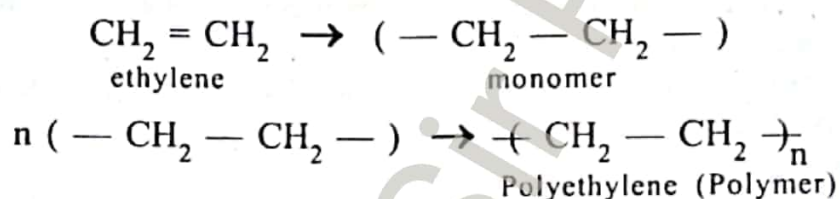


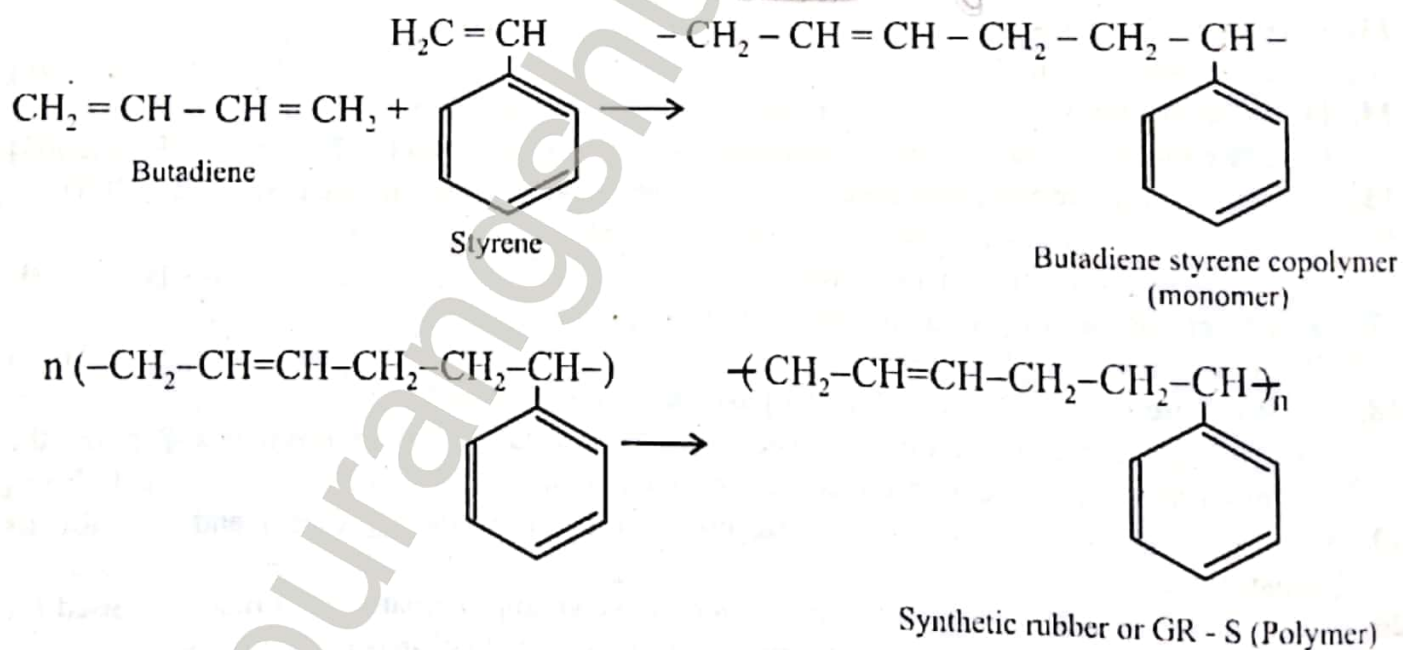
POLYMERS

2.1. INTRODUCTION

A Polymer ('Poly' means many and 'mer' is an unit) is a big molecule formed by repeated joining of simpler molecules. For example, ethylene is a simple molecule or monomer (means one unit). If a number of ethylene molecules (monomers) repeatedly join with each other, a long chain of ethylene molecule will be formed and will be termed polyethylene, a polymer.

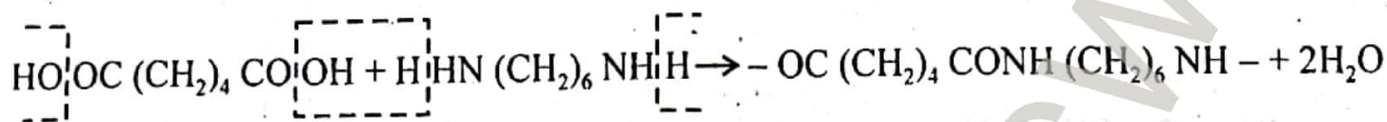


Polyethylene or polythene is called homopolymer as the same unit occurs again and again. If the combination takes place between monomers of different chemical structure repeatedly, the product will be termed as copolymer. *eg.*



In the above two examples it can be observed that the product formed is an exact multiple of the monomer and hence these are called addition polymerisation.

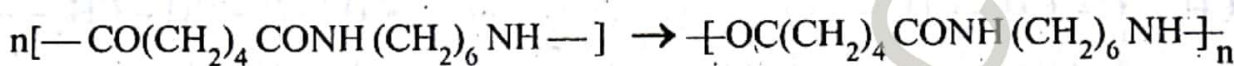
In some cases it may so happen that molecules of different chemical structures having more than one functional group react among themselves repeatedly with the elimination of a small molecule such as water, ammonia, hydrochloric acid etc. to produce a polymeric product. This type of reaction is known as condensation polymerisation. An important example is the formation of Nylon 66.



Adipic acid

Hexamethylene
diamine

Hexamethylene adipamide
(monomer)



Polyhexamethylene adipamide (Polymer)

Or Nylon 66

So, *polymerisation* is the combination of two or more simple molecules of the same or different types with or without the elimination of small molecules resulting in the formation of giant molecules.

Sourangshu Sir