2 & \quad \text{CO} \\
\text{保护胺} & \\
\text{保护酸}
\end{align*}
\]

\[
\begin{align*}
\text{H} & \quad \text{K} \\
\text{保护酸} & \\
\text{保护胺}
\end{align*}
\]
POLYMER CHEMISTRY - KEY CONCEPTS

Classification:
- linear
- branched
- cross-linked

Another classification:
- homopolymers (1 unit as building block)
- copolymer (2 units)
  - random
  - block
  - graft

Polymerization - radical processes

1. Initiation: \[ \text{In} \cdot \text{CH}_2=\text{CH}_2 \rightarrow \text{In-CH}_2-\text{CH}_2 \]

2. Propagation: \[ \text{In-CH}_2-\text{CH}_2 + \text{CH}_2=\text{CH}_2 \rightarrow \text{In-CH}_2-\text{CH}_2-\text{CH}_2 \]

3. Termination: chain stops growing chain growth

Polyethylene - see on web