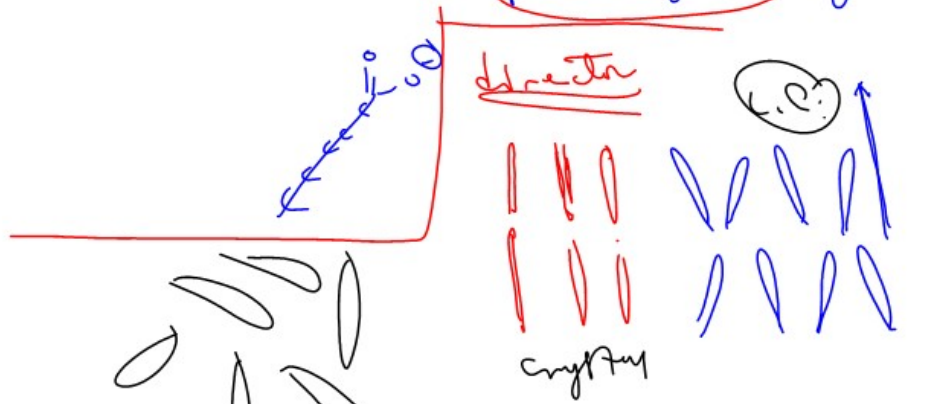


Liquid Crystals (LC)

Solid material
liquid: } liquid crystal
(mesogenic state)

L.C. mesogens { strongly polar }
or polarizable } molecules



Order parameter

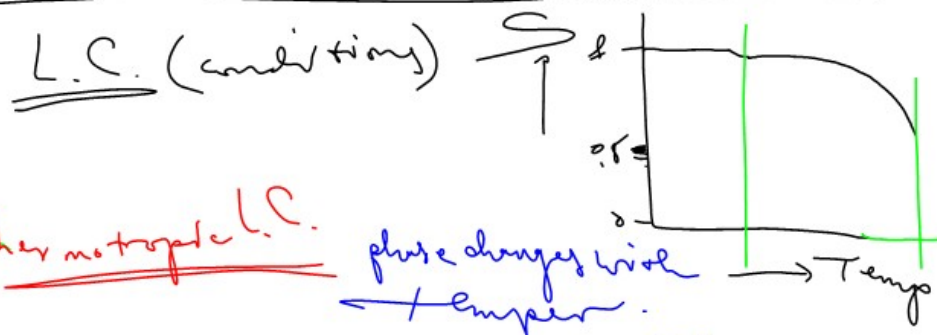
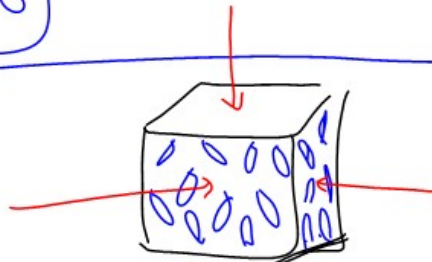
$$S = \frac{1}{2} (3 \cos^2 \theta - 1)$$

$\theta = 0 \Rightarrow \cos \theta = 1 \Rightarrow S = 1$
crystal

L.C. $S \approx 0.7 - 0.9$

$S = 0$

anisotropy



Thermotropic L.C. phase changes with temperature.

Lyotropic L.C. phase changes with concentration

Crystal [strict positional order
strict orientational order

L.C. no strict positional order
strict orientational order

Phases of L.C.

① Nematic Phases
no positional order
only orientational order
anisotropic

