C. Classification of polymers on the basis of Molecular forces.

* Elastomers :→

The polymers that have elastic character like rubber are called elastomers.

In these polymers, the intermolecular forces of attraction between the polymer chains are weakest. Therefore the polymers can be easily stretched by applying small stress and regains their original shape when the stress is removed.

eg → Natural rubber.

However, a few cross linked are also introduced in the chains. Which help the polymers to come back to the original position when the force is withdrawn.

eg → Natural rubber, Vulcanized rubber, Buna-S rubber, Buna-N rubber, SBR, neo-prene etc.

SBR → (Styrene - Butadiene rubber)

$$\left(CH_2-\overset{CH_3}{\overset{|}{C}}=CH-CH_2\right)_n \quad , \quad \left(CH_2-\overset{C_6H_5}{\overset{|}{CH}}-CH_2-CH=CH-CH_2\right)_n$$

Natural rubber SBR

Vulcanized rubber :→ Charles Goodyear — In 1839

Vulcanization :→ The process in which natural rubber is heated with 3-5% H_2SO_4, it becomes gives non-sticky and more elastic product called Vulcanized rubber and this process is called Vulcanization.

$$-CH_2-\overset{CH_3}{\overset{|}{C}}=CH-CH_2-CH_2-\overset{CH_3}{\overset{|}{C}}=CH-CH_2- \xrightarrow[H_2SO_4,\ \Delta]{\text{Vulcanization}}$$

$$+$$

$$-CH_2-\underset{CH_3}{\underset{|}{C}}=CH-CH_2-CH_2-\underset{CH_3}{\underset{|}{C}}=CH-CH_2-$$