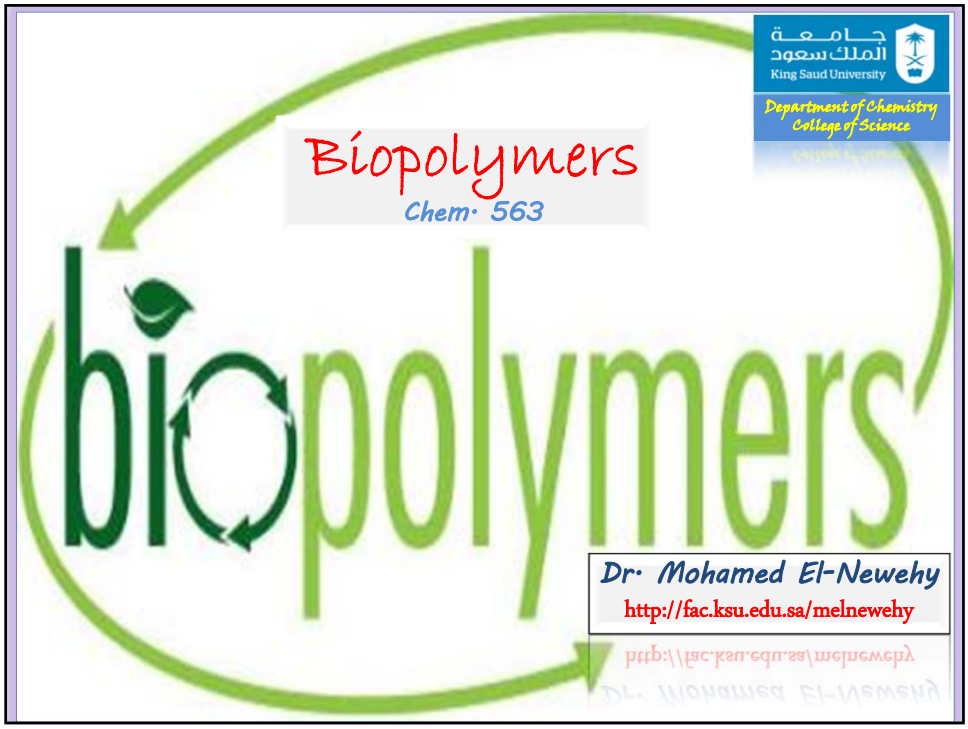

Definition and Types

- ***Biopolymers*** are polymers that bio-degrade with the action of micro-organisms, heat and moisture.
- ***Biopolymers*** can be made using waste starch from a crop that has been grown for food use.
- ***Biopolymers*** are polymers produced by living organisms.

They are polymeric biomolecules, biopolymers contain monomeric units that are covalently bonded to form larger structures.

- **There are three main classes of biopolymers based on the differing monomeric units used and the structure of the biopolymer formed**:
  1. ***Polynucleotides***
     which are long polymers composed of 13 or more nucleotide monomers.
  2. ***Polypeptides***
     which are short polymers of amino acids.
  3. ***Polysaccharides***
     which are often linear bonded polymeric carbohydrate structures.

Biopolymers versus Synthetic Polymers

Definition and Source

- ***Biopolymers*** are made from biomass.
- ***Synthetic polymers*** are often made from the petroleum feedstock.

Increased use of bio-polymers would reduce the dependence on fossil fuels; another advantage is that biopolymers are easily bio-degradable.

Structure

- ***Synthetic polymers*** are much simpler and random and molecular mass.
- This fact leads to a molecular mass distribution that is missing in ***biopolymers***.
- All ***biopolymers*** of a type (say one specific protein) are all alike: they all contain the similar sequences and numbers of monomers and thus all have the same mass.

This phenomenon is called **monodispersity** in contrast to the polydispersity encountered in synthetic polymers.

As a result **biopolymers have a polydispersity index of 1**.
i.e. ***biopolymers are monodisperse***.