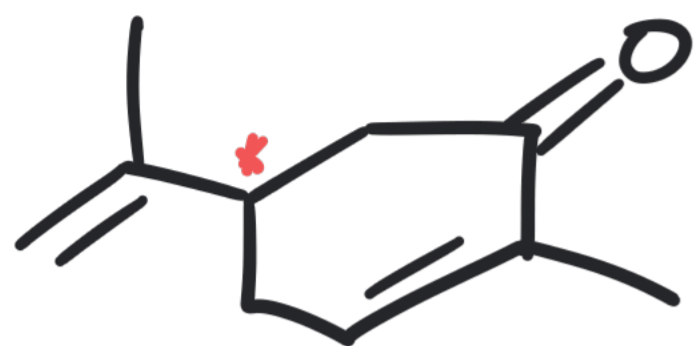
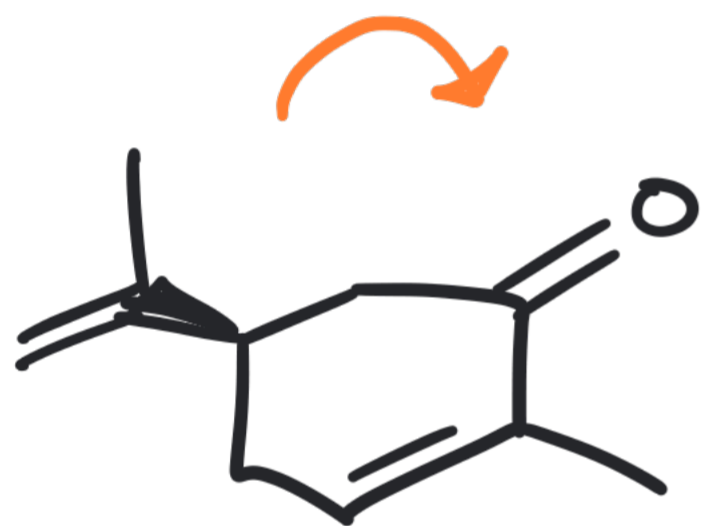


# Working With Enantiomers - Optical Activity



Carvone  
(chiral)



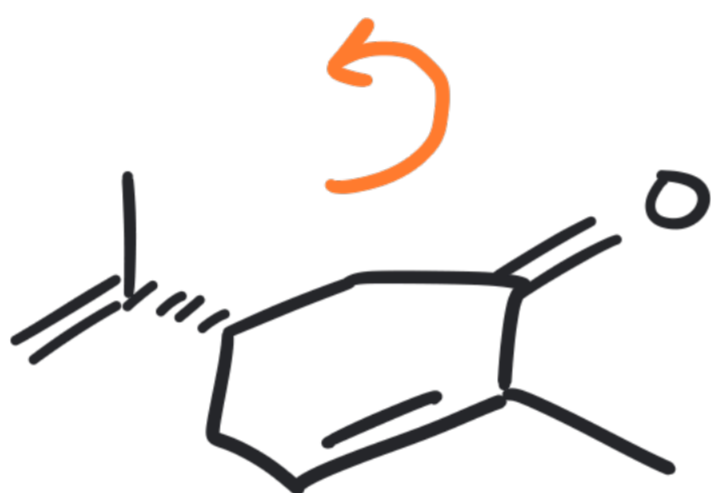
(+)-Carvone

mp: 25°C

bp: 231°C

$[\alpha]_D^{20} +61^\circ$

↑ optical rotation



(-)-Carvone

25°C

231°C

-61°

pure single enantiomers  
of chiral molecules are  
optically active - rotate plane polarized  
light

Can purchase either  
enantiomer + or -  
in pure form

or

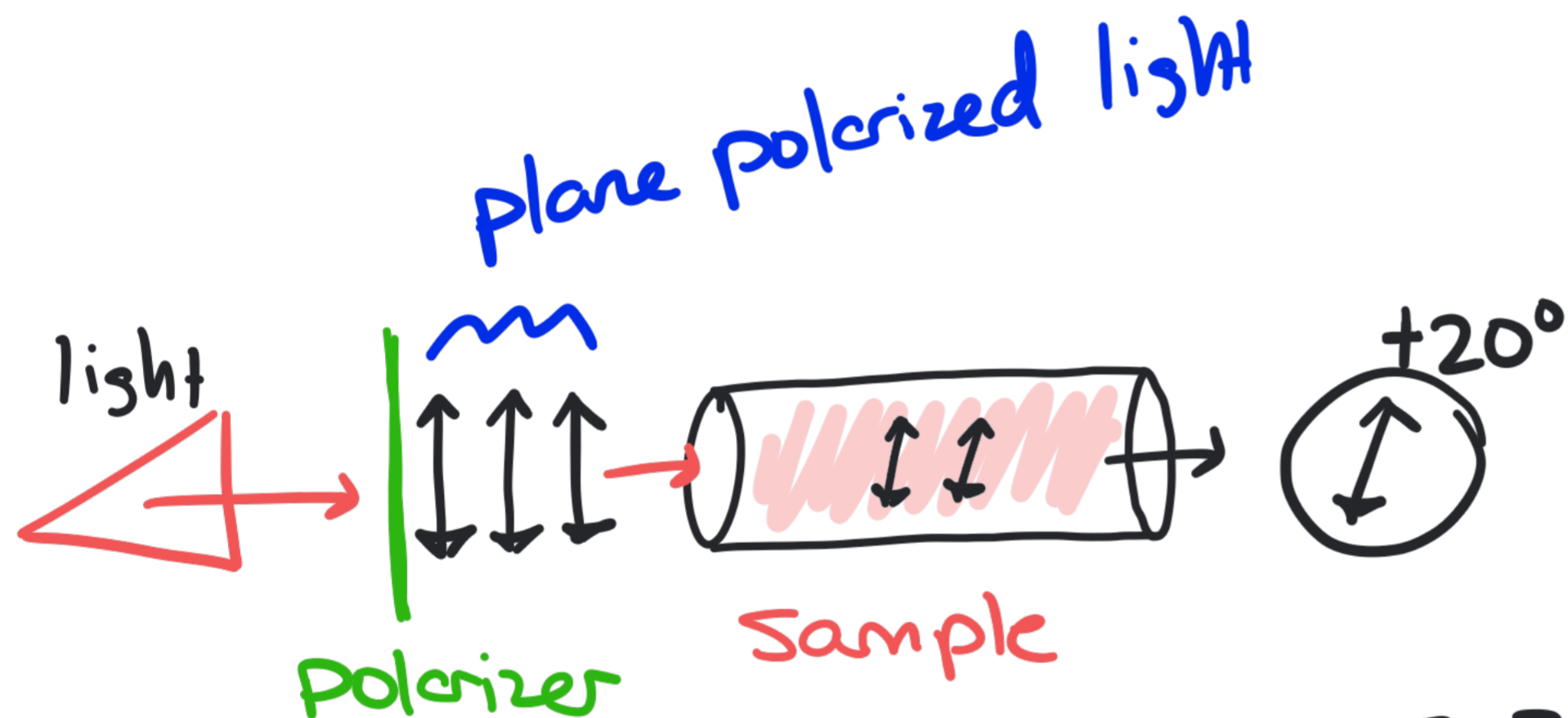
Can purchase a 1:1  
mixture of the enantiomers  
(±)-Carvone

↳ racemic mixture

In a racemic mixture, the  
optical rotations cancel  
= optically inactive

Optical activity is measured by a polarimeter

light  $\downarrow \nearrow \leftrightarrow$



$$[\alpha]_D^{20} = \frac{\text{degree of rotation}}{\text{Path length (dm)} \cdot \text{Conc (g/ml)}}$$

No correlation between +/- and R/S  
Experiments bookkeeping



Single enantiomer = optically active  
 Racemic mix = optically inactive  
 achiral molecules = optically inactive

tartaric acid  
 Stereoisomers

