

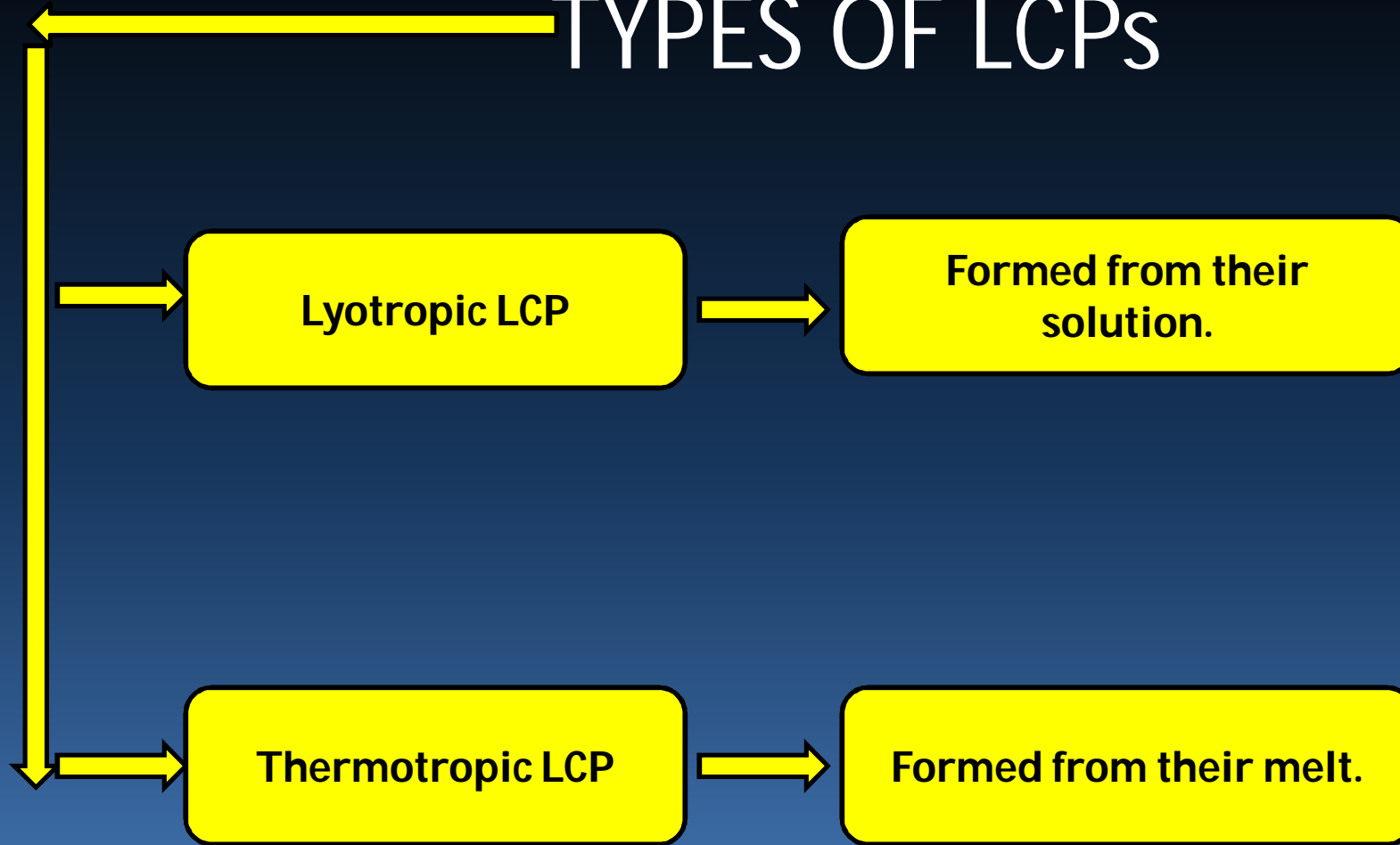
# LIQUID CRYSTAL POLYMERS

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# LIQUID CRYSTAL POLYMER

- These polymers which have a tendency to **align** their chains **parallel** over a long distance , **prior** to the crystallization from their **melt** or **solution**.
- Occurrence: Liquid crystallinity in polymers may occur either by **dissolving** a polymer in a **solvent** or by **heating** a polymer **above** its **glass** or **melting** transition point.

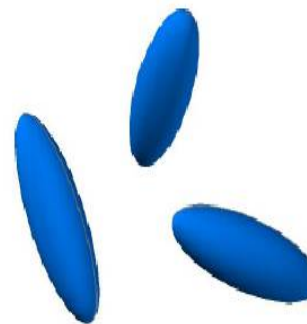
# TYPES OF LCPs



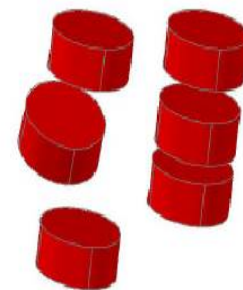
# Characteristics

- Highly **polarised** chain structure.
- Molecules should have **aromatic rings**.
- Molecules should be like **disc**.

Disc like structure



Rod shaped

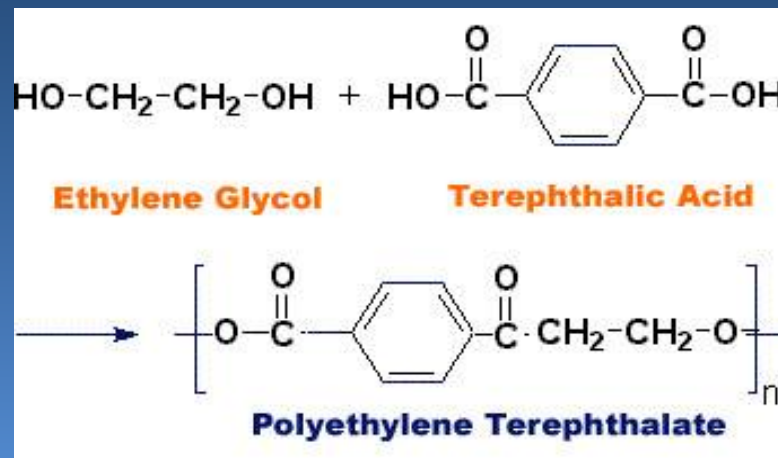


Disc shaped

# MISCELLAENOUS

- Liquid-crystal polymers (LCPs) are a class of aromatic **polyester polymers**.
- Polyester Polymers: Polyester is a category of polymers which contain the **ester** functional group in their main chain. Although there are many polyesters, the term "polyester" as a specific material most commonly refers to **polyethylene terephthalate (PET)**.

Preparation



# PROPERTIES

- Higher crystallinity in solid state.
- High tensile strength.
- Very tough.
- Higher  $T_m$  and  $T_g$ .
- Have property of multiple internal reflection.
- Used at higher working temperature.

# APPLICATIONS

- For optical fibres.
- Electrical and electronics app.
- Transport,automotive,military app.
- Aircraft and aerospace app.
- Chemical and consumer app.
- Used as fillers for composites.

