

D. B. College (Jaynagar) Lect. no. - 13

B.Sc. (II) Hons. Carbohydrate

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Date - 25/07/2020

POLYMERS AND POLYMERISATION

- ◆ A Polymer may be defined as a high molecular weight compound formed by the combination of a large number of one or more types of small molecular weight.
- ◆ The small unit (s) of which polymer is made is known as monomer.
- ◆ The polymerisation may be defined as a chemical combination of a number of similar or different molecules to form a single large molecule.
- ◆ A polymer which is obtained from only one type of monomer molecules is known as homopolymer Example:-

Polythene, PVC, PAN, Teflon, Buna rubber etc.

A Polymer which is obtained from more than one type of monomer is known as a Co-polymer for example.

Buna-S, Dacron, Nylon-66, Bakelite etc.

□ Classification of Polymers:

(1) Classification based upon origin (source):

(a) Natural Polymers (b) Semi-Synthetic Polymers

(c) Synthetic Polymers

(a) Natural Polymers: These are of Natural origin or these are found in plants and animals. Natural Polymers also called as biopolymers.

Example: Proteins (Polymers of amino acids), Polysaccharides (Polymers of mono saccharides), Rubber (Polymers of isoprene), Silk, wool, starch, Cellulose, enzymes, natural

Rubber, haemoglobin etc.

(b) Semi Synthetic Polymers:

Example: Nitro Cellulose, Cellulose acetate, Cellulose Xanthate, etc.

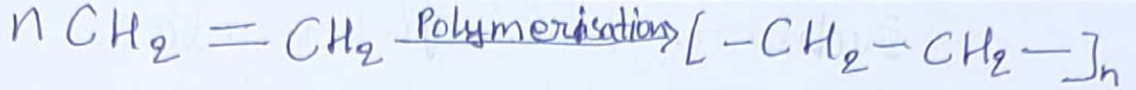
(c) Synthetic Polymers: These are artificial polymers. For example Polythene, nylon, PVC, bakelite, dacron.

(2) Classification based upon synthesis:

(A) Addition Polymers: These are polymers formed by the addition together of the molecules of the monomers to form a large molecule without elimination of any thing.

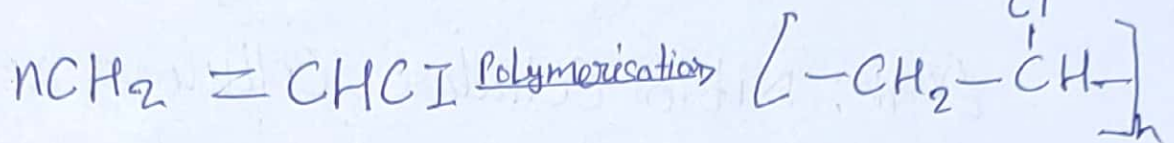
The process of the formation of addition polymers is called addition Polymerisation.

For example



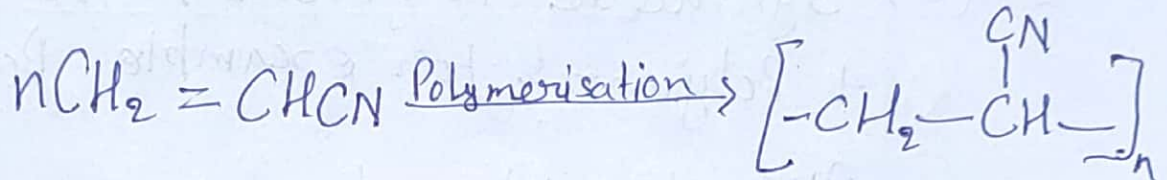
Ethene

Polythene



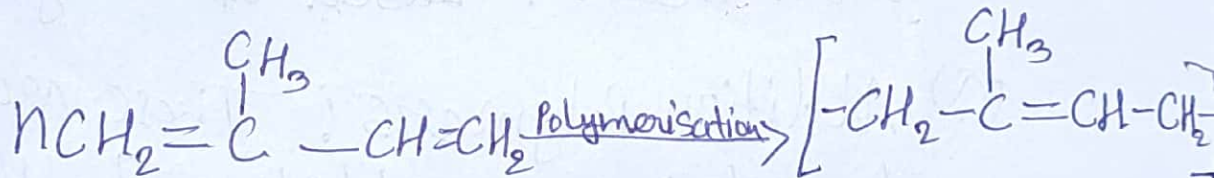
Vinyl Chloride

PVC



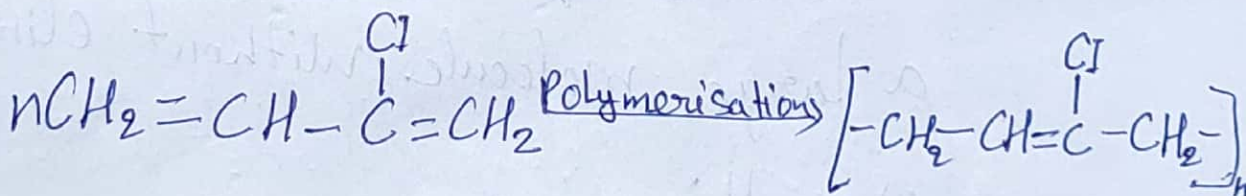
Vinyl ~~chloride~~ cyanide

Orlon



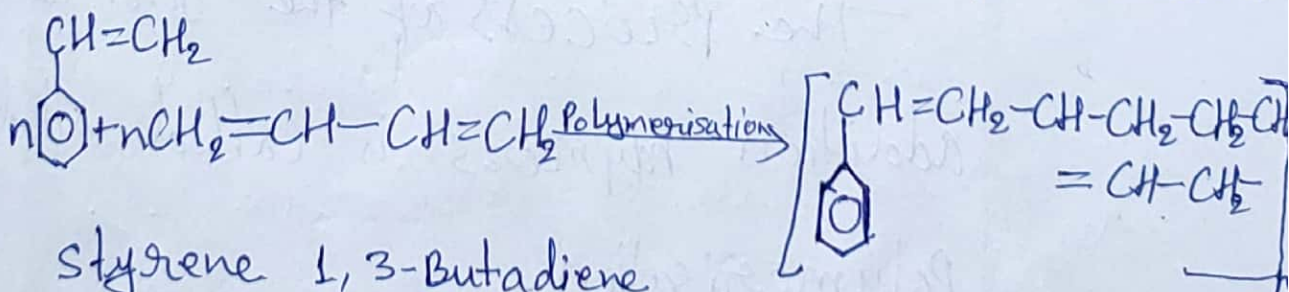
Isoprene

Natural Rubber



Chloroprene

Neoprene Rubber



Styrene 1,3-Butadiene

Styrene butadiene rubber
(SBR)