

BME341 Biomaterials



Lecture #4

Polymer Structure

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Polymer Conformation

- Polymer conformation: term describing the part of the structure of a molecule that can be changed by rotation around single bonds.
- Repeat unit and polymer conformation can be highly affected by chemical composition.

Polymer Configuration

- Configuration is the part of the structure of a molecule that can not be changed except by breaking and reforming of primary bonds.
- There are several common polymer configurations
- In reality, any polymer chain contains a mixture of configurations.

Polymer Structure

- In addition to their conformation and configuration, polymers can possess various overall structures.
 - ✓ Linear
 - ✓ Branched
 - ✓ Network
 - ✓ Crosslinked

Polymer Synthesis

Polymerization: occurs through repeated chemical reactions that join individual mer units into a longer chain

- In order to link the small molecules one has to force them to lose their electrons by the chemical processes of condensation and addition.

Copolymers

Two or more monomers polymerized together

✓ random

✓ alternating

✓ block

✓ graft

Introduction to Material Characterization

- Student presentations on
 - Chromatographic
 - Spectroscopic
 - Microscopic characterization techniques