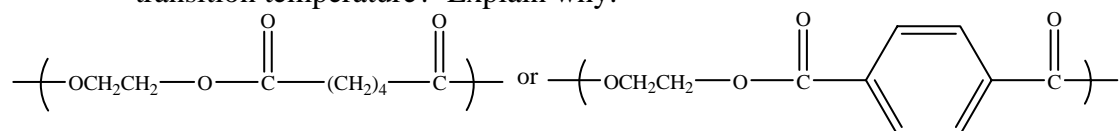


CHEM-450

Quiz # 1

Q1. (a) Define the term glass transition temperature, T_g .

(b) Which of the following polymers would you expect to have a higher glass transition temperature? Explain why.



Q2. Explain why nylon-66 has a higher melting point than polyethylene. (Draw structures).

Q3. Draw a general structure of a polymer in which the principal intermolecular forces are dipole-dipole forces.

Q4. Describe the following statement as True or False:

(a) HDPE is more branched than LDPE

(b) LDPE is more apt (more likely) to be crystalline than HDPE.

(c) Presence of crosslinking increases the T_g of polymer.

Q1. Calculate the root-mean-square end-to-end distance for a macromolecule in molten polypropylene. Take the molecular weight to be 100,000, tetrahedral angle = 109.5° , and the CC bond length = 0.154 nanometer.

t

(d) LDPE softens at a lower temperature than HDPE True or false