

Chapter 4. Stereoisomerism

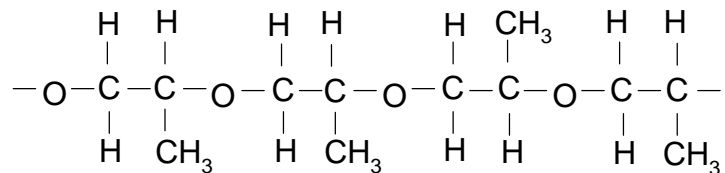
· Polymer configuration – arrangements of atoms which cannot be altered except by

breaking and reforming primary chemical bonds.

– Configuration in vinyl polymers –

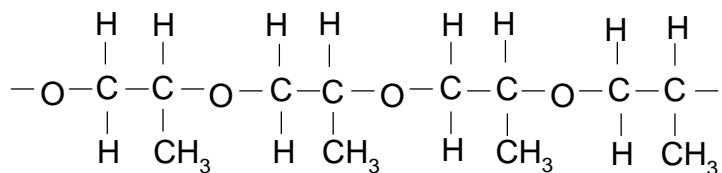
i) Atactic – a random arrangement of the unsymmetrical group.

[(e.g.) polypropylene oxide]

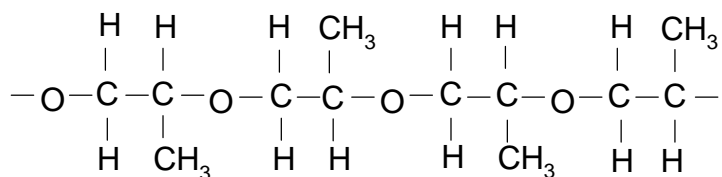


ii) Isotactic – the structure in which all of the groups are lined up on the same side of the backbone.

e.g.) PPO, i-PP ($T_m = 176\text{ }^\circ\text{C}$)



iii) Syndiotactic – alternating placement of the group on either side of the chain.



· Configuration - specifies the relative spatial arrangement of bonds in a molecule (of given constitution) without regard to the changes in molecular shape which can arise because of rotations about single bonds. A change in configuration requires the breaking and reforming of chemical bonds.

· Conformation - the conformation of a macromolecule of given constitution and configuration specifies the spatial arrangements of the various atoms in the molecule that may occur because of rotations about single bonds.

- vinyl polymer stereoregularity가 가 crystallinity가 가

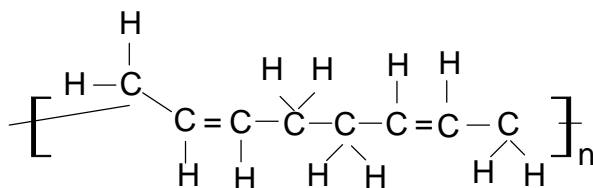
- no configurational isomers in PE

· Polymer conformation - changes in structure caused by rotation about single bond.

- stereoisomerism in diene polymer

ex) polybutadiene,

i) cis-PBD : the substituent groups on the double-sided carbons may either be on the same side.



ii) trans -PBD : the substituent groups on the double -sided carbons may either be on the opposite side.

