

Plastics and Chemical Bonds

Instructional objectives of the lesson:

- 1 – Identify the relationship between unsaturated hydrocarbons and plastics.
- 2 - Identify how double bonds are formed.
- 3 - Identify the concept of plastics as large organic polymers.
- 4 - Identify examples of useful polymers in our daily life.
- 5 – Explore ways to improve the quality of plastic materials by changing the groups linked to carbon atom.
- 6 – List some properties of the carbon atom and identify its distinguished ability to form single and double bonds with different atoms.
- 7 – Search for kinds of bacteria and fungi that that are capable of decomposing some plastic materials.

Topics that students must know

- 1 – Electron configuration for carbon according to Hund's rule.
- 2 - The concept of mixing orbitals (hybridization)
- 3 - Classification of aliphatic hydrocarbons (alkanes, alkenes, Alkynes).

A brief summary of the introduced topics:

Due to the difficulty in understanding and visualizing concepts related to chemical structure -such as forming and breaking bonds to make huge plastic materials that can be easily converted into endless list of products used as alternatives for glass that breaks easily, and iron that rusts- I used drawings, electron movements, and overlapping of orbitals to simplify the unseen mechanism of forming double bonds that lead to the formation of polymers, and plastics.